YELLOW JACKET®

Deluxe 45° Flaring Tool

A full range 1/8" to 3/4" O.D. flaring tool for soft copper
DELUXE 45° FLARING TOOL

- Designed with the new R-410A system requirements in mind
- Self-centering yoke grips without marring or constricting tube
- Automatic tube height gauge for correct tubing height
- Multi-faceted burnishing cone produces a burnished flare seat for a positive seal
- Easy-to-use with four basic steps
- Made in the USA

Note: To improve grip on copper, all moving parts including the wing nut threads, wing nut mating threads and feed screw threads must be oiled regularly. Failure to do so may result in tubing slippage, undersize flares and damage to the tool.

1. With cone up, open the two dies of the clamping yoke
2. Select sizes on underside of dies to match tubing O.D.
3. Insert tubing until it touches the height gauge
4. Turn the feed screw to flare the tubing

R-410A Flare Diameters

- Installation instructions for systems using R-410A vary between manufacturers with respect to 45° flares. Some require the larger flares produced by the Deluxe 45° Flaring Tool (60278) while others prefer the rolled flare produced by the eccentric cone flaring tool
- Instead of the standard 1/4" (7/16-20 thread, 1/4" O.D.) fitting for air conditioning systems, some manufacturers are moving to 5/16" (1/2-20 thread, 5/16" O.D.) to differentiate fittings and avoid misconnections. These fittings can often be found on mini split systems

Maximum Diameter of Flare Cone (Average)

<table>
<thead>
<tr>
<th>Flare size</th>
<th>SAE spec produced by most flaring tools</th>
<th>Some R-410A mfg. specs produced by 60278</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot;</td>
<td>0.181*</td>
<td>*</td>
</tr>
<tr>
<td>3/16&quot;</td>
<td>0.248*</td>
<td>*</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>0.327*</td>
<td>0.358*</td>
</tr>
<tr>
<td>5/16&quot;</td>
<td>0.406*</td>
<td>*</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>0.488*</td>
<td>0.520*</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>0.622*</td>
<td>0.654*</td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>0.748*</td>
<td>0.776*</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>0.917*</td>
<td>0.945*</td>
</tr>
</tbody>
</table>

* These tube sizes are not used by some R-410A equipment manufacturers. The Deluxe Flaring Tool 60278 adopts the SAE standard for these sizes.

ECCENTRIC CONE FLARING TOOL

Off-center hardened steel cone with 45° flare produces a rolling action for uniform flare walls without galling in 3/16" to 3/4" O.D. tubing.

- Large feed screw handle for smooth turning with little effort
- Black oxide-finished steel flaring bars are heat-treated for durability and secure grip on tubing
- Recommended for soft materials such as copper and aluminum
- Built-in clutch release to prevent over-torquing

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60278</td>
<td>Deluxe flaring tool for 1/8&quot; to 3/4&quot; O.D.</td>
</tr>
<tr>
<td>60214</td>
<td>Replacement wing nut</td>
</tr>
<tr>
<td>60268</td>
<td>Replacement grip</td>
</tr>
<tr>
<td>60269</td>
<td>Wing nut and bolt</td>
</tr>
<tr>
<td>60273</td>
<td>Burnishing cone and pin</td>
</tr>
<tr>
<td>60274</td>
<td>Yoke assembly</td>
</tr>
<tr>
<td>60295</td>
<td>Flaring tool with eccentric cone for 3/16&quot; to 3/4&quot; O.D.</td>
</tr>
</tbody>
</table>
45° FLARING TOOLS
3/16" to 1-1/8"

- 60210 heavy-duty is designed for tight spaces
- 60230 heavy-duty flares on tubing up to 3/4"
- 60290 large is designed to flare on tubing up to 1-1/8"
- Hardened steel flaring bar to resist tube slippage
- Forged steel yoke that slips over bar and locks with a turn
- Precision threaded feed screw and long handle
- Chrome finish

**FLARE/BURNISH TOOL**

Multi-faceted cone rolls a precise flare and simultaneously burnishes it on brass, copper and aluminum.

**UPC# Description**

- 60270 Flare/burnish tool for 3/16" to 5/8" O.D.
- 60271 Flare yoke only for 60270
- 60272 Flaring bar for 60270

The only replaceable parts are those listed above.

**UNIVERSAL 45° FLARE/BURNISH TOOL**

Universal designed bar will hold all inch and metric size tubing up to 5/8" (16 mm).
- Flare bar is compact and easy to use in tight spaces
- Multi-faceted cone rolls out precise 45° flare and burnishes simultaneously
- Flare is formed above flare bar

**UPC# Description**

- 60275 Universal flaring tool for 3/16" to 5/8" O.D.
- 60276 Flaring bar only for 60275
- 60277 Flaring yoke only for 60275

The only replaceable parts are those listed above.

**LIGHTWEIGHT SWAGE/FLARE KIT**

The aluminum body and bar makes this half the weight of traditional steel designs.
- Six quick-change positions for flaring soft copper and aluminum tube
- The chrome finish of the swaging pin allows for an easy flare operation
- Strong aluminum bars - each hole flare tested more than 1000 times.
- Swage pin sizes are molded into the case for easy organization
- Quick connect on yoke saves time during pin/cone changing
- Built-in slide gauge to easily meet desired flare sizes without the guesswork.
- One yoke for both flaring and swaging
- Blow-molded carrying case included

**UPC# Kit Swaging/Flaring Sizes**

- 60430 Inches: 6 positions for 1/4, 5/16, 3/8, 1/2, 5/8 and 3/4" O.D. tube
- 60431 Inches: 6 positions for 1/4, 5/16, 3/8, 1/2, 5/8 and 3/4" O.D. tube
  Metric: 6 positions for 6, 8, 10, 12, 16 and 18 MM O.D. tube; hex wrench included

**UPC# Replacement Parts**

- 60428 Replacement case for 60430/60431
- 60432 Lightweight 60430/60431 bar, inch
- 60433 Lightweight 60431 bar, metric
- 60434 Replacement yoke for 60430/60431
- 60435 6 mm swage pin for 60431
- 60436 8 mm swage pin for 60431
- 60437 10 mm swage pin for 60431
- 60438 12 mm swage pin for 60431
- 60439 16 mm swage pin for 60431
- 60451 18 mm swage pin for 60431
- 60452 Flaring cone for 60430/60431
- 60472 1/4" swage pin for 60430
- 60473 5/16" swage pin for 60430
- 60474 3/8" swage pin for 60430
- 60477 1/2" swage pin for 60430
- 60478 5/8" swage pin for 60430
- 60479 3/4" swage pin for 60430
**SWAGING AND 45° FLARING TOOL**

1/2" to 1-1/8" O.D.

- 60453 mid-size swages and flares for 1/2", 5/8" and 3/4" O.D. tubing
- 60455 large-size swages and flares for 3/4", 7/8" and 1-1/8" O.D. tubing

**SWAGING AND 45° FLARING TOOL**

3/16" to 3/4" O.D.

