

# SHOP EQUIPMENT

## Hydraulic Pumps

### Vanguard Jr.® Two-Stage, High-Pressure Power Units

Combines compact size and light weight with 2-stage high performance. Choose from several models with electric motors and many options. Designed for operating pressures up to 10,000 PSI.

Vanguard Jr. gives you just what you need: 2-stage flexibility with high performance, and a selection of units and options that lets you tailor the pump to your needs. Refer to the performance and speed tables below, and you'll see how these pumps cut down the time needed for almost any job. The 2-stage operation automatically matches pump performance to the job requirements. The low-pressure, high-volume stage provides fast ram approach and return. Then at approximately 200 PSI, the high-pressure, low-volume stage takes over to handle high force requirements. These pumps are ideal for hundreds of hydraulic applications such as clamping, bending, straightening, pressing, forming, testing, pushing, and pulling. Each is equipped with a relief valve factory-set at 10,000 PSI (the maximum operating pressure of the pump). Choose from models with electric (115 or 230 volt) motors and options that include remote hand- and foot-operated motor controls, adjustable pressure regulator, and pressure switch. Vanguard Jr. starts easily under load and has been thoroughly field-tested for high cycle reliability.

#### Speed Comparison Chart

The job — Fully extend a 10-ton ram with a 10-1/8" stroke:

Pump No.	5" travel No load	5" travel Under load	Total Time
4031	4 sec.	34 sec.	38 sec.
4002 Hand Pump	141 strokes of pump handle		4 to 5 min.*

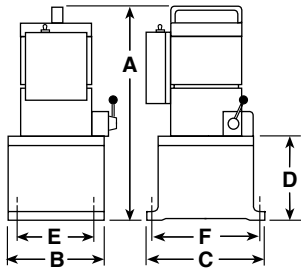
\* Handle effort at max. pressure is 140 lbs.

**No. 4031** – Vanguard Jr. two-stage hydraulic pump with 2-position/3-way valve and 6 ft. remote motor control (specify 115V or 230V). 1 gal. of oil supplied. Wt., 35 lbs., 7 oz.

**No. 4033** – Vanguard Jr. two-stage hydraulic pump with 3-position/4-way valve and 6 ft. remote motor control (specify 115V or 230V). 1 gal. of oil supplied. Wt., 36 lbs.

**No. 4036** – Vanguard Jr. two-stage hydraulic pump with 3-position/4-way valve and run/off/jog motor control (specify 115V or 230V). 2 gal. of oil supplied. Wt., 61 lbs., 7 oz.

Universal Motor  
Version



**Specifications** Note: Dimensions shown apply to pumps with 104 cu. in. reservoir.

A	B	C	D	E	F
16"	6"	8"	4-3/4"	5-1/8"	7-1/8"

#### Performance

The low-pressure, high-volume stage provides fast ram approach. When high force is needed, the high-pressure, low-volume stage takes over. The figures below indicate oil delivery of the electric power unit at various pressure levels.

170 cu. in./min. at 100 PSI    32 cu. in./min. at 1,000 PSI  
25 cu. in./min. at 5,000 PSI    18 cu. in./min. at 10,000 PSI

### Universal Motor Version and Large Reservoir Models

These all have a 10,000 PSI pump and universal motor: 1/2 h.p., 12,000 RPM, 115 or 230 volt (specify), 60/50 cycle A.C. single phase. No. 4036 has an extra-large 2-gallon (462 cu. in.) reservoir to permit full stroke of large displacement rams. Also suited for applications where several rams are used.

Pump No.	For use with:	Control Valve	Reservoir	Motor Control
4031	Single-acting rams	2-position 3-way	.45 gallon 104 cu. in.	Remote 6 ft. cord
4033	Double-acting rams	3-position 4-way	.45 gallon 104 cu. in.	Remote 6 ft. cord
4036	Double-acting rams	3-position 4-way	2 gallon 462 cu. in.	Run/off/jog

### High Capacity Reservoir Conversion Kit









Increase the oil capacity of your No. 4031 or No. 4033 pump with this kit. It gives you a plastic reservoir and everything else needed to give you 462 cu. in. of oil.

**No. 27874** – 2-gallon reservoir conversion kit. 6-1/2" x 9-1/2" x 11-1/2". Wt., 12 lbs., 13 oz.



### Pressure Regulator/Check Valves and Accessories














	OTC No.	Description
	9623	Pressure regulator valve. For remote location in a hydraulic system. Adjusts from 1,000 to 10,000 PSI. Wt. 2 lbs., 2 oz.
	9575	Needle valve for fine metering. Use several for controlling multiple single-acting rams simultaneously, yet independently. 3/8" NPTF ports. Wt., 1 lb., 3 oz.
	9596	Load lowering valve. 3/8" NPTF ports, 10,000 PSI max. operating pressure. Wt., 2 lbs., 3 oz.
	7312	O-ring/oil seal pick. An extremely handy little tool! Makes removal and installation of oil seals and o-rings a snap. Pick has a metal shaft. Wt., 2 oz.
	10461	Remote control foot switch, 10 ft. cord. Press for "on," release for "off." Wt., 2 lbs., 13 oz.
	25017	Remote control hand switch, 10 ft. cord. Press for "on," release for "off." Wt., 1 lb. (Replacement rocker switch only, No.16772)
	9625	Pressure switch. 1/4" NPTF external thread. Wt., 1 lb., 5 oz.

#### Gauges - All gauges have 1/4" NPTF threads

	9650	Pressure and tonnage gauge. Four scales: 0-10,000 PSI, 0-17-1/2-ton, 0-30 ton, and 0-50 ton. 3-1/2" dia. face (Dry). Wt., 8 oz.
	9651	Pressure and tonnage gauge. Four scales: 0-10,000 PSI, 0-55 ton, 0-75 ton, and 0-100 ton. 3-1/2" dia. face (Dry). Wt., 8 oz.
	9652	Pressure and tonnage gauge. Four scales: 0-10,000 PSI, 0-5 ton, 0-10 ton, and 0-25 ton. 3-1/2" dia. face (Dry). Wt., 8 oz.
	9653	Pressure gauge. Two scales: 0-10,000 PSI, and 0-689 BAR. 3-1/2" dia. face. Use with any OTC pump or ram (Dry). Wt., 8 oz.
	9654	Pressure gauge. Two scales: 0-10,000 PSI, and 0-689 BAR. 2-1/2" dia. face. Use with any OTC pump (Dry). Wt., 5 oz.
	9655	Pressure gauge. One scale: 0-6,000 PSI. 3-1/2" dia. face (Dry). Wt., 8 oz.
	9658	Pressure gauge. Two scales: 0-10,000 PSI, and 0-689 BAR. 2-1/2" dia. face. Gauge is filled with glycerin or silicone to dampen vibration and fluid pulsation. Use with any OTC pump or ram. Wt., 8 oz.
	9659	Pressure gauge. Same as 9658 except is liquid filled and has 3-1/2" diameter face. Wt., 14 oz.







#### Adapters and Fittings

	24815	Tee adapter. For installing gauge between pump and hose coupling. Has 1/4" and 3/8" NPTF internal and 3/8" NPTF external.
	25919	Double tee adapter. Permits use of more than one ram in series with one pump. Three 3/8" NPTF ports.

	OTC No.	Description
	9617	Manifold block. For use when a multiple-ram system is required. Has six 3/8" NPTF ports.
	22641	"Y" manifold. Useful when connecting two rams to a single line. Three 3/8" NPTF ports.
	10645	45° fitting. Used when mounting gauge at an angle on connection such as 24815. External and internal 1/4" NPTF ends.
	10469	Swivel connector. 3/8" NPTF external, 3/8" NPSM internal.
	10682	Coupling. Both ends 3/8" NPTF internal.
	10474	Street elbow. Internal and external 3/8" NPTF ends.
	10673	Short nipple. 1-1/2" long, 3/8" NPTF external ends.
	13828	Long nipple. 2" long, 3/8" NPTF external ends.
	10675	Long nipple. 2" long, 1/4" NPTF external ends.
	10647	90° elbow. 3/8" NPTF internal ends.
	10909	Pipe plug. Heat-treated, 3/8" NPTF.
	10479	Pipe plug. Heat-treated, 1/4" NPTF.
	13888	Coupling. Ends - 3/8" NPTF internal and 1/2" NPTF external.

#### Quick Couplers

Precision built and designed for high pressure. Permits disconnecting hose without loss of oil. 3/8" NPTF

	9795	Complete quick coupler
	9796	Ram half coupler and dust cap
	9797	Ram half coupler dust cap only
	9798	Hose half coupler only
	9799	Hose half coupler dust cap only
	9866	Hose or ram half cap

# SHOP EQUIPMENT

## Hydraulic and Bushing Tools



9636

9637


### Hydraulic Oil

Ensure dependable performance of rams and pumps by using this high-grade, specially prepared oil. Contains foam suppressant additives; high viscosity index.

OTC No.	Size	Viscosity	Recommended for use with
9636	1 quart	215 SSU @ 100°F	4000, 4002, 4016, 4017, 4020, 4021, Vanguard, RamRunner and Stinger pumps
9637	1 gallon		

### Hydraulic Hose

Lightweight, rugged hose in lengths to 20 ft. Choose from 1/4" I.D. or 3/8" I.D. high flow hose. All have 3/8" NPTF ends. Operating pressure is 10,000 PSI. Hoses comply with MHI Std. IJ100.



OTC No.	Hose Length	Hose Inside Diameter	Hose Type
9767	6 ft.	1/4"	Braid (2-ply Rating)
9768	8 ft.		
9769	10 ft.		
9770	12 ft.	3/8"	Nylon Core Synthetic Fiber Reinforced *
9780	6 ft.		
9781	10 ft.		
9782	20 ft.	Flow	

\* Note: This hose is not recommended for use where heat or weld spatter conditions exist.

### 80-Ton Capacity Truck Center and End Bushing Service Equipment

For fast, easy bushing replacement on 340, 380, 440, and 450 series Hendrickson suspensions. Recommended by Hendrickson as the only correct method for bushing replacement—eliminates “torching”!

Knock off about six to eight hours when replacing center and end bushings. Center bushings, which often require more frequent service, can be replaced in under two hours, and the beam and wheels stay in place! The No. 1741 and 1742 sets include a hydraulic pump and ram to deliver up to 80 tons of force!

If center bushings are allowed to wear from lack of maintenance, the end bushings may soon fail, which can also lead to excessive tire wear. Correct bushing maintenance with one of OTC’s heavy-duty service sets can save needless parts costs and downtime.

#### Center Bushing Service

Two hours. That’s about what it takes to replace center bushings with this equipment. Best of all, the beam and wheels are not removed.

#### End Bushing Removal & Installation

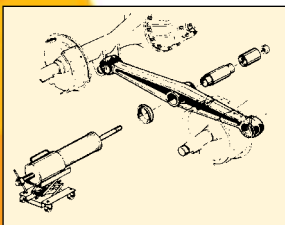
This is almost as easy as center bushing replacement. Of course, the wheels have to be removed first, then the hanger tubes or end beam adapter plugs. (See page 302 for 1743 hanger tube service set and 1745 end bushing adapter service set.) After that, the procedure is much like center bushing replacement. Typically save six to eight hours because the beams are not removed from the truck.

**NOTE:** Hendrickson Mfg. Co. has changed the numerical designations on the following suspension models. These numerical changes **DO NOT** affect service procedures or tooling required to service their suspensions.

Original Model Number	New Model Number
380	400
440	460
450	480
500	650



Order information for center and end beam bushing service sets is below and on the following pages.



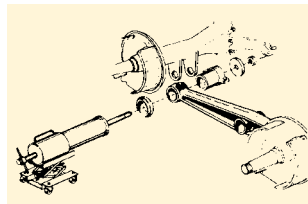
OTC No. 1740 tooling set up for center bushing replacement.

### For 340 thru 450 Series Hendrickson Suspensions

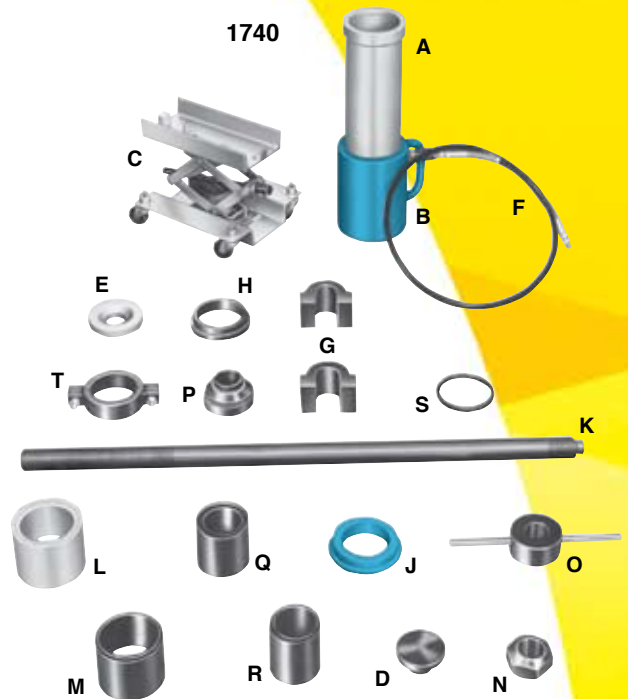
Item	No.	Description
A	44119	Receiving tube
B	51678	80-ton cylinder
C	51695	Jack cart
D	206457	Press adapter
E	206459	Clamp plate
F	303839	Hydraulic hose
G	302018	Spacer (2)
H	302019	Receiving adapter
J	302021	Receiving adapter
K	302023	Pulling screw
L	302026	Installing adapter
M	302027	Removing adapter
N	302028	Hex nut
O	302029	Speed nut
P	302030	Removing adapter
Q	302031	Installing adapter
R	302032	Removing adapter
S	302401	Spacer ring (3)
T	42052	Inst. adapter clamp

### Basic Tooling Set

**No. 1740** – This is the basic tooling set for servicing center and end beam bushings. It does not include the hydraulic pump or gauge. If you are already equipped with hydraulics, you can be replacing bushings right away! (Does not include tooling for hanger tube or end plug adapter removal.)  
Wt., 250 lbs.



No. 1740 tooling setup for end bushing installation.



### Hendrickson Service Sets with Hydraulics

The preferred method for servicing center and end beam bushings. You get the complete No. 1740 basic set, plus OTC's No. 4031 two-stage electric/hydraulic pump with remote hand switch, a No. 9654 pressure gauge, hose half coupler, and 80-ton single-acting ram. (Tooling for hanger tube or end plug adapter removal not included.)

**No. 1742** – Hendrickson service set includes Basic Tooling Set No. 1740 plus hydraulics.  
Wt., 285 lbs.

The method Hendrickson recommends for suspension service. You get the No. 1740 basic set, plus OTC's No. 4062 two-stage electric/hydraulic pump with remote hand switch, a No. 9653 pressure gauge, hose half coupler, and 80-ton single-acting ram. (Tooling for hanger tube or end plug adapter removal not included.)

**No. 1741** – Hendrickson service set with hydraulics.  
Wt., 285 lbs.



For 340 – 450 series  
Hendrickson suspensions;  
includes No. 4031 pump

For 340 – 450 series  
Hendrickson suspensions;  
includes No. 4062 pump



### R400 Center Bushing Adapter Set

Used with OTC's No. 1740 suspension tool set, these adapters let you remove and install the new style R400 center bushings on Hendrickson suspensions. Set includes one No. 310248 removing adapter and one No. 310249 installing adapter.

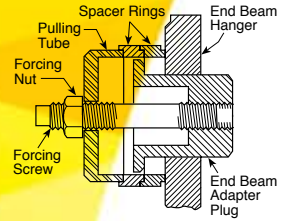
**No. 1746** – Removing/installing bushing adapter set. For R400 series Hendrickson suspensions having center bushing No. 49400 or field service center bushing No. 49600. Wt., 27 lbs., 7 oz.



1746

# SHOP EQUIPMENT

## Bushing Service Tools



1745

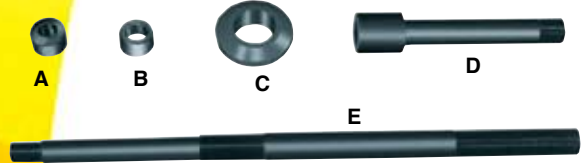
### End Bushing Adapter Puller Set

**No. 1745** – Set contains everything needed to remove end bushing adapter plugs in 380 thru 440 series suspensions. The plugs have to be removed prior to end bushing replacement.

The set is complete in a handy plastic case.

For use with 1740 series tooling sets (order separately). Wt., 9 lbs., 13 oz.

Item	No.	Description
A	207025	Spacers (3)
B	302592	Screw (7/8"-14)
C	302593	Screw (15/16"-12)
D	207027	Screw
E	207026	Plug gauge
F	207030	Hand tap (7/8"-14)
G	207031	Hand tap (15/16"-12)
H	207039	Nut assembly
I	302595	Receiving cup



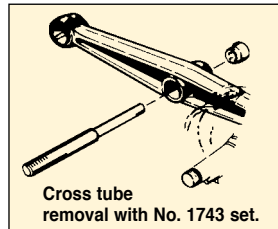
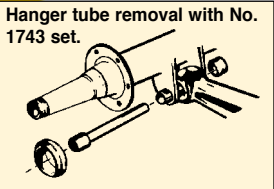
1743

### End Bushing Hanger Tube/ RU Series Center Bushing Service Set

**No. 1743** – Required for servicing RU340 series center bushings. The long puller screw is used to remove the beam cross tube.

The 1743 also removes end bushing hanger tube assemblies. For use with 1740 tooling (order separately). Wt., 44 lbs.

Item	No.	Description
A	25417	Nut
B	206455	Removing adapter
C	302015	Receiving adapter
D	302119	Special screw
E	302020	Pulling screw



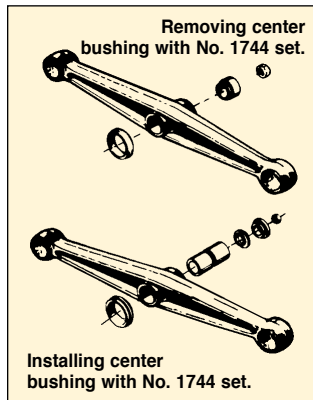
1744

### Bronze Center Bushing Service Set

**No. 1744** – Designed for replacing bronze center bushings on 340, 380, 440, and 460 Hendrickson suspensions. Also installs bronze center bushing grease seals. For use with 1740 series tooling set (order separately). Wt., 15 lbs., 10 oz.

For 340, 380, 440, & 460 series suspensions.

Item	No.	Description
A	28536	Installing adapter
B	28538	Installing adapter
C	302024	Removing/Installing adapter
D	302025	Removing/Installing adapter



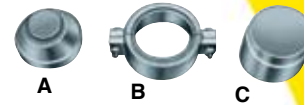
### Center and End Bushing Service Set

**No. 1763** – This set is required for bushing service on 500 and 700 series heavy-duty suspensions. It is intended for use with a 100-ton capacity shop press. It allows replacement of center and end bushings.

Wt., 39 lbs., 11 oz.

**For 500 & 700 series suspensions. Use with a shop press.**

Item	No.	Description
A	208350	Adapter
B	208349	Adapter clamp
C	28541	Adapter



1763

### Bronze Center Bushing Service Set

**No. 1762** – Saves hours replacing bronze center bushings on Hendrickson 500 and 700 suspensions. Use with a 100-ton capacity shop press.

Wt., 17 lbs., 7 oz.

**For 500 & 700 series suspensions. Use with a shop press.**

Item	No.	Description
A	204266	Installing adapter
B	38095	Removing adapter

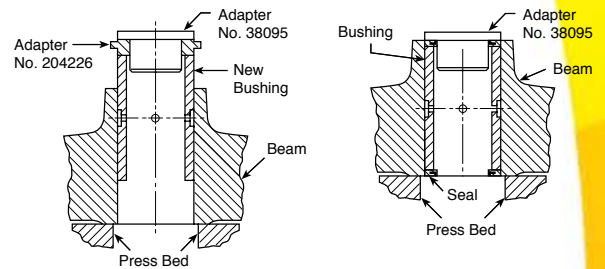


A



B

1762



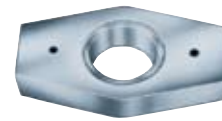
### Center and End Bushing Tool Set

**No. 1764** – This set is the answer for replacing center and end bushings on Hendrickson 340 and 380/440 series suspensions. The 1764 is for use with a 100-ton or larger hydraulic press. The press plate sits on the press bolster to provide a level, cradle-like surface for the beam to rest on during pressing.

Wt., 109 lbs.

**For 340 and 380/440 series suspensions. Use with a shop press.**

Item	No.	Description
A	51100	Press plate
B	302032	Removing adapter
C	302031	Installing adapter
D	302030	Removing adapter
E	42052	Inst. adapter clamp
F	206459	Clamp plate
G	206457	Press adapter
H	302027	Removing adapter
I	302026	Installing adapter



A



B



C



D



E



F



G



H



I

1764





1748



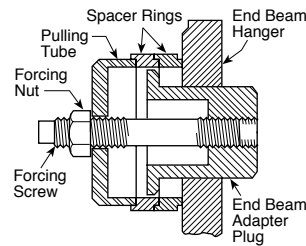
### End Bushing Adapter Puller Set for Hendrickson Truck Suspensions

**No. 1748** – This set contains everything needed to remove end bushing adapter plugs used on 400 series and the larger 460–520 series suspensions. The plugs have to be removed prior to end bushing replacement. The set is complete in a handy plastic case. For use with 1740 series tooling sets (order separately).

Wt., 12 lbs.

**For servicing the 400 and larger 460–520 series suspensions.**

Item	No.	Description
A	207025	Spacers (3)
B	302592	Screw (7/8"–14)
C	302593	Screw (15/16"–12)
D	207027	Screw
E	207026	Plug gauge
F	207030	Hand tap (7/8"–14)
G	207031	Hand tap (15/16"–12)
H	207039	Nut assembly
I	302595	Receiving cup
J	*221378	Hand tap (M30 x 2)
K	*313342	Screw (M30 x 2)



\* For use on 460–520 series adapter plugs (can be purchased separately and used with set No. 1745).

### Hendrickson Bar Pin Adapter Set

Servicing bar pin end bushings used on Hendrickson equalizing beam tandem truck suspensions requires the use of special tooling. OTC's No. 1757 adapter set is used with the beam removed from the truck, and in conjunction with OTC No. 51100 press plate and a 100-ton hydraulic shop press.

The 1757 set, which replaces the No. 1747 set, includes an adapter for installing bushings in older forged beams as well as the fabricated beams introduced in 1999.

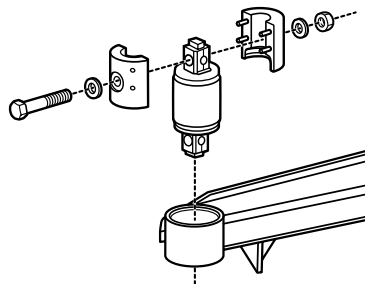
To remove bushings, use OTC's previously introduced No. 302030 removing adapter and No. 206457 press adapter, both of which may be ordered separately. Reinstall bushings following procedures recommended by the suspension manufacturer.

**No. 1757** – Hendrickson bar pin adapter set.

Wt., 18 lbs.



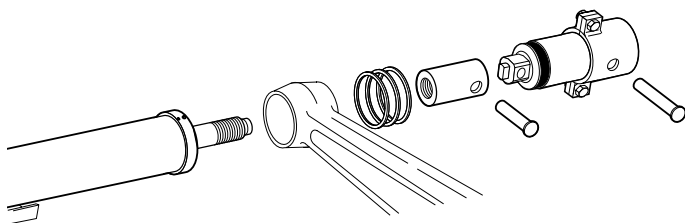
1757



### Hendrickson Suspension Bar Pin End Bushing Adapter Set

Extend your No. 1741 and No. 1742 bushing service equipment sets. You can now remove and install worn end bushings on the Hendrickson new style bar pin end bushings without removing the equalizing beam from the vehicle. The No. 1749 works in conjunction with OTC's No. 1741 and No. 1742 80-ton portable service equipment to do the job quickly, using procedures recommended by the manufacturer.

**No. 1749** – Hendrickson suspension bar pin end bushing adapter set. Wt., 53 lbs.



Item	No.	Description
A	314557	Receiving tube
B	49050	Installer
C	314556	Receiving adapter
D	314558	Pin
E	314559	Pin

### Hendrickson Primaax Quick Alignment Socket

- Hendrickson – Approved tool.
- Used to adjust axle alignment on the Primaax air suspension.
- Works on Primaax models 230, 460, and 690 rear suspensions.

**No. 1767** – Hendrickson Primaax quick alignment socket. Wt., 3 lbs., 8 oz.



1767

### Hydraulic Flow Testers

50 and 75 GPM hydraulic oil flow testers accurately measure oil flow, temperature, and pressures against manufacturers' specifications.

Troubleshoot hydraulic circuits and isolate faulty components on mobile equipment, machine tools, fork lifts, agricultural and industrial tractors, and equipment (open or closed) hydraulic systems with capabilities up to 75 GPM at pressures to 5,000 PSI. Models include features such as an automatic pressure compensating load valve that lets you increase flow without affecting the pressure settings. Temperature flow and RPM readings are displayed in metric or English, and accurate to within plus or minus 2% of full scale. Each tester is protected by a safety disc, which ruptures automatically if pressures exceed the upper limits.

**No. 4221** – 75 GPM hydraulic circuit tester. Comes with two pressure gauges and three 9-volt batteries. Wt., 21 lbs., 3 oz.

**No. 4235** – 50 GPM hydraulic circuit tester with single liquid-filled pressure gauge. Includes two adapter unions for 3/4" NPTF fittings. Wt., 33 lbs.



4221

4235



Fittings, hoses, and tachometer accessories are available separately.



# SHOP EQUIPMENT

## Transmission Jacks



**OTC Stinger**

1521A

**ANSI  
PALD**

### 1,000 lb. Capacity Low-Lift Transmission Jack

- Universal mounting head, with adjustable brackets, tilts front to back and side to side for easy transmission alignment.
- With a height range of 6-1/2" to 29-1/2", it is ideal for today's ground-hugging cars.
- Safety chains hold the load securely, even while moving about the shop.
- Wide, stable wheel base with four swivel casters, and two handle grips make it easy to position under the vehicle.
- Safety overload prevents jack from being used beyond its rated capacity.
- Pump handle rotates a full 360° for use in any position.
- Flash-chromed ram inhibits rust from entering the hydraulic system.

**No. 1521A** – Low-lift transmission jack. Wt., 141 lbs.

Model	Cap. (tons)	Overall Length	Overall Width	Max. Height	Min. Height	Tilt			Weight
						Side	Front	Back	
1521A	1/2	34-1/2"	19-3/8"	29-3/4"	7-1/2"	30°	60°	17°	128 lbs.

**OTC Stinger**



1522A

**ANSI  
PALD**

### Heavy-Duty 2,000 lb. Capacity Low-Lift Transmission Jack...for Class 7 and 8 Trucks

- Rugged, stable unit is ideal for handling heavy transmissions. Includes adapter plate for Eaton® Fuller® RoadRanger® transmissions.
- Low profile design gets under the lowest clearance trucks, making it ideal for clutch repair work. There's even a built-in tool tray on each side rail.
- Pump handle rotates 360° for operator convenience; ball bearing 3.5" diameter swivel casters provide easy positioning of jack.
- Safety overload system prevents use of jack beyond its rated capacity, and a safety bypass protects the hydraulic cylinder from damage. Cylinder features a chrome-plated piston for long life.

**No. 1522A** – Low-lift transmission jack. Includes No. 220492 adapter for Eaton® Fuller® RoadRanger® transmissions. Wt., 328 lbs.

Model	Cap. (tons)	Overall Length	Overall Width	Max. Height	Min. Height	Tilt			Weight
						Side	Front	Back	
1522A	1	43-1/2"	26"	35-1/4"	6-7/8"	11°	24°	18°	287 lbs.

**OTC Stinger**

### Air-Assisted 1,000 lb. Capacity High-Lift Transmission Jack

- Air-assist primary stage for rapidly raising the mounting head, activated by depressing foot pedal.
- Hydraulic secondary stage for precise operator control, activated by a hand pump to raise the load, and a release knob to lower the load.
- Big, easy-to-grip knobs that make mounting head adjustments simple, and a safety chain for securing the load.
- Wide leg base with 4" polyurethane swivel wheels that provide stability and easy maneuvering. (Brakes on two of the wheels.)
- Safety overload system to prevent jack from being used beyond its rated capacity.

**No. 1794A** – 1,000 lb. air/hydraulic transmission jack.  
Wt., 166 lbs., 4 oz.

Model	Max. Load Capacity	Overall Height (low posit.)	Max. Height	Max. Forward Tilt	Max. Backward Tilt	Max. Side Tilt (either side)	Leg Width
1794A	1,000 lbs.	37-5/8"	76-1/2"	42°	46°	±12°	37-1/8"



1794A



### 1,000 lb. Capacity High-Lift Transmission Jack

- Universal saddle tilts front to back and side to side; features adjustable corner brackets and safety chain for optimum positioning of the load.
- Flash-chromed rams inhibit rust from entering the hydraulic system.
- Foot-operated pump and lowering pedal for ease of control when positioning or removing a transmission.
- Wide leg base with 4" polyurethane swivel wheels that provide stability and easy maneuvering. (Brakes on two of the wheels.)
- Safety overload system to prevent jack from being used beyond its rated capacity.

**No. 1793A** – High-lift transmission jack with foot pump.  
Wt., 162 lbs.

Model	Max. Load Capacity	Overall Height (low posit.)	Max. Height	Max. Forward Tilt	Max. Backward Tilt	Max. Side Tilt (either side)	Leg Width
1793A	1,000 lbs.	35"	71-5/8"	24°	19°	±20°	37-1/8"



1793A



# SHOP EQUIPMENT

## Jacks and Wheel Dolly



**OTC Stinger**

215009

1788A

**ANSI  
PALD**

### 22-Ton Capacity Under-Axle Jack

- Self-retracting, spring return feature.
- Long 50" T-handle lets you easily position jack under vehicles with long overhangs.
- One pull of the handle activates the self-retracting 22-ton capacity ram without having to crawl underneath the vehicle. Jack has large rubber-tired wheels.
- Lifting range:
  - Screw Extd. – 8" min./17" max. height with adapter
  - Screw Retd. – 8" min./12-1/2" max. height
- Cylinder stroke, 4-3/4"; extended screw length, 5"; PSI range, 90–145.

