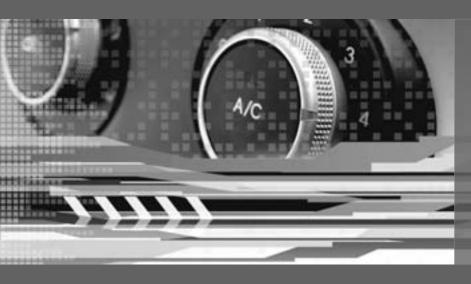


[COOLING]





AC1234 PRODUCT LINE AND ACCESSORIES SERVICE STATION FOR R-1234YF A/C SYSTEMS









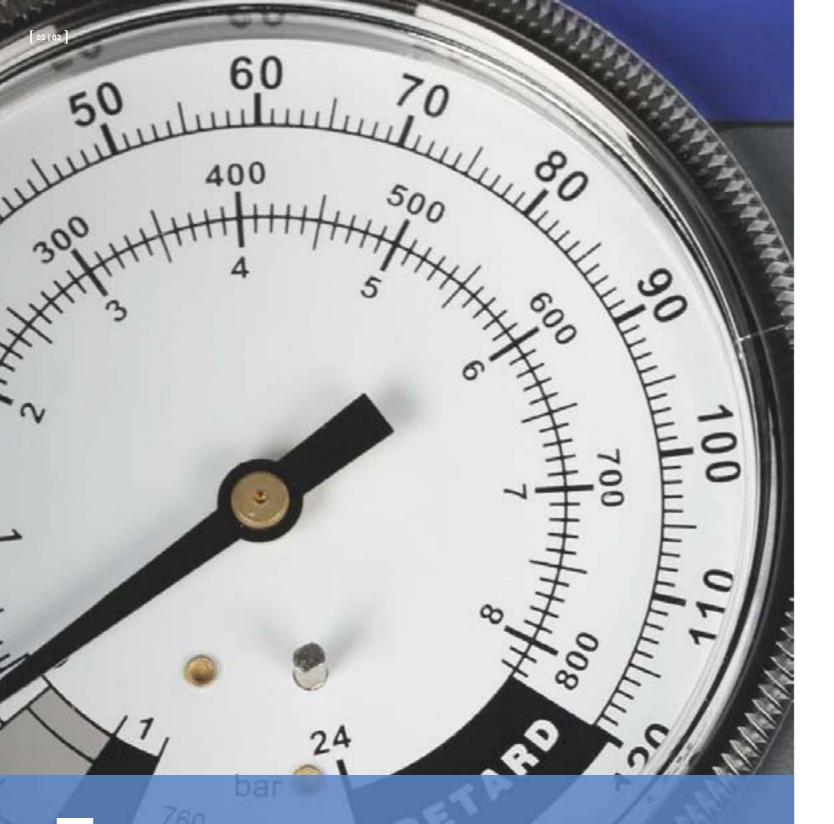












THE YEAR 2011 WILL BE REMEMBERED AS A MILESTONE IN THE EVOLUTION OF VEHICLE CLIMATE CONTROL SYSTEMS.

ROBINAIR AC1234 - CONTENT **SPX SERVICE SOLUTIONS** KEEPS YOUR WHEELS TURNING ROBINAIR - AN SPX BRAND 05 GERMAN QUALITY **INTRODUCING R-1234YF** 06 - 07 THE GOOD GAS WHAT DOES THIS MEAN 08 - 09 FOR YOUR WORKSHOP? **ROBINAIR AC1234** 10 - 11 THE NEW STANDARD IN AIR CONDITIONING SERVICE **EVERYTHING YOU NEED** 12 - 13 AND MORE TECHNICAL DATA, 14 - 15 PRIMARY FUNCTIONS PRODUCTION AND QUALITY 16 - 17 AC1234 18 - 22 ACCESSORIES A GLOBAL NETWORK 23 FOR OUR CUSTOMERS

SPX SERVICE SOLUTIONS – KEEPS YOUR WHEELS TURNING







SPX Service Solutions provides special service tools and equipment, advanced diagnostic solutions and technical information services for the transport and capital equipment sectors. Through its global OTC, Tecnotest and Robinair brands, SPX has been supplying tools and solutions to the automotive industry since 1911. With our extensive variety of quality products, we have the solution to your needs, whatever your system or component.