- Deeply knurled adapters
- Flaring bars are hardened and chrome plated for durability
- Kit comes complete with six swage adapters, flaring cone, two flaring bars, yoke and a deluxe case

**FLARING/CUTTING KITS**

A wide variety of heavy-duty tool kits for flaring 3/16" to 3/4" O.D.

**ELECTRIC/MANUAL LIGHTWEIGHT FLARING TOOL**

For super fast flaring, remove the top handle and replace with an electric drill bit.

- For use with electric/power drill (with torque adjusted function only).
- Handle included for for manual flaring.
- Side handle locks movement of the yoke assembly during flaring.
- The hardened, polished eccentric cone of with 45° flare produces a rolling action for uniform flare walls without galling in 1/4" to 3/4" O.D. tubing.
- Built-in clutch release to prevent over-torquing.

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**UPC#** | **Description**
--- | ---
60453 | Swage/flare kit complete for 1/2" to 3/4" O.D.
60456 | 1/2" Swage adapter
60457 | 5/8" Swage adapter
60458 | 3/4" Swage adapter
60449 | Flare cone 1/2" to 3/4"
60443 | Complete yoke for 60440/60453
60455 | Large swage/flare kit complete 3/4" to 1-1/8" O.D.
60457 | 7/8" Swage adapter
60458 | 1-1/8" Swage adapter
60459 | Flare cone 3/4" to 1-1/8"
60456 | Complete yoke for 60455
60292 | Flare bar 3/4" to 1-1/8" O.D.
60441 | Handle screw assembly
60442 | "C" clip and nut

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**UPC#** | **Kit Swaging/Flaring Sizes**
--- | ---
60241 | Inches: 6 positions for 1/4, 5/16, 3/8, 1/2, 5/8 and 3/4" O.D. tube
60242 | Metric: 6 positions for 6, 8, 10, 12, 16 and 18 MM O.D. tube

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**UPC#** | **Replacement Parts**
--- | ---
60433 | Lightweight 60431 bar, metric
60434 | Replacement yoke for 60430/60431
60243 | Replacement side handle for 60241/60242
60244 | Replacement top handle for 60241/60242
TUBING EXPANDER/SWAGER For 5/16" to 1-5/8" O.D.

With long handles for comfortable leverage, easily expand 5/16" to 1-1/8" O.D. soft copper and aluminum tubing in seconds. Select from nine expander heads to attach to the front of the handles.

- Precise swaging on the job
- Re-round deformed tubes and fittings
- Salvage shorts and scrap to make couplings
- Handles, tapered expanding pin, and other moving surfaces heat treated for durability
- Use on 0.063" wall soft copper and aluminum to 1-5/8" O.D. (anneal hard copper prior to use)
- Use on 0.047" wall soft steel to 7/8" O.D.
- Kit includes six expander heads; three optional sizes sold separately

Sets in case

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>60412</td>
<td>Expander handles</td>
</tr>
<tr>
<td>60405</td>
<td>Nut and bolt</td>
</tr>
<tr>
<td>60410</td>
<td>Expander handle hinge bolt (9 mm)</td>
</tr>
<tr>
<td>60411</td>
<td>Blue case</td>
</tr>
<tr>
<td>60427</td>
<td>Steel roller</td>
</tr>
<tr>
<td>60429</td>
<td>Drive pin</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Expander heads</th>
<th>UPC#</th>
<th>Description</th>
<th>Maximum wall thickness</th>
<th>Swage depth</th>
<th>Segment stretch</th>
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</thead>
<tbody>
<tr>
<td>60413* 5/16&quot;</td>
<td>60413</td>
<td>Expander head</td>
<td>0.039&quot;</td>
<td>0.24&quot;</td>
<td>—</td>
</tr>
<tr>
<td>60414 3/8&quot;</td>
<td>60414</td>
<td>Expander head</td>
<td>0.039&quot;</td>
<td>0.35&quot;</td>
<td>0.06&quot;</td>
</tr>
<tr>
<td>60415 1/2&quot;</td>
<td>60415</td>
<td>Expander head</td>
<td>0.047&quot;</td>
<td>0.43&quot;</td>
<td>0.06&quot;</td>
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<tr>
<td>60416 5/8&quot;</td>
<td>60416</td>
<td>Expander head</td>
<td>0.047&quot;</td>
<td>0.57&quot;</td>
<td>0.06&quot;</td>
</tr>
<tr>
<td>60417 3/4&quot;</td>
<td>60417</td>
<td>Expander head</td>
<td>0.047&quot;</td>
<td>0.59&quot;</td>
<td>0.06&quot;</td>
</tr>
<tr>
<td>60418 7/8&quot;</td>
<td>60418</td>
<td>Expander head</td>
<td>0.047&quot;</td>
<td>0.71&quot;</td>
<td>0.06&quot;</td>
</tr>
<tr>
<td>60420 1-1/8&quot;</td>
<td>60420</td>
<td>Expander head</td>
<td>0.063&quot;</td>
<td>0.77&quot;</td>
<td>0.90&quot;</td>
</tr>
<tr>
<td>60422* 1-3/8&quot;</td>
<td>60422</td>
<td>Expander head</td>
<td>0.063&quot;</td>
<td>0.77&quot;</td>
<td>0.90&quot;</td>
</tr>
<tr>
<td>60424* 1-5/8&quot;</td>
<td>60424</td>
<td>Expander head</td>
<td>0.063&quot;</td>
<td>0.77&quot;</td>
<td>0.90&quot;</td>
</tr>
</tbody>
</table>

* Optional sizes sold separately.

HYDRAULIC TUBE EXPANDER KIT

- Hydraulic power
- Eliminates fittings

PUNCH-TYPE SWAGING TOOL

- Expands one end of copper tubing for connecting same size tubes
- Heat-treated and plated alloy steel
- Made in the USA

Swaging sets

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
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<tbody>
<tr>
<td>60475</td>
<td>Set – 4 piece in pouch for 1/4&quot;, 3/8&quot;, 1/2&quot; and 5/8&quot;</td>
</tr>
<tr>
<td>60476</td>
<td>Set – 5 piece in pouch for 1/4&quot;, 5/16&quot;, 3/8&quot;, 1/2&quot; and 5/8&quot;</td>
</tr>
<tr>
<td>60461</td>
<td>Set with clamping bar and 6 punches 3/16&quot; to 5/8&quot;</td>
</tr>
<tr>
<td>60462</td>
<td>Clamping bar only</td>
</tr>
</tbody>
</table>