**No. 1788A** – Under-axle hydraulic jack with 22-ton capacity self-retracting ram. Wt., 102 lbs.

**No. 215009\*** – In-line oil lubricator. Add to air line to meter precise flow of lubricant to air motor. Has 1/4" NPT fitting. Wt., 8 oz.

\*Not included, order separately. Prevents harmful contamination caused by moisture in the air line!



**OTC Stinger**

1769A

**ANSI  
PALD**

### Truck Dual Wheel Dolly

- This 1,500 capacity dolly will remove, transport, and replace dual wheel and tire assemblies without strain or struggle. Swivel casters, 3-1/2" front and 3" rear, provide easy maneuverability.
- Floor space is 43" by 42".
- No. 1769 hydraulic jack provides over 6-1/2" of lift and tilts wheel assembly 7° to prevent damage to wheel seal.
- Includes a 6' support chain to hold load in place.

**No. 1769A** – Dual wheel dolly. Wt., 187 lbs.

### 5-Ton and 10-Ton Service Jacks

- A built-in safety overload prevents using the jack beyond its rated capacity.
- Convenient foot pedal speeds the lifting operation. Handle lock and release control are located on top of the handle. Handle can be locked into any position from vertical to horizontal.
- Both models have a spring-loaded 40" handle.

**No. 1505B** – 5-ton service jack. Wt., 232 lbs.

**No. 1510B** – 10-ton service jack. Wt., 412 lbs.

### 20-Ton Capacity Service Jack

- Low-profile stance and extended height add to versatility.
- Wheels and swivel casters feature internal bearings.
- Either the foot pedal or jack handle may be used for pumping action. Counter-balanced, spring-assisted handle has a three-position lock.

**No. 1512** – 20-ton service jack. Wt., 505 lbs.

Specifications:	No. 1505B	No. 1510B	No. 1512
Capacity	5-ton	10-ton	20-ton
Lifting range	6" to 22"	6-1/4" to 22"	7-1/2" to 24"
Saddle dia.	5-1/8"	6"	7-1/2"
Overall reach	47"	51"	97"
Frame height	7-3/4"	9-3/4"	10-1/4"
Handle Length	43"	43-1/4"	42"
Floor space	14-3/4" to 56"	18" to 60"	18-1/8" to 61-3/8"

**OTC Stinger**



### 5-Ton and 10-Ton Air/Hydraulic Service Jacks

- Bring the versatility of air-assist operation to your shop's lifting tasks. The 10-ton model can also be operated manually, when shop air is not available.
- Huge front wheels mounted in bearings provide trouble-free service life. Rugged steel frame members.
- Rear swivel casters make spotting the jack easy. Spring-loaded handle may be locked in three positions, from horizontal to vertical.

**No. 1507A** – 5-ton air/hydraulic service jack. Wt., 232 lbs.

**No. 1511A** – 10-ton air/hydraulic service jack. Wt., 330 lbs.

Specifications:	No. 1507A	No. 1511A
Capacity	5 ton	10 ton
Air pressure	80–120 PSI	80–120 PSI
Lifting range	5-7/8" to 22"	6-3/8" to 22"
Saddle dia.	6-5/8"	7-3/8"
Overall reach	87"	90"
Frame height	8"	12-3/4"
Handle length	40"	42"



# SHOP EQUIPMENT

## Service Jacks



1503A



1504A



### 2-1/2 Ton and 3-Ton Service Jacks

- The Stinger series 2-1/2 and 3-ton hydraulic service jacks are designed for the budget-minded shop owner, who still wants the quality of an OTC product.
- Built from select steel, these jacks can stand up to the abuse that jacks are subjected to daily. Yet, their light, compact design makes them easy and convenient to use.
- Each jack has a built-in safety overload system that prevents use beyond its rated capacity.
- With rear swivel casters, maneuvering and positioning of these jacks is an easy task.

**No. 1503A** – 2-1/2 ton service jack with lifting range of 5" to 20". Wt., 80 lbs., 5 oz.

**No. 1504A** – 3-ton service jack with lifting range of 6" to 23-1/2". Wt., 91 lbs., 5 oz.

Specifications:	No. 1503A	No. 1504A
Capacity	2-1/2 ton	3 ton
Lifting range	5" to 20"	5-3/8" to 20-1/4"
Saddle dia.	5"	5"
Overall reach	21"	21"
Frame height	6-1/4"	6-1/4"
Handle Length	37-1/2"	37-1/2"
Floor space	14" x 26"	14" x 26"



1500A



### 3-Ton Stinger Jack Pack

- Pack includes both a No. 1504A 3-ton hydraulic service jack and a pair of No. 1772C 3-ton ratcheting jack stands.
- The stands have a steel base for strength, self-locking ratchet handle, durable baked enamel finish, and conform to ANSI PALD-4 load rating standard. Base: 8-1/4" x 7-1/2". Height range: 11-5/8" to 17-1/8".
- Jack has a light, compact design with a 37-1/2" handle length, and a lifting range of 5" to 20-1/4".

**No. 1500A** – 3-ton capacity jack pack. Wt., 106 lbs., 5 oz.

### Two-Speed 3-1/2 Ton Service Jack

The ideal floor jack for both a large automotive service center or a one person shop.

- Gets to the load quickly.
- One pump to load; three pumps to full height unloaded.
- Extra wide lift range – from 4" to 21".
- A long 48" spring-loaded handle provides rapid return after each pump.
- Heavy-duty construction – rolled edges add strength and resist twisting.
- With a wheel base of 23", the front wheels are 3-1/2" diameter and rear casters are 2-1/8".
- Pinned 4-3/4" saddle will not lift off during use.
- 2-year limited warranty.

**No. 1526** – 3-1/2 ton quick lift service jack.  
Wt., 96 lbs.



OTC Stinger

1526

ANSI  
PALD

### SUV Jack Pack

Pack includes No. 1526, 3-1/2 ton service jack, combined with No. 1773C, 6-ton jack stands.

- One pump to load; three pumps to full height unloaded.
- Extra wide lift range – from 4" to 21".
- 48" long, spring-loaded handle provides rapid return after each pump.
- Heavy-duty construction – rolled edges add strength and resist twisting.
- Gets to the load quickly.
- Pinned 4-3/4" rubber saddle will not lift off during use and minimizes scuffing of lifting surface.
- Stands have a steel base for strength, self-locking ratchet handle, and a durable baked enamel finish.
- 2-year limited warranty.

**No. 1536** – SUV jack pack. Wt., 130 lbs.



OTC Stinger

1536

ANSI  
PALD

### 1-1/2 Ton Racing Jack

- Dual pump pistons – just four pumps get you to maximum height of 18 inches.
- Low profile – 3-1/2 inches – makes it perfect for ground hugging, high-performance cars.
- Weighs just 42 pounds and includes side-mounted handles for quick and easy carrying.
- Aircraft-grade billet aluminum provides strength with maximum weight savings.
- Two-piece, 44-1/2" long handle quickly snaps together.
- Removable, rubber saddle pad protects vehicle and prevents slipping.
- 2-year limited warranty.

**No. 1537** – 1-1/2 ton racing jack. Wt., 42 lbs.



1537

ANSI  
PALD

OTC Stinger

# SHOP EQUIPMENT

## Lifts and Easy Roller



### Motorcycle / ATV Lift

- 1,500 lb. capacity.
- Large, 17" long skids will lift the largest, widest cruisers.
- Lowest clearance available, 3-1/2" at lowest level, with a lift range of 3-1/2" to 16-3/4".
- Removable handle makes for easy movement around load.
- Features also include foot pedal release, locking rear casters, automatic safety lock, and two ratcheting tie down straps for safety.
- Two-year warranty.

**No. 1545** – 1,500 lb. capacity motorcycle/ATV lift. Wt., 74 lbs.



### Easy Roller™ Vehicle Positioning System

The Stinger No. 1580 Easy Roller provides a technician with a simple and efficient method of moving a disabled vehicle around a shop environment. Just position an Easy Roller at each wheel of a vehicle weighing up to 6,000 lbs., and use the foot pedals to activate the hydraulic lift mechanisms. Within minutes, one individual can easily move the car throughout the garage. The Easy Roller fits tread widths up to 12", and the four heavy-duty casters can support up to 1,500 lbs. per unit, while, at the same time, protecting the shop floor from damage.

- Four heavy-duty phenolic casters.
- 1,500 lb. capacity per unit.
- Hydraulic lift mechanism with locking pin.
- Fits tread widths up to 12".

**No. 1580** – 1,500 lb. Easy Roller™ (sold individually). Wt., 44 lbs.



### 4-Ton Capacity Fork Lift Jack

- 8,000 lb. capacity with a low starting height of 2-5/8".
- Two-position lift pad permits handling of all lift truck configurations with flat or edged surfaces.
- Minimum low lift: 2-1/4".  
Maximum high lift: 16-1/4".
- Features include high-quality seals and high-strength steel construction.
- Handle stop makes for easy maneuverability.
- 30" long handle.

**No. 1540** – 4-ton capacity fork lift jack. Wt., 73 lbs.

### Brake Drum Dolly

- Removes, installs, and transports truck brake drums without physically having to lift them.
- Works on all 15" and 16-1/2" drums found on most class 7 and 8 tractor and trailer brake systems.
- 6" height adjustment aids installation.
- Heavy-gauge steel construction, 8" tires, and 36" handle.

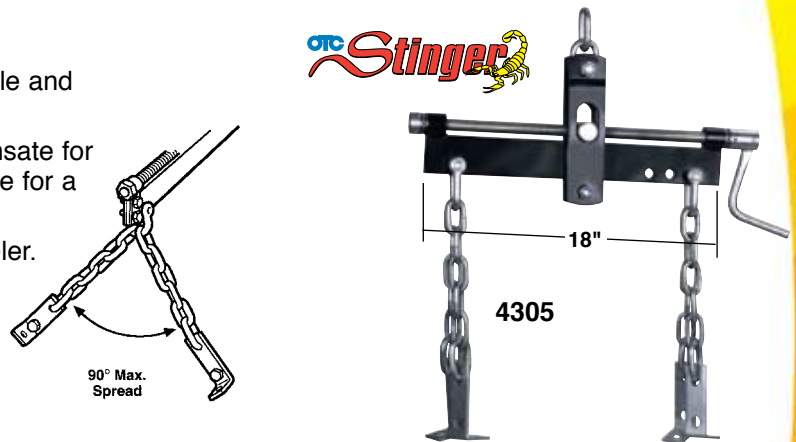
**No. 1543** – Brake drum dolly. Wt., 62 lbs.



### Engine Load Leveler

- Designed to hook to a crane or hoist to handle and position large, bulky components.
- The horizontal tilt can be adjusted to compensate for off-center loads, or adjusted to a certain angle for a component being positioned.

**No. 4305** – 1,500 lb. capacity engine load leveler. Wt., 15 lbs.



### Engine Support Bar

- 1,100 pound capacity.
- Rubber padded support legs ensure stability during use.
- Tubular steel construction for long life.
- Adjustable width: 57" x 27".
- Features two hook assemblies for ease of use.
- Includes two 36" chain assemblies.

**No. 4324** – Engine support bar. Wt., 50 lbs.





# SHOP EQUIPMENT

## Cranes and Engine Support



2002, 2004



### 2,000 and 4,000 lb. Capacity Folding Floor Cranes

- Both of these cranes fold up for compact storage.
- Front wheels are 3-1/2"; rear casters 5-7/8".

**No. 2002** – 2000 lb. capacity crane with a reach of 24" to 36". Wt., 185 lbs.

**No. 2004** – 4000 lb. capacity crane with a reach of 25" to 46". Wt., 225 lbs.

Specifications	2002	2004
Maximum capacity, boom extended	500 lbs.	1,000 lbs.
Maximum capacity, boom retracted	2,000 lbs.	4,000 lbs.
Maximum height, boom extended	94"	104"
Maximum height, boom retracted	87"	81"
Effective boom reach, boom extended	36"	48"
Effective boom reach, boom retracted	24"	26"
Leg width @ front wheels	32-1/2"	25"
Leg height	6-1/2"	7-3/4"
Floor space folded	57" x 38"	16" x 17-1/2"
Floor space unfolded	70" x 32"	33" x 33-1/2"



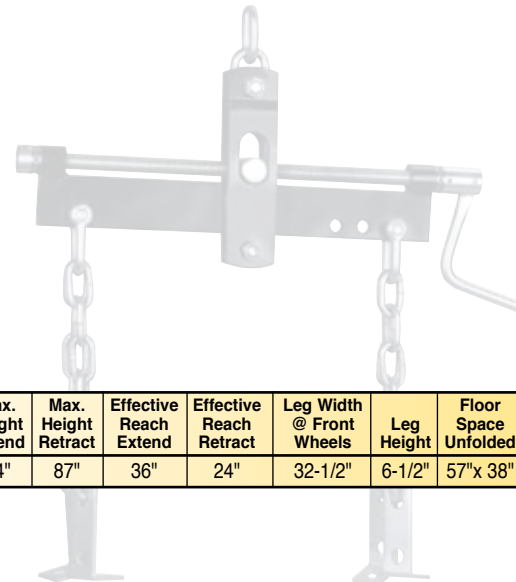
2003

### Engine Lift Package

**Combines a No. 4305 Load Leveler with a No. 2002 Stinger Crane.**

- 1,500 lb. capacity.
- 2,000 lb. capacity crane folds up for compact storage, out of your way.
- Load leveler provides the flexibility you need for pulling engines.

**No. 2003** – Engine lift package. Wt., 210 lbs.



Model	Max. Cap. Boom Extend	Max. Cap. Boom Retract	Max. Height Extend	Max. Height Retract	Effective Reach Extend	Effective Reach Retract	Leg Width @ Front Wheels	Leg Height	Floor Space Unfolded	Floor Space Folded
2003	500 lbs.	1,500 lbs.	94"	87"	36"	24"	32-1/2"	6-1/2"	57" x 38"	16" x 17-1/2"

### 1,000 lb. and 1,250 lb. Capacity Engine Stands

- Heavy-duty mounting plate and adapter arms for servicing light truck and car engines.
- Fixed polyurethane back wheels; poly swivel castors on front for smooth travel.
- 24" handle makes easy work of rotating the engine 360°; hitch pin locks engine in place.
- Model 2012A has a built-in tool tray.

**No. 2010A** – 1,000 lb. capacity engine stand.  
Wt., 51 lbs., 11 oz.

**No. 2012A** – 1,250 lb. capacity engine stand.  
Wt., 73 lbs., 12 oz.

Model	Capacity	Height To Center Line	Length	Width	Wheel Diameter	Front Wheels	Back Wheels	Handle Length
2010A	1,000 lbs.	24"	31-1/4"	26"	3-1/2"	Swivel Caster	Fixed	24"
2012A	1,250 lbs.	24"	33"	33-3/4"	3-1/2"	Swivel Caster	Fixed	24"



### Ratchet-Style Jack Stands

- Formed and welded steel base for strength; self-locking ratchet handle cannot be released under load. Durable baked enamel finish resists corrosion.
- Stands conform to ANSI PALD-4 load rating standard; factory tested before shipment.

**No. 1772C** – Pair of 3-ton jack stands.  
Base: 8-1/4" x 7-1/2". Height range: 11" to 17".  
Wt., 15 lbs.

**No. 1773C** – Pair of 6-ton jack stands.  
Base: 11-7/16" x 10". Height range: 15-3/8" to 24-1/4".  
Wt., 25 lbs.

**No. 1784C** – Pair of 12-ton jack stands.  
Base: 12-5/8" x 11-3/8". Height range: 19-1/2" to 30-3/4".  
Wt., 80 lbs.



# SHOP EQUIPMENT

## Stands & Jacks



2015A  
ANSI  
PALD



2016A  
ANSI  
PALD



2018A  
ANSI  
PALD

### Tripod and Underhoist Stands

#### 4,000 lb. Capacity Underhoist Tripod Stand

- Lifting height of 58-7/8" to 91-5/8"; saddle measures 3-1/4" x 3-1/4".
- 24" x 24" x 24" tripod base.

**No. 2018A** – Underhoist stand.  
Wt., 40 lbs.

#### 1,500 lb. Capacity Underhoist Stand

- Lifting height of 54-1/4" to 80-3/4"; saddle measures 5-1/4" x 1-1/4". 11-7/8" dia. base.

**No. 2015A** – Underhoist stand.  
Wt., 30 lbs.

#### 1,500 lb. Capacity Underhoist Stand with Foot Pedal

- Foot pedal actuated lifting mechanism.
- Lifting height of 54-1/4" to 80-3/4"; saddle measures 5-1/4" x 1-1/4".

**No. 2016A** – Underhoist stand.  
Wt., 35 lbs.



9220B  
ANSI  
PALD



4313A  
ANSI  
PALD

### Air/Hydraulic Bottle Jacks

- Compact, yet heavy-duty units designed for the truck and construction industries; in the shop, roadside, or at the job site.
- Can be operated either manually or pneumatically. Air hose can swivel in any direction of connection from air source. Minimum air pressure required is 100 psi. Safety valve prevents overloading.
- Extension screw gives added height when needed.

**No. 9212B** – 12-ton air-assist hydraulic bottle jack.  
Wt., 31 lbs.

**No. 9220B** – 20-ton air-assist hydraulic bottle jack.  
Wt., 42 lbs.

**No. 4313A** – 12-ton air-assist hydraulic bottle jack.  
Wt., 29 lbs.

**No. 4321B** – 20-ton air-assist hydraulic bottle jack.  
Wt., 45 lbs.

Order No.	Cap.	Min. Height	Stroke	Max. Height	Screw/Adp.	Air Pressure	Base Area
9212B	12	9-1/2"	5-7/8"	18-1/2"	3-1/8"	100–200 psi	4-3/4" x 8"
9220B	20	9-1/2"	5-3/8"	18-1/4"	3-3/8"	100–200 psi	5-3/4" x 8-1/2"
4313A	12	9-1/2"	6-1/8"	18-3/8"	2-3/4"	100–200 psi	6-3/8" x 7-5/8"
4321B	20	9-7/16"	5-7/8"	17-11/16"	2-5/16"	100–200 psi	8-1/32" x 7-1/16"

### Hydraulic Bottle Jacks

- OTC breaks the price barrier! A very competitively priced line of bottle jacks that offers the quality and reliability that the market has come to expect from OTC.
- Jacks can be used in vertical or horizontal positions.
- Fewer working parts, extremely smooth bearing surfaces, and close tolerances ensure long life.
- Oil bypass system prevents the lifting ram from being over-extended.



Cap. (tons)	Stroke	OTC No.	Retracted Height Min.	Length of Screw Extension	Height with Screw Extended	Pump Strokes to Extend Piston One Inch	Saddle Dia.	Base Size	Carry Handle	Weight
5	4-3/4"	9005B	7-7/8"	2-3/4"	15-3/8"	12	1-3/8"	5-3/16" x 3-31/32"	No	8 lbs.
8	4-3/4"	9008B	7-7/8"	2-3/4"	15-3/8"	18	1-1/2"	6" x 3-1/2"	Yes	13 lbs.
12	3-3/4"	9012B*	6-3/4"	3"	13-1/2"	26	1-7/8"	6-1/2" x 4-3/16"	Yes	15 lbs.
12	5-7/8"	9112B	9-1/2"	3-1/8"	18-1/2"	26	1-7/8"	6-1/2" x 4-3/16"	Yes	20 lbs.
20	3-3/8"	9020B*	7-1/8"	1-9/16"	12"	22	2"	7-3/16" x 5-1/16"	Yes	22 lbs.
20	6-1/4"	9120B	10-5/8"	3-1/8"	16-7/8"	22	2"	7-3/16" x 5-1/16"	Yes	30 lbs.
30	6-1/4"	9030B	11"	-	17-1/4"	35	2-3/8"	7-9/16" x 5-9/16"	Yes	45 lbs.
50	6-3/4"	9050B	12"	-	18-3/4"	35	3"	9-5/16" x 7-3/8"	Yes	97 lbs.
2	4-9/16"	4302A	7-3/16"	1-7/8"	13-5/8"	10	13/16"	3-3/4" x 3-3/8"	No	5.8 lbs.
4	4-9/16"	4304A	7-11/16"	2-9/16"	14-13/16"	11	1-1/4"	3-7/8" x 3-9/16"	No	7.4 lbs.
6	6-3/4"	4306A	8-5/8"	2-5/8"	17-1/4"	14	1-3/8"	3-3/4" x 4-3/8"	Yes	10 lbs.
8	5-7/8"	4308A	9-1/16"	3-1/4"	18-3/16"	14	1-3/8"	4-3/4" x 4-1/16"	Yes	13.2 lbs.
12	6-1/8"	4312A	9-1/4"	3-5/16"	18-11/16"	18	1-11/16"	5-1/4" x 4-9/16"	Yes	16.4 lbs.
12 (shorty)	2-13/16"	4314A	6-3/16"	1-5/8"	10-5/8"	23	1-9/16"	5-1/4" x 5-3/8"	Yes	13 lbs.
20	5-9/16"	4320A	9-5/8"	2-1/4"	17-1/2"	26	1-13/16"	5-5/8" x 6-1/4"	Yes	24 lbs.
20 (shorty)	6-3/4"	4322A	6-3/8"	1-5/16"	11-1/4"	26	1-13/16"	6" x 6-1/2"	Yes	18.5 lbs.
32	6-9/16"	4332A	9-15/16"	-	16-1/2"	22	2-1/8"	6-5/8" x 5-1/8"	Yes	34.4 lbs.
50	5"	4350	9-1/2"	-	14-1/2"	40	3-1/4"	7" x 8-1/2"	Yes	64.8 lbs.

\*Low profile models

# SHOP EQUIPMENT

## Pumps and Rams



2510A



### Air/Hydraulic Pump

- 10,000 PSI air/hydraulic pump.
- Internal relief valve.
- Two-stage release mechanism.
- Pump, hold, or release load with pedal control.
- 98 cu. in. useable capacity.
- 3/8 NPT oil port.

**No. 2510A** – Air/hydraulic pump.  
Wt., 21 lbs.



9110A

9104A



### Hydraulic Rams for Collision Repair Sets

These premium quality rams are designed for long, trouble-free service. Backed by a two-year warranty, they feature a special piston rod that permits their use with the snap-together components of OTC Stinger's new collision repair sets, or with most similar competitive products.

**No. 9104A** – 4-ton ram with 4" stroke and special piston rod end designed to fit most collision repair set components. Wt., 4 lbs.

**No. 9110A** – 10-ton ram with 6" stroke and special piston rod end designed to fit most collision repair set components. Wt., 12 lbs.

OTC No.	Cap. in Tons	Stroke	Collapsed Height	Extended Height	Spring Return	Rod End Dia.	Max. Oper. Pressure (PSI)	Oil Cap. (cu. in.)	Oil Port
9104A	4	4"	10-3/8"	14-3/8"	Yes	.874"	8,950	4.97	1/4" NPT
9110A	10	6"	15"	21"	Yes	1.310"	8,950	13.69	1/4" NPT



9106A



9107A

### Single-Speed Hydraulic Hand Pumps

These single-speed pumps are ideal for single-acting rams. Developing up to 10,000 psi operating pressure, the pumps operate horizontally or vertically in the "head down" position. Finger tip control provides instant release or pumping action. Has a built-in safety overload valve. Ideal for use with OTC Stinger single-acting rams, or similar competitive rams.

**No. 9106A** – Hand pump only.  
Wt., 5 lbs., 10 oz.

**No. 9107A** – Hand pump only.  
Wt., 13 lbs.

Specifications:	9106A	9107A
Maximum operating pressure	10,000 psi	10,000 psi
Volume per stroke	0.17 cu. in.	0.17 cu. in.
Reservoir capacity	18 cu. in.	30 cu. in.
Oil port	1/4" NPT	1/4" NPT

### Stinger Series 4- and 10-Ton Collision Repair Sets

- Very competitively priced, yet high quality sets include single-speed hydraulic hand pump, hose, and ram.
- Components snap together for quick setups to apply pushing, spreading, or pulling force.
- Components include: hydraulic pump, hose, and ram; ram flat base; extension tubes (4); 1/2-ton spreader; tube coupling; ram toe; wedge head; serrated saddle; flex head; plunger toe; 90° wedge head; storage case. The case for the 10-ton set has wheels for mobility.

**No. 1513A** – 4-ton collision repair set. Has single-speed hydraulic hand pump and ram with 4" stroke. Wt., 40 lbs.

**No. 1515A** – 10-ton collision repair set. Has single-speed hydraulic hand pump and ram with 6" stroke. Wt., 75 lbs.



### Passenger and Light Truck Wheel Step

- Provides quick, easy access to your vehicle's roof for loading/unloading cargo.
- Fits passenger and light trucks.
- Installs in seconds.
- Adjusts to fit 14" to 20" wheel sizes.
- 300 pound capacity.
- Non-skid platform surface.
- Two-year warranty.

**No. 1534A** – Light truck wheel step. Wt., 12.5 lbs.



### Low Profile Fluid Receiver

- Designed for receiving waste fluid during a wide range of repair jobs.
- Fluid capacity: 7.5 gallons.
- Constructed of polyethylene plastic for heavy-duty use—yet, only weighs 13 pounds.
- Low profile, only 5" high, it easily slides under passenger cars.
- Designed with four casters to provide efficient maneuverability.
- Suitable for cooling system repair jobs—can be used for antifreeze.
- Includes splash screen to prevent spillage and splashing.
- Two-year warranty.

**No. 1577** – Low profile fluid receiver. Wt., 12 lbs., 8 oz.





### Summary of ANSI/ASME PALD, Safety Standard for Portable Automotive Lifting Devices

This standard is intended as a guide to manufacturers, suppliers, purchasers, and operators of equipment, as well as governmental authorities. The following are typical test requirements:

- A: Load Sustaining Test – The lift device shall hold a rated load at maximum height without dropping more than 1/8" in a minute, or more than 3/16" in 10 minutes.
- B: Mobility Test – The lift device must move over a 1/2" high, 15 degree slope rise in the floor and a 1/2" drop back to the floor while traveling at 1-1/2 to 2 ft./sec. and supporting a rated load at the minimum height position. The device must not lose the load or tip over.
- C: Stability Test – The lift device must be moved against a 2" high vertical rise at 90 degrees to the direction of travel, while supporting a rated load at the minimum height and moving at 1-1/2 to 2 ft./sec. The device must not lose the load or tip over when tested at the point of greatest instability.
- D: Proof Load Test – The lift device shall function throughout its lift range with a proof load centrally located on the lift platform. Proof load shall be 125% of rated capacity for devices equipped with an internal relief valve, or 150% of rated load for devices with no internal relief.

	Bottle Jacks	Transmission Jacks Low & High Lift	Engine Stands	Support Stands	Upright Mobile Lifts	Service Jacks	Wheel Dollies	Shop Cranes	High Reach Supplementary Auxiliary Stands	Vehicle Ramps	Forklift Jacks
A Load Sustaining Test	X	X	X	X	X	X	X	X	X	X	X
B Mobility Test		X	X				X	X			
C Stability Test		X	X				X	X			
D Proof Load Test	X	X	X	X	X	X	X	X	X	X	X

# ANSI

# PALD

### Quick Finder Index

Recovery/Recycling Units . . . . .	<b>322–335</b>
Recovery/Recycling Accessories . . . . .	<b>335–336</b>
Oil Injectors . . . . .	<b>336</b>
A/C Flushing . . . . .	<b>337</b>
Refrigerant Identifiers . . . . .	<b>338</b>
Refrigerant Leak Detectors . . . . .	<b>339–342</b>
Combustible Gas Detection . . . . .	<b>343–344</b>
Ultrasonic Leak Detection . . . . .	<b>345</b>
UV Leak Detection . . . . .	<b>346</b>
Thermometers . . . . .	<b>348–350</b>
Manifolds and Hoses . . . . .	<b>351–356</b>
Vacuum Pump Oil. . . . .	<b>357</b>
Vacuum Pumps . . . . .	<b>358–361</b>
Vacuum Gauges. . . . .	<b>363–364</b>
Refrigerant Scales . . . . .	<b>365–366</b>
Dial-A-Charge Charging Cylinders. . . . .	<b>367</b>
Refrigerant Heater Blankets. . . . .	<b>368</b>

Tubing Cutters . . . . .	<b>368–369</b>
Tubing Deburring Tools . . . . .	<b>370</b>
Inspection Light . . . . .	<b>370</b>
A/C Clutch Tools. . . . .	<b>371</b>
Fin Straighteners . . . . .	<b>371</b>
A/C Valve Core Tools . . . . .	<b>372–373</b>
A/C Adapters . . . . .	<b>373</b>
Heat Gun . . . . .	<b>374</b>

**1-800-822-5561**  
**Robinair**  
**Technical**  
**Services**





# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

**COOLTECH**  
2K



342000



Design certified by UL to meet SAE J-2210.

## Automatic Operation

- Automatic Refrigerant Refill
- Automatic Refrigerant Identification
- Automatic Air Purge
- Automatic Oil Drain
- Automatic Clearing after every job

## R-134a Recovery, Recycling, Evacuation, and Recharging

The Industry's Most Advanced Model is also

### The Easiest To Use!

The 342000 automates A/C service from start to finish. Using temperature probes and service hoses, it gives you a snapshot of the system's operation — which can be printed — then verifies the refrigerant type, recovers, recycles, evacuates, and recharges. It even drains system oil once the job is finished.

### Exceptional Accuracy

**Electronic Scale** — Scale is mounted internally and includes built-in dampening of shock loads that occur when the unit is moved over gravel or an uneven floor.

**Microprocessor** — Controls functions; typical evacuation time and recharge amounts are pre-programmed as defaults, but can be easily changed as needed; also signals when it's time to drain the oil container, change the filter-drier or source tank.

**Refrigerant Identifier** — Can save you thousands of dollars by warning you of contaminated or mixed refrigerants. Verifies 98% purity automatically at the beginning of each job.

### Unmatched Speed

**6 CFM Vacuum Pump** — Our CoolTech pump has the power to quickly evacuate the system prior to recharging.

**Heavy-Duty Compressor** — Pulls from both the high- and low-sides for fastest recovery; initial pass through the filter-drier provides single pass recycling.

**Oil Injection** — Lets you replace system oil in seconds through the service hoses, while the system is in a vacuum, with no other connections needed — just press a button.

### All controls are at your fingertips...

**Refrigerant Identifier** — If contaminated refrigerant is detected, recovery is stopped to protect the unit and your shop's refrigerant supply.

**Built-in Printer** — Increases customer confidence, simplifies diagnosis and provides a record of service; just press "Print" to get a hard copy of pressures/temperature, ambient conditions, and other data.

