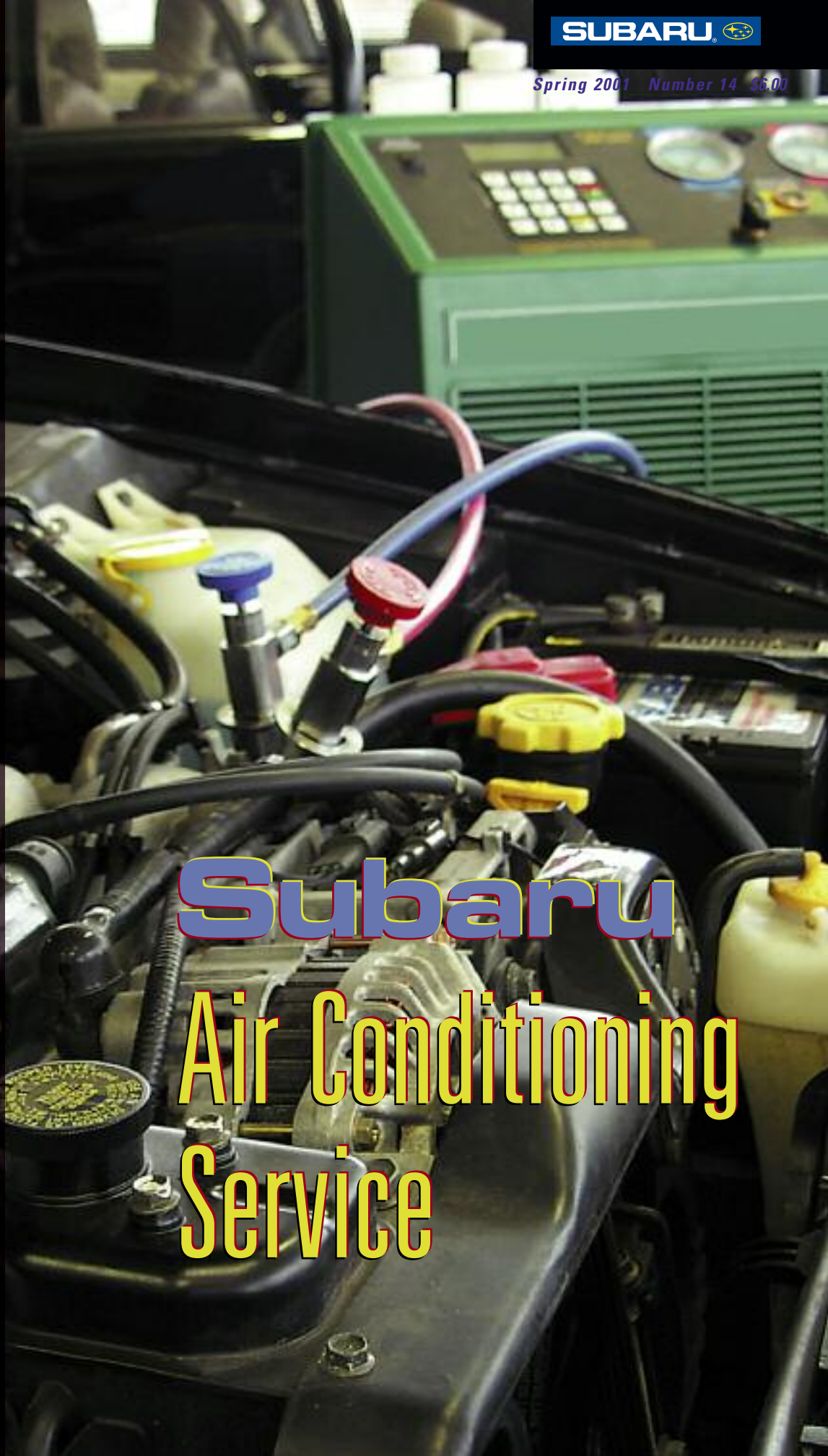
SUBARU

Spring 2001 Number 14 $6.00

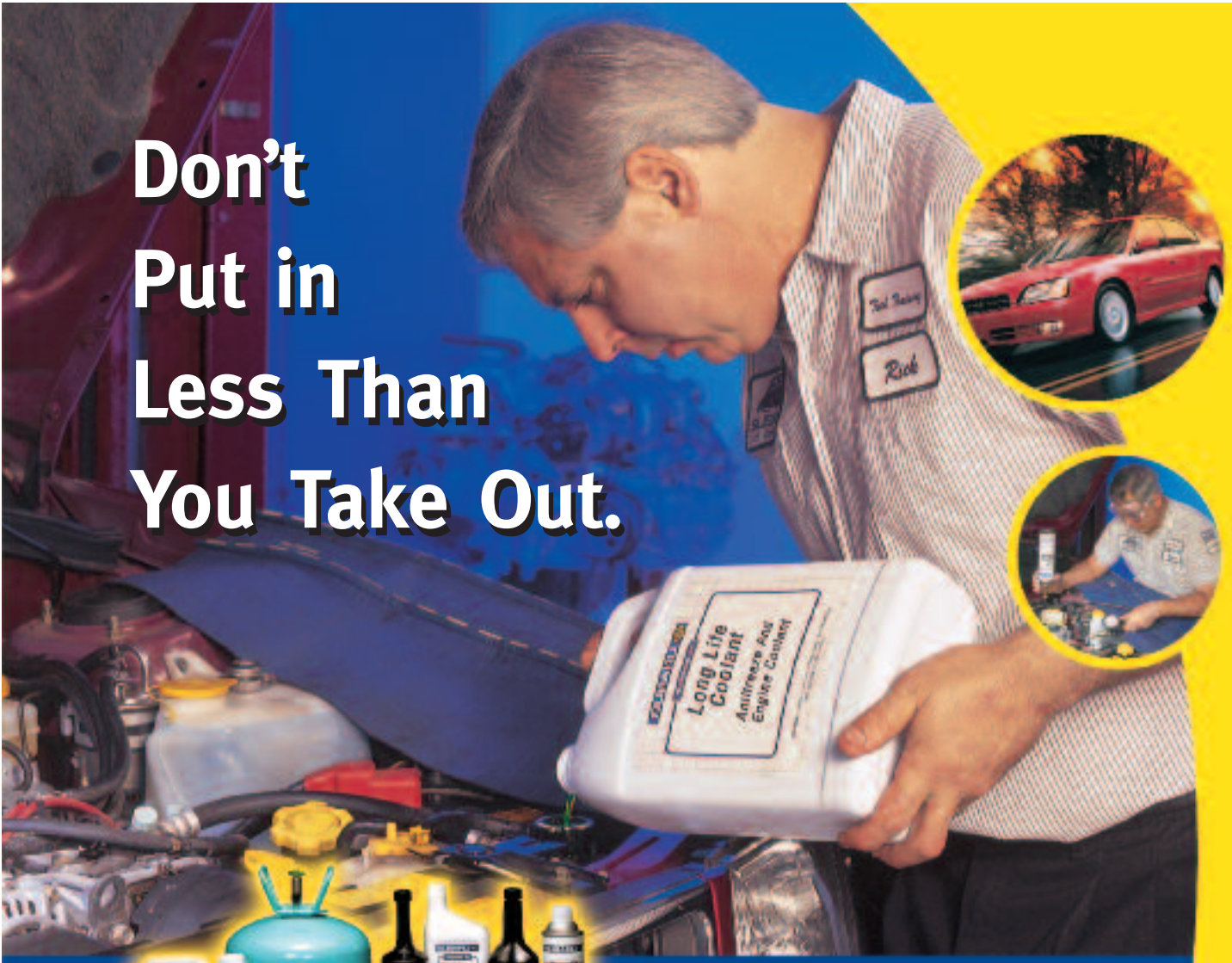
The End Wrench™

A Publication for Professional Repair Technicians from Subaru N.E.W. Horizons Dealers



Subaru Air Conditioning Service

Don't Put in Less Than You Take Out.



Introducing Genuine Subaru Automotive Chemicals.

Fluids:

- Long Life Coolant
- Windshield Washer Concentrate
- AT/PS Fluid

Cleaners:

- Non-Chlor. and Regular Brake Cleaners
- Fuel Injector Cleaners
- Top Engine Cleaner
- Glass Cleaner
- Throttle Plate and Induction Cleaner
- Silicone Lubricant
- Carburetor Cleaner

Refrigerants:

- R-134a Refrigerant

Every Subaru is filled with the highest quality service chemicals at the factory – all formulated to help keep performance and driveability at their peak. When it's time to change chemicals, don't use anything less than the best – Genuine Subaru Automotive Chemicals. When you do, you'll know you're giving your customers the service chemicals that meet the demanding requirements of today's advanced Subaru designs.

We offer a full line of fluids, refrigerants, and cleaners. Give your customers the quality they deserve – Genuine Subaru Automotive Chemicals. Call your local Subaru dealer or check out www.subaru.com to find the dealer nearest you.

SUBARU
Genuine Parts

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Caution:
Vehicle servicing performed by untrained persons could result in serious injury to those persons or others.

Information contained in this newsletter is intended for use by trained, professional auto repair technicians ONLY. This information is provided to inform these technicians of conditions which may occur in some vehicles or to provide information which could assist them in proper servicing of these vehicles.

Properly trained technicians have the equipment, tools, safety instructions, and know-how to perform repairs correctly and safely. If a condition is described, DO NOT assume that a topic covered in these pages automatically applies to your vehicle or that your vehicle has that condition.

The End Wrench™

A Publication for Professional Repair Technicians from Subaru N.E.W. Horizons Dealers

SUBARU

inside

SUBARU OE PRO™
Original Equipment Parts/
Professional Service

HFC-134a Air Conditioning Service & Testing

Subaru air conditioning systems are designed to provide many years of service, with a minimal amount of technician involvement. However, in the event of an accident or other unplanned occurrence, service to the air conditioning system may be required. The following service and testing procedures should be used to diagnose, service and repair Subaru air conditioning systems filled with HFC-134a refrigerant.

Safety Precautions

Component parts of the cooling system, refrigerant, compressor oil, and other parts are not the same for the HFC-134a system and the older CFC-12 system. Do not interchange parts or liquid.

Vehicles with HFC-134a air conditioning systems, use only HFC-134a parts that are indicated on a label attached to the vehicle. Before performing any maintenance, verify the type of air conditioning system installed in the vehicle.

Compressor Oil

Do not use any compressor oil that is not specifically designated for the HFC-134a air conditioning system; only use ZXL100PG. Also, do not use HFC-134a compressor oil in the CFC-12 air conditioning system. If compression oils are mixed, poor lubrication will result and the compressor itself may be damaged.