Single tools

<table>
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<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60460</td>
<td>Multi-swage punch, 6 sizes 3/16&quot; to 5/8&quot;</td>
</tr>
<tr>
<td>60463</td>
<td>3/16&quot; O.D. punch</td>
</tr>
<tr>
<td>60464</td>
<td>1/4&quot; O.D. punch</td>
</tr>
<tr>
<td>60465</td>
<td>5/16&quot; O.D. punch</td>
</tr>
<tr>
<td>60466</td>
<td>3/8&quot; O.D. punch</td>
</tr>
<tr>
<td>60467</td>
<td>1/2&quot; O.D. punch</td>
</tr>
<tr>
<td>60468</td>
<td>5/8&quot; O.D. punch</td>
</tr>
<tr>
<td>60469</td>
<td>3/4&quot; O.D. punch</td>
</tr>
<tr>
<td>60470</td>
<td>7/8&quot; O.D. punch</td>
</tr>
</tbody>
</table>

* Lightweight and portable
- Easy one-hand operation

HYDRAULIC TUBE EXPANDER KIT

- Hydraulic power
- Eliminates fittings

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
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<tbody>
<tr>
<td>60495</td>
<td>Replacement expander pin 3/8&quot; to 1-5/8&quot;</td>
</tr>
<tr>
<td>60498</td>
<td>Replacement case</td>
</tr>
<tr>
<td>60499</td>
<td>Replacement grease tube</td>
</tr>
<tr>
<td>60413-24</td>
<td>Replacement expander heads (see above)</td>
</tr>
</tbody>
</table>
RATCHET HAND TUBE BENDER

Easy one hand bending of 1/4" to 7/8" soft copper and soft aluminum. Hard copper must be annealed before bending.

- Quick change bending mandrels and shoes
- Trouble free ratchet mechanism
- Index marks to locate bends
- Complete tube bender kit includes all items required to bend 1/4", 5/16", 3/8", 1/2", 5/8", 3/4" and 7/8" tubing

Full Range Heavy Duty Tube Benders

**For 1/4" to 7/8" radius**

Make fast bends on almost every size of soft copper, brass, aluminum, steel and soft stainless steel tubing to 180°.

**60390** is a compact three-in-one bender for 1/4", 5/16" and 3/8" O.D. tubing. Calibrated markings for bends up to 180° help you duplicate angles.

Conforms to Fed. Spec. GGG-B-191-a Type III, Class 2.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Bending radius</th>
<th>Description</th>
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<tbody>
<tr>
<td>60390</td>
<td>15/16&quot;</td>
<td>1/4&quot;, 5/16&quot;, 3/8&quot; 3-in-1 Tube bender</td>
</tr>
<tr>
<td>60373</td>
<td>9/16&quot;</td>
<td>1/4&quot; Tube bender</td>
</tr>
<tr>
<td>60374</td>
<td>11/16&quot;</td>
<td>5/16&quot; Tube bender</td>
</tr>
<tr>
<td>60375</td>
<td>15/16&quot;</td>
<td>3/8&quot; Tube bender</td>
</tr>
<tr>
<td>60377</td>
<td>1-1/4&quot;</td>
<td>1/2&quot; Tube bender</td>
</tr>
<tr>
<td>60378</td>
<td>2-1/4&quot;</td>
<td>5/8&quot; Tube bender</td>
</tr>
<tr>
<td>60379</td>
<td>3&quot;</td>
<td>3/4&quot; Tube bender</td>
</tr>
<tr>
<td>60380</td>
<td>3-1/4&quot;</td>
<td>7/8&quot; Tube bender</td>
</tr>
</tbody>
</table>

SPRING TUBE BENDER

**For 1/4" to 7/8"**

Spring benders slip over soft copper and aluminum tubing during bending to help prevent tube collapse.

- Silver-plated finish
- Conforms to Fed. Spec. GGG-B-191-a Type IV

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
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<tbody>
<tr>
<td>60354</td>
<td>1/4&quot; O.D. bending spring</td>
</tr>
<tr>
<td>60355</td>
<td>5/16&quot; O.D. bending spring</td>
</tr>
<tr>
<td>60356</td>
<td>3/8&quot; O.D. bending spring</td>
</tr>
<tr>
<td>60357</td>
<td>7/16&quot; O.D. bending spring</td>
</tr>
<tr>
<td>60358</td>
<td>1/2&quot; O.D. bending spring</td>
</tr>
<tr>
<td>60359</td>
<td>5/8&quot; O.D. bending spring</td>
</tr>
<tr>
<td>60360</td>
<td>3/4&quot; O.D. bending spring</td>
</tr>
<tr>
<td>60361</td>
<td>7/8&quot; O.D. bending spring</td>
</tr>
<tr>
<td>60362</td>
<td>Set-6 sizes–1/4&quot;, 5/16&quot;, 3/8&quot;, 7/16&quot;</td>
</tr>
<tr>
<td>60363</td>
<td>Set-4 sizes–1/2&quot;, 5/8&quot;, 3/4&quot;</td>
</tr>
<tr>
<td>60353</td>
<td>Set-4 sizes–1/2&quot;, 5/8&quot;, 3/4&quot;</td>
</tr>
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</table>

* Designates the call-out number for the parts diagram on the 60331 instruction chart.
The YELLOW JACKET Mini-Split Tool Kit addresses many of the special requirements found in mini-split installation manuals.
- R-410A service tools
- Takes the guesswork out of finding the right tool for the job
- Meet manufacturers’ specifications on mini-split installations and repairs
- 60991 for domestic and 60992 for international service technicians

Each kit includes:
- Heat Pump Manifold
  Designed to handle all mini-split refrigerants and pressures (including heating modes) (R-410A only on 60992)
- 60” PLUS II Hoses
  Rated for 400 psi (276 bar) minimum burst and 800 psi (55 bar) maximum working pressure.
  - 60991 - (RYB) 1/4" with 1/4" flare fittings
  - 60992 - 1/4" with 1/4" flare flare fittings (Y), 1/4" x 5/16" (R&B) and; (Red) 1/4" Female flare on manifold connection and 1/4" female flare on angled service end.
- Eccentric Cone Flare Tool
  Creates high quality flares for 3/16” to 3/4” O.D. tubing
- Hex Key Set
  Mini-Split Hex Keys - 5/32", 3/16", 5mm and 6mm
- Vacuum/Charge Valve with Side Port
  - 60991: 5/16"x1/4"x1/4" (18986)
  - 60992: 5/16"x5/16"x5/16" (18985)
- 45° R-410A Coupler 5/16” Female Quick Coupler x 1/4” Male Flare (60992 only)
- Tube Cutter and Deburring Tool
- Adjustable Torque Wrench
  - 60652 Eight head Kit includes: 60991: 16, 17, 21, 22, 24, 26, 27 and 29 mm flare nuts
  - 60650 Six head kit includes: 60992: 17, 22, 24, 26, 27 and 29 mm flare nuts
- 16” Tool Bag
  Durable nylon bag with strap and over 25 pockets

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60991</td>
<td>Mini-Split tool kit with tool bag</td>
</tr>
<tr>
<td></td>
<td>(R-22/407C/410A Heat pump manifold)</td>
</tr>
<tr>
<td>60992</td>
<td>Mini-Split tool kit with tool bag (R-410A Heat pump manifold)</td>
</tr>
<tr>
<td>60990</td>
<td>16” Tool bag</td>
</tr>
</tbody>
</table>

Designed to accommodate the full range of ductless mini-split flare nut sizes and torque requirements.

