

HVAC PRODUCT RANGE

2014/15



ROBINAIR®

Leading brand for air-conditioning service equipment since 1956

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All images in this catalogue are for illustration purposes only, final product may differ in appearance. Specifications are subject to change.
Terms and conditions apply and are available from customer service

ROBINAIR

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22791

Infrared Refrigerant Leak Detector

- ▶ Advanced infrared sensor designed to last a minimum of 10 years.
- ▶ Three sensitivity levels down to 0.15 oz./year.
- ▶ Automatically recalibrates in highly contaminated areas to help pinpoint exact location of leak.
- ▶ Won't trigger on oil or moisture.
- ▶ Senses CFC, HFC, HCFC blends, and HFO-1234yf refrigerants.
- ▶ 8-hour lithium ion battery lasts all day long and beyond.
- ▶ Visual alert and peak button make it easy to find leaks in noisy environments.
- ▶ Audible alert with mute button.
- ▶ Magnetic hanger to easily position the unit during leak repair.
- ▶ Durable carrying case to store leak detector and accessories.
- ▶ Meets NEW SAE J2913 standard for 1234yf and previous SAE J2791 standard for 134A.

Specifications	
Gases measured: CFC, HFC, HCFC blends and HFO-1234yf.	Less than 0.5 oz. per year (14 gr/yr)
Sensing element: Infrared	Four "AA" Alkaline Batteries (Included)
Response time:	32° to 105° F (0° to 40° C)
Sensitivity levels:	0.5 to 1 second.
	HIGH 0.15 oz./year and higher
	MEDIUM 0.25 oz./year and higher
	LOW 0.5 oz./year and higher
Accuracy:	Meets current SAE J2791 and J2913 standards.
Calibration:	Automatic
Warm up time:	30 seconds
Probe length:	15 inches
Battery type:	3.7VDC(nominal) rechargeable lithium-ion battery.
Battery life: Approximately.	8 hours when fully charged.



16600

Electronic Refrigerant Leak Detector

- ▶ Proven Corona Discharge technology
- ▶ Detects all CFC, HCFC and HFC Refrigerants
- ▶ Easy – One Hand operation
- ▶ Audible and visual leak indicators
- ▶ Adjustable Sensitivity Control – infinite control in contaminated areas
- ▶ Adjustable Volume Control
- ▶ 16" Flexible Probe
- ▶ Includes spare Sensing Tip
- ▶ UL Design Certified to SAE J1627
- ▶ One year warranty



16600

Replacement Parts (supplied with product)	Part Number
Sensing Tip	16503

Specifications	
Ultimate Sensitivity	Less than 0.5 oz. per year (14 gr/yr)
Power Supply	Four "AA" Alkaline Batteries (Included)
Operating Temp	32° to 105° F (0° to 40° C)

LEAK DETECTION

XL-1A, RX-1A, XP-1A

Refrigerant Leak Detectors

- ▶ Microprocessor controlled circuit monitors the sensing tip up to 2000 times per-second
- ▶ Detects all Halogenated refrigerants
- ▶ Variable frequency audible alarm
- ▶ 14" Flexible stainless steel probe with Teflon™ liner
- ▶ Rubber cushion grip
- ▶ Constant Power Indication
- ▶ Power Supply: 3VDC, two "C" cell alkaline batteries (included)
- ▶ Sensing Tip Life: approx. 20 hours (two tips included)
- ▶ Operating Temp: 30° to 125° F (0° to 52° C)
- ▶ Blow Molded Carrying Case included, optional holster
- ▶ Certified to SAE J1627
- ▶ UL Classified & CE approved
- ▶ See chart for warranty information

Specifications	XL-1A	RX-1A	XP-1A
Ultimate Sensitivity	< 0.4 oz. per year (11 gr/yr)	< 0.25 oz. per year (7 gr/yr)	< 0.1 oz. per year (3 gr/yr)
True Mechanical Pump	n/a	Yes	Yes
Visual Leak Indication Levels	n/a	6 (single color)	18 (tri-color)
Sensitivity Levels	1	2	7
One Touch Reset and Keypad Controls	n/a	Yes	Yes
Mute Button	n/a	n/a	Yes
Battery Test	n/a	n/a	True voltage indication
Battery Life	Approx. 40 hrs.	Approx. 30 hrs.	Approx. 30 hrs.
Warranty	2 Years	2 Years	3 Years

Replacement Parts (supplied with product)	Part Number
Blow Molded Carrying Case	XP-4A
Battery Cover	XP-5A
Maintenance Kit (3 tips with protectors)	XP-2



XP-1A



RX-1A



XL-1A

TIF8900-A

Combustible Gas Detector

- ▶ Solid state sensor technology, long life and precision
- ▶ Broad band of combustible gas detection
- ▶ Sensitivity as low as 5 ppm
- ▶ Adjustable sensitivity
- ▶ Audible "Geiger counter" signal
- ▶ LED Leak Intensity Lights
- ▶ Automatic warm up
- ▶ Cordless operation
- ▶ Flexible 16" stainless steel probe for hard to reach places
- ▶ Rechargeable battery and charger included
- ▶ Rugged custom carrying case
- ▶ Made in the USA

Applications and Uses:

- ▶ Gas lines and Pipes
- ▶ Exhaust and Fuel leaks
- ▶ Propane filling stations
- ▶ Fuel in marine bilges
- ▶ Heat Exchanger leaks
- ▶ Check manholes for safety
- ▶ Detect arson residue
- ▶ IAQ tests
- ▶ Liquid or gas fired heating systems

Specifications	
Voltage (Charger)	115V, 60Hz
Probe Length	15" (38cm)
Power Supply	(Two) 2.4V Ni-Cad Batteries
Battery Life	4 Hours/Charge
Response Time	Instantaneous
Warm-up Time	30 seconds



TIF8900-A



Classified by underwriters Laboratories inc® only as to Intrinsic safety in class I Groups a,b,c, & d hazardous LOCATIONS.

Replacement Parts	Part Number
Sensor	TIF8801
Rechargeable Ni-Cad batteries (2 each)	TIF8806A
220V battery charger	TIF8806B
Cigarette lighter charger	TIF8805
Carrying Case	ATP-7038
Battery Cover	527690RED

Partial List of Detectable Compounds			
Compound	Min. detectable concentration	Compound	Min. detectable concentration
Acetylene	50 ppm	Methyl Chloride	5 ppm
Iso-Butane (R600a)	500 ppm	Hydrogen Sulfide	5 ppm
Methane	500 ppm	Acetone	50 ppm
Ethane (R170)	500 ppm	Methanol	50 ppm
Propane (R290)	500 ppm	Ammonia (R717)	20 ppm
Ethylene	500 ppm	Gasoline	1 ppm
Hydrogen	500 ppm	Chlorine	1 ppm
Methyl Ether	500 ppm		
Vinyl Chloride	5 ppm		

TIF8800X

Combustible Gas Detector

The TIF8800X is a low maintenance, battery operated, combustible gas detector that provides a ticking signal that increases in frequency as the source of combustible gas or vapor is located. The TIF8800X is small enough to be operated with just one hand, yet loaded with the kind of advanced features service professionals demand. This tool allows you to pinpoint combustible gas leaks as small as 1 ppm quickly, while checking a relatively large area in a short amount of time with absolutely no calibration required.

Applications

The TIF8800X may be used in almost any situation where a combustible gas, vapor, or residue needs to be found. An ideal instrument for pinpointing combustible gas leaks in commercial, residential, and industrial applications.

Features:

- ▶ Audible "ticking" signal
- ▶ Leak strength indicating LEDs
- ▶ Adjustable sensitivity
- ▶ Cordless operation
- ▶ Fast warm-up
- ▶ Battery status indication
- ▶ 15 inch flexible probe for hard-to-reach areas
- ▶ One-year warranty

Specifications:

- ▶ Power Supply: 4.8V NiMH rechargeable battery pack
- ▶ Continuous Operation
- ▶ Time: Approximately 4 hours
- ▶ Battery Pack
- ▶ Lifetime Approximately 500 charge cycles
- ▶ Warm-up Period: 30 seconds
- ▶ Duty Cycle: Continuous; no limitation
- ▶ Response Time: Instantaneous
- ▶ Sensitivity: Variable; as low as 1 ppm (gasoline)
- ▶ Operating Environment: 32°F to 104°F (0°F to 40°C)
- ▶ Weight: Approximately 16 ounces (454 grams)
- ▶ Certifications: UL913 7th Edition (use in Class I, II, or III, Division 1 hazardous (classified) locations)

Kit includes: TIF8800X, battery, battery charger and soft case



LEAK DETECTION



UV Leak Detection

- The easiest and most accurate gun available today.
- One squeeze injects a pre-measure amount (1/8 oz.) of dye. No more adding too much dye.
- Brightest dyes in the industry, exceeds all industry performance standards.
- Most powerful light in its class. Fluorescent dye from up to 50ft away. (Light is only used in 16235 kit)
- Meets the new SAE J2297 standard for use with both R134A and R1234YF.

16234

- Injection gun.
- Fluorescent leak detection dye.

16235

- Injection gun.
- Fluorescent light.
- Fluorescent leak detection dye.
- Fluorescent dye cleaner.
- UV glasses and blow molded case.

16234



16235

A/C Fluorescent Dyes

- Exceeds all industry performance standards.
- Compatible with all materials found in a vehicle's A/C system.
- Meets the new SAE J2297 standard for use with both R134A and R1234YF.
- REACH and CLP compliant.



16240

64 applications
One 8 oz. bottle



16241

64 applications
One 8 oz. bottle



16242

12 applications
Twelve 1/4 oz. bottles



16243

24 applications
Six 1 oz. bottles

UV Leak Detection

UV leak detection can be used for both automotive and HVAC-R systems, and dyes won't harm the system.

- High intensity beam makes even small leaks visible and is bright enough to be used in daylight.
- Rugged case and a shock-absorbing mounting mechanism protect the lamp during use and storage.
- UV bulb is rated for 3000 hours and is economical to replace.
- Comes with a 15' (4.57 m) long cord with battery clips for automotive use or with a transformer for 115V operation, doing away with heavy batteries and the need to recharge.
- Designed with super luminescence, so leaks are easy to spot, even small ones.
- Won't affect the viscosity of refrigerant lubricants and is safe for the entire A/C system.
- Speeds service, since there's no need to recover the charge, add dye, and recharge, as with some other brands.

16350 – UV leak detection kit includes: Powerful 50-watt/12-volt UV lamp with 15' cord and battery clips. Injection gun with R-134a hose and R-12 adapter. Four universal A/C dye twist-on cartridges (No. 16356). Enough dye for 20 applications (OEM-approved and SAE-certified dye). UV enhancing glasses with dye cleaner.

16380 – UV leak detection kit includes: Cordless/rechargeable true UV LED light. Six 1/4 oz. dye cartridges (No. 16357). UV enhancing glasses, dye cleaner. Injection gun with R-134a hose & R-12 adapter.

16355 – UV injection kit include: Injection gun with R-134a hose and R-12 adapter, four universal A/C dye twist-on cartridges (No. 16356, 1 oz./ 30 ml each), and service stickers.

16356 – Universal A/C dyes includes: Four 1 oz./30 m twist-on cartridges. Enough dye for 20 applications (OEM-approved and SAE-certified dye). For kit Nos. 16350, 16380, and 16355.

16357 – Six 1/4 oz./7.5 ml twist-on cartridges. Enough dye for six applications (OEM-approved and SAE-certified dye). For kit Nos. 16350, 16380, and 16355.

UV Lamps

16296 – 12V UV lamp, UV shield/enhancer glasses, power cord with battery clips, CE approved.

16254 – Replacement 50 watt bulb for 16345.

16208 – On/Off switch for 16345.

16249 – Replacement lens for UV lamp for 16345.

16345 – Cordless/rechargeable true UV LED light, battery charger, and UV enhancing glasses.

16348 – 120V battery charger, 16349 – 220V battery charger.



16345

16296



16350



16380



16355



16356



16357

RA1000**Nitrogen Regulator**

- ▶ Great for pinpointing those "hard to find" leaks
- ▶ Ideal for use in conjunction with Flushing systems
- ▶ Regulator designed to safely reduce cylinder pressure to required working pressure
- ▶ A robust and reliable Regulator with encapsulated seat design
- ▶ Regulator is fitted with a safety relief valve
- ▶ Fully adjustable
- ▶ Accurate for safe pressure testing
- ▶ Type 50 side entry inlet fitting (Australian standard)
- ▶ 1/4" outlet fitting
- ▶ Compliance to AS4267



Specifications	
Range	0-1000kPa
Inlet Fitting	Type 50 side entry inlet fitting (Australian standard)
Outlet Fitting	1/4"MFL

16455**TruTrack™ Ultrasonic Leak Detector**

- ▶ Detects Refrigeration leaks
- ▶ pressurized gas leaks
- ▶ vacuum leaks
- ▶ dry nitrogen gas leaks
- ▶ steam leaks, etc.
- ▶ It will detect any gas under pressure or vacuum.
- ▶ Allows you to identify potential failures in bearings, valves, solenoids and other operational components.
- ▶ Adjustable sensitivity.
- ▶ Audible and visual leak indication.
- ▶ Powered by one 9V battery (included).