SPX KEEPS YOU OUT OF TROUBLE

SPX businesses have the lowdown on regulatory requirements across a host of industries. We are familiar with national and regional regulations, and we are aware of the safety and environmental issues.

Our in-house experts are well versed in these industry-specific issues. They can help your business grow by implementing processes that provide traceability, automate compliance tasks and meet specific regulatory requirements.

With our 100-year track record of supplying special tools and equipment to the automotive industry, it's not surprising that we enjoy a close relationship with the world's leading automakers. We've built their high standards and exacting demands into our products.

Last but not least, SPX has an unparalleled network of distributors and service agents. They are happy to advise you on the right products for your specific needs. In addition, they can provide training and after-sales support.



GERMAN QUALITY

ROBINAIR - AN SPX BRAND



Robinair is the world's leading manufacturer of air conditioning service units for cars, trucks, buses and aircraft. For more than 50 years, the brand has been renowned for its advanced technology, top quality and reliability.

Robinair was founded in 1956 by the Kent-Moore Corporation of Warren, Michigan, to design and manufacture specialised tools for repairing appliances. The new company was named after two Kent-Moore executives, whose surnames were Robinette and Adair. Soon after, Robinair moved into a growing market: air conditioning, which was becoming increasingly popular, both for homes and cars. In the space of just a few years, Robinair's product line was the most comprehensive in the industry. And it still is today.

Robinair's state-of-the-art production plant is located in Pollenfeld, Germany. Here, the new AC1234 is proudly "Made in Germany", underscoring a commitment to the highest quality.

The AC1234 range is designed to meet specific regulatory requirements. You will find products certified for use in hazardous environments and products designed to meet the most rigorous safety or environmental standards.

Approved and certified: CE, TÜV, SAE, UL.

50 YEARS OF INNOVATION BY ROBINAIR

Robinair founded in 1956.

With the increasing popularity of air conditioning, both for homes and cars, in just a few years, the product line was the most complete in the industry.

Robinair patents rotary mechanical vacuum pump design. (1975)

Robinair introduces deluxe A/C evacuation and charging station. (1976)

Robinair patents first refrigerant recovery and charging station. (1979)

Robinair patents microprocessor controlled recovery and recharge A/C service station. (1985)

SPX

Robinair patents first refrigerant recovery and purification process. (1987)

Robinair introduces the EnviroCharge product. The first A/C service station to recover, recycle and recharge. (1992)

Robinair patents an apparatus for identifying and distinguishing different refrigerants for use in an A/C service station. (1993)

Robinair introduces the Enviro Charge R-134a product. The first A/C service stations to recover, recycle and recharge R-134a refrigerant. (1994)

Robinair patents a method of purging air and system clearing. (1994)

Robinair patents the automatic oil drain function and industry leading background tank fill technology. (1999)

Robinair patents an automatic hose clearing function to minimise oil cross contamination. (2005)