Easier-to-use and more adjustable than other flare nut torque wrenches on the market.

Precision torque wrench for exact tightening to 10-80 N-M or 7.4-59 ft. lb.
- Adjustable in Newton-meters and foot-pound.
- Six interchangeable open end adapters.
  - 60650 (6 Heads): Sizes: 17, 22, 24, 26, 27 & 29 mm
  - 60652 (8 Heads): Sizes: 16, 17, 21, 22, 24, 26, 27 & 29 mm
- The N-M and foot-pound (FT-LB) scales are marked on the barrel of the wrench for easy and permanent reference.
- The micrometer-type sleeve is easy to read and allows accurate pre-set torque values to be set. When the set torque is reached, the wrench produces an audible click and a slight, safe release of tension to prevent over tightening.
- This product has been designed to be tough, durable and easy to use. It comes supplied in a blow-molded storage and carry case.
- Accurate within 4% when measured per BSEN 26789 & ISO 6789 & ASME B107.14M & DIN3122 regardless of the open end adapter head used.
SERVICE WRENCHES

Standard reversible ratchet wrench with square openings: 1/4" and 3/16" at one end; 3/8" and 5/16" at other end.

Heavy-duty features a heavier handle and larger gear. Stronger gear teeth are combined with strong reversing mechanism for long service life.

Knuckle saver design for convenience in tight areas. Square opening 1/4" and 3/16" one end; 3/8" and 5/16" at other end.

Reversible wrench for larger service valves. 3/8" square one end; 1/2" square at other.

7" heavy-duty reversible ratchet wrench with hex openings 1/2" and 9/16" at one end; square 3/16" and 1/4" at other end.

SERVICE WRENCH AND ADAPTER

Combination service wrench and hex adapter for accessing liquid and suction based valves on residential and commercial units up to 7.5 tons. Heat-treated hex works for 3/16" and 5/16" hex valves. Black oxide plated. New adapter for some York and Coleman units.

KNUCKLE-SAVER™ HEX WRENCH SETS

Three-piece or five-piece

The offset design saves knuckles in tight places.

- Accurately sized and broached ends for correct fit
- Heat-treated critical wear parts for long life
- Finger control reversing
- Chrome plated for durability
- Made in the USA

KNUCKLE-SAVER™ HEX WRENCH SETS

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
<th>Hex sizes</th>
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</thead>
<tbody>
<tr>
<td>60630</td>
<td>Set - 5 wrenches</td>
<td>1/4&quot; to 7/8&quot;</td>
</tr>
<tr>
<td>60631</td>
<td>Set - 3 wrenches</td>
<td>1/4&quot; to 9/16&quot;</td>
</tr>
<tr>
<td>60633</td>
<td>Ratchet wrench</td>
<td>1/4&quot; x 5/16&quot;</td>
</tr>
<tr>
<td>60634</td>
<td>Ratchet wrench</td>
<td>3/8&quot; x 7/16&quot;</td>
</tr>
<tr>
<td>60635</td>
<td>Ratchet wrench</td>
<td>1/2&quot; x 9/16&quot;</td>
</tr>
<tr>
<td>60636</td>
<td>Ratchet wrench</td>
<td>5/8&quot; x 11/16&quot;</td>
</tr>
<tr>
<td>60637</td>
<td>Ratchet wrench</td>
<td>3/4&quot; x 7/8&quot;</td>
</tr>
</tbody>
</table>

SPORLAN VALVE WRENCH

Spanner end tightens packing nut around super heat adjustment stem. 1/8" square end adjusts Sporlan solenoid valves with manual lift stems as on Series B6 and E6 through MA 50. Also 3/16" square at same end for expansion valves.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60617</td>
<td>Sporlan valve wrench</td>
</tr>
</tbody>
</table>
TUBE DEBURRING TOOL

For fast deburring, rotate blade.

**UPC**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60163 Deburring tool with spare blades</td>
</tr>
<tr>
<td>60164 Replacement blade for 60163</td>
</tr>
<tr>
<td>60165 Economy deburr for 60139 tube cutter</td>
</tr>
<tr>
<td>60166 Economy deburr for 60146 tube cutter</td>
</tr>
</tbody>
</table>

TUBE REAMER/BURR REMOVER

Steel blades remove inner and outer burrs.

**UPC**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60161 Tube reamer - 1/16&quot; up to 1-3/8&quot; O.D.</td>
</tr>
</tbody>
</table>

PREMIUM TUBE CUTTERS

Enclosed precision feed mechanism for easy, smooth cutting.

- Wide rollers with flare cut-off groove for convenience. Ground surface for easy rolling
- Wheel retracts into cutter body to save 1" in cutting radius
- Textured finish is easy to grip and hold
- Alloy steel wheels have a sharper cutting wheel edge for less burr on copper, aluminum and mild steel tubing
- Wheels are pinned to rotate in either direction without the screw backing out
- Corrosion-resistant finish on lightweight aluminum frame

**UPC**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60161 Small cutter* for 1/8&quot; to 1-1/8&quot; O.D.</td>
</tr>
<tr>
<td>60162 Large cutter* for 1/4&quot; to 1-5/8&quot; O.D.</td>
</tr>
<tr>
<td>60163 Constrictor/cutter for 1/4&quot; to 1-1/8&quot; O.D.</td>
</tr>
</tbody>
</table>

CONSTRICITOR/CUTTER

Cutter modified with blunt wheel to roll down the tube O.D.

**UPC**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60101 Small cutter* for 1/8&quot; to 1-1/8&quot; O.D.</td>
</tr>
<tr>
<td>60102 Large cutter* for 1/4&quot; to 1-5/8&quot; O.D.</td>
</tr>
<tr>
<td>60103 Constrictor/cutter for 1/4&quot; to 1-1/8&quot; O.D.</td>
</tr>
</tbody>
</table>

HEAVY DUTY MINI-CUTTERS

Mini-cutters are compact yet easy to grip and feature large rollers and flare cut-off groove.

**UPC**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60160 Small Mini for 1/8&quot; to 5/8&quot; O.D.</td>
</tr>
<tr>
<td>60121 Mini-cutter for 1/4&quot; to 7/8&quot; O.D.</td>
</tr>
<tr>
<td>60142 Big Mini for 1/4&quot; to 1-1/8&quot; O.D.</td>
</tr>
</tbody>
</table>

**Mini-cutter 60121** for heavy-duty cutting from 1/4" to 7/8" O.D.

**Small Mini 60160** cuts 1/8" to 5/8" with a turning radius of only 1-3/16".

**Big Mini 60142** cuts from 1/4" to 1-1/8" O.D.
**LARGE TUBE CUTTERS**

To 5-1/8" O.D. (130 mm)

- “I beam” design uses aluminum alloy for both strength and light weight
- Wide body has long rollers to hold tubing and includes a flare cut-off groove
- Contoured handle for easy gripping also holds spare cutter wheel
- Separate deburr tool slides into cutter body

**PIPE CUTTER** For black iron

Cuts black iron pipe more cleanly and quickly than other types of cutters. Cast iron body holds heat-treated steel cutter wheel.