**16451****TruTrack Ultrasonic Sound Generator**

- ▶ An ideal accessory for Robinair's Model 16455 Ultrasonic Leak Detector,
- ▶ The sound generator detects seal failure in refrigerators, microwaves, vehicle passenger compartments, trunks, and any other location where there should be a good seal.
- ▶ Battery-operated
- ▶ Unit emits special frequency from inside the test area; where the sound can be heard, a leak exists.

**Gas Manifold Pressure Test Kits**

- ▶ Use these handy kits to Measure Natural gas or LP gas pressure across appliance manifolds
- ▶ Test gas stoves, furnaces, dryers and other gas appliances
- ▶ Economical and accurate – easier to use than a manometer
- ▶ Diaphragm gauge is calibrated in inches of water column, also shows ounces per square inch
- ▶ Includes fitting for quick connection to the appliance manifold
- ▶ Packed in high impact plastic case for protection during transit and use

42160 Manifold Pressure Test Kit, Pressure measurements from 0 – 35" of water column

42162 Manifold Pressure Test Kit, Pressure measurements from 0 – 10" of water column

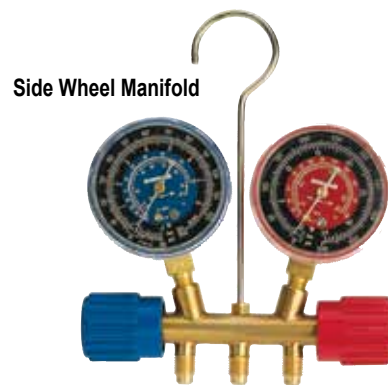


GAUGES & HOSES

Two Way Brass Manifolds

- ▶ Our popular Side Wheel Manifold is durable and easy to use
- ▶ Solid forged brass for long life; hand wheels are durable, color-coded Lexan®
- ▶ Universal Gauges – Clearly marked so they're easy to read and protected with Lexan™ lenses
- ▶ Field Proven Face Seal Valves – Provide a tight seal, less wear and improved flow

Refrigerants	Item #	Gauges 2 1/2"	RYB Hose
R12/22/502 Fahrenheit/kPa/psi	40160	Red/Blue/Black	Manifold only
	40161	Red/Blue/Black	36" Standard hoses with standard fittings
	40162	Red/Blue/Black	60" Standard hoses with standard fittings
	40163	Red/Blue/Black	60" Enviroguard hoses with Quickseal fittings
R22/404A/410A Fahrenheit/kPa/psi	40170	Red/Blue/Black	Manifold only
	40174	Red/Blue/Black	60" Enviroguard hoses with Quickseal fittings
R134a/404A/507 Fahrenheit/kPa/psi	40180	Red/Blue/Black	Manifold only
	40181	Red/Blue/Black	36" Standard hoses with standard fittings
	40182	Red/Blue/Black	60" Standard hoses with standard fittings
	40186	Red/Blue/Black	60" Enviroguard hoses with Quickseal fittings
R22/134a/404A Fahrenheit/kPa/psi	40190	Red/Blue/Black	Manifold only
	40192	Red/Blue/Black	60" Standard hoses with standard fittings
	40194	Red/Blue/Black	60" Enviroguard hoses with Quickseal fittings
R22/134a/404A Celsius/Bar/psi	40190C	Red/Blue/White	Manifold only
	40191C	Red/Blue/White	36" Standard hoses with standard fittings
	40192C	Red/Blue/White	60" Standard hoses with standard fittings
R22/134a Fahrenheit/kPa/psi	40152	Red/Blue/Black	Manifold only
	40153	Red/Blue/Black	36" Standard hoses with standard fittings
	40169	Red/Blue/Black	60" Standard hoses with standard fittings
	45134A	Red/Blue/Black	R134a Set with 72" hose set and service couplers Gauge Holster
R134A Fahrenheit/kPa/psi	48134A		Brass manifold 60" Hose Set, Manual Couplers
R134A/R12 Fahrenheit/kPa/psi	45111		Brass Manifold 72" Hose Set, Manual Couplers
R22/134A Celsius/Bar/psi	43133C	Red/Blue/White	R134a Set with 72" hose set and service couplers; has degrees Celsius temperature scales
R410 Fahrenheit/kPa/psi	41671	Red/Blue/Black	Manifold only
	41670	Red/Blue/Black	60" Enviroguard hoses with in-line ball valve 1/4" SAE fittings



Side Wheel Manifold



Side Wheel Manifold with Gauge Holster

Optional Accessories	Part Number
Protective Boot	40001



New Robinair Packaging



45111



48134A



Red/Blue/White Celsius Brass Manifold

HVAC/R & Automotive 4-Way Manifold 41400A

Diagnose, evacuate and charge an A/C system without switching hoses, making service work faster and more convenient.

Manifold & Gauges Set Feature

- ▶ Zero Adjustable Gauges
- ▶ Extruded Aluminum Manifold Block
- ▶ Larger colour coded "DELUX" soft grips
- ▶ High and Low Side gauges with PSI/bar (kPa= bar x 100) display with R134a, R22, R404a Celsius temperature scale
- ▶ Brass fittings with 1/4"MFL outlets
- ▶ Hanging Hook
- ▶ Optical Sight glass for visual contact
- ▶ Colour coded protection gauge boots



41400A

Part Number	HVAC/R & Automotive
41400A	Manifold only
Part Number	Automotive - R134a
41400A-72A	72" Service Hoses with R134a Couplers, Quickseal fitting on supply hose 72", 36" Standard yellow hose with standard fittings-vacuum

Aluminum Block Gauge Sets- AUTOMOTIVE- R134a 13208C

- ▶ Both Manifold & Gauges Sets Feature
- ▶ Zero Adjustable Gauges
- ▶ Extruded Aluminum Manifold Block
- ▶ Color Coded Knobs
- ▶ High and Low Side gauges with PSI/bar (kPa= bar x 100) display with 134a,R22,R404a Celsius temperature scale
- ▶ Brass fittings with 1/2"ACME outlets
- ▶ Hanging Hook
- ▶ Optical Sight glass for visual contact
- ▶ "SPUD NUTS" For hanging couplers/hoses from



13208C



13208-KIT

13208C	Manifold only
13208-KIT	72" Service Hoses with R134a Couplers, Quickseal fitting on supply hose 72" in Durable carry case

Aluminum Block Gauge Sets- HVAC/R 13199C

Both Manifold & Gauges Sets Feature

- ▶ Zero Adjustable Gauges
- ▶ Extruded Aluminum Manifold Block
- ▶ Color Coded Knobs
- ▶ High and Low Side gauges with PSI/bar (kPa= bar x 100) display with R134a, R22, R404a Celsius temperature scale
- ▶ Brass fittings with 1/4"MFL outlets
- ▶ Hanging Hook
- ▶ Optical Sight glass for visual contact



Aluminum Block Gauge Sets- HVAC/R- R410A 13205C

- ▶ Both Manifold & Gauges Sets Feature
- ▶ Zero Adjustable Gauges
- ▶ Extruded Aluminum Manifold Block
- ▶ Color Coded Knobs
- ▶ High and Low Side gauges with PSI/bar (kPa= bar x 100) displays R410A in Celsius & Fahrenheit temperature scale
- ▶ Brass fittings with 5/16"MFL outlets (1/2"-20UNF)
- ▶ Hanging Hook
- ▶ Optical Sight glass for visual contact



13199C	Manifold only
13199-36S	36" Standard hoses with standard fittings
13199-60S	60" Standard hoses with standard fittings

13205C	Manifold only
13205-36S	36" Standard hoses with standard fittings
13205-60S	60" Standard hoses with standard fittings

GAUGES & HOSES



11910

11910
Digital Gauge (Low Pressure)

- Easy to read large backlit display
- Accurate readings
- Supports multiple refrigerants
- Built in Pressure/Temperature chart for 17 different refrigerants.
- Compatible with many different manifolds
- Low pressure (0-250 psi)



11920

11920
Digital Gauge (High Pressure)

- Easy to read large backlit display
- Accurate readings
- Supports multiple refrigerants
- Built in Pressure/Temperature chart for 17 different refrigerants.
- Compatible with many different manifolds
- High pressure (0-500 psi)

Replacement Gauges

General usage gauges for multiple applications where pressure or vacuum readings are required. Dampening helps reduce excessive needle fluttering making the gauge much easier to read. Internal components are compatible with many industry applications. The ability to recalibrate the gauge is a standard feature on all gauges. Temperature scale reads in °F or °C and pressure is displayed in either PSI or BAR.

Celsius temperature scales on Replacement Guages

Item	Description	Size	Press Scale	Refrigerants
13149-C	Compound Gauge - Blue-°F& °C	2 1/2"	30"-0-250 PSI -1-0-35 BAR	R410A
41676-C	Pressure Gauge - Red-°F& °C	2 1/2"	0-800 PSI 0-55 BAR	R410A
11797	Compound Gauge - Blue - °C	2 1/2"	-1 - 0 - 24 BAR	R22/134a
11798	Pressure Gauge - Red - °C	2 1/2"	0 - 34 BAR	R22/134a
11797-C	Compound Gauge - Blue - °C	2 1/2"	-1 - 0 - 24 BAR & 30"-120 psi	R22/R404A/R134a
11798-C	Pressure Gauge - Red - °C	2 1/2"	0 - 34 BAR & 0-500 psi	R22/R404A/R134a
11854C	Compound Gauge - Blue - °C	80mm	30"-0-250 PSI -1-0-35 BAR	R410A/22/404A/134A
11855C	Pressure Gauge - Red - °C	80mm	0-800 PSI 0-55 BAR	R410A/22/404A/134A



13149-C



41676-C



11794-C



11795-C

Fahrenheit temperature scales on Replacement Guages

Item	Description	Size	Press Scale	Refrigerants
11724	Compound Gauge - Blue-°F	2 1/2"	30"- 0 - 250 PSI	R22/404A/410A
11725	Pressure Gauge - Red-°F	2 1/2"	0 - 800 PSI	R22/404A/410A
11734	Compound Gauge - Blue-°F	2 1/2"	30"- 0 - 120 PSI	R12/22/502
11735	Pressure Gauge - Red-°F	2 1/2"	0 - 500 PSI	R12/22/502
11744	Compound Gauge - Blue-°F	2 1/2"	30"- 0 - 120 PSI	R134a/404A/507
11745	Pressure Gauge - Red-°F	2 1/2"	0 - 500 PSI	R134a/404A/507
11754	Compound Gauge - Blue-°F	2 1/2"	30"- 0 - 120 PSI	R22/134a/404A
11755	Pressure Gauge - Red-°F	2 1/2"	0 - 500 PSI	R22/134a/404A
11794	Compound Gauge - Blue-°F	2 1/2"	30"- 0 - 120 PSI	R22/134a
11795	Pressure Gauge - Red-°F	2 1/2"	0 - 500 PSI	R22/134a
13149	Compound Gauge - Blue-°F	2 1/2"	30"- 0 - 250 PSI	R410A
41676	Pressure Gauge - Red-°F	2 1/2"	0 - 800 PSI	R410A



11794



11795



13149



41676

AUTOMOTIVE R134a HOSE CHART

Enviro-Guard™ Hoses for Automotive R134a

Length (Inches)	Yellow 1/2"ACME x 1/2"ACME	Blue 14mm x 1/2"ACME	Red 14mm x 1/2"ACME	Set (Yellow,Blue,Red)
36"	61036	62036	63036	60036
60"	61060	62060	63060	60060
72"	61072	62072	62244	60072
96"	61096	62121	63096	60096
240"	N/A	62242	62246	64240 (excl.yellow)

Enviro-Guard™ Hoses for Automotive R134a "Conversion Hoses"

Length (Inches)	Yellow 1/2"ACME x 1/4"FLL	Blue 14mm x 1/4"FLL	Red 14mm x 1/4"FLL	Set (Yellow,Blue,Red)
72"	13190	13187	13188	N/A

Enviro-Guard™ Hoses for Automotive R134a 1/2"ACMEx1/2"ACME QuickSeal Fitting

Length (Inches)	Yellow 1/2"ACME x 1/2"ACME	Blue 1/2"ACMEx1/2"ACME	Red 1/2"ACME x 1/2"ACME	Set (Yellow,Blue,Red)
36"	19078	19079	19077	N/A

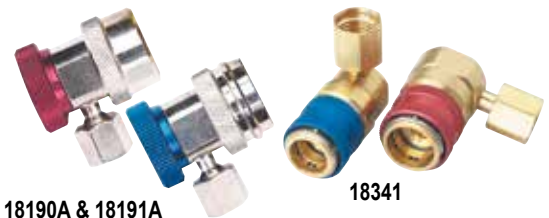
Robinair Tech-Plus "Economy"

Length (Inches)	Yellow 1/2"ACME x 1/2"ACME	Blue 14mm x 1/2"ACME	Red 14mm x 1/2"ACME	Set (Yellow,Blue,Red)
72"	N/A	N/A	N/A	49072

Service Couplers for Automotive R-134a

Field service couplers connect to our special Enviro-Guard™ hoses to allow access to service ports on automotive R-134a A/C systems. The quick-connect design has an integral safety sleeve, which protects against injury and refrigerant loss if the coupler is disconnected under pressure. The compact design easily fits into tight quarters, which is especially handy for retrofits. Six-ball couplers provide a more stable grip on the fitting than do couplers with four balls.