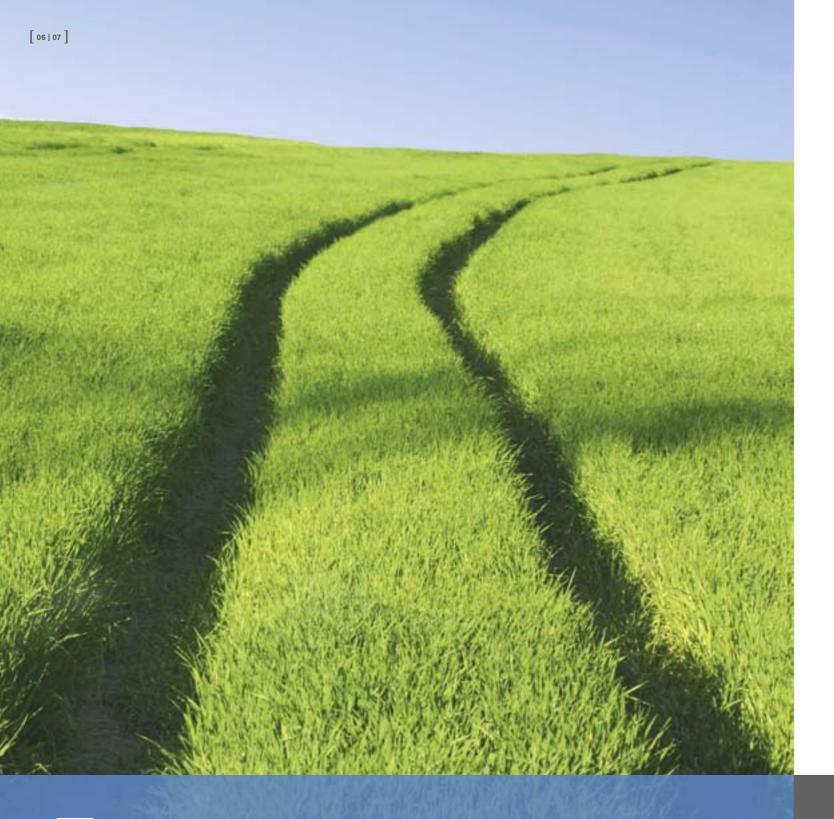
Robinair introduces the 34788 A/C recover, recycle, recharge machine.
The first to meet SAE J2788.
(2006)

Robinair manufactures the 250,000th A/C service station. (2008)

Robinair introduces the AC788PRO, the first European A/C service station to recover 95% of the refrigerant. (2009)

Robinair introduces the AC1234 for use with new R-1234yf refrigerant. (2010)

1956 1960s 1970s 1980s 1990's 2000's 2010



IN 2009, ROBINAIR STATIONS RECOVERED 8,900 TONS OF REFRIGERANTS WORLDWIDE. THIS PREVENTED EMISSIONS AMOUNTING TO 12 MILLION TONS OF CO₂ OR 2 MILLION MORE VEHICLES ON THE ROAD.

INTRODUCING R-1234YF -

THE GOOD GAS

Due to its environmental impact, R134a, the refrigerant currently used in vehicles around the world, is being phased out. To comply with new European legislation, a new refrigerant, R-1234yf, is being introduced in its place.

While it is an efficient refrigerant, R134a is also known to have consequences for global warming. Increasing environmental awareness has led the scientific and industrial community to search for a less harmful alternative.

R-1234yf has now emerged as the best possible replacement. This gas has an environmental impact of 4 GWP (units of global warming potential) – well under the EU limit of 150 GWP, and a major improvement on R134a, which has a whopping 1430 GWP. What's more, R-1234yf does not have hefty cost implications for industry.

The only downside of the new refrigerant, compared to R134a, is that it can be flammable in specific circumstances. However, this can be kept under control with well-engineered air conditioning servicing machines – like our Robinair units – and some common sense precautions in the workshop.

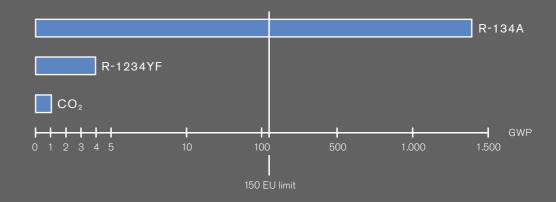
SPX SERVICE SOLUTIONS HELPS COMPANIES GREEN UP

SPX works with customers to develop solutions that require less energy, reduce environmental impact and minimise waste. With AC1234, our focus is on increasing energy efficiency and reducing refrigerant use. The result: a solution that's not just greener, but also more cost-effective.

LESS WASTE, MORE PRODUCTIVITY

SPX companies also create technologies and enhanced processes that help customers operate in more environmentally friendly ways. For example, thanks to Robinair's unsurpassed performance and quality, the AC 1234 minimises refrigerant use, recovering 99 per cent of R-1234yf refrigerant.

GLOBAL WARMING POTENTIAL



WHAT DOES THIS MEAN FOR YOUR WORKSHOP?

Starting in 2011, a range of vehicles with air conditioning systems running on the new R-1234yf gas will enter the European market. However, the great majority of vehicles on the roads will still be using the older R-134a refrigerant – and these will continue to require servicing for the next 15 years or so. This means that your workshop will need equipment that can handle both the old and new vehicles.