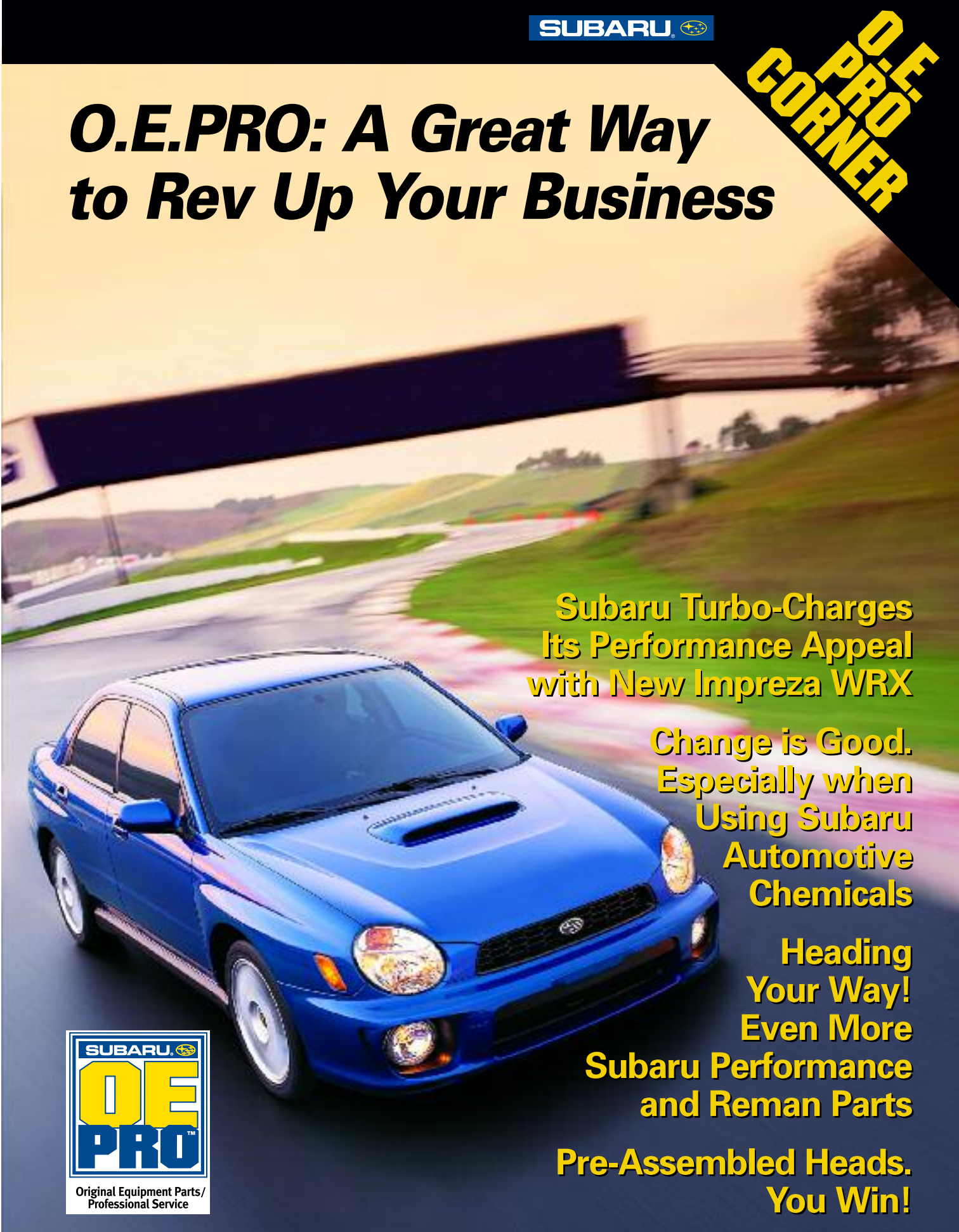
Because HFC-134a compressor oil is very hygroscopic (easily absorbs moisture), when parts of the air conditioning system are being removed, quickly install a blind plug to prevent contact with the outside air. Also, always make sure that the service container for compressor oil is tightly closed except when in use. Store compressor oil in a tightly closed steel container.

Refrigerant

Do not put CFC-12 refrigerant into a HFC-134a air conditioning system. Also, do not put HFC-134a refrigerant into a CFC-12 air conditioning system. If the wrong refrigerant is used, poor lubrication will result and the compressor itself may be destroyed.

O.E. PRO CORNER

O.E.PRO: A Great Way to Rev Up Your Business



Subaru Turbo-Charges Its Performance Appeal with New Impreza WRX

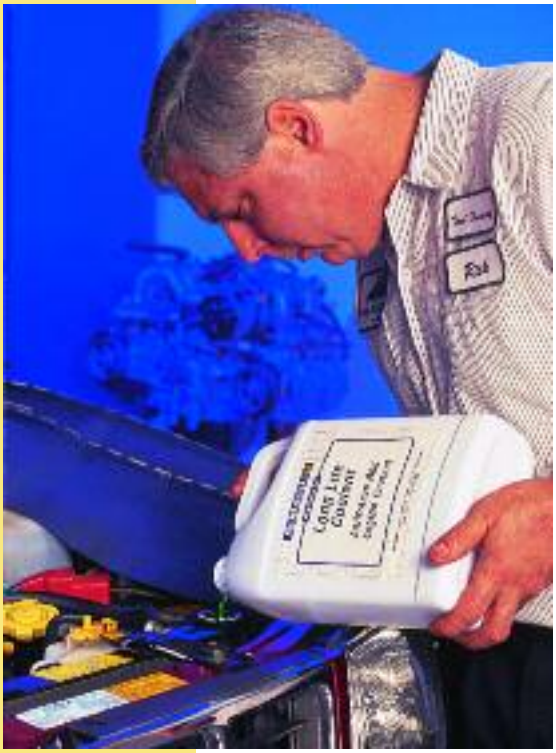
Change is Good. Especially when Using Subaru Automotive Chemicals

Heading Your Way! Even More Subaru Performance and Reman Parts

Pre-Assembled Heads. You Win!

SUBARU OE PRO™
Original Equipment Parts/ Professional Service

O.E.PRO: A Great Way to Rev Up Your Business



When a well-tuned car revs up through the gears, you can feel the acceleration. The same can be true with your business. When cars are passing through your service bays at a good clip, the work is done and customers are happy, everything hums along beautifully. The O.E.PRO Parts Program can be a real asset in all the ways it helps your shop run smoothly. Like a good tune-up, it helps keep your business running at top performance without hesitation, without strain.

Take our product warranty, for example. With its backing you know you can use Genuine Subaru parts with total confidence. You install the part without a second thought because it's engineered to work flawlessly for the Subaru vehicle you're maintaining. There's no hesitation because, unlike questionable aftermarket parts, you know the Subaru part will fit precisely and work to spec as promised. It's a no-brainer to pick up the phone and order from your local authorized Subaru dealer.

From our warranty to our selection of parts to our quality control to our competitive pricing, you know you can trust the O.E.PRO Parts Program to help keep your business revved up and moving forward at a smart pace.

Change is Good. Especially When Using Subaru Automotive Chemicals

As this year's rough winter passes into memory, pre-summer is the ideal time to promote a vehicle maintenance service special. The wear and tear of winter calls for a thorough check-up to ensure that your customer's cars are ready to take on the searing days of summer. Genuine Subaru Automotive Chemicals should be an integral part of these service check-ups.

Whether you're charging the system with refrigerant, putting in new factory-fill coolant, quieting down the squeaks from winter salt with silicone lubricant or cleaning the fuel system during tune-ups, Subaru Chemicals ensure that you're providing your customers' cars with the best quality possible — plus, a new car feel that keeps them coming back to you.

Genuine Subaru Automotive Chemicals and Fluids Order List

Keep your inventory complete with these high-quality items for all your pre-summer vehicle maintenance business.

Cooling System
- ☑ Factory-Fill Coolant

Air Conditioning
- ☑ R-134a Refrigerant

Fuel System
- ☑ Carburetor Cleaner
- ☑ Aerosol and Pour-In Fuel Injector Cleaner
- ☑ Top Engine Cleaner
- ☑ Throttle Plate Cleaner

Brakes
- ☑ Brake Cleaner
- ☑ N/C Brake Cleaner

Steering and Drive Train
- ☑ Factory-Fill Auto Trans/Power Steering Fluid

General Maintenance
- ☑ Silicone Lubricant
- ☑ Factory-Fill Windshield Washer Concentrate
- ☑ Glass Cleaner

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Original Equipment Parts/
Professional Service

Subaru Turbo-Charges Its Performance Appeal with New Impreza WRX

You can feel the excitement in the air at Subaru these days. Hearts are racing as fast as the news flashing around the country. Subaru has a hot new car off the line that brings a brand new level of spirit and performance to the compact sedan class: the new 2002 Subaru Impreza WRX.

This is a battle-hardened driving machine featuring legendary Subaru all-wheel drive, a 227 horsepower turbo-charged boxer engine and the rugged heritage of World Rally racing. And it's going to turn a lot of heads among your customers. The end result can be a heap of extra money in your pocket.

The fact is, with high-performance add-ons like an instrument gauge pack, 17" wheels, suspension kits, performance mufflers and more for the WRX Sedan and Wagon, and 02 Impreza RS, you'll have y to handle a lot more high- ance business. In fact, now at the word has hit the street that Subaru builds high- performance cars with real muscle, your opportunities or making money with Sub- are better than ever!

it, but the Subaru Impreza ng wins in quite a few road rallies lately. So you'll be able to capitalize on this race-proven engineering with a complete new line of high performance parts. We think your most enthusiastic Subaru customers will jump at the chance to customize their Subaru RS and WRX vehicles with the performance features that are capturing racing headlines all around the U.S.

There are even plenty of high-profit appearance items to keep you and your customers smiling, including Titanium and carbon shift knobs, carbon fiber trim kits and brake handles, SPT decals and more. So, get ready to handle the hottest new Subaru cars to come down the road in years. It's a whole new ball game in the performance field and the name is Subaru!

Heading Your Way! Even More Subaru Perform ance and Reman Parts

You expect O.E.PRO to keep offering more new parts applications. Well, the coming months will not disappoint! You'll soon have more Subaru Performance Tuning components and remanufactured parts available. Plus, our research survey in the works shows that the O.E.PRO pricing story remains a major plus in your favor. So, keep expecting great things from Subaru. We will deliver!

Original Equipment Parts/
Professional Service

Pre-Assembled Heads. You Win!

It's as obvious as flipping a coin. When you order a cylinder head, be sure it's a Genuine Subaru cylinder head assembly and you can't lose. In fact, why gamble with a bare cylinder head? Why risk having to tear it down to make repairs that might be easily missed? With a leak-tested and warranted cylinder head assembly from Subaru, you won't lose your shirt playing the odds against some kind of fluke mechanical failure. In fact, specifying and installing fully assembled and tested Genuine Subaru engine heads is as close as you can get to a sure thing. So be sure to order pre-assembled engine heads. You'll flip over the labor savings.