- 18190A** Low-side manual coupler, blue actuator.
18191A High-side manual coupler, red actuator.
18192 Set of manual service couplers (18190A&18191A).
18341 High- and low-side automatic couplers.
19150 O-ring kit for field service couplers.

**18190A & 18191A****18341****Replacement Parts for Hoses, Adapters & Couplers**

- 40653B** 3/16" Valve Core Depressors for Hoses & Adapters, pkg/6
40082 1/4" Valve Core Depressors for Hoses & Adapters, pkg/6
40677 3/16" Gaskets for Hoses & Adapters, pkg/6
40083 1/4" Gaskets for Hoses & Adapters, pkg/6
40084 3/8" Gaskets for Hoses & Adapters, pkg/6

**Quick Seal™ Repair Kits (for hoses and adapters)**

- 18451** 45°, 1/4" Quick Seal Repair Kit
18180 1/4" Quick Seal O-Rings Set, pkg/6

Manifold Valve Stem Replacement Assembly Kits

Kits include all necessary parts to service one manifold valve,

To replace stems on both valves, order two kits

- 40232** Stem Assy. Kit for Manifolds with Conical Seal (1995 and earlier models)
13148 Stem Assy. Kit for Side-wheel Manifolds, with Face Seal (1996 to current models) includes stem with O-rings, spring and screw (will not fit Sight glass Manifolds)
19695 Stem Assy. Kit for Sight glass Manifolds, with Face Seal
13067 High Vacuum Silicone Grease – 1/2 oz.

Replacement Knobs/Handles for Manifolds

- 40449** Set of one red and one blue, 1/4" drive ("spoke" style)
41698 Set of one red and one blue, 1/4" drive (barrel style)
48319 Set of one red and one blue handles includes stem and seals

**41698****40449****18576****R-134a Manifold Gauges/Hoses Parts Kit**

- ▶ 4 manifold stems.
- ▶ 6 o-rings, 14 mm.
- ▶ 12 valve core depressors.
- ▶ 12 hose gaskets, 1/4".
- ▶ 12 manifold stem o-rings.
- ▶ 6 Quick Seal™ o-rings for R-134a.
- ▶ 2 caps with straps, 1/2" Acme.
- ▶ O-ring lubricant (high vacuum grease).
- ▶ Valve core remover/installer with 6 valve cores.
- ▶ 4 color-coded Lexan® handwheels and screws.
- ▶ Set of R-134a coupler o-rings, high- and low-side

**17026****HVAC Replacement Parts Kit**

Contains an assortment of the most commonly needed replacement parts for repairing manifolds, hoses and various other A/C tools. Kit contains:

- ▶ 2 Manifold Stem Repair Kits (Conical Seal)
- ▶ 2 Manifold Stem Repair Kits (Face Seal)
- ▶ 12 Valve Cores
- ▶ 12 Valve Core Depressors, 1/4"
- ▶ 12 Hose Gaskets
- ▶ 6 Quick Seal Caps, 1/4"
- ▶ 6 Quick Seal Gaskets
- ▶ O-rings for Quick Seal Fittings
- ▶ 1 Valve Core Remover/Installer with 6 Valve Cores
- ▶ 2 Sets of Color-coded Lexan®, Hand wheels (red and blue)



GAUGES & HOSES

Hose Selection Charts HVAC/R & Automotive R12

1/4" FFL Enviro-Guard™ High Pressure Hoses with standard fittings 740 psi working pressure/3700 psi burst pressure				
Length (Inches)	Yellow	Blue	Red	Set (Yellow,Blue,Red)
72"	67172	67272	67372	67072

1/4" FFL Enviro-Guard™ High Pressure Hoses with Quick Seal™ fittings 740 psi working pressure/3700 psi burst pressure				
Length (Inches)	Yellow	Blue	Red	Set (Yellow,Blue,Red)
36"	68136A	68236A	68336A	69036A
60"	68260A	68260A	68360A	69060A
72"	68172A	68272A	68372A	69072A
96"	68196A	68296A	68396A	69096A

1/4" FFL Standard Hoses with standard fittings 500 psi working pressure/2500 psi burst pressure				
Length (Inches)	Yellow	Blue	Red	Set (Yellow,Blue,Red)
36"	31036	32036	33036	30036
60"	31060	32060	33060	30060
72"	31078	32072	31079	30072
96"	31096	32096	33096	N/A

1/4" FFL Standard Hoses with Quick Seal™ fittings 500 psi working pressure/2500 psi burst pressure				
Length (Inches)	Yellow	Blue	Red	Set (Yellow,Blue,Red)
72	38172A	38272A	38372A	39072A

R410A HOSE SETS		
5/16" (1/2"-20UNF) High Pressure Hoses with standard fittings 800 psi working pressure/4000 psi burst pressure		
Length (Inches)	Part Number	Description
36"	41036S	Set of 3 Hoses with standard fittings (Red,Blue,Yellow)
60"	41060S	Set of 3 Hoses with standard fittings (Red,Blue,Yellow)
5/16" (1/2"-20UNF) High Pressure Hoses with QuickSeal fittings 800 psi working pressure/4000 psi burst pressure		
Length (Inches)	Part Number	Description
36"	41036Q	Set of 3 Hoses with QuickSeal fittings (Red,Blue,Yellow)
60"	41060Q	Set of 3 Hoses with QuickSeal fittings (Red,Blue,Yellow)

Special Hoses or Special Jobs

Ball Valve Adapters

These six inch adapters connect to any 1/4" FFL charging hose for convenient in-line control of refrigerant flow. The ball valve opens and closes in just a quarter turn. The fitting features a 45° bend for easier connections, even in tight spots.

- 18501** 1/4" MFL x 1/4" FFL, Blue
- 18512** 1/4" MFL x 1/4" FFL, Red
- 18513** 1/4" MFL x 1/4" FFL, Yellow
- 18514** 1/4" MFL x 1/4" FFL, Blue, Red and Yellow (set of 3)
- 18511** 1/4" MFL x 3/16" FFL, Red

Flexible Adapters

Flexible adapters feature brass fittings and durable neoprene-coated hose, 6".

- 10293** 1/4" MFL x 1/8" FFL, Blue
- 10470A** 1/4" MFL x 3/16" FFL, Red
- 10778** 1/4" MFL x 1/4" FFL, Yellow

20' Charging Hoses

- 68020** 20' Enviro-Guard™, 1/4" FFL hose, with standard fittings– Set, Red and Blue
- 68420** 20' Enviro-Guard™, 1/4" FFL hose, with Quick Seal™ fittings–Set, Red and Blue

Enviro-Guard™ Hoses with Ball Valves

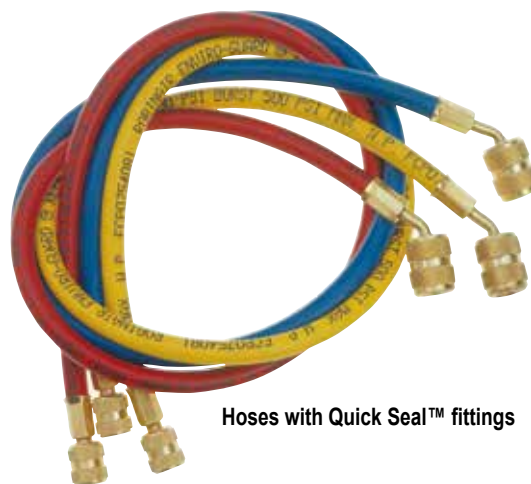
In-line ball valves control refrigerant flow with a quarter turn

- 65060** 60" Enviro-Guard™, 1/4" FFL hoses, with Ball Valves–Set of three(Yellow,Blue,Red)
- 65160** 60" Enviro-Guard™, 1/4" FFL hose, with Ball Valve – Yellow
- 65260** 60" Enviro-Guard™, 1/4" FFL hose, with Ball Valve – Blue
- 65360** 60" Enviro-Guard™, 1/4" FFL hose, with Ball Valve – Red

3/8" FFL Charging and Vacuum Hoses

Reduce pull-down time by as much as 40% with these larger diameter hoses

- 68060** 60" Enviro-Guard™ Hose, 3/8" FFL, with standard straight fittings – Yellow



Hoses with Quick Seal™ fittings



Flexible adapters hose, 6".

Ball Valve Adapters

GENERAL PURPOSE VALVES & FITTINGS

R-134a Valve Core Remover

10588 Our popular valve core remover/installer has been engineered for use when servicing deeper core R-134a A/C systems. 1/4" Valve Core Remove Installers



10588

13145 Valve core remover/installer with 6 valve cores Valve Core Remover/Installer



13145

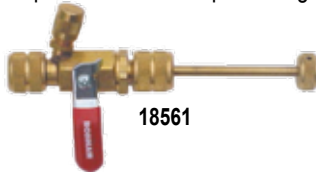
Valve Core Remover/Installers

18560 Remove and install valve cores from a 1/4" male flare access fitting without the loss of refrigerant. Durable, solid brass tool has a ball valve that can be opened or closed in just a quarter-turn, rather than a stem-type valve. Designed with a stainless steel ball and brazed side fitting for durability and long life.



18560

18561 Replace leaking valve cores quickly and easily, or remove the valve core and hold it out of place for evacuation or charging. Features a solid brass body with a convenient handle that opens and closes in a quarter-turn to speed service. Compact design easily fits most locations.



18561

Pick Extractor

14774 For use with 14599 or 14650, extractor lets you remove damaged cores in the service line while the system is fully charged, without releasing refrigerant into the atmosphere.



14774

Adapters / Coupling

- 40410** 1/4 MFL with core x 1/4 FFL with copper gasket, pkg/6
- 40410A** 1/4 FFL x 5/16MFL (R410A)
- 10459** 1/2" FFL x 1/4" MFL
- 13110** 3/8" FFL x 1/4" MFL
- 13066** 1/2" FFL x 3/8" MFL
- 61402RA** 1/4" FFL x 1/2" M-ACME



40410

Quick Seal™ Adapters

Quick Seal™ fitting automatically shuts off the charging hose when you disconnect it from the system, so any refrigerant left in the hose is not released. This also prevents "finger burn" and adds an extra measure of safety. Made of solid brass.

- 10292** 1/4" MFL to 1/4" FFL
- 10296** 1/4" MFL to 3/16" FFL
- 10250** 1/4" MFL to 1/4" FFL, 90° Elbow



10292

Hose Extension Coupler

For connecting any number of hoses to get the required length

- 40333** 1/4" MFL x 1/4" MFL

90° Style Adapters

Solid brass fitting is ideal for tight spots.

- 10469A** 1/4" MFL x 3/16" FFL
- 40563A** 1/4" MFL x 1/4" FFL



10469A

Straight Style Adapters

- 10468A** 1/4" MFL x 3/16" FFL
- 40560A** 1/4" MFL x 1/4" FFL



10468A

Quick Couplers with Depressors

- 40553** 1/8 FPT x 1/4 FFL, ea.
- 40555** 1/4 FPT x 1/4 FFL, ea.



40553

Solder Union Type

- 40416** 1/4 MFL x 1/8 OD Copper Tube Ext., pkg/6
- 40417** 1/4 MFL x 3/16 OD Copper Tube Ext., pkg/6
- 13142** 1/4 MFL x 1/4 OD Copper Tube Ext., pkg/6
- 40419** 1/4 MFL x 5/16 OD Copper Tube Ext., pkg/3*
- 40420** 1/4 MFL x 3/8 OD Copper Tube Ext., pkg/3*
- 13143** 1/4 MFL x 1/4 OD or 3/8 ID Solder with cap and chain*
- 40427** 1/4 MFL x 1/4 OD or 3/8 ID Solder, pkg/6*

*Comes with 40535 Valve Core Remover



40417

40427

Elbow Access Fitting

- 40422** 1/4 MFL with core x 1/8 MPT Elbow, pkg/6



40422

Brass/Plastic Caps

- 40572** 1/4" solid brass Quick Seal™ caps, pkg/6



40572

Refrigerant Cylinder Adapters

- 12821RA** 1/2" M-ACME x 5/8" FBSPP
- 12822RA** 1/2" M-ACME x 3/4" FBSPP
- 12824RA** 1/4" MFL x 3/4" FBSPP



12824RA

GENERAL PURPOSE VALVES & FITTINGS

General Purpose Valves

Straight Type

- 40464** Straight Type 1/4 MFL x 1/4 MFL
13144 Straight Type 1/4 MFL x 1/4 FPT



Quick Coupler Style Valve

- 40380** Quick Coupler Style Valve 1/4 FFL Coupler x 1/4 MFL



Gauge Cocks Brass Tee Handle

- 40479** 1/4 FPT x 1/4 MPT



Tube Piercing Valves

Piercing Valves with Flow Control and 1/4 S.A.E. Connector Size

- 40288** Fits 3/16, 1/4, 5/16, 3/8 OD
13139 Fits 1/2, 9/16, 5/8 OD
40291 Gaskets for 40288/40330, pkg/3



Piercing Valves with Valve Cores

- 40330** Fits 3/16, 1/4, 5/6, 3/8 OD
40336 Fits 1/2, 5/8 OD



Straight Line Top Valves

- 40472** Fits 1/4, 5/16, 3/8 OD



25175B

Refrigerant Recovery Machine 115V

- ▶ Automatic High Pressure cut-out switch for safety
- ▶ Direct liquid recovery without damaging the compressor
- ▶ All new proprietary "Oil-less" compressor and 1/2 hp motor
- ▶ Field serviceable compressor
- ▶ Multi-refrigerant capable with Self-Clearing feature, which prevents cross-contamination
- ▶ One 60" hose included
- ▶ 1/4" MFL fittings
- ▶ Optional Float Cable provides automatic shut off when tanks are 80% full
- ▶ Power Source – 220V-240V 50/60 Hz, metric gauges