- Fine pitch threads assure easy cuts on black pipe
- Large rollers for clean right-angle cuts

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60131</td>
<td>6 lb. pipe cutter for 1/8&quot; to 2&quot; pipe</td>
</tr>
<tr>
<td>60132</td>
<td>Pipe cutter wheel for 60131</td>
</tr>
</tbody>
</table>

**HEAVY DUTY PIPE WRENCH**

Designed for strength and durability with maleable iron construction. Instant grip and release jaws are heat treated and non-replaceable.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60641</td>
<td>8 in. pipe wrench</td>
</tr>
<tr>
<td>60642</td>
<td>10 in. pipe wrench</td>
</tr>
<tr>
<td>60644</td>
<td>14 in. pipe wrench</td>
</tr>
<tr>
<td>60645</td>
<td>16 in. pipe wrench</td>
</tr>
<tr>
<td>60646</td>
<td>24 in. pipe wrench</td>
</tr>
</tbody>
</table>

**PVC AND POLYETHYLENE PIPE CUTTER**

- Easy ratchet action and unique hooked tube-gripping jaws give an easy and clean cut
- Steel alloy blade is replaceable, repairable and heat-treated for long life

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60190</td>
<td>PVC pipe cutter up through 3/4&quot;</td>
</tr>
<tr>
<td>60191</td>
<td>PVC pipe cutter up through 1-1/4&quot;</td>
</tr>
<tr>
<td>60192</td>
<td>PVC pipe cutter up through 2-1/8&quot;</td>
</tr>
<tr>
<td>60193</td>
<td>Replacement blade for 60190</td>
</tr>
<tr>
<td>60194</td>
<td>Replacement blade for 60191</td>
</tr>
<tr>
<td>60195</td>
<td>Replacement blade for 60192</td>
</tr>
</tbody>
</table>

**CAPILLARY CUTTER**

Cleanly cut capillary tubing without flattening or constricting tubing.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60195</td>
<td>Capillary cutter</td>
</tr>
</tbody>
</table>

**TIPS FOR CUTTING**

Cutters are designed for different applications and materials, and must be used properly for optimum performance.

- Tubing cutters are designed for softer thinner-wall materials such as copper, aluminum and brass. The wheel is designed very specifically with a sharp edge for quick cutting
- Black iron pipe cutters are larger in size and use fine pitch threads and large rollers for clean right-angle cuts

To ensure lasting tool performance, use the correct cutters for copper and pipe cutters for black iron pipe.
### Tube cutter parts – organized by cutter

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Qty</th>
<th>Pkg*</th>
<th>UPC#</th>
<th>Qty</th>
<th>Pkg*</th>
<th>Description</th>
<th>Cutter</th>
</tr>
</thead>
<tbody>
<tr>
<td>60098</td>
<td>1</td>
<td>B</td>
<td>60099</td>
<td>10</td>
<td>B</td>
<td>Cutter wheels for stainless</td>
<td>60101, 60102, 60103</td>
</tr>
<tr>
<td>60079</td>
<td>1</td>
<td>B</td>
<td>60097</td>
<td>5</td>
<td>B</td>
<td>Pin and clip for wheel</td>
<td>60101, 60102, 60103</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>60094</td>
<td>5</td>
<td>B</td>
<td>Clip only for pins above</td>
<td>60101, 60102, 60103, 60122</td>
</tr>
<tr>
<td>60093</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td>Package one each wheel, pin, clip</td>
<td>60101, 60102, 60103</td>
</tr>
<tr>
<td>60100</td>
<td>1</td>
<td>B</td>
<td>60107</td>
<td>10</td>
<td>B</td>
<td>Cutter wheels for copper</td>
<td>60101, 60102, 60103, 60160</td>
</tr>
<tr>
<td>60106</td>
<td>1</td>
<td>B</td>
<td>60117</td>
<td>10</td>
<td>B</td>
<td>Constrictor wheels</td>
<td>60101, 60102, 60103</td>
</tr>
<tr>
<td>60077</td>
<td>1</td>
<td>B</td>
<td>60095</td>
<td>5</td>
<td>B</td>
<td>Reamer screw and washer</td>
<td>60101, 60102, 60103</td>
</tr>
<tr>
<td>60078</td>
<td>1</td>
<td>B</td>
<td>60096</td>
<td>5</td>
<td>B</td>
<td>Reamer</td>
<td>60101, 60102, 60103</td>
</tr>
<tr>
<td>60108</td>
<td>1</td>
<td>B</td>
<td>60129</td>
<td>5</td>
<td>B</td>
<td>Screw for knob</td>
<td>60101, 60102, 60103</td>
</tr>
<tr>
<td>60074</td>
<td>1</td>
<td>B</td>
<td>60075</td>
<td>5</td>
<td>B</td>
<td>Screw for cutter wheel</td>
<td>60121</td>
</tr>
<tr>
<td>60072</td>
<td>1</td>
<td>B</td>
<td>60073</td>
<td>10</td>
<td>B</td>
<td>Cutter wheels</td>
<td>60121</td>
</tr>
<tr>
<td>60080*</td>
<td>1</td>
<td>B</td>
<td>60125*</td>
<td>5</td>
<td>B</td>
<td>Screw for cutter wheel</td>
<td>60121, 60123</td>
</tr>
<tr>
<td>60120*</td>
<td>1</td>
<td>B</td>
<td>60116*</td>
<td>20</td>
<td>B</td>
<td>Cutter wheels</td>
<td>60121, 60142</td>
</tr>
<tr>
<td>60144</td>
<td>1</td>
<td>B</td>
<td>60143</td>
<td>5</td>
<td>B</td>
<td>Cutter blade pin and clip</td>
<td>60142</td>
</tr>
<tr>
<td>60124</td>
<td>1</td>
<td>B</td>
<td>60115</td>
<td>10</td>
<td>B</td>
<td>Cutter wheels</td>
<td>60139</td>
</tr>
<tr>
<td>60136</td>
<td>1</td>
<td>B</td>
<td>60140</td>
<td>5</td>
<td>—</td>
<td>Screw/retainer</td>
<td>60139</td>
</tr>
<tr>
<td>60172</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td>Screw for handle</td>
<td>60139</td>
</tr>
<tr>
<td>60174</td>
<td>1</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td>Spring for shaft</td>
<td>60139</td>
</tr>
<tr>
<td>60165</td>
<td>1</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td>Replacement deburr tool</td>
<td>60139</td>
</tr>
<tr>
<td>60147</td>
<td>1</td>
<td>B</td>
<td>60148</td>
<td>5</td>
<td>B</td>
<td>Cutter wheels</td>
<td>60146</td>
</tr>
<tr>
<td>60141</td>
<td>1</td>
<td>B</td>
<td>60149</td>
<td>5</td>
<td>B</td>
<td>Screws for cutter wheels</td>
<td>60146</td>
</tr>
<tr>
<td>60166</td>
<td>1</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td>Replacement deburr tool</td>
<td>60146</td>
</tr>
<tr>
<td>60110</td>
<td>1</td>
<td>B</td>
<td>60088</td>
<td>10</td>
<td>B</td>
<td>Cutter wheel</td>
<td>60122 and 60160</td>
</tr>
<tr>
<td>60081</td>
<td>1</td>
<td>B</td>
<td>60085</td>
<td>10</td>
<td>B</td>
<td>Screw</td>
<td>60122 and 60160</td>
</tr>
<tr>
<td>60110</td>
<td>1</td>
<td>B</td>
<td>60088</td>
<td>10</td>
<td>B</td>
<td>Spare cutting wheel</td>
<td>60122 and 60160</td>
</tr>
<tr>
<td>60081</td>
<td>1</td>
<td>B</td>
<td>60085</td>
<td>10</td>
<td>B</td>
<td>Spare screw</td>
<td>60160</td>
</tr>
<tr>
<td>60111</td>
<td>1</td>
<td>B</td>
<td>60089</td>
<td>10</td>
<td>B</td>
<td>Cutter wheel for Imperial</td>
<td>75015, 174-F, 274-F, 312-FB, 374-FC, TC 1000, TC 1020, TC 2050</td>
</tr>
<tr>
<td>60112</td>
<td>1</td>
<td>B</td>
<td>60090</td>
<td>10</td>
<td>B</td>
<td>Cutter wheel for stainless Imperial</td>
<td>75046, 174-F, 274-F, 312-FB, 374-FC, TC 1000, TC 1020, TC 2050</td>
</tr>
<tr>
<td>60082</td>
<td>1</td>
<td>B</td>
<td>60086</td>
<td>10</td>
<td>B</td>
<td>Screw for Imperial</td>
<td>74762, 174-F, 274-F, 312-FB, 374-FC, TC 1000, TC 1020, TC 2050</td>
</tr>
<tr>
<td>60113</td>
<td>1</td>
<td>B</td>
<td>60091</td>
<td>10</td>
<td>B</td>
<td>Cutter wheel for Imperial</td>
<td>74761, 206-FA</td>
</tr>
<tr>
<td>60083</td>
<td>1</td>
<td>B</td>
<td>60087</td>
<td>10</td>
<td>B</td>
<td>Screw and nut for Imperial</td>
<td>77511, 206-FA</td>
</tr>
</tbody>
</table>