All MSRPs are Net of Core

Years	Part #	Notes	MSRP
LEON E/LOYALE			
85-87	SOA4786060	RH Carb	333.25
85-87	SOA4786040	LH Carb	333.25
86-94	SOA4786070	RH SPI	333.25
86-94	SOA4786050	LH SPI	333.25
LEON E/LOYALE TURBO			
85-90	SOA4786090	RH	399.92
85-90	SOA4786080	LH	399.92
LEGACY			
90-94	SOA4786010	RH & LH	428.50
95	SOA4786010	RH A/T	428.50
95	SOA4786130	LH A/T	428.50
96	SOA4786140	RH & LH 2.2 M/T	428.50
96	SOA4786140	RH 2.2 A/T	428.50
96	SOA4786150	LH 2.2 A/T	428.50
96	SOA4786200	RH 2.5	457.07
96	SOA4786210	LH 2.5	457.07
97-98	SOA4786160	RH & LH 2.2 M/T	428.50
97-98	SOA4786160	RH 2.2 A/T	428.50
97-98	SOA4786170	LH 2.2 A/T	428.50
97-98	SOA4786180	RH 2.5	457.07
97-98	SOA4786190	LH 2.5	457.07
LEGACY TURBO			
91-94	SOA4786020	RH	671.36
91-94	SOA4786030	LH	671.36

Years	Part #	Notes	MSRP
IMPREZA			
93	SOA4786100	RH 1.8 Calif. Spec.	399.93
93	SOA4786110	LH 1.8 Calif. Spec.	399.93
93	SOA4786120	RH 1.8 49 State Spec.	399.93
93	SOA4786110	LH 1.8 49 State Spec.	399.93
94-95	SOA4786100	RH 1.8	399.93
94-95	SOA4786110	LH 1.8	399.93
95	SOA4786010	RH 2.2 A/T	428.50
95	SOA4786130	LH 2.2 A/T	428.50
96	SOA4786120	RH & LH 1.8 M/T	399.93
96	SOA4786100	RH 1.8 A/T	399.93
96	SOA4786110	LH 1.8 A/T	399.93
96	SOA4786140	RH & LH 2.2 M/T	428.50
96	SOA4786140	RH 2.2 A/T	428.50
96	SOA4786150	LH 2.2 A/T	428.50
97-98	SOA4786160	RH & LH 2.2 M/T	428.50
97-98	SOA4786160	RH 2.2 A/T	428.50
97-98	SOA4786170	LH 2.2 A/T	428.50
98	SOA4786180	RH 2.5	457.07
98	SOA4786190	LH 2.5	457.07
FORESTER			
98	SOA4786180	RH	457.07
98	SOA4786190	LH	457.07

O.E. Quality Remanufactured Axles

Want to save on labor and make extra profits? Use Genuine Subaru remanufactured front drive axle assemblies. You'll do both while offering your customers original equipment quality. These reman axles are tested to match O.E. specifications and are available for the front drive train of front-wheel and all-wheel vehicles in a wide selection of models from 1980 to 1999.

Genuine Subaru Remanufactured Axles

All Applications MSRP $139.95 (net of core)

Vehicle Application	Axle Shaft Reman. No.	Axle Shaft FHI Number
COUPE, SEDAN, WAGON		
80-84 (2WD)	SOA925H700R1	723221055
80-84 (4WD)	SOA925H800R1	723221392
HATCHBACK		
80-89 (2WD)	SOA925H700R1	723221055
80-89 (4WD)	SOA925H800R1	723221392
BRAT		
82-89 (4WD)	SOA925H800R1	723221392
3 DOOR, 4 DOOR, STATION WAGON		
85 (2WD) MT, AT, SPI 87-89 (2WD) MT, SPI 85-87 (4WD) MT, AT, Carb	SOA925H100R1	23221GA234
85 (2WD) MT, AT, Carb 86 (2WD) MT, CARB 86-89 (2WD) AT, SPI	SOA925H200R1	23221GA244
85-89 (2WD, 4WD) AT, Turbo 88-89 (4WD) AT, SPI	SOA925H300R1	23221GA373
85-89 (2WD, 4WD) MT, Turbo	SOA925H400R1	23221GA593

Vehicle Application	Axle Shaft Reman. No.	Axle Shaft FHI Number
LOYALE		
90-94 (2WD) M/T 92-94 (4WD) MT, 3AT	SOA925H100R1	23221GA234
90-94 (2WD) 3AT	SOA925H200R1	23221GA244
90-91 (4WD) MT, 3AT 90 (2WD, 4WD) AT, Turbo	SOA925H300R1	23221GA373
90-94 (2WD, 4WD) MT, Turbo	SOA925H400R1	23221GA593
XT COUPE		
85-87 (2WD, 4WD) MT, 3AT 88-91 (2WD, 4WD) MT	SOA925H100R1	23221GA234
88-89 (2WD, 4WD) 3AT, Turbo	SOA925H300R1	23221GA373
85-89 (2WD, 4WD) MT, 4EAT, Turbo 88-91 (2WD, 4WD) 4EAT	SOA925H400R1	23221GA593/941
LEGACY		
90-94 (2WD) All	SOA925H500R1	28021AA530/560
90-94 (4WD) MT, AT, Turbo	SOA925H600R1	28021AC290
95-96 (2WD, 4WD) AT ** 95-99 (4WD) MT **		
IMPREZA		
93-96 (2WD, 4WD) AT **	SOA925H600R1	28021AC290
93-97 (4WD) MT ** 95-97 (2WD) MT **		

** Remanufactured axle shafts shall not be used for warranty repairs performed under the Powertrain warranty.

Genuine SUBARU Performance Parts

make the Subaru Impreza RS and the WRX Thrill Rides

The exacting performance standards prized in Subaru Performance Tuning c ponents are now available in more par applications than ever. In fact, we v applied our trophy-winning racing exp ence to our full line of Performance for Impreza 2.5 RS back to 1998 as we new parts for the exciting new WRX. N you can offer your customers everythi from strut tower braces to short thro shifters to performance mufflers. Dri looking for quicker steering response ing-quality shift action and quicker ation will find these SPT parts win ning performance without compromise.

Subaru Enthusiasts Will Love the Extra Kick!

These components significantly enhance the driving experience, adding responsive ness and style that will thrill the most ardent Subaru driver — especially drivers of the new Impreza WRX. Plus, you can offer your customers performance styling good ies such as high-tech carbon fiber shift knobs and interior accent trim kits, performance gauge packages, front end covers, SPT decals and more.

You ll Love the Extra Business

This line of Subaru Performance Tuning (SPT) parts can help foster a loyalty a your performance enthusiasts, customers wh frequently put more money into their

Up to 2001 Impreza 2.5 RS Performance Parts

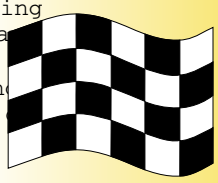
Description	Part #	MSRP
Rear Differential Protector	B0310AS002	$68.95
Short Throw Shifter	C1010FA000	$260.00
Titanium Shift Knob (Sti)	C1010FA100	$149.95
Carbon Fiber Shift Knob-M/T	C1010FA140	$175.00
Carbon Fiber Parking Brake Lever	C1010FC121	$295.00
Strut Tower Brace (Steel)	E4010FA000	$144.95
Strut Tower Brace (Carbon Fiber)	E4010FA100	$629.00
Gauge Pack (Performance)	H5010FA034	$595.00
Gauge Pack Housing (Gray)	H0017FC9100E	
Carbon Fiber PatternedTrim A/T	J1310FA130	$335.00
Carbon Fiber PatternedTrim M/T	J1310FA140	$335.00
Carpeted Floor Covers	J5010FS0010E	$69.95
Front End Cover-Hood	M0010FS111	$44.95
Front End Cover-Full	M0010FS140	$119.95
SPT Decal Set (Blue)	SOA588N400	$69.95
SPT Decal (Silver/Blue)	SOA588N450	$69.95
Intermediate Pipe and Muffler	SOA8377500	$495.00

2002 Impreza RS and WRX Performance Parts

For details about these exciting new SPT components including 17" BBS aluminum alloy wheels and performance suspension kits, please contact your local authorized Subaru dealer.

Genuine Subaru Performance Mufflers

Application		Part #	Previous Part #	MSRP
96-99	LEGACY GT SEDAN	SOA8376300	44305AC421	$375.00
96-99	LEGACY GT WAGON	SOA8376400	44305AC411	$375.00
98-01	IMPREZA RS COUPE & SEDAN	SOA8376500	44305FA100, 110	$375.00
00-01	LEGACY GT SEDAN	SOA8377300	44300AE14A	$375.00
00-01	LEGACY GT WAGON	SOA8377400	44300AE10A	$375.00



Genuine SUBARU Performance Parts

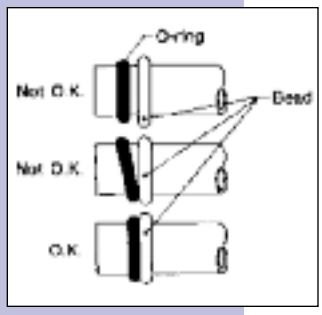
A select group of race-proven performance and appearance parts specially engineered and designed to increase your customer's driving pleasure.

SUBARU OE PRO™

Original Equipment Parts/ Professional Service

Handling of Refrigerant

Because refrigerant boils at approximately -30°C (-22°F) at sea level, it is cold enough to give you severe frostbite. Always wear goggles to protect your eyes and gloves to protect your hands. Also, even under the pressures normally found in CFC-12 containers, refrigerant will boil with the addition of heat. This could raise the pressure inside the container to a dangerous level.

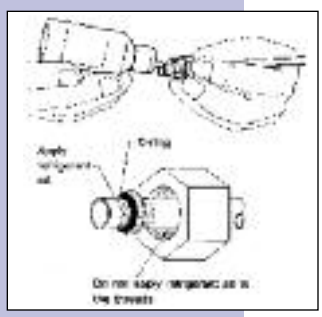


Never expose a can of HFC-134a to direct sunlight, or to temperatures over 40°C (104°F). One more thing to remember about HFC-134a is that when it is exposed to an open flame or to hot metal, it forms phosgene, a deadly gas. Do not discharge HFC-134a into the atmosphere on purpose. Always read and follow the precautions on the HFC-134a bottle.

Basic Information

1. The combination of moisture and refrigerant forms acid, therefore, moisture should not be allowed to enter the refrigerant.
2. Refrigerant oil readily absorbs moisture, therefore, keep refrigerant oil containers tightly capped.
3. The process of evacuating the system is performed to remove small amounts of moisture. This is accomplished by lowering the pressure inside the system, which allows the moisture to boil off, in much the same way that a pot of water will boil away to nothing given enough time. The evacuation process does not suck the moisture out of the system.
4. A minimum level of vacuum must be reached to satisfactorily evacuate the system. This minimum level of vacuum depends on the temperature inside the system. The chart below shows the level of vacuum required to boil water at various temperatures.

   Additionally, the vacuum level shown on a gauge will read approximately 4 kPa (25 mm Hg, 1 in Hg) less for each 304.8 m (1,000 ft) above sea level, due to the decrease in atmospheric pressure at altitude.



Vacuum level required to boil water (at sea level)

Temperature °C (°F)	Vacuum kPa (mm Hg, in Hg)
1.7 (35)	100.9 (757, 29.8)
7.2 (45)	100.6 (754, 29.7)
12.8 (55)	99.9 (749, 29.5)
18.3 (65)	99.2 (744, 29.3)
23.9 (75)	98.5 (739, 29.1)
29.4 (85)	97.2 (729, 28.7)
35 (95)	95.8 (719, 28.3)

O-ring Connections

The following points should be kept in mind when assembling O-ring connections:

- Avoid unnecessary handling and contact of O-rings with your hands, since even clean fingers contain body acids, which can contaminate the O-ring surface.
- Do not handle O-rings with gloves, shop towels, etc., since lint particles may cling to the O-ring, possibly causing a leak upon assembly.
- Always lubricate O-rings before assembly to allow the 0-ring to seat itself properly.
- Be certain to use torque wrenches when tightening O-ring fittings, because overtightening can not only damage the O-ring, but it can distort the tube end as well.