25201B

Refrigerant Recovery Machine 220V

- ▶ Designed for the recovery medium and high-pressure refrigerants, including R-410A
- ▶ Automatically switches from liquid to vapor recovery
- ▶ Provides continuous recovery without the need to change the hose or flip a switch
- ▶ Automatic high pressure cut-out switch for safety
- ▶ Direct liquid recovery without damaging the compressor
- ▶ Oil-less compressor allows rapid transfer of large amounts of liquid
- ▶ Efficient fan and large condenser can handle high ambient temperatures
- ▶ Multi-refrigerant capable with Self-Clearing feature, which prevents cross-contamination
- ▶ Four 60" hoses, with ball-valves included
- ▶ Optional Float Cable provides automatic shut off when tanks are 80% full
- ▶ 1/4" MFL fittings
- ▶ Power Source – 220V-240V 50/60 Hz, metric gauges, CE approved



Teas/Fittings

- 40384** 1/4 MFL Branch with core x 3/8 OD tube or 1/2 OD solder, pkg/3*
40386 1/4 MFL run x 1/4 FFL run with depressor x 1/4 MFL Branch with core, pkg/3
40396 1/4 MFL Branch with core 1/4 MFL run x 1/4 FFL swivel run, pkg/3
40390 1/4 MFL Branch with core x 1/8 MPT run x 1/8 MPT, pkg/3
40398 1/4 FFL Swivel Branch with depressor x 1/4 MFL run with core x 1/4 MFL run, pkg/3
40399 1/4 FFL Swivel Branch x 1/4 MFL run x 1/4 MFL run with core, pkg/3

*Comes with 40535 Valve Core Remover



40398



40386



40396

Refrigerant Cylinder Adapters

- 12821RA** 1/2" M-ACME x 5/8" FBSP
12822RA 1/2" M-ACME x 3/4" FBSP
12824RA 1/4" MFL x 3/4" FBSP



12824RA

Minimax-RA

Automotive Recovery Machine

The MINIMAX-RA comes complete with an Oil Separation System. The unit is designed specifically for automotive applications. During the recovery of refrigerant, oil is separated and can be measured. This allows the technician the ability to accurately access the quantity of oil to be put back into the system. The separator can also be bi-passed when required



Replacement Parts (supplied with product)	Part Number
Filter-Drier, 1/4" MFL x 1/4" MFL	100343
Hose, Blue 4" Long	100345
Yellow Hose	31036

Minimax-RR

Automotive Recovery & Recycle Module

The MINIMAX-RR is ideal for the busy workshop or mobile service vans. The Recycler is detachable enabling the technician to recover refrigerant from multiple systems and then recycle for re-use. The **RG-RR** (Recycle only) can also be purchased individually and used on any existing refrigerant recovery units such as: RG5000-RA, RG5000-E, 25151RA, 25176RA, etc.



Replacement Parts (supplied with product)	Part Number
Filter-Drier, 1/4" MFL x 1/4" MFL	100343
Hose, Blue 4" Long	100345
Yellow Recycle Module Hose Set	RR-HS-A
20kg Recovery & Recycle Cylinder	34750RA
Filter/Dryer	34379
Manifold & Gauge Set	13208-AUS
Sight Glass	658-0404H
Copper Sealing Washers	61405RA

RG5410A-A & RG5410A-E

Refrigerant Recovery Machine

- ▶ Recovers all commonly used CFC, HFC, HCFC Refrigerants (including R410-A [Puron™])
- ▶ Designed for use with High Pressure refrigerants
- ▶ Selectable High Pressure safety "cut off" switches (400 or 550 psi)
- ▶ Proprietary "Oil-less" compressor capable of handling both liquid and vapor
- ▶ All new ergonomic design for easier handling
- ▶ 3/8" – 3-row condensor for maximum performance in even the harshest conditions
- ▶ Corrosion proof polyethylene blow molded case
- ▶ Field serviceable semi-hermetic compressor (100:1 Compression Ratio)
- ▶ An automatic low-pressure cut-off switch turns the machine off at 15" of vacuum,
- ▶ Self purge feature
- ▶ Includes Filter-Drier
- ▶ Power Source – 230V 60Hz, 10A Max, 1/2HP Direct Drive, AC Brushless Motor
- ▶ One year warranty
- ▶ Weight: 14.5kg,(32 lbs),dimensions:13" H x 9" W x 19" L



Performance Specifications	Cat 111	Cat 1V	Cat V
Push/Pull Recovery Rate	4.64kg/min (10.2 lbs/min)	5.57kg/min (12.2 lbs/min)	6.22kg/min (13.7lbs/min)
Liquid Recovery Rate	1.57kg/min (3.46 lbs/min)	1.81kg/min (3.99 lbs/min)	1.85kg/min (4.07lbs/min)
Vapor Recovery Rate	0.11kg/min (0.24 lbs/min)	0.15kg/min (0.33 lbs/min)	0.16kg/min (0.35lbs/min)
Final Recovery Vacuum	33.6 kPa	33.6 kPa	33.6 kPa

Replacement Parts (included)	Part Number
Filter-Drier, 1/4" MFL x 1/4" MFL	100343
Hose, Blue 4" Long	100345

Optional Accessories	Part Number
20kg Recovery Cylinder	34750RA
Tool Caddy	TC-2000

RECOVERY

RaptorEX (RG5410AEX-A & RG5410EX-E) Refrigerant Recovery Machine

- ▶ Recovers all commonly used CFC, HFC, HCFC Refrigerants (including R410-A [Puron™])
- ▶ Designed for use with High Pressure refrigerants
- ▶ Selectable High Pressure safety "cut off" switches (400 or 550 psi)
- ▶ Proprietary "Oil-less" compressor capable of handling both liquid and vapor
- ▶ All new ergonomic design for easier handling
- ▶ 3/8" – 3-row condenser for maximum performance in even the harshest conditions
- ▶ Corrosion proof polyethylene blow molded case
- ▶ Field serviceable semi-hermetic compressor
- ▶ Auto-purge helps clear any residual refrigerant, leaving the machine "ready to go" for the next service call.
- ▶ An automatic low-pressure cut-off switch turns the machine off at 15" of vacuum,
- ▶ Padded handle grip makes carrying the machine to job sites easier and more comfortable
- ▶ Includes Filter-Drier
- ▶ Power Source – 230 V 50 Hz
- ▶ UL approved
- ▶ One year warranty
- ▶ Weight: 34 lbs., 15.4kgs.; dimensions: 13" H x 9" W x 19" D (48.3 x 33 x 22.9 cm)

RAPTOR^{EX}



A = Australian Plug
E = European Plug

Optional Accessories	Part Number
20kg Recovery Cylinder	34750RA
Tool Caddy	TC-2000

Replacement Parts (supplied with product)	Part Number
Filter-Drier, 1/4" MFL x 1/4" MFL	100343
Hose, Blue 4" Long	100345

UL Certified
Per ARI Standard 740-98.
To meet or exceed EPA regulations. Refrigerant Recovery Machine 8EA7.

Recovery capabilities	Vapor, liquid, push/pull
Compressor	Oil-less, 100:1 compression ratio
Motor	Direct drive _ hp, high efficiency
Size	483 L x 330 H x 229 W mm
Weight	34 lbs. 15.4kgs
Electrical	220-240V 50 Hz
Approvals	ARI-740, UL, CE and TUV - pending
Warranty	1-year

	lbs./min			kg/min		
	Vapor	Liquid	Push/Pull	Vapor	Liquid	Push/Pull
R-12	.41	4.77	14.50	.18	2.17	6.59
R-22	.41	4.77	14.50	.18	2.17	6.59
R-134A	.32	4.14	11.70	.14	1.80	5.32
R-407C	.34	4.78	11.40	.15	2.17	5.18
R-410A	.44	5.13	14.10	.20	5.13	6.41

Micro Raptor (RG3000)

- ▶ Minimum size – Maximum performance; ideal for residential and appliance service
- ▶ Easy to carry. Compact package that is small and light only 8kg.
- ▶ Recovers all commonly used CFC, HFC, HCFC Refrigerants (including R-410A)
- ▶ Proprietary "Oil-less" compressor capable of handling both liquid and vapor
- ▶ Rugged. Designed to withstand the rigors of daily use in extreme conditions.
- ▶ Tough corrosion proof polyethylene blow molded case
- ▶ Fast. Save time on each job with best in class recovery performance.
- ▶ Field serviceable. kits available to replace wearable components,
- ▶ Ergonomic handle design makes it comfortable to grip and move from site to site.
- ▶ Internal filter helps protect the machine from harmful foreign objects.
- ▶ One-year warranty

MICRO RAPTOR



Recovery capabilities	Vapor, liquid, push/pull
Compressor	Oil-less
Motor	Direct drive 1/3hp, high efficiency
Size	310mm x 175mm x 235mm
Weight	8kgs
Electrical	220-240V 50 Hz
Approvals	ARI-740, UL, CE
Warranty	1-year

Recovery Ratings			
	Vapor	Liquid	Push/Pull
R-22	.105	0.848	3.34

RAPTOR

Raptor (RG6000) Refrigerant Recovery Machine

Advantage RG6000

Refrigerant recovery the only way HVAC/R professionals know time is money. The more time spent doing one job means the less money earned performing another job. The new Promax RG6000 is design to help save time and put more money in your pocket.

Best Performance

The RG6000 is built for speed and does not disappoint. Designed to provide the best refrigerant recovery speeds in all conditions, the new twin cylinder design provides greater throughput of both refrigerant liquid and vapor.

Rugged and Tough

The RG6000 is designed and built to last even in the most extreme conditions. The case is designed for maximum durability. An oversized condenser helps the machine run cool in extreme temperatures.

Easy to Carry

The RG6000 is light in weight and includes a padded handle grip for easier carrying to and from the job site.

Service Made Easy

Everyone knows that even the best built products eventually wear out and need to be repaired. When that time comes with the new RG6000 the process is quick and simple. In as little as 25 minutes using some basic tools, the entire unit can be taken apart and rebuilt.

RG6000 Features:

- ▶ Fast - Save time on each job with best in class recovery performance
- ▶ Easy to carry. Compact package that is small and light.
- ▶ Rugged. Designed to withstand the rigors of daily use in extreme conditions
- ▶ Easy to Use. Large oversized pressure gauges are easy to read
- ▶ Convenient. Self purge manifold makes it easy to prepare the machine for the next job
- ▶ Field Serviceable. Easy to disassemble and repair with kits available to replace wearable components helping limit downtime.
- ▶ Ergonomic handle design makes it comfortable to grip and move from site to site.
- ▶ Internal filter helps protect the machine from harmful foreign objects
- ▶ Proprietary dual cylinder "oil-less" compressor is capable of handling both liquid and vapor.
- ▶ High pressure safety shut-off switch - If system pressure rises above 550 psi, the unit shuts off. The shut-off switch automatically resets itself after pressure drops below 400 psi.
- ▶ **Works with all CFC, HFC, HCFC refrigerants including R-410A.**
- ▶ One year warranty



RG6000

Recovery Ratings per UL ARI-740-98*

* UL and ARI tests are a level field comparison method. In other testing conditions, machines can exhibit much higher rates

	lbs./min			kg/min		
	Vapor	Liquid	Push/Pull	Vapor	Liquid	Push/Pull
R-22	0.55	7.78	15.72	0.25	3.53	7.13
R-410A	0.35	6.04	16.76	0.16	2.74	7.60
R-134A	0.40	5.05	11.13	0.18	2.29	5.05
R-407A	0.53	6.94	16.01	0.24	3.15	7.26

Specifications

Capabilities	Push-Pull, Liquid, Vapor
Motor	3/4 hp, Direct Drive
Weight	27lbs (12.25kg)
Dimensions	17"L x 9"W x 12"H (43cm x 23cm x 30cm)
Approvals	UL (ARI-740) CE & TUV - pending
Warranty	1 Year

ROB-25700-A Robinair Recovery Unit

- ▶ SAE J2851 HFO Recovery Equipment
- ▶ Class-1 Flammable gas or vapour
- ▶ Non-arcing make/break components
- ▶ High-pressure cut-off (550psi)
- ▶ 3-row condenser
- ▶ 3/4-HP motor
- ▶ UL design certified

R32

Hydrocarbon Recovery	
	kg/min
Liquid	2.33
Vapour	0.20
Push/Pull	6.41



EVACUATION

14777

Compact Electronic Thermistor Vacuum Gauge

- ▶ Compact, pocket-size – 2.5" x 3"
- ▶ Takes guess work out of evacuation – accurately indicates when system is ready for recharge
- ▶ Designed for use under high vacuum, reads down to 10 microns
- ▶ Easy-to-read LCD, automatically registers smaller numeric segments as system pulls-down
- ▶ 6' long lead and magnetic mounting strip – allows for convenient, easy to read, positioning



Specifications	
Range	25,000 to 10 microns
Vacuum Fitting	1/4" MFL
Power Supply	One 9V battery (included)

Vacuum Pump Oil - Premium

The performance of your pump depends largely on the quality and purity of the vacuum pump oil. Robinair's oil is engineered to maintain maximum viscosity at high running temperatures and to improve cold weather starts. To keep the pump operating at peak efficiency, change the oil frequently. Moisture and other contaminants can quickly deteriorate the purity of the oil, thinning the oil, and reducing the pump's ability to reach deep vacuum conditions.