* For old model with Ritchie imprint.

---

**SERVICE COUNTER KIT**

Kit quantities only. Order individual parts and paks for restocking from chart.

---

**Service counter cutter parts kit 60130**

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Qty</th>
<th>Description</th>
<th>Cutter</th>
</tr>
</thead>
<tbody>
<tr>
<td>60130</td>
<td></td>
<td>Counter selection - tube cutter maintenance kit as below</td>
<td></td>
</tr>
<tr>
<td>60179</td>
<td>1</td>
<td>Kit box only with label - empty</td>
<td>60101</td>
</tr>
<tr>
<td>60100</td>
<td>3</td>
<td>Cutter wheels for copper</td>
<td>60102</td>
</tr>
<tr>
<td>60079</td>
<td>3</td>
<td>Pin and clip for wheel</td>
<td>60101</td>
</tr>
<tr>
<td>60077</td>
<td>3</td>
<td>Reamer screw and spacer</td>
<td>60101</td>
</tr>
<tr>
<td>60078</td>
<td>3</td>
<td>Reamer</td>
<td>60102</td>
</tr>
<tr>
<td>60106</td>
<td>3</td>
<td>Constrictor wheel</td>
<td>60103</td>
</tr>
<tr>
<td>60098</td>
<td>3</td>
<td>Cutter wheel for stainless</td>
<td>60101</td>
</tr>
<tr>
<td>60108</td>
<td>3</td>
<td>Screw for knob</td>
<td>60121 (old)*, 60142</td>
</tr>
<tr>
<td>60120</td>
<td>6</td>
<td>Cutter wheels</td>
<td>60121 (new)*, 60142</td>
</tr>
<tr>
<td>60072</td>
<td>3</td>
<td>Cutter wheels</td>
<td>60121 (old)*</td>
</tr>
<tr>
<td>60080</td>
<td>3</td>
<td>Cutter wheel screw and retainer</td>
<td>60121 (new)*</td>
</tr>
<tr>
<td>60074</td>
<td>3</td>
<td>Cutter wheel screw and retainer</td>
<td>60121 (new)*</td>
</tr>
<tr>
<td>60144</td>
<td>3</td>
<td>Cutter pin and clip for wheel</td>
<td>60142</td>
</tr>
<tr>
<td>60124</td>
<td>3</td>
<td>Cutter wheels</td>
<td>60139</td>
</tr>
<tr>
<td>60136</td>
<td>3</td>
<td>Cutter wheel screw and retainer</td>
<td>60139</td>
</tr>
<tr>
<td>60110</td>
<td>3</td>
<td>Spare cutting wheel</td>
<td>60160</td>
</tr>
<tr>
<td>60081</td>
<td>3</td>
<td>Spare screw</td>
<td>60160</td>
</tr>
</tbody>
</table>

* 60121 (old) model with Ritchie imprint.

* 60121 (new) model with YELLOW JACKET imprint.
RETAINING RING PLIERS – COMBINATION INTERNAL/EXTERNAL

Compact pliers for use on SealRight™ coupler with interchangeable tips.

- Six point broached jaw for accurate tip alignment. Adjustable for hex tips
- High handle-to-jaw ratio for increased mechanical advantage
- Easy-to-use – just set lever to “internal” or “external”
- Adjustable stop for efficient internal ring installation and prevention of external ring damage
- Spring return for easy control
- Includes pouch with five pairs of alloy steel replaceable tips and hex wrench

Works on internal and external retaining rings where bearings are used, where a shaft must be held in a bore, under the dashboard and more.

HEX KEYS

All hex keys from 1/20” to 5/16” are premium 8650 heat-treated steel alloy for rugged use.

