



Hot Air

NEWSLETTER

The Automotive Air-conditioning, Electrical and Cooling Technicians of Australasia

February 2011

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Top training totally affordable VASA gives big incentives to enroll in June see-change event



VASA members will be offered the biggest incentives ever to enroll for the June 2011 Wire & Gas event in Melbourne.

Recognising that this will be a very different kind of convention, with no big trade show or gala social events, the directors agreed that registration fees would need to be low enough to encourage members to sample this new offering.

As well as smaller registration fees than previous events, members outside of Victoria will be encouraged to make the trip to Melbourne, with a rebate of \$100 on every registration.

The sea-change you can really see!

Wire & Gas 2011 is the sea-change that VASA hopes will breathe new life into its training program and provide real benefits to members. The new convention logo says it all – the members need to see the change.

The event is going to be very different. Just two solid days of training, a small number of display tables will replace the big trade show. While there are fewer social events, there will be plenty of time and opportunity for networking and catching up with old mates.

The venue is Novotel St Kilda Beach, where VASA held highly successful conventions in June 1995 and again in 1999.

Unlike the multiple training options at previous conventions, this time, nobody will miss any of the top level training.

VASA has selected four of Australia's top trainers, some of whom you have enjoyed previously, to deliver hard hitting, concentrated training for two solid days. Each training session will run for three hours, classroom style, with all technical training including vehicles for hands-on experiences.



Grant Hand



Jack Stepanian



Dave Townley



Geoff Mutton





The costs and the benefits

VASA members

\$350 + GST

Members living outside Victoria will receive a rebate of \$100 + GST to help with travel and accommodation.

Employees of VASA members

\$350 + GST

Employees living outside Victoria will receive a rebate of \$100 + GST to help with travel and accommodation.

VASA student members and apprentices employed in VASA member workshops

\$100 + GST (no rebate applies)

Non-VASA members

\$400 + GST (no rebate applies)

Here's what you get

Access to four sessions of three-hour training workshops, morning and afternoon tea and lunches both days and a happy hour with cocktail food and drinks on Saturday evening.

Delegates requiring accommodation can take advantage of a special rate for Wire & Gas of \$199 for a standard Queen room, including breakfast at Novotel St Kilda Beach. Delegates will be given a special code to quote when making their bookings. This will be listed on the registration form.

A nice little bundle if you want to save money

Registrations for the June 2011 Wire & Gas training weekend can be made any time, but if you would like to wait till you receive your annual membership renewal notice (around early March 2011), you will be able to take advantage of a special VASA bundle.

Pay your Wire & Gas registration and your renewal fee at the same time, and you qualify for a 10% discount on the whole bundle.

It will work like this:

The Wire & Gas registration form will be posted with your

membership renewal tax invoice in the same envelope early in March.

To qualify for the 10% discount, the member must send **both** forms back to the VASA office together.

All discounts will then be generated on the Wire & Gas tax invoice which will be sent back to the member.

This invoice will show the 10% discount on the Wire & Gas registration, as well as the 10% rebate on the membership fee.

And if the member lives outside Victoria, the invoice will also show a \$100 + GST rebate on Wire & Gas.

Wire & Gas 2011 will deliver concentrated programs of special interest to a range of technicians from apprentices to Cert IV holders and above.

Grant Hand

Cert IV air conditioning and refrigeration advanced course.

Dave Townley

Climate control systems to Cert IV level on late model vehicles.

Jack Stepanian

Advanced engine management to Cert IV level on vehicles three to six years old.

Geoff Mutton

Business training with specific relevance to aftermarket automotive workshops.

Learn to Earn was devised in 2010 to differentiate this new training stream from its technical counterparts.

VASA director, Jeff Smit, who is also a trainer in his own right, worked for six months with business trainer Geoff Mutton to develop programs aimed specifically at the aftermarket vehicle repair sector.

The popularity of Geoff's session at Wire & Gas 2010 was sufficient to ensure that Learn to Earn will become a regular feature of all future VASA training.