- 13203 - Quart bottle (12 per case)
- 13203-1 - Quart bottle (Each)
- 13204 - Gallon bottle (4 per case)



R32

15707 - Hydrocarbon Vacuum

Robinair R32 Gas 184l/m (6.5 CFM) 2-Stage Vacuum Pump

- ▶ Thermal overload protection
- ▶ Solid-state encapsulated start mechanism
- ▶ Start components isolated
- ▶ Automatic restart after thermal overload
- ▶ 230V 50Hz
- ▶ 10°C to 60°C operating temperature
- ▶ 40 Microns
- ▶ 1/2HP Motor



14830A

Thermistor vacuum gauge.

- ▶ Solid-state instrument constantly monitors and visually indicates the vacuum level in 10 segments from atmosphere to 50 microns.
- ▶ LCD screen can be read even in direct sunlight and minimizes battery consumption.
- ▶ There are no adjustments to make, no calibrations for atmospheric pressure or altitude.
- ▶ Durable carrying case protects the instrument and has a built-in compartment for storing the 24" charging hose (included).



Specifications	
Range	25,000 to 50 microns
Resolution	in 10 segments
Vacuum Fitting	1/4" FFL
Power Supply	Four "D" cell batteries or optional A/C adapter (not included)
Display	Custom LCD, 10 segments
Weight	2.38 lbs. (1.08 kg) without batteries
Dimensions	10" H x 7.5" W x 3.375" D (25.4 cm x 19 cm x 8.6 cm)

14010A

Thermistor Vacuum Gauge

- ▶ Large analog meter – clearly marked for easy reading of micron levels
- ▶ Indicates actual vacuum level in the system
- ▶ Measures from 25,000 to 0 microns
- ▶ Two operation modes – select between the null method for greatest accuracy or direct meter reading for continuous monitoring of the evacuation process
- ▶ Proven bridge circuit compensates for changes in ambient temperature from 30° to 120° F (-1° to 49° C) and also for variances in battery voltage
- ▶ Rugged Carrying Case, protects unit during transit and use



Specifications	
Range	25,000 to 0 microns
Vacuum Fitting	1/4" FFL
Power Supply	Six "C" cell batteries

Replacement Parts (supplied with product)	Part Number
Replacement Thermistor Tube	17162

CoolTech® Vacuum Pumps & VacuMaster™-Economy Vacuum Pumps

- ▶ Performance tested to meet Robinair's high standards
- ▶ Power and capacity for a wide range of service applications.
- ▶ High CFM rating for fast, thorough evacuation.
- ▶ Two-stage rotary vane design.

Features:

Two-stage Design – Cleans the system more thoroughly than a single-stage pump; the second stage starts pumping at a lower pressure so you can pull a deeper, ultimate vacuum.
Oil Drain Valve – Positioned at the bottom of the oil reservoir and angled for faster, more complete draining.

Oil Fill Port – Makes adding oil simple since the port is accessible from the front or either side. The sight glass on the front of the pump shows you when enough oil has been added.

Heavy-Duty Motor – High torque design for easy startup and efficient operation.

Die-Cast Aluminum Housing – Cast aluminum housings make the pumps lightweight but durable.

Additional CoolTech® Vacuum Pumps Features

Iso-Valve™ – Isolates the pump from the system with just a quarter-turn.

Gas Ballast – Moisture laden air passing through the pump mixes with relatively dry air to such a degree that compression does not cause condensation.

Offset Rotary Vanes – Our proven design builds a powerful compression within the pumping chamber to reduce system pressure and vaporize moisture so it can be exhausted along with air.

Molded Base – Durable polycarbonate base improves pump balance and minimizes vibration during operation.



Series 2



	Heavy Duty Motor	Two-Stage Design	Die-Cast	Offset Rotary Vanes	Iso-Valve	Gas Ballast
CoolTech®	■	■	■	■	■	■
VacuMaster™	■	■	■	■		

CoolTech® Vacuum Pumps									
Model	Free Air Displacement	Factory Micron Rating	No. of Stages	Intake Fitting	Oil Capacity	Motor Size	Voltage	Weight	Dimensions (mm)
15401-15444	93 l/m 4CFM	20	2	1/4" & 1/2" ACME	384ml	1/3hp	220V 50Hz	13.2kg	248x381x143
15601-15605	142 l/m 6CFM	20	2	1/4" & 1/2" ACME	384ml	1/2hp	220V 50Hz	13.2kg	248x381x143
15121A-15122A	236 l/m 10CFM	20	2	1/4" & 1/2" ACME	500ml	1/2hp	220V 50Hz	17.2kg	272x142x419
15400	4CFM	20	2	1/4" & 1/2" ACME	384ml	1/3hp	110V 60Hz	13.2kg	248x381x143
15600	6CFM	20	2	1/4" & 1/2" ACME	384ml	1/2hp	110V 60Hz	13.2kg	248x381x143
VacuMaster™-Economy Vacuum Pumps									
15151-S2	35 l/m 1.5CFM	25	2	1/4" & 1/2" ACME 3/8" x 1/2" ACME adaptr.	210ml	1/4hp	220V 50Hz	8.2kg	230x123x316
15301-S2	71 l/m 3CFM	25	2	1/4" & 1/2" ACME 3/8" x 1/2" ACME adaptr.	300ml	1/3hp	220V 50Hz	9.8kg	240x138x336
15501-S2	118 l/m 5CFM	25	2	1/4" & 1/2" ACME 3/8" x 1/2" ACME adaptr.	300ml	1/2hp	220V 50Hz	10.5kg	240x138x336
15701-S2	170 l/m 6.5CFM	25	2	1/4" & 1/2" ACME 3/8" x 1/2" ACME adaptr.	590ml	3/4hp	220V 50Hz	16.1kg	270x145x398
15707 (R32)	184 l/m 6.5CFM	40	2	1/4" & 1/2" ACME 3/8" x 1/2" ACME adaptr.	590ml	1/2hp	220V 50Hz	16.3kg	270x145x398
15801-S2	212 l/m 8CFM	25	2	1/4" & 1/2" ACME 3/8" x 1/2" ACME adaptr.	590ml	1hp	220V 50Hz	16.3kg	270x145x398

34970

Air Vac

The AIR-VAC is a Venturi-type vacuum pump powered by compressed air and designed for mobile air conditioning service.

OPERATING NOTES

A constant air source of 75 psi is required for pump operation. The pump has an air consumption of 4.2 SCFM and will pull a vacuum up to 29.7 inches of mercury at sea level.

Oil or water in the air line will not harm the pump; it will be exhausted through the pump.



Tanks/Oil Injectors

Syringe-Type Injectors

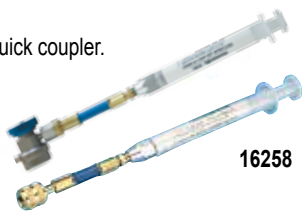
Use these syringe-type injectors to add oil to a fully pressurized A/C system. Just fill the barrel with the amount of oil needed, connect the injector, and press the plunger.

16256 – R-134a oil injector, 1/2" Acme quick coupler.

16258 – Oil injector, 1/4" SAE fitting.

*Not recommended for UV dye injection.

16256



16258

Oil Injectors

It takes just seconds to transfer an oil charge while the system is in a vacuum. The injectors are great add-ons to recovery/recycling and charging.

- ▶ Installs in-line on the low side of the manifold.
- ▶ Made of durable polypropylene with oil levels marked in ounces and milliliters.
- ▶ Solid brass fitting with a Lexan® handwheel.

18065 – Oil injector with 1/4" SAE fitting.

34065 – R-134a oil injector with 1/2" Acme fitting.

*Not recommended for UV dye injection.



34065

18065

CYLINDERS - Australia/NZ

The **34750RA** (R134a)

Cylinders have a two tap valve and separate air purge.



Heater Blanket

- ▶ Speeds charging by raising temperature, thus creating a positive pressure difference between tank and A/C system
- ▶ Fits 30 and 50 pound refrigerant tanks
- ▶ Includes Thermostat – set at 125° F (55° C)
- ▶ Safety thermal cut-off switch protects against overheating
- ▶ 300 watts, 2.6 amps

10994 – Heater blanket, 110V

13184 – Heater blanket, 220V–240V 50 Hz, with internal IEC receptacle.

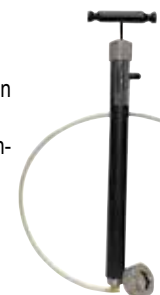


Heater Blanket

14388

Refrigerant Oil Pump

- ▶ Oil-Pump design allows you to add refrigerant oil to a system under pressure
- ▶ Designed for larger systems
- ▶ Siphon hose allows for the removal of old oil, preventing over-charging
- ▶ Pump universally mounts directly to one-gallon containers
- ▶ Allows the pumping of oil directly from the container, keeping oil free from dirt & moisture
- ▶ Pump can remain mounted on oil container during storage
- ▶ Oil is pumped at a rate of 3 ounces (90 ml) per stroke



14388

Refrigerant Tanks - Export Only

17121 – 30 lb. tank, 1/4" fittings (25150, 25175, 25200B, 34234, 34300-2K, 34800 series).

17506 – 50 lb. tank, 1/4" fittings (17800A, 17800-2K, 17700A, 25150, 25175, 25200B series).

17605 – 30 lb. tank with float switch (17650A series).

17572 – 50 lb. tank with float switch.

17686 – 50 lb. tank with 3/8" fitting, float assembly for 17680A series.

34102 – 30 lb. tank for R-134a (34234, 34300-2K, 34800, 34134A, 34134-2K series).

34579 – 30 lb. tank (34650 series).

34750 – 50 lb. tank for R-134a (34700 series).



17121



17506



17605



17572



17686



34102



34579



34750

TIF9030

Compact Refrigerant Scale

- ▶ New molded design, easy to carry and storage
- ▶ Capacity up to 220 Lbs (100 Kg)
- ▶ High accuracy (± 0.5 oz) and resolution (0.1oz)
- ▶ Display provides Lbs/oz; decimals Lbs and Kilograms measurements
- ▶ 9V Battery powered
- ▶ Platform adapts to most existing tanks (9" x 9")
- ▶ 3 Control keys: ON/OFF, Automatic zeroing and measurement units
- ▶ Charging and Recovery capabilities
- ▶ CE approved
- ▶ One year warranty
- ▶ Optional Soft Carry Case TIF9031



9010A

Slimline Refrigerant Scale

- ▶ Touch Key controls
- ▶ Three display modes – Lbs./oz.; Decimal Lbs., Kilograms
- ▶ High Resolution – 0.1 oz./0.005 Lbs./2 grams
- ▶ Extremely Accurate
- ▶ 110 Pound/50kg capacity
- ▶ Auto Zero
- ▶ Removable platform and control box with prop stand/hanging hook
- ▶ Compact design, completely portable
- ▶ Can be used with all refrigerants
- ▶ Removable control box with prop stand/hanging hook
- ▶ CE approved
- ▶ Two year warranty



ATP9060E

Jumbo Scales

- ▶ Heavy-Duty Aluminium 150kg Scale
- ▶ Large 6-Digit LCD Display
- ▶ Large platform 350 x 260mm
- ▶ Easy to carry
- ▶ Easy to use
- ▶ Rugged and compact anodized aluminium case
- ▶ Resolution 10g/0.05lbs/0.5oz
- ▶ Select from three units:kgs, lbs and lbs/oz
- ▶ 9V battery power supply
- ▶ 3 function buttons: ON/OFF Switch, zero reset, units select



TIF9055

Programmable Charging/Recovery Meter

- ▶ 220 pound OR 100 kg capacity
- ▶ Allows automatic Charging or Recovery operations
- ▶ Color-coded keypad controls
- ▶ Three display modes – Lbs./oz.; Decimal Lbs.; Kilograms
- ▶ Very High Resolution – 0.2 oz./0.010 Lbs./4 grams
- ▶ Can be used with all refrigerants, including High Pressure (R-410A)
- ▶ Advanced Charge and Recovery Modes – uses tare weight & Max. capacity of cylinder to calculate maximum Charge/Recovery available
- ▶ User Programmable memory for up to 99 different stored values
- ▶ "Repeat" charge feature
- ▶ Removable platform and control box with prop stand/hanging hook
- ▶ Compact Design – completely portable, battery powered
- ▶ Low battery indicators
- ▶ Five year warranty



TIF9020A

Slimline Refrigerant Scale

- ▶ 200Lb or 100Kg capacity
- ▶ Three display modes, Lbs./oz.; Decimal Lbs.; Kilograms
- ▶ High resolution – 0.2 oz./0.010 Lbs./4 grams
- ▶ Compact design and completely portable
- ▶ Extremely Accurate
- ▶ Auto Zero
- ▶ Removable platform and control box with prop stand/hanging hook
- ▶ Charging and recovery capabilities
- ▶ CE approved
- ▶ Two year warranty