- Chamfered square cut ends for easy socket insertion
- Corrosion-resistant finish
- Patented organizer case with identifying slots that lock keys in place when not in use
- Ball end keys ease tightening of fasteners where sockets are up to 30° off axis. Provides fast full socket engagement where regular hex keys cannot do the job

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Standard end</th>
<th>Description</th>
<th>UPC#</th>
<th>Ball end</th>
</tr>
</thead>
<tbody>
<tr>
<td>60670</td>
<td>1/20”</td>
<td>12 piece set with case</td>
<td>60685</td>
<td></td>
</tr>
<tr>
<td>60671</td>
<td>1/16”</td>
<td>12 piece set with case</td>
<td>60686</td>
<td></td>
</tr>
<tr>
<td>60672</td>
<td>5/64”</td>
<td>12 piece set with case</td>
<td>60687</td>
<td></td>
</tr>
<tr>
<td>60673</td>
<td>3/32”</td>
<td>12 piece set with case</td>
<td>60688</td>
<td></td>
</tr>
<tr>
<td>60674</td>
<td>7/64”</td>
<td>12 piece set with case</td>
<td>60689</td>
<td></td>
</tr>
<tr>
<td>60675</td>
<td>1/8”</td>
<td>12 piece set with case</td>
<td>60690</td>
<td></td>
</tr>
<tr>
<td>60676</td>
<td>9/64”</td>
<td>12 piece set with case</td>
<td>60691</td>
<td></td>
</tr>
<tr>
<td>60677</td>
<td>5/32”</td>
<td>12 piece set with case</td>
<td>60692</td>
<td></td>
</tr>
<tr>
<td>60678</td>
<td>3/16”</td>
<td>12 piece set with case</td>
<td>60693</td>
<td></td>
</tr>
<tr>
<td>60679</td>
<td>7/32”</td>
<td>12 piece set with case</td>
<td>60694</td>
<td></td>
</tr>
<tr>
<td>60680</td>
<td>1/4”</td>
<td>12 piece set with case</td>
<td>60695</td>
<td></td>
</tr>
<tr>
<td>60681</td>
<td>5/16”</td>
<td>12 piece set with case</td>
<td>60696</td>
<td></td>
</tr>
<tr>
<td>60682</td>
<td>–</td>
<td>Case</td>
<td>60697</td>
<td></td>
</tr>
</tbody>
</table>

12” HEX KEY WRENCHES

- Heat-treated for long life
- Chamfered ends for easy insertion into sockets
- Black finish

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Size</th>
<th>UPC# Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>60750</td>
<td>Set 7 pcs. Hex key wrenches, includes all sizes below</td>
<td>60685</td>
</tr>
<tr>
<td>60757</td>
<td>5/64”</td>
<td>1-3/4”</td>
</tr>
<tr>
<td>60758</td>
<td>3/32”</td>
<td>1-3/4”</td>
</tr>
<tr>
<td>60760</td>
<td>1/8”</td>
<td>1-3/4”</td>
</tr>
<tr>
<td>60762</td>
<td>5/32”</td>
<td>1-3/4”</td>
</tr>
<tr>
<td>60763</td>
<td>3/16”</td>
<td>1-3/4”</td>
</tr>
<tr>
<td>60764</td>
<td>7/32”</td>
<td>1-3/4”</td>
</tr>
<tr>
<td>60765</td>
<td>1/4”</td>
<td>1-3/4”</td>
</tr>
</tbody>
</table>

FOLD-UP HEX KEY SETS

Locate the correct key size easily. For rugged use, each key is premium 8650 heat-treated steel alloy.

- Chamfered square cut ends for easy socket insertion
- Corrosion-resistant finish
- Smooth one-piece handle with sizes clearly marked
- Keys snap to work position for leverage and fold into handle for compact storage
- Replacement keys available

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60700</td>
<td>Hex key set – 8 sizes - 1/20”, 1/16”, 5/64”, 3/32”, 7/64”, 1/8”, 9/64”, 5/32”</td>
</tr>
</tbody>
</table>

60750 60757 60758 60760 60762 60763 60764 60765 60685 60686 60660 60682 60663 60645 60665 60695 60696 60697 60698 |
**FAN BLADE PULLER**

All steel design includes a 15/16" hex head and 5/8" shaft milled back 1-1/2" and undersized for 1/2" shaft opening. A self centering alignment tool is included.

Four fingers attach to the fan blade. For durability they are made of hardened 4140 chrome moly steel.

- Remove squirrel cage type blower wheels
- Pull off fan blades
- Remove pulleys or sheaves
- Fits 1-3/4" hub maximum (will work on a 10" pully if the diameter is less than 1-3/4")

Comes with 8 screws, 4 for hex key and 4 for wrench.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60590</td>
<td>Fan blade puller complete</td>
</tr>
<tr>
<td>60591</td>
<td>Replacement “fingers” (4)</td>
</tr>
<tr>
<td>60592</td>
<td>Bolt for 60590</td>
</tr>
</tbody>
</table>

**PINCH-OFF TOOLS**

60665 will pinch off and reround 1/4", 5/16", 3/8" and 1/2" copper.
60661 pinches off copper and other lines quickly. Trigger release.
60666 is a ViseGrip® pinch-off tool.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60665</td>
<td>Bar-style pinch-off and reround tool</td>
</tr>
<tr>
<td>60661</td>
<td>Plier type pinch-off tool</td>
</tr>
<tr>
<td>60666</td>
<td>ViseGrip® pinch-off tool</td>
</tr>
</tbody>
</table>

**REFRIGERANT RECOVERY PLIERS**

The fastest and easiest way to evacuate refrigerant before disposal of a unit.

- Snaps onto refrigerant line and punctures large hole for immediate and maximum full flow to recovery unit
- One adjustable tool fits all sizes from 3/16" to 7/8" O. D. hard tubing
- Replaceable hardened steel needle

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>60667</td>
<td>Refrigerant recovery pliers</td>
</tr>
<tr>
<td>60668</td>
<td>Replacement needle and gasket</td>
</tr>
<tr>
<td>19022</td>
<td>Replacement gasket only (5 pak)</td>
</tr>
</tbody>
</table>

**HAND-HELD REFRACTOMETER**

For retrofitting a mineral oil system with POE, the refractometer can accurately predict remaining mineral oil in the system down to one percent. Acceptable levels of remaining oil depend on compressor/system manufacturer requirements.

Refractive range 1.435 to 1.520 at room temperature.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>69000</td>
<td>Hand-held refractometer with case</td>
</tr>
</tbody>
</table>
Max-Flow™ Combination Oil Pump

Pump oil into the compressor on the down stroke while the system is under pressure, making pumping easier with a positive stroke.

- Remove oil for recovery and conversion
- Add oil to existing systems
- Pumps 2.6 oz. or 78 ml per stroke
- Pumps against 200 psi pressure
- Comfort-grip rubber handle
- Universal stopper automatically adjusts to all standard openings in 1, 2-1/2 and 5 gallon oil containers
- Suction transfer hose and fittings included. Connects to bottom of unit to pump oil from equipment quickly and efficiently
- Use with alkyl-benzene, ester-based, polyol ester, mineral and synthetic oils
- Made in the USA

Max-Flow™ Deluxe Oil Pump

The Max-Flow deluxe oil pump is a high capacity unit for quick charging.