Remove Protective Seals

Just prior to making the connection, remove the protective seals.

Caution: If for any reason you have to stop before making a connection, recap the tube, component or fitting.

Visually inspect the O-ring surface, the O-ring mating surface, the threads and the connection points. If a defective part is found, replace it. The O-ring must sit square against the tube bead. If necessary, slide the O-ring into proper position with clean hands.

Lubricate the Components

For lubrication of the components, use only refrigerant oil as described in the appropriate service manual. Apply oil from an oil squirt gun or other closed container. Do not use your finger to spread the oil over the O-ring.

Apply a small amount of refrigerant oil to the top and sides of the O-ring. The area covered by oil should include the O-ring and the tube bead.

Genuine SUBARU Maintenance Parts

Dirt. Dust.
Heat. Friction.
Contaminants.

They re out there, waiting to rob automobile of its pep and perform ance.
And its value. Without regular mair nance, even the best designed vehi soon lose that new car feeling.

The answer?

Regular maintenance by trained pr fessionals. And Genuine Subaru Par specifically engineered to precise fications. So they fit right, perfo ter and last longer.

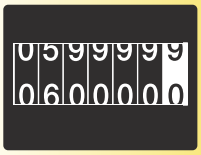
While non-genuine parts may save few pennies now, car owners often e up
paying more for them in the long run. With poor performance. Shorter replacement intervals. And, in some cases, even costly damage as a result of parts that didn t quite fit or didn t quite meet the requirements of the car s original equipment.

Genuine Subaru Parts

To help Subaru owners get maximum enjoyment and value from their vehi cles, your local Subaru dealer maintains a ready supply of frequently needed parts—at prices competitive with off-brand parts. Belts, hoses and spark plugs. Air filters, fuel
filters and oil filters. Brake pads and shoes. Ignition wires and everything else you might need to help keep your customers Subaru vehicles running smoothly.
They re all specifically made for Subaru vehicles, and no matter what anyone might tell you, they aren t the same as those aftermarket imitations.

A few examples:

- Genuine Subaru oil filters have a resin-impregnated filter media for high dirt-holding capacity, and are built to rigid Subaru specifications.
- Genuine Subaru air filters have an oiled media of cellulose, synthetic fibers and thermoplastic resins designed for maximum filtering efficiency.
- Genuine Subaru fuel filters have high dirt-holding capacity and stainless steel construction to protect internal components and help prevent leaks.
- Genuine Subaru Micro V belts are specially constructed with fiber-loaded reinforcement ribs to help resist wear and cracking.
- Subaru V-belts for use in engine drives have thermally active tensile cords for maintenance-free performance.
- Materials of OE?brake pads are specifically formulated to be compatible with the rotor surface to help prevent brake judder, noise and excessive heat buildup, which can impair stopping effectiveness.
- Copper spark plugs feature the largest (2.6mm) center electrode in the industry for longer, more effective service life. A solid copper core provides wider heat range for protection from low speed fouling and pre-ignition. A high- alumina ceramic insulator helps resist



Genuine SUBARU
Maintenance Parts

The secret to long life and lively performance:

Regular maintenance and Genuine Subaru Parts.

SUBARU OE PRO™

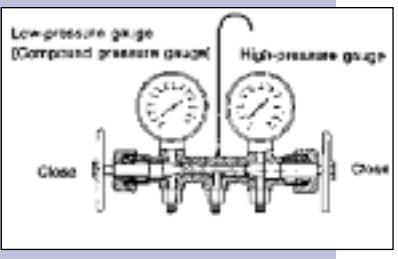
Original Equipment Parts/
Professional Service

Discharge the System

Caution: The following points should be kept in mind when discharging the system.

- Be certain that goggles and gloves are worn.
- Connect refrigerant recovery system to manifold gauge set and remove recycle refrigerant from A/C system.

Connecting the Manifold Gauge Set



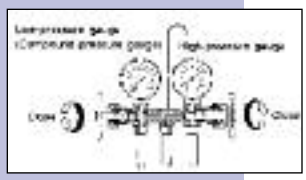
1. Close the high and low side manifold valves.
2. Turn the A/C system ON and turn the ignition switch OFF.
3. Attach the high- and low-pressure manifolds to the high and low services port on the vehicle.

Prepare for Discharging

Connect the center manifold hose to the refrigerant recovery system to recycle refrigerant.

Evacuating & Charging

The following points should be kept in mind when evacuating and charging with a manifold gauge set.



1. Be certain that goggles and gloves are worn.
2. If bulk refrigerant (30 lb) canister is used, be certain to weigh the charge amount carefully, using the correct equipment, to avoid overcharging the system.
3. The charging procedure described in this section begins by charging liquid refrigerant into the high-pressure side of the system with the engine off. The procedure is completed by charging refrigerant vapor into the low-pressure side of the system with the engine running.

Caution: Never open the high-pressure manifold valve when the engine is running.

Connect the Gauge Set

1. Close the high- and low-pressure manifold valves.
2. Attach the low-pressure manifold hose to the low- pressure service port on the vehicle. Check the low-pressure gauge. If more than 10 psi is indicated, discharge the system prior to charging.
3. Attach the high-pressure manifold hose to the high pressure service port on the vehicle.
4. Connect the center hose from the manifold to the vacuum pump.
5. Turn on the vacuum pump.
6. Slowly open the low-pressure manifold valve.
7. When the low-pressure gauge reaches approximately 66.43 kPa (498.3 mm Hg, 19.62 in Hg), slowly open the high pressure manifold valve.
8. Maintain a minimum vacuum level of 100.56 kPa (754.4 mm Hg, 29.70 in Hg) for a minimum of 15 minutes on a new system or 30 minutes for an in-service system.

Note: The gauge will read 4 kPa (25 mm Hg, 1 in Hg) less for every 304.8 m (1,000 ft) above sea level.

Perform a Vacuum Leak Test

1. After 15 minutes (or more) of evacuation, close the high-pressure manifold valve.
2. Close the low-pressure manifold valve.
3. Turn off the vacuum pump.
4. Note the low side gauge reading.
5. After 5 minutes, re-check the low-pressure gauge reading. If the vacuum level has changed more than 4 kPa (25 mm Hg, 1 in Hg), perform an HFC-134a leak test. If the vacuum reading is about the same as noted in step 4, continue to step 6.
6. Carefully attach the can tap to the refrigerant can by following the can tap manufacturer's instructions.
7. Disconnect the center manifold hose from the vacuum pump and connect the hose to the tap valve.
8. If a 13.6 kg (30 lb) container of refrigerant is used a weight scale will be needed. This scale is to determine the amount of refrigerant that is used.

   Connect the center hose from the manifold to the valve. Place the 13.6 kg (30 lb) container on the scale, valve end down.

Purge the Center Hose

1. Verify that all three hose connections are tight at the manifold gauge set.
2. Open the valve on the HFC-134a source.

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Restoring an engine s performance with new Genuine Subaru Engine Components is a smart decision. Our new compo nents are far more reliable than rebuilt alternatives. Rebuilt engine components are based on exist ing parts that have failed in servic e—for example, a rebuilt cylinder head from a core broker or junkyard. A component that has failed once before may fail again—even after rebuilding—for similar reasons.

Rebuilding a component with non-Genuine Subaru parts allows suppliers to shortcut costs by using parts that not only don t meet stringent Subaru stan dards, but are also inferior in terms of fit and function. With Genuine Subaru Engine Components, you know you re getting the best whether you re replac ing a component or rebuilding an entire engine.

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Restoring an engine by using new Genuine Subaru Engine Components may eliminate the expense of pur chasing a completely new or rebuilt engine assembly—or even buying a new vehicle! Competitively priced with typical rebuilt parts, Genuine Subaru Engine Components also save time and money during installa tion compared to non-gen uine parts that may require a force-fit. And, mostimportantly in the long run, they provide the same precise quality and superb performance as those originally fitted to your customers engines.

More Easily Available

Most new Genuine Sub aru Engine Components are readily available from your Subaru dealer—generally more so than rebuilt engines, which may take weeks to deliver. Genuine Subaru Engine Components mean faster, more convenient turn around time for your customers.

Why buy an entire engine, new or rebuilt, when all you need is a quality component?

To restore your customers engines to like-new performance and reliabili ty, specify only the new Genuine Sub aru Engine Components that you need.

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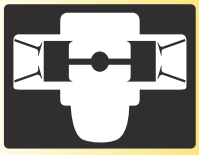
100 percent?of completed head assemblies are leak-tested after assembly to insure proper seating and sealing of valves.

New Genuine Subaru Engine Components Include:

- Complete Cylinder Head Assem blies, *now including additional appli cations through model year 1998*, all new, not rebuilt, ensuring the best performance and long life. Each assembly is complete, with all-new parts, including the cylinder head itself, valves, springs, seals and retain ers. Plus, rebuilding costs are elimi



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Engine Components

Speed your Subaru engine repair work with the full line of Genuine Subaru Engine Components including oil and water pumps, clutch disks, camshafts, gaskets, seals, belts and more.

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3. With safety equipment in place (goggles and gloves), use extreme caution and loosen the center hose connection at the manifold and allow the HFC-134a to escape for no more than two or three seconds, then quickly retighten the hose fitting at the manifold.

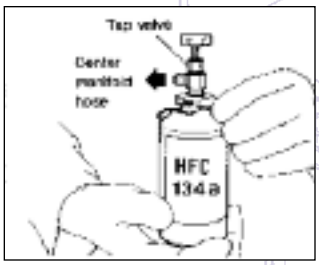
Initial Charging Through the High Side

1. Connect a tachometer to the engine.
2. With the engine off, start charging by slowly opening the high-pressure manifold valve.

Note: The initial charge rate can be increased by immersing the can in lukewarm (below 100 degrees F) water for a short time.

Check the Gauge Readings

When both the high- and low-pressure gauge readings are about equal, or the HFC-134a source is empty, or the system has been filled to specifications, close the high-pressure manifold valve.

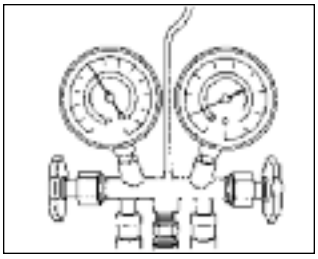


Add Additional Cans

If the HFC-134a source is exhausted, first close the high-pressure manifold valve, second, close the can tap valve, then slowly purge the refrigerant from the service hose by loosening the fitting at the can tap. Repeat the steps as necessary.

Complete Charging Through the Low Side

1. Verify that the high-pressure manifold valve is closed (should have already been closed).
2. Verify that the low-pressure manifold valve is closed (should have already been closed).
3. With the A/C switch off and the windows rolled down, start the engine and run at idle rpm.
4. Set the A/C controls on maximum cool and set the blower speed on the highest setting.
5. Quickly turn the A/C switch on-off-on-off a few times to prevent initial compressor damage due to "load shock." Finish this operation with the A/C switch in the ON position.
6. Raise engine rpm to approximately 1,500 rpm.