Specifications

	TIF9030	9010A	TIF9020A	TIF9055	ATP9060E
Range	0.000 lbs. to 219.990 lbs., OR 0.000 kg to 100.000 kg	0 lbs. 0.0 oz. to 110 lbs. 0.0 oz., 0.000 lbs. to 110.000 lbs., OR 0.000 kg to 55.000 kgs	0 lbs. 0.0 oz. to 199 lbs. 0.000 lbs. to 199.990 lbs., OR 0.000 kg to 100.000 kg	0 lbs. 0.0 oz. to 219.99 lbs. 0.0 oz., OR 0.000 lbs. to 219.990 lbs., OR 0.000 kg to 100.000 kg	0.000 kg to 150.000 kg
Resolution	± 0.5 oz	0.1 oz./0.005 lbs./2 grams	0.2 oz./0.010 lbs./4 grams	0.2 oz./0.010 lbs./4 grams	0.5 oz./0.050 lbs./10 grams
Accuracy	$\pm 0.5\%$ of reading	$\pm 0.5\%$ of reading	$\pm 0.5\%$ of reading ± 1 digit	$\pm 0.5\%$ of reading	$< 0.5\%$ of reading
Operating Temp	32° to 120°F (0° to 49°C)	32° to 120°F (0° to 49°C)	32° to 120°F (0° to 49°C)	32 to 120° F (0 to 49°)	32 to 120° F (0 to 49°)
Power Supply	9VDC	9VDC	9VDC	Four AA batteries and one 9V battery	1 x 9V Alkaline Battery
Battery Life	30 hours	30 hours	20 hours	30 hours	30 hours
Coil Cord Length	NA	6 ft. (1.8m)	6 ft. (1.8m)	NA	NA
Max. Solenoid operating pressure	NA	NA	NA	500 psi	NA
Inlet/Outlet Ports	NA	NA	NA	1/4" MFL and 1/2" ACME adapters	NA

DIAGNOSTIC INSTRUMENTS

16009

DiscovR Refrigerant Identifier

The best defense against unknown refrigerant and the risks associated with unknown refrigerant is a refrigerant identifier. With the new Robinair 16009 DiscovR 134a refrigerant identifier you can:

Protect your A/C service equipment. Know whether or not you have acceptable R134a refrigerant before servicing the vehicle with the DiscovR refrigerant identifier.

Guard against costly recovery equipment repairs. Contaminated refrigerant can wreak havoc on any R134a recovery, recycle and recharge machine. The average repair cost is \$300, and in many cases contaminated refrigerant will void the product's warranty. Shield your RRR machine from contaminated refrigerant by using the DiscovR refrigerant identifier before connecting to the vehicle.

Uncover hard to find air contamination. DiscovR refrigerant identifier notifies you when the system contains excessive air.

Fast and Accurate. 'Pass' and 'Fail' lights clearly show if refrigerant is pure enough to be recovered.



16009

16910

CoolTech ID Plus

Identifies refrigerant type and purges damaging air

In addition to dependable refrigerant identification, the ID Plus measures non-condensable gases (air) in the refrigerant, and purges it directly from the tank or system.

- ▶ Displays the actual percentage of R-12, R-134a, R-22, and air in the system or tank.
- ▶ Gives you the option of purging air, if significant concentration is found.
- ▶ Hydrocarbon alarm sounds, if flammable substances are sensed.
- ▶ Parallel printer port allows you to connect a printer for a hard copy of testing results.



16910

Replacement Parts for 16910

16913 – Replacement filter

19713 – R-12 replacement hose

19714 – R-134a low-side coupler, 1/2" Acme female adapter

19716 – R-134a replacement hose

CoolTech ID Plus Specifications

Power Source...115V 60 Hz A/C;

configurable to 220V

Dimensions...27.94 cm x 22.86 cm x 11.43 cm

Weight...740 g

3880X

Video Inspection Scope

- ▶ Easy to see high resolution color image (Resolution = 320x240 pixels)
- ▶ Large 2.5" full color monitor for easy viewing
- ▶ Autofocus camera helps keep the image clear and sharp
- ▶ Waterproof, flexible 36" Staylock™ shaft
- ▶ Small 10mm shaft diameter
- ▶ 5 hours of operation (4-AA batteries included)
- ▶ Video output for optional recording
- ▶ Storage case
- ▶ 1-year warranty



3880

TIF3420**Differential Pressure Meter**

The TIF3420 easily takes differential pressure readings with the dual input pressure manometer. Use to measure differential, absolute and static pressures in most HVAC systems.

Features:

- ▶ Chose the units of measure your most comfortable with – 11 selectable units of measure to choose from.
- ▶ Store MIN/MAX and AVG readings.
- ▶ Rugged design that is easy to grip and hold.
- ▶ Large easy to view LCD display is easy to read from a distance.
- ▶ Zero function lets you correct for any offsets in readings or measurements.



TIF3420



TIF3110

TIF3110**Thermometer/Psychrometer**

The new TIF3110 Thermometer/Psychrometer combines the function of a humidity meter, type-K thermocouple thermometer, and an infrared thermometer into one convenient handheld device. Ideal for quickly checking indoor air quality in offices, production rooms or in warehouses.

Features:

- ▶ Built in Infrared thermometer for non-contact temperature measurement to 932 °F with a 30:1 distance to spot ratio.
- ▶ Type K temperature input for contact temperature measurement to 2500 °F.
- ▶ Display air temperature, relative humidity, dew point and wet bulb temperatures.
- ▶ Highly accurate and dependable readings – within 2% RH.
- ▶ Rugged design that is easy to grip and hold.
- ▶ Large easy to view LCD display is easy to read from a distance.
- ▶ Rugged carrying case.
- ▶ Display modes in °F or °C

**TIF3220****Thermo-Anemometer and IR Thermometer**

The new TIF3220 measures air speed and temperature. It is ideal for spot air flow measurements at various air returns and vents.

Features:

- ▶ Simultaneously display both air flow or air velocity and ambient temperature measurements.
- ▶ Easy to set area dimensions that can be stored in the meters internal memory and recalled during the next use of the instrument.
- ▶ Built in Infrared thermometer for non-contact temperature measurement to 932 °F with a 30:1 distance to spot ratio.
- ▶ Rugged design that is easy to grip and hold.
- ▶ Large easy to view LCD display is easy to read from a distance.
- ▶ Store MIN and MAX readings. Hold specific readings with the data hold function.
- ▶ 3 ½ ft cable connects the vane sensor to the instrument making it easy to reach ceiling vents.
- ▶ Display modes in °F or °C



TIF3220

DIAGNOSTIC INSTRUMENTS

TIF3310

Thermocouple Thermometer

The TIF3310 easily takes differential temperature readings with the dual type-K thermocouple probes.

Features:

- ▶ Use contact differential temperature measurements (T1-T2) to display HVAC Superheat measurements.
- ▶ Rugged design that is easy to grip and hold.
- ▶ Large easy to view LCD display is easy to read from a distance.
- ▶ Store MIN/MAX and AVG readings.
- ▶ Includes 2 bead type wire temp probes, rugged carrying case, and 9V battery.
- ▶ Display modes in °F or °C



TIF3310

TIF3320 / TIF3320A

Thermocouple Thermometer and IR

The TIF3320 easily takes differential temperature readings with the dual type-K thermocouple probes plus non-contact surface temperatures using the IR thermometer probe (included in item TIF3320).

Features:

- ▶ Use contact differential temperature measurements (T1-T2) to display HVAC Superheat measurements.
- ▶ Display temperature differentials between both contact and IR temperature readings (T1, T2, T3).
- ▶ Rugged design that is easy to grip and hold.
- ▶ Large easy to view LCD display is easy to read from a distance.
- ▶ Store MIN/MAX and AVG readings.
- ▶ Use the IR thermometer probe to measure noncontact surface temperatures up to 1022 °F. Laser pointer helps you locate your target easily.
- ▶ Includes 2 bead type wire temp probes, IR Thermometer probe (TIF3320), rugged carrying case, and 9V battery.
- ▶ Display modes in °F or °C



TIF3320



TIF3320A

TIF7201

Pocket IR Thermometer

- ▶ System-on-a-Chip SoC technology: compact and lightweight
- ▶ Backlit LCD display w/ dual readings
- ▶ °C / °F Switch and MAX function
- ▶ Auto power off after 15 sec.
- ▶ Battery level indication
- ▶ Distance to spot (D/S): 1:1

Applications:

- ▶ Automotive • Electrical
- ▶ General home use • HVAC/R

Available in 4pk. display: TIF7201D
(Includes 4 of the TIF7201)



TIF7201

3665

Phototach (Contact/Non-Contact)

- ▶ Can be used as a contact as well as a non-contact tachometer.
- ▶ Four styles of contact adapter tips clip easily to the top of the phototach.
- ▶ Infrared technology makes the phototach accurate, convenient, and easy to use.
- ▶ Infrared beam not affected by ambient light.
- ▶ Non-contact design results in zero torque loss for true precision.
- ▶ Phototach is equipped with a laser pointer for accurate targeting.
- ▶ Reflective tape placed on a revolving object can be measured at distances from 2" to 20".
- ▶ Wide measuring range and high resolution, 2.5 to 99,999 rpm with a large 5-digit display, autoranging, min/max memory storage, and low-battery indicator.



3665

TIF7620, TIF7612, TIF7610 IR Thermometer PRO

- ▶ Complete IR design is incorporated inside of a single chip, reducing space and creating a compact and light weight product.
- ▶ Innovative optical lens – accurate measurements; wide temperature range.
- ▶ Laser pointer – Easy to define the target area to be measured.
- ▶ Extend temperature – TIF7612 and TIF7620 have a thermocouple. interface that can extend the temperature up to 1999°F.
- ▶ Simple and easy to operate – Simply point at desired target and press the trigger button for a temperature reading.
- ▶ Set alarm temperatures (Low and High Temperatures) to receive alert information when the set points are measured out of the range (TIF7612 and TIF7620 only).
- ▶ (MAX), (MIN), Difference between MAX and MIN (DIF), and average (AVG) modes are available in TIF7612 and TIF7620.
- ▶ The new TIF IR thermometers incorporate visual low battery indication and simple operation of two “AAA” batteries.



TIF7610



TIF7612



TIF7620

Specification	TIF7610	TIF7612	TIF7620
Measurement Range	-60 to +500°C (-76 to +932°F)	-60 to +500°C (-76 to +932°F)	-60 to +760°C (-76 to +1400°F)
Thermocouple Measurement Range	N/A	-64 to +1400°C (83.2 to +1999°F)	
Accuracy: Tobj=59°-95°F (15-35°C) Tamb=77°F (25°C)	±1.8°F (1.0°C)		
Accuracy: Tobj= -27-932°F (-33-500°C) Tamb= 73°F ±5°F (23 ± 3°C)	±2% of reading or 4°F (2°C) whichever is greater		
Thermocouple Accuracy	N/A	±1% of reading or 1.8°F (1°C) whichever is greater (Test under Tamb=73±11°F[23+6°C])	
Emissivity	0.95 fixed	Adjustable	
Resolution: 14.2° F~199.9° F (-9.9~199.9°C)	0.1°F/0.1°C (1° below 9.9 and above 199.9)		
Spectral Response	5 ~ 14μm	8 ~ 14μm	
Response Time (90%)	.5 sec		
Distance:Spot	10:1	12:1	20:1
Battery Life	Typ.18 hours		
Dimensions	175.2 x 39.0 x 71.9mm		
Weight	179 grams including batteries (AAA*2pcs)		

A/C SERVICE SOLUTIONS

Analog Thermometers

- ▶ These pocket thermometers include a protective sheath with pocket clip.
- ▶ **10596** -40 to +160F - 1" face
- ▶ **10597** 0 to +220F - 1" face
- ▶ **10945** 0 to +220F - 1-3/4" face
- ▶ **40859** -40 to +70 C - 1" face



43240

Digital Thermometer

- ▶ Compact – with many capabilities
- ▶ Accurate
- ▶ Celsius or Fahrenheit selectable
- ▶ Min./Max. and Hold features
- ▶ Battery saver mode
- ▶ For surface, liquid and air temperatures
- ▶ Durable cover to protect probe
- ▶ -40-200° C)



Accuracy	± 2° F between -14° and 212° F ± 1° C between -10° and 100° C (otherwise ± 3° F or ± 1° C)
Display Resolution	0.1° F/C throughout range
Sampling Time	One second
Battery	One 1.5 Volt, size LR44

43230

180° Swivel-Head Digital Thermometer

- ▶ Compact size – convenient to carry & store
- ▶ Selectable – Celsius and Fahrenheit
- ▶ Reliable readings over entire range
- ▶ For surface, liquid and air temperatures
- ▶ Protective sheath with pocket clip



43230

Temp Range	-58° to 302° F (-50° to 150° C)
Accuracy	± 2° F between -4° and 248° F ± 1° C between -20° and 120° C (otherwise ± 4° F or ± 2° C)
Display Resolution	0.1° between -19.9 and 199.9, otherwise 1°
Sampling Time	One second
Auto Power off	10 minutes
Battery	One 1.5 Volt, size LR44
Probe Cord Length	36" (91.4cm)

Charging Stations

Our popular charging station is equipped with the components necessary to evacuate and recharge to factory specifications. And you have flexibility with the equipment fitted

Standard Equipment

- ▶ Heavy Duty Trolley - This attractive Robinair trolley will keep your equipment organised and portable.
- ▶ 4 Way Manifold- Diagnose, evacuate and charge an A/C system without switching hoses, making service work faster and more convenient.
- ▶ Hoses & Couplers- 72" Service Hoses with R134a Couplers, Quickseal fitting on supply hose 72" and 36" standard hose for evacuation
- ▶ Durable wheels- Keeping you portable
- ▶ Cylinder Safety strap- Durable strap makes it easy to move without removing the cylinder

9020A is a slimline charge scale with 100kg capacity with a Auto-Zero function.

