Imperial®

DEPENDABLE UNDER PRESSURE®

Professional Tools

HVACR Service | Tube Working | Specialty Pliers

MADE IN THE U.S.A.

1.800.561.8187 www.itm.com information@itm.com

Imperial®
DEPENDABLE UNDER PRESSURE®

Professional Tools

HVACR Service | Tube Working | Specialty Pliers

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

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.

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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.

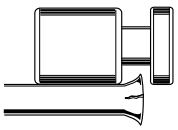
S16003162 Replacement cutter wheel for soft copper & aluminum tubing is extra sharp to minimize burr buildup.

S76637 Constrictor wheel for producing sweat joints.

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

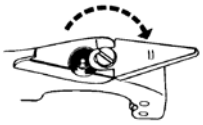
TC-1010

312-FC



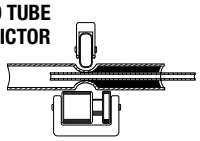
FLARE CUT-OFF GROOVE
Groove in rollers reduces tube loss when cracked flare is removed.

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

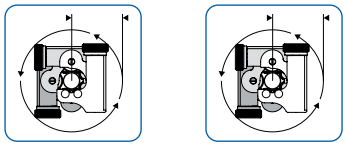
METAL TUBING

"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.

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

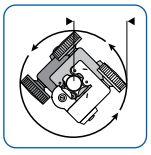
TC-1050RH For 1/8" to 5/8" (4 mm to 15 mm) O.D. tubing. 2-Pc. set includes TC-1050 "IMP"® mini tube cutter and ratcheting handle in clamshell packaging. Length 5". Wt. 6.0 oz.

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

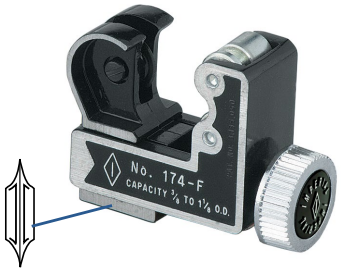
BIG "IMP"® TUBE CUTTER - "Big capacity in small size"

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.

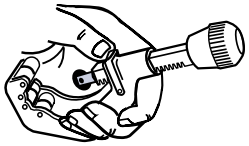
206-FB For 3/8" to 2-5/8" (10 mm to 66 mm) O.D. tubing. Includes (2) S74761 general purpose cutter wheels. Length closed 7-3/4". Wt. 2.0 lbs.

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.

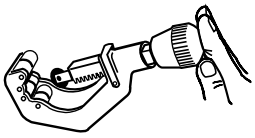
Conforms to Federal Specification GGG-C-771d, Type II, Class I.

206-FB

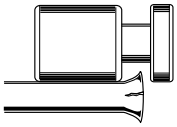
406-FA



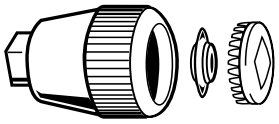
RATCHET FEED
Ratchet release opens cutter instantly to maximum size.



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.

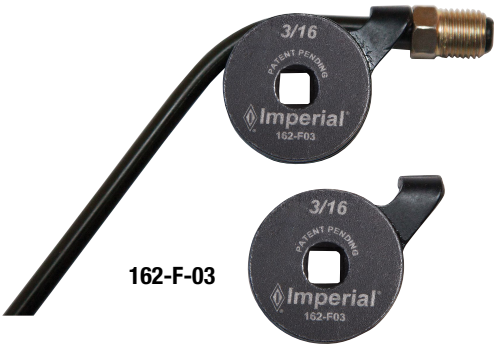
MICRO TUBE BENDER

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

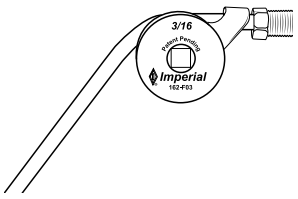
162-F Micro bender for 3/16" and 1/4" O.D. soft copper and aluminum tubing.



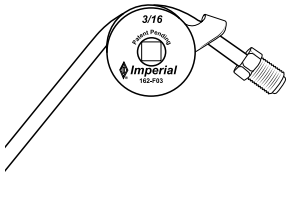
162-F-03

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-04



Use 1/4" ratchet to drive



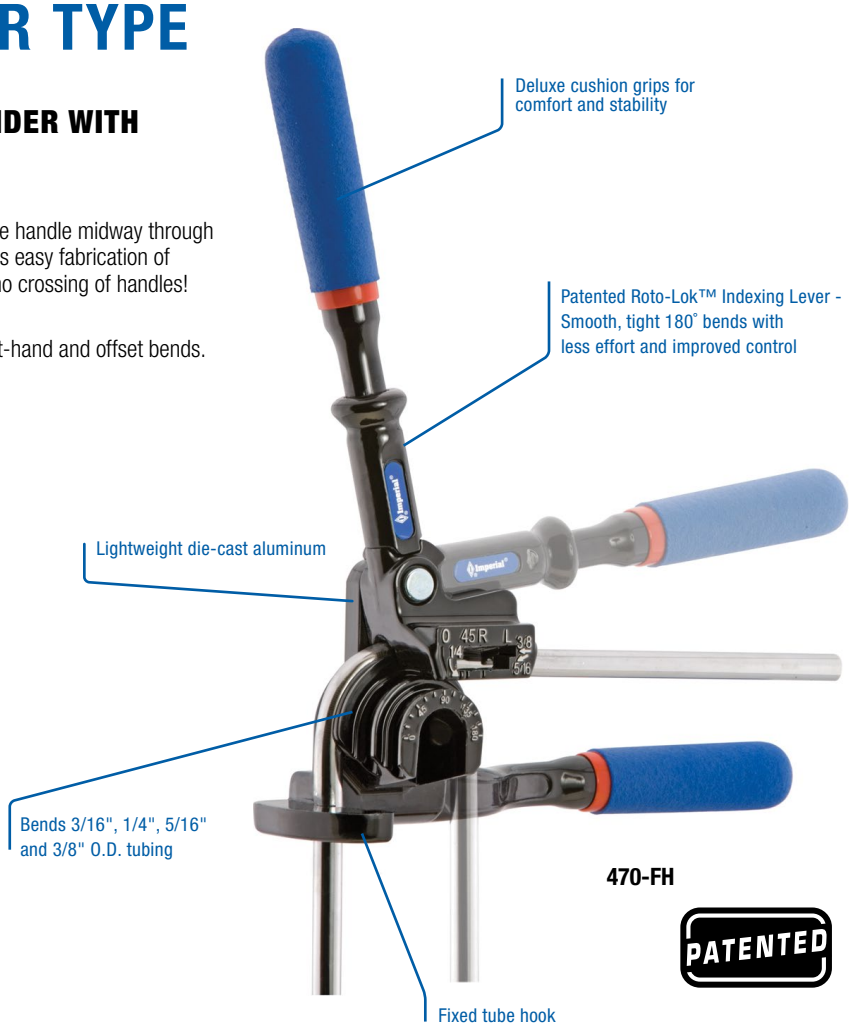
For bends greater than 45° you may need to reposition bender as shown.

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

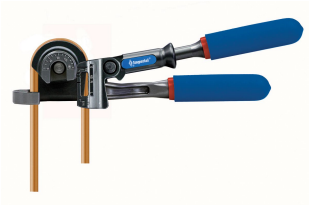


470-FH

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

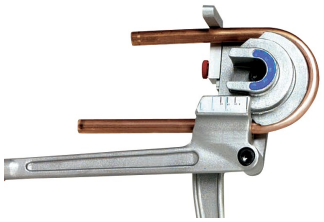
- Bends 3/16", 1/4", 3/8" and 1/2" tubing.
- Makes smooth, tight-radius 180° bends.
- Calibrated markings - for making accurate left-hand, right-hand and offset bends.
- Adjustable hook.
- Optimum bending radius – for each tubing size.
- Cushion grips – for extreme comfort.
- Made of lightweight die-cast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

PATENTED

370-FH

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



Easy 180° bends in one swift motion

IMP™ TRIPLE HEAD BENDERS

- 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

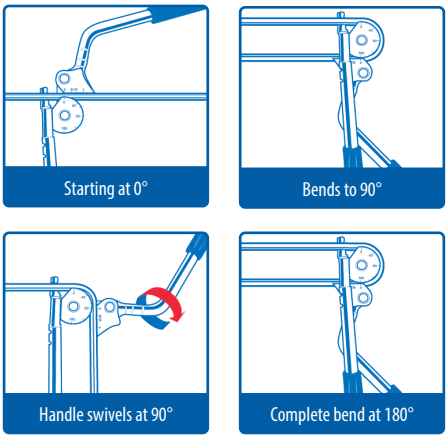
Each tool bends only one size.

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.



HEAVY DUTY LEVER TYPE

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

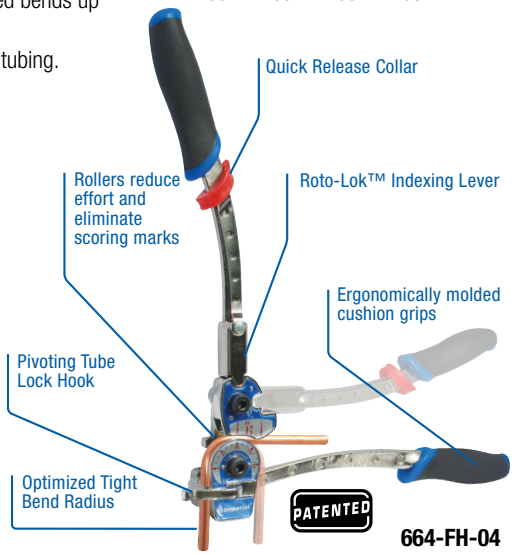
For 1/4" to 1/2" and 6 mm to 12 mm O.D. tubing.

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

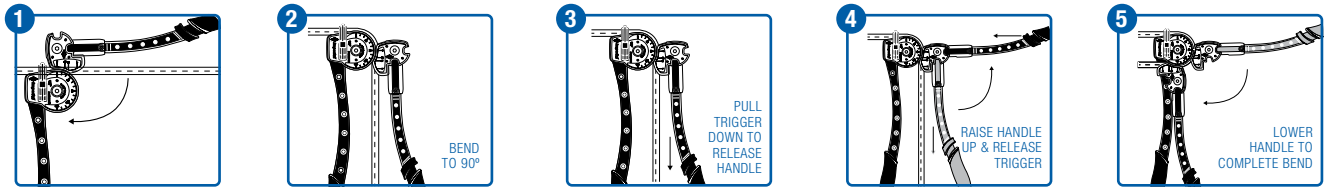
- New design for accurate and tight bends up to 180° in stainless steel and other tough metals.
- Patented, quick action trigger release repositions two-stage handle midway through a bend when both handles begin to meet. This feature allows easy fabrication of optimized bends up to 180º with reduced 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

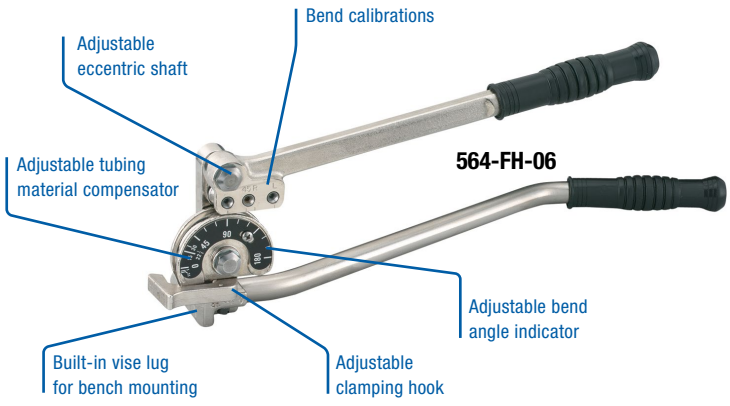


564-FH LEVER TYPE HEAVY-DUTY TUBE BENDER

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

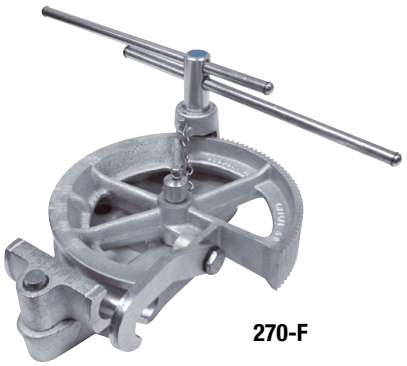
Each tool bends only one size.

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.