Charge the System

1. With the refrigerant source connected and the service hose purged, slowly open the low-pressure manifold valve, while checking the low-pressure gauge reading.

Caution: The refrigerant source must be positioned for vapor (valve up).

2. Keep the low side pressure below 276 kPa (2.81 kg/c m2, 40 psi) by using the low-pressure manifold valve to regulate the flow of refrigerant into the system.
3. When the system is fully charged, close the low- pressure manifold valve.
4. Close the valve at the refrigerant source.

Complete All System Checks

1. Evaluate the system performance (refer to performance testing section).
2. Perform leak detection test.

Caution: Always perform leak checking in an environment free of refrigerant pollution. Do not disconnect the high- or low-pressure hoses from the vehicle before leak checking.

Leak Testing

The following points should be kept in mind when conducting a refrigerant leak test:

1. The A/C system to be tested must have an adequate refrigerant charge to begin with.
2. The area where the leak test is conducted must be free of wind and drafts, with still air being the ideal condition.
3. The atmosphere where the leak test is conducted must be free of refrigerant contamination.
4. Operate the A/C system for approximately 10 minutes, then turn the engine off an begin the leak test.
5. Refrigerant gas is heavier than air, therefore always hold the probe below the connection being tested.
6. When checking for a leak along a length of hose or tube, the leak detector probe must be moved slowly, approximately 25 mm (1 in) per second, making sure probe does not come in contact with the component being tested.

All Genuine SUBARU Remanufactured Parts...

Meet Strict Subaru of America Authorized Genuine Parts Specifications and Perform Like New...

Since they are remanufactured by Subaru original suppliers, they incorporate the latest design enhancements, meet the latest, most stringent OEM specifications and perform exactly like new Genuine Subaru parts.

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The highest level of quality control and meticulous attention to detail means you can count on long term, best possible performance.

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Are Fully Restored...

Many components that some rebuilders consider satisfactory are automatically replaced with new components in our remanufactured parts. Remanufacturing parts may cost a little more than rebuilding, but it s the only way to ensure the same quality, performance and safety standards provided by an original part. And there are still substantial savings over new replacement parts.

Must Pass the Same Tests as New Parts...

Unlike rebuilt parts which are repaired just enough to pass the rebuilder s tests, our remanufactured parts must pass the same tests as a new part at each stage of reassembly. At the end of the line, every part must meet all of the quality control standards—the same tolerances and specification—that the factory has established for new parts. Parts that don t pass all this precision testing never leave the factory.

And Cost Less Than New Parts.

Genuine Subaru Remanufactured Parts cost less only because they cost less to build. Instead of raw material, they start with a core—a used part that s been returned. Every core that s returned is checked by factory inspec

Genuine SUBARU Remanufactured

In short, Genuine Subaru Remanufactured Parts offer great value: the same quality and performance as a new unit, but at a reasonable price with substantial savings.

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7. When checking for a leak at a certain point, the leak detector probe must be held at that point for at least 5 seconds.

Check the System Pressure

With gauges connected to the A/C system, operate the A/C and confirm that the high side pressure is above 690 kPa (7.03 kg/c m2, 100 psi). If not, evacuate and charge the system before leak checking (refer to evacuation and charging sections).

Clean Connections Before Testing

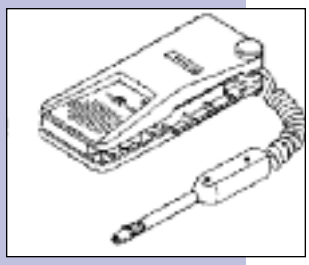
Before testing, use a clean shop towel to wipe off refrigerant oil, dirt, or foreign material from all of the connections and components to be tested.

Note: Since refrigerant oil absorbs refrigerant, excess oil on or near a connection may falsely signal a leak.

Calibrate Leak Detector

Refer to the manufacturer's instructions for the particular type of detector used and calibrate the instrument.

Caution: Always make sure that the probe tip filter is clean and free of contamination.



Leak Test - High-Pressure Side

Operate the A/C system for approximately 10 minutes, then turn the engine off and begin the leak test.

1. Begin at the connection of the high-pressure tube to the evaporator, and work your way along the high-pressure side of the system to the compressor. There are three places to check on each tube connection.
2. Check the area.
   - Check the area where the fitting joins the tube.
   - Check the area where the two parts of the fitting join each other.
   - Check the area where the nut joins the tube.
3. Check the area of the sight glass and pressure switch (dual switch), and also check the seams of the receiver drier.
4. Check the connections of the tubes to the condenser, and also check any welded joints on the condenser.

Caution: An oily area on the fins of the condenser may indicate a leak.

5. Check the area where the hoses attach to the compressor.
6. Check around the machined portions of the compressor (where the compressor sections join each other).
7. If equipped, check the thermal limiter on the compressor housing.
8. Check the compressor shaft seal by probing near the center of the compressor clutch pulley.

Note: Some shaft seals have a very slight amount of normal leakage [approximately 28 g (1.0 oz) per year].

Leak Test - Low-Pressure Side

1. Begin at the connection of the low-pressure tube to the evaporator, and work your way along the low-pressure of the system to the compressor. There are three places to check on each tube connection.
2. Check the area.
   - Check the area where the fitting joins the tube.
   - Check the area where the two parts of the fitting join each other.
   - Check the area where the nut joins the tube.

Lubrication

System Oil Stabilization

Prior to opening the refrigerant system for repairs (except compressor seizure) the system must be stabilized for correct oil replenishment.

Follow these procedures:

1. Engine speed set to 1,500 rpm
2. A/C ON
3. Air source to recirculate
4. Blower in 4th or high speed position
   - Make sure the air entering the evaporator is above 26.7°C (80°F).
   - The discharge (high) side pressure must be above 588 kPa (6 kg /cm2, 85 psi).
5. Operate the A/C for 10 minutes.

System Discharge

Slowly, discharge the system starting with the high-pressure side until the pressure drops below 345 kPa (3.52 kg/c m2, 50 psi), then open the low-pressure side.

Genuine SUBARU Replacement Mufflers

for Perfect Fit and Function.

Unlike typical generic mufflers, Genuine Subaru Replacement Muffler Assemblies offer these unique-advantages...

Welded, One-Piece Assembly

A Genuine Subaru Replacement Muffler Assembly is a complete, all-welded, one-piece unit that ensures easy and precise installation and the same exact fit as the assembly supplied on the vehicle as original equipment. A Genuine Subaru Replacement Muffler Assembly eliminates the need to deal with the all-too-common combination of leak-prone pipe adapters; cumbersome multiple clamps; and adaptable hangers that never fit quite right.

Fully Aluminized Steel Construction

A Genuine Subaru Replacement-Muffler Assembly is a heavy-duty, integrated unit of thicker materials than typical aftermarket mufflers. Special corrosion resistant aluminized steel construction allows for long life. Sound absorbing materials help subdue sound without hampering performance unlike typical replacement mufflers with few baffles to suppress exhaust noise.

Specifically Designed for Your Customers Cars

A Genuine Subaru Replacement-Muffler Assembly is designed for each Subaru vehicle application to cross-fitted to multiple makes and rigged with adapters. All mounting parts precisely match the original Subaru assembly for easy, safe, no-rattle replacement.

Backed by Warranty

A Genuine Subaru Replacement-Muffler Assembly is backed by the Genuine Subaru Parts warranty that covers the entire, integrated unit not just the muffler itself including welded-on pipes, clamps, and hardware.

Typical warranties cover the muffler box only. When it rusts out and is replaced under warranty, you still pay for the related pipes, adapters, clamps and

Genuine Subaru Replacement Mufflers

Now Includes Performance Mufflers 6-1-01

Application		New Part Number	Previous Part Number	MSRP
82-87	BRAT	SOA8375100	SOA5225119	$89.95
80-84	STATION WAGON & 4-DOOR SEDAN			
81-89	HATCHBACK	SOA8375200	SOA5225119	$89.95
87-94	JUSTY	SOA8375300	744304451	$89.95
85-93	LEONE/LOYALE SEDAN	SOA8375600	44301GA211	$69.95
85-90	LEONE/LOYALE SEDAN-TURBO		44301GA221	
86-90	LEONE/LOYALE 3-DOOR	SOA8375600	44301GA211	$69.95
86-90	LEONE/LOYALE 3-DOOR-TURBO		44301GA221	
85-94	LEONE/LOYALE WAGON	SOA8375700	44301GA231	$69.95
85-90	LEONE/LOYALE WAGON-TURBO		44301GA241	
85-87	XT (THRU 12/86) INCL. TURBO	SOA8375800	44304GA321	$129.95
87	XT TURBO (FROM 1/87)		44304GA341	
87-91	XT (FROM 1/87)		44304GA361	
87-91	XT6			
90-94	LEGACY (2WD) WAGON	SOA8375500	44304AA080	$129.95
90-94	LEGACY (2WD) SEDAN	SOA8376000	44304AA110	$129.95
90-94	LEGACY (4WD) SEDAN	SOA8375900	44304AA120	$129.95
90-94	LEGACY (4WD) WAGON	SOA8375400	44304AA130	$129.95
93-96	IMPREZA 1.8L (2WD)	SOA8376100	44305FA061	$129.95
93-96	IMPREZA 1.8L (4WD)	SOA8376200	44305FA071	$129.95
95-97	LEGACY (2WD) 2.2L WAGON	SOA8376800	44305AC110	$129.95
95-97	LEGACY (2WD) 2.2L SEDAN	SOA8377100	44305AC090	$129.95
95-97	LEGACY (AWD) 2.2L SEDAN	SOA8377000	44305AC100	$129.95
95-97	IMPREZA (ALL) 2.2L; 97 1.8L (ALL)	SOA8377200	44305FA100	$129.95
Genuine Subaru Performance Mufflers				
96-99	LEGACY GT SEDAN	SOA8376300	44305AC421	$375.00
96-99	LEGACY GT WAGON	SOA8376400	44305AC411	$375.00
98-01	IMPREZA RS COUPE & SEDAN	SOA8376500	44305FA100, 110	$375.00
00-01	LEGACY GT SEDAN	SOA8377300	44300AE14A	$375.00
00-01	LEGACY GT WAGON	SOA8377400	44300AE10A	$375.00

IMPORTANT NOTE: Federal and California law prohibits use of these parts in making repairs covered under emissions-related warranties extended on the vehicle at the time of its original purchase. No claims under those warranties will be honored unless OEM parts are used.

Genuine SUBARU Replacement Mufflers

Wouldn't your customers prefer Genuine Subaru Replacement Mufflers? They're domestically-sourced and competitively priced with aftermarket mufflers.

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Air Conditioning Service Regulations

It's been several years since the first Subaru HFC-134a-equipped air conditioning system entered production. And it's been more than five years since the legal production of CFC-12 officially ended in the United States. Although all new Subaru vehicles sold in this country have been equipped with HFC-134a A/C systems for some time now, many older vehicles with CFC-12 A/C systems are still in service. Some of these older CFC-12 vehicles have been retrofitted to HFC-134a refrigerant, while others may have been charged with 'alternative' refrigerants.

The refrigerant changeover has lead to incorrect assumptions among some technicians. Since we're no longer operating in a one refrigerant world, this is understandable. Perhaps you are unsure what the rules regarding refrigerant handling and air conditioning service are.