CHOOSE YOUR VACUUM PUMP

CoolTech® Vacuum Pumps & VacuMaster™-Economy Vacuum Pumps

- ▶ Performance tested to meet Robinair's high standards
- ▶ Power and capacity for a wide range of service applications.
- ▶ High CFM rating for fast, thorough evacuation.
- ▶ Two-stage rotary vane design.



9020A



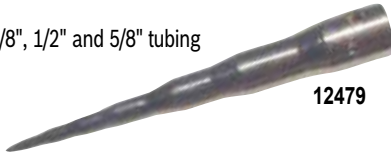
	Heavy Duty Motor	Two-Stage Design	Die-Cast	Offset Rotary Vanes	Iso-Valve	Gas Ballast
CoolTech®	■	■	■	■	■	■
VacuMaster™	■	■	■	■		

Model #	Scale	Vacuum Pump	Hose Type
13206RT-2D	STANDARD (ADS-100)	VACUMASTER 118lt/m (15501)	72" R134a with service couplers
13206RT-2E	STANDARD (ADS-100)	VACUMASTER 180lt/m (15701)	72" R134a with service couplers

12479

Six-in-One Swaging Tool

- ▶ One convenient tool, forms solder cups on six (6) different sizes of tubing
- ▶ Made of fatigue proof steel
- ▶ Works on 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" tubing



12479

42022

Mini Tubing Cutter

- ▶ Short swing radius for tight spots
- ▶ Wide capacity range
- ▶ For 1/8" to 1-1/8" O.D. tubing



42022

42024

Mini Tubing Cutter

- ▶ Smallest cutting radius in the industry
- ▶ Ideal for extremely tight places
- ▶ Fine thread screw provides easier tightening
- ▶ For 1/8" to 5/8" O.D. tubing



42024

42028

Tubing Cutter with Deburring Tool

- ▶ Aluminum alloy body and nickel-chrome durable finish
- ▶ Includes tubing deburring tool located on the head of cutter
- ▶ For use on cooper, aluminum, steel and stainless steel tubing
- ▶ Wide capacity range
- ▶ For 1/4" to 1-1/2" tubing



42028

42035

Slip-Adjust Tubing Cutter

- ▶ All metal construction
- ▶ Spring-loades cutting tool for faster cutting
- ▶ Two locations for spare cutting wheels (included)
- ▶ Includes attached reaming tool
- ▶ For 1/4" to 2" ubing



42035

Ratcheting Tubing Cutter

- ▶ Designed for confined spaces
- ▶ Unique ratcheting action operates like a socket ratchet but cuts copper, aluminum, stainless steel, and PVC
- ▶ Spring-loaded adjusting screw applies continuous pressure while cutting.

42071 - Ratcheting tubing cutter for 1/8" to 1/2" tubing.

42080 - Ratcheting tubing cutter for 1/4" to 7/8" tubing.

42090 - Ratcheting tubing cutter for 1/4" to 1-1/8" tubing



42071

42080

42090

18548

4-In-1 Tube Bender

- ▶ Bends four sizes of soft or annealed tubing
- ▶ Prevents crimping, flattening or scratching
- ▶ Calibration allows duplication of any angle
- ▶ Long handles (8-1/2") no extensions required
- ▶ "Glass/plastic" construction combines strength with lightweight durability
- ▶ For use on 3/16", 1/4", 5/16" and 3/8" tubing



18548

6515

Three-in-One 180° Tubing Bender

- ▶ Capable of making 180° bends in copper, brass, aluminum and steel tubing
- ▶ Just one tool works on three sizes of tubing 1/4", 5/16", 3/8"



6515

Double Flaring Tool Set

6506

- ▶ Also performs 45° single flares on 4mm, 4.75mm, 6mm, 8mm,

10mm, 12mm, and 14mm copper, aluminum, brass, and magnesium tubing.

- ▶ Includes tubing cutter and adapters for doubleflaring 4mm, 4.75mm, 6mm, 8mm, and 10mm tubing



6506

6503

- ▶ Also performs 45° single flares on 3/16", 1/4", 3/8", 7/16", 1/2", and 5/8" copper, aluminum, brass, and magnesium tubing.
- ▶ Includes tubing cutter and adapters for double flaring 3/16", 1/4", 5/16", 3/8", and 1/2" tubing

4503

- ▶ Designed for double or single flare in copper, aluminum, soft steel brake line, and brass tubing (to 45 degrees).
- ▶ Includes five adapters 3/16" through 1/2" (4.8mm through 12.7mm).
- ▶ Chrome swivel, made of alloy steel reduces friction.
- ▶ Forged yoke made of heat-treated steel.
- ▶ Housed in a blow-molded storage case.

4503

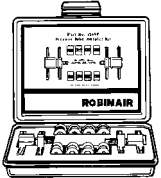


GENERAL TOOLS

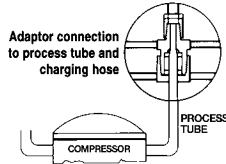
12458

Process Tube Adapter Kit

- ▶ Kit provides the quickest and easiest means of connecting charging lines to process tubes for evacuating and recharging a system
- ▶ Assures an absolute seal between tubing and the charging hose
- ▶ Eliminates the need for flaring and the possibility of metal chips getting into the system
- ▶ Includes Carrying Case with individual compartments
- ▶ Adapts 3/16", 1/4" 5/16" and 3/8" copper tubing to charging hose



12458



12294

Pinch-Off Tool

- ▶ Patented clamping mechanism quickly and securely pinches off tubing and cloth-reinforced hose
- ▶ Comfortable cushion grip
- ▶ Ideal for closing off compressor process tubes
- ▶ For 3/16", 1/4", 5/16" and 3/8" tubing



12294

7238

Set of four A/C spring-lock

These tools will quickly separate springlock refrigerant pressure lines on the air conditioning systems of 1981 to 2002 Ford vehicles, and 1994 to 2002 Chrysler and Jeep vehicles. Spring-loaded in the closed position to deflect spray that occurs when a line is disconnected.

coupling tools: **7239, 7240, 7241, and 7242.** (3/8", 1/2", 5/8", 3/4")



18403

Fin Straightener

- ▶ Six-in-one
- ▶ Cleans & straightens condenser and evaporator coil fins
- ▶ Each section clearly marked with fin size
- ▶ Compact size, head 3-1/8" in diameter/handle 3 1/2" long

18403 8, 9, 10, 12, 14, & 15 fins per inch



A/C Ratchet Wrenches

11008

Reversible, 1/2" and 9/16" HEX openings on one end, 3/16" and 1/4" SQUARE on the-other

10696

Reversible, four SQUARE openings, 1/4" and 3/16" on one end, 3/8" and 5/16" on the-other

11012

Reversible, with 25° OFFSET, four SQUARE openings, 1/4" and 3/16" on one end, 3/8" and 5/16" on the-other



11012



10696

4497A

Ratcheting Terminal Crimper

- ▶ Heavy-gauge steel crimping tool designed for insulated wire terminals.
- ▶ Ratcheting action crimps terminal to correct tightness on the wire, making crimping fast and easy.
- ▶ Insulated handles with compound mechanical leverage for power.
- ▶ For wire sizes: AWG 22-18 (0.6mm—1.0mm) red terminal; AWG 16-14 (1.3mm -1.6mm) blue terminal; AWG 12-10 (2.0mm—2.6mm) yellow terminal.



4497

4498

7-in-1 Wire Stripper & Crimper

- ▶ Strips insulation off electrical wires ranging from 10 AWG—22 AWG (0.6mm—2.6mm) in diameter. Pliers on tip of jaw for looping or grabbing wire in tight places.
- ▶ Heat-treated steel jaws cut solid or multi-strand wire.
- ▶ Screw cutter shears screws clean, with no thread clean-up required.

Works on machine screw sizes 4-40, 5-40, 6-32, 8-32, 10-24, and 10-32.

- ▶ Crimps insulated and non-insulated wire terminals, 7mm—8mm spark plug wire connectors.



4498

4505

Bushing Driver Set

- ▶ Enables you to remove and install bushings ranging from 3/8" to 1-3/8" in diameter, # Includes: Large, medium, and small driver handles with nuts; sixteen bushing adapters ranging from 3/8" to 1-3/8".
- ▶ Housed in a blow-molded storage case.



4505



4507

4507

Bearing Race & Seal Driver Set

- ▶ Permits installation of tapered bearing races and seals without damage to the component or housing. Includes a driver handle plus popular bearing and seal drivers, ranging from 1.565" to 3.180".
- ▶ Tapered side of driver is used to install races. Invert the driver to the flat side to install seals. Set is housed in a blow-molded plastic storage case.
- ▶ Includes driver handle with bolt, plus these tool sizes: 1.565", 1.750", 1.965", 2.325", 2.470", 2.555", 2.830", 2.995", and 3.180".

4502**Hose Clamp Plier Set**

- ▶ Includes a cross-slotted jaw pliers and a wide, flat-band hose clamp pliers. Services most ring-type or flat-band hose clamps.
- ▶ The clamps are held open with a ratchet locking mechanism. Jaws swivel to access hose clamps in any position.

**4510****Hose Pinch-off Pliers Set**

- ▶ Shuts off flow through vacuum lines, fuel lines, coolant lines, etc.
- ▶ Cocking ratchet mechanism holds pivoting jaws tightly in place. Heavy-duty swivel jaws pivot to assure parallel pinching.
- ▶ Contents of set:
 - ▶ 8" tool for small hoses and tight areas
 - ▶ 10" tool for radiator and vacuum lines
 - ▶ 12" tool for radiator and vacuum lines

**4509****Straight-Blade Hose Cutter**

- ▶ Cuts rubber hoses ranging from 1/4" to 1-1/2".
- ▶ Simply place hose in tool and squeeze handle to cut.

**4411****"Guillotine" Hose Cutter Tool**

- ▶ Hooks and cuts plastic lines and rubber hoses from 1/8" to 1" diameter. Simply hook hose in V-shaped end, and squeeze handle to cut. Compound mechanical leverage provides power. Spring-loaded blade returns to open position after use, so blade is not exposed.
- ▶ Linear design with hook feature reaches, grabs, and cuts hoses in tight areas.

**4600****Punch & Chisel Set**

- ▶ Durable set of heat-treated chrome vanadium steel punches and chisels. Storage tray included.

**Set Includes, (also available separately):**

- ▶ 3 – Cold chisels (with gauge): 3/8" x 5-1/2"; 1/2" x 6"; 5/8" x 6-1/2"
- ▶ 2 – Center punches: 1/8" x 5"; 3/16" x 6"
- ▶ 5 – Pin punches: 3/32" x 4-1/4"; 1/8" x 4-3/4"; 5/32" x 5"; 3/16" x 5-1/4"; 1/4" x 5-3/4"
- ▶ 5 – Taper punches: 3/32" x 5-1/4"; 1/8" x 5-3/4"; 5/32" x 6"; 3/16" x 6-1/4"; 1/4" x 6-3/4"

4512**Snap Ring Pliers Set**

- ▶ For internal or external snap rings; thumbscrew permits quick conversion. Made of heavy-gauge tempered steel. Also includes two stainless steel handled picks.
- ▶ Contained in a blow-molded plastic storage case.

Contents of Set:

.090" tip - straight pliers	.047" tip - straight pliers
.090" tip - 90° pliers	.047" tip - 90° pliers
.070" tip - straight pliers	.038" tip - straight pliers
.070" tip - 90° pliers	.038" tip - 90° pliers
.047" tip - straight pliers	Straight tip pick 90° tip pick

**4514****Mini Snap Ring Plier Set**

- ▶ Small-size pliers for work in tight areas. Service S-ring and R-ring clips, internal or external, straight or angled. Ruggedly built of heat-treated chrome molybdenum steel.
- ▶ Set includes two internal snap ring pliers (one straight, one 45°) and two external snap ring pliers (one straight, one 45°).
- ▶ All pliers have .038" (1.0mm) diameter tips.

**4515****Mini Pick & Hook Set**

- ▶ Sturdy stainless steel points and shafts designed for marking, removing o-rings, accessing snap rings, and performing other tasks. Assorted angle tips allow you to reach awkward locations.
- ▶ Knurled shaft design enhances finger control for delicate jobs.

**4550****Scraper Set**

- ▶ Scrapers feature polished, heat-treated, stiff, stainless steel blades.
- ▶ Handles are ergonomic two-component plastic and feature a non-slip grip and steel bolstered end.
- ▶ Packaged in a storage tray.

Includes: 1-1/4" straight blade, 1-1/4" bent blade, and 2" straight blade.



GENERAL TOOLS

4602

Brass Punch Set

- ▶ Two large, brass non-sparking punches. Ideal for use near precision parts or in locations where sparks from ferrous metal could be hazardous.
- ▶ Includes an 8" punch (5/8" hex, tapered to 3/8") and 10" straight punch (3/4" dia., chamfered at both ends.)