As noted before, R-1234yf is slightly flammable. So it is essential to use equipment that is specifically designed for the new refrigerant and that has been properly certified.

WHAT YOUR WORKSHOP NEEDS:

- 1. Avoiding contamination between the two refrigerants is imperative. Accordingly, using two distinct circuits for the recovery and recharging process represents the best solution. In reality, this translates into a dedicated machine for each of the two systems. From a purely technical perspective, a "dual use" unit or a retrofit of an older R-134a service machine is possible. But major auto manufacturers have not endorsed either dual use or retrofit solutions for their networks.
- 2. In addition, major automotive manufacturers are recommending the use of refrigerant identifiers that will allow the workshop to monitor the type, quality and purity of a given refrigerant.
- **3.** Finally, the professional workshop will also require a new leak detector capable of identifying leaks of the new refrigerant in the vehicle's air conditioning system.





R-1234YF IS DRIVING THE SERVICING OF VEHICLE CLIMATE CONTROL SYSTEMS FORWARD.

ROBINAIR AC1234 – THE NEW STANDARD IN AIR CONDITIONING SERVICE

AC1234 is the first Robinair air conditioning service station to conduct maintenance and service on mobile air conditioning systems that use the new refrigerant R-1234yf.

Developed in conjunction with car manufacturers, this unit meets the highest standards in performance, safety and efficiency. Working with a global engineering team, Robinair has brought all its experience to bear in this unit. This ensures that R-1234yf-based air conditioning systems are serviced in the most efficient and most reliable way possible, giving you peace of mind.

The unit is designed to be intrinsically safe: it will only operate after having successfully completed a thorough self-check.

















AC1234 - FEATURES AT A GLANCE



Large display; easy to read; 20 languages, video training available



Connectivity: USB ports, LAN network connection, SD card slot for expanding memory



Oil or UV dye injection, separate circuit (for hybrid and electric vehicles' A/C systems)



Unit includes tank storage, making it easy to store flammable refrigerant



Easy to maintain (Vacuum pump oil change, high serviceability)



Vacuum pump with dual stage, for deep recovery and deep vacuum phase



EVERYTHING YOU NEED - AND MORE

What are you looking for in a new recharging station? If maximum safety, ease of use, top quality, efficiency and eco-friendliness are on your list, the AC1234 has your needs covered.

MAXIMUM SAFETY:

- > Meets all applicable safety requirements
- > Safe management of R-1234yf flammable gas
- > Low refrigerant emissions during normal operation
- > Compliant with CE and SAE standards including the tough SAE J2843
- > Automatic functionality prevents error-prone manual processes
- > Automatic control of internal ventilation
- > Can be connected to an external refrigerant identifier, preventing contamination
- > Uses only one gas eliminates risk of refrigerant contamination

EASE OF USE:

- > Automatic unit does the hard work for you
- > Electronic scales ensuring accurate, efficient oil/UV dye recovery and injection
- > Handy keypad functions are performed at the press of a button
- > Large colour display, with more than 20 languages available
- > A/C database so it automatically injects exactly the right amount of refrigerant
- > Training video and help function no need to read the manual or get any special training
- > Designed for minimum maintenance and maximum serviceability vacuum pump oil and internal filter are simple to replace, saving you time and hassle
- > Oil/dye injection bottles are easily accessible, thanks to magnetic connectors
- > Large and readable 100 mm, class 1, EN837 gauges to check A/C system pressure
- > Electronic pressure AC system check
- Automatic tank refill (with automatic level check) just plug in the source tank and the unit does the refilling for you – a feature unique to the AC1234

TOP QUALITY:

- > Complies with all international standards (CE, UL, SAE, ANSI)
- > Certified by well-regarded independent testing agency TÜV
- > Maximum accuracy during recovery no refrigerant is wasted, minimising refrigerant costs
- > Independent oil and UV dye injection systems no cross contamination of lubricants
- > Automatic internal and service hose clearing
- > Automatic unit maintenance service counter to ensure unit is operating efficiently
- > Designed to comply with rigorous OEM guidelines