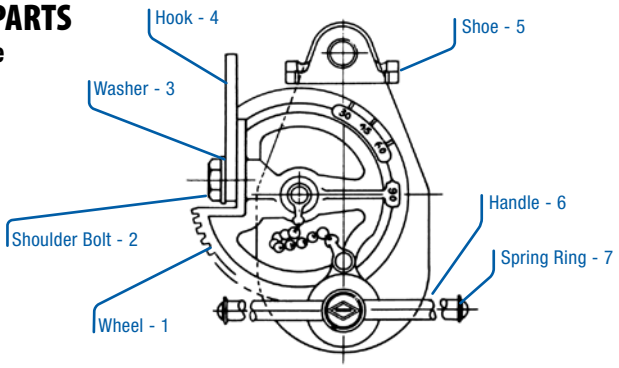
270-F

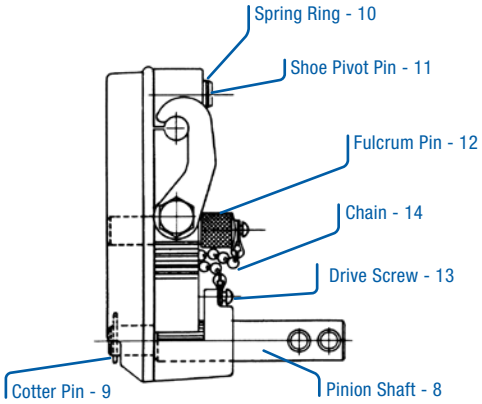
PART NO.	TUBE O.D. (in.)	RADIUS TO CENTER OF TUBE (in.)	MIN. RETURN FROM CENTER TO CENTER OF TUBE (in.)	WEIGHT EACH (lbs.)	WALL THICKNESS (in.)
270-F-12	3/4	4	9-1/2	15	.042 to .083
270-F-14	7/8	4	9-1/2	14.75	.042 to .083
270-F-16	1	4	9-1/2	14.75	.065 to .095*
270-F-18	1-1/8	4	9-1/2	14.75	.065 to .095*

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

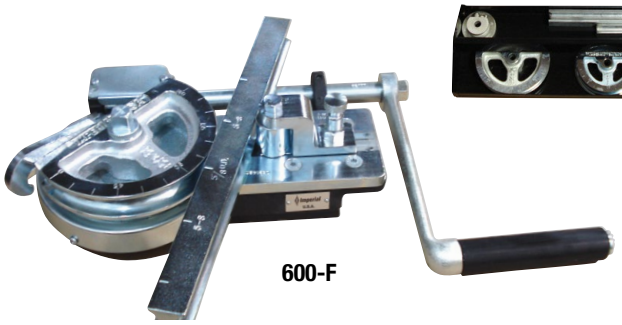
For 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" O.D. tubing.

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

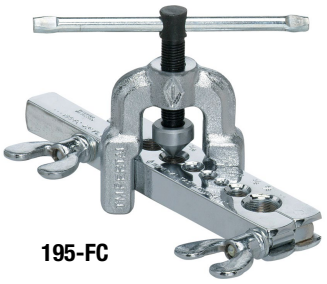
TUBE O.D. (in.)	WALL THICKNESS (in.)	RADIUS TO CENTER OF TUBE (in.)
1/4	.016 to .049	3/4
5/16	.020 to .065	1
3/8	.028 to .083	1-1/4
1/2	.035 to .083	2
5/8	.042 to .083	2-1/2
3/4	.049 to .083	3

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


195-FC

45° FLARING TOOL

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

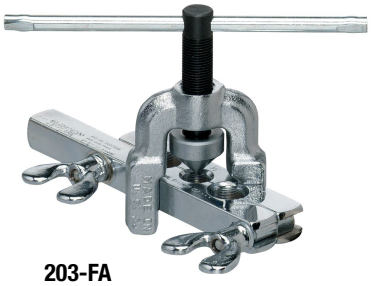
195-FC Flares 7 sizes of tubing. Rugged forged steel slip-on yoke and hardened flaring bar. Positive clamping action of bars prevents tube slippage. Self-centering yoke with swivel-type, hardened steel, chrome finished flaring cone forms better flares with less effort. Design of yoke permits flaring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

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.

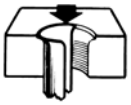

203-FA

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

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

45° ROL-AIR™ FLARING TOOL

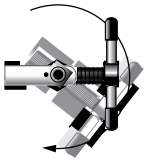
Flares and burnishes 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing.

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



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.

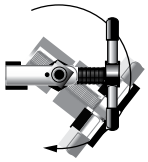
525-F

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.

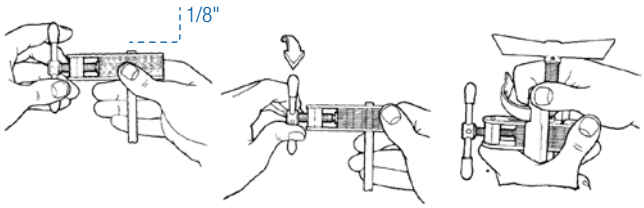
Outside Tube Diameter (in.)	3/16	1/4	5/16	3/8	1/2	5/8
Wall Thickness (in.)	.028	.035	.035	.035	.035	.035

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

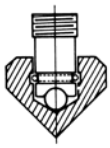
45° DOUBLE FLARING TOOL

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

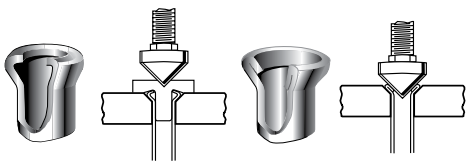
93-FB Recommended for Bundy and other annealed soft steel tubing (wall thickness to .035"). Also makes single or double flares in soft copper or aluminum tubing. Small, lightweight, easy to handle. Steel yoke; swivel-type hardened steel, chrome finished flaring cone. Bar provides positive grip of tubing.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

37° FLARING TOOL

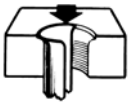
For 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing.

437-FB

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.

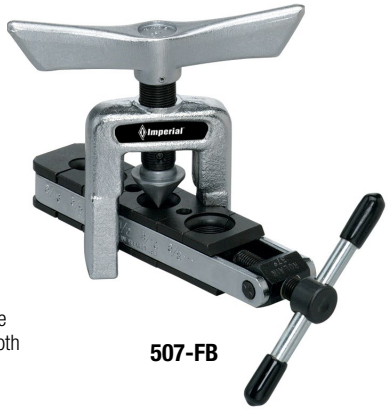
Outside Tube Diameter (in.)	3/16	1/4	5/16	3/8	1/2	5/8
Wall Thickness (in.)	.032	.032	.032	.032	.035	.035

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

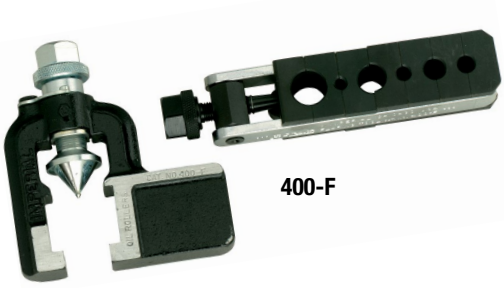
507-FB For use with soft copper, aluminum and brass tubing. Faceted, hardened steel chrome finished cone rolls out perfect 37° flares above die block - then automatically burnishes flare face. Original wall thickness is maintained at base of flare. Slip-on yoke permits use in tight quarters where there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

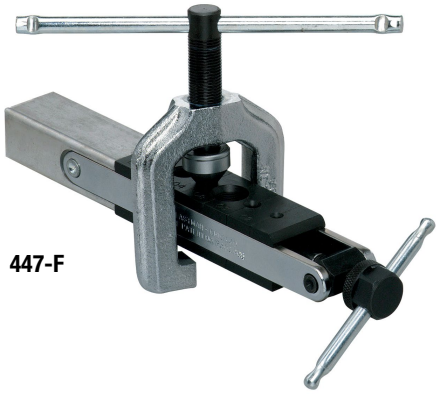
37° FLARING TOOLS

37° HEAVY-DUTY FLARING TOOL

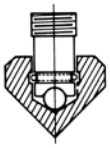
For 1/8", 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing.

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

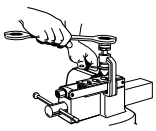
For 3/4", 7/8", 1" and 1-1/4" O.D. tubing.

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.

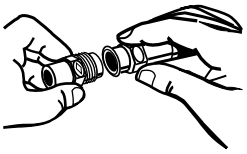
555-FS Flares and swages 6 sizes of soft copper, aluminum or brass tubing. Makes both 45° and 37° single flares. Fast cam lever operation. Portable. Can be clamped in vise or bolted to bench. Change sizes quickly. Built in gauge for accurate flare size or swage depth. Unique jaws provide a positive non-slip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

Replacement parts:

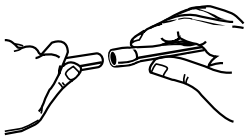
560-S-03	3/16" Swaging adapter.	**560-S-10**	5/8" Swaging adapter.
560-S-04	1/4" Swaging adapter.	**S70348**	45° Flaring cone.
560-S-05	5/16" Swaging adapter.	**S70349**	37° Flaring cone.
560-S-06	3/8" Swaging adapter.	**S8711201**	Set of replacement dies.
560-S-08	1/2" Swaging adapter.		

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.

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.

293-F

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

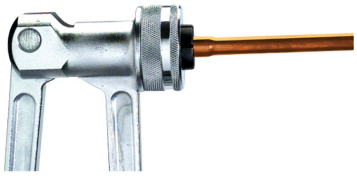
275-FSCD Kit contains 275-FS, TC-1000, and double flaring adapters for 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing. Includes tool case.

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 175EXC	XpandR™ Pliers 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.

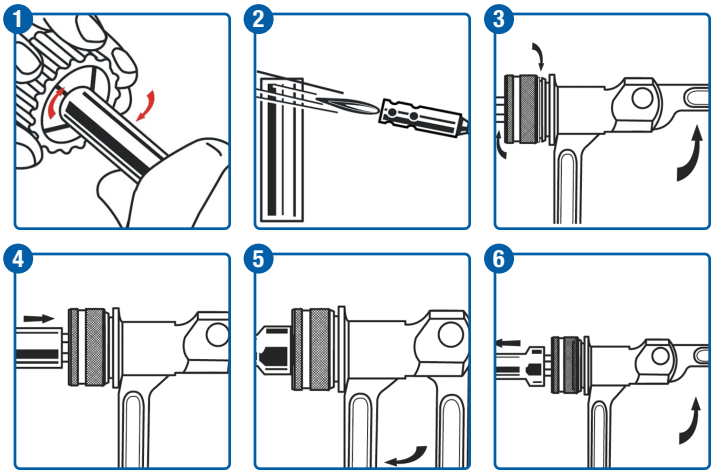
ADDITIONAL HEAD SIZES AVAILABLE	
175EX16	1" head
175EX18	1-1/8" head
175EX22	1-3/8" head
175EX26	1-5/8" head

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.

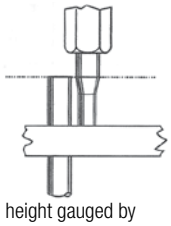
195-SA Vise-mountable flaring bar and 4 swaging punches for 1/4", 3/8", 1/2" and 5/8" O.D. tubing. Includes tool case. Wt. 2.0 lbs.

S75531 Flaring bar only. Wt. 1.0 lb.

94-SSP

193-S

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



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

195-SA

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

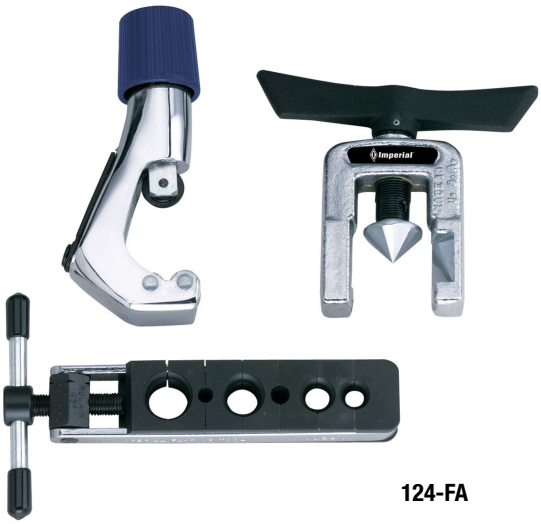
95-S

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 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.