Friday 10 June 2011

1pm Registration desk opens
Delegates begin checking in
Evening Free to network

Saturday 11 June 2011

7am Registration desk opens
8.30am – 12 noon Training sessions in four separate rooms - all technical sessions on vehicles
10.15am – 10.45am Morning tea break
12 noon – 1pm Lunch and mini trade displays
1.15pm – 4.45pm Training sessions in four separate rooms
3.15pm – 3.45pm Afternoon tea break
5pm – 6.30pm VASA Annual General Meeting and forum for all delegates in the main ballroom
6.15pm – 7.15pm Happy hour
Evening Free to go on the town with your new contacts

Sunday 12 June 2011

9am – 12.30pm Training sessions in four separate rooms
10.30am – 11am Morning tea break
12.30am – 1.30pm Lunch and mini trade displays
1.45pm – 5.15pm Training sessions in four separate rooms
3.30pm – 4pm Afternoon tea break
Evening Convention close



Win yourself an iPad



In the next issue of Hot Air (April 2011) VASA will invite its workshop members and student members to take part in a quiz program with a difference, offering the chance for some lucky members to win an iPad.

In fact, you will get more than one chance because VASA will give away one iPad every two months until further notice.

The quiz is based on the original questionnaire which accompanied the famed Registered Technicians Program (RTP), which VASA developed over a seven-year period to provide members with detailed underpinning knowledge of the electrics, electronics, refrigeration and climate control systems in mobile air conditioning.

The RTP is considered by many to be the bible of air conditioning practice.

Hot Air has already started to reproduce the RTP in modern dress, with the second instalment in this edition.

As soon as the April edition reaches you, the competition begins.

It is a web based competition, so to enter, you will need to go to www.vasa.org.au

and follow the prompts to the online questionnaire. For those who might be a bit rusty, all of the answers can be found in the RTP on these pages and in the member's password area on the website.

You fill in the questionnaire online, press the submit button, and your entry will be marked and a winner selected. The judges will be looking for correct entries, and will put all correct entries into the hat for the big prize.

Apart from being a bit of fun, the quiz will be beneficial because it will encourage you to read the RTP and you may even learn something new or something you may have long forgotten.

Trivia corner

The Packard Motor Car Company was the first car maker to build air conditioners into its cars, beginning in 1939.

The system took up half of the entire trunk space, was not very efficient, and had

no thermostat or independent shut-off mechanism.

In 1954, the Nash Ambassador was the first American car to boast a front-end, fully-integrated heating, ventilating, and air-conditioning system.



Seriously affected by floodwater?

VASA members whose workshop and business were seriously disrupted by floodwaters may be eligible for a special concession on their membership fees, due on 1 April 2011.

The January VASA board meeting declared that no member would lose their membership if facing other financial priorities because of flood damage.

'It's much more important to get the business operating and look after family and staff before having to worry about finding the money to pay memberships,' said VASA president Ian Stangroome.

'We will not abandon our members if they have been so affected and the board has the power to waive fees for a year in these cases.'

Any members who fall into this category should call VASA treasurer Jeff Smit, or CEO Ken Newton. There are no forms or red tape, just let us know your situation and things will quietly happen.

Phone: Jeff or Wendy Smit 02 9437 9942 or
Ken Newton 0438 569 517

DON'T WASTE IT!

VASA is urging its members to conserve R134a, as rumours mount about price increases.

Depending on which website you visit, there are warnings of price increases of 10% to 35% in coming months.

The VASA board was told recently of one buyer of R134a for medical uses who was hit with a major price increase of more than 20%.



VASA members can be better prepared for possible major price increases by being more careful about the handling and storage of R134a.

storage, recovery and test equipment.

"If R134a is going to be like gold, it might be worthwhile considering the purchase of a gas identifier and a recycling machine if you haven't already done so.

"Now is the time to conserve refrigerant," says VASA president Ian Stangroome.

"Some of the bigger workshops do this already, and it's good insurance for any future price hike or refrigerant shortage," added Ian.

"Check your cylinders. Make sure there are no leaks. Be vigilant about the state of your



VASA Technical Bulletin

Category: ELECTRICAL

Volume 1 Bulletin 1

Every issue of Hot Air will revisit the RTP, in the order in which it was first delivered to members a decade ago. The technical information is as relevant now as it ever was. Members will find it a great resource for younger technicians, or those venturing into electrics and vehicle climate control repairs.

PRINCIPLES OF ELECTRICITY

Electrical terminologies and explanatory notes

In Hot Air December 2010, we covered the basic concept of electricity. Now we can have a closer look at common terms and their meaning.

Voltage

As previously explained there is an 'out of balance' condition that exists in the battery. If there is no force applied to an electron it will not move out of orbit.

Even if it is the 'free' electron with a weak attractive force to the nucleus of the atom - that force is enough to keep it there.