In recent years, the EPA has carried out enforcement of the Clean Air Act rules which apply to air conditioning systems and refrigerant handling. That's why we felt it would be helpful to print a portion of the EPA Clean Air Act rules which apply to automobile air conditioning systems here. To avoid misunderstandings, specific interpretations of the Clean Air Act rules are taken from EPA statements.

Black Market CFCs

If you knowingly buy or possess illegal chlorofluorocarbons (CFCs) smuggled into the United States, you are committing a punishable, criminal offense. If you are a wholesaler, distributor, or retailer of CFCs, you are responsible for ensuring the CFCs you buy are legal. You should be able to describe the diligent efforts you take to make sure the CFCs you possess were not smuggled into the United States.

What Are the Penalties for Purchasing or Possessing Illegal CFCs?

The most immediate consequence of possessing illegal CFCs is having them confiscated. The U.S. Customs Service, under its laws and regulations, may confiscate any goods that enter the United States illegally. The U.S. Customs Service can

confiscate illegally imported CFCs all the way down the distribution chain. Purchasing your CFCs from a reputable wholesaler or distributor does not relieve you of responsibility. If the CFCs you possess were illegally smuggled into the United States, you could lose the valuable product, even though you paid for it.

There are many other potential consequences of purchasing or possessing illegal CFCs. If the U.S. Customs Service confiscates your CFCs, you might become the subject of an investigation by the Customs Service and the U.S. Environmental Protection Agency (EPA). Investigations of your company might involve interviewing your employees and reviewing your records. The Internal Revenue Service (IRS) also might decide to audit you or your company regarding payment of the excise taxes on CFCs. If you knowingly purchase or possess CFCs illegally smuggled into the United States, you could face severe penalties.

CFC Enforcement Actions

An EPA administrative law judge has ordered a Granite Falls, North Carolina automobile dealer to pay a penalty of $34,254 for violations of the Clean Air Act. An EPA Administrative Penalty Order has alleged that the dealership failed to use certified technicians as well as the proper recycling or recovery equipment while handling CFC-containing refrigerants. EPA acted on a tip from a former employee, and conducted an investigation of the company's ozone-depleting refrigerant handling practices at its body shop and service facility.

The EPA also filed Administrative Complaints against several companies in the Southeast as part of a nationwide enforcement initiative under the Federal Clean Air Act as it pertains to the use of chlorofluorocarbons (CFCs). The complaints sought a total of more than $100,000 in civil penalties for alleged violations ranging from the failure to use certified technicians while servicing refrigerated appliances and auto and residential air conditioners to the use of unacceptable substitute refrigerants.

Handling Contaminated & Unfamiliar Automotive Refrigerants

Buying and handling A/C refrigerants is a lot more complicated than it used to be. Even when R-12 was the only refrigerant in town, many A/C techs discovered systems that had been contaminated with air, R-22 or hydrocarbons such as propane and butane. Today, with new vehicles using R-134a refrigerant, and with an abundance of other R-12 substitutes on the market, the variety of refrigerants that techs may handle on the job is making A/C service more complicated than ever.

Identifying Refrigerants

EPA requires that when any vehicle is retrofitted from R-12, a label identifying the new refrigerant in the system must be placed under the hood, and new fittings that are unique to that refrigerant must be attached to the high- and low-side service ports of the A/C system. These EPA requirements obviously don't solve the entire refrigerant identification problem. Your shop could encounter a vehicle that has been retrofitted to another refrigerant but has not been properly re-labeled, or a vehicle that has the right label, but highly contaminated refrigerant.

Checking refrigerant pressures does not guarantee that you will recognize that refrigerant is contaminated or is a brand that is unfamiliar to you. Unusual head pressures may tip you off that a system labeled to indicate that it has pure R-12 or R-134a in it actually is highly contaminated or contains another refrigerant altogether. However, you may also encounter a contaminated system, or a system that contains a blend refrigerant, that indicates pressures similar to those of pure R-12 or R-134a.

Purchasing a refrigerant identifier unit can help pinpoint many refrigerant identification problems, and EPA strongly recommends (but does not require) that techs obtain this equipment. The equipment you choose will depend on what you plan to do once you discover that refrigerant in a vehicle is not pure R-12 or R-134a. If, for example, you decide to turn the customer with a contaminated system away, then a less-expensive identifier that simply tells you whether refrigerant is pure R-12 or R-134a ("go/no-go") may be sufficient for you.

However, a unit that can help you identify the chemical composition of the refrigerant more specifically can be an important diagnostic tool, so the extra cost may be well worth it. Some models can identify flammable substances, which require special care and safe handling. Some models can tell you how much air is in recycled refrigerant, so that you can use these models to determine whether the air purge cycle feature on your R-12 or R-134a recycling equipment is functioning properly. Excess air in an A/C system can lead to false readings in electronic low charge indicators in some vehicles; rapid clutch cycling and potential clutch failures; and noisy compressor operation. Finally, using this tool may build your customers' confidence in your diagnostic abilities.

Keep in mind that even the most sophisticated diagnostic units on the market today cannot properly identify all combinations of chemicals used in blend refrigerants. Diagnostic identifiers being sold today may be able to identify potential R-12 and R-134a contaminants such as air, R-22, and hydrocarbons, but many were not designed to identify R-124 and R-142b (chemicals that are components in many of the new substitute refrigerants), or to recognize particular chemical combinations as specific patented, marketed blend refrigerants. In the future, equipment manufacturers may develop equipment designed

to identify all of the substitute refrigerants that are being marketed today.

Whether you are interested in purchasing a "go/no-go" unit or a diagnostic unit, check that the unit meets the SAE J1771 standard, which is an indication that the unit accurately identifies refrigerants. When claiming to meet this standard, manufacturers of identifier equipment are required to label the unit stating its level of accuracy.

If you are reluctant to invest in another piece of equipment, consider making an arrangement to borrow an identifier from a nearby service facility that has purchased one. That facility may agree to make its identifier available to you for a reasonable fee.

Recovering & Recycling Contaminated Or Unfamiliar Refrigerants

You may not wish to turn away a good customer who comes to the shop with contaminated R-12 or R-134a, or with a substitute refrigerant for which you have no dedicated recovery or recycling equipment. What do you do?

Recovering Refrigerant

As a first step, the contaminated or unfamiliar refrigerant must be recovered. EPA prohibits venting any automotive refrigerants (including "unacceptable" refrigerants), no matter what combination of chemicals is in the refrigerant. The best way to recover contaminated or unfamiliar refrigerant is to dedicate a recover-only unit to anything that is not pure R-12 or pure R-134a. Some equipment manufacturers may also market new types of recover-only stations specifically designed to remove these refrigerants.

If the refrigerant you extract into a recovery unit contains a high level of flammable substances such as propane and butane, a fire hazard may result if the refrigerant comes into contact with an ignition source within the equipment. Whether you are purchasing a new piece of equipment to handle your contaminated and unfamiliar refrigerants, or you are converting a piece of existing equipment for this purpose, make sure you talk to your sales representative about what features have been incorporated into the equipment to guard against risks of ignition.

Refrigerant should be recovered into the standard DOT-certified, gray-with-yellow-top recovery tank, and if the tank is not equipped with a float valve (which serves as overfill protection), make sure it never gets filled beyond 60 percent of its gross weighted capacity, as specified in the SAE J1989 and J2211 standards.

If A/C service is not a large percentage of your business, then you may be reluctant to invest in another piece of recovery equipment. If this is the case, consider calling a local A/C specialty shop that may have the equipment necessary to service contaminated refrigerants or refrigerants that are unknown to you.

Recycling Refrigerant

Once recovered, refrigerant should not be recycled on-site unless it is uncontaminated R-12 or R-134a. Recovering contaminated R-12 or R-134a refrigerant into recycling equipment may damage the equipment. In addition, EPA regulations currently prohibit technicians from recycling blend substitute refrigerants (contaminated or not). EPA is working with independent testing laboratories and with equipment manufacturers to determine whether it is possible to develop recycling equipment to service these blends that protects both the health and safety of the technician, and the integrity of the A/C system.

Section 609 Technician Certification Programs

Section 609 covers technician certification in the motor vehicle sector only. Becoming certified allows you to: (1) purchase R-12 and ozone-depleting blend substitutes for R-12 (right now, all blends are ozone-depleting); and (2) perform refrigerant servicing of vehicles with R-12, R-134a, or blend refrigerants.

Although you have to be certified to perform refrigerant servicing of vehicles equipped with R-134a, currently, you do not have to be certified to purchase R-134a. EPA, however, issued on June 11, 1998 a proposed regulation that would restrict the sale of R-134a to certified technicians. If you become certified now, your certification will allow you to purchase R-134a if a sales restriction is instituted in the future.

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Provide Protection and Enhance Performance.

When it comes to fluids and other chemicals you put in a car, there s one way to be sure you re meeting same high standards of original Su equipment: Use Genuine Subaru Auto motive Chemicals.

Subaru Now Offers A Full Line of Quality Teste Aerosols and Fluids

This line covers all the essentia ice chemicals. From coolant and au matic transmission fluid to brake cleane fuel injector cleaner, these premi chemicals are all approved by Subaru for use in Subaru vehicles. Each automotive chem ical is engineered to assure maximum-per formance and trouble-free driving. And because they re competitively priced, you can use it day in and day out on all your service work and make extra money at the same time.

All Refrigerants Are Not Cre ated Equal!

Genuine Subaru R-134a Refrigerant, unlike many after-market products, is manufactured and packaged to the strin gent Air Conditioning and Refrigerant

Genuine Subaru Automotive Chemicals

ITEM	CONTENTS	CASE QTY.	PART #	NOTES	UNIT MSRP
AEROSOLS					
Brake Cleaner	18 oz. net wt.	12	SOA868V9100		$ 3.15
N/C Brake Cleaner	14 oz. net wt.	12	SOA868V9110	Non-Chlorinated	$ 3.15
Carburetor Cleaner	11.3 oz. net wt.	12	SOA868V9120		$ 2.73
Glass Cleaner	18 oz. net wt.	12	SOA868V9130		$ 2.73
Aerosol Fuel Injector Cleaner	7 oz. net wt.	12	SOA868V9140	Aerosol/Rail Applied	$ 15.08
Application Tool for Fuel Injector Cleaner			SOA868V9410		$ 234.63
Application Tool Adapters			SOA868V9420	Incl. Hose Adapters, Fuel Block-off Clamps, etc.	$ 77.83
Pour Fuel Injector Cleaner	16 fl. oz.	12	SOA868V9150	Fluid/Gas Tank Additive	$ 5.67
Top Engine Cleaner	11 fl. oz.	24	SOA868V9160		$ 2.73
Application Tools for Top Engine Cleaner			SOA868V9430	Incl. Tubes, Connectors, etc.	$ 33.72
Throttle Plate Cleaner	4 oz. net wt.	12	SOA868V9170		$ 1.68
Silicone Lubricant	12.5 oz. net wt.	12	SOA868V9200		$ 2.94
FLUIDS					
Factory Fill Coolant	1 gal.	6	SOA868V9210		$ 12.04
Factory Fill Windshield Washer Concentrate	16 fl. oz.	24	SOA868V9230		$ 2.53
Factory Fill Auto Trans Fluid/Power Steering Fluid	32 fl. oz.	12	SOA868V9240		$ 3.00
REFRIGERANT					
R-134a Refrigerant	30 lbs.	1	SOA868V9310		$ 221.93

Genuine SUBARU Automotive Chemicals

Now you can provide your customers with Genuine Subaru Chemicals that are tested and approved by Subaru engineers to meet the operating specifications of Subaru vehicles.