**Plain Language Prompts** — Clearly tells the technician what needs to be done, right down to opening service couplers, or what function the unit is currently performing. Select **English**, **French**, or **Spanish**; also select **pounds** or **kilograms**.

**No. 342000** — CoolTech-2K R-134a recovery, recycling, evacuation, and recharging unit.

### Replacement Parts

**No. 34724** — Spin-On Recycling Filter-Drier

**No. 16913** — Refrigerant Identification Filter

**No. 34215** — Thermal Paper for Printer

**No. J-45268** — Flushing Kit Adapter

Protect your investment with a heavy-duty vinyl dust cover; see page 335.

# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

## CoolTech...takes the guesswork out of A/C service!

Control panel is at optimum angle for viewing during operation; gauges are 4" diameter.

Refrigerant identifier filter is easy to reach for replacement.

Printer provides handy hard copy of vehicle operation data.

Bottle for oil injection mounts on side.

Rounded corners prevent damage to vehicle.

High impact polypropylene is impervious to chemicals commonly used in the shop environment.

Construction is lightweight and durable.

Unique "sidewinder" cabinet with large wheels and casters makes unit easy to position near the vehicle.

Indicator light flashes after each operation is complete.

Large, high resolution display is easy to read.

Keypad is clearly marked and simple to understand following display prompts.

Handle is ergonomically located so the unit moves with less effort.

Rear door opens for access to the filter-drier.

Source tank is readily accessible.

Oil drain bottle is calibrated to show how much should be replaced.

Back of Unit — Two temperature probes with 15' cords are included.

### Takes the guesswork out of A/C service!

**Snapshot Mode** — Shows date/time, minimum low-side and maximum high-side pressures, ambient conditions, refrigerant type, duct temperature, and amount of refrigerant recovered. Results can be printed and shown to the customer.

**Recharging** — Transfers charge in minutes and is accurate, to  $\pm$  one ounce.

**Air Purge** — Tests refrigerant before recovery and continuously monitors refrigerant in the internal vessel; automatically purges air as needed.

**Temperature Probes** — Two probes are included, so there's no need for separate thermometers; you can check both front and back vents for adequate cooling.

**Built-In Diagnostics** — If any operating parameters are incorrect, unit alerts you so corrections can be made.

**Constant Refrigerant Refill** — Maintains 12 to 15 lbs. (5.44 to 6.8 kg) of refrigerant in the internal storage vessel so you'll never have to stop in the middle of a job to refill the tank; all it takes to change the source tank is one fast connection.

### Here's how the 342000 simplifies A/C service...

**Identification** — Active flow control protects the identifier from damaging liquid refrigerant, oil, and other contaminants.

**Recovery** — Automatically restarts if the unit senses a rise in pressure.

**Simple Maintenance** — Filter-drier life is monitored by the microprocessor; when prompted, the unit automatically pumps down and evacuates the filter-drier before and after charging.

**Power Charge** — If the transfer of refrigerant stalls for 30 seconds, the unit goes into an automatic power charge mode, building pressure to force the charge.

### Specifications

Voltage.....	115V 60 Hz
Source Tank.....	30 or 50 lbs. (23 kg) not included
Operating Range.....	50° to 120° F (11° to 49° C)
Recycling Filter-Drier.....	43 cu. in. (710 cc) spin-on
Scale Resolution.....	1/100 lb. (.02 kg)
Dimensions.....	52" H x 33" W x 20" D (132 cm x 83.8 cm x 50.8 cm)
Weight.....	202 lbs. (91.63 kg) without source tank

# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

## COOLTECH 34700Z



34700Z

## R-134a Recovery, Recycling, Evacuation, and Recharging

**Combines simple operation with superior accuracy**

The CoolTech 34700Z recovers, recycles, evacuates, leak tests, and recharges R-134a quickly and accurately.

**Automatic Function** — With this new option, you can program the unit to recover, vacuum, leak test, charge, and then walk away without having to operate panel valves.

**Vacuum Leak Test** — Will monitor the vacuum level after an evacuation, and inform the technician of a possible leak in the vehicle's A/C system.

**Automatic Refrigerant Refill** — With this latest advance, you never have to stop in the middle of a job to change refrigerant tanks. The unit maintains 12 to 15 pounds of refrigerant in an internal vessel, and signals when it's time to change the supply tank, so no monitoring is required.

**Automatic Air Purge** — Eliminates damaging air without any monitoring of gauges or opening of valves.

**Automatic Oil Drain** — The unit automatically drains system oil captured during recovery, and the display reminds you to empty the bottle.

**Refrigerant Charging** — Has never been this easy. Select a charge mode from either the high-side, low-side, or both.

### Accuracy features eliminate guesswork!

**Electronic Scale** — The scale weighs recovered refrigerant and charges by weight for greatest accuracy.

**Internal Storage Vessel** — Refrigerant is recovered into and charged out of this vessel, which is permanently mounted to the electronic scale for continuing reliability.

**Internal Manifold** — A Robinair exclusive, this block manifold contains all the solenoids that control refrigerant flow in and out of the unit, reducing the possibility of leaking connections and eliminating the need to operate panel valves.

**No. 34700Z** — CoolTech recovery/recycling unit.

### Replacement Part

**No. 34724** — Spin-on recycling filter-drier.

**Alpha-numeric menu displays in English, French, Spanish, or Japanese**

DEFAULTS MENU  
3) CALIBRATE SCALE

**Alpha-Numeric Display** — The scrolling display shows messages, so it's clear what your choices are or what needs to be done. You can select English, French, Spanish, or Japanese, as well as pounds or kilograms.

# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

The next generation 34700Z platform is based on the same features, reliability, and robust design as the 34700-2K plus....

**Automatic Operation** allows the technician to program the unit to recover, recycle, evacuate, leak test, recharge, and then walk away without having to operate panel valves.

**Vacuum Leak Test** will monitor the vacuum level after an evacuation and inform the technician of a possible leak in the vehicle's A/C system.

**Large 4" diameter gauges.**

**Tool tray.**

**LEDs indicate charge mode.**

**On-board oil injection.**

**Easy access service door.**

**Improved User Interface** prompts the technician all the way through a service. It is as simple as following the instructions that scroll across the display.

**Programmable operation** English, French, Spanish, and Japanese languages built-in.

**Hose and power cord storage.**

**Docking ports for couplers.**

**Automatic oil drain with graduated bottle.**

**Automatic tank refill**  
Supply tank not included.

**Large pneumatic tires & casters make unit easy to position near vehicle.**



Design certified by UL to meet SAE J-2210.

## Specifications

Voltage	115V 60 Hz
Refrigerant Container	On-board 30 lb. (14 kg) vessel (source tank not included)
Operating Range	50° to 120°F (11° to 49°C)
Recycling Filter-Drier	43 cu. in. spin-on type
Pump Free Air Displacement	3.0 cfm (85 l/min)
Dimensions	50" H x 34" W x 23" D (127 cm x 86.4 cm x 58.4 cm)
Shipping Weight	235 lbs. (106.6 kg)

Protect your investment with a heavy-duty vinyl dust cover; see page 335.



34715

Identifier bracket easily attaches to the 34700Z unit to mount 16900 series refrigerant identifiers.

# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

## COOLTECH 34788



34788



Compliant to SAE-J2788,  
effective 12/06

## R-134a Recovery, Recycling, Evacuation, and Recharging

### The New Efficiency Standard

The 34788 recovers 95% of the refrigerant and has a charge accuracy of +/- 1/2 oz. The oil inject feature has less than 1% cross contamination.

**Automatic Function** — With this new option, you can program the unit to recover, vacuum, leak test, charge, and then walk away without having to operate panel valves.

**Vacuum Leak Test** — Will monitor the vacuum level after an evacuation, and inform the technician of a possible leak in the vehicle's A/C system.

**Automatic Refrigerant Refill** — With this latest advance, you never have to stop in the middle of a job to change refrigerant tanks. The unit maintains a user selectable amount (4 to 20 lbs.) of refrigerant in an internal vessel, and signals when it's time to change the supply tank, so no monitoring is required.

**Automatic Air Purge** — Eliminates damaging air without any monitoring of gauges or opening of valves.

**Automatic Oil Drain** — The unit automatically drains system oil captured during recovery. Graduations on the container clearly show how much oil needs to be replaced.

**Refrigerant Charging** — Has never been this easy. Select a charge mode from either the high-side, low-side, or both.

### Accuracy features eliminate guesswork!

**Electronic Scale** — The scale weighs recovered refrigerant and charges by weight for greatest accuracy.

**Internal Storage Vessel** — Refrigerant is recovered into and charged out of this vessel, which is permanently mounted to the electronic scale for continuing reliability.

**Internal Manifold** — New, larger solenoids and flow paths make this model more robust than ever. The block manifold design minimizes leak points and eliminates the need to operate panel valves.

**Refrigerant Management System** — New and improved system displays refrigerant use and monitors remaining filter life. Prompts appear when 1/3 of filter life remains.

**No. 34788** — CoolTech recovery/recycling unit.

### Replacement Part

**No. 34724** — Spin-on recycling filter-drier.

## Alpha-numeric menu displays in English, French, Spanish, or Japanese

05 SUBURBAN  
FRONT & REAR A/C  
CHARGE CAPACITY  
3.00LBS.

**Alpha-Numeric Display** — The scrolling display shows messages, so it's clear what your choices are or what needs to be done. You can select English, French, Spanish, or Japanese, as well as pounds or kilograms.

# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

The next generation 34788 platform is based on the same features, reliability, and robust design as the 34700Z plus....

Control panel offers flat storage feature when not in use

Large, 4" diameter gauges

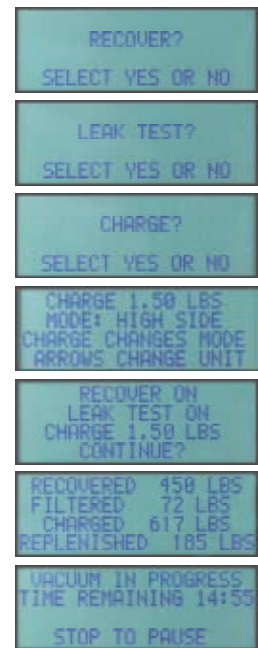
Two large tool storage areas

Change between traditional & hybrid vehicle systems without fear of cross contamination with improved oil injection



Database expansion slot \* Optional Databases Available Soon

## Service Prompts



New 2X larger display makes the 34788 easier than ever to use

Design certified by UL to meet SAE J-2788



- Built-in storage for extra filter
  - On-board storage for compressor oils
- \* Extra filter & bottles not included



### Specifications

Voltage	115V 60 Hz
Refrigerant Container	30 lb. (14 kg)
	vessel (source tank not included)
Operating Range	50° to 120°F (11° to 49°C)
Recycling Filter-Drier	43 cu. in. spin-on type
Pump Free Air Displacement	3 cfm (85 l/min)
Dimensions	44" H x 34" W x 23" D
	(127 cm x 86.4 cm x 58.4 cm)
Shipping Weight	235 lbs. (106.6 kg)

Protect your investment with a heavy-duty vinyl dust cover; see page 335.

# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

## COOLTECH<sub>134</sub>



34134Z



Design certified by UL to meet SAE J-2210.

1-800-822-5561  
**Robinair  
Technical  
Services**

## R-134a Recovery, Recycling, Evacuation, and Recharging

The CoolTech 34134Z recovers, recycles, evacuates, and recharges R-134a refrigerant quickly and accurately.

- Automatic recovery/recharge by weight.
- Programmable vacuum time intervals.

**Manual Air Purge** — Removes air from the internal storage vessel. The gauges on the control panel show when to purge the air.

**Oil Drain** — The display reminds you to drain the system oil captured during recovery. Graduations on the container clearly show how much oil needs to be replaced.

**Oil Inject** — System prompts user to inject oil before charge. O-ring on oil reservoir provides visual reference on graduated container.

**Electronic Scale** — The scale is mounted internally for protection, and has a dampening mechanism that protects against impact shocks, such as movement over rough surfaces. The scale weighs recovered refrigerant, and the unit charges by weight for greatest accuracy.

**Internal Storage Vessel** — Refrigerant is recovered into and charged out of this vessel, which is permanently mounted to the electronic scale for continuing reliability.

**Internal Manifold** — Block manifold contains solenoids that control refrigerant flow, reducing the possibility of leaking connections.

### Maintenance Prompts

- System prompts user to change vacuum pump oil when needed.
- System prompts user to change filter-drier when needed.

### Easy to Use!

**Ergonomic Design** — The cabinet is easy to maneuver between service bays and position near the vehicle.

**Gauges** — The high- and low-side gauges are mounted at an angle that's easy to see.

**Unit of Measure** — Select pounds or kilograms through the menu.

**No. 34134Z** — CoolTech recovery, recycling, recharging unit.

Protect your investment with a heavy-duty vinyl dust cover; see page 335.

### Specifications

Voltage	115V 60 Hz
Total Amp Draw	8.0 amps
Refrigerant Container	On-board 30 lb. (14 kg) vessel (source tank not included)
Operating Range	50° to 120° F (11° to 49° C)
Recycling Filter-drier	43 cu. in. in-line (710 cc)
Pump Free Air Displacement	3 cfm (71 //min.)
Dimensions	50" H x 34" W x 23" D (127 cm x 86.4 cm x 58.4 cm)
Shipping Weight	225 lbs. (102 kg)

### International Models for R-134a, R12 Recovery, Recycling, Evacuation, and Recharging

Combines simple operation with superior accuracy the CoolTech 700 recovers, recycles, evacuates, and recharges R-134a quickly and accurately. Built in the new "sidewinder" cabinet, it combines proven technology with the latest in time-saving features.

#### Automatic operation means less attention is needed!

**Automatic Refrigerant Refill** — With this latest advance, you never have to stop in the middle of a job to change refrigerant tanks. The unit maintains 12 to 15 pounds (5.44 to 6.80 kg) of refrigerant in an internal vessel, and signals when it's time to change the supply tank so no monitoring is required.

**Automatic Air Purge** — Eliminates damaging air without any monitoring of gauges or opening of valves.

**Automatic Oil Drain** — The unit automatically drains system oil captured during recovery, and the display reminds you to empty the bottle. Calibrations on the container clearly show you how much oil needs to be replaced. Accuracy features eliminate guesswork!

**Electronic Scale** — The scale is mounted internally for protection and has a dampening mechanism that protects against impact shocks, such as movement over rough surfaces. The scale weighs recovered refrigerant and charges by weight for greatest accuracy.

**Internal Storage Vessel** — Refrigerant is recovered into and charged out of this vessel, which is permanently mounted to the electronic scale for continuing reliability.

**Internal Manifold** — A Robinair exclusive, this block manifold contains all the solenoids that control refrigerant flow, reducing the possibility of leaking connections.

**Ergonomic Design** — The cabinet is easy to maneuver between service bays and position near the vehicle.

**Large Gauges** — The high- and low-side gauges are mounted at an angle that's easy to see, and they're a full 4" (10.2 cm) in diameter.

#### Features that speed service

- 6 CFM vacuum pump for fast, thorough pull-down.
- Heavy-duty compressor pulls from both sides during recovery.
- Single-pass recycling meets SAE specs.
- Oil injector lets you add system oil in seconds.

**No. 34711-2K** – R-134A Recovery, Recycle, and Recharge.

**No. 34724** – Spin-on filter.

Protect your investment with a heavy-duty vinyl dust cover; see page 335.

#### Specifications

<b>Voltage</b> .....	220V – 240V 50/60 Hz
<b>Refrigerant Container</b> .....	On-board 30 lb. (14 kg) vessel (source tank not included)
<b>Operating Range</b> .....	50° to 120° F (11° to 49° C)
<b>Recycling Filter-Drier</b> .....	43 cu. in. spin-on type
<b>Pump Free Air Displacement</b> .....	3.0 cfm (85 l/m)
<b>Dimensions</b> .....	52" H x 33" W x 20" D (132 cm x 83.8 cm x 50.8 cm)
<b>Weight</b> .....	180 lbs. (81.65 kg)

## COOLTECH 700

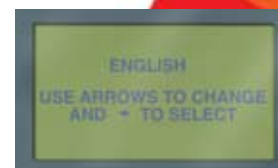


34711-2K



Alpha-numeric menu displays in English, French, Arabic, Spanish, Chinese, or Korean.

The scrolling display shows messages so it's clear what your choices are or what needs to be done.





# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

## COOLTECH AC375C



Operational symbols in the following languages:

Arabic, Chinese (simplified), Chinese (traditional), English, French, Hebrew, Korean, Portuguese, and Spanish.

CE

AC375A

### Specifications

Voltage	220 — 230V 50/60 Hz
Refrigerant Container	On-board 30 lbs. (14 kg) vessel (Source tank not included)
Operating Range	50° to 120°F (11° to 49°C)
Recycling Filter-Drier	16 cu. in. in-line (262 cc)
Pump Free Air Displacement	3.0 cfm (85 L/m)
Dimensions	52" H x 33" W x 20" D (132 cm x 83.8 cm x 50.8 cm)
Weight	232 lbs. (105 kg)

## International Models for R-134a, R12 Recovery, Recycling, Evacuation, and Recharging

Combines Simple Operation with Superior Accuracy.

- Automatic recovery/recharge by weight
- Automatic vacuum by time

**Automatic Air Purge** – Eliminates damaging air without any monitoring of gauges or opening of valves.

**Oil Drain** – The display reminds you to drain the system oil captured during recovery. Calibrations on the container clearly show you how much oil needs to be replaced.

**Oil Inject** – System prompts user to inject oil before charge. Reservoir provides visual reference on calibrated container.

**Electronic Scale** – The scale is mounted internally for protection, and has a dampening mechanism that protects against impact shocks such as movement over rough surfaces. The scale weighs recovered refrigerant and charges by weight for greatest accuracy.

**Internal Storage Vessel** – Refrigerant is recovered into and charged out of this vessel, which is permanently mounted to the electronic scale for continuing reliability.

**Internal Manifold** – Block manifold contains solenoids that control refrigerant flow for easy operation, also reducing the possibility of leaking connections.

### Maintenance Prompts

- System prompts user to change vacuum pump oil when needed.
- System prompts user to change filter-drier when needed.

**Ergonomic Design** – The cabinet is easy to maneuver between service bays and position near the vehicle.

**Gauges** – The high and low side gauges are mounted at an angle that's easy to see.

**Unit of Measure** – Select pounds or kilograms through the menu.

### Features that Speed Service

- 142 l/m vacuum pump for fast, thorough pull-down.
- Heavy-duty compressor pulls from both sides during recovery.
- Single pass recycling.
- Oil injector lets you add system oil in seconds.

**No. AC375A** – R-134A recovery, recycle, evacuates, and recharge.

### For Multiple Refrigerants...

The 17800B recovers, recycles, evacuates and recharges — all in one fast, continuous operation through one hook-up. It's ideal for refrigerated trailers, buses, RVs, and other vehicles that use more than one refrigerant. The CoolTech Multi is also great for fleet maintenance, covering a variety of makes and models since it has both R-12 and R-134a capabilities. In-plant maintenance departments will find it can handle the different types of refrigerants used in various systems.

### Proven technology simplifies service!

**Microprocessor** — Controls functions; prompts lead you through programming and also signal when it's time to change the filter-drier, vacuum pump oil, and compressor oil.

**Float Chamber** — Automatically adjusts from liquid to vapor for most efficient recovery.

**Electronic Scale** — Makes it simple to recharge to factory specifications; also weighs recovered refrigerant and provides tank overflow protection.

**CoolTech Vacuum Pump** — 6 CFM has the capacity to thoroughly evacuate the system, readying it for recharging.

### Versatility for many types of systems!

**Lockout Panel** — Prevents mixing of refrigerants; rotates to one side for 1/4" fittings and to the other for 1/2" Acme fittings.

**Single-Pass Recycling** — Makes an initial pass through the filter-drier; additional recycling can be programmed in case of compressor burn-out, or other conditions.

**Heavy-Duty Filter-Drier** — Removes moisture and acid from the refrigerant; can handle up to 200 pounds between change-overs. Comes with two 50 pound tanks, one with 1/4" fittings and the other with 1/2" Acme fittings. Also three sets of charging hoses are included — one for R-12, one for automotive R-134a (with field service couplers), and one for other refrigerants using 1/4" SAE fittings.

**No. 17800B** — Multiple refrigerant recovery, recycling, and recharging machine.

#### International Models

**No. 17801B** — 220–240V 50 Hz, readout in kilograms.

#### Replacement Parts

**No. 19776** — Recycling filter-drier.

**No. 17506** — 50 lb. (23 kg) refillable tank, 1/4" fittings.

**No. 34750** — 50 lb. (23 kg) refillable tank, 1/2" ACME fittings.



One piece of equipment is all you need for A/C and refrigeration service.

## COOLTECH MULTI



Design certified by UL to meet SAE J-1770.

**17800B**

**Recovers, Recycles, Evacuates, and Recharges R-12, R-134a, R-22, R-502, MP and HP Blends — and many more!**

**Also great for in-plant maintenance!**

#### Specifications

Voltage.....	115V 60 Hz
Tanks.....	Two 50 lb. (23 kg) refillable
Operating Range.....	50° to 105° F (11° to 41° C)
Recovery Rate.....	Vapor — 1/2 lb/min. (.2 kg/min.)
	Liquid — 1 lb/min. (.4 kg/min.)
Recycling Rate.....	4 lbs/min. (1.8 kg/min.) flow rate
Recycling Filter-Drier.....	1150 g XH-9
Pump Free Air Displacement.....	6 cfm (142 l/m) at 50 Hz
Dimensions.....	47" H x 26" W x 30" D
	(119 cm x 66 cm x 77 cm)
Weight.....	256 lbs. (116 kg) without tank

# ROBINAIR FLUID PRODUCTS

Recovery / Recycling



17700Z

Recovery,  
Recycling,  
Evacuation,  
and Recharging  
for R-12

Design certified by UL  
to meet SAE J-1990.



## Specifications

Voltage	115V/60Hz
Refrigerant Container	On-board 30 lb. (14 kg) vessel (source tank not included)
Operating Range	50° to 120° F (11° to 49° C)
Recycling Filter-Drier	43 cu. in. spin-on type
Pump Free Air Displacement	6 cfm (142 l/m)
Dimensions	50" H x 34" W x 23" D (127 cm x 86.4 cm x 58.4 cm)
Weight	234 lbs. (106.6 kg)



## R-12 Recovery, Recycling, Recharging

Fully automatic function lets you recover, vacuum, leak test, charge, and then walk away. Combines simple operation with superior accuracy. The CoolTech 17700Z recovers, recycles, evacuates, leak tests, and recharges R-12 quickly and accurately.

### Automatic operation means less attention is needed!

**Automatic Function** — With this new option, you can program the unit to recover, vacuum, leak test, charge, and then walk away without having to operate panel valves.

**Vacuum Leak Test** — Will monitor the vacuum level after an evacuation, and inform the technician of a possible leak in the vehicle's A/C system.

**Automatic Refrigerant Refill** — With this latest advance, you never have to stop in the middle of a job to change refrigerant tanks. The unit maintains 12 to 15 pounds of refrigerant in an internal vessel, and signals when it's time to change the supply tank, so no monitoring is required.

**Automatic Air Purge** — Eliminates damaging air without any monitoring of gauges or opening of valves.

**Automatic Oil Drain** — The unit automatically drains system oil captured during recovery, and the display reminds you to empty the bottle. Graduations on the container clearly show you how much oil needs to be replaced.

**Refrigerant Charging** — Has never been this easy. Select a charge mode from either the high side, low side, or both.

### Accuracy features eliminate guesswork!

**Electronic Scale** — The scale is mounted internally for protection and has a dampening mechanism that protects against impact shocks, such as movement over rough surfaces. The scale weighs recovered refrigerant and charges by weight for greatest accuracy.

**Internal Storage Vessel** — Refrigerant is recovered into and charged out of this vessel, which is permanently mounted to the electronic scale for continuing reliability.

**Internal Manifold** — A Robinair exclusive, this block manifold contains all the solenoids that control refrigerant flow in and out of the unit, reducing the possibility of leaking connections and eliminating the need to operate panel valves.

### Best of all, it's easy to use!

**Ergonomic Design** — The cabinet is easy to maneuver between service bays and position near the vehicle.

**Large Gauges** — The high- and low-side gauges are mounted at an angle that's easy to see, and they're a full 4" in diameter.

Features that speed service:

- 6 CFM vacuum pump for fast, thorough pull-down.
- Heavy-duty compressor pulls from both high- and low-side.
- Single-pass recycling meets SAE specs. Oil injector lets you add system oil in seconds.

**No. 17700Z** — R-12 recovery, recycling, & recharging unit.

**No. 17492** — Dust cover.

### Universal Recovery Station For Contaminated Or Mixed Refrigerant...

With the CoolTech 680, you don't have to turn away an A/C job because the refrigerant is contaminated. This is a recovery-only unit designed for quickly capturing contaminated or unknown refrigerants, mixtures, and blends. It protects your recovery/recycling equipment and your shop's refrigerant supply.

- Recover into one 50-lb. tank for collection and off-site disposal. (Mixtures and blends cannot be recycled.)
- Simple to hook up and operate with instructions printed on the control panel for quick reference.
- Other features include an air regulator for compressor air supply; air line lubricator, which prolongs motor life by supplying continuous lubrication; and tank pressure gauge.
- Two hoses are included, one with a 1/4" MFL fitting and one with a 1/2" Acme field service coupler.

#### Here's how the CoolTech 680 works:

- Connect service hose (included) to A/C system's low-side access port.
- Turn switch to "Start." Recovery begins immediately.
- Watch the inlet pressure gauge — it shows when the system has been pulled into a vacuum — recovery is complete.

#### Includes User Safety Features

- The unit runs on standard (compressed) shop air and the vehicle's battery, reducing risk when recovering flammable hydrocarbons. (Some substitute refrigerants contain propane or butane.)
- Tank float switch prevents overfilling of the 50 lb. tank.

**No. 17680-2K** — Contaminated refrigerant recovery station.

#### Replacement Part

**No. 17686** – 50 lb. (23 kg) tank with float switch.

#### Specifications

Power Source .....	12V DC and compressed air (200 psi max., 120 psi/min.)
Refrigerant Tank .....	50 lb. (23 kg) with float switch (included)
Dimensions .....	45" H x 22" W x 28" D (114 cm x 56 cm x 71 cm)
Weight.....	66 lbs. (30 kg) without tank

# COOLTECH 680



**17680-2K**

#### IMPORTANT:

Refrigerant collected should not be used in any A/C system. When the tank is full, send it to a disposal facility.



# ROBINAIR FLUID PRODUCTS

Recovery / Recycling

## COOLTECH 17580



17580

### Specifications

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

## Make flushing part of your regular A/C service

You know that not all A/C jobs are simple recharges — there are times when you need to flush a vehicle's air conditioning system to ensure that it operates satisfactorily. These circumstances fall into three categories:

**Routine Maintenance** — As an air conditioning system ages, oil, sludge, and particulates build up, plug screens, expansion valves, and capillary tubes. Periodically, you should flush the system components to remove these contaminants.

**Repairs** — To be sure the system will operate properly, you should flush it whenever you repair or replace components. Failed components may contain metal shavings, sludge, and other debris that damage the system or affect the operation.

**R-134a Retrofits** — In some cases, conversion procedures call for complete removal of existing oil in an A/C system before changing fittings and recharging with R-134a. Flushing is the most thorough means of removing the oil, and it will also pick up any refrigerant residue in the system. Flushing, combined with pulling a deep vacuum, is your assurance the system is ready for the new refrigerant.

### A/C Component Flusher

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** — To observe flow rates and cleaning process.

One gallon of solvent is needed for the flush procedure. The unit purges solvent from the component, collecting the used material in the collection tank. An activated charcoal filter limits emissions and odors during flushing and purging.

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

### Adapter Kit

**No. 17607** — Universal A/C flushing adapter kit.



11411

## Fluid Capacities Book and CD

- Has complete coverage of fluid capacities with lube type for domestic and import vehicles.
- Used for A/C, coolant and transmission, brake, power steering and engine oil.
- Covers vehicle model years 1994–2005.

**No. 11411** — Fluid capacities book and CD.

### Maintenance Kits

Keep recovery and recycling units operating at peak efficiency with a convenient maintenance kit. Contains one Quick Change filter-drier to be used on both R-12 and R-134a stations, and one 16-ounce bottle of our Premium High Vacuum Pump Oil.

**No. 13172** – Maintenance kit for models using No. 34724 filter-drier (17700A, 17700-2K, 34700, 34700-2K, 34700Z, 342000, 34711-2K, 34800, 34800-2K, 34900 series).

**No. 13169** – Maintenance kit for early models using No. 34134Z, 34134-2K, AC374, AC375A, 34430 filter-drier (17700A, 34700, 34300-2K, 34134Z, 34134-2K, AC374, AC375A, AC375C).

See your instruction manual if you have questions about which filter-drier to use.



13172

13169

### A/C System Sealant Remover

- Removes sealant, dye, lubricant, and other contaminants from refrigerant prior to entering the recovery unit.
- Use with recover, recycle, and recharge units that have external or internal manifold pressure gauges.
- Easy hookup between vehicle and the A/C recovery unit.
- Works with refrigerant in either a gas or a liquid state.

**No. 17622** – A/C system sealant remover.

**No. 17623** – Internal replacement filter.

**No. 17641** – Sealant remover adapter hose kit for connecting one No. 17622, R-134A, or R-12.



17622

17623

17641

### Vinyl Dust Covers

Protect your investment with a heavy-duty vinyl cover. Features corded seams for durability; medium gray color with CoolTech logo.

**No. 17495** – Fits all 34300-2K, 34134-2K series.

**No. 17812** – Fits all 17800A, 17800-2K, 34800 series.

**No. 17490** – Fits all 34900, 34800-2K, 17800B series.

**No. 17492** – Fits all 342000, 17700-2K, 34700-2K, 34134Z, 34700Z, 34711-2K, AC375, AC375A, 17700Z, 34702Z.



17492

# ROBINAIR FLUID PRODUCTS

## Recovery / Recycling



18065

34065

### Oil Injectors

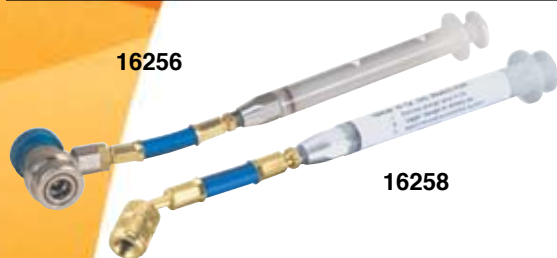
It takes just seconds to transfer an oil charge while the system is in a vacuum. The injectors are great add-ons to recovery/recycling and charging.