EFFICIENCY:

- Service time can be reduced by 20 minutes compared to a standard unit thanks to the unique deep recovery function, which cuts out the vacuum phase
- > Automatic functionality also minimises time-consuming manual processes
- > Recovers 10 per cent more refrigerant than a standard unit (SAE J2843 certification) so you save refrigerant costs with each service
- > Plus, there is 80 per cent less waste of refrigerant during normal operations, saving you even more money
- > Can be connected to PCs/shop system
- > Extra functionality available with add-on modules
- > Printer before and after service documentation
- Micron gauge measures depth of vacuum, reduced pressure evaporation and moisture before charge
- > Diagnostic tools link measurements to VIN
- > Temp/Humidity additional diagnostics, integrated with printer output

ECO-FRIENDLINESS:

- Refrigerant waste is minimised during normal operation as a result of automatic air purge and oil draining
- At least 95 per cent of refrigerant is recovered from the A/C system thanks to deep recovery function
- > 20 per cent lower energy consumption compared to similar products, thanks to time savings



TECHNICAL DATA, PRIMARY FUNCTIONS

	AC1234-3	AC1234-5	AC1234-7* / AC1324-8**
Refrigerant	R-1234yf	R-1234yf	R-1234yf
Automatic function	Semi - automatic	Automatic	Fully automatic
Single processing mode selection (Recovery, vacuum, charge functions)	Yes	Yes	Yes
Recovery function	Automatic	Automatic	Automatic
Lubricant oil drain function	Automatic – visual (bottle graduations)	Automatic – visual (bottle graduations)	Automatic with electronic scale control
Vacuum function	Automatic	Automatic	Automatic
Leak test	Automatic	Automatic	Automatic
Lubricant oil injection	Manual	Automatic with electronic scale control; 1 tanks	Automatic with electronic scale control; 2 tanks
UV dye injection	Not available	Not available	Automatic with electronic scale control
Refrigerant charge function	Automatic	Automatic	Automatic
Flushing function	Yes	Yes	Yes
Internal storage vessel refill function	Manual	Automatic	Automatic
Air purge function	Manual	Automatic with electronic control	Automatic with electronic control
Hose clearing function	Yes	Yes	Yes
Filter replacement counter	Yes	Yes	Yes
Electronic database	Optional – using smart key	Yes	Yes
Report printout function	Optional	Optional	Yes
Display	Monochrome graphical display (160 x120)	340 x 220 CD	Color 1/4 VGA
Keypad	Function and alpha-numeric keypad	Function and alpha-numeric keypad	Function and alpha-numeric keypad
Gauges, manometers	EN837-1, 63 mm	EN837-1, 100 mm	EN837-1, 100 mm
Manual valves	2 (HP & LP)	No	No

	AC1234-3	AC1234-5	AC1234-7* / AC1324-8**
Service hoses & Couplers	2.50 mt SAE J2888	2.50 mt SAE J2888	2.50 mt SAE J2888
Printer	Optional	Optional	Yes
USB connection	No	Yes, 1	Yes, 2
SD card slot	Yes	Yes	Yes
Internal air flow control	Yes	Yes	Yes
Hermetic compressor	1/3 HP	1/3 HP	1/3 HP
Vacuum pump	3 cfm (71 L/min)	3 cfm (71 L/min)	170 I/min (50 Hz) 198 I/min (60 Hz)
Internal storage vessel	10 Kg (22 LB)	10 Kg (22 LB)	10 Kg (22 LB)
Filter dryer	300 cc	700 cc	700 cc
Vehicle lubricant oil separator	Double chamber	Double chamber	Double chamber
Compressor lubricant separator	Single chamber with solenoid control for oil return	Single chamber with solenoid control for oil return	Single chamber with solenoid control for oil return
CE	Yes	Yes	Yes
TUV	Yes	Yes	Yes
SAE J2099	No	Yes	Yes
SAE J2843	No	Yes	Yes
UL1963	No	Yes	Yes
ANSI/ASA 12.12.01	No	Yes	Yes
RoHS	Yes	Yes	Yes
WEEE	Yes	Yes	Yes
Batteries and accumulator directive	Yes	Yes	Yes

 $^{^\}star$ AC1234-7 with or without external refrigerant analyser $\,^{\star\star}$ AC1234-8 with embedded refrigerant analyser

[16 | 17]

HIGH-TECH PRODUCTION – FOR QUALITY YOU CAN TRUST

Why are Robinair A/C units such exceptional quality? A lot of that has to do with how they're made.