4650

Mirror and Magnet Set

- ▶ Handles telescope from 6-1/2" to 25". Swivel heads allow access to tight areas.
- ▶ Large, rectangular swivel mirror is 2" x 3-1/2", and is attached to one telescoping handle; small mirror is 1-1/4" in diameter, and is interchangeable with magnets on the other handle.
- ▶ Magnets can lift up to 8 lbs.



4651

Screw Extractor Set

- ▶ Removes broken studs and bolts.
- ▶ Includes ten guide bushings, five drill bits and five screw extractors with extractor nuts.
- ▶ Drill bits are left handed to help removal.



4605

Punch & Chisel Set

- ▶ Safety protective handle allows easy grip and protects hand from being hit by hammer.
- 12 punches and chisels included:**
 5 flat chisels: 1/2", 5/8", 3/4", 7/8", and 1" wide blades
 1 cape chisel: 1/4" wide blade
 2 taper punches: 1/8" and 1/4" diameter
 2 pin punches: 3/16" and 1/4" diameter
 ▶ 2 center punches: 1/8" and 3/16" diameter
 Double locking ball detent holds punch or chisel securely in the driver handle.



4607

1/2" Impact Driver

- ▶ Loosens hard-to-turn screws, bolts or nuts.
- ▶ Handle design prevents possibility of hitting hand with hammer when striking impact driver.
- ▶ Bit holder 1/2" drive and 5/16" hex for Phillips and flat screwdriver bits.

Includes eight screwdriver bits:

- No. 2 Phillips bit, 1-3/8" long with 5/16" hex
- No. 2 Phillips bit, 3-1/8" long with 5/16" hex
- No. 3 Phillips bit, 1-3/8" long with 5/16" hex
- No. 3 Phillips bit, 3-1/8" long with 5/16" hex
- 5/16" wide x 1-3/8" long with 5/16" hex slotted bit
- 5/16" wide x 3-1/8" long with 5/16" hex slotted bit
- 3/8" wide x 1-3/8" long with 5/16" hex slotted bit
- 3/8" wide x 3-1/8" long with 5/16" hex slotted bit



4608

3/8" Impact Driver

- ▶ Loosens hard-to-turn screws, bolts or nuts.
- ▶ Handle design prevents possibility of hitting hand with hammer when striking impact driver.
- ▶ Bit holder has 3/8" drive and 5/16" hex for Phillips and flat screwdriver bits.

Includes eight screwdriver bits:

- No. 2 Phillips bit, 1-3/8" long with 5/16" hex
- No. 2 Phillips bit, 3-1/8" long with 5/16" hex
- No. 3 Phillips bit, 1-3/8" long with 5/16" hex
- No. 3 Phillips bit, 3-1/8" long with 5/16" hex



4606**Brass Hammer and Punch Set**

- ▶ Brass-head hammer and punches are ideal to use where sparks from ferrous metals would be hazardous, or where precision metal parts could be damaged by steel tools.
- ▶ Hammer head weighs 24 oz.; brass drift punch is 10" x 3/4" diameter; brass tapered punch is 8" x 5/8" hex tapered to 3/8" diameter point.

**Blue Force — Handled Pry Bar Set**

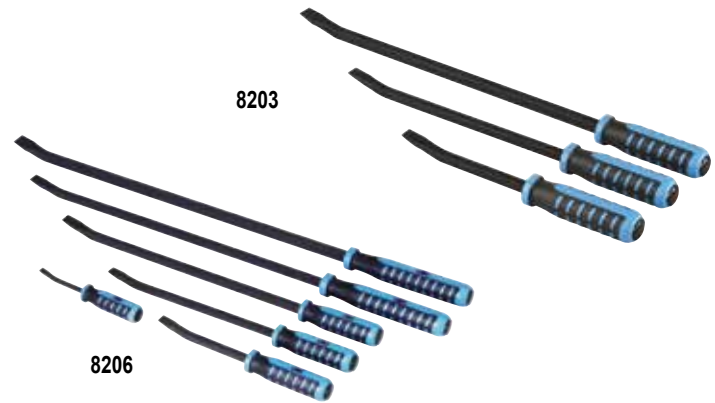
- ▶ Finally, a heavy-duty pry bar made of tempered square steel that you can hit without damaging the handle.
- ▶ Black chrome striking cap allows hitting the bar without damage to the handle.
- ▶ Ergonomic handle – dual durometer composite handle for user comfort; reduces hand fatigue.
- ▶ Polished tip with black oxide finish. Long-life finish resists rust and wear during use.

8203

Set includes 12", 18", and 24" bar shank lengths packaged in a gray molded tray.

8206

Set includes 8", 12", 18", 24", 32" and 36" bar shank lengths packaged in a gray molded tray.



8203

8206

4535**A/C Clutch Hub Remover/Installer Set (13 pc.)**

- ▶ For damage-free removal and installation of the clutch hubs on these air conditioning compressors: GM-Harrison DA-6, HR-5, V-5, A-6, and early R4; Nippondenso Ford/Chrysler A590, C171, FS-6, 6P148A (new style); Sanden & Sankyo; York/Tecumseh HR980; Zexel/Mitsubishi CH series.
- ▶ Set includes a removing flange, plus forcing screws and adapter assemblies to remove and install virtually all clutch hubs.
- ▶ Includes blow-molded plastic case.

4535

**4536****A/C clutch pulley puller set.**

- ▶ For removal of stubborn air conditioning clutch pulleys. Also can be used on many alternator, generator, power steering, and crankshaft pulleys, harmonic balancers, and fiber timing gears.
- ▶ Set includes drop-forged components: one 3/4"-16 x 5" live-center forcing screw, 5-1/2" crossbar with 3 spread settings, two pairs of jaws, and a clamp bolt.
- ▶ Spread: 3" to 5"; Reach: 1" to 5".
- ▶ Includes blow-molded plastic case.

**4537****A/C clutch holding tool.**

This three-stud spanner wrench keeps the A/C clutch from turning when loosening or tightening the retaining nut. Adjusts quickly with brass thumbscrews to fit various styles of A/C compressors used on GM, Ford, and Chrysler vehicles. Also fits a variety of other pulleys.

**18021****Clutch Plate Remover Kit**

This handy kit contains clutch plate removers for a variety of popular A/C compressors. These tools can be used both for removing the clutch plate to gain access to the shaft seal and for re-installing it. The compact design makes it possible to work in tight spots and, in many cases, the tool can be used with the compressor mounted on the vehicle. Contains the following clutch plate removers:

10861 – For GM A6 and R4 compressors

11009 – For Ford FS6 and Chrysler C-171 compressors

41067 – For GM DA6, HR6, and V5 compressors



18021

11009**Clutch Plate Remover**

Designed to overcome resistance when removing the clutch plate.



A/C FLUSHING

17580

A/C Flushing Unit

The 17580 makes flushing of lines, evaporators and condensers fast and easy.

Closed Loop —Circulates solvent continuously through components (adapters are needed).

Pulsing Action — Loosens dirt, corrosion and other debris; by switching the hoses, you can also back flush.

Air Agitation Needle Valve — Bubbles air into liquid stream to enhance cleaning action.

Hose Adapters — Contains adapters to mate with 1/4" flare and 3/8" quick disconnect fitting kits.

Sight Glass — Tank level sight glass for easy filling.

One gallon of flush solvent is recommended for each flush procedure. During the closed loop flush operation, the solvent is filtered through a replaceable filter before being restored to the internal storage vessel. An activated charcoal filter limits odors while solvent is being removed from the component during the purge cycle.

No. **17580** — A/C Flushing Unit. Wt., 110 lbs. (50 kg)

17580



Specifications	
Dimensions	52" H x 33" W x 20" D
Weight	110 lbs. (50 kg)
Supply Pressure	80-150 psi

17595

Flush Gun Kit

An economical means of flushing contaminants and scale from A/C system components, the flush gun uses dry shop air to pressurize the solvent. The process thoroughly cleans the part, removing oil and any refrigerant contaminants and residue. The attached nozzle directs the flow of solvent without spray-back.



17595

10986

Orifice tube remover

Use this hand tool to remove the orifice tube before flushing. Speeds service by removing the build-up of particulates on the orifice screen and restrictions that slow flushing. The basic tool works on GM and Ford vehicles and comes with: an extender body for 1985 and newer Ford models; an adapter for 1989-91 GM "J", "L", and "N" cars; and an adapter for 1991 and newer GM "C" and "K" trucks with #3096068 orifices.



17607

Universal Flushing Adapter Kit

This kit of adapters is designed to isolate A/C system components for closed loop flushing.



17607

Power Flush Solvent

Gives you the cleaning power to flush particulates and system lubricant from A/C and refrigeration lines, evaporators, and condensers. An ideal substitute for CFC-113, it has excellent cleaning properties and good evaporation rate. Compatible with all CFC, HCFC, and HFC refrigerants.

No. **17565** Carton of six Power Flush Solvent 5lt Tin

No. **17565-1** 5lt Tin Power Flush Solvent

17565-1



3665	24	11797	10	16254	6	40162	8	42162	7
3880X	22	11797-C	10	16256	20	40163	8	43133C	8
4411	29	11798	10	16258	20	40169	8	43230	26
4497A	28	11798-C	10	16296	6	40170	8	43240	26
4498	28	11854C	10	16345	6	40174	8	45111	8
4502	29	11855C	10	16348	6	40180	8	45134A	8
4503	27	11910	10	16350	6	40181	8	48134A	8
4505	28	11920	10	16355	6	40182	8	48319	11
4507	28	12294	28	16356	6	40186	8	61402RA	13
4509	29	12458	28	16357	6	40190	8	65060	12
4510	29	12479	27	16380	6	40190C	8	65160	12
4512	29	12821RA	13, 14	16451	7	40191C	8	65260	12
4514	29	12822RA	13, 14	16455	7	40192	8	65360	12
4515	29	12824RA	13, 14	16600	3	40192C	8	68020	12
4535	31	13066	13	16910	22	40194	8	68060	12
4536	31	13067	11	17026	11	40232	11	68420	12
4537	31	13110	13	17121	20	40288	14	ATP9060E	21
4550	29	13139	14	17506	20	40291	14	Micro Raptor	16
4600	29	13142	13	17565	32	40330	14	Minimax-RA	15
4602	30	13143	13	17565-1	32	40333	13	Minimax-RR	15
4605	30	13144	14	17572	20	40336	14	RA1000	7
4606	31	13145	13	17580	32	40380	14	Raptor	17
4607	30	13148	11	17595	32	40384	14	RaptorEX	16
4608	30	13149	10	17605	20	40386	14	RG3000	16
4650	30	13149-C	10	17607	32	40390	14	RG5410A-A	15
4651	30	13184	20	17686	20	40396	14	RG5410AEX-A	16
6503	27	13199-36S	9	18021	31	40398	14	RG5410EX-E	16
6506	27	13199-60S	9	18065	20	40399	14	RG6000	17
6515	27	13199C	9	18180	11	40410	13	ROB-25700-A	17
7238	28	13203	18	18190A	11	40410A	13	RX-1A	4
8203	31	13203-1	18	18191A	11	40416	13	TIF3110	23
8206	31	13204	18	18192	11	40417	13	TIF3220	23
9010A	21	13205-36S	9	18341	11	40419	13	TIF3310	24
9020A	26	13205-60S	9	18403	28	40420	13	TIF3320	24
10250	13	13205C	9	18451	11	40422	13	TIF3320A	24
10292	13	13206RT-2D	26	18501	12	40427	13	TIF3420	23
10293	12	13206RT-2E	26	18511	12	40449	11	TIF7201	24
10296	13	13208C	9	18512	12	40464	14	TIF7610	25
10459	13	13208-KIT	9	18513	12	40472	14	TIF7612	25
10468A	13	14010A	18	18514	12	40479	14	TIF7620	25
10469A	13	14388	20	18548	27	40553	13	TIF8800X	5
10470A	12	14774	13	18560	13	40555	13	TIF8900-A	5
10588	13	14777	18	18561	13	40560A	13	TIF9020A	21
10596	26	14830A	18	18576	11	40563A	13	TIF9030	21
10597	26	15121A	19	19150	11	40572	13	TIF9055	21
10696	28	15122A	19	19695	11	40653B	11	XL-1A	4
10778	12	15151-S2	19	22791	3	40677	11	XP-1A	4
10945	26	15301-S2	19	25175B	14	40859	26		
10986	32	15400	19	25201B	14	41400A	9		
10994	20	15401	19	34065	20	41400A-72A	9		
11008	28	15444	19	34102	20	41670	8		
11009	31	15501-S2	19	34579	20	41671	8		
11012	28	15600	19	34750	20	41676	10		
11724	10	15601	19	34750RA	20	41676-C	10		
11725	10	15605	19	34970	19	41698	11		
11734	10	15701-S2	19	40001	8	42022	27		
11735	10	15707	18, 19	40082	11	42024	27		
11744	10	15801-S2	19	40083	11	42028	27		
11745	10	16009	22	40084	11	42035	27		
11754	10	16208	6	40152	8	42071	27		
11755	10	16234	6	40153	8	42080	27		
11794	10	16235	6	40160	8	42090	27		
11795	10	16249	6	40161	8	42160	7		

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