- 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.

**No. 18065** – Oil injector with 1/4" SAE fitting.

**No. 34065** – R-134a oil injector with 1/2" Acme fitting.

\*Not recommended for UV dye injection.



16256

16258

### 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.

**No. 16256** – R-134a oil injector, 1/2" Acme quick coupler.

**No. 16258** – Oil injector, 1/4" SAE fitting.

\*Not recommended for UV dye injection.



17121

17506

17605



17572

17576



34750

34102

### Refrigerant Tanks

**No. 17121** – 30 lb. tank, 1/4" fittings (25150, 25175, 25200B, 34234, 34300-2K, 34800 series).

**No. 17506** – 50 lb. tank, 1/4" fittings (17800A, 17800-2K, 17700A, 25150, 25175, 25200B series).

**No. 17605** – 30 lb. tank with float switch (17650A series).

**No. 17572** – 50 lb. tank with float switch.

**No. 17576** – 30 lb. tank, float switch, 3/16" fitting. (17625A series).

**No. 17686** – 50 lb. tank with 3/8" fitting, float assembly for 17680A series.

**No. 34102** – 30 lb. tank for R-134a (34234, 34300-2K, 34800, 34134A, 34134-2K series).

**No. 34579** – 30 lb. tank (34650 series).

**No. 34750** – 50 lb. tank for R-134a (34700 series).

### Recycling Filter-Driers

Specially blended for maximum acid and moisture removal.

**No. 17630** – Inlet filter for 17625A, 34650.

**No. 17663** – Inlet filter for 17650A.

**No. 17677** – XH-9 filter drier for 17800A, 17800-2K series.

**No. 19776** – Quick change filter for 17800B.

**No. 34430** – Quick change filter for older 17700A, 34450, 34700 (1997), AC375, AC375A, AC375C, 34134Z.

**No. 34724** – Spin-on filter for 17700-2K, 34134A, 34134-2K, 342000, 34234, 34300-2K, 34700, 34700-2K, 34700Z, 34788, 34800, 34800-2K, 34900 series.



### Orifice Tube Remover

Use this handy 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.

**No. 10986** – Orifice tube remover.

10986



### 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, any refrigerant contaminants, and residue. The attached nozzle directs the flow of solvent without spray-back.

**No. 17595** — Flush gun kit.

17595



### 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. Meets ANSI/ASHRAE 97-1933.

**No. 17565** – Gallon, six per carton.

**No. 17609** – Quart, six per carton.

17565

17609



### A/C Flushing Adapter Kit

These adapters are designed to isolate A/C system components for closed loop flushing.

**No. 17607** – Universal flushing adapter kit.

17607





# ROBINAIR FLUID PRODUCTS

## Refrigerant Identifiers



**Fast and Accurate** — Displays test results in less than a minute and passes the refrigerant only if it's 98% pure. To ensure consistent, rapid results, the units are not pressure/temperature dependent.

**Reliable Technology** — The instruments use dependable infrared technology developed by Neutronics, Inc., to determine if the refrigerant is an acceptable type and is pure enough to be used.

**Unique Case Design** — Puts all the components up front where you can see them at a glance, including the filter. Contoured case can be held in either hand, and rubber feet protect the vehicle's finish.

### Refrigerant Identifiers... Critical For Today's Automotive A/C Service

It's been estimated that one in 10 vehicles on the road has an A/C system with contaminated refrigerant. The only way to know for sure if you can safely recover these charges is with a refrigerant identifier. You may also save hundreds of dollars by checking bulk tanks for purity before use.

Robinair's CoolTech line shows you in just seconds if it's safe to recover or recharge the refrigerant. There's no guesswork, because a red light indicates "fail", while a green light is your signal to continue with service. For R-12 and R-134a vehicles.

16910



Gauge on panel shows system pressure

#### Specifications

Power Source	100- 220V
Dimensions	11" H x 9" W x 4-1/2" D (27.94 cm x 22.86 cm x 11.43 cm)
Weight	1.75 lbs. (740 g)

### 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 them 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.
- On-board printer port allows you to connect a printer for a hard copy of testing results.

**No. 16910** — CoolTech ID Plus.

**No. 16913** — Replacement filter.

**No. 19713** — R-12 replacement hose.

**No. 19714** — R-134a low-side coupler, 1/2" Acme internal adapter.

**No. 19716** — R-134a replacement hose.

16900



#### Specifications

Power Source	12V DC or 115V 60 Hz AC (adapter included)
Dimensions	11" H x 9" W x 4" D (27.94 cm x 22.86 cm x 11.43 cm)
Weight	1.75 lbs. (740 g)

### CoolTech ID

#### Signals "Go" only if refrigerant is 98% pure

"Go" and "No Go" indicators on display clearly show if refrigerant is pure enough to be recovered or charged.

- Dual power source gives you flexibility, comes with battery clips for 12V power and 115V AC adapter.
- Displays percent of air in the A/C system or tank.

**No. 16900** — CoolTech ID Plus.

**No. 16913** — Replacement filter.

**No. 19712** — Air detection sensor.

**No. 19713** — R-12 replacement hose.

**No. 19714** — R-134a low-side coupler, 1/2" Acme internal adapter.

**No. 19716** — R-134a replacement hose.

**No. 19718** — 12V battery adapter.

**No. 19719** — 120V wall adapter.

### TIFZX-1 Leak Detector

#### Features

- Heated Pentode™ sensor technology.
- Refrigerant specific detection.
- Detects ALL halogenated refrigerants at levels below 0.1 oz./yr., as low as 0.05 oz./yr. for R-12.
- Tri-color visual leak size indication.
- Tactile keypad controls with one touch reset and adjustable sensitivity.
- True mechanical pump provides instant response and clearing.
- Sensor failure indication.
- Carrying case and re-charger included.
- Ni-MH rechargeable batteries.
- Revolutionary design.
- Certified to SAE J1627.
- Flexible stainless probe (16").
- CE approved.
- 25-year warranty.



TIFZX-1

#### Replacement Parts

- TIFZX-2** – Heated Pentode™ sensor.
- TIFZX-3** – 110V-60 Hz battery charger (North and South America).
- TIFZX-3E** – 230V-50Hz battery charger (Europe, Asia, Australia).
- TIFZX-3J** – 100V-50/60 Hz battery charger (Japan only).
- TIFZX-5** – Ballistic nylon carrying case.
- TIFZX-6** – Remote battery charging base, 110V-60Hz (optional).
- TIFZX-7** – Nickel-Metal Hydride (Ni-MH) battery pack (optional).
- TIFZX-8** – Filter elements (10 pack).
- TIFZX-9** – Probe tip.
- TIFZX-10** – Flexible probe (includes probe tip).
- TIFZX-11** – 12V DC cigarette lighter charger.
- TIFZX-14** – Maintenance kit: probe tip, filter, and o-ring.
- TIFZX-15** – Filter elements (5 pack).

800-327-5060

**TIF**  
**Technical**  
**Services**

#### Specifications

##### Sensitivity

Per SAE J1627 criteria: 0.5 oz./yr. (14 g/yr.) for R-134a, R-22, and R-12.

##### Ultimate Sensitivity

Less than 0.1 oz./yr. (3 g/yr.) R-134a, in high sensitivity; as low as 0.05 oz./yr. R-12 in low sensitivity.

##### Warm-up Period

20 seconds.

##### Operating Temperature

32° to 122° F (0° to 50° C).

##### Power Supply

Ni-Cad standard, Ni-MH optional.

##### Battery Recharge Time

2 hours, integral charge status indicator.

##### Failed Sensor Indication

All LEDs flash red, pump off.

##### Sensor Life

100 to 150 hours.

##### Battery Life

Standard Ni-Cad battery pack - 4 to 5 hours.

Optional Ni-MH battery pack - 5 to 6 hours.

##### Unit Dimensions

10.25" L x 2.5" Dia. (26 cm L x 6.5 cm Dia.)

##### Weight

Approximately 16 oz. (452 grams).

# ROBINAIR FLUID PRODUCTS

## Refrigerant Leak Detectors



**Back View**  
The gooseneck probe clips into a holder on the back of the unit for protection during storage and transit.



### Electronic Leak Detector

For all CFC, HCFC, and HFC Refrigerants

Robinair's electronic leak detector is ergonomically designed to fit in your hand. Holding it is natural and comfortable, and it fits into tight spots, so you can thoroughly check for leaks. No. 16600 is packed with features that help you pinpoint leaks quickly.

**One-Hand Operation** — The 16" gooseneck probe holds its position so you can operate the detector with one hand.

**Audible and Visual Leak Indicators** — An alarm increases in frequency as the tip gets close to a high concentration of refrigerant. LEDs are especially helpful when you're working in a noisy environment.

**Threshold Balancing Control** — Gives you infinite control for eliminating background contamination, so you can zero in on the leak site.

**Volume Control** — Adjust the audible leak signal to the volume that's right for the background noise in the shop or at the job site.

### Reliable Technology = Dependable Leak Detecting

No. 16600 uses proven corona discharge technology to sense leaks. It works by creating a high voltage corona in the sensing tip. When this field is interrupted by refrigerant, the alarm is triggered. All corona discharge leak detectors are not the same, however — the quality of key components is critical in providing an effective instrument.

### Transformer

To create the high voltage corona, the unit must "pump up" from the battery output to 2000 volts. It takes a specialized transformer to consistently provide this voltage, and ours is the result of years of testing and field use to ensure operation you can rely on.

**No. 16600** — Electronic leak detector.

### Specifications

Power Source .....	Four AA Alkaline batteries (included)
Battery Life .....	Approximately 25 hours
Dimensions .....	8-1/2" L x 3-1/4" W x 2" D (21.59 cm x 8.26 cm x 5 cm)
Probe Length .....	16 in. (40.6 cm)
Weight .....	1.14 lbs. (.52 kg) with batteries



**16503**

### Sensing Tip

The materials, shape, and finish of the sensor and surrounding shell are critical to the effectiveness and life of the tip. Specially engineered tip is built with a mirror finish for superior sensitivity and durability.

**No. 16503** — Sensing tip.

### TIFXL-1A, TIFRX-1A, TIFXP-1A Leak Detectors

The revolutionary new "Generation X" line of TIF refrigerant leak detectors brings you tomorrow's technology today. We not only changed the way our leak detectors look, but the way to look at leak detectors. Innovative MPC circuitry and Advanced Digital Signal Processing monitor the sensing tip up to 2000 times per second. Automatic reset, true mechanical pump, and visual indicators (TIF XP-1 and TIF RX-1) speed and simplify leak searches.

A completely re-designed sensing tip increases sensitivity, improves reliability, and lasts twice as long as its predecessor. This results in fewer comebacks, less hassle, and lower maintenance costs. We are so confident in the design and quality of these detectors that they are backed by a warranty of up to 3-years!

#### All Models Feature

- Microprocessor controlled circuit with Advanced Digital Signal Processing.
- Detects ALL halogenated refrigerants.
- Certified to SAE J1627.
- Variable frequency audible alarm.
- CE approval.
- UL classified.
- Constant power indication.
- Cordless and portable; operates on two C-cell batteries.
- 14" (35.5 cm) flexible stainless steel probe with Teflon liner.
- Carrying case included, optional holster.
- Optional reference leak source.

#### Additional Features

##### TIFXL-1A

- Single switch control. • Two-year warranty.

##### TIFRX-1A

- Six-segment visual leak size indicator.
- True mechanical pump provides positive airflow through sensing tip.
- High and low sensitivity levels.
- One touch reset.
- Tactile keypad controls. • Two-year warranty.

##### TIFXP-1A

- Tri-color, six-segment visual leak size indicator displays 18 alarm levels.
- Seven levels of sensitivity adjustment provide an increase of up to 64x.
- Battery test function with true voltage indication.
- Mute feature silences audible alarm.
- True mechanical pump provides positive airflow through sensing tip.
- One touch reset.
- Tactile keypad controls.
- Three-year warranty.

#### Replacement Parts (all models)

**TIFXP-2** – Maintenance kit (3 tips, 3 protectors).

**TIFXP-4** – Deluxe carrying case.

**TIFXP-5A** – Battery cover.



TIFXP-1A

TIFRX-1A

TIFXL-1A

Design Certified by MET Laboratories, Inc., to meet SAE J1627 for R-134a, R-12, and R-22.



CLASSIFIED BY UNDERWRITERS LABORATORIES INC® ONLY TO INTRINSIC SAFETY IN CLASS 1 GROUPS C & D HAZARDOUS LOCATIONS.

#### Specifications

<b>Power Source</b>	3V DC; 2 "C" cell alkaline batteries
<b>Ultimate Sensitivity</b>	..... TIFXL-1A - Less than 0.4 oz./yr. (11g/yr.) ..... TIFRX-1A - Less than 0.25 oz./yr. (7g/yr.) ..... TIFXP-1A - Less than 0.1 oz./yr. (3 g/yr.)
<b>Sensing Tip Life</b>	..... Approx. 20 hours
<b>Operating Range</b>	..... 30° to 125° F (0° to 52° C)
<b>Battery Life</b>	..... TIFRX-1A and TIFXP-1A – Approx. 30 hrs. ..... TIFXL-1A – Approx. 40 hrs.
<b>Duty Cycle</b>	..... Continuous
<b>Response Time</b>	..... Instantaneous
<b>Reset Time</b>	..... One second
<b>Warm-up Time</b>	..... Approx. 2 seconds
<b>Unit Weight</b>	..... 1.2 lbs. (560 grams)
<b>Unit Dimensions</b>	..... 9" x 2.25" x 2.25" ..... (22.9 cm x 5.7 cm x 5.7 cm)
<b>Fixed Probe Length</b>	..... 14" (35.5 cm)

# ROBINAIR FLUID PRODUCTS

## Refrigerant Leak Detectors



TIF5750A



Design Certified by MET Laboratories, Inc. to meet SAE J1627 for R-134a, R-12, and R-22.

### Specifications

Operating Temp	30° to 125° F (0° to 52° C)
Power Source	(2) 1.5V "C" batteries
Battery Life	30 hrs. (alkaline)
Response Time	Instantaneous
Warm-up Time	5 to 6 seconds
Reset Time	One second
Probe/Cord Length	Probe =14" (35 cm) Cord = 36" (91.4 cm)
Dimensions	8" x 3" x 1.8" (20 cm x 7.6 cm x 5 cm)
Weight	20 oz. (560 grams)
Maximum Sensitivity	0.5 oz./yr. for R-12, R-22 & R-134a per SAE J1627 criteria
Ultimate Sensitivity	Less than 0.25 oz./yr.

### TIF5750A Super Scanner™ Refrigerant Leak Detector

Full featured but easy to use, this is the original TIF detector. The TIF5750A offers the detachable, flexible probe with micro-pump, leak intensity indicators, and all the features you have come to know and trust. Includes the SCAN mode that revolutionized leak detection.

### Features

- LED leak size indicators.
- Two sensitivity positions, including our unique ScanMode.
- Reset button for instant re-calibration.
- Detachable probe.
- High efficiency pump.
- Certified to SAE J1627.
- Detects ALL halogenated refrigerants.
- SAE classified for intrinsic safety.
- Constant power indication.
- Cordless and portable; operates on two C-cell batteries.
- 14" (35.5 cm) flexible, stainless probe.
- Carrying case and spare sensing tip included.
- One-year warranty.

TIF5750A – Refrigerant leak detector.

TIF548 – Custom molded carrying case.

TIF555 – Maintenance kit (3 tips, 3 protectors).

TIF560 – Sensing tip bulk pack (25 pieces).

TIF5201A – Leak source.



TIFH10A



Design Certified by MET Laboratories, Inc. to meet SAE J1627 for R-134a, R-12, and R-22.

### A/C Pump Style Refrigerant Leak Detector

This AC powered Leak Detector is ideal for continuous use and/or bench testing. It has a sensitivity adjust knob for "Fine Tuning." A unique probe with pump and a built-in neon light. Audible alarm and visual indication on all CFC, HCFC, and HFC leaks.

### Features

- High efficiency pump
- Dual sensitivity positions
- Visual indicator in probe
- Built-in carrying case
- Powered by 115 volts AC (220V available)

TIFH10A – A/C pump style refrigerant leak detector.

TIF555 – Maintenance kit (3 tips, 3 protectors).

TIF5201A – Leak source.

### Specifications

Operating Temp	30° to 125° F (0° to 52° C)
Power Supply	115V AC/60 Hz (230V 50 Hz)
Response Time	Instantaneous
Warm-up Time	30 seconds
Probe/Cord Length	36" (91.4 cm)
Dimensions	8.5" x 5" x 3.75" (21.6 cm x 13 cm x 8 cm)
Weight	3.1 lbs. (1.4 kg)
Maximum Sensitivity	0.5 oz./yr. for R-12, R-22, & R-134a per SAE J1627 criteria
Ultimate Sensitivity	Less than 0.25 oz./yr.

# ROBINAIR FLUID PRODUCTS

## Combustible Gas Leak Detectors

### TIF8900 Combustible Gas Detector

The TIF8900 is a super-sensitive, cordless, combustible gas detector that detects a broad range of natural gases including propane, methanol, butane, and gasoline.

- Solid-state sensor technology, long life, and precision.
- Adjustable sensitivity levels; as low as 5ppm.
- Audible "Geiger counter" signal.
- Rechargeable battery and charger included.

#### Specifications

Power Source	Two 2.4V Ni-Cad batteries (included)
Battery Life	Approx. 4 hours per charge
Dimensions	8-1/2" L x 2-1/2" W x 2" D (21.59 cm x 6.35 cm x 5.08 cm)
Operating Range	32° F to 105° F
Probe Length	16 inches
Weight	12.3 oz.

TIF8900 – Combustible gas detector.

#### Replacement Parts

TIF8801 – Sensing tip.

TIF8803A – 115V battery charger.

TIF8805 – Cigarette lighter adapter.

TIF8806A – Rechargeable Ni-Cad batteries.

TIF8806B – 220V battery charger.



TIF8900

### TIF8800, TIF8800A, TIF8850 Combustible Gas Detectors

These detectors are MSHA approved and UL classified. The unique flexible 15" stainless probe allows you to access hard-to-reach places. All feature automatic warm-up, are ideal for a tremendous range of uses, and are invaluable for safety in many applications. Each unit includes its own rechargeable Ni-Cad batteries for years of use.

#### All Models Feature

- Automatic warm-up.
- Broad band detection.
- Low battery indicator.
- Recharger and ABS carrying case.
- Sensitivity adjust control.
- Audible "Geiger counter" signal.

#### Additional Features of TIF8800A

- LED leak intensity lights.

#### Additional Features of TIF8850

- LED leak intensity lights.
- Audio mute button to silence the alarm.



TIF8800A



#### Specifications

Operating Temp	32° to 125° F (0° to 52° C)
Power Supply	(2) 2.4V Ni-Cad Batteries
Battery Life	4 hours/charge
Response Time	Instantaneous
Warm-up Time	30 seconds
Probe/Cord Length	15" (38 cm)
Dimensions	8" x 3" x 1.8" (20 cm x 7.6 cm x 5 cm)
Weight	15.5 oz. (434 grams)
Ultimate Sensitivity	5–50 ppm



800-327-5060

**TIF**  
Technical  
Services



# ROBINAIR FLUID PRODUCTS

## Combustible Gas Leak Detectors



TIF8800



TIF8850



### TIF8800, TIF8800A, TIF8850 Combustible Gas Detectors (continued)

#### Applications

The TIF8800 series detectors are general purpose combustible gas detectors that may be used in almost any situation where a combustible gas, vapor, or residue needs to be found. Among the many applications are:

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

#### Replacement Parts

**TIF548** – Custom carrying case.

**TIF8801** – Sensing tip.

**TIF8803A** – 115V battery charger.

**TIF8805** – Cigarette lighter adapter.

**TIF8806A** – Rechargeable Ni-Cad batteries.

**TIF8806B** – 220V battery charger.

#### Partial List of Detectable Compounds

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

800-327-5060  
**TIF**  
Technical  
Services

### TruTrack Ultrasonic Leak Detector

TruTrack is an ultra-sensitive leak detector, which uses ultrasound technology to “hear” the sound of a leak. It makes finding leaks fast and accurate, because it eliminates annoying false triggering and interference. Also, there’s no need to recalibrate for background noise.

TruTrack is the perfect complement to other forms of leak detection. It’s effective on systems that are pressurized or under vacuum, because it senses the frequency of refrigerant escaping. Larger leaks may require the use of UV or electronic leak detection systems.

#### Use TruTrack to identify...

- Refrigerant leaks.
- Pressurized gas leaks.
- Vacuum leaks.
- Dry nitrogen gas leaks.
- Steam leaks.
- Failing solenoids, valves, bearings.

#### So Sensitive It Hears the Blink of an Eye!

**Easy to Use** — Just put on the headset, adjust the sensitivity level, and place the sensor near the suspected problem area; you can use the sensor alone or with one of the probes.

**Positive Identification** — You hear the sound of the leak in the headset with no beeps or squeals; the sound is loudest when you are near the leak.

**Accurate** — Wind, stray gases, or other contaminants will not trigger a false alarm; the unit suppresses most background noises.

**Dependable** — There are no clogged tips to clean, or sensors to replace, to get accurate readings.

**Versatile** — Ideal for a wide range of service and preventive maintenance applications. Taking regular readings of bearing or solenoid function, for instance, can show increased noise, which may be a sign the component is starting to fail.

**Saves Time and Money** — Pinpoints leaks quickly and accurately; can be used to prevent downtime by identifying potential component failure; hears tell-tale sounds without tearing down the equipment.

**No. 16455** – TruTrack ultrasonic leak detector.

#### Replacement Parts

**No. 16452** – Flextube.

**No. 16956** – Contact probe.

**No. 16958** – Replacement headset.

**TruTrack**  
ULTRASONIC  
LEAK DETECTOR



16455

Comes complete with padded carrying case, headset, solid contact probe, and flextube.



A solid contact probe is included for identifying potential failures in bearings, valves, and other operational components.

### 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.

**No. 16451** – TruTrack ultrasonic sound generator.



16451

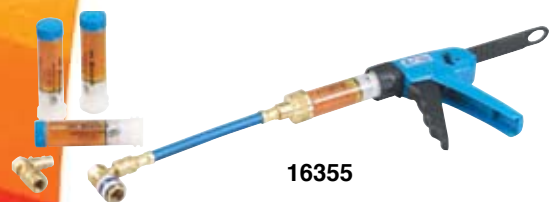
#### Specifications

<b>Power Source</b> .....	One 9V battery (included)
<b>Dimensions</b> .....	4-1/2" L x 3-3/8" W x 3/4" D (11.43 cm x 8.57 cm x 1.9 cm)
<b>Weight</b> .....	5 oz. (140 g)



# ROBINAIR FLUID PRODUCTS

## UV Leak Detection



### UV Leak Detection

Robinair's ultraviolet leak detection kits help you find leaks fast, because you can actually see the leak. You don't have false triggering or background contamination to contend with, as you do with other types of detectors. The dye combines with the refrigerant lubricant and migrates out at the leak, where it is illuminated in the beam of the UV light.

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.

**No. 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.

**No. 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.

**No. 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.

**No. 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.

**No. 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.

### CoolTools UV Lamps

A high intensity lamp which makes even the smallest leak easy to spot. The durable design stands up to everyday use and the pistol-grip design is comfortable to hold. The bulb is rated for 3000-hour life and can be replaced when necessary.

**No. 16296** – 12V UV lamp, UV shield/enhancer glasses, power cord with battery clips, CE approved.

**No. 16254** – Replacement 60 watt bulb.

**No. 16208** – On/Off switch.

**No. 16249** – Replacement lens for UV lamp.

**No. 16345** – Cordless/rechargeable true UV LED light, battery charger, and UV enhancing glasses.

**No. 16347** – 12V battery charger.

**No. 16348** – 120V battery charger.

**No. 16349** – 220V battery charger.



# ROBINAIR FLUID PRODUCTS

Inspection Enclosure

## Inspection Enclosure

Change your environment to enhance your senses!

**Indoors:** No need to shut off overhead lights or close garage doors.

- Provides darkened area for inspecting engine compartments without inconveniencing other technicians.

### Countless Applications:

- UV dyes inspection: Coolant, A/C, transmission, engine oil.
- Evaporative emission testing.
- Electronic refrigerant leak detectors.
- Enhanced viewing of backlit diagnostic tools.
- Spark plugs: Ignition and crossfire traces.
- Timing light.
- Cylinder head inspection.

### Outdoors: Blocks sun and wind.

- Speeds testing and inspection by blocking light, wind, and rain.
- Enhances intensity of any UV light.
- Provides personal protection during inclement weather.
- Stows in integral stuff-sack.
- Soft Seal—encapsulated magnets for No Scratch Seal on open hood of vehicle.

**No. 16390** – Portable inspection enclosure.

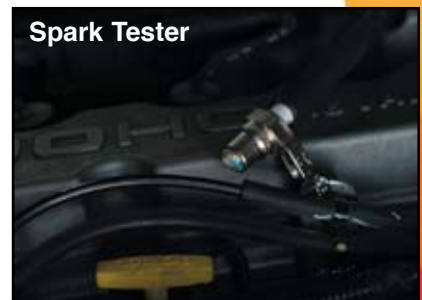
**No. 16395** – Portable inspection enclosure with wall mounting frame, 73" wide x 48" deep.

**No. 16393** – Wall mounting frame only, 73" wide x 48" deep.

16390



UV Dye Inspection



Spark Tester



Timing Light

Technician is able to perform several inspections in a darkened environment.



16395  
Work bench not included.

# ROBINAIR FLUID PRODUCTS

## Thermometers



TIF7000



### Specifications

Range	-40° to 1999° F (-40° to 1100° C)
Resolution	1° F (1° C)
Accuracy	± 1%, ± 1 digit (32° to 212° F)
Operating Temp	32° to 125° F (0° to 52° C)
Power Supply	(1) 9V battery
Battery Life	100 hours
Response Time	1-10 seconds
Warm-up Time	Instantaneous
Probe/Cord Length	36" (91.4 cm)
Dimensions	5" x 2.5" x 1" (12.7 cm x 6 cm x 2.5 cm)
Weight	5 oz. (140 grams)

### Digital Thermometer/Pyrometer

TIF manufactures a wide range of K-type digital thermometers. Packaged with a variety of probes, these fast responding, accurate thermometers are designed for rugged use.

The TIF7000, the original TIF thermometer, comes with three different probes. The first is the air probe, which can be used for instant readings of air temperatures from -40°F to over 1000°F. The second probe, the surface probe, is used for quick surface readings from -40°F to 1999°F. The immersion probe tests liquid temperature from -40°F to 500°F.

#### Features

- Field calibrateable, interchangeable probes.
- Wide sensing range.
- Universal connector.
- 9V battery powered.
- Custom fitted ABS carrying case.
- Superfast response.
- °F or °C selectable.
- One-year warranty.
- Auto zero each reading with display updates three times per second.

**No. TIF7000** – Digital thermometer/pyrometer.

**No. TIF7500A** – Includes the penetration probe (TIF7010 Only).

**No. TIF7000TP** – (TIF7002, TIF7003, TIF7008)

**No. TIF7005** – Coil cord.

**No. TIF7006** – Carrying case.

#### Accessory Probes

**No. TIF7002** – Surface.

**No. TIF7003** – Air.

**No. TIF7008** – Tire.

**No. TIF7004** – Immersion.

**No. TIF7009** – General purpose.

**No. TIF7007** – Superheat.

**No. TIF7010** – Penetration.



TIF7050



### Specifications

Range	-40° to 450° F (-40° to 232° C)
Resolution	1° F (1° C)
Accuracy	± 1%, ± 1 digit (32° to 212° F)
Operating Temp	32° to 125° F (0° to 52° C)
Power Supply	(1) 9V battery
Battery Life	100 hours
Response Time	2 seconds
Warm-up Time	Instantaneous
Probe/Cord Length	36" (91.4 cm)
Dimensions	5" x 2.5" x 1" (12.7 cm x 6 cm x 2.5 cm)
Weight	5 oz. (140 grams)

### Digital Thermometer/Pyrometer "Racing Kit"

Whether racing is your hobby or your profession, you need to have the TIF7050. This is the first digital pyrometer to combine laboratory technology with speed. The tire probe (included) allows quick temperature readings across the entire tread width. Instant temperature readings provide information on your tire's contact patch for camber, stagger, and/or shock adjustments.

#### Features

- Probe, display, connector cord, and a high impact carrying case.
- Super fast settling time.
- Switch selector for °F/°C.
- Display updates three times per second.
- ± 1% accuracy.

**No. TIF7050** – Digital thermometer/pyrometer "Racing Kit."

**No. TIF7005** – Coil cord.

### 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 you 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.



Specification	TIF7610	TIF7612	TIF7620
Measurement Range	-76 to +932°F (-60 to +500°C)	-76 to +932°F (-60 to +500°C)	-76 to +1400°F (-60 to +760°C)
Thermocouple Measurement Range	N/A	83.2 to +1999°F (-64 to +1400°C)	
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)		

### 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



TIF7201



TIF7201D

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

# ROBINAIR FLUID PRODUCTS

## Thermometers



43240

### Specifications

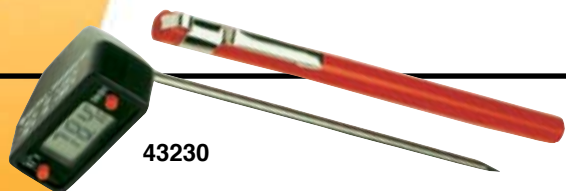
**Range** ..... -40° to 390° F (-40° to 200° C)  
**Accuracy** ..... ± 2° F between -14° and 212° F  
 ..... ± 1° C between -10° and 100° C  
 ..... Otherwise: ± 3° F (±1° C)  
**Display Resolution** ..... 0.1° F (0.1° C) throughout range  
**Battery** ..... One 1.5V x 1, Size LR44

### Digital Thermometer

This digital thermometer gives you full-feature capabilities in a case that is small enough to fit in your shirt pocket. A wide temperature range and highly accurate readings make it useful for a variety of applications.

- Accurate readings from -40° F to 390° F (±2°) and from -40° C to 200° C (±1°).
- Switch selects Celsius or Fahrenheit.
- Sampling time is just one second; HOLD button freezes display for accuracy.
- Easy-to-read display can be read even in direct sunlight.
- Durable case includes a cover to protect the probe.
- Uses one 1.5V battery; includes battery-saver mode.
- Min/Max display for reading temperature ranges.