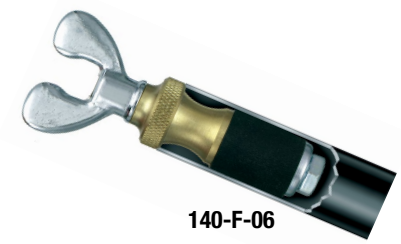
105-FF

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.

127-C

127-CO

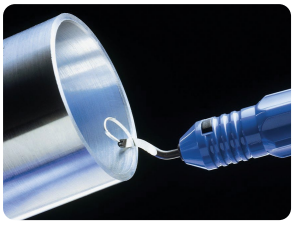
124-C

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

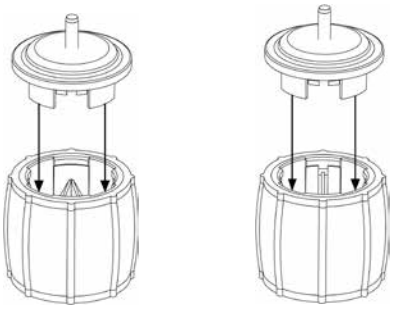
INNER-OUTER REAMING AND DEBURRING TOOLS

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.

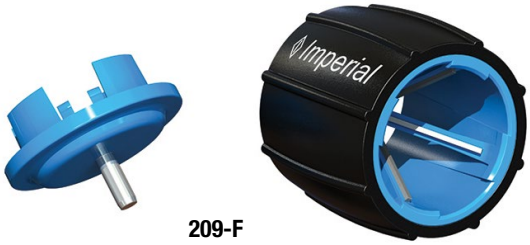
208-F

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.



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).

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

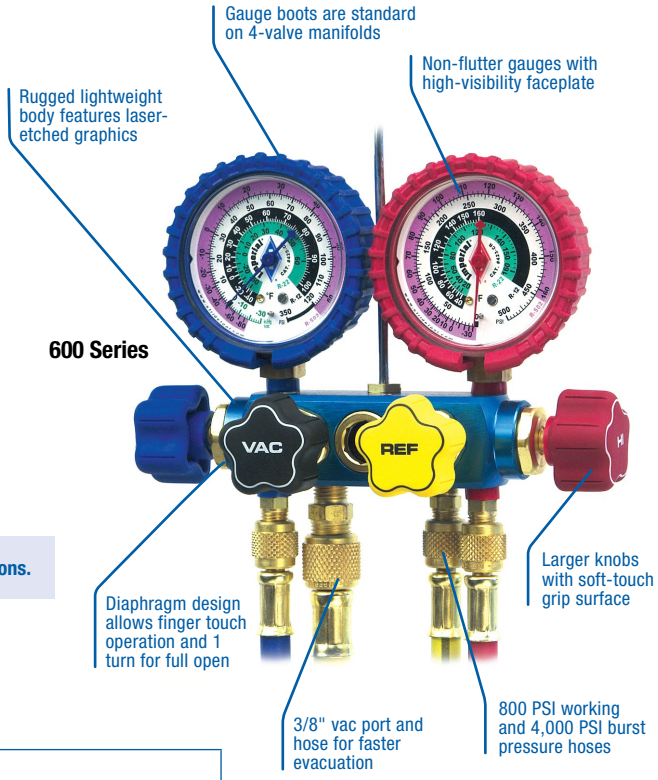
195F-7STDS KIT

SERVICE MANIFOLDS

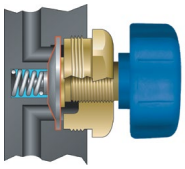
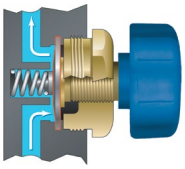
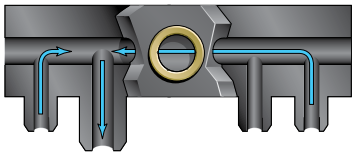
600 SERIES 4-VALVE MANIFOLD

- **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

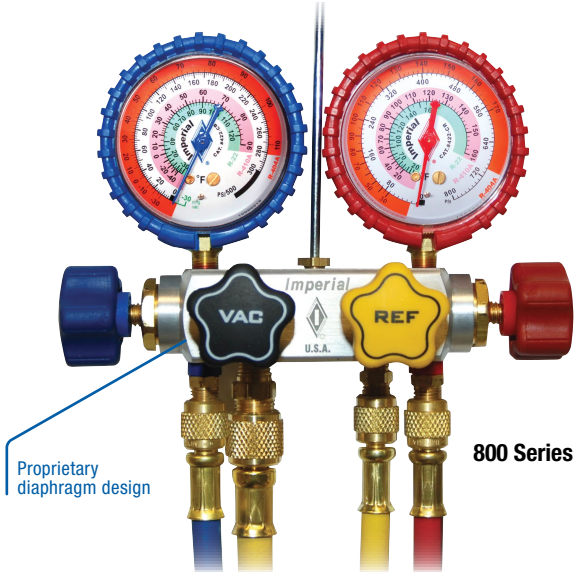
		
Fingertip pressure to close completely	One turn to full open	3/8" vacuum port and oversized passages evacuate system 4 times faster than ordinary manifolds

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.



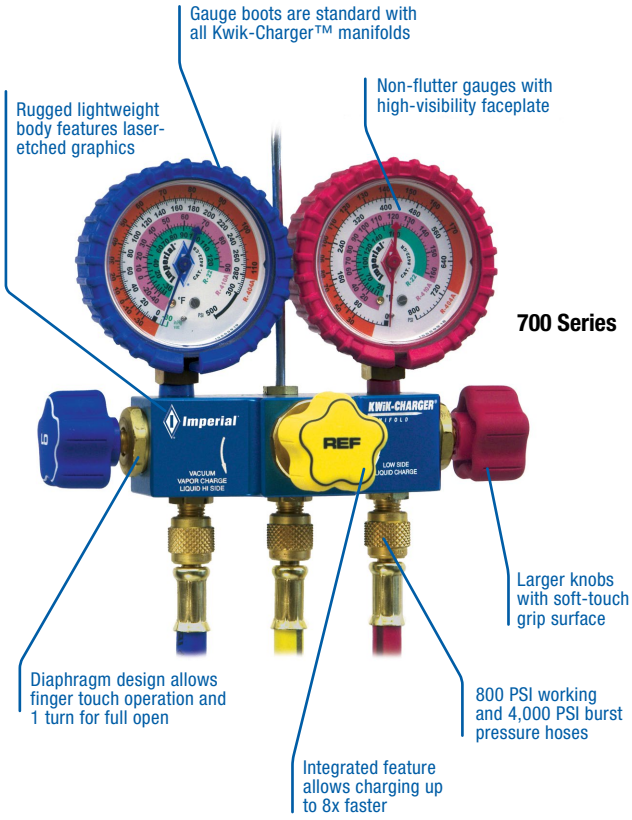
Recognized Component. is a registered trademark of Underwriters Laboratories LLC

SERVICE MANIFOLDS

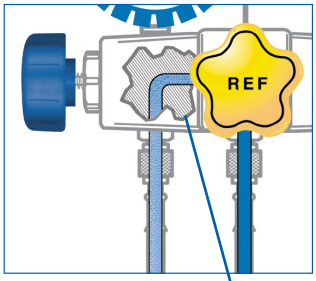
700 SERIES KWIK-CHARGER™ MANIFOLD

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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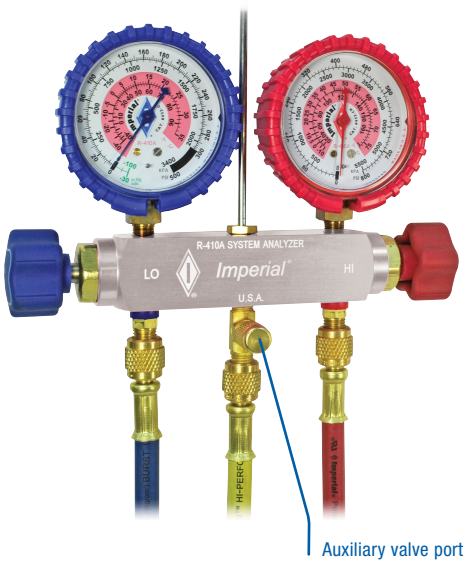
SERVICE MANIFOLDS

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

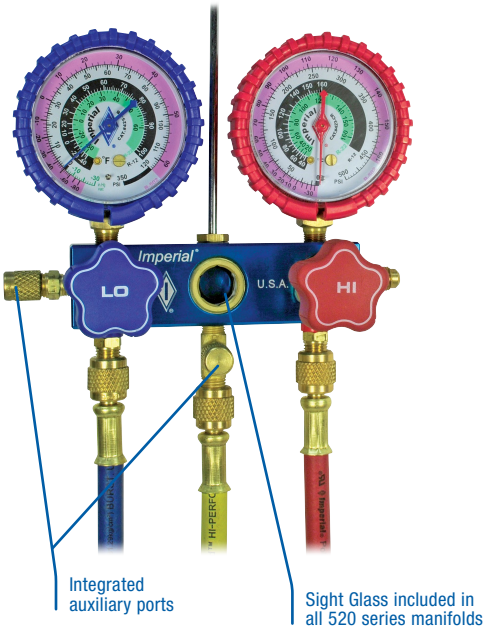
- **Auxiliary Valve Port** – Allows multiple hookups for vacuum gauge, vacuum pump, recovery unit and add-ons.
- **Dual O-Ring Seal** – For high-pressure valve use. Electroless nickel plate stem to reduce wear and gauling.
- **Precision Gauges & Protective Boots** – Unique design with easy to read color-coded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



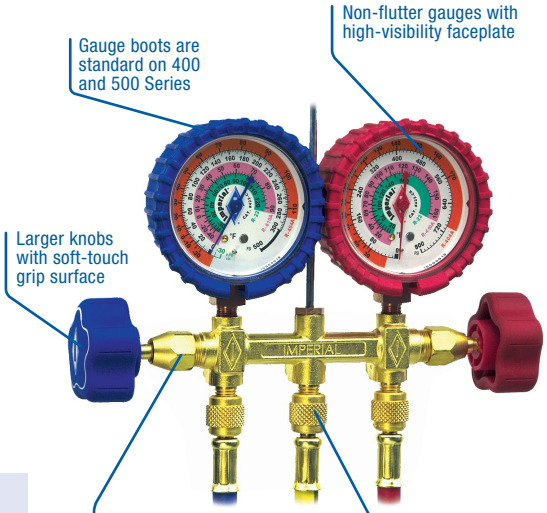
Recognized Component. is a registered trademark of Underwriters Laboratories LLC

SERVICE MANIFOLDS

400 SERIES DELUXE 2-VALVE BRASS MANIFOLD

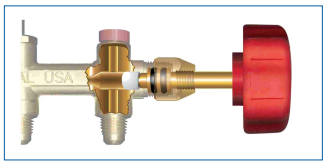
- **Dual O-Ring Valves** – Precision engineered with dynamic full-flow design for faster trouble-free evacuation and charging.
- **Precision Gauges & Protective Boots** – Unique design with easy to read color-coded scales provides superior resistance to shock, vibration and pulsation for superior performance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

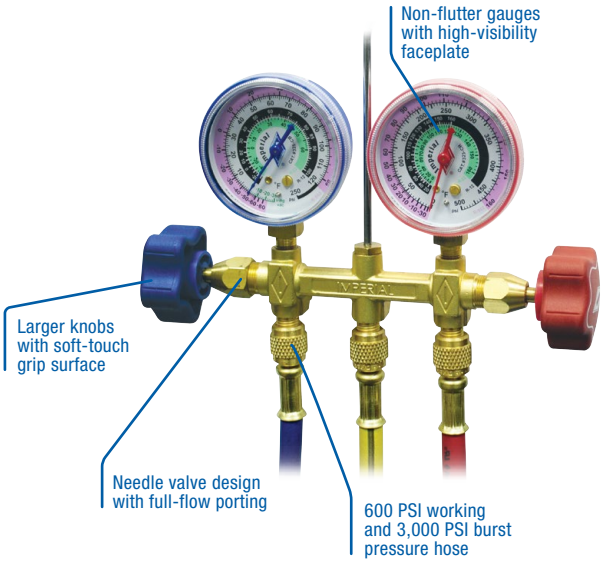


300 SERIES ECONOMY BRASS MANIFOLDS

- **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



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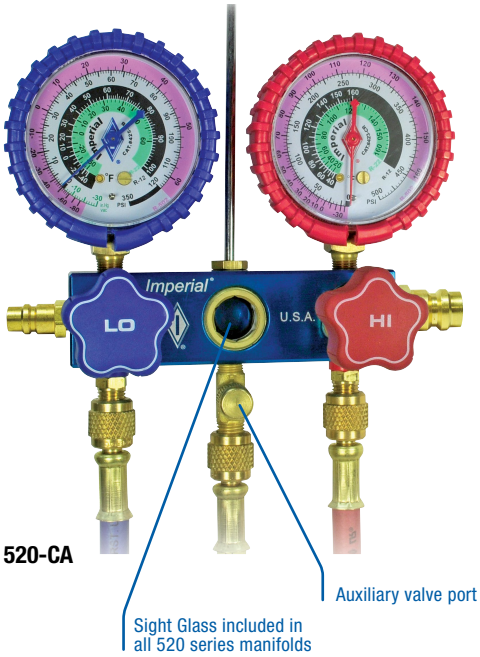
AUTOMOTIVE SERVICE MANIFOLDS & ACCESSORIES