SUBARU OE PRO™

Original Equipment Parts/ Professional Service

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Blower Motor Resistor Repairs

If you are servicing a vehicle with a repeat blower motor resistor complaint and you have checked the blower motor for excessive draw, it may be necessary to replace the blower motor at the same time you install a new resistor. The repeat resistor failure may be due to excessive blower motor current draw.

Legacy Zexel Air Conditioning

If you receive a customer complaint of a slight "chirp" or "squeak" when the compressor is engaged and also during A/C cycling, do not replace the compressor. Verify proper belt tension and A/C system operation using the applicable service manual. If the A/C system is not used for a period of time, the compressor and clutch assembly may require a break-in procedure to be performed. As the customer uses the A/C or defrost modes, the "chirp" or "squeak" will diminish. Also, the red clutch dust (rust like substance) is normal and will accumulate during normal usage. Do not replace the compressor or clutch for these conditions.

1995 Model Year RHD Postal Legacy Air Conditioning System

The 1995 RHD Postal Legacy air conditioning system is manufactured by Nippon Denso and not by Zexel as in the previous 1990-94 models. Detailed information about the changes can be found in the 1995 Right Hand Drive Service Manual Supplement MSA5T9504A.

Legacy Compressor Belt Tension

Use a belt tension gauge approved for use on serpentine type belts to adjust Legacy compressor belt tension. Calsonic recommends 144-166 lbs. for a new belt. Zexel recommends 145-165 lbs. for a new belt.

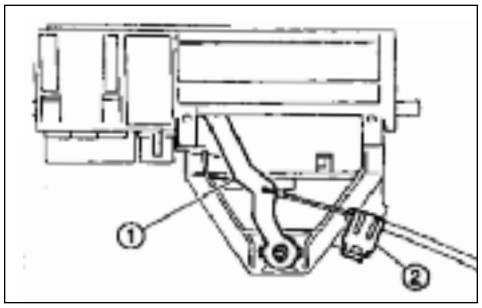
SVX Evaporator Thermosensor Intake Sensor

Should you have a failure of the Evaporator Thermosensor (also known as the Intake Sensor) in an SVX, the new part you receive may be physically different than the part you are replacing. The new part requires contact with the fins of the evaporator, so removal of the evaporator is required in order to install it.

There may be a small resistor harness between the old sensor and the vehicle's harness. If there is, it should be removed prior to installation of the new thermo-sensor. Failure to remove this resistor may cause insufficient cooling under certain conditions of temperature and humidity.

A/C Performance–All Models

When diagnosing a poor A/C cooling complaint, do not overlook the possibility that the heater temperature control cable is misadjusted.



A misadjusted cable could allow heated air to mix with the cooler air and significantly increase the temperature of the air at the ducts. It is important that the air mix door be completely closed when in the A/C mode.

Cooling Fan Operation

The logic of the engine cooling fan operation in some 1997 and 1998 Legacy models is different from earlier Legacy models. When the engine temperature increases to the level where engine cooling fan operation is required, only one cooling fan may come on, contrary to the previously expected two cooling fans. If the A/C is turned on, or if the engine temperature continues to increase, both cooling fans will then come on. There are some vehicle speed parameters that have an effect on the fan operation, but they are not as noticeable as the fan operation with the vehicle stationary.

This is a normal operation and no repair attempts should be made. The systems that turn on only one cooling fan when warm can be identified by watching the LED indicators on the Select Monitor. With the A/C off and the engine warm enough to need cooling fan operation, the vehicles which

turn on only one fan will energize Fan Relay 2. Vehicles that run both fans will energize Fan Relay 1.

1998 Subaru Forester Dash Vent Noise

If you encounter a customer complaint of a "crunching" noise coming from the passenger side dash vent with the blower fan on 3 or 4 speed, it could be caused by the dash vent door.

Inspect the packing (sealing) sponge rubber installed around the dash vent door, inside the vent. Air movement past this sealing rubber may cause the rubber to move up and down (vibrate). This vibration is the noise the customer is hearing.

To correct this problem, apply a thin bead of adhesive to both sides of the rubber gasket between the gasket and the vent door groove the gasket sits in. The adhesive will hold the gasket in place and keep it from moving.

1998 Subaru Forester Squeaking Noise With A/C On

If you encounter a customer complaint of a squeak type noise coming from the dash area when the A/C cycles ON at an engine RPM of 3,000, the noise could be caused by the Thermal Expansion Valve (TXV).

If the TXV is causing the noise, replace the TXV with a modified type that was incorporated into production during July of 1997. The modified type can be identified by a red line on the upper front portion of the valve. Your Subaru Parts Department has the part number for the modified type TXV.

Subaru Impreza Center Dash Vent Airflow

If you're dealing with a customer complaint of different air flow patterns from the driver's half/ passenger's half of the center dash vent, be advised that this is a normal condition and no repairs should be attempted. Air flow will be greater from the passenger's half of the vent.

Air Conditioner Hoses

When servicing, diagnosing or repairing an A/C system, never sharply bend, pinch, or crimp the hoses. The hoses are internally lined with a nylon barrier to prevent leakage. When this barrier is cut or broken, it can swell and create an internal blockage in the A/C lines.

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A/C System Diagnostic Tips

To properly diagnose the A/C system heat transfer efficiency, the Subaru A/C vendors remind us to carry out the performance test, as outlined in the appropriate service manual, prior to taking the manifold gauge pressure readings. This is especially true when diagnosing a Zexel or Calsonic system with a variable displacement compressor. This performance test applies to all types of A/C systems to ensure proper performance.

Whenever a compressor is being replaced, both the new compressor and the old compressor must be drained of oil and measured separately. Compare the amount of oil from the old compressor to the minimum oil amount found in the applicable service manual:

- If it is above the minimum, put the same amount of new compressor oil in the new compressor.
- If below the minimum oil level, put the minimum amount of new compressor oil in the new compressor.

Note: Refer to the compressor oil measuring chart for specific oil quantity and type requirements. Never install a new compressor without adjusting the oil content. Too much refrigerant oil can cause poor heat transfer at the evaporator because the oil tends to coat the internal walls of the evaporator coil and occupies space that should contain refrigerant for proper heat absorption.

A/C Testing for System Leakage

Whenever the A/C system is being tested for leaks, make sure the Shrader valve caps are securely in place before using the leak detection device. The Shrader valve final seal is the O-ring inside the Shrader valve cap.

Dust & Dirt Entering Rear of Vehicle

If you receive questions from customers regarding dust and dirt entering and accumulating in the rear of the vehicle while they are driving on dirt, cinder, or gravel roads, advise them that they should avoid using the Recirculate position of their heating and ventilation systems under those circumstances. While driving in the Recirculate position, a low pressure is produced in the vehicle, which tends to draw dust and dirt into the vehicle.

When using the ventilation system on outside air, the flow through air and the blower fan both serve to pressurize the interior slightly and help to prevent the intrusion of dust and dirt. This precaution is effective in circumstances when the customer's vehicle itself is kicking up the dust and dirt. If, of course, the dust and dirt is being kicked up from other vehicles and the customer is driving through or in the cloud of dust, then Recirculate can be used to prevent the blower fan from ingesting and blowing dirt into the interior of the vehicle.

A/C Inoperative Impreza/Forester Vehicles

If you encounter an Impreza or Forester vehicle with the A/C not working or working 'backwards,' check to see if the vehicle has the correct evaporator thermosensor installed. The evaporator thermosensors for these vehicles work opposite each other. Installing an Impreza evaporator thermosensor into a Forester will cause the A/C system to run with the A/C switch in the OFF position. The same thing can happen if the situation is reversed (Forester thermosensor installed in an Impreza.) Also, switching model years within the same vehicle, (i.e. 1998 Impreza part installed in a 1997 Impreza), can cause the system to operate backwards. So, when replacing evaporator thermosensors in Impreza and Forester vehicles, always stay with the correct model and year.

Use Of A/C Dyes in Subaru Air Conditioning Systems Manufacturer's Recommendations

Zexel USA HVAC

- Non-ultraviolet (red dye] is strongly cautioned against. There are many contaminants in this type of dye, which can cause premature compressor or other system component failure.
- Ultraviolet dye can be used as a last resort to attempt to find a repeat leak that cannot be found using an adequate electronic leak detector. ZEXEL USA HVAC Technical Service Department utilizes a Yokogawa electronic

leak detector for field investigations. We have found this detector to be very reliable and accurate, when properly maintained. This detector is also marketed by KentMoore Tool Company. In most instances, we have not found it necessary to use any type of dye for leak detection. The most important parts of leak detection are patience and proper equipment maintainance.

Calsonic North America, Inc.

- Calsonic only recommends ultraviolet dye. Ultraviolet dye called Bright Solution is an example of one product approved by Calsonic. KentMoore Tool Company sells the ultraviolet dye using their part number J41447 for R134a and J39475 for R12 systems.
- Also recommended are the dye injector tools that do not require the use of refrigerant to introduce the dye into the A/C system. Use KentMoore A/C Tracer Dye Injector part numbers J41459 for R134a and J41709 for R12 systems.
- To find a leak with the dye injected into the A/C system, Calsonic recommends using the Universal 12 volt Leak Detection Lamp that can be ordered through KentMoore using part number J42220.
- Calsonic recommends the use of a Yokogawa leak detector or the DTEK leak detector, which can be ordered from KentMoore Tool Company using part number J41995.

Refrigerant Substitution Warning

At this time no OE Automotive or Mobile Air Conditioner Manufacturers recommend the use of alternative refrigerants (e.g. FREEZE 12 or FRIGC FR12). More importantly, the vehicle manufacturer's warranty will be void if refrigerants other than the ones intended (R12 and R134a) are used.

There are potential cross contamination problems caused by different refrigerants that are not mixable:

- Permanent refrigerant recovery machine damage.
- Containers of contaminated refrigerant that cannot legally be reused.
- New refrigerants cannot be vented into the atmosphere because they are still listed as potential ozone depletors.
- Disposal fees for getting rid of the contaminated substances.
- New refrigerants cannot be recycled with the current recycling systems dedicated for R12 and R134a.
- No leak detection devices for alternative refrigerants are available at this time.

What is a Subaru N.E.W. Horizons Dealer?

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Subaru N.E.W. Horizons Dealers have been recognized for their outstanding performance in serving the wholesale market. N.E.W. Horizons dealers provide you with a direct wholesale parts hotline and also maintain a large inventory of competitively priced Genuine Subaru Parts, which means you can get most parts immediately. If not, the N.E.W. Horizons dealer's direct access to the Subaru Parts Distribution Network means it can get you almost any part you need quickly. If you have a question about a specific part or repair job, just ask. No one knows a Subaru, or the parts needed to repair them, like a Subaru N.E.W. Horizons Dealer.