We need to apply a force to make electrons move from one atom to another. The force is a result of the imbalance between the positive and negative areas in the battery. That is, it is really as a result of the imbalance of electrons - more electrons on one side of the power source than another.

Atoms that are missing electrons they originally had (ie they are positively charged) would like to get them back. Atoms with more electrons than they originally had

(ie they are negatively charged) would like to get rid of them.

The more atoms with excess electrons they want to dump and more atoms missing electrons in the battery is what creates the **electrical pressure or force** that will make electrons move through a conductive circuit.

Electrical pressure is otherwise known as **electromotive force** - the force to make electrons move (EMF), voltage (V) or potential difference (PD).

If the battery is in a high state of charge there is a high accumulation of positive and

negative atoms at each respective pole. This generates a high electrical pressure or force (voltage) which, if we complete a circuit between the two battery poles, will make electrons flow.

Conversely, if there has been a current drain or electron drain between the positive and negative poles, then the accumulation of positive and negative atoms will not be as great - the electrons have balanced a considerable number of the atoms.

Therefore the electrical pressure will not be as great (reduced voltage or reduced potential difference).

If no force is applied to an electron it will not move out of orbit. We need to apply a force to make electrons move from one atom to another.

Voltage is the force that makes electrons move and can also be referred to as electromotive force

*electro = electron
motive = moving
force = force*

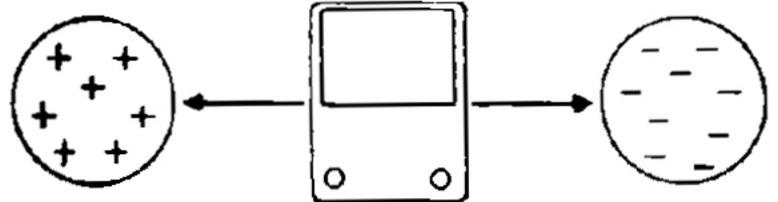
Electron moving force

Apply Ohm's law to a real situation - if the voltage is low to a component then the current flow will also be low.

Therefore, there will be a reduced amount of work done.

This is the problem with unwanted voltage drops or losses.

VOLTAGE



Ohm's law

A brief review:

- Electricity is the flow of electrons through a circuit (current flow).
- Voltage is an electrical force or pressure that causes the electrons to flow.

If these two basic concepts are applied then the greater the voltage the greater will be the flow of electrons (high current flow).

A common principle of this is the use of 24 volts as opposed to 12 volts for high current requirement circuits - double the voltage - double the current flow.

Stage 1 of Ohm's law

The current flow in a circuit is directly proportional to the voltage applied to that circuit.



George Ohm 1789 - 1854 was a mathematics teacher who became interested in the new field of electricity. At the time many physicists didn't use mathematics. They observed and described physical phenomenon much like Jane Goodall observed chimpanzees in Africa. Ohm combined his mathematics and the results of his electrical experiments to produce Ohm's laws.



Apply Stage 2 of Ohm's Law to a real situation.

If we put more resistance in a circuit we reduce current flow – hence the amount of work done.

Think of the blower motor resistors.

Resistances and Ohm's law

The ease or difficulty with which a material allows electrons to flow from atom to atom is called resistance and is measured in ohms.

The higher the ohms the higher the resistance or opposition to current flow.

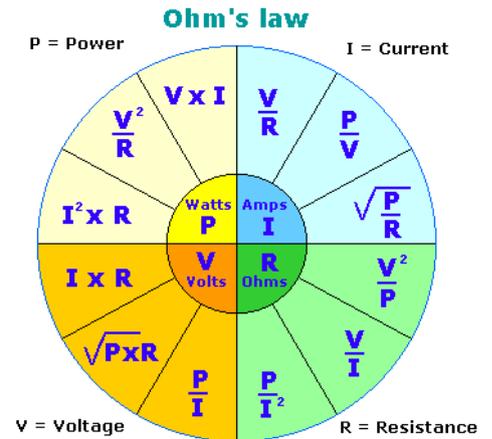
If we double the resistance of a circuit we halve the current flow through that circuit.

Stage 2 of Ohm's law

The current flow in a circuit is inversely proportional to the resistance of that circuit.

Ohm's law as an equation

Ohm's law is often expressed as an equation to state the relationship between current flow (I), voltage (V) or electromotive force (E) and resistance (R).



Ohm's law is used to identify various operational characteristics of systems in both electrics and electronics.

Given any two knowns (volts/amps/ohms) we can calculate the third unknown on a theoretical base and if