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

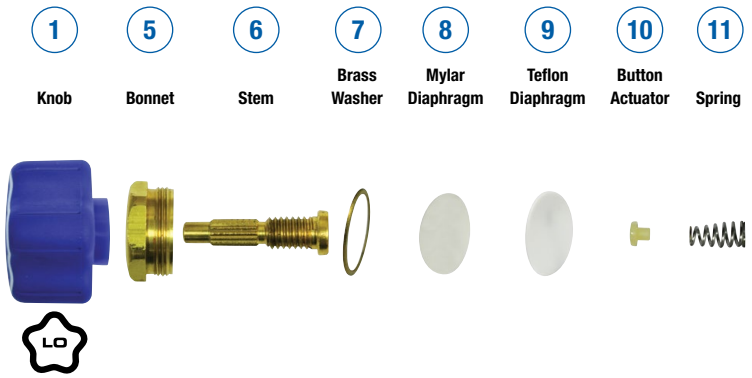
MANIFOLD ACCESSORIES & SERVICE PARTS (see pages 33-34 for details)

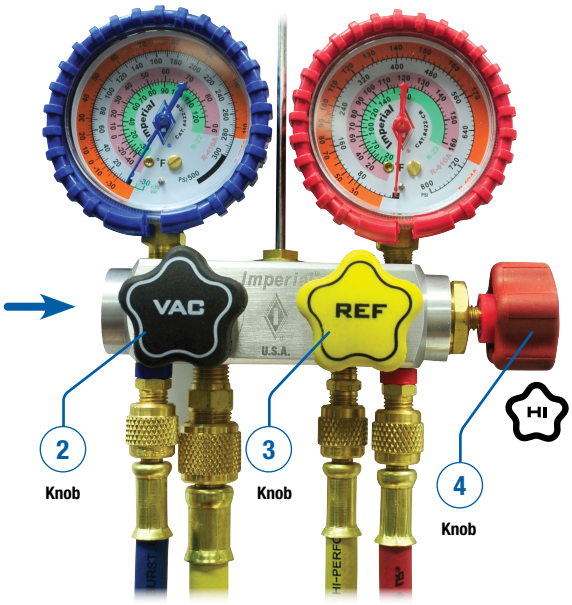
10SG Sight Glass Repair Kit
400-RB Set: Red & Blue Protective Gauge Boots
405-RH High Side Repair Kit w/soft touch knob for 300 & 400 Series "Imperial USA" brass manifold
405-RL Low Side Repair Kit w/soft touch knob for 300 & 400 Series "Imperial USA" brass manifold
500-RH High Side Repair Kit for 510 & 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



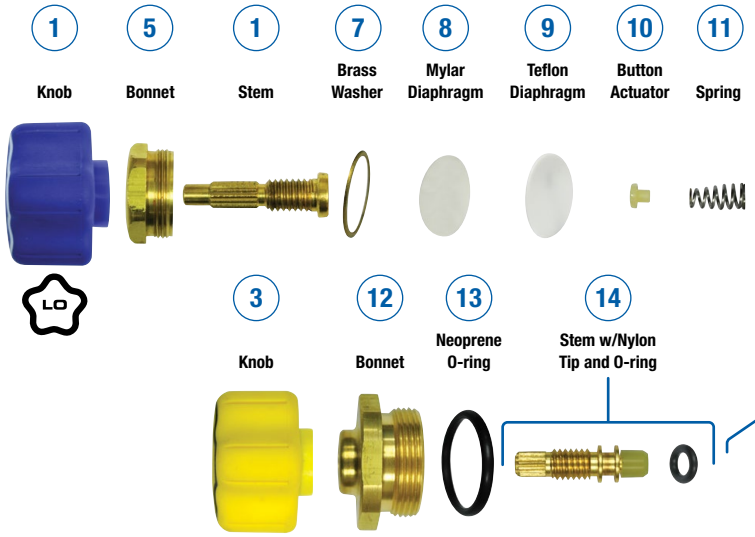


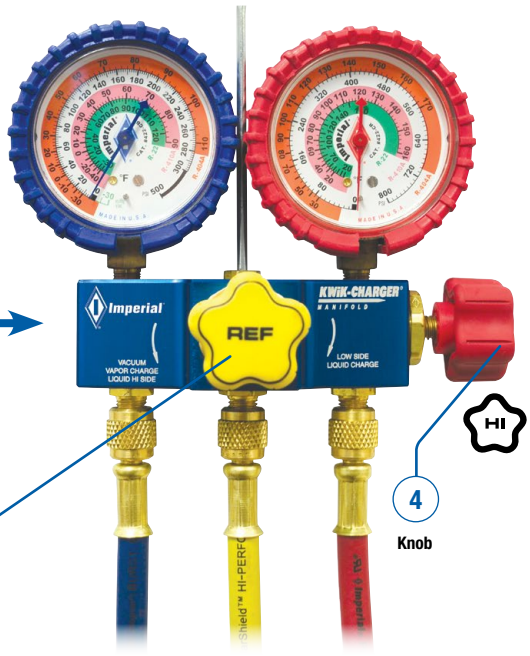
MANIFOLD REPAIR KITS AND REPLACEMENT PARTS LIST

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

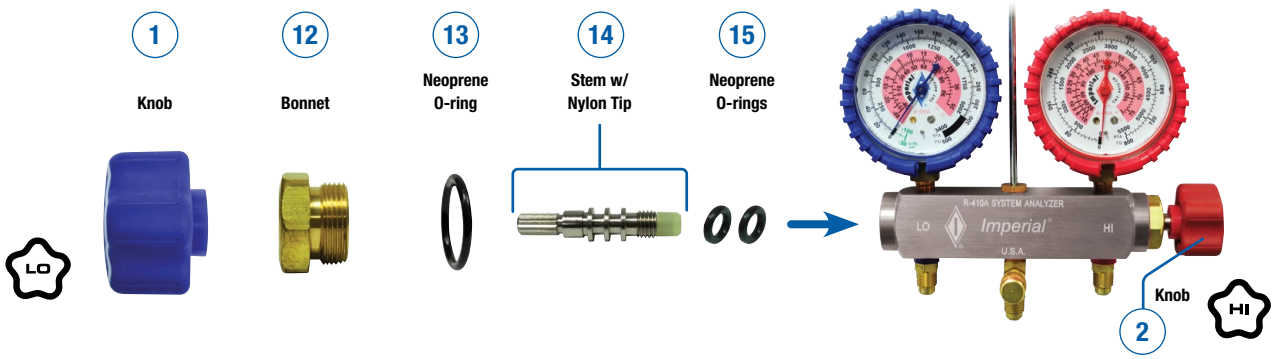


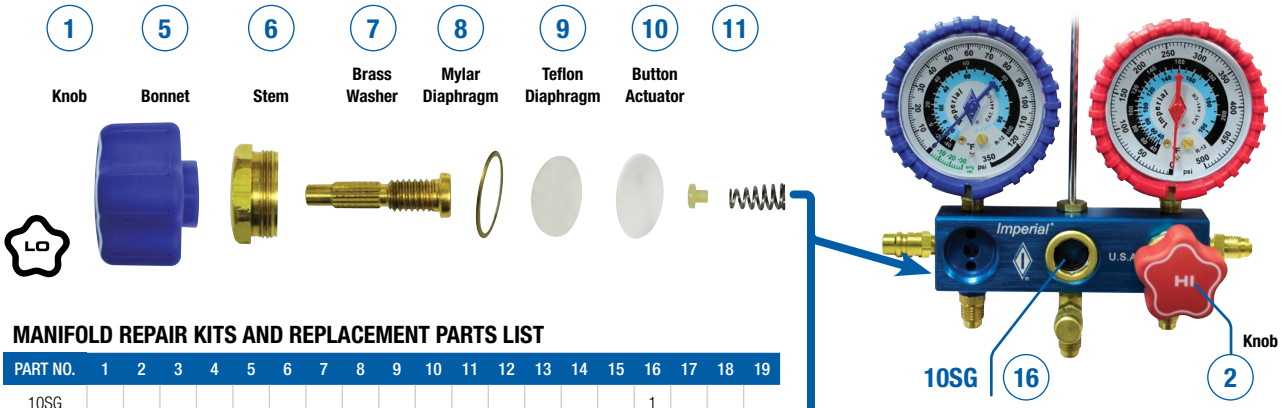


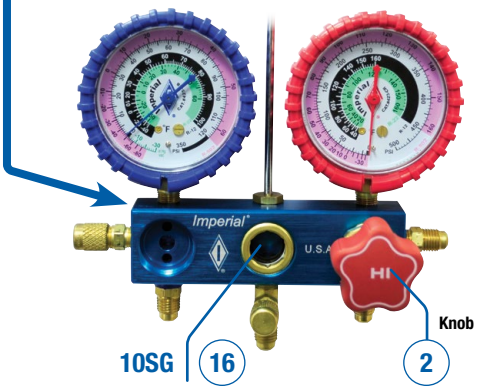
† 700-CV is shipped completely assembled for quick & easy replacement.

SERVICE MANIFOLDS PARTS ILLUSTRATIONS

510 AND 520 SERIES 2-VALVE MANIFOLD





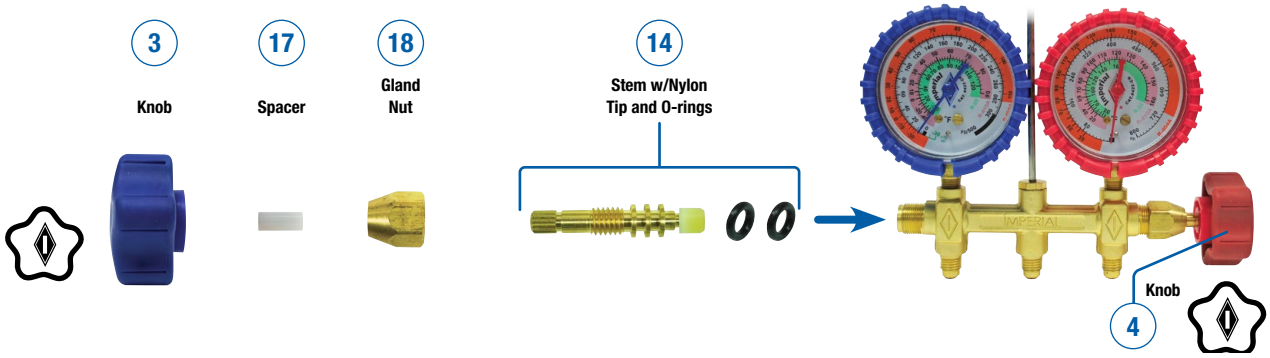


MANIFOLD REPAIR KITS AND REPLACEMENT PARTS LIST

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

Imperial
THERMAL ENGINEERING COMPANY
DEPENDABLE UNDER PRESSURE

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

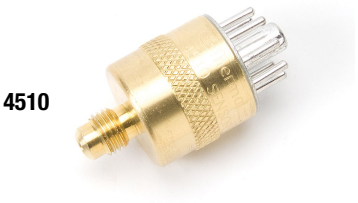
- AC/battery operated.
- Range: Atmosphere to 10 microns.
- Ambient temperature compensated.
- Complete with Model 4510 Sensor.
- Accuracy: 200-1000 microns ±5%.
- Power: 110AC or 2 “D” cell batteries (Batteries not included).

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.