**No. 43240** – Digital thermometer.



43230

### Specifications

**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 (±2° C)  
**Display Resolution** ..... 0.1° between -19.9 to 199.9  
 ..... otherwise 1°  
**Battery** ..... One 1.5V x 1, Size LR44  
**Automatic Power OFF** ..... After 10 minutes  
 ..... if ON/OFF is not pressed

### Swivel Head Digital Thermometer

The head on this digital thermometer swivels making it easy to see readings, at any angle. The compact size is convenient to carry and store.

- 180° swivel head makes display easier to read in tight places.
- Reliable readings over the entire temperature range.
- Readings can be toggled between Celsius and Fahrenheit.
- Sampling time is just one second.
- Durable case includes a pocket clip.
- For surface, liquid, and air temperatures.

**No. 43230** – Swivel head digital thermometer.



TIF750

### Digital Thermometer

- Large 1-1/4" diameter face with push button controls.
- Range from -58° to 302°F (-50° to 150°C).
- 5" (12.7 cm) stainless stem.
- Protector sheath with pocket clip.

**No. TIF750** – Digital thermometer.



10596

10945

10597

40859

### Dial Thermometers

All pocket thermometers come with a pocket-clip carrying case for protection and easy access. Easy-to-read faces are available in a variety of sizes and ranges.

Part No.	Temperature Range	Size
10596	-40° to + 160°F	1" dial face
10597	0° to + 220°F	1" dial face
10945	0° to + 220°F	1-3/4" dial face
40859	-40° to + 70°C	1" dial face

### R-134a Side-Wheel Manifolds for Automotive Service

**Solid Forged Brass Bar** — Long-lasting and durable with proven face seal valves.

**New Universal Gauges** — Easy-to-read dial faces show R-134a temperatures in degrees Fahrenheit, plus pressures in psi and kPa.

**Flexible Holster** — Protects your manifold during use and storage.

**Pressure Temperature Chart** — Stores in a slot on the back of the manifold; gives you multiple refrigerant capability.

**Includes** — R-134a low-permeation hoses with field service couplers on the high- and low-side hoses; yellow hose is 1/4" FFL x 1/2" Acme with Quick Seal™ fitting.

#### Models

**No. 40134A** — R-134a manifold gauge set with three 72" color-coded hoses and automotive field service couplers.

**No. 42134A** — R-134a manifold gauge set with three 72" color-coded hoses and automotive field service couplers; has Celsius temperature scale on gauges.

**No. 13138** — Hanging hook.

#### Replacement Hoses for 40134A and 40135:

**No. 13187** — Blue, **No. 13188** — Red, **No. 13190** — Yellow.

**No. 41698** — Set of one red and one blue with 1/4" drive (barrel style).



### 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.

**No. 19150** — O-ring kit for field service couplers.

**No. 18190A** — Low-side manual coupler, blue actuator.

**No. 18191A** — High-side manual coupler, red actuator.

**No. 18192** — Set of manual service couplers.

**No. 18341** — High- and low-side automatic couplers.

**No. 18074** — Low-side coupler, straight, blue actuator.

**No. 18075** — High-side coupler, straight, red actuator.

**No. 18174** — Low-side coupler, 90°, blue actuator.

**No. 18175** — High-side coupler, 90°, red actuator.



18192



18341



18174



18175



18074



18075

# ROBINAIR FLUID PRODUCTS

## A/C Manifold & Hoses



40152

### Side-Wheel Manifolds with 1/4" Fittings

Our popular side-wheel manifold is easy to use and designed for accuracy.

**Bar** — Solid forged brass for long life; handwheels are durable, color-coded Lexan™.

**Universal Gauges** — Clearly marked so they're easy to read and protected with Lexan™ lenses.

**Field-Proven Face Seal Valve** — Prevents leakage past the stem.

#### Models

**40152** — Standard side-wheel manifold, color-coded gauges, Fahrenheit scale, brass bar, handwheels, and hanging hook—no hoses.

**40151** — Standard side-wheel manifold, color-coded gauges, Celsius scale, brass bar, handwheels, and hanging hook—no hoses.

**40153** — Standard side-wheel manifold set, includes three 36" standard hoses with 1/4" fittings.

**40159** — Standard side wheel manifold, color-coded gauges, Fahrenheit scale, brass bar, handwheels, 80 mm lens gauges, and hanging hook—no hoses.

**40169** — Standard side wheel manifold set, includes three 60" standard hoses with 1/4" fittings.



41600

### Side-Wheel Manifolds-in Protective Holster

Use the 41600 for almost every job, instead of carrying several manifolds with 1/4" fittings. Gauges show R-22 and R-134a temperature scales.

**Flexible Holster** — Provides protection against the bumps and knocks of everyday use.

**Pressure Temperature Chart** — Stores in a slot on the back, giving multiple refrigerant capability.

**Face Seal Valves** — Provide a tight seal, less wear, and improved flow.

Comes with manifold bar, protective holster, 2-1/2" gauges, color-coded hand wheels, and hanging hook.

**41600** — Side-wheel manifold in protective holster—no hoses.

**41620** — Side-wheel manifold set with protective holster, three 72" standard hoses, and standard fittings.

**41630** — Side-wheel manifold set with protective holster, three 72" standard hoses with Quick Seal™ fittings.

**41640** — Side-wheel manifold set with protective holster, three 72" Enviro-Guard™ hoses with Quick Seal™ fittings.

**41612** — Side-wheel manifold, temperature readings in degrees Celsius—no hoses.

### Brass Manifold

No. 49300 – R-134a manifold only.

No. 13202 – R-134a manifold with hose set (49072) and service couplers.

### Aluminum Block Manifold with Sight Glass

No. 13199 – 1/4" MFL manifold only.

No. 48430 – 1/4" MFL manifold with hose set (68472).

No. 13208 – R-134a manifold only.

13199



49300



48430



### R-134a Manifold Kit

Deluxe combination side can tap features: 1/4" MFL and 1/2" Acme ports, hinged inserts for cans of R-12, R-134a, and their respective oils. 72" hoses for R-134a with automatic couplers, aluminum manifold, 1" dial thermometer, temperature/pressure chart, and blow-molded case.

No. 13136 – R-134a manifold kit.

13136



### Dual Manifold Gauge Kit

Includes aluminum block manifold, high- and low- R-134a snap couplers, 1" dial thermometer, 72" R-134a hose set, 72" R-12 hose set, and blow-molded storage case.

No. 48450 – Dual manifold gauge set.

48450

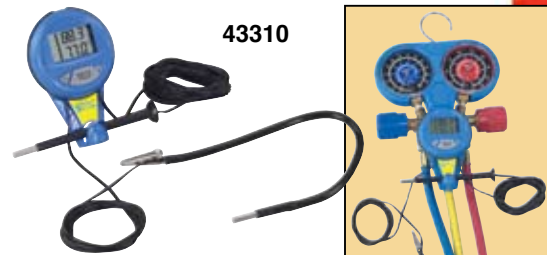


### A/C System Performance Calculator

- Instant performance test under any ambient temperature condition.
- Suspends from hood latch or attaches to your manifold gauge set.
- Includes ambient and vent temperature probes.
- Fahrenheit and Celsius scales. • Auto shut off.
- Diagnostic flow chart and tech tips to guide you through the test.

No. 43310 – A/C system performance calculator.

43310



### Replacement Gauges

Universal compound replacement gauge, psi/kPa pressure readings, R-22 and R-134a temperature readings in degrees Fahrenheit.

No. 11794 – Replacement gauge (replaces 11692).

Universal compound replacement gauge, psi/kPa pressure readings, R-22 and R-134a temperature readings in degrees Celsius.

No. 11797 – Replacement gauge.

Universal pressure replacement gauge, psi/kPa pressure readings, R-22 and R-134a temperature. Temperature readings in degrees Fahrenheit.

No. 11795 – Replaces 11693.

Universal pressure replacement gauge, psi/kPa pressure readings, R-22 and R-134a temperature. Temperature readings in degrees Celsius.

No. 11798 – Replacement gauge.

Replacement gauge lens, quarter turn on-off.

No. 11796 – Replacement gauge lens.

11794



11795





# ROBINAIR FLUID PRODUCTS

## A/C Manifold & Hoses



TIF9675  
(shown)

### TIF9675 & TIF9685 Digital Replacement Gauges

TIF has designed these gauges with the latest state-of-the-art technology. The digital display means you can have quick, easy-to-read, and accurate readings. These gauges allow you to read both pressure and vacuum.

Gauges are compatible with all refrigerants and are individually powered by one 9V battery.

**No. TIF9675** – Low-side gauge reads in increments of .10 from -30 in Hg to 99.9 psi.

**No. TIF9685** – High-side gauge reads in increments of 1 psi from 0 psi to 500 psi.

#### Specifications

Range	Low: -29.9 in Hg to 99.9 psi High: 0–500 psi
Resolution	Low: 0.1 in Hg and 0.1 psi High: 1 psi
Accuracy	±2% of reading
Operating Temp	32°–125° F (0°–52° C)
Power Supply	(1) 9V battery
Battery Life	>100 hours (alkaline)
Dimensions	3.5" x 2.8" x 1.9" D (8.9 cm x 7.1 cm x 4.8 cm)
Weight	6 oz. (170g)



### Stem Replacement Assembly Kit

Kits include all necessary parts to service one manifold valve. To replace stems on both valves, order two kits.

**No. 40232** – Stem assembly kit for manifolds with conical seal design.

**No. 13148** – Face seal kit for side-wheel manifolds, includes stem with o-rings, spring, and screw. Will not fit sight glass manifold.

**No. 19695** – Face seal kit for sight glass manifolds.

**No. 13067** – High vacuum grease.

#### Replacement Handwheels

**No. 40449** – Set of one red and one blue with 1/4" drive.

**No. 41698** – Set of one red and one blue with 1/4" drive (barrel style).

#### Replacement Parts for Hoses and Adapters

Replacement parts help you keep your charging hoses and adapters in top working condition.

**No. 18180** – O-rings for Quick Seal™ 1/4" fittings and adapters, pkg/6.

**No. 40531** – O-rings for 10293 adapters, pkg/6.

**No. 40082** – 1/4" valve core depressors, pkg/6.

**No. 40083** – 1/4" gaskets, pkg/6.

**No. 40084** – 3/8" gaskets, pkg/6.

**No. 40677** – 3/16" gaskets, pkg/6.

**No. 40653B** – 3/16" valve core depressors.

### Replacement Parts Kit for R-12 Manifold Gauges and Hoses

- 6 hose gaskets.
- 6 gasket adapters.
- 2 stem repair kits .
- 12 Quick Seal™ caps.
- 12 valve core depressors, 1/4".
- 4 Lexan® handwheels and screws.
- O-rings to service Quick Seal™ fittings.
- Valve core remover/installer with valve cores.

**No. 18019** – Replacement parts kit for R-12 manifold gauges and hoses.

### Replacement Parts Kit for R-134a Manifold Gauges and Hoses

- 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.

**No. 18576** – Automotive replacement parts kit for R-134a manifold gauges and hoses.



18576

### Hoses

**No. 30072** – Standard hose (500/2500 psi) – 72", 1/4" SAE internal fitting x 1/4" SAE internal.

**No. 34107** – Standard hose (500/2500 psi) – 72" 1/4" SAE internal fitting x 1/4" SAE internal with auto shut-off.

**No. 68472** – Enviro-Guard hose (740/3700 psi) – 72" 1/4" SAE internal fitting x 1/4" SAE internal with auto shut-off

**No. 49072** – R-134a Enviro-Guard hose (740/3700 psi) – 72" red/blue, 1/2" ACME internal x 14 mm external fittings; yellow, 1/2" ACME internal x 1/2" ACME internal.

### Special Hoses for Special Jobs Enviro-Guard™ Hoses with Ball Valves

In-line ball valves control refrigerant flow, open and close in a quarter turn.

**No. 65060** – Set of three 60" hoses with ball valves.

**No. 65160** – 60" Enviro-Guard™ hose with ball valve, yellow.

**No. 65260** – 60" Enviro-Guard™ hose with ball valve, blue.

**No. 65360** – 60" Enviro-Guard™ hose with ball valve, red.

### Hose Extension Coupler

Connect any number of hoses to get the extra length you need – there's no need to order special hose lengths.

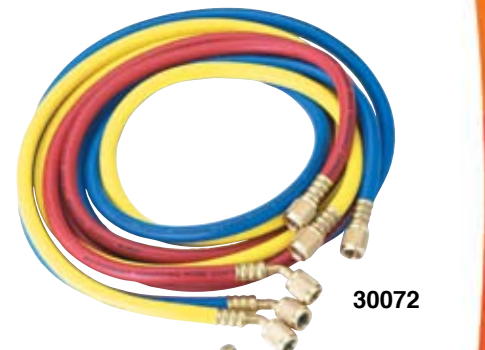
**No. 40333** – 1/4" MFL x 1/4" MFL, no valve core.

**No. 10328** – 1/2" Acme external x 14 mm internal (for automotive R-134a).

### 20' Charging Hoses

**No. 68020** – Set of 20' Enviro-Guard™ red and blue, 1/4" fittings.

**No. 68420** – Set of 20' Enviro-Guard™ red and blue, Quick Seal™ fittings.



30072



65060



40333

# ROBINAIR FLUID PRODUCTS

## A/C Manifold & Hoses



### Charging Hoses

Robinair premium refrigerant charging hoses are built for long life and dependability. A strong, six-sided crimp provides a reliable connection between the hose and barb, even at maximum pressure. The coupler nuts are deeply knurled for quick finger-tightening. Enviro-Guard™ hoses are ideal for high pressure applications, including R-410a systems.

### Hose Selection Charts

Length (inches)	Yellow	Blue	Red	Pkg. Set (Blue, Red, Yellow)
36	31036	32036	33036	30036
60	31060	32060	33060	30060
72	31078	32072	31079	30072
96	31096	32096	33096	N/A

#### 1/4" Standard Hoses with Standard Fittings

Neoprene-coated for flexibility and wear resistance, with a valve core depressor and a 45° bend on one end for convenient access to the system.

500 psi working pressure; 2500 psi burst pressure.

Length (inches)	Yellow	Blue	Red	Pkg. Set (Blue, Red, Yellow)
72	38172A	38272A	38372A	39072A

#### 1/4" Standard Hoses with Quick Seal™ Fittings

500 psi working pressure; 2500 psi burst pressure.

Length (inches)	Yellow	Blue	Red	Pkg. Set (Blue, Red, Yellow)
72	67172	67272	67372	67072

#### 1/4" Enviro-Guard™ Hoses with Standard Fittings

740 psi working pressure; 3700 psi burst pressure.

Length (inches)	Yellow	Blue	Red	Pkg. Set (Blue, Red, Yellow)
36	68136A	68236A	68336A	69036A
60	68160A	68260A	68360A	69060A
72	68172A	68272A	68372A	69072A
96	68196A	68296A	68396A	69096A

#### 1/4" Enviro-Guard™ Hoses with Quick Seal™ Fittings

Special barrier material prevents virtually any permeation of refrigerant, yet remains flexible. With 45° Quick Seal™ fittings.

740 psi working pressure; 3700 psi burst pressure.

Length (inches)	Yellow 1/2" ACME x 1/2" ACME	Blue 14 mm x 1/2" ACME	Red 14 mm x 1/2" ACME	Pkg. Set (Blue, Red, Yellow)
36	61036	62036	63036	60036
60	61060	62060	62243	60060
72	61072	62072	62244	60072
96	61096	62121	63096	60096
240	NA	NA	NA	64240 (excl. yellow)
240	NA	NA	62246	NA
240	NA	62242	NA	NA

#### Enviro-Guard™ Hoses for Automotive R-134a

Meets all specifications for low permeation construction. Clearly marked for R-134a. See page 351 for service couplers.

740 psi working pressure; 3700 psi burst pressure.

### Premium High Vacuum Pump Oil

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.

### Thermally Stable

Laboratory tests prove that Robinair oil is more thermally stable in comparison to other leading brands, which means it resists breaking down due to heat for a longer period of time.

### Lower Moisture Content

Robinair oil has a lower moisture content than other oils, thanks to our special packaging and handling procedures. Moisture degrades the oil's purity, thinning it, and reducing the pump's ability to reach a deep vacuum.

**No. 13119** – Pint bottle, 12 per case.

**No. 13203** – Quart bottle, 12 per case.

**No. 13204** – Gallon bottle, 4 per case.

### Also Available

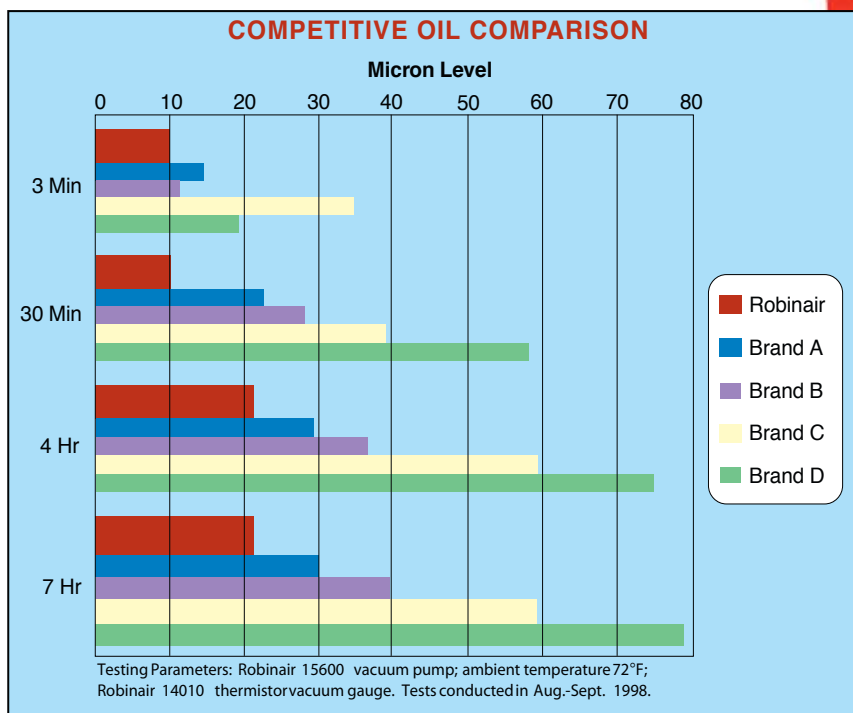
**No. 17191** – Oil spout for quart bottle, 10" long, handy for adding oil to a pump mounted on a station.



### Change Your Vacuum Pump Oil Frequently

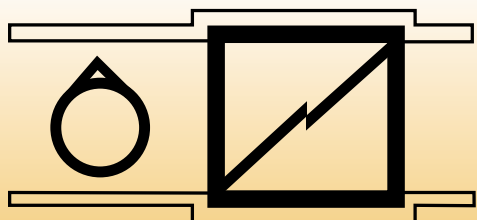
Clean oil is important for peak vacuum pump performance. When the oil is contaminated, it reduces your pump's ability to remove moisture from a system. You should change the pump oil frequently, and especially in the following situations:

- You have just evacuated a system that you suspect was overly moisture-laden.
- You have just evacuated a system with a compressor burnout.
- The pump oil looks cloudy or milky.
- The pump will not pull to factory specifications when blanked off to an electronic thermistor vacuum gauge.
- Every 10 hours of operation.



# ROBINAIR FLUID PRODUCTS

## A/C Vacuum



MOISTURE TO ICE CRYSTALS



MOISTURE

REFRIGERANT

ACID

## The Importance of Deep Vacuum

The purpose of a vacuum pump is to remove moisture and air from an A/C-R system.

Modern systems are built tighter and charges are more critical. That means these systems have a greater sensitivity to moisture and other contaminants, making thorough evacuation more important than ever before.

Moisture in a refrigeration system, directly or indirectly, is the cause of most problems and complaints. First, moisture can cause freeze-up in a system. Moisture is picked up by the refrigerant and transported through the refrigerant line in a fine mist, with ice crystals forming at the point of expansion.

“Freeze-up” is not the only problem caused by moisture. It can also result in corrosion, the effects of which are not apparent until the real damage has occurred. Moisture alone is bad enough, but combined with refrigerants containing chlorine, hydrochloric acids can form. These greatly increase the corrosion of metals.

Also, refrigerant oil rapidly absorbs moisture. Water-formed acids combine with the refrigerant, forming a closely bonded mixture of fine globules. The effect is called sludging and it greatly reduces the lubricating ability of the oil.

A vacuum pump removes troublesome moisture by lowering the pressure within the system and vaporizing (or boiling off) the moisture, then exhausting it along with air.

## CoolTech™ – The Inside Story

A vacuum pump that’s fast and thorough saves you not only time, but also the expense of callbacks and dissatisfied customers. Robinair pumps perform better than other pumps in the industry, ensuring you complete dehydration before recharging.

Robinair pumps are engineered specifically to meet the needs of the kind of A/C work you’re doing today, and to give you trouble-free operation. We’ve put our years of experience and know-how into developing pumps that help you do the job faster and better.

All Robinair pumps are backed by our exclusive “No Hassle” over-the-counter replacement warranty. You can return a pump to your Robinair distributor for an immediate exchange — with no hassle! (In U.S. and Canada only; in other locations, see your Robinair distributor.)

Robinair CoolTech vacuum pumps are designed for use on A/C-R systems using CFCs, HCFCs, and HFCs in conjunction with mineral oil, ester oil, alkylbenzene oil, and PAG oil as lubricants. Do not use them with ammonia or lithium bromide systems; not for use with flammable refrigerants.

### 1 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.

### 2 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.

### 3 Die-Cast Aluminum Housing

Cast aluminum housings make the pumps lightweight but durable.

### 4 Heavy Duty Motor

High torque design for easy startup and efficient operation.

### 5 Molded Base

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

### 8 Oil Drain Valve

Positioned at the bottom of the oil reservoir and angled for faster, more complete draining.

### 6 Iso-Valve™

Isolates the pump from the system with just a quarter-turn.

### 7 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.

### Selecting the Right Size Pump

The more air a pump moves, the faster it can reach an acceptable vacuum. A smaller pump takes more time to evacuate a system than one that's the correct size for the job.



### Use this Chart as a Guide to Selecting the Right Size Pump

System	Recommended Pump Size	
	CoolTech™	VacuMaster™
Up to 10 tons (35kW); Domestic Refrigeration, Passenger Cars	1.2 CFM (28 l/m)	1.5 CFM (35 l/m)
Up to 30 tons (105kW); Residential A/C, Panel Trucks & RV's	4 CFM (93 l/m)	3 CFM (71 l/m)
Up to 50 tons (176kW); Rooftop A/C systems, Tractor/Trailers, Buses	6 CFM (142 l/m)	5 CFM (118 l/m)
Up to 70 tons (246kW)	10 CFM (236 l/m)	8 CFM

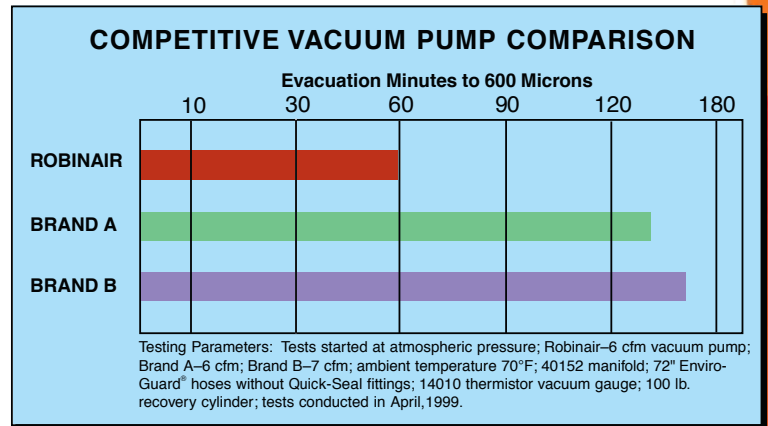
Tests done under the same laboratory conditions confirm that Robinair vacuum pumps consistently out perform other major brands. Our Model 15600 reaches a vacuum of 600 microns in just 60 minutes, while the competition's pumps took more than two hours to reach the same micron level.

### Robinair pumps weigh less!

You'll appreciate the difference a few pounds make when you're carrying the pump up a ladder or through an access hatch.

### Robinair pumps use less oil!

Smaller oil capacity means that your maintenance costs will be lower over the life of the pump.



<b>Robinair (6 CFM)</b>	<b>27 lbs</b>
Brand A (6 CFM)	34.5 lbs
Brand B (7 CFM)	27.5 lbs

<b>Robinair</b>	<b>15 oz.</b>
Brand A	24 oz.
Brand B	30 oz.

# ROBINAIR FLUID PRODUCTS

A/C Vacuum



**15120A**  
10 CFM



**15600** – 6 CFM  
**15400** – 4 CFM  
**15434** – 4 CFM



**15234**  
1.2 CFM

## CoolTech® Vacuum Pumps

- Power and capacity for a wide range of service applications.
- High CFM rating for fast, thorough evacuation.
- Two-stage rotary vane design.

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.

**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.

**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.

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

Model	Free Air Displacement	Factory Micron Rating	No. of Stages	Intake Fitting	Oil Capacity	Motor Size	Voltage	Approvals	Weight	Dimensions
<b>Domestic Models</b>										
15234	1.2 CFM	50 microns	2	1/4" MFL and 1/2" Acme	5 oz. (148 ml)	1/8 hp	115V 50/60 Hz	UL	10 lbs. (4.5 kg)	8.5" H x 4.3" W x 9.5" L 215 mm x 108 mm x 240 mm
15400	4 CFM	20 microns	2	1/4" MFL and 1/2" MFL	15 oz. (445 ml)	1/3 hp	115V 60 Hz	UL	29 lbs. (12.2 kg)	9.75" H x 5.625" W x 15" L 247 mm x 142 mm x 381 mm
15434	4 CFM	20 microns	2	1/4" MFL and 1/2" Acme	13 oz. (384 ml)	1/3 hp	115V 60 Hz	UL	29 lbs. (12.2 kg)	9.75" H x 5.5" W x 15" L 247 mm x 142 mm x 381 mm
15600	6 CFM	20 microns	2	1/4" MFL and 1/2" MFL	15 oz. (445 ml)	1/2 hp	115V 60 Hz	UL	30 lbs. (12.2 kg)	9.75" H x 5.625" W x 15" L 247 mm x 142 mm x 381 mm
15120A	10 CFM	20 microns	2	1/4" MFL and 1/2" MFL	16.5 oz. (448 ml)	1/2 hp	115V 60 Hz	UL	30 lbs. (12.2 kg)	10.75" H x 5.625" W x 16" L 247 mm x 142 mm x 381 mm
<b>International Models</b>										
15226	28 liters/minute	50 microns	2	1/4" MFL and 1/2" Acme	5 oz. (148 ml)	1/8 hp	220V 50/60 Hz	CE	10 lbs. (4.5 kg)	8.5" H x 4.5" W x 9.5" L 215 mm x 108 mm x 240 mm
15401	93 liters/minute	20 microns	2	1/4" MFL and 1/2" MFL	15 oz. (444 ml)	1/3 hp	115V/220-250V 50/60 Hz	CE	32 lbs. (14.5 kg)	9.5" H x 5.5" W x 15" L 247 mm x 142 mm x 381 mm
15424	93 liters/minute	20 microns	2	1/4" MFL and 1/2" Acme	15 oz. (445 ml)	1/3 hp	115V/220-250V 50/60 Hz	CE	29 lbs. (14.5 kg)	9.5" H x 5.5" W x 15" L 247 mm x 142 mm x 381 mm
15601	142 liters/minute	20 microns	2	1/4" MFL and 1/2" MFL	15 oz. (445 ml)	1/3 hp	115V/220-250V 50/60 Hz	CE	33 lbs. (15 kg)	9.5" H x 5.5" W x 15" L 247 mm x 142 mm x 381 mm
15121A	236 liters/minute	20 microns	2	1/4" MFL and 1/2" MFL	17 oz. (503 ml)	1/2 hp	115V/220V 50/60 Hz	CE	38 lbs. (17.2 kg)	10" H x 5.5" W x 16" L 272 mm x 142 mm x 419 mm

### 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.



**15150**  
1.5 CFM



**15500**  
5 CFM

Model	Free Air Displacement	Factory Micron Rating	No. of Stages	Intake Fitting	Oil Capacity	Motor Size	Voltage	Weight	Dimensions
<b>Domestic Models</b>									
15150	1.5 CFM	50 microns	2	1/4" MFL and 3/8" Acme 3/8" FFL x 1/2" Acme adaptr.	7.4 oz. (219 ml)	1/4 hp	115V 60Hz	22 lbs. (10 kg)	9.5" H x 4.75" W x 12.5" L 240 mm x 120 mm x 315 mm
15300	3 CFM	40 microns	2	1/4" MFL and 3/8" MFL 3/8" FFL x 1/2" Acme adaptr.	7.5 oz. (220 ml)	1/3 hp	115V 60Hz	28 lbs. (12.5 kg)	10" H x 5" W x 13" L 255 mm x 123 mm x 336 mm
15500	5 CFM	40 microns	2	1/4" MFL and 3/8" Acme 3/8" FFL x 1/2" Acme adaptr.	7.5 oz. (220 ml)	1/3 hp	115V 60Hz	28 lbs. (12.2 kg)	10" H x 5" W x 13" L 255 mm x 123 mm x 336 mm
15800	8 CFM	40 microns	2	1/4" MFL and 3/8" MFL 3/8" FFL x 1/2" Acme adaptr.	18.6 oz. (550ml)	1 hp	115V 60Hz	37lbs. (16.78 kg)	16" H x 6" W x 10" L 406" mm x 152mm x 254mm
<b>International Models</b>									
15151 1.5 CFM	35 liters/minute	50 microns	2	1/4" MFL and 1/2" Acme 3/8" FFL x 1/2" Acme adaptr.	7.5 oz. (220 ml)	1/4 hp	220V 50Hz	21 lbs. (9.6 kg)	9.5" H x 4.5" W x 12.5" L 240 mm x 120 mm x 315 mm
15301 3 CFM	71 liters/minute	40 microns	2	1/4" MFL and 1/2" MFL 3/8" FFL x 1/2" Acme adaptr.	7.5 oz. (220 ml)	1/3 hp	220V 50Hz	28 lbs. (12.5 kg)	10" H x 5" W x 13" L 255 mm x 123 mm x 336 mm
15501 5 CFM	118 liters/minute	40 microns	2	1/4" MFL and 1/2" Acme 3/8" FFL x 1/2" Acme adaptr.	7.5 oz. (220 ml)	1/3 hp	220V 50Hz	28 lbs. (12.5 kg)	10" H x 5" W x 13" L 255 mm x 123 mm x 336 mm

	Oil Fill Port	Heavy Duty Motor	Two-Stage Design	Molded Base	Die-Cast	Oil Drain Valve	Offset Rotary Vanes	Iso-Valve	Gas Ballast
CoolTech™ Pumps	•	•	•	•	•	•	•	•	•
VacuMaster® Pumps	•	•	•	•	•	•			

All Robinair pumps are backed by our exclusive "No Hassle" over-the-counter replacement warranty. You can return a pump to your Robinair distributor for an immediate exchange — with no hassle! (In U.S. and Canada only; in other locations, see your Robinair distributor.)