Our **state-of-the-art A/C production line** in Pollenfeld, Germany, reflects the latest Lean Manufacturing, SixSigma and Kanban standards. At ergonomically-designed workstations, highly-skilled workers assemble Robinair products around the clock. In fact, the facility was recently upgraded to produce increased volumes of Robinair A/C machines, following strong demand from the European market.

Multiple quality checks are built into the production process to ensure every unit is 100 per cent safe to operate. These include high-pressure checks in line with the European Pressure Equipment Directive (97/23/EC) (also known as PED) and VDA (German Automotive Industry Association) requirements, which ensure that all components have the necessary strength and stability. Vacuum tests simulate the functionality of the recovery process while leakage tests ensure all connections are completely leak-proof. We also conduct high voltage and insulation tests, and check all electric and electronic functions and interfaces.

Just-in-time processes ensure that our products are available in the right place at the right time – meeting global demand. Because outstanding quality means that our A/C units are durable, reliable and efficient – something that's appreciated worldwide.



FROM MANUFACTURING TO QUALITY CONTROL TO DELIVERY - ROBINAIR ALWAYS PERFORMS TO THE HIGHEST STANDARDS

















AC1234 - ACCESSORIES

THE "AIR CONDITIONING DIAGNOSTICS TRIANGLE":

Air conditioning systems in modern vehicles are increasingly complex, making diagnostic procedures and subsequent repairs difficult. When analysing any air conditioning system, there are three different diagnostic aspects to consider:

- > Thermodynamics
- > Electronics
- > Refrigerant purity

ROBINAIR AIR CONDITIONING DIAGNOSTICS:

The Robinair product range encompasses different tools for each element of the "diagnostics triangle", giving the air conditioning specialist all the equipment required for a complete air conditioning diagnostics system.

On the following pages, you can find out about air conditioning accessories especially designed to be used in conjunction with R-1234yf air conditioning service machines. For all our available accessories, please see the complete Robinair product range brochure.

AIR CONDITIONING SERVICE UNIT ACCESSORIES FROM ROBINAIR – THE PROVIDER OF THE WORLD'S MOST ADVANCED AND MOST POPULAR AIR CONDITIONING SERVICE UNITS FOR CARS, TRUCKS AND BUSES.

RA22791 - INFRARED REFRIGERANT LEAK DETECTOR

FEATURES:

- > Advanced infrared sensor designed to last a minimum of 10 years
- Three sensitivity levels down to 0.15 oz./year
- > Automatically recalibrates in highly contaminated areas to help pinpoint the exact location of the leak
- > Won't trigger on oil or moisture
- > Detects CFC, HFC and HCFC blend refrigerants
- > 8-hour lithium ion battery lasts all day long and beyond
- A visual alert and peak button make it easy to find leaks in noisy environments
- > Audible alert with mute button
- > Magnetic hanger for simple hanging of unit during leak repair
- > Durable carrying case lets you easily transport detector and accessories
- Meets new SAE J2791 leak detection standard

SPECIFICATIONS:

- Gases measured: CFC, HFC, HCFC blends (R-1234yf, R-134a, etc.)
- > Sensing element: Infrared
- > Response time: Less than 1/2 second
- > Sensitivity levels: HIGH 0.15 oz./year and higher
- > MEDIUM 0.25 oz./year and higher
- > LOW 0.5 oz./year and higher
- > Accuracy: Meets current SAE J2791 standards
- > Calibration: Automatic
- > Warm up time: 30 seconds
- > Probe length: 38 cm
- > Battery type: 7.4VDC (nominal) rechargeable lithium ion polymer battery
- > Battery life: Approximately 8 hours when fully charged
- > Patents: 6,791,088 and 7,022,993 Infrared Leak Detector