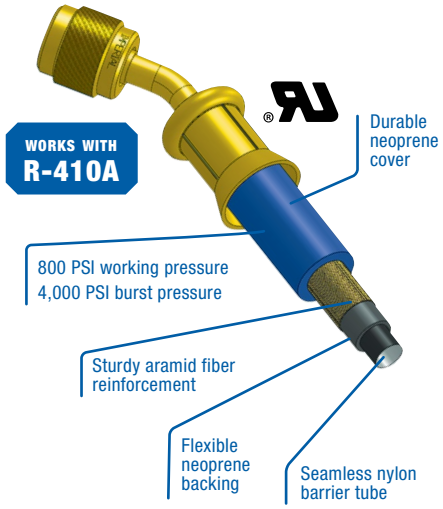
4510

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

900 SERIES POLARSHIELD® HOSES with automatic shut-off valve

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

900 SERIES HOSES (1/4" FFL* connections with automatic shut-off on one end)

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

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

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

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

850 SERIES POLARSHIELD® HOSES

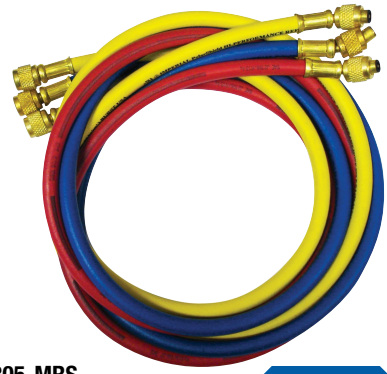
850 SERIES POLARSHIELD® HOSES FOR R-410A SYSTEMS with 5/16" access fittings (1/4" x 5/16" hose connections)

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

WORKS WITH R-410A

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.

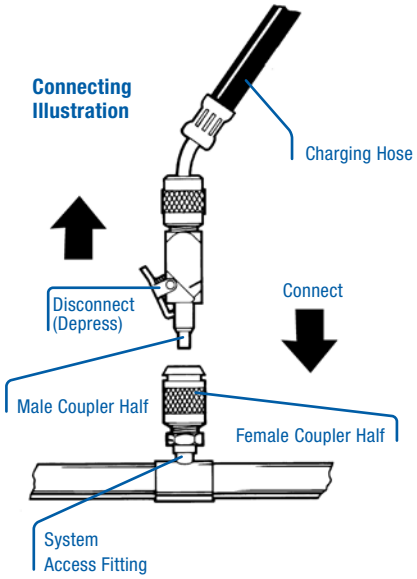
An automatic shut-off valve retains refrigerant pressure in a disconnected hose. This feature permits transferring high side hose refrigerant through the service manifold into the low side, thereby eliminating waste and hazardous high pressure discharge and atmospheric damage.

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.

WORKS WITH
R-410A



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.

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	

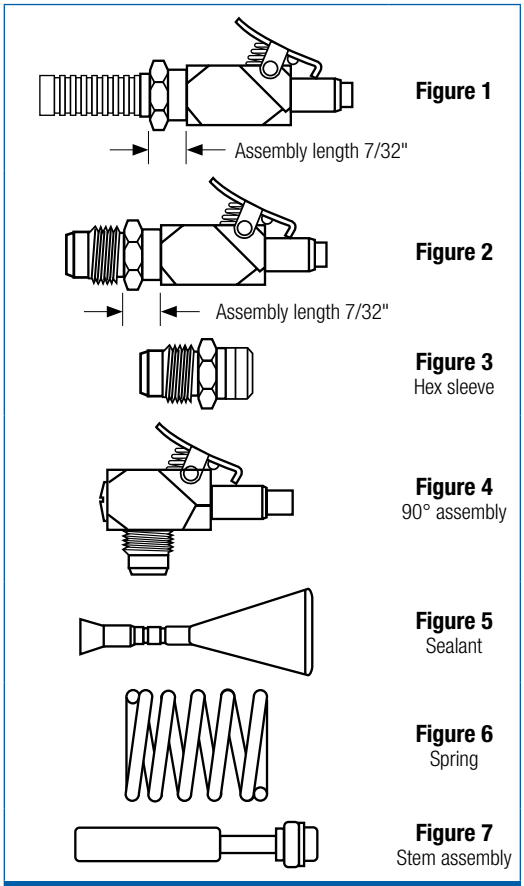


Figure 1

Figure 2

Figure 3
Hex sleeve

Figure 4
90° assembly

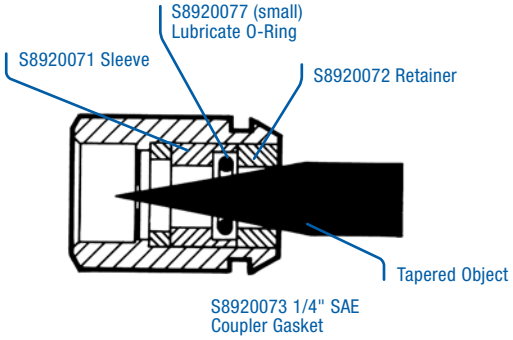
Figure 5
Sealant

Figure 6
Spring

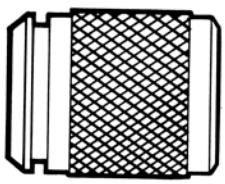
Figure 7
Stem assembly

KCK-M Male Kwik-Coupler Adapter Repair Kit

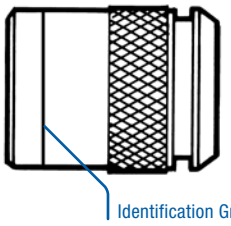
STANDARD FEMALE COUPLER



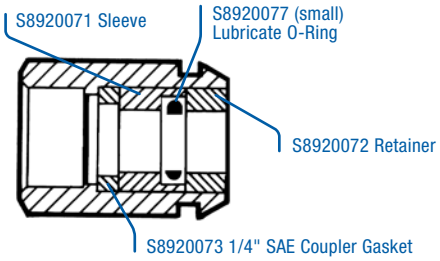
**S8920074 1/4"
Female Coupler**



**S5951125 Female
Coupler (accessory side)**



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



REFRIGERANT CHARGING & RECOVERY

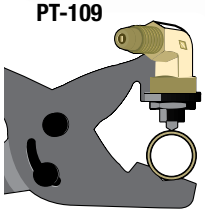
KWIK-VISE™

Refrigerant Recovery Tool

PT-109 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.

PT-109



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

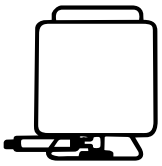
WORKS WITH R-410A

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.

Imperial
THERMAL ENGINEERING COMPANY
DEPENDABLE UNDER PRESSURE

WORKS WITH
R-410A

7701

VIZI-VAPR REPAIR KIT

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

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

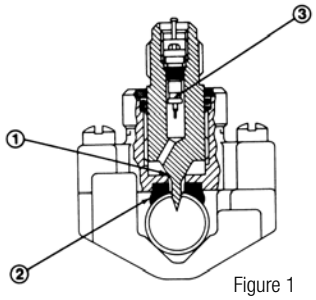
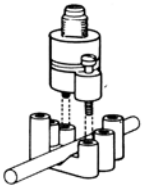
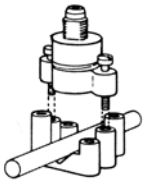


Figure 1

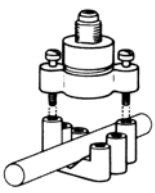
FITS THREE SIZES



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.

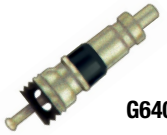
9-C

ACCESS VALVES

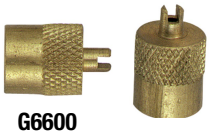
These valves are designed to facilitate charging and testing of refrigeration systems. Furnished with flare cap on valve end.

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.

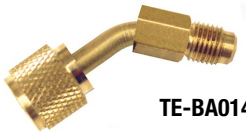
PART NO.	MALE	FEMALE	OTHER	APPLICATION
TE-BA01	1/4" SAE	5/16" SAE	W/ core and depressor	R-410A International

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.

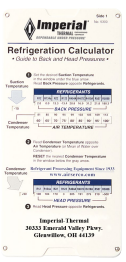
5175

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

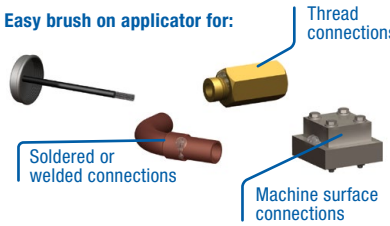
A real time-saver in servicing cooling systems, Liqui-Vac is the only liquid sealant with the capacity of sealing high vacuum connections. It will positively seal high vacuum leaks around threads, through flared connections, face joints, wherever metal joins metal. Liqui-Vac sets up quickly, but remains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

Imperial THERMAL ENGINEERING COMPANY DEPENDABLE UNDER PRESSURE

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

CHARG-CHECK HEATER ASSEMBLIES

7020 120 Volt heater assembly.

7024 240 Volt heater assembly.

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

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.

TEST LEAD KIT

2605

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.

COMPRESSOR TERMINAL REPAIR KIT

GL-1000

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-900 REFRIGERANT GAS	LD-910 COMBUSTIBLE GAS	LD-920 N_2 / H_2 TRACER GAS
Sensitivity	0.05 oz/yr R-134a 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 SAE J2791 (R-134a) SAE J2913 (R-1234YF) ASHRAE 173 2012 EN 14624-2012	CE MSHA Intrinsic Safety	CE EMC Directive 2014/30/EU
Warranty	2 years including sensor	2 years including sensor	2 years including sensor

LD-910

LD-920

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

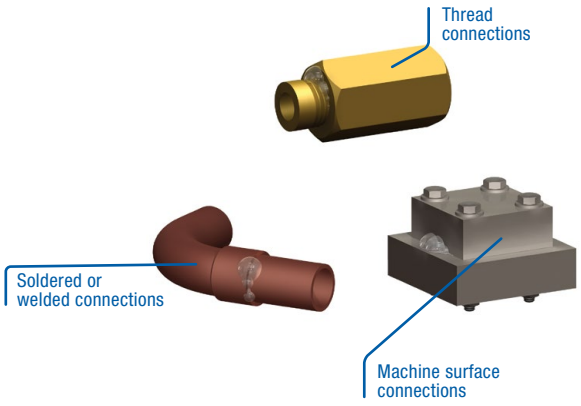
Specifications No. 4015 Formula 372G

- 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.

770440

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.

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

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.

117000

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

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.

140211

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.

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

270430

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.

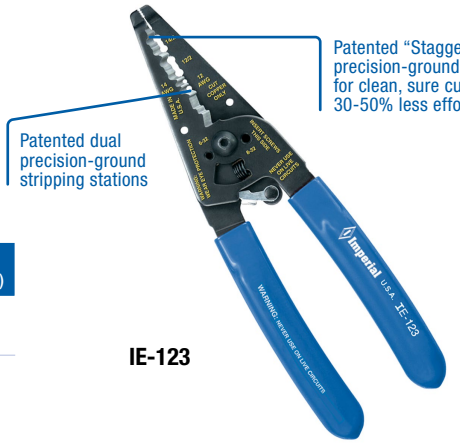
PART NO.	DESCRIPTION	STRIPPER SIZE (AWG)	CUTTER TYPE	SCREW CUTTER	NOM. LENGTH (in.)
IE-155	Ergonomic Super Stripper/Cutter	10-18 Solid 12-20 Stranded	Curved-long	6-32 / 8-32	7-1/4
IE-159	Ergonomic Super Stripper/Cutter	20-30 Solid	Curved-long	6-32 / 8-32	7-1/4

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 12-14 AWG	Staggered	6-32 / 8-32	7-3/4



PATENTED

UPFRONT STRIPPERS/CUTTERS

HEAVY-DUTY UPFRONT STRIPPERS & CUTTERS

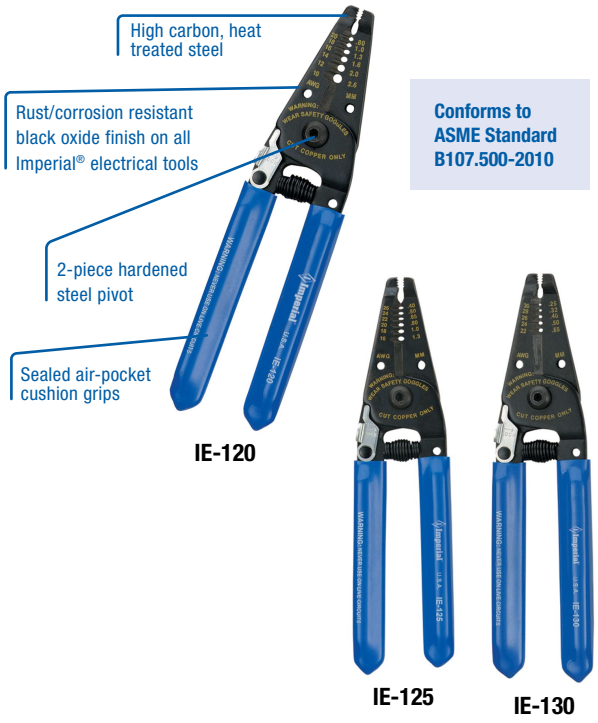
- Serrated pliers nose for pulling and working wire, small nuts, etc.
- AWG and metric wire sizes are embossed in steel and pad printed for high visibility.
- 2-piece hardened steel pivot for lifetime service.
- Lock to protect cutting and stripping edges when stored.
- Spring return to help speed work.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