# ROBINAIR FLUID PRODUCTS

## A/C Vacuum



34970

### Air-Vac™ for R-12 and R-134a

**Economical Air-Vac** uses shop air to pull the system into vacuum and includes inlet fittings with 1/4" and 1/2" Acme sizes.

**Easy to use** — Unique venturi design runs on shop air.

**Rugged Lexan® Case** — Both oil- and scratch-resistant and comes with a convenient handle.

**Low Maintenance** — There's no oil or moving parts to replace.

**No. 34970** — Air-Vac™ for R-12 and R-134a.

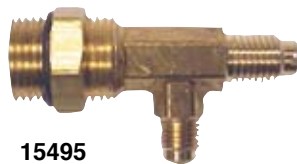
**No. 34977** — Replacement inlet tee, 1/4" MFL and 1/2" acme.

### Specifications

Drive.....	Compressed air
Free Air Displacement.....	1 CFM
Input Pressure.....	75 psi
Vacuum Rating.....	29 in./Hg
Intake Fitting.....	1/4" MFL and 1/2" ACME
Dimensions.....	4-1/2" H x 4" W x 7-1/2" L
Weight.....	2 lbs./1 kg



15195



15495



10459

### Pump Intake Fittings

#### R-12/R-134a Dual Inlet Fittings

Convert your pump to R-12 and R-134a. Solid brass tees replace inlet fittings on pump; includes a branch with a 1/4" MFL fitting for R-12 (and other refrigerants) and a branch with 1/2" Acme fittings for automotive R-134a.

#### Also Available:

**No. 15555** — Screw-on inlet adapter converts any pump, 1/4" FFL coupler x 1/4" MFL x 1/2" Acme.

**No. 15195** — 1/4" MFL/1/2" Acme combination inlet fitting for 15200 series vacuum pumps.

**No. 15495** — 1/4" MFL/1/2" Acme combination inlet fitting for 15400/15600 series vacuum pump.

#### Pump Intake Fitting Adapters:

**No. 10459** — Adapter, 1/2" FFL to 1/4" MFL.

**No. 13110** — Adapter, 3/8" FFL to 1/4" MFL.

**No. 13066** — Adapter, 1/2" FFL to 3/8" MFL.

### The Importance of Measuring Vacuum

Moisture in an A/C system is a serious problem for the technician – it causes freeze-ups and corrosion, seriously damaging the A/C system. The most effective way to eliminate moisture is to create a vacuum deep enough to boil it away. For that, you need a high vacuum pump, and a tool to tell you when the vacuum is deep enough to adequately dehydrate the system.

Without a means of measurement, evacuation time is based on guesswork. The length of time required for thorough dehydration will vary from system to system because of several factors – so using a clock isn't foolproof. You risk not removing all the moisture – or wasting time by running the pump long after evacuation is complete.

Many service technicians rely on the compound gauge of the manifold to read vacuum. While the manifold is good for gross measurements, it's simply not accurate enough to determine exact vacuum levels. It's designed to read low pressures in inches of mercury, but there's no way to read exact levels when you're pulling the last, most critical inch of vacuum.

If you look at the compound gauge face, you can see that it's not possible to clearly differentiate between 29" Hg and 29.9" Hg, for example. But in microns – the precise measurements for the last inch of vacuum – that's the difference between roughly 23,000 and 250 microns.

A closed-end, U-tube, mercury manometer is capable of reading to 500 microns. However, it's a delicate instrument, more suited to a laboratory or controlled environment.

The most economical, effective, and easy-to-use option is an electronic thermistor vacuum gauge. It eliminates the guesswork by measuring the vacuum to precise micron levels, ensuring the system is leak-free, moisture-free, and ready to be recharged. Although originally developed as a laboratory instrument, today's thermistor vacuum gauges are rugged enough – and reliable enough – for field service work.

### 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).

**No. 14830A** – Thermistor vacuum gauge.



**14830A**

### Specifications

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

# ROBINAIR FLUID PRODUCTS

## A/C Vacuum



14777

### Compact Electronic Vacuum Gauge

Robinair's 14777 electronic vacuum gauge is just 2-1/2" x 3" in size, but accurate enough to clearly indicate when the system is free from moisture and ready for recharging.

Specifically designed for use with a high vacuum pump, the 14777 measures to 10 microns.

**Clearly Shows Vacuum Level** – The display is an easy-to-read LCD type with readout showing the current vacuum level.

**6' Lead for Service Flexibility** – Hang the gauge in a location that's convenient for you to monitor vacuum level.

**Mounting Magnet** – Position the 14777 where it's easy to read the LCD.

### Hassle-Free Operation

**No. 14777** – Compact electronic vacuum gauge.

**No. 14778** – Replacement thermistor tube.



When reading vacuum, remember that the location of the vacuum gauge tube will affect the reading. The closer the gauge is to the vacuum pump, the lower the reading will be. Conversely, if you take the reading at a line far away from the pump, the reading will be on

the high side.

The way to get the most reliable reading is to isolate the vacuum pump using a vacuum valve assembly. Allow the pressure to equalize throughout the system, then take a final reading.

A reading that's too high is a good indication of moisture in the system; continuing to evacuate will likely pull the system into a deeper vacuum. If the pressure will not equalize, you probably have a leak, which should be repaired.

### Specifications

Power Supply.....	One 9V battery (included)
Vacuum Fitting.....	1/4" MFL
Length of Lead.....	6 feet (8.3 m)
Vacuum Rating.....	.29 in./Hg
Dimensions.....	3" H x 2.5" W x 1" D
.....	(7.62 cm x 6.35 cm x 2.54 cm)

### Slimline Refrigerant Scale

A revised and updated version of the classic TIF Slimline scale, the TIF9010A brings greater performance, reliability, and usability to the trade. With the greatest resolution in the industry, and no compromise on capacity, this unit offers features and specs that you won't want to do without.

#### FEATURES

- Touch key controls.
- Three display modes - lbs./oz.; decimal lbs.; kilograms.
- Very high resolution - 0.1 oz./0.005 lbs./2 grams.
- Extreme accuracy.
- 110 pound/50 kg capacity.
- Auto zero.
- Compact design, 2.5" (6.35 cm) thick.
- Charging and recovery capabilities.
- Can be used with all refrigerants.
- Completely portable, battery powered.
- Removable control box with prop stand/hanging hook.
- Built into carrying case.
- Two-year warranty.

**No. TIF9010A** – Slimline refrigerant scale.



TIF9010A

#### Specifications

<b>Range</b> .....	0 lbs. 0.0 oz. to 110 lbs. 0.0 oz., or .....0.000 lbs. to 110.000 lbs., or .....0.000 kg to 50.000 kg
<b>Resolution</b> .....	0.1 oz./0.005 lbs./2 grams
<b>Accuracy</b> .....	±0.5% of reading
<b>Operating Temp</b> .....	.32° to 120°F (0° to 49°C)
<b>Power Supply</b> .....	.9V DC
<b>Battery Life</b> .....	20 hours
<b>Coil Cord Length</b> .....	.6 ft. (1.8 m)
<b>Dimensions</b> .....	15.25" x 10.5" x 2.5" (38.7 cm x 26.7 cm x 6.35 cm)
<b>Weight</b> .....	4.5 lbs. (2 kg)

### Economy Digital Refrigerant Scale

- New molded design, easy to carry and store.
- Capacity up to 220 lbs. (100 kg). Display shows lbs./oz. and kg.
- High accuracy (±0.5 oz.) and resolution (0.1oz).
- 9-volt battery power.
- Platform to adapt to most existing tanks (9" x 9").
- Three control keys: On/Off, automatic zeroing, and measurement units.
- Charging and recovery capabilities
- CE approved.
- One-year warranty.

**No. TIF9030** – Economy digital refrigerant scale.

**No. TIF9031** – Economy digital refrigerant scale carrying case.



TIF9030



TIF9031

# ROBINAIR FLUID PRODUCTS

## A/C Scales



TIF9055

### Specifications

Range	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
Resolution	0.2 oz./0.010 lbs./4 grams
Accuracy	± 0.5% of reading
Power Supply	Four AA batteries and one 9V battery
Battery Life	30 hours
Max. Solenoid operating pressure	500 psi
Operating Temp.	32°F to 120°F (0°C to 49°C)
Inlet/Outlet Ports	1/4" MFL fittings with 1/2" ACME adapters
Weight	Approx. 7 lbs.

### Certified Refrigerant Scale

- 200 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.
- Advanced charge and recovery modes – uses tare weight and maximum 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.

**No. TIF9055** – Certified refrigerant scale.



34990

### Specifications

Weight Limit	110 lb. (50 kg) bulk tank maximum
Display	16 digit alphanumeric LCD
Weight Resolution	0.02 lbs. (.01 kg)
Operating Temp	50° to 120°F (10° to 49°C)
Power Supply	110V 50 Hz
Dimensions	13.5" x 11" x 4" (34 cm x 28 cm x 10 cm)
Platform Dimensions	8.5" x 8.5" (22 cm x 22 cm)
Weight	Approx. 8 lbs. (4 kg)

### Automatic Charging Scale

Just program the charge amount and this scale accurately charges refrigerant from a bulk tank, and shuts off automatically for hands-off operation.

**Charging is simple** – just press and hold the “Charge” key until the display shows the desired weight, then release the key!

**Accurate Charging** – Meter is accurate to ±1 oz.; can handle up to 110 lbs.

**Dual Fittings for Versatility** – Includes both 1/4" MFL and 1/2" ACME fittings.

**Corner Balancing** – Weight measurement is accurate even if the tank is placed off-center on the platform.

**Tare Function** – Zeroes the display so you can easily read changes in the weight.

**No. 34990** – Automatic charging scale.

### International Model

**No. 34991** – 220–240V 50/60 Hz, 1/4" MFL and 1/2" ACME fittings.



### Cordless Rechargeable 30-LED Light

- Work anywhere without worrying about tangled cords
- Eliminate the possibility of electrical shock from worn and frayed power cords!
- One-hour recharge time provides up to 8 hours of continuous operation.
- 30 super-bright, long-life LEDs provide forward directed pure white light.
- Strong enough to withstand being driven over by a vehicle!
- Slim design allows access into tight areas.
- Swivel hook allows the light to be positioned in any direction.

**No. 16440** – Cordless rechargeable 30-LED light.



16440

### Dial-A-Charge® Charging Cylinders

Calibrated shrouds make accurate charging simple, and the charge is measured by weight for greatest accuracy. Using the calibrations in conjunction with the pressure gauge, you can easily compensate for volume fluctuations that occur as the ambient temperature changes, just by “re-dialing” the shroud.

Heated cylinders help speed the transfer of refrigerant by overcoming the equalization of pressure between the system and the charging cylinder. This reduces the time required for a complete charge.

- Charges by volume; calibrations on the shroud make it easy to charge the exact amount required.
- Comes in durable polyethylene case for protection during storage and transit. Cylinder snaps in and out of the case and can be stored either vertically or horizontally.
- For safety, all cylinders come with pressure relief valves; they automatically reset when a safe working pressure is restored.



For automotive applications, order the Dial-A-Charge with Acme fittings.

R-12, R-22, R-502 MODELS – 1/4" SAE FITTINGS			
Capacity	110V	220V	Graduations
2-1/2 lb.	43299B	NA	1 oz.
5 lb.	43678B	–	1 oz.
2200 grams	43681B	20349B	25 g

R-134a MODELS		
Capacity	110V	Graduations
2-1/2 lb. 1100 grams 1/4" SAE fittings	43134B	1 oz. 25 g
5 lb. 2200 grams 1/4" SAE fittings	43534B	1 oz. 25 g
5 lb. 2200 grams ACME fittings	34205A	1 oz. 25 g
Capacity	220V	Graduations
5 lb. 2200 grams ACME fittings	43220	1 oz. 25 g

# ROBINAIR FLUID PRODUCTS

## A/C Tools & Accessories



### Heater Blanket

Robinair's heater blanket speeds charging by maintaining a constant temperature, thus creating a positive pressure between the refrigerant tank and the A/C system.

- Fits 30 and 50 pound refrigerant tanks.
- Thermostat is set at 125°F (55°C).
- Thermal cut-off switch protects against overheating.
- 300 watts, 2.6 amps.

**No. 10994** – Heater blanket.

### International Models

**No. 13183** – Heater blanket, 220V–240V 50 Hz, no plug.

**No. 13184** – Heater blanket, 220V–240V 50 Hz, with internal IEC receptacle.



### Mini Tubing Cutter

With a short swing radius, this cutter makes quick work of cutting tubing in tight spots. The 42022 is especially versatile with its larger range: 1/8" to 1-1/8" O.D. tubing capacity.

**No. 42022** – Mini tubing cutter.



### Mini Tubing Cutter

With the smallest cutting radius in the industry, the 42024 is ideal for extremely tight places. A finer thread screw provides easier tightening. For 1/8" to 5/8" O.D. tubing.

**No. 42024** – Mini tubing cutter.



### Mini Tubing Cutter

- Works on tubing sizes 1/8" to 5/8" O.D. (3 mm to 16 mm).
- Easily cuts copper, brass, aluminum, and steel brake lines in hard-to-reach places.
- Ream folds onto cutter body for storage.
- Extra cutting wheel stored under ream.

**No. 6514** – Mini tubing cutter.



### Heavy-Duty Tubing Cutter

- Works on tubing sizes 1/8" to 1-1/8" O.D. (3 mm to 29 mm).
- Easily cuts copper, brass, aluminum, and steel brake lines.
- Ream folds onto cutter body for storage.
- Extra cutting wheel stored under ream.

**No. 6512** – Heavy-duty tubing cutter.



### Tubing Cutter

Our roller-type cutter makes clean cuts in copper, aluminum, steel, and stainless steel tubing. Features easy action, wide capacity range, and a pencil reamer. For 1/4" to 1-1/2" O.D. tubing.

**No. 42028** – Tubing cutter.

### Slip-Adjust Tubing Cutter

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

**No. 42035** – Slip-adjust tubing cutter.



42035

### Ratcheting Tubing Cutters

- 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.

**No. 42071** – Ratcheting tubing cutter for 1/8" to 1/2" tubing.

**No. 42080** – Ratcheting tubing cutter for 1/4" to 7/8" tubing.

**No. 42090** – Ratcheting tubing cutter for 1/4" to 1-1/8" tubing.



42090

42080

42071

### Ratcheting Tubing Cutter Display

- Includes twelve No. 42071 ratcheting tubing cutters designed for use in 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.

**No. 42012** – Display box of 12 No. 42071 ratcheting tubing cutters for 1/8" to 1/2" tubing.



42012

### Replacement Cutter Wheels

These top quality replacement cutter wheels are thinner for cleaner cuts with less effort. Made of high quality, shock-resistant, tool steel, the cutters are also heat treated to resist breakage and last longer. Cutter wheels are available to fit Robinair cutters, and can be used as replacements in nearly all other brands.



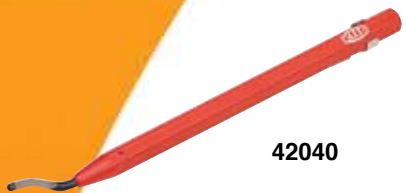
#### Replacement Wheel Chart

Model No.	Fits Cutter No.
13167	42024
13168	42022, 42035
42062	42028
42073	42071
42083	42080, 42090



# ROBINAIR FLUID PRODUCTS

## A/C Tools & Accessories



### Single Blade Deburring Tool

This handy tool removes internal burrs in copper tubing. It features a high-speed steel, blade, aluminum handle, and pocket clip. Tubing size is unlimited.

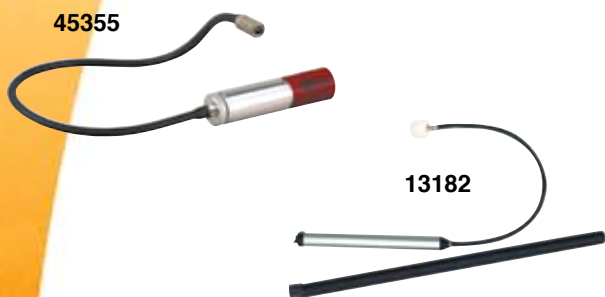
**No. 42040** – Single blade deburring tool.



### Deburring Tool

Quickly deburrs aluminum, copper, and steel tubing, and can work on any size tubing. It's made with a high-speed, steel blade and a durable aluminum handle. Three spare blades store in the handle.

**No. 13162** – Deburring tool.



### Fiber Optics Inspection Light

The applications for this handy tool are practically endless...check burners on heat exchangers for cracks, check coils for dirt and damage, look at serial numbers, fan motor tags, etc., on furnaces and condensing units. Fiber optics provide a bright light, but the shaft is just 7.6 mm in diameter. A durable cover fits over the 15" flexible shaft for protection. Powered by three AA batteries.

**No. 13182** – Fiber optics inspection light.

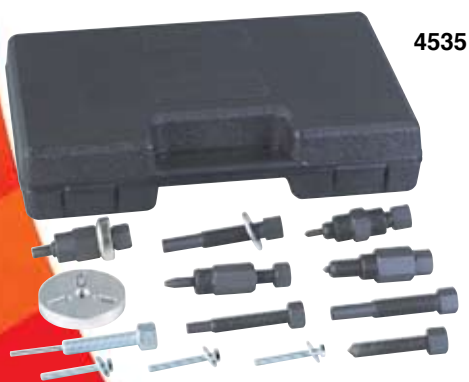
**No. 45355** – Inspection light with magnetic tip and base.



### A/C Clutch Pulley Puller Set

- For removal of stubborn air conditioning clutch pulleys. Also 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 three spread settings, two pairs of jaws, and a clamp bolt.
- Spread: 3" to 5"; Reach: 1" to 5".
- Includes blow-molded plastic case.

**No. 4536** – A/C clutch pulley puller set.



### A/C Clutch Hub Remover/Installer Set

- 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.

**No. 4535** – A/C clutch hub remover/ installer set (13 pc.).



### Clutch Plate Remover

Designed to overcome resistance when removing the clutch plate.

**No. 11009** – Clutch plate remover.

### Spring Lock Coupler Disconnect Set

Set includes four sizes for use on 3/8", 1/2", 5/8", and 3/4" tubes. Allows quick, safe disconnect of spring lock couplers on late model Ford systems and Tecumseh HR980 compressors.

**No. 7238** – Spring lock coupler disconnect set.

7238



### Fuel Line Disconnect Tool

Special low-profile design works in close quarters on GM, Ford, and Chrysler vehicles where there is limited clearance between the fuel line fittings and fuel filters, fuel rails, or sending units. This tool is designed to access the center port on the GM fuel tank sending unit.

For 3/8" and 1/2" applications; will also service 2001 thru current 3/4- and 1-ton trucks with the Duramax Diesel engine.

**No. 6511** – Fuel line disconnect tool.

6511



### Clutch Plate Remover/Installer

These compact tools are used both to remove the clutch for access to the shaft seal and to re-install it by simply inverting the nut and main bearing.

**No. 10861** – A6, R4. **No. 41067** – V5, DA6, HR6.

10861



### Compressor Turning Tool

Works on wide variety of compressor models. Fits clutch hubs that do not have holes that a spanner wrench can grip, or a hex end that a box wrench can grip. Spreads lubrication to prevent compressor damage at start-up. Recommended by OE compressor manufacturers.

- Threads into most hex-less clutch hubs.
- Uses a standard 19mm (3/4") wrench.
- Allows technician to check for internal damage.
- Breaks compressor lock-up due to sticky protective coatings.
- Turns compressor in the direction of normal rotation.

**No. 41057** – Compressor turning tool.

41057



### 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.

**No. 4537** – A/C clutch holding tool.

4537



### Four-In-One Tube Bender

Effortlessly bends four different sizes of soft or annealed tubing without crimping, flattening, or scratching. Calibration allows duplication of any angle. Handles are 8-1/2" long, so extensions are not needed, and glass/plastic construction combines strength with lightweight durability.

**No. 18548** – Tube bender for 3/16", 1/4", 5/16", and 3/8" tubing.

18548

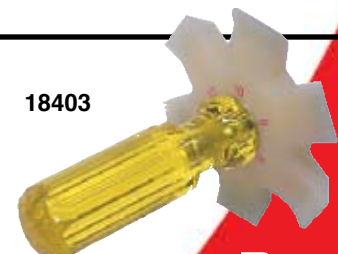


### Fin Straightener

Use our handy six-in-one straightener to clean and straighten condenser and evaporator coil fins. Straightener sections are clearly marked for fin size. The tool is compact enough to use even in confined spaces: the straightener head is 3-1/8" in diameter; the handle is 3-1/2" long.

**No. 18403** – Fin straightener – 8, 9, 10, 12, 14, & 15 fins per inch.

18403



# ROBINAIR FLUID PRODUCTS

## A/C Tools & Accessories



18560

### Valve Core Remover / Installer

Remove and install the valve core 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 and 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.

**No. 18560** – Valve core remover / installer.



18561

### Valve Core Remover / Installer

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

**No. 18561** – Valve core remover / installer.



14773

### Thread Chaser

For use with No. 18560 or 18561, valve core remover/ installer. This item actually repairs damaged threads on valve cores in the service line, without releasing refrigerant into the atmosphere.

**No. 14773** – Thread chaser.



14774

### Pick Extractor

For use with No. 18560 or 18561, valve core remover/ installer, this extractor lets you remove damaged cores in the service line while the system is fully charged. There's no release of refrigerant into the atmosphere.

**No. 14774** – Pick extractor.



11014

### Access Valve Core Removers Save Service Time

These handy tools remove valve cores without losing the system charge. They're designed specifically for use during evacuation or recharging on any system with valve core-type access ports. Removing the core restriction results in maximum flow, greatly reducing the time required for evacuation and charging.



10588

### R-12 Valve Core Remover

Services late model GM cars with deeper valve cores.

**No. 11014** – R-12 valve core remover.

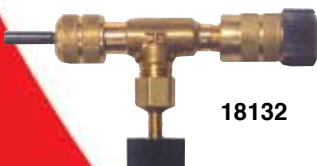


13145

### R-134a Valve Core Remover

Our popular valve core remover/installer has been engineered for use when servicing deeper core R-134a A/C systems.

**No. 10588** – R-134a valve core remover.



18132

### 1/4" Valve Core Remover

Robinair's standard valve core remover includes six replacement valve cores which store in the tool's body.

**No. 13145** – Replacement valve cores, pkg/6.

### Valve Core Remover/Installer

Replace leaking valve cores quickly and easily, or remove the valve core and hold it out of place for evacuation or charging. Designed for automotive access fittings with deeper valve cores.

**No. 18132** – Valve core remover/installer.

### Valve Core Remover Kit

- Standard valve core extractor.
- 8 mm valve core extractor.
- 10 mm valve core extractor.
- GM high flow valve core extractor.
- JRA valve core extractor.
- R-134a low- and high-side body assemblies with side ports.
- R-134a low- and high-side port adapters.
- Plastic carrying case.
- Usage chart.

**No. 18340** – Valve core remover kit.

#### Order Separately:

**No. 20371** – (Red) High-side valve core remover tool – GM.

**No. 18336** – (Blue) Low-side valve core remover tool – GM.



### Access Adapters

Robinair offers a complete selection of access adapters for hooking up A/C systems for evacuation and recharging. These adapters fit most systems, and sizes are available to fit most passenger cars. "A" models have longer valve core depressors to work on both standard and the deeper-set valve cores in some vehicles. Check manufacturer's specifications for specific applications.

#### 90° Style Adapters

Solid brass fitting is ideal for tight spots or locations where making connections is difficult.

**No. 10469A** – 1/4" MFL x 3/16" FFL.

**No. 40563A** – 1/4" MFL x 1/4" FFL.



**40563A**

#### Straight Style Adapters

Straight adapter is versatile and easy to use. Made of solid brass.

**No. 10468A** – 1/4" MFL x 3/16" FFL.

**No. 40560A** – 1/4" MFL x 1/4" FFL.



**10468A**

#### Flexible Adapters

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

**No. 10293** – 1/4" MFL x 1/8" FFL, blue.

**No. 10470A** – 1/4" MFL x 3/16" FFL, red.

**No. 10778** – 1/4" MFL x 1/4" FFL, yellow.

**No. 40531** – Replacement o-rings for 10293, pkg/6.

**No. 40677** – 3/16" gasket.

**No. 40653B** – 3/16" valve core depressors.

**No. 40082** – 1/4" valve core depressors.

**No. 40083** – 1/4" hose gaskets.



# ROBINAIR FLUID PRODUCTS

## A/C Tools & Accessories



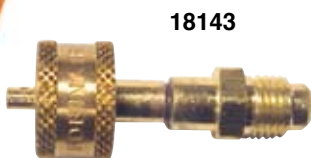
10237A

### Fits-All Adapter Kit

Our access adapters have been combined into a kit that's ideal for accessing R-12 vehicle A/C systems, as well as other types of systems. Five different adapters are included with 1/4" fittings: three flexible adapters (part numbers 10293, 10470A, 10778) and two 90° brass adapters (part numbers 10469A and 40563A). See descriptions above for specifications.

**No. 10237A** – Fits-all adapter kit.

### Straight Adapter



18143

This straight adapter is designed specifically for General Motors vehicles with R-12 air conditioning systems featuring "Positive Seal" high-side charge valves. The adapter is made of brass with an easy-to-grip coupler nut, 1/4" MFL x 3/16" FFL.

**No. 18143** – Straight adapter.

### Quick Seal™ Adapters



10292

Quick Seal fittings automatically shut 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.

**No. 10292** – 1/4" MFL to 1/4" FFL.

**No. 10296** – 1/4" MFL to 3/16" FFL.

**No. 10250** – 1/4" MFL to 1/4" FFL, 90°.

### Quick Seal Repair Kits

**No. 40300** – 1/4" FFL Quick Seal™ kit – for hoses and adapters.

**No. 40302** – 1/2" Acme Quick Seal™ kit.

**No. 18451** – 45° 1/4" Quick Seal™ kit.

**No. 18180** – 1/4" Quick Seal™ o-rings.



40572

### Brass Caps

**No. 40572** – 1/4" solid brass caps have knurled ridges for easy gripping. Package of six.

### Heat Gun



14450

A lightweight source of directed heat offering 500°F and 750°F settings, and also has a "cold" setting. This handy heat gun is ideal for many applications, including:

- Fast heating/drying of materials.
- Quick curing/drying of epoxies.
- Applying shrink tubing.
- Softening tubing for bending.
- Speed-drying of touch-up paint to eliminate "haze."
- Drying out condensation in motors, clutches, controls, etc. Shock-proof and cool-running with a tough Lexan® housing, the unit weighs just 2-1/2 lbs.
- 115V 50/60 Hz.