REFRIGERANT ANALYSER – FOR SIMPLE, SAFE REFRIGERANT TESTING

Robinair offers two distinct refrigerant analysers designed to meet the German Automotive Industry Association's (VDA) refrigerant analyser specification

INTERNAL OR EXTERNAL MODEL FOR USE IN AN A/C SERVICE MACHINE

This refrigerant analyser is designed to operate seamlessly with an A/C service machine, and can be mounted internally or externally. At a command from the machine, the analyser receives the sample gas, analyses it and gives a PASS or FAIL signal to be displayed by the A/C service machine. A PASS indication will allow the A/C service machine to begin the recovery part of the A/C service. A FAIL indication will prevent the A/C service machine from recovering the refrigerant.

HAND HELD MODEL FOR USE WITH AN A/C SERVICE MACHINE OR INDEPENDENTLY

This refrigerant analyser is designed to operate independently or in conjunction with an A/C service machine. It is a handheld model that can be used to test vehicles while the A/C service machine is in use elsewhere. It includes an R-1234yf low-side coupler, and receives a sample of the refrigerant gas from a dedicated refrigerant analyser service hose, which connects to the vehicle's vapour (low-side) service port. The unit features easy-to-understand LED status lights and single push-button operation. At the user's command, the analyser receives the sample gas, analyses it and gives a PASS or FAIL signal, indicated with red and green LEDs. The refrigerant analyser stores the test data so that the unit can be connected to the A/C service machine's USB refrigerant analyser port. A PASS indication will allow the A/C service machine to begin the recovery part of the A/C service, after the refrigerant analyser service hose is removed and the A/C service machine hoses are connected. A FAIL indication will prevent the A/C service machine from recovering the refrigerant.



Refrigerant measured	R-1234yf
Accuracy	Better than (+/-) 0.5 %
Pass/Fail setpoint	99.5 %
Ambient operating temp range	10 °C to 50 °C
Elevation range (reference: sea level)	-50m to 2,500m
Vibration sensitivity	Unaffected by standard workshop environment
Power	12 VDC @ 0.5 amps
Approvals	CE, GS
Integral pressure/flow control	Yes
Enclosure	Yes
Integral calibration pump	Yes
Oil contamination trap	Yes, replaceable by user
Filtration	Yes, replaceable by user

ACT800 - GAS TRACER KIT -LEAK DETECTION WITH NITROGEN GAS, N₂H₂

Clearly, air-conditioning service providers may not refill systems with fluorinated greenhouse gases if an abnormal amount of the refrigerant has leaked from the system, until the necessary repair has been completed.

This tracer uses a non-toxic, non-flammable, environmentally-friendly (non-polluting) mixture of 5 per cent hydrogen and 95 per cent nitrogen. As a result, the mixture can be released into the environment after the leak detection procedure is completed. The mixture complies with Article 6, Paragraph 3 of EU directive 2006/40/EC.

The leak detector reacts to the hydrogen component of the tracer - because hydrogen molecules are so small, it is an ideal gas for leak detection. The gas is charged into an empty system at a pressure of approximately 75 psi (5bar). As hydrogen is lighter than air, always probe slightly above the suspected leak area.

Once the source of the leak is located and repaired, the gas can be released and the system can be recharged again with refrigerant.





Leak detector	H ₂ Gas Tracer
Sensitivity	< 5 ppm
Sensor life	> 300 hours
Response time	Instantaneous
Power supply	4AA alkaline batteries
Battery life	8 hours continuous
Warm up time	< 20 seconds
Probe length	43 cm
Weight	0.68 kg
Warranty	2 years

	Part Number
Professional Kit > Case > Leak Detector > Gas Tank 2l > Low and high side connectors > Hoses > Pressure Regulator > 3 Pressure gauges	ACT800
Base kit	ACT600
Leak detector	ACT200
Tank refill	ACTN ₂ H ₂

A GLOBAL NETWORK - FOR OUR CUSTOMERS

WE OFFER WORLDWIDE SERVICE, WITH OVER 5,000 SPX SERVICE SOLUTIONS EMPLOYEES AND 300+ SERVICE CENTERS ACROSS THE GLOBE.

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