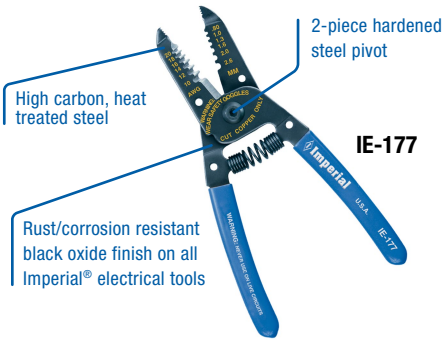


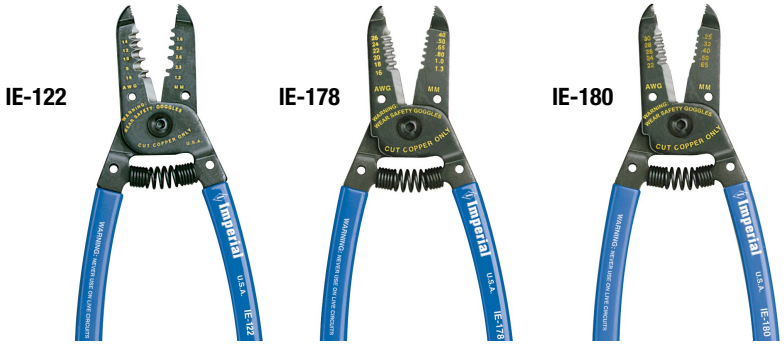
Conforms to ASME Standard B107.500-2010

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

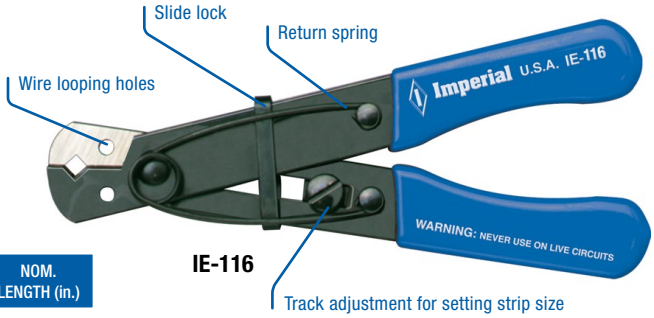




UPFRONT STRIPPERS/CUTTERS

"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 • Track adjustment for setting strip size	10-20	Scissors	5
IE-116	Standard "V" Stripper • Track adjustment for setting strip size • Automatic Return Spring • 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 mm^2 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 10-22 Stranded 0.34 - 6.0 mm^2	10-22	Scissors	
IE-163	Mini Cutter			Scissors	5-1/2
IE-164	Mini Stripper	8-18 Solid 10-22 Stranded 0.34 - 6.0 mm^2			5-1/2
IE-165	Mini Crimper		10-22		5-1/2

IE-162

COMBINATION TOOLS

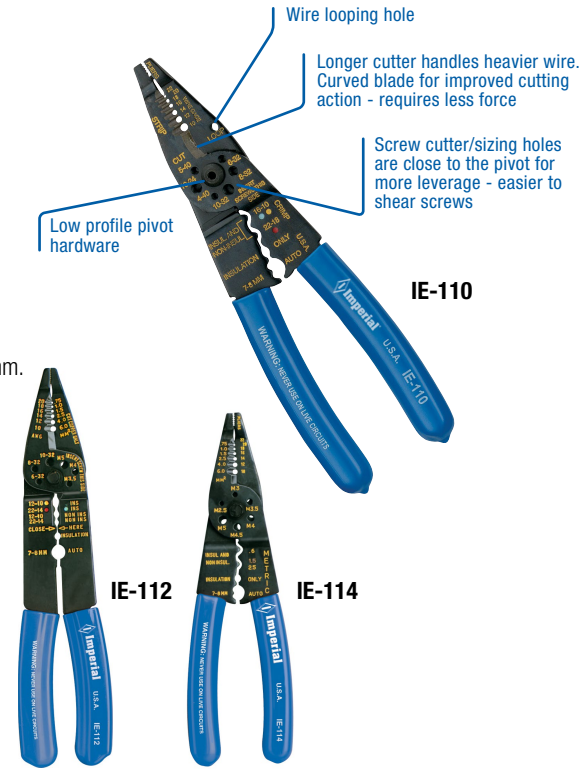
- (6) upfront, precision-ground stripping stations for solid and stranded wire.
- Wire cutter.
- (6) screw sizing and cutting stations.
- Wire terminal and 7-8 mm automotive ignition crimp stations.
- Highly visible, easy-to-read graphics.
- Cushion grips.

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.

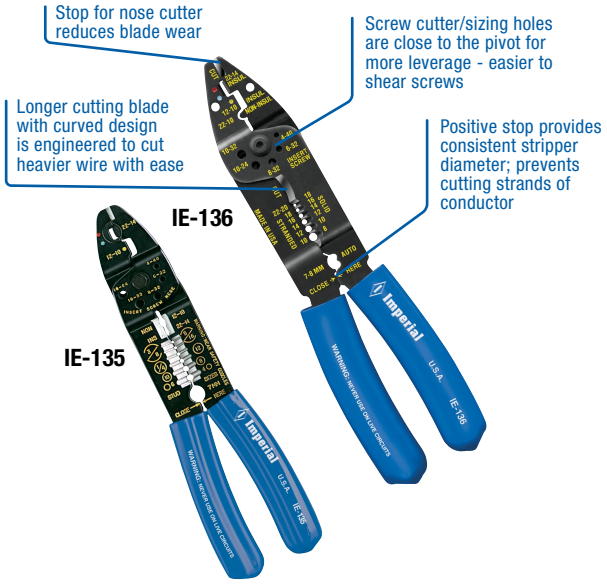
IE-110 AWG
IE-112 Combination Metric/AWG.
IE-114 Metric version.



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.



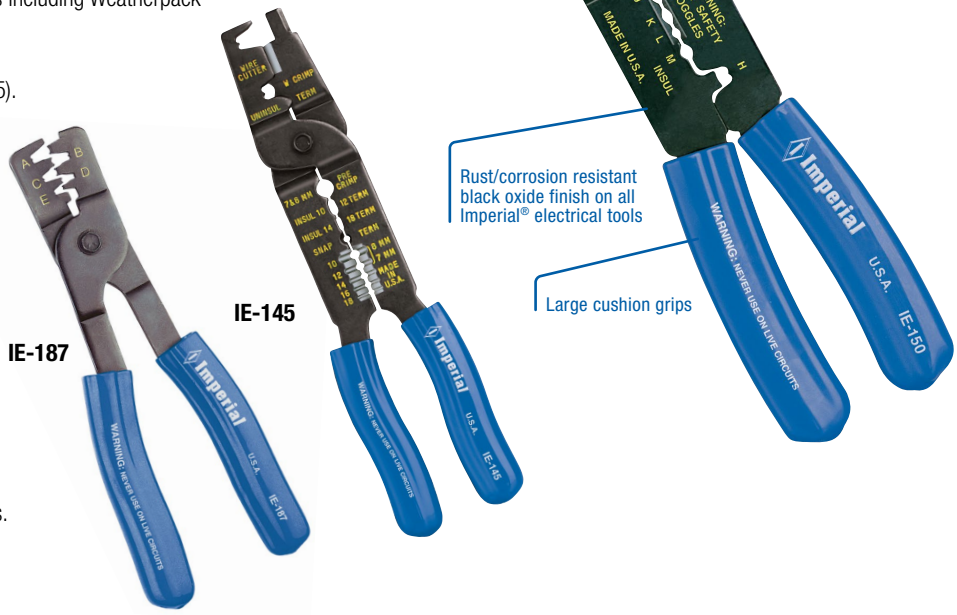
PART NO.	DESCRIPTION	STRIPPER SIZE (AWG)	CUTTER TYPE	CRIMPS INSULATED (AWG)	CRIMPS NON-INSULATED (AWG)	SCREW CUTTER	NOM. LENGTH (in.)
IE-110	Super 5-in-1 Combination	10-22	Curved-long	10-22	10-22 7-8 mm Auto	4-40 / 5-40 / 6-32 8-32 10-32 / 10-24	8-1/4
IE-112	Combination Metric/AWG	10-20, 0.75-6.0 mm²	Straight	10-22	10-22 7- 8 mm Auto	6-32 / 8-32 / 10-32 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 10-22	1.5-6.0 mm, 10-22 7-8 mm Auto	2.5/3.0/3.5/4.0 4.5/5.0 mm	8-1/4
IE-135	Crimper/Cutter with 6 Strip Stations	10-22	Anvil	10-22	10-22, 7-8 mm Auto	4-40 / 6-32 / 8-32 10-32 / 10-24	8-3/4
IE-136	Upfront Cutter/ Crimper Stripper	8-18 Solid 10-22 Stranded	Anvil Curved-long	10-22	10-22, 7-8 mm Auto	4-40 / 6-32 / 8-32 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.



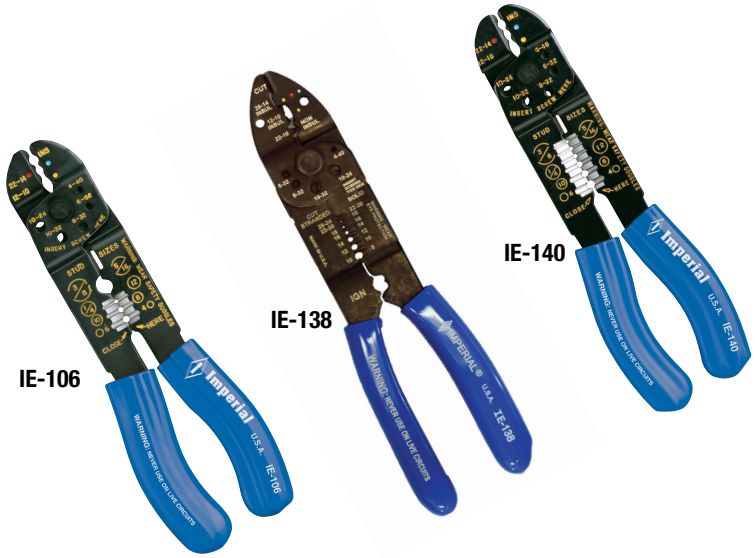
MULTI-PURPOSE TOOLS

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 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 7-8 mm Auto	(c)	•			•	46E
IE-112	Combination AWG/Metric Tool	10-20 0.75-6.0 mm²	10-22	10-22 7-8 mm Auto	(d)	•				2E
IE-114	Upfront Stripper/Cutter/Crimper, Metric	0.75-6.0 mm² 10-22	1.5-6.0 mm 10-22	1.5-6.0 mm 10-22 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 0.8-2.6 mm				•	•	•	•	31E
IE-122	Stripper/Cutter, Standard Duty	8-16 Stranded 1.3-3.3 mm				•		•	•	3E
IE-123	NM-B Cable, Dual	12-2, 14-2 NM-B 12-14 AWG			(a)	•	•	•	•	77E
IE-125	HD Stripper/Cutter	16-26 Stranded 0.4-1.3 mm				•	•	•	•	32E
IE-130	HD Stripper/Cutter	22-30 0.25-0.65 mm				•	•	•	•	33E
IE-135	Upfront Crimper/Cutter, 6 Strip Stations	10-22	10-22	10-22 7-8 mm Auto	(b)	•				18E
IE-136	Upfront Crimper/Cutter/Stripper	8-18 Solid 10-22 Stranded	10-22	10-22 7-8 mm Auto	(b)	•			•	52E
IE-138	Automotive Crimper/Stripper	8-22 Solid 10-26 Stranded	10-26	10-22 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 "W", "F" terminals		•				23E
IE-150	Open & Closed Barrel Crimper		Open barrel Closed barrel 10-22	Open barrel Closed barrel Flag terminals	(b)					25E
IE-155	Super Stripper, Ergonomic Handles	10-18 Solid 12-20 Stranded			(a)	•	•	•	•	56EB
IE-159	Super Stripper, Ergonomic Handles	20-30 Solid 22-32 Stranded			(a)	•	•	•	•	66EB
IE-162	3-Piece Mini Electrical Tools Kit, in Pouch	8-18 Solid 10-22 Stranded 0.34-6.0 mm²	10-22	10-22		•				700E
IE-163	Mini Cutter					•				701E
IE-164	Mini Stripper	8-18 Solid 10-22 Stranded 0.34-6.0 mm²								702E
IE-165	Mini Crimper		10-22	10-22						703E
IE-177	Stripper/Cutter, Standard Duty	10-20 0.8-2.6 mm				•		•	•	5E
IE-178	Stripper/Cutter, Standard Duty	16-26 Stranded 0.4-1.3 mm				•		•	•	6E
IE-180	Stripper/Cutter, Standard Duty	22-30 0.25-0.65 mm				•		•	•	7E
IE-182	Stripper/Cutter, Standard Duty w/Lock and Spring	10-20 Stranded 0.8-2.6 mm				•	•	•	•	15E
IE-187	5 Station Micro Terminal Crimper			Open barrel Weatherpack 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