**No. 14450** – Heat gun.

### Replacement parts

**No. 44993** – Heater element assembly for 14450.

**No. 44996** – Carbon brush.

**No. 44997** – Switch assembly.

## A

### Adapters

Air conditioning	373
Anchor pin	237
Breakout box	42
Compression tester, Ford	122
Crankshaft balancer puller kit, GM	121
Engine stand adapters	269
External-internal threaded	212
Grip wrench	214
Inner tie rod sockets	100
Internal threaded	212
Lite Link™	25
MagiKey®	25
Metric	211
Step plate	212
Vision Premier	53
Air bag release tool	51, 182
Air bag simulators	51, 103
Air brake service kit	239

### Air conditioning

A/C disconnect tools	155–157
Adapters	373
Air-Vac™	362
Charging cylinder, Dial-A-Charge®	367
Clutch holding tool	371
Clutch hub remover/installer set	370
Clutch pulley puller set	370
Compressor turning tool	371
Couplers	351
Dust covers, vinyl	335
Flushing kits and solvent	337
Flushing unit	334
Gauges	351–354
Heat gun	374
Heater blankets	368
Internal replacement filter	335
Leak detectors	339–346
Manifold accessories/ replacement parts	351–356
Oil injectors	336
Orifice tube remover	337
Recovery/recycling units	322–333
Recycling filter-driers	336
Refrigerant identifiers	338
Refrigerant scales	365–366
Refrigerant tanks	336
Replacement gauges	353
Sealant remover adapter hose kit	335
Side-wheel manifold	352
Sight glass manifold, alum	353
Spring-lock coupling tools	156
Syringe-type injectors	336
System performance calculator	355
System sealant remover	335
Vacuum gauges and parts	363–364
Vacuum pumps	360–361
Air cooler tester, charged	230
Air lift jacks	254

Air-Vac™ for R-12 & R-134a	362
Alignment assist tool	99
Alternator tools	104, 129
Alternator/starter tester, The Judge	63
Analyzers, MicroGas	54
Anchor pin press	237
ANSI / PALD safety standards	320
Auto body tools	187, 190–191, 203, 284
AutoCode™ diagnostic tool	18
Automotive scope	30–31

## B

Back Buddy™ lift & accessories	262
--------------------------------	-----

### Ball Joint

Application chart	94–97
Separators	86–90
Sockets, Chrysler	93
Spanner wrench	93
Tie rod separator	101
Tools, adapters, kits, & accessories	90–97
Banjo fittings, quick-disconnect	229
Barring tool, Cummins®	229
Battery and electrical systems testers	58–61
Battery service	184–186
Bearing cup installer	233
Bearing cup remover	142
Belt tension gauge	119
Blade Buddy™ cutting edge handler	264
Blast-Vac multipurpose cleaning gun	138
Boot clamp tools	146–147
Bore scope	47
Bottle jacks	282, 316–317
Brake drum dolly	262, 313
Brake tools	162–168, 239–241
Brake-Link™ diagnostic tool	25

### Brakes

Air brake service kit	239
Brake anchor pin and bushing service set	240
Fluid evacuation/bleeding	164, 179
Pressure test kit	162
S-cam air brake spring tool	240
Breakout Box	42
Bushing service tools	88, 199, 238, 240, 300–305

## C

### Cables

ABS / Air Bag USA 2004	11
Breakout Box	42
Electronic diagnostic	21–23
Genisys	10–11
Nemisys	14, 23
Tech II Flash	20, 23
The Judge	63
Vision Premier	52

Calibration fluid	245
Caliper hanger set	165
Caliper pin removers	166
Cam tools	105–117
Camber adjusting tool	98
Car dolly	270
Caster/camber adjusting tools	98–99
Charging cylinder, Dial-A-Charge®	367
Circuit testers, leads	35–37
Clevis pin press	239
Clutch tools	152–154, 231–232, 370–371
Clutch, flywheel handlers	261
Code retrieval keys, GM	49, 167
Code Scanner® diagnostic tool	17
Collision repair sets	283, 319
Compression testers	122, 123, 226–227
ConnecTech™ PC wireless	11
Control arm prying tool, lower	98
Coolant exchange unit	134
Coolant service accessories	135
Cooling system pressure tester	136
Couplers, service	288, 351
Crankshaft (app. charts)	106–117
Crankshaft service tools	118, 120–121, 125
Cutter set, spot weld	188
Cutting edge handler	264
CV joint tools	145–147
Cylinder leakage tester kit	124
Cylinder liner height gauge	226

## D

DAT diagnostic tools	32
Decarbonizer fluid	67
Deburring tools	370
Diagnostic guide, component	37
Diagnostic software	10–11, 24

### Diagnostic tools

Brake-Link™	25
Code Scanner®	17
DAT	32
Engine analyzer	52
Genisys	3–13
MagiKey® module	25
Multimeters	32–33
Nemisys	14
ScanPro	16
Tech 2 Flash	20
Vision Premier	52
Diesel emission tester	55
Diesel nozzle tester	246–248
Differential service tools	155, 232
Digital Automotive Tester (DAT)	32
Disconnect tools	75–76, 155–157, 371
Distributor service tools	122

# Alphabetical Index

## Dolly

- Brake drum dolly . . . . . 262, 313
- Car dolly . . . . . 270
- Easy Roller™ . . . . . 312
- Wheel dolly . . . . . 262–263, 308
- Drive-pulley service tools . . . . . 230
- DVOMs . . . . . 33

## E

- E-clip tool set . . . . . 191
- Easy Roller™ vehicle positioning system . . . . . 312
- Electrical system & battery testers . . . . . 58–61
- Emission tester, diesel . . . . . 55

## Engine

- Analyzer . . . . . 52
- Barring tool, Cummins . . . . . 133
- Cam timing tools . . . . . 105–117
- Lift package . . . . . 314
- Load leveler . . . . . 313
- Preluber kit . . . . . 128
- Stands and adapters . . . . . 267–269
- Support bar . . . . . 268, 313
- Turning tool, Cummins® . . . . . 229
- EVAP tester . . . . . 80–81
- Exhaust back pressure gauge . . . . . 78

## F

- Fan clutch service tools . . . . . 139–142
- Fiber optics inspection light . . . . . 370
- Fin straightener . . . . . 371
- Flaring tools . . . . . 168, 169
- Flex-View bore scope . . . . . 47
- Floor cranes . . . . . 270–272, 314
- Flow meter, fuel emission . . . . . 78
- Flow testers, hydraulic . . . . . 305
- Fluid capacities book and CD . . . . . 334
- Ford cam tool application charts . . . . . 106, 107, 108
- Fork lift jack . . . . . 264, 312
- Front axle shaft installer, Subaru . . . . . 145
- Front end service set . . . . . 86
- Front hub tools . . . . . 143
- Front leaf spring, pin, & bushing service set . . . . . 238
- Front spindle puller, 4WD . . . . . 144
- Frost plug remover/installer set . . . . . 129
- Fuel injection, cleaners, chemicals adapters, fittings, & access. . . . . 67, 69–73

## Fuel injection

- Cleaning kits . . . . . 67
- Cummins test kit . . . . . 133
- Diagnostic kits . . . . . 68–69
- Gauge assemblies . . . . . 68, 71–72, 73, 78
- Hoses . . . . . 68, 72
- Nozzle pullers, adapters . . . . . 244
- Nozzle socket, Bosch . . . . . 244
- Pump rotating tool . . . . . 245

- Remover kit, Cummins® diesel . . . . . 132
- Test kit, Cummins® diesel . . . . . 220
- Tester . . . . . 48, 74
- Fuel inlet restriction test adapter, Cummins® diesel . . . . . 229
- Fuel line clamp set . . . . . 71, 77
- Fuel line wrenches, diesel . . . . . 245
- Fuel pressure test kit . . . . . 68, 228
- Fuel tank handler . . . . . 252
- Fuel volume test adapter, Cummins® diesel . . . . . 133, 229

## G

- Gas detector, combustible . . . . . 343, 344

## Gauges

- A/C . . . . . 351–354
- Component tester . . . . . 44
- Exhaust back pressure . . . . . 78
- Fuel injection . . . . . 68
- Hydraulic . . . . . 299
- Gear-position sensor adjuster, Ford . . . . . 138
- Genisys diagnostic tool . . . . . 3–13
- Glow plug service tools . . . . . 129, 131, 226–227

## H

- Half-shaft remover/differential rotator . . . . . 128, 155
- Hammer & punch set . . . . . 190
- Harmonic balancer service tools . . . . . 120, 121
- Headlamp alignment tool, Ford . . . . . 186
- Heat gun and replacement parts . . . . . 374
- Heater blankets . . . . . 368
- Heater line quick-disconnect release tool, GM . . . . . 138
- Heating system, magnetic induction . . . . . 284–285

## Heavy-Duty Tools

- Hendrickson service tools . . . . . 300–305
- Holding fixture, bench mounted . . . . . 204, 267

## Hoses

- A/C . . . . . 355
- A/C selection chart . . . . . 356
- Cutters . . . . . 183
- Hydraulic . . . . . 300
- Removal tool . . . . . 137
- Hub puller, universal . . . . . 143
- Hub resurfacing kit, holder, replacement parts . . . . . 144, 165
- Hubcap installer . . . . . 236
- HubTamer bearing service tools . . . . . 142
- Hydraulic adapters, fittings, gauges, couplers . . . . . 299
- Hydraulic flow testers . . . . . 305
- Hydraulic hoses . . . . . 300
- Hydraulic oil . . . . . 300

## I

- Idle air control / idle speed control testers . . . . . 49, 71
- Ignition spark testers . . . . . 48
- Ignition tester, Digital Automotive Tester (DAT) . . . . . 32
- Impact drivers . . . . . 189, 190
- InfoTech 2005 software kit . . . . . 10
- Injection pump timing wrenches . . . . . 132 228

## Injector

- Nozzle testers, Nozlrater, accessories . . . . . 246–248
- Remover/installer kits . . . . . 132, 227, 243
- Seat cleaner . . . . . 245
- Sleeve set . . . . . 245
- Timing kit, Cummins® diesel . . . . . 230
- Inspection enclosure . . . . . 347
- Inspection light, fiber optics . . . . . 370
- Intake system cleaning fluid . . . . . 67

## J

### Jacks

- Accessories . . . . . 259, 308
- Air/hydraulic jacks . . . . . 257, 309
- Air lift jacks . . . . . 254
- Bottle jacks . . . . . 282, 316–317
- Floor jacks . . . . . 259, 310–311
- Fork lift jacks . . . . . 264, 312
- Jack & stand packs . . . . . 259, 310–311
- Racing jacks . . . . . 259
- Service jacks . . . . . 257–259, 309–311
- Stands . . . . . 259–260, 315–316
- Transmission jacks . . . . . 251–253, 306–307
- Under-axle jacks . . . . . 255–256, 308
- Judge, The . . . . . 63

## K

- Kingpin & brake anchor pin pusher . . . . . 237

## L

- Leak detectors . . . . . 80–81, 339–345
- LED light, cordless rechargeable . . . . . 367
- Lift system . . . . . 253
- Lift, motorcycle /ATV . . . . . 312
- Lite Link™ adapter . . . . . 25
- Load-Rotor® . . . . . 272–273
- Lock pin remover, accessories . . . . . 172
- Lock plate compressor/steering wheel remover set . . . . . 102
- Lug nut cap remover . . . . . 236

## M

- MagiKey® module . . . . . 25
- Manifold, gauges, accessories, replacement parts . . . . . 351–356
- MicroGas analyzer & replacement parts . . . . . 54
- MinuteMan Plus electrical system tester . . . . . 61

Mirror & magnet set . . . . .193  
 Mirror removal tools . . . . .187  
 Motorcycle / ATV lift . . . . .312  
 Multimeters . . . . .32–33

## N

Nemisys™ scan tool . . . . .14  
 Noid Lites . . . . .45, 73  
 Nozlrater injector nozzle  
 testers & accessories . . . . .246–248  
 Nut splitter, C-frame . . . . .188

## O

O-ring / oil seal tools . . . . .193  
 Oil cooler line disconnect tool,  
 Ford . . . . .152  
 Oil filter crushers . . . . .265–266  
 Oil filter tools . . . . .199–201  
 Oil injectors . . . . .336  
 Oil light reset tool kit . . . . .46  
 Oil pump drive removal tool, GM . . .120  
 Oil seal and wear ring installer . . . .225  
 Oil seal kit, rear main, Ford . . . . .131  
 Oil spout . . . . .357  
 Oil transfer handler . . . . .264, 319  
 Oil, hydraulic . . . . .300  
 Oil, vacuum pump . . . . .357  
 OneStep battery analyzer . . . . .62  
 Orifice tube remover . . . . .337

## P

Parasitic drain tester . . . . .60  
 Parts tray, magnetic . . . . .181  
 Phototach . . . . .47  
 Pick extractor . . . . .372  
 Pickle forks . . . . .88–89  
 Pitman arm service tools . . . . .86–88, 100

## Pliers

Axle stud cone . . . . .240  
 Boot clamp, Chrysler . . . . .146  
 Brake spring and claw . . . . .168  
 CV boot clamp . . . . .146, 147  
 Exhaust hanger . . . . .188  
 Flexible hose clamp . . . . .137  
 Horseshoe lock ring . . . . .178  
 Hose clamp . . . . .136–137  
 Hose pinch-off . . . . .183  
 Offset hose clamp . . . . .137  
 Oil filter . . . . .201  
 Pinch-off . . . . .71, 183  
 Snap ring . . . . .177–178

Power steering pump  
 pulley tools . . . . .103–105, 237  
 Power train lift . . . . .250

## Presses

Bench . . . . .274  
 Open throat . . . . .277  
 OTC bottle jack . . . . .276  
 Protective blankets . . . . .280  
 Shop . . . . .274–281  
 Stinger bottle jack . . . . .276

Pressure & temperature analyzer . . . .44  
 Pro-Link® diagnostic tool,  
 accessories . . . . .24–25  
 Propane enrichment kit . . . . .78  
 Protective blankets . . . . .207, 280  
 Pry bars . . . . .192–193, 236

## Pullers

13 & 17-1/2 ton . . . . .220  
 A/C clutch pulley . . . . .217  
 Accessories . . . . .221–222  
 Bearing separator/bar-type puller . .218  
 Bearing splitter . . . . .222  
 Blind hole . . . . .217  
 Body and fender dent . . . . .203  
 Cone-type . . . . .215  
 Cummins® injector . . . . .243  
 Differential bearing . . . . .214  
 Drive-gear coupling, compressor . .230  
 Flange-type . . . . .125, 126, 219  
 Flywheel, steering wheel,  
 and pulley . . . . .101–102  
 Four-in-one set . . . . .219  
 Gear and pulley . . . . .198  
 Grip-O-Matic® . . . . .208–210, 214  
 Heavy-duty U-joint . . . . .233  
 Hub oil seal . . . . .238  
 Hydraulic . . . . .221, 222  
 Internal pulling attachments . . . . .211  
 Lock-on, jaw-type set . . . . .218  
 Motorcycle / ATV chain tension . . .195  
 Multipurpose sets . . . . .215, 217  
 Pilot bearing . . . . .213, 215, 232  
 Power steering . . . . .103  
 Push-Puller® and  
 accessories . . . . .209–211, 218, 221  
 Rear axle set, accessories . . . . .216  
 Reversible-jaw slide hammer . .213, 216  
 Seal . . . . .203  
 Silver Slapper . . . . .215  
 Slack adjuster . . . . .239  
 Slide hammer . . . . .213–216  
 Steering wheel . . . . .103  
 Windshield wiper . . . . .195  
 Pulley holder, universal . . . . .127, 195  
 Pulley pulling attachments . . . . .211  
 Pump intake fittings . . . . .362

## Pumps

Air/hydraulic . . . . .286, 287, 295, 318  
 Electric/hydraulic two-stage . . .296–298  
 Hand hydraulic . . . . .283, 287,  
 . . . . .292–295, 318  
 Pump & ram sets . . . . .286, 292–293  
 Vacuum . . . . .360–361  
 Punch & chisel sets . . . . .188–190  
 Putty knife set . . . . .191

## R

Radiator dye, coolant . . . . .135  
 Radio removal tools . . . . .182–183  
 Ramps, truck . . . . .255

## Rams

Aluminum . . . . .290  
 Center hole Power Twin® . . . . .290  
 Collision repair . . . . .283, 319  
 Hollow center spring return . . . . .289  
 Single-acting spring return . . . . .288, 291  
 Rear axle service tools . . . . .148, 149  
 Rear crankshaft seal  
 installer, Ford . . . . .120  
 Rear main seal installer, Ford . . . . .120  
 Rear wheel bearing tools . . . . .149  
 Recovery/recycling units, accessories,  
 replacement parts . . . . .322–336  
 Refractometer, coolant and battery . .135  
 Refrigerant identifier, accessories/  
 replacement parts . . . . .325, 338  
 Refrigerant scales, automatic  
 charging . . . . .365–366  
 Refrigerant tanks . . . . .336  
 Reservoirs, replacement . . . . .250,  
 . . . . .295–296, 298  
 Retaining ring pliers . . . . .176–179  
 Ribe bit & key sets . . . . .174  
 Rotating electrical tester . . . . .63

## S

SABRE battery testers . . . . .56–57

## Scan tools

AutoCode™ . . . . .18  
 Code Scanner® . . . . .17  
 Genisys . . . . .3–13  
 Nemisys™ . . . . .14  
 OTC tool comparison chart . . . . .19  
 Ready Scan™ . . . . .18  
 ScanPro . . . . .16

## Scopes

Automotive . . . . .30–31  
 Flex-View bore . . . . .47  
 Genisys . . . . .3–13  
 Solarity . . . . .26–29  
 Scraper set . . . . .191  
 Screw & stud extractors . . . . .180  
 Seat belt bolt removal tool, GM . . . .174  
 Separator tools & accessories . . . .88–90  
 Serpentine belt tool . . . . .127  
 Shaft protector & accessories . . . . .212  
 Shock link/tie rod separator . . . . .89  
 Slack adjuster puller . . . . .239  
 Slack check . . . . .239  
 Sleeve puller/installer sets  
 and accessories . . . . .224–225  
 Slide hammer units,  
 basic . . . . .148, 213  
 Smoke Check diesel  
 emission tester . . . . .55  
 Smoke machine . . . . .80–81  
 Snap ring pliers . . . . .176–179



# Alphabetical Index

## Sockets

Axle nut . . . . .160  
Bit holders . . . . .173  
Brake caliper . . . . .165, 171  
Budd wheel . . . . .235  
Chrysler ball joint . . . . .93  
Diesel injector . . . . .132, 228  
Head bolt, BMW & Toyota . . . . .127  
Hex . . . . .172, 173  
Locknut . . . . .158, 162  
Mack kingpin . . . . .237  
Oil pressure sending unit . . . . .77  
Oxygen sensor . . . . .77  
Pinion . . . . .236  
Saturn window glass . . . . .182  
Sensor set . . . . .77  
Spark plug, Ford F-150 . . . . .119  
Strut rod nut . . . . .84  
Tie rod . . . . .100, 101,  
. . . . .237, 238  
Tool board . . . . .234, 235  
TORX® . . . . .170–173  
Truck pinion . . . . .236  
VW and Audi strut nut . . . . .84  
Water pump, GM . . . . .138  
Wheel bearing locknut . . . . .160,  
. . . . .234–235  
Software kits, electronic  
diagnostic . . . . .10–11  
Solarity diagnostic tool . . . . .26–29  
Spark plug service tools . . . . .48, 119  
Spreader, hydraulic . . . . .287  
Spring compressors . . . . .81–83  
Steering wheel service tools . . . . .101–103,  
. . . . .163, 189  
Stethoscope . . . . .49, 203  
Strut tools . . . . .82–83  
Support stands . . . . .260, 316  
Surge protector, Antizap auto . . . . .49  
Syringe-type injectors . . . . .336

## T

Tech 2 diagnostic tool . . . . .20  
Terminal release tool . . . . .50  
Terminal test kit . . . . .34  
Thermistor vacuum gauge . . . . .363  
Thermometers . . . . .348–350  
Thread chaser . . . . .194  
Tie rod service tools . . . . .86–87,  
. . . . .89, 99–101  
Timing service tools . . . . .43, 106–118  
. . . . .241–242  
Tire pressure monitoring system . . . . .40–41  
Toe adjustment service tools . . . . .85–86  
Tool boards . . . . .234, 235, 236  
Torque angle gauge . . . . .181  
Torque converter/cleaner &  
accessories . . . . .151

Torque wrenches, multipliers . . . . .180–181  
Torsion bar tools . . . . .84, 85  
Torx® bit sockets, holders . . . . .170–173  
Transfer Tanker . . . . .264, 319  
Transflow transmission oil cooler  
flusher . . . . .150  
Transmission service tools . . . . .124,  
. . . . .150–154, 204, 241–243,  
. . . . .251–253, 306–307  
Tube bender . . . . .166, 371  
Tubing cutters . . . . .167, 368, 369

## U

U-joint service tools . . . . .145  
Ultrasonic leak detector . . . . .345  
Upper control arm alignment  
wrenches . . . . .99  
Upper control arm bushing  
service set . . . . .88  
Upper control arm knock-out tool . . . . .84  
USA 2005 European starter kit . . . . .11  
USA 2004 ABS / Air Bag cable kit . . . . .11  
USA 2004 ABS / Air Bag  
software kits . . . . .11  
USA 2006 Asian cable kit . . . . .10  
USA 2006 Asian software kits . . . . .10  
USA 2006 Domestic software  
update kit . . . . .10  
UV lamps . . . . .346

## V

Vacuum/pressure pump kit . . . . .179  
Vacuum front hub puller  
release tools (Ford) . . . . .144  
Vacuum gauges . . . . .363–364  
Vacuum grease, high . . . . .354  
Vacuum hose and fuel line  
removal tool . . . . .136  
Vacuum pump oil . . . . .357  
Vacuum pump pulley remover  
jaws, Ford diesel . . . . .105  
Vacuum pump, deluxe metal . . . . .179  
Vacuum pumps . . . . .360–361  
Vacuum/pressure gauge kit . . . . .124  
Valve core remover/installer . . . . .372, 373  
Valve spring compressors . . . . .119, 125  
Valves, hydraulic . . . . .297  
Vision Premier engine analyzer . . . . .52

## W

Water pump pulley tool,  
Cummins® . . . . .230  
Water pump socket, GM . . . . .138  
Wheel dolly . . . . .262–263, 308  
Wheel Mate™ . . . . .263  
Wheel steps . . . . .258, 319  
Wheel tipper . . . . .263

## Wrenches

Allen . . . . .199  
Alternator insulator, Delco . . . . .129  
Ball joint spanner . . . . .93  
Caster/camber adjusting, Ford . . . . .98  
Chain . . . . .202  
Chrysler fuel pump spanner . . . . .78  
Clutch adjusting . . . . .231, 232  
Differential bearing preload . . . . .155  
Fan clutch . . . . .139–142  
Ford lock ring . . . . .84  
Fuel line . . . . .245  
Giant adjustable . . . . .196  
Gland nut . . . . .187  
Hex key . . . . .194  
Injection pump timing . . . . .132, 228  
Lock ring . . . . .78  
Oil filter . . . . .199–201  
Rear toe adjustment . . . . .85  
Spanner adjustable . . . . .197  
Spanner, variable pin . . . . .128  
Strap . . . . .202  
Timing belt, Chrysler . . . . .118  
Torque . . . . .180–181  
Tubular spanner . . . . .235  
Upper arm alignment . . . . .99  
Wrist strap, anti-static . . . . .49

# GM, Ford, Chrysler Tool Index

<b>GM Tool Index</b>	<b>Part No.</b>	<b>Page No.</b>
4WD ball joint service kit for Dana 44 front axles	No. 7704	91
4WD front spindle puller	No. 7502	144
4WD ball joint adapter set	No. 7920	92
4WD spindle nut socket set	No. 4543	161
ABS brake proportioning valve depressor	No. 7853	164
Alignment assist tool	No. 7676	99
Axle nut socket set	No. 4547	160
Ball joint adapter update kit	No. 6732	92
Brake shoe spanner and spring remover	No. 6631	168
Camshaft timing tools	No. 6045	118
Cam tool set (In-line 4-cylinder)	No. 6685	112
Cam tool set (GM Northstar V8)	No. 6686	115
Cam tool sets (6 cylinder) (In-line 5,6, or V6)	No. 6687, 6688	116
Caster/camber adjusting tool	No. 7840	98
Clutch line disconnect tool	No. 7910	153
Crankshaft balancer puller kits	No. 7911, 7912	120
Delco alternator insulator wrench	No. 7780	129
Detroit Diesel injector socket	No. 5060	132
Diesel compression tester with adapters	No. 5020	130
Disc park brake caliper tool kit	No. 7317A	164
Ear-type CV boot clamp pliers	No. 4723	147
ECM code retrieval key.	No. 7739	167
F-body camber adjusting tool	No. 7539	98
Flange-type puller set	No. 6294	126
Front hub puller for 4WD vehicles	No. 7901	143
Glow plug removal tool	No. 6005	129
Harmonic balancer puller	No. 6667	121
Heater line quick-connect release tool	No. 6046	138
Injection pump wrench set	No. 6087	132
Inner tie rod adapter sockets	No. 7678	100
Inner tie rod removal set	No. 7595A	100
Inner tie rod tools	No. 7504A, 7505A	101
Locknut sockets	No. 7157, 7158	158
Master disconnect tool set	No. 6508	157
Oil pump drive removal tool	No. 7943	120
Pitman arm remover	No. 6496	87
Pitman arm remover	No. 6532	89
Power steering and alternator pulley puller/installer	No. 4529	104
Power steering pump pulley installer	No. 7209	103
Power steering pump pulley installer	No. 7005	105
Power steering pump pulley kit	No. 7830A	104
Power steering pump pulley service kit	No. 7362	103
Rear axle bearing puller	No. 7496A	149
Seat belt bolt removal tool	No. 5901	174
Spark plug socket set	No. 6897	119
Steering wheel lock plate removers	No. 7815, 7031A	102
Steering wheel puller leg set	No. 7929A	101
Torsion bar unloading tool	No. 7822A	85
Transmission line disconnects	No. 6611	153
Transmission oil cooler line disconnect tool	No. 7937	154
Truck bushing adapter set	No. 8348	88
Truck tie rod socket	No. 6065	101
U-joint removing/installing tool	No. 7248	145
Upper arm alignment wrenches	No. 7534	99
Upper control arm knock-out tool	No. 7491C	84
W-body brake bushing service set	No. 7639	166
W-body strut service set	No. 7568A	83
W-body strut tool kit	No. 4533	84
Water pump socket	No. 6060A	138
<b>Ford Tool Index</b>	<b>Part No.</b>	<b>Page No.</b>
2WD Ford van ball joint adapter set	No. 7919	92
4.6L 4-valve cam timing kit	No. 6498	108
4WD ball joint service kit for Dana 44 front axles	No. 7704	91
4WD caster/camber sleeve puller	No. 7588A	99
5- and 9-pin connector harness for glow plug testing	No. 6088, 6089	131
6.0L diesel fan clutch wrench	No. 6974	141
Air bag simulators	No. 7955, 7956, 7957	103
Axle shaft seal installer	No. 6695	144
Ball joint adapter set (master set)	No. 7918	93
Ball joint adapter set	No. 8032	91
Ball joint adapter update kit	No. 6731	92
Ball joint remover	No. 7825	91
Ball joint spanner wrench	No. 7080	93

Ball joint super set	No. 6530	90
Brake spring tool	No. 7456	166
Cliper pin remover	No. 7299	166
Cam tool kits	No. 6486, 6487, 6488	105
Cam tool kits	No. 6489	106
Cam tool kits	No. 6498	108
Caster/camber adjusting tools	No. 7829, 8312	98
Caster/camber alignment set	No. 7091	99
Clutch coupling tool	No. 7646A	152
Compression tester adapter	No. 5607	122
Crankshaft positioning tool	No. 6024	118
Diesel compression test adapter	No. 6076	130
Diesel fan clutch wrench	No. 6068	139
Diesel vacuum pump pulley remover jaws	No. 7922	105
Disc brake caliper pin remover	No. 7499	166
Disconnect tool set	No. 6508	157
Ear-type CV boot clamp pliers	No. 4723	147
Fan clutch wrench sets	No. 4585, 6974	141
Front hub puller for 4WD vehicles	No. 7901	143
Front hub release tool set	No. 7932	144
Gear-position sensor adjuster	No. 7784	138
Glow plug removal tool	No. 6005	129
Halfshaft remover/differential rotator	No. 7140	128
Harmonic balancer puller	No. 6667	121
Injector remover/installer kit	No. 6067	132
Inner tie rod adapter sockets	No. 7593	100
Lock pin remover	No. 7122R	103
Oil line disconnect tool for 6.0L	No. 6594	131
Oil line disconnect tool (high pressure)	No. 6595	132
Pitman arm puller (super-duty)	No. 6497	87
Power steering pump pulley installer	No. 7771	103
Power steering pump pulley puller/installer set	No. 4530	104
Power steering pump/alternator pulley remover	No. 7185	104
Rear crankshaft seal installer	No. 7834	120
Rear main seal installer	No. 7786	120
Rear main oil seal kit	No. 7835	131
Rear toe adjustment wrenchs	No. 7814, 7706, 7899	85
Separator tool	No. 6533	89
Spark plug sockets	No. 6900, 6897	119
Steering wheel puller leg set	No. 7929A	101
Tie rod/Pitman arm adjusting set	No. 6274	100
Torsion bar adjustment tool	No. 7816	85
Transmission cooler line disconnect set	No. 6593	153
Truck tie rod socket	No. 6065	101
Truck torsion bar tool	No. 7826	84
Upper arm alignment wrenches	No. 7414	99
Valve spring compressor tool	No. 7928	119
<b>Chrysler Tool Index</b>	<b>Part No.</b>	<b>Page No.</b>
A/C spring-lock coupling tools	No. 6538	156
Alignment assist tool	No. 7676	99
Ball joint socket	No. 8033, 8034	93
Boot clamp pliers	No. 4720	146
Cam tool set	No. 6689	109
Camshaft alignment tool set	No. 7999	118
Crankshaft damper remover/installer kit	No. 6075	121
Differential bearing preload wrench	No. 6602	155
Disconnect tool set	No. 6508	157
Harmonic balancer holding tool	No. 6495	120
Inner tie rod adapter sockets	No. 7678, 7594	100
Inner tie rod crimper tool	No. 7504A	101
Inner tie rod socket tool	No. 7572	100
Jeep/truck ball joint set	No. 8031	90
LH toe adjusting tool sets	No. 6272, 7891	86
Power steering and alternator pulley puller/installer	No. 4529	104
Power steering pump pulley kit	No. 7830A	104
Spark plug socket set	No. 6897	119
Steering pivot pin remover	No. 7889	103
Steering wheel lock plate remover	No. 7815	102
Steering wheel puller leg set	No. 7929A	101
Timing belt adjustment wrenchs	No. 7695, 7997	118
Transmission disconnect set	No. 6520	153
Truck tie rod socket	No. 6065	101
Upper control arm bushing service set	No. 7068	88