Please note: Left column telephone numbers provide direct access to Subaru N.E.W. Horizons Parts Departments. Right column numbers provide general access to Subaru N.E.W. Horizons Dealers.

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New Mexico

Albuquerque
Garcia Subaru
505.260.5164 505.260.5155

Albuquerque
Lee Galles Subaru
505.837.5244 505.855.5800

Santa Fe
Premier Subaru of Santa Fe
505.428.7341 505.471.7007

New York

Amherst
Northtown Subaru/Hyundai
716.835.4611 716.835.8500

Colonie
Goldstein Subaru
800.955.1727 518.869.1250

Glen Cove
North Coast Subaru
516.674.9309 516.676.3676

Huntington
Metric Auto Sales, Inc.
800.696.9980 631.499.6777

Ithaca
Bill Cooke Imports, Inc.
800.870.3270 607.257.1515

Jamestown
Ed Shults Subaru
800.752.7774 716.484.7151

Kingston
Colonial Motor Cars, Ltd.
845.339.3591 914.339.3330

Orangeburg
Bill Kolb, Jr. Subaru, Inc.
845.398.6323 845.359.7777

Orchard Park
West Herr Subaru
716.662.3570 716.662.3565

Pleasantville
Prestige Imports
914.769.1493 914.769.5100

Ravena
Marshall's Auto Exchange
518.756.9701 518.756.6161

Rhinebeck
Ruge's Subaru
800.343.7843 914.876.7074

Riverhead
Riverhead Bay Motors
531.727.5590 631.727.4000

Rochester
Piehler Subaru
716.254.4754 716.458.4540

Rye
Rye Subaru
914.967.4830 914.967.6300

Sayville
Donaldsons, Inc.
631.567.8100 631.567.6400

Syracuse
Bill Rapp Subaru
315.463.4958 315.437.2501

Syracuse
Romano Subaru
315.475.3365 315.471.3665

Tarrytown
Rushneck Subaru
914.631.0670 914.631.0815

Utica
Don's Subaru
800.527.1027 315.797.1520

Vestal
Matthews Subaru Company
607.754.0397 607.754.2050

Victor
Van Bortel Motorcar, Inc.
716.924.4383 716.924.5230

Wappingers Falls
Wappingers Falls Subaru
845.298.4465 914.298.8880

Yonkers
Smith Cairns
Subaru/Ford/Mazda
914.377.8116 914.377.8100

Yorktown Heights
Curry Ford Subaru
800.288.6777 914.736.1300

North Carolina

Asheville
Prestige Subaru/Dodge, Inc.
888.854.4293 828.298.9600

Boone
John Cook Subaru/Suzuki
800.844.2665 828.264.0675

Chapel Hill
Performance Subaru
800.476.3191 919.942.3191

Charlotte
Folger Subaru
800.376.1242 704.536.9635

Greensboro
Bob Dunn Subaru/Ford
800.489.3866 336.275.9761

Raleigh
Southern States Imports, Inc.
800.489.3684 919.828.0901

Winston Salem
Flow Subaru
800.467.5002 336.723.3524

Ohio

Cincinnati
Borcherding Subaru
800.843.3663 513.677.1800

Cincinnati
Subaru of Beechmont
513.474.5720 513.474.4313

Columbus
Byers Imports
800.327.0360 614.864.5180
Columbus
Hatfield Subaru
614.675.0288 614.870.9559

Fairfield
Fairfield Subaru
513.874.6977 513.874.6980

Findlay
LaRiche Subaru Toyota, Inc.
800.545.6885 419.423.5656

North Olmstead
Ganley Westside Imports
440.734.1076 440.734.2000

Warrensville Heights
Ellacott-Shaker Subaru
800.475.8555 216.475.3444

Wickliffe
Glavic Motors, Inc.
800.634.9770 440.585.1000

Oklahoma

Broken Arrow
Ferguson Advantage Imports
800.728.5538 918.251.4542

Oklahoma City
Cable Subaru
800.522.6793 405.789.8500

Oregon

Beaverton
Carr Subaru
800.888.6793 503.644.2161

Eugene
Romania Subaru
541.465.3555 541.465.4600

Gresham
Gresham Nissan Subaru
800.669.1198 503.661.1200

Medford
Southern Oregon Subaru
541.245.2003 541.772.3377

Oregon City
Thomason Subaru
888.596.5288 503.656.0612

Portland
Wentworth Subaru
800.232.8097 503.232.2000

Pennsylvania

Allentown
Becker Wagonmaster, Inc.
610.395.6530 610.395.3745

Bridgeport
Eger Subaru
610.277.6308 610.277.2050

Butler
Kerven Enterprises, Inc.
800.KERVEN9 724.287.0734

Concordville
Concordville Motorcar, Inc.
800.220.3100 610.459.8900

Doylestown
Fred Beans Subaru/Dodge
877.94.BEANS 215.348.7500

East Petersburg
Lancaster County Motors, Inc.
800.215.5644 717.569.4514

Erie
New Motors, Inc.
800.352.1052 814.868.4805

Harrisburg
Faulkner Subaru
717.564.5736 717.564.4545

Jenkintown
Glanzmann Subaru
800.440.0130 215.885.8282

Mechanicsburg
Cumberland Valley Motors
717.697.9478 717.697.9448

Moosic
Minooka Subaru
800.982.4054 570.346.4641

Newtown Square
Rafferty Subaru
610.353.6906 610.353.6900

Northumberland
W & L Subaru
877.995.7822 570.473.3432

Philadelphia
Wilkie Subaru
800.962.4389 215.236.7500

Pittsburgh
Bianchi Subaru
877.563.4WDS 724.325.2888

Pittsburgh
Bill Gray Subaru
412.344.0181 412.344.0100

Pittsburgh
Bowser Subaru
800.231.4452 412.469.2100

Temple
Steve Moyer Subaru
800.995.2627 610.929.4703

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Apple Subaru
800.228.7299 717.854.1800

Rhode Island

North Kingstown
Pilgrim Motors, Inc.
800.243.8485 401.294.3395

North Smithfield
Anchor Subaru
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Pawtucket
Tom Subaru
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Bald Hill Subaru
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North Charleston
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Lithia Subaru of Sioux Falls
800.952.3535 605.336.1700

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Knoxville
Harper Vehicles, LLC
800.879.8733 865.691.5551

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Jim Keras Subaru Buick
800.272.2012 901.373.2700

Nashville
Jim Reed Subaru
800.522.2207 615.329.2929

Texas

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800.846.4403 512.454.9489

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800.880.8846 210.308.0200

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Salt Lake City
Nate Wade Subaru
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Twin City Subaru
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Stacy Subaru
802.251.1000

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Burlington Subaru
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The Car Store
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Kinney Subaru
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Virginia

Charlottesville
Brown Subaru
800.635.3170 804.977.3380

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Farrish Subaru/Oldsmobile/Jeep
800.572.7278 703.273.0200

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Bob Wade Subaru
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Dulles Jeep/Subaru
800.394.5357 703.777.7077

Midlothian
Pence Subaru
800.447.3623 804.378.3000

Norfolk
Roughton Subaru
757.461.2967 757.461.1200

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Team Motorsport, Inc.
800.277.8757 540.366.4830

Staunton
Staunton Subaru/Nissan, Inc.
800.296.3465 540.886.3465

Vienna
Stohlman
Subaru/Volkswagen, Inc.
800.697.4979 703.893.2990

Washington

Auburn
Auburn Subaru
800.827.2787 253.833.4940

Bremerton
Shoreline Subaru
800.458.5808 360.479.4320

Kirkland
Kirkland Subaru
800.860.7397 425.820.8993

Puyallup
Puyallup Subaru
253.286.2043 253.845.9566

Renton
Walker's Renton Subaru
800.261.7366 425.226.2775

Seattle
Carter Subaru
800.426.1332 206.542.1166

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Appleway Subaru
800.876.4412 509.924.6900

Spokane
Camp Subaru
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Jeff Morris Subaru
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Larry Myers Subaru Jeep/Eagle
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Morgantown
John Howard Motors
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Wisconsin

Appleton
Gustman Motor Company, Inc.
800.283.6693 920.733.6693

Madison
Don Miller Subaru/Pontiac
800.362.3323 608.258.3500

Schofield
Dave Kasten Motors, Inc.
715.359.2637 715.359.3638

Waukesha
Don Jacob's Subaru/ Buick
800.334.3934 262.542.5711

Wyoming

Cheyenne
Dinneen Subaru
888.634.7733 307.778.2410

Please note: Left column telephone numbers provide direct access to Subaru N.E.W. Horizons Parts Departments. Right column numbers provide general access to Subaru N.E.W. Horizons Dealers.

insider info.

Dealer technicians and sublet shops repairing A/C systems must be aware of customers who may have A/C systems that are contaminated with mixes of products which can be dangerous, as well as destructive to expensive recovery and recycling machinery.

Refrigerant contamination has been labeled as "the plague," because once you receive contaminated refrigerant, you can potentially contaminate vehicles that were not contaminated previously.

To avoid the costly consequences, the manufacturers of Subaru air conditioning systems recommend the purchase of refrigerant identifiers. Such devices are available through Robinair and Nuetronics, as well as other refrigerant tool suppliers.

Note: One extremely important feature of one of the refrigerant identifiers is the ability to alert the technician of a flammable substance in the A/C.

Over/Undercharge

Some A/C performance problems can be as simple as an overcharge or undercharge of the refrigerant in the system. If you are diagnosing an A/C performance complaint and nothing obvious is revealed (such as a seized compressor, leaks, or a damaged condenser) it may be time to measure the refrigerant charge.

Refrigerant Cross Contamination

1994 and later Legacy, Impreza and SVX models are equipped with R-134a air conditioning systems. However, all Loyale and Justy models were originally equipped with R12 systems (unless they were retrofited later). Keep this information in mind when servicing or diagnosing Subaru A/C systems.

R134a is the refrigerant of choice. This product does not contain suspected ozone depleting chloroflourocarbons. The chemical compounds and molecular structures of the old refrigerant R12 and the new refrigerant R134a are completely different. However, the temperature/pressure relationships of the two are very similar.

R134a and R12 are not compatible. Under no circumstances should they be mixed. If you suspect that a refrigerant system has been tampered with or may be contaminated, observe the following general rules.

Symptoms of a contaminated system may be any of the following:

- High to extremely high system pressure; the higher the mix of contamination, the higher the pressure will be.
- Poor cooling
- Rapid cycling of the compressor

Inspect for:

- Correct condenser fan operation
- Debris in front of the condenser
- Correct blower fan operation
- Charge/caution label
- Service ports, stripped threads (from wrong fittings)
- Cloudy, milky sight glass

Contact the customer for:

- Repair history
- Information on previous visits to Subaru dealers or independent repair shops for previous A/C work.

It is very important that refrigerants be handled properly. Always wear protective gloves and goggles. For your safety and the safety of others, it is imperative that the work area is properly ventilated. If a refrigerant release occurs, wait until the mist clears before continuing.

R12 and R134 are to be handled separately. The two refrigerants cannot be mixed. The lubricating oils used in R12 and R134a systems are incompatible. Service tools cannot be intermixed. If you find yourself not sure of what to do when servicing an R134a system, don't guess. Refer to service manuals and service bulletins. As with all automotive repair work, good service depends on good diagnosis.

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