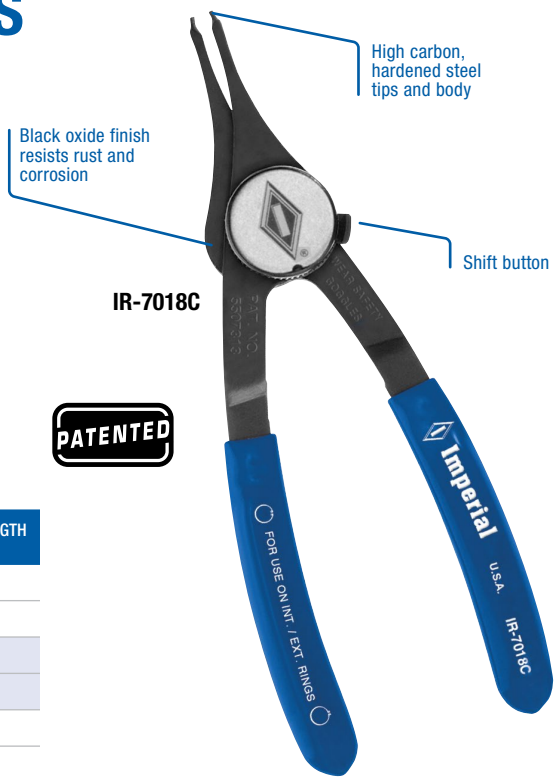
CAM-LOCK™ CONVERTIBLES

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

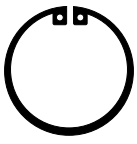
PART NO.	DESCRIPTION	TIP DIA. (in.)	TIP ANGLE	TYPE		NOM. LENGTH (in.)
				Int. (Housing)	Ext. (Shaft)	
IR-3818C	Cam-Lock Convertible	.038	18°	•	•	6
IR-3890C	Cam-Lock Convertible	.038	90°	•	•	6
IR-4718C	Cam-Lock Convertible	.047	18°	•	•	6
IR-4790C	Cam-Lock Convertible	.047	90°	•	•	6
IR-7018C	Cam-Lock 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

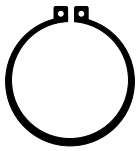
IR-6CK

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

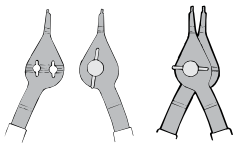
External

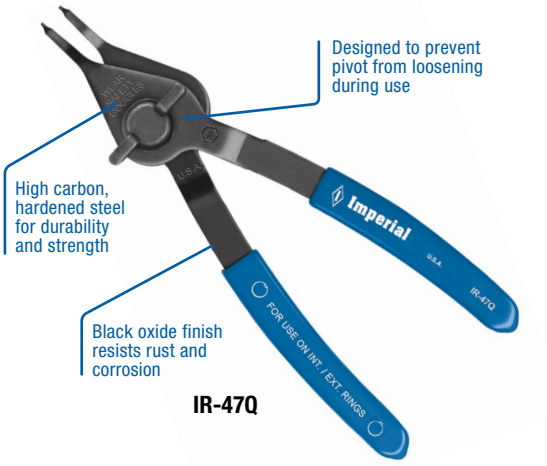
QTR-TURN® CONVERTIBLES

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.



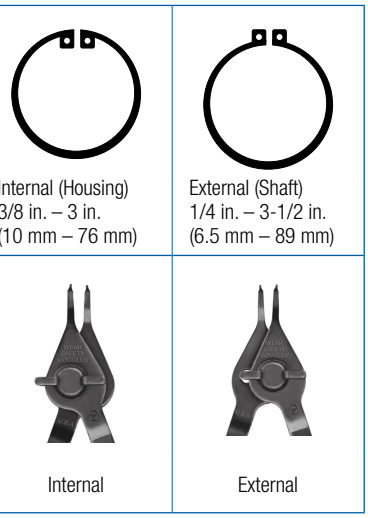


IR-47Q

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



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

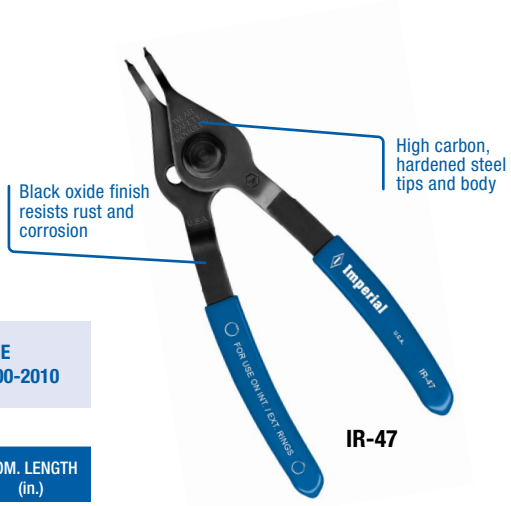
STANDARD CONVERTIBLES

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.

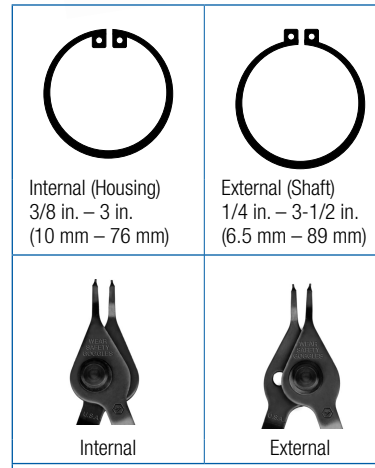
Conforms to ASME Standard B107.500-2010



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



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

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˚)

INDUSTRIAL AND UTILITY PLIERS

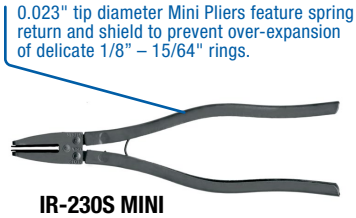
INDUSTRIAL FIXED TIP PLIERS WITH SPRING, STOP & GRIPS*

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		NOM. LENGTH (in.)
				Int. (Housing)	Ext. (Shaft)	
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



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		NOM. LENGTH (in.)
				Int. (Housing)	Ext. (Shaft)	
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		NOM. LENGTH (in.)
				Int. (Housing)	Ext. (Shaft)	
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

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.

IR-44MK

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

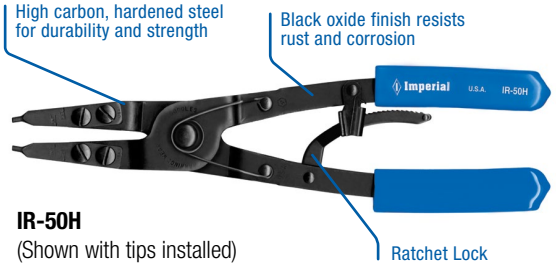
THE PROFESSIONAL'S CHOICE FOR INTERMEDIATE SIZE 1–1/2" TO 4" RINGS
IR-50K HEAVY DUTY PLIERS SET

- 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

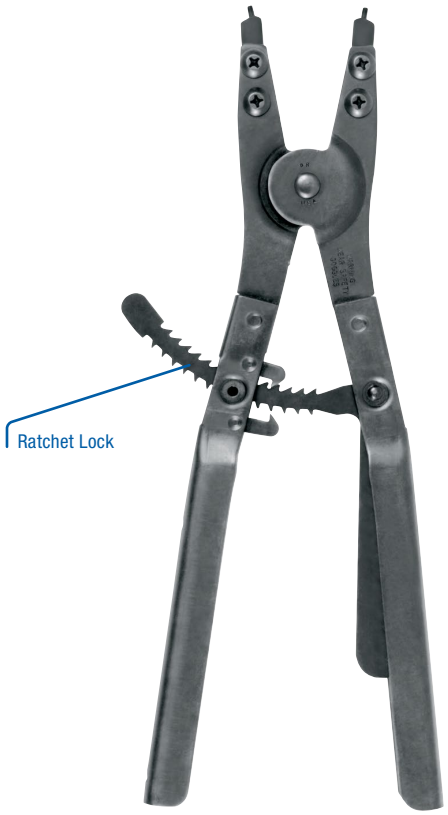


IR-50H
(Shown with tips installed)

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

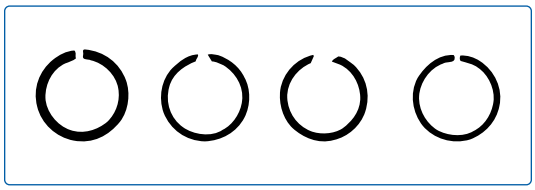
IR-170S

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.

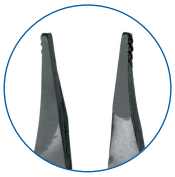


FIXED TIP LOCK RING PLIERS

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

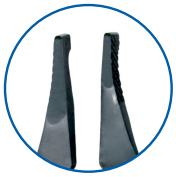
PART NO.	DESCRIPTION	NOM. LENGTH (in.)
IR-LRRL	External Pliers with IR-47R style tips, ratchet lock & spring return	10-1/2
IR-LRS	External Pliers with IR-47R style tips & spring return	14
IR-LHS	Horseshoe style tips (1 pair) for above pliers	



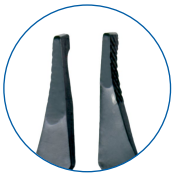
IR-48R

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 1 pair each: .038" 0°, 45°, 90°; .047" 0°, 45°, 90°; .070" 0°, 15°				4496R
IR-184TK	Tip Kit, 8 Pair SAE/Metric 1 pair each: .038" 0°, 15°, 45°; .047" 0°, 15°, 90°; .070" 15°; .093" 0°				45R08
IR-182TK	Tip Kit, 4 Pair 1 pair each: .038" 90°; .047" 0°, 45°; .070" 0°				4481R
IR-183TK	Tip Kit, 8 Pair 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: .108" 0°, 15°, 45°, 90°				5002R
IR-5120TK	Tip Kit, 4 Pair w/ screws 1 pair each: .120" 0°, 15°, 45°, 90°				5003R
IR-5004TK	Tip Kit, 4 Pair w/ screws 1 pair each: .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	.023	.125		SH, BSH, VSH	5100, 5101, 5102	-12
	IR-0015R	IR-2154R	IR-2159R		.156				-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

*Rotor Clip® and Truarc® are registered trademarks of Rotor Clip Company, Inc

MILBAR® WIRE TWISTERS

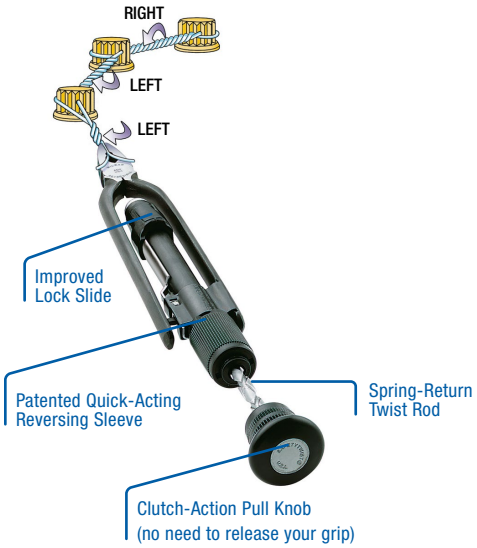
The world's leading brand of Wire Twister Tools and Kits, Milbar® Wire Twisters are designed for the professional mechanic. Milbar forgings are made from high carbon alloy steel and are controlled throughout the manufacturing process to exacting engineering specifications. Each tool passes a series of 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).