- Remove oil for recovery and conversion
- Add oil to existing systems
- Pumps 3.8 oz. (112.38 ml) per stroke
- Fits all size oil containers
- Foot stand base provides support and leverage while pumping against the high pressures of a running compressor
- Operating unit in reverse with adapter hose accessory removes oil from equipment quickly and efficiently
- Use with alkyl-benzene, ester-based, polyol ester, mineral and synthetic oils
- Will pump against 250 psi pressure
- Made in the USA

Refillable Oil Injectors

Add liquid to systems and sample refrigerant quickly and easily.

- Body and cap are rugged aluminum with “O” ring seal
- Male fitting at one end with Schrader. A ball valve for control on other end with a short length of hose
- Valve depressor in Female end
- 600 psi maximum working pressure
- Made in the USA

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>69560</td>
<td>1/2 oz. Oil injector 1/4&quot; Male flare x 1/4&quot; Female Q.C.</td>
</tr>
<tr>
<td>69561</td>
<td>2 oz. Oil injector 1/4&quot; Male flare x 1/4&quot; Female Q.C.</td>
</tr>
<tr>
<td>69562</td>
<td>4 oz. Oil injector 1/4&quot; Male flare x 1/4&quot; Female Q.C.</td>
</tr>
<tr>
<td>69563</td>
<td>“O” ring 1/2 oz. injector (5 pak)</td>
</tr>
<tr>
<td>69564</td>
<td>“O” ring 2 and 4 oz. injector (5 pak)</td>
</tr>
<tr>
<td>69565</td>
<td>1/2 oz. R-134a auto injector with hose and service coupler</td>
</tr>
<tr>
<td>69566</td>
<td>2 oz. R-134a auto injector with hose and service coupler</td>
</tr>
<tr>
<td>69567</td>
<td>4 oz. R-134a auto injector with hose and service coupler</td>
</tr>
<tr>
<td>69722</td>
<td>Replacement hose for 69560, 69561 and 69562</td>
</tr>
<tr>
<td>69724</td>
<td>Replacement hose for 69565, 69566 and 69567</td>
</tr>
</tbody>
</table>
ERGONOMIC FINFIX™ COMBS
For 14 different fin sizes

Color-coded nylon fin combs are designed to easily straighten and clean fins on standard and high efficiency condensers and evaporators. Shape conforms to the hand and thumb for a more comfortable grip.

Available individually bagged or as a set of six assorted. One set of six covers 12 different fin sizes. 61157 is for high efficiency units.

<table>
<thead>
<tr>
<th>Individual UPC#</th>
<th>Description</th>
<th>Fins per inch</th>
<th>Color</th>
<th>Bag of 25 UPC#</th>
</tr>
</thead>
<tbody>
<tr>
<td>61151</td>
<td>FinFix 1</td>
<td>8 and 10</td>
<td>Orange</td>
<td>61161</td>
</tr>
<tr>
<td>61152</td>
<td>FinFix 2</td>
<td>9 and 15</td>
<td>Yellow</td>
<td>61162</td>
</tr>
<tr>
<td>61153</td>
<td>FinFix 3</td>
<td>11 and 13</td>
<td>Blue</td>
<td>61163</td>
</tr>
<tr>
<td>61154</td>
<td>FinFix 4</td>
<td>12 and 14</td>
<td>Green</td>
<td>61164</td>
</tr>
<tr>
<td>61155</td>
<td>FinFix 5</td>
<td>16 and 17</td>
<td>Lime</td>
<td>61165</td>
</tr>
<tr>
<td>61156</td>
<td>FinFix 6</td>
<td>18 and 20</td>
<td>Red</td>
<td>61166</td>
</tr>
<tr>
<td>61157</td>
<td>FinFix 7</td>
<td>21/22 and 23/24</td>
<td>Purple</td>
<td>61167</td>
</tr>
<tr>
<td>61158</td>
<td>Set of 6</td>
<td>8 to 20</td>
<td>Assorted</td>
<td>—</td>
</tr>
</tbody>
</table>

MECHANIX™ WORK GLOVES

Gloves feature a padded, two-way stretch lined spandex top for fit and flexibility.
- Smooth surface thumb and index finger improve grip
- Soft, flexible, durable and breathable synthetic leather palm
- Synthetic leather and lycra finger gussets
- Elastic cuff with adjustable hook and loop TPR closure

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10057</td>
<td>Medium Mechanix™ work gloves</td>
</tr>
<tr>
<td>10058</td>
<td>Large Mechanix™ work gloves</td>
</tr>
<tr>
<td>10059</td>
<td>Extra large Mechanix™ work gloves</td>
</tr>
</tbody>
</table>

SAFETY GOGGLES

Helps protect your eyes against metal particles, sparks, refrigerant gases, etc. when working on HVAC/R systems.

Safety goggles are recommended any time you work on a system.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11002</td>
<td>Safety goggles</td>
</tr>
<tr>
<td>11003</td>
<td>Ventilated safety goggles</td>
</tr>
</tbody>
</table>

FIN STRAIGHTENERS

Fin straighteners straighten even severely damaged condenser and evaporator fins quickly and easily. Also clean away lint, rust, dirt and other debris.

Straightening wire tension is adjustable to accommodate various fin types. Wires are held by a sturdy metal body.

61170 includes a long comfort-grip handle, making straightener easier to use. Head is 20 percent wider than the 61150 to straighten more fins in one pass.

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>61150</td>
<td>Fin straightener</td>
</tr>
<tr>
<td>61170</td>
<td>Fin straightener with large handle</td>
</tr>
</tbody>
</table>

TELESCOPING GLASS MIRRORS

• Check leaks in hard to see places
• Stainless steel mirror on ball joint rotates 360°
• Handle extends to 28°

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
<th>Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>78094</td>
<td>2-1/4&quot; round</td>
<td>9-1/4&quot; to 14-1/4&quot;</td>
</tr>
<tr>
<td>78097</td>
<td>2-1/4&quot; round magnified (2X)</td>
<td>9-1/4&quot; to 14-1/4&quot;</td>
</tr>
<tr>
<td>78098</td>
<td>1-1/4&quot; round</td>
<td>7&quot; to 19&quot;</td>
</tr>
<tr>
<td>78099</td>
<td>1-1/4&quot; round magnified (2X)</td>
<td>7&quot; to 19&quot;</td>
</tr>
<tr>
<td>78103</td>
<td>2&quot; x 3-1/2&quot; rectangular</td>
<td>11&quot; to 15-1/2&quot;</td>
</tr>
<tr>
<td>78104</td>
<td>1&quot; x 2&quot; oval</td>
<td>7&quot; to 19&quot;</td>
</tr>
</tbody>
</table>

Replacement mirrors only

<table>
<thead>
<tr>
<th>UPC#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>78105</td>
<td>2-1/4&quot; round glass</td>
</tr>
<tr>
<td>78106</td>
<td>2&quot; x 3-1/2&quot; rectangular glass</td>
</tr>
<tr>
<td>78107</td>
<td>1&quot; x 2&quot; oval glass</td>
</tr>
</tbody>
</table>