# Numerical Index

000-31529	53	1120	176, 177	1522A	306	1822	273	1949A	235	3180	59
000-31568	53	1121	210, 218, 220	1525	259	1823	276	1950M	234	3181	59
000-31598	53	1122	210, 215,	1526	311	1823A	276	1951M	234	3182	59
464	214		218, 220, 222	1532	259	1824	276	1952M	234	3183	58
465	214	1123	210, 218,	1533	259	1824A	276	1953M	234	3184	58
518	220		220, 222	1534A	319	1825	275	1954M	234	3185	58
522	198, 218	1124	210	1536	311	1826	277	1955M	234	3225	42
525	219	1125	176, 177	1537	311	1826A	277	1956M	234	3225-10	42
534-07071	53	1125	177	1540	312	1833	276	1957M	234	3226	42
538-06766-002	53	1126	210, 222	1543	313	1834	276	1958M	234	3226-04	42
679	211, 218, 222	1127	210, 221, 222	1545	312	1845	278	1959M	234	3226-13	42
680	211	1128	210, 220, 222	1560	177	1846A	278	1960M	234	3235	42
680	222	1130	210, 218,	1565	177	1847	278	1961M	234	3238	42
714	178		220, 221, 222	1569	177	1850	278	1975	236	3238-UPD	42
885	197	1131	177	1572	270	1851	278	1976	236	3239	42
898A	203	1150	211	1577	319	1854	279	1977	236	3305-124	22
927	209, 218, 220	1151	211	1580	312	1857	280	1978	236	3305-13	22
938	209, 220	1152	211, 220	1582	259	1858	280	1979	236	3305-14	21, 22
939	209	1153	211	1585	250	1858-1P	280	1980	236	3305-141	22
981	217	1154	211, 221, 222	1590	254	1865	281	1981	236	3305-15	22
0000-8103	53	1155	213, 215	1591A	254	1865P	281	1982M	242	3305-16	22
0100	176	1156	213	1595	250	1866	281	2002	314	3305-17	21, 22
0200	176	1165	211	1620	220	1868	280	2003	314	3305-18	21
0300	176	1166	221, 222	1621	220	1872	278	2004	314	3305-19	21, 22
0400	176	1170	213, 220, 222	1675	220	1874	265	2010A	315	3305-20	22
0500	176	1171	213	1676	220	1875	265	2012A	315	3305-22	22
0600	176	1172	213	1677	220	1876	265	2015A	316	3305-27	21
1020	208	1173	213	1679	222	1877	266	2016A	316	3305-48	22
1021	208	1174	213	1680	222	1879	276	2018A	316	3305-53	71
1022	208, 220	1176	213, 216,	1681	222	1880	275	2036PB	207, 280	3305-58	21
1023	208, 215		220, 222	1682	222	1881	277	2510A	318	3305-65	22
1024	208, 220	1177	213, 215, 220	1683	222	1882	279	2860PB	207, 280	3305-68	22
1025	208, 222	1178	216	1688	221	1884	274	3050C	45, 73	3305-71	21
1026	208, 220	1179	215	1689	221	1887	274	3051	45, 74	3305-72	21
1027	208, 215, 222	1180	218	1690	221	1888	275	3052S	45, 71, 73, 74	3305-73	21
1028	155, 214	1182	218	1723	268	1889	277	3053S	45, 71, 73, 74	3305-74	21
1031	155, 214	1183	218	1725	268	1893	279	3054C	45, 71, 73	3305-84	21
1035	208, 220, 222	1184	215	1726	267	1896	266	3101-02	24	3305-92	22
1036	208, 220	1200	224	1728	252	1899	274	3101-04	25	3305-93	22
1037	208, 220, 222	1201	224	1728-19	252	1901	234	3101-11	24	3306-05	21
1038	208	1202	224	1733	260	1902	158, 159, 234	3101-14	24	3306-11	21
1039	208, 220, 222	1203	224	1734A	258	1903	234, 235	3101-15	24	3306-12	21
1040	208	1204	225	1735	267	1904	234, 235	3101-16	24	3306-13	21
1041	208, 222	1205	225	1736	260	1905	234, 235	3101-17	24	3306-14	21
1042	208	1219	225	1740	301	1906	234	3101-41	24	3306-15	21
1043	208	1221	225	1741	301	1907	234, 235	3101-44	24	3306-16	21
1044	208	1222	225	1742	301	1908	234, 235	3101-45	24	3306-17	21
1045	208	1223	225	1743	302	1909	234, 235	3101-46	24	3306-18	21
1046	208	1225	225	1744	302	1910	234, 235	3101-47	24	3306-19	21
1047	208	1227	225	1745	302	1911	234, 235	3101-49	24	3306-20	21
1048	208	1230	225	1746	301	1912	234	3101-52	24	3306-21	21
1049	208	1230PB	207, 280	1748	304	1913	234, 235	3101-56	24	3306-22	21
1050	208	1232	225	1749	305	1914	234, 235	3101-57	24	3306-23	21
1062	210, 221, 222	1233	225	1750	268	1915	234	3101-61	24	3306-24	21
1062M	234	1240	225	1750A	268	1916	234	3101-62	24	3306-26	21
1063	210	1242	225	1757	304	1917	234, 235	3101-63	24	3306-27	21
1064	209	1243	225	1758	252	1918	234	3101-65	24	3306-28	21
1065	209	1245	225	1762	303	1919	234, 235	3101-69	24	3306-29	21
1066	209, 221, 222	1246	225	1763	303	1920	234	3101-70	24	3306-31	21
1067	209	1250	225	1764	303	1921	234, 235	3101-71	24	3306-32	21
1070	210, 221, 222	1252	225	1767	238, 305	1922	234, 235	3101-72	24	3306-33	21
1071	210	1253	225	1769A	308	1923	234, 235	3101-77	24	3306-34	21
1072	209	1254	225	1770A	263	1924	234, 235	3101-78	25	3306-35	21
1073	209	1255	225	1772C	315	1925	234, 235	3101-79	24	3306-36	21
1074	209, 221, 222	1256	225	1773C	315	1926	234	3101-80	24	3306-37	21
1075	209	1266	187	1774B	260	1927	234, 235	3102	25	3306-38	21
1076	210, 221, 222	1320	177	1778A	260	1928	158, 159,	3102-01	25	3306-41	21
1080	209, 221, 222	1325	177	1779A	260		234, 235	3102-05	25	3306-47	23
1100	209	1329	177	1781A	260	1929	235	3103	25	3306-48	21
1101	209, 220	1340	176, 177	1783	260	1930	235	3104	24	3320	49, 71
1102	209	1345	176, 177	1784C	315	1931	235	3106	25	3358	18
1103	209	1349	177	1788A	308	1932	234, 235	3130AGM	61	3363	43
1104	209, 210, 220	1500A	310	1791	253	1933	234, 235	3131-02	61	3365	43
1105	209, 210,	1503A	310	1792	253	1934	234	3131AGM	61	3367	43
	221, 222	1504A	310	1793A	307	1935	234, 235	3135	61	3381	60
1106	209, 210, 222	1505B	309	1794A	307	1936	158, 159, 234	3136	62	3382	60
1107	209, 210, 222	1507A	309	1805	272	1937	234, 235	3141	49	3382-01	60
1108	209, 210	1510B	309	1806	272	1938	234, 235	3142	49	3385	44
1109	209, 210, 222	1511A	309	1807	270	1939	234	3167	56	3386	60
1110	209, 210	1512	309	1812	273	1940	234	3167-01	56	3397	48, 71, 74
1111	209, 210,	1513A	319	1813	272	1941	234	3167-HD	57	3398	48, 71, 74
	221, 222	1515A	319	1814	272	1944	235	3168	56	3416	15
1112	210	1517A	283	1815	271	1945A	235	3168-HD	57	3416-01	15
1113	210, 221, 222	1519A	283	1819	271	1946A	235	3169	56, 57	3421-04	21
		1520	253	1820	271	1947A	235	3172	56	3421-08	21
		1521A	306	1821	265	1948A	235	3172-15	57	3421-09	31

# Numerical Index

3421-36	11	3615	11	3780-08	29	4016	294	4498	50, 184	4551-2	191
3421-37	11	3625-14	20	3780-09	29	4017	294	4499	50, 184	4552	191
3421-38	11	3625-17	20	3797	14	4020	295	4502	136	4552-1	191
3421-41	23	3625-19	20	3800-25	31	4021	295	4503	169	4552-2	191
3421-42	23	3625-20	20	3820-06	30	4022	295	4504	169	4552-3	191
3421-43	23	3628	20	3820-07	31	4025	295	4506	71, 77	4554	181
3421-44	21	3630	35, 36	3820-09	31	4026	287	4507	198	4555	200
3421-46	12	3630-10	36	3820-12	31	4031	298, 301	4508	203	4556	200
3421-47	11	3631	35, 36	3820-13	30	4033	298	4508-1	203	4557	200
3421-48	11	3633	35, 36	3831	40	4036	298	4509	183	4559	90
3421-54	11	3633-10	36	3833	40	4042	286	4510	183	4560	201
3421-73	11	3634	36	3833-2	41	4044	297	4510-8	183	4561	201
3421-74	11	3636	36	3833-3	41	4046	297	4510-10	183	4562	201
3421-75	11	3639	36	3833-4	41	4057	297	4510-12	183	4565	201
3421-76	23	3640	62	3833-5	41	4062	296, 301	4511	183	4566	201
3421-77	11	3641	62	3833-6	41	4064	296	4511-1	183	4567	201
3421-79	10	3642	35, 37	3833-7	41	4082B	286	4512	177	4568	201
3421-82	10	3642-10	36	3833-8	41	4083B	286	4512-1	177	4572	125
3421-83	10	3643	63	3833-9	40, 41	4088A	286	4512-2	177	4573	125
3421-84	10	3643-01	63	3833-11	40, 41	4089A	286	4512-3	177	4576	188
3421-85	10	3643-21	64	3833-14	41	4100	288	4512-4	177	4579	216
3421-86	10	3643-22	64	3833-15	41	4101	288	4512-5	177	4581	217
3421-87	10	3643-23	64	3833-16	41	4103	288	4512-6	177	4585	141
3421-88	10, 21	3643-24	64	3833-17	41	4104	288	4512-7	177	4585-1	141
3421-90	10	3643-25	64	3833-18	39, 41	4105	288	4512-8	177	4585-2	141
3490	44	3643-26	64	3833-19	39, 41	4106	288	4512-9	177	4585-3	141
3491-01	44	3643-27	64	3833-20	39, 41	4107	288	4512-10	177	4585-4	141
3491-02	44	3643-28	64	3833CD	40	4108	288	4513	178	4585-5	141
3491-03	44	3643-29	64	3833QR	40	4110	288	4513-1	178	4589	164
3491-11	44	3643-30	64	3833T	40	4111	288, 290	4513-2	178	4590	168
3491-12	44	3643-31	64	3833TCD	40	4115	288	4513-3	178	4591	168
3491-13	44	3643-32	64	3833TQR	40	4116	288, 290	4513-4	178	4592	240
3492	44	3643-33	64	3840	30	4120	221, 222, 290	4513-5	178	4592-1	240
3494	18	3643-34	64	3840-01	30	4121	221, 222, 290	4513-6	178	4599	163
3498	17	3643-35	64	3840-02	31	4122	221, 222, 290	4514	178	4600	188
3499	16	3643-36	64	3840-03	31	4130	290	4515	193	4602	188
3500-01	30	3643-37	64	3840-04	31	4131	289	4518	218	4603	129
3500-01A	30	3643-38	64	3840-05	31	4132	289	4520	214	4603-1	129
3500-03	31	3643-39	64	3840-06	30	4139	289	4520-1	214	4604	129
3500-04	31	3643-40	64	3840-15	53	4140	289	4520-2	214	4604-1	129
3500-05	31	3643-41	64	3840-16	53	4141	291	4520-3	214	4604-2	129
3500-06	31	3643-42	64	3840-17	53	4142	291	4520-4	214	4604-3	129
3500-15	31	3643-43	64	3843-07	30	4143	291	4521	137	4605	189
3500-17	31	3643-44	64	3843-11	30	4144	291	4522	136	4605-1	189
3500-26	31	3643-78	63	3850-01	31	4145	291	4523	137	4606	190
3500-28	31	3644	36	3850-02	29	4169	293	4524	137	4607	190
3500-30	32	3646	20	3850-05	29	4170	293	4525	137	4608	190
3500-31	31	3650	37	3851	29	4175	292	4528	154	4609	174
3500-36	31	3660	47	3852	29	4180	224, 292	4529	104	4611	184
3500-37	31	3660-03	47	3852M	29	4185	292	4530	104	4612	185
3500-38	31	3665	47	3852MT	29	4186	292	4531	127	4613	185
3500-39	31	3669	13	3855	29, 54	4200	246	4533	84	4614	185
3500-40	32	3669HD	12	3890	163	4201	247	4534	217	4615	185
3500-41	32	3670	13	3891	41	4202	246	4535	370	4616	185
3500-42	32	3671	13	3902	37	4203	246	4536	217, 370	4617	185
3500-43	32	3673	41	3903	37	4210	248	4537	371	4618	186
3505	32	3674	41	3904	37	4221	305	4542	160	4619	186
3509	33	3681	13	3905	37	4235	305	4543	161	4620	186
3514	33	3687	12	3906	37	4240	237	4543-1	161	4621	186
3525	34	3688	12	3947-01	53	4241	237	4543-2	161	4622	186
3535	32	3700-25	29, 54	3947-02	53	4302A	317	4543-3	161	4623	147
3545	32	3700-26	54	3947-03	31, 53	4304A	317	4543-4	161	4645	127
3559	181	3700-27	54	3947-04	31, 53	4305	313	4543-5	161	4650	193
3564	37	3700-28	54	3947-05	31, 53	4306A	317	4543-6	161	4651	180
3565	37	3700-29	54	3947-06	31, 53	4308A	317	4545	180	4652	140
3565-CD	37	3700-30	54	3947-07	31, 53	4312A	317	4546	163, 189	4673	77
3566	37	3700-36	54	3947-08	53	4313A	316	4546-1	163, 189	4673-1	77
3567	37	3700-39	54	3947-09	53	4314A	317	4546-2	163, 189	4673-2	77
3567-CD	37	3700-41	54	3947-10	53	4320A	317	4547	160	4673-3	77
3569	34	3700-60	29, 54	3947-11	53	4321B	316	4547-29	160	4673-4	77
3579	48	3740	53, 54	3947-12	53	4322A	317	4547-30	160	4673-5	77
3587	34	3770	51	3947-13	53	4324	313	4547-32	160	4673-6	77
3589	48	3774-01	14, 23	3947-14	53	4332A	317	4547-34	160	4673-7	77
3590	48	3774-02	14, 23	3947-15	53	4350	317	4547-35	160	4676	195
3591	47	3774-03	14, 23	3947-16	53	4407	198	4547-36	160	4681	104
3596-1	46	3774-04	14, 23	3955	53	4475	202	4547-38	160	4689	186
3596-10	46	3774-05	14, 23	3969	34	4485	188	4549	191	4703	146
3596-2	46	3774-11	14	3969-1	34	4489	190	4549-1	191	4710	195
3596-3	46	3774-12	14	3987	34	4490	181	4549-2	191	4711	182
3596-4	46	3774-13	14	4000	283	4491	203	4549-3	191	4712	182
3596-5	46	3780	12, 29	4002	221, 222,	4492	191	4550	191	4715	182
3596-6	46	3780-01	29	.....	283, 293	4493	49, 184	4550-1	191	4715-1	182
3596-8	46	3780-02	29	4004	287	4494	77, 156	4550-2	191	4715-2	182
3596-9	46	3780-03	29	4008	222, 295	4495	156	4550-3	191	4715-3	182
3596E	46	3780-04	29	4009	295	4496	136	4551	191		
3598	47	3780-05	29, 54	4012	294	4497	50, 184	4551-1	191		

# Numerical Index

4715-4	182	5083	264	6073	155	6176	165, 171,	6525-6	80	6986	197
4715-5	182	5085	238	6075	121	6177	172, 173	6525-7	80	6986-1	197
4715-6	182	5086	283	6076	130, 227	6178	165, 171,	6525-8	80	6986-2	197
4715-7	182	5090	262	6078	133, 228, 229	6178	172, 173	6525-9	80	6986-3	197
4715-8	182	5093A	256	6080	133, 228	6178	172	6525-10	80	6986-4	197
4715-9	182	5095A	262	6082	133, 228, 229	6180	171	6525-11	80	6987	197
4720	146	5096A	262	6084	100	6181	170, 171, 173	6525-12	80	6987-6	197
4721	147	5097	264	6087	132, 228	6182	170, 171, 173	6530	90	6987-8	197
4722	147	5100	263	6088	131, 227	6183	170, 171, 173	6531	88, 89	6987-10	197
4723	147	5105	263	6089	131, 227	6184	170, 171, 173	6532	89	6987-12	197
4724	146	5106	257	6093	165	6185	170, 171, 173	6533	89	7000A	67, 71
4731	125	5110	257	6100	170	6186	170, 171, 173	6534	89	7000A-1	67
4752	179	5112	282	6101	170, 173	6187	170, 171, 173	6535	89	7005	105
4754	127, 195	5120	282	6102	170, 173	6188	170, 171, 173	6536	142	7020	204, 267
4756	189	5190	233	6103	170, 173	6191	170, 171, 173	6537	142	7023	99
4756-1	189	5191	233	6104	170, 173	6192	170, 173	6538	156	7024	153
4756-2	189	5192	233	6105	170, 173	6193	173	6540	149	7028	231, 232
4756-3	189	5202	258	6106	170, 173	6194	172	6541	148	7031A	102
4756-4	189	5203	258	6107	165, 170,	6195	172	6542	145, 215	7034	166
4756-5	189	5212	282	6108	171, 173	6196	172	6550	69	7045B	83
4756-6	189	5213	282	6108	165, 170,	6200	45, 73, 74	6551	69	7053K	176
4756-7	189	5213T	282	6109	171, 173	6266	45, 71, 73	6552	69	7057	233
4756-8	189	5220	282	6109	170, 173	6272	86	6570	69	7062A	201
4756-9	189	5221	282	6110	165, 170,	6274	100	6573	142	7068	88
4756-10	189	5221T	282	6110	171, 173	6275	100	6580	82	7069A	240
4756-11	189	5225	256	6111	170, 173	6283	159	6581	82	7070A	241
4758	195	5230	275	6112	165, 170,	6284	121	6582	82	7071	155, 194, 232
5007	257	5268	255	6112	171, 173	6290	143	6583	83	7072A	231
5008	257	5269	255	6113	173	6292	121	6585	82	7073A	231, 232
5009	257	5603	122	6114	172	6293	122	6586	82	7074A	231, 232
5012A	255	5604	123	6117	172	6294	126, 219	6587	82	7075	241
5014	264	5605	123	6119	172	6295	86	6588	48	7077	240
5015A	261	5606	122	6121	172	6296	86, 87	6589	48	7080	93
5017	262	5607	122	6122	172	6297	86, 87	6593	153	7085	146
5018	261	5609	124	6123	172	6298	143	6594	131, 227	7090A	158, 159
5019	251	5610	124	6124	172	6299	89	6595	132, 227	7091	99
5020	130, 226	5613	124	6125	172	6466	107	6598	78	7095	100
5021	130, 226	5630	68	6126	172	6467	106, 107	6599	78	7096	100
5022	225	5900A	170	6127	172	6469	106, 107	6601	158, 159	7097	100
5023	245	5901	174	6128	172	6470	106, 107	6602	155	7100	272
5024	245	5906	170, 172	6129	172	6471	107	6603	76	7103	193
5028	213, 244	5908	170, 172	6130	171, 173	6472	106, 107	6604	152	7106	226
5029	231	5909	174	6131	173	6473	107	6611	153	7108	241
5030	231	5910	127, 180	6132	172	6474	106, 107	6612	162	7109	241
5033	231	5915	170, 172	6133	172	6475	106, 107	6613	128, 196	7117	244
5034	231	5916	170, 172	6134	172	6476	106, 107	6625	81	7118	152, 204
5035	231	5918	170, 172	6135	165, 171	6477	106, 107	6631	168	7119	230
5038	240	5919	173	6136	173	6478	106, 107	6650	285	7120A	230
5039	230	5920	170, 173	6141	171, 173	6479	106, 107	6660	130, 227	7120B	230
5040	243	5921	170, 173	6142	173	6480	106, 107	6667	109, 110, 121	7121	244
5042	243	5922	170, 173	6143	171, 173	6481	106, 107	6673	119	7122R	103
5043	232	5923	170	6144	171, 173	6482	106, 107	6676	196	7123K	176
5044	231, 232	5924	170, 173	6145	171	6483	106, 107	6685	112, 113, 114	7125K	176
5045	232	5925	170, 173	6146	171, 173	6484	106, 107	6686	115	7135A	143
5046	232	5926	170, 173	6147	171, 173	6485	106, 107	6687	116	7140	128, 155
5047	236	5927	170, 173	6148	171, 173	6486	105	6688	116, 117	7148	78
5048	232	5928	170, 173	6149	173	6487	105	6689	109, 110, 111	7157	158, 159
5049	232	5929	170, 173	6150	171	6488	105	6695	144	7158	158, 159
5051	242	5930	170, 173	6151	170, 171, 173	6489	106, 107	6711	183	7161	229
5052	239	5934	170, 173	6152	170, 171, 173	6492	128	6730	90	7162	193
5053	237	5935	170, 173	6153	170, 171, 173	6494	81	6731	92	7163	193
5054	239	5936	170, 173	6154	171, 173	6495	120	6732	92	7164	193
5055	239	5937	170, 173	6155	170, 171, 173	6496	87	6733	93	7165	193
5056	239	5938	170, 173	6156	170, 171, 173	6497	87	6784	200	7166	192
5057	239	5939	170, 173	6157	170, 171, 173	6498	108	6785	187	7167	192
5059	236	5945	51, 182	6158	172	6501	213	6789	190	7168	192
5060	132, 228	6005	129, 226	6159	172	6503	168	6795	162	7171	193
5062	243	6006	158	6160	172	6504	169	6796	162	7180	239
5063	242	6007	98	6161	172, 173	6505	126	6897	119	7185	104
5064	242	6009	106, 107	6162	172, 173	6506	169	6898	119	7187	45, 71, 73
5065	242	6010	162	6163	172, 173	6508	75, 157	6899	119	7188	45, 71, 73
5066	242	6020	106, 107	6164	172, 173	6509	71, 76	6900	119	7189	77
5068	237	6021	167	6165	165, 171,	6511	71, 76, 371	6901	199	7204E	139, 140
5070	231	6022	127	6165	172, 173	6512	167, 368	6902	162	7204E1	139, 140
5071	230	6023	45, 71, 73	6166	172, 173	6514	167, 368	6903	200	7204E2	139, 140
5072	241	6024	118	6167	165, 171,	6515	166	6904	200	7205E	140
5073	181	6043	138	6167	172, 173	6516	167	6905	200	7205E1	139, 140
5074	181	6045	118	6168	172	6517	76	6921	162	7205E2	139, 140
5077	264	6046	138	6169	172	6520	153	6928	162	7206	202
5078	251	6047	154	6170	172	6521	80	6930	125, 219	7207	241
5079	237	6060A	138	6171	172, 173	6525	80	6931	77	7208A	143, 215
5080	238	6065	101, 238	6172	172, 173	6525-1	80	6936	162	7209	103
5081	240	6067	132, 227	6173	172, 173	6525-2	80	6968	202	7211	68, 71
5082	263	6068	139, 140	6174	172, 173	6525-3	80	6969	202	7211M	68
		6069	132, 228	6175	165, 171,	6525-4	80	6974	141	7214A	71
					172, 173	6525-5	80	6985	142	7215	78

# Numerical Index

7222A.....	71	7415.....	181	7704.....	91, 97	7996.....	92	8116.....	211	9799.....	299
7236.....	67, 71	7416.....	78	7706.....	85	7997.....	111, 118	8117.....	211	9814.....	236
7238.....	371	7420.....	192	7707.....	84	7998.....	78	8120.....	211	9850.....	234
7244.....	71, 152, 153	7421.....	192	7737.....	50	7999.....	110, 118	8121.....	211	9851.....	235
7245.....	102	7426.....	228	7738.....	50	8000.....	212	8122.....	211	9852.....	235
7246.....	197	7430.....	67, 68, 71	7739.....	49, 167	8001.....	212	8123.....	211	9866.....	299
7248.....	145, 239	7433.....	71	7740.....	50	8002.....	212	8124.....	211	9901.....	236
7249.....	91, 97	7439.....	71	7741.....	50	8003.....	212	8125.....	211	10012.....	199
7269.....	158, 159	7441.....	67	7742.....	50	8004.....	212	8126.....	211	10017.....	151
7270A.....	158, 159	7442.....	67, 71	7743.....	50	8005.....	212, 222	8130.....	211	10020.....	199
7272.....	67, 68, 71	7443.....	67, 71	7744.....	49	8006.....	212, 222	8131.....	211	10088.....	224
7273.....	67, 71	7444.....	71	7771.....	103	8007.....	212, 222	8132.....	211	10215.....	222
7294.....	83	7448.....	67	7780.....	129	8008.....	212	8133.....	211	10221.....	224
7295.....	178	7453A.....	245	7784.....	138	8009.....	212	8134.....	211	10237A.....	374
7299.....	166	7454.....	129	7786.....	120	8010.....	212, 222	8135.....	211	10250.....	374
7300.....	176	7455.....	243	7790.....	126	8011.....	212	8136.....	211	10292.....	374
7301.....	176	7456.....	166	7792.....	148, 216	8012.....	212, 222	8137.....	211	10293.....	373
7307.....	197	7458.....	244	7795.....	158, 159, 234	8013.....	212, 222	8140.....	211	10296.....	374
7308.....	197	7460.....	245	7796.....	158, 159, 234	8014.....	212	8141.....	211	10328.....	355
7309.....	197	7461.....	245	7797.....	68	8015.....	212, 222	8142.....	211	10459.....	362
7310A.....	88, 220	7462.....	241	7798.....	153	8016.....	212	8143.....	211	10461.....	299
7311A.....	88, 220	7463.....	187	7814.....	85	8017.....	212, 222	8144.....	211	10468A.....	373
7312.....	193, 299	7470.....	230	7815.....	102	8018.....	212, 222	8145.....	211	10469.....	299
7313.....	178	7471A.....	133, 229	7816.....	85	8019.....	212, 222	8146.....	211	10469A.....	373
7314A.....	86	7472.....	71	7817.....	139, 140	8020.....	212, 221, 222	8149.....	87	10470A.....	373
7315A.....	86	7480.....	231	7818.....	139, 140	8021.....	212, 221, 222	8150.....	88	10474.....	299
7317A.....	164	7488A.....	162	7822A.....	85	8022.....	212	8186.....	110	10479.....	299
7318.....	215	7490.....	233	7823.....	139, 140	8023.....	212, 221, 222	8200.....	187	10586.....	224
7319.....	215	7491C.....	84	7825.....	91	8024.....	212, 222	8203.....	192	10588.....	372
7321.....	194	7494A.....	149	7826.....	84	8025.....	212, 222	8206.....	192	10596.....	350
7322.....	194	7495.....	216	7827.....	182	8027.....	212, 222	8208.....	192	10597.....	350
7323.....	194	7495A.....	148, 149	7828.....	45, 71, 73	8028.....	212, 221, 222	8212.....	192	10645.....	299
7324.....	194	7496.....	216	7829.....	98	8029.....	212, 221, 222	8218.....	192	10647.....	299
7325.....	194	7496A.....	148, 149	7830A.....	104	8030.....	212	8224.....	192	10673.....	299
7326.....	194	7497.....	216	7834.....	120	8031.....	90	8232.....	192	10675.....	299
7327.....	194	7497A.....	148, 149	7835.....	131	8032.....	91	8236.....	192	10682.....	299
7328.....	194	7499.....	166	7840.....	98	8033.....	93	8245.....	192	10778.....	373
7329.....	194	7502.....	144	7853.....	164	8034.....	93	8245S.....	192	10854.....	199
7330.....	194	7503.....	86, 101, 145	7854.....	139, 140	8035.....	212, 220	8312.....	98	10855.....	199
7331.....	194	7504A.....	101	7855.....	139, 140	8036.....	212, 221, 222	8348.....	88	10861.....	371
7332.....	194	7505A.....	101	7885.....	139	8037.....	212, 220	9005B.....	317	10909.....	299
7333.....	194	7507.....	145	7887.....	139, 140	8038.....	212, 220,	9008B.....	317	10945.....	350
7334.....	194	7508.....	145	7888.....	177	.....	221, 222	9012B.....	317	10986.....	337
7335.....	71	7509.....	145	7889.....	103	8039.....	212, 220	9020B.....	317	10994.....	368
7336.....	71	7534.....	99	7891.....	86	8040.....	212, 220	9030B.....	317	11009.....	370
7337.....	76	7535.....	145	7894.....	91, 97	8041.....	212, 220	9050B.....	317	11014.....	372
7342.....	71	7536.....	99	7896.....	72	8042.....	212	9101A.....	287	11411.....	334
7345.....	194	7537.....	99	7899.....	85	8043.....	212, 220	9102.....	287	11466.....	224
7346.....	194	7539.....	98	7901.....	143	8044.....	212, 220, 222	9104A.....	318	11565.....	246
7347.....	194	7544.....	84	7902.....	72	8050.....	212	9106A.....	318	11794.....	353
7348.....	194	7559.....	179	7904A.....	67, 72	8051.....	212	9107A.....	318	11795.....	353
7349.....	194	7568A.....	83	7904A-1.....	67	8052.....	212	9110A.....	318	11796.....	353
7350.....	194, 199	7572.....	100	7910.....	153	8053.....	212	9112B.....	317	11797.....	353
7351.....	194	7575.....	183	7911.....	120	8054.....	212	9120B.....	317	11798.....	353
7352.....	194	7587.....	152	7912.....	120	8055.....	212	9195.....	288	12001.....	199
7353.....	194	7588A.....	99	7913.....	158, 159	8056.....	212, 222	9196.....	288	13066.....	362
7354.....	194	7593.....	100	7915.....	72, 133, 228	8057.....	212	9212B.....	316	13067.....	354
7355.....	194	7594.....	100	7917.....	93	8058.....	212	9220B.....	316	13110.....	362
7356.....	194	7595A.....	100	7918.....	93, 97	8059.....	212	9500.....	297	13119.....	357
7357.....	194	7597.....	71	7919.....	92, 97	8060.....	212	9575.....	299	13136.....	353
7358.....	194	7601.....	45, 71, 73	7920.....	92, 97	8061.....	212	9582.....	297	13138.....	351
7359.....	194	7602.....	45, 71, 73	7922.....	105	8062.....	212	9596.....	299	13145.....	372
7360.....	194	7608.....	45, 71, 73	7923.....	72	8063.....	212	9617.....	299	13148.....	354
7361.....	76	7612.....	158, 159	7924A.....	143	8064.....	212	9623.....	299	13162.....	370
7362.....	103	7628.....	71	7925.....	139, 140	8065.....	212	9625.....	299	13167.....	369
7365.....	194	7629.....	71	7925-1.....	139, 140	8066.....	212	9636.....	300	13168.....	369
7370.....	71	7631.....	71	7925-2.....	139, 140	8067.....	212	9637.....	300	13169.....	335
7371.....	71	7635A.....	68	7927A.....	102	8068.....	212	9650.....	221, 222, 299	13172.....	335
7372.....	148, 215, 220	7639.....	166	7928.....	119	8069.....	212	9651.....	299	13182.....	370
7374.....	148, 216	7640.....	196	7929A.....	101	8070.....	212	9652.....	299	13183.....	368
7375.....	180	7641.....	196	7932.....	144	8071.....	212	9653.....	299	13184.....	368
7377.....	180	7645.....	60	7932-1.....	144	8072.....	212	9654.....	299	13187.....	351
7378.....	180	7646A.....	152, 153	7932-2.....	144	8073.....	212	9655.....	299	13188.....	351
7379.....	180	7649.....	67	7937.....	153, 154	8074.....	212	9658.....	299	13190.....	351
7380.....	181	7654.....	128	7941.....	158, 159	8075.....	212, 220, 222,	9659.....	299	13199.....	353
7392.....	198, 220, 222	7655.....	71, 183	7942A.....	144, 165	.....	275, 277, 278	9767.....	221, 222, 300	13202.....	353
7393.....	198, 215,	7659.....	67	7943.....	120	8076.....	212, 222,	9768.....	300	13203.....	357
.....	218, 220	7660.....	71	7947.....	216	.....	275, 277, 278	9769.....	300	13204.....	357
7394.....	143	7661.....	165	7948.....	216	8100.....	164, 179	9770.....	300	13208.....	353
7400.....	202	7665.....	68	7951.....	72	8101.....	164, 179	9780.....	300	13828.....	299
7401.....	202	7666.....	71, 99	7954.....	51	8110.....	211	9781.....	300	13888.....	299
7402.....	194	7677.....	188	7955.....	51, 103	8111.....	211	9782.....	300	14450.....	374
7403.....	102, 220	7678.....	100	7956.....	51, 103	8112.....	211	9795.....	299	14773.....	372
7410.....	179	7695.....	110, 111, 118	7957.....	51, 103	8113.....	211	9796.....	299	14774.....	372
7412K.....	177	7698.....	158, 159	7991.....	136	8114.....	211	9797.....	299		
7414.....	99	7703.....	214	7995.....	146	8115.....	211	9798.....	221, 222, 299		