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

3W6

Cushioned throat prevents foreign object damage.

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

MILBAR®

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.

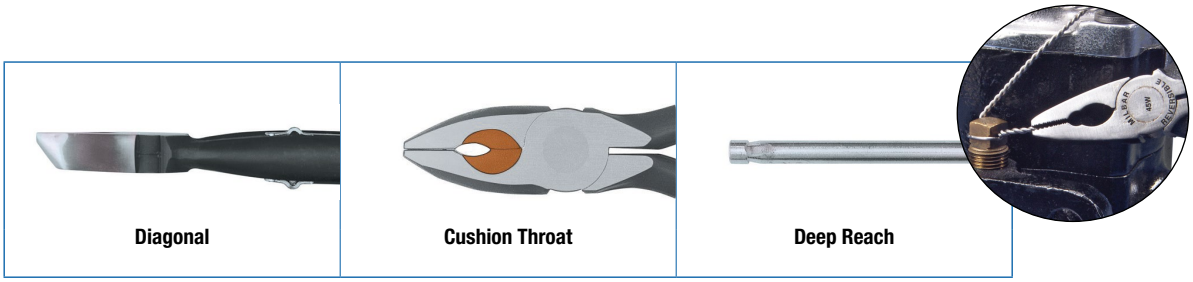
SAFETY WIRE

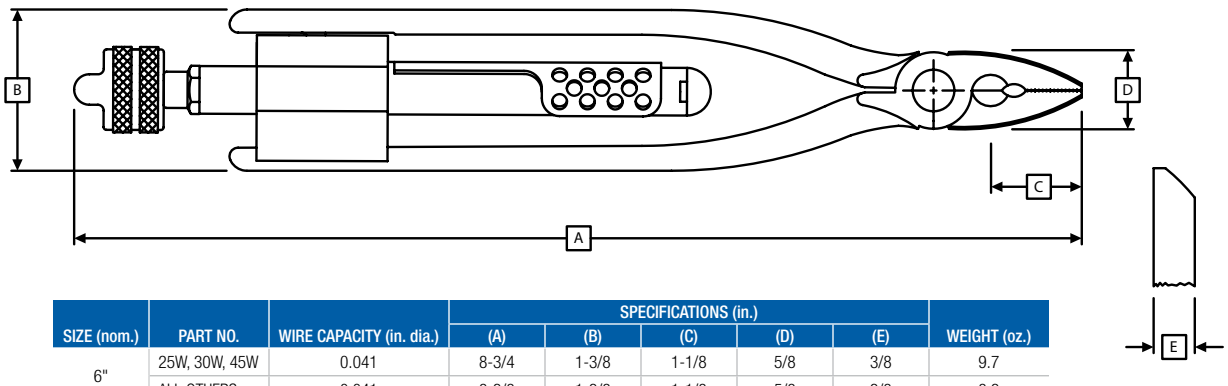
PART NO.	WIRE DIA (in.)	SIZE	WIRE LENGTH (ft.)
14WA	.020	1/4 lb. Spool	234
15WA	.032	1/4 lb. Spool	91
16WA	.041	1/4 lb. Spool	55
17WA	.020	1 lb. Dispenser	937
18WA	.025	1 lb. Dispenser	599
19WA	.032	1 lb. Dispenser	366
20WA	.041	1 lb. Dispenser	223
21WA	.051	1 lb. Dispenser	144

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





SIZE (nom.)	PART NO.	WIRE CAPACITY (in. dia.)	SPECIFICATIONS (in.) (A)	(B)	(C)	(D)	(E)	WEIGHT (oz.)
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

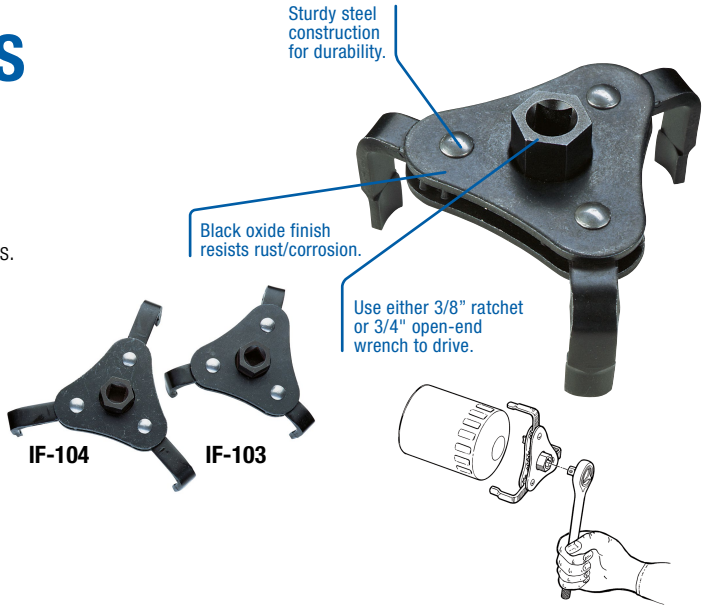
QUICK REFERENCE GUIDE

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 One each: 11W, 1W393, 13W, 14WA, 15WA, 16WA										
109W	Limited Access Safety Wiring Kit One each: 11W, 13W, 14WA, 15WA, 16WA										

OIL FILTER WRENCHES

ADJUSTABLE OIL FILTER WRENCHES

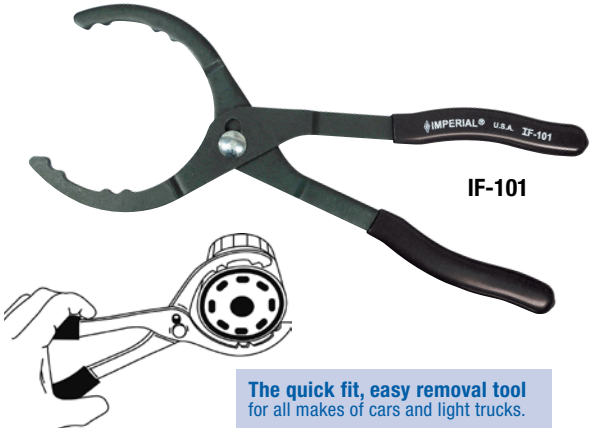
- Self-adjusting heavy-duty design actually grabs onto the filter and automatically tightens.
- Ideal for removal of most spin-off oil, fuel and fuel-water separators.
- Use either 3/8" ratchet or 3/4" open-end wrench to drive.
- Low profile (2-1/2" high) for easy access in confined areas.
- Withstands 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")



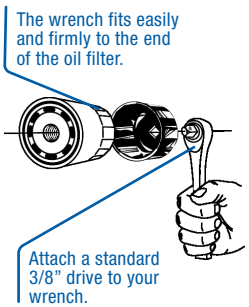
The quick fit, easy removal tool for all makes of cars and light trucks.

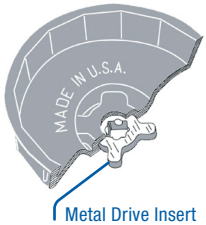
OIL FILTER CUP WRENCHES

- 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

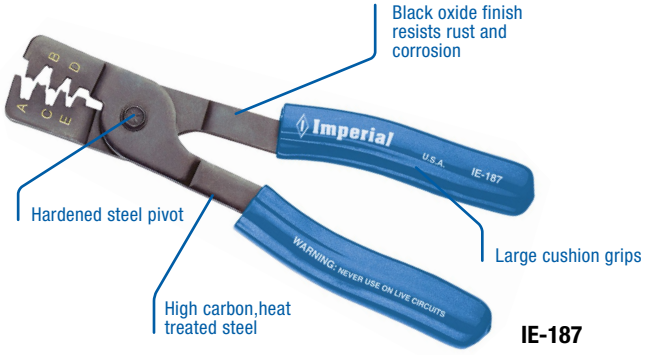




ENGINE TOOLS

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.

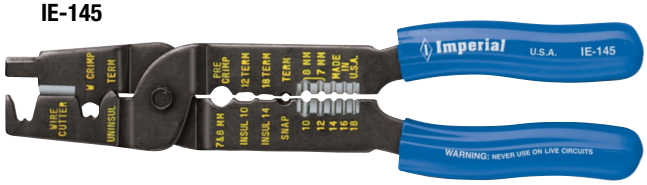


IE-187

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

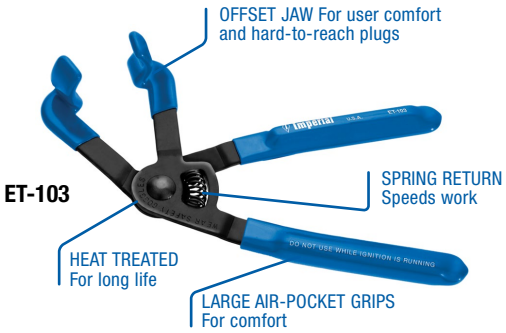
- Crimps insulated and non-insulated open & closed barrel and flag terminals. Crimp range - 10-22 AWG.
- Screw sizing and cutting stations.
- Highly visible, easy-to-read graphics.
- Cushion grips for comfort.

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



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

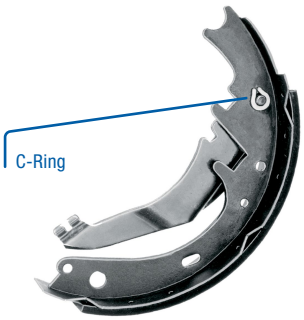
BRAKE "C" RING PLIERS

- 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

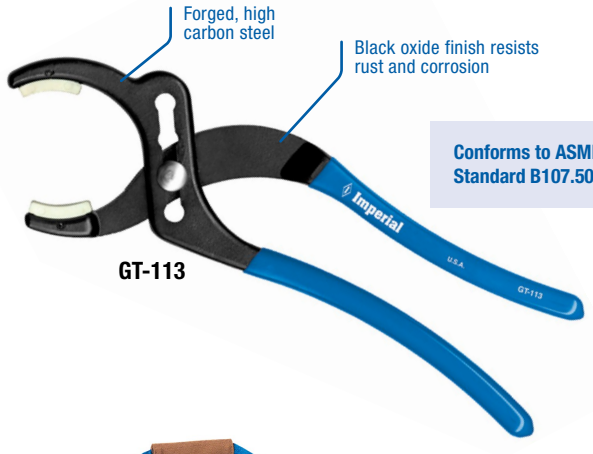


GENERAL TOOLS

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	



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

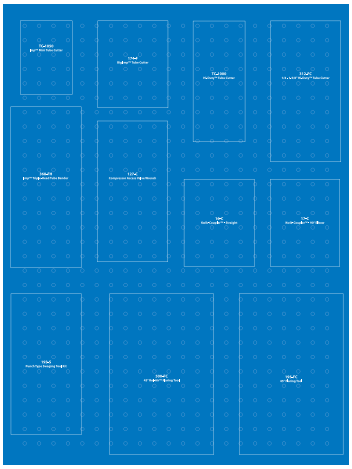
TH-103 7-1/2" H x 39" W vinyl.

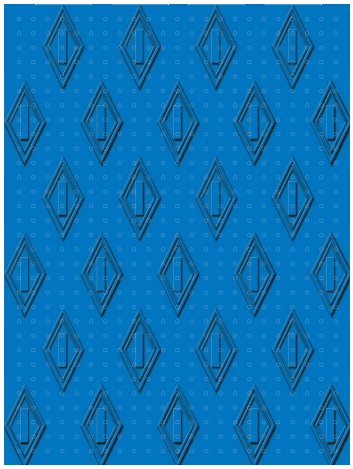
TOOL CENTER PLANOGRAM KITS

- 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.

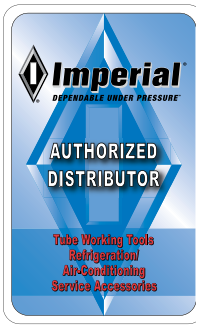




"AUTHORIZED DISTRIBUTOR" VINYL STATIC LABEL

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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Any product manufactured by Stride Tool, LLC that fails to render service due to defect in workmanship or materials will be replaced at no charge. Product failures due to misuse, abuse, normal wear & tear or alterations are not covered by the Limited Lifetime Warranty. Wear items (such as cutter wheels, seals, gaskets, o-rings and gauges) will need to be replaced over time, and are not included. Stride Tool makes no other warranty, expressed or implied. Tools should be returned to the buyer's place of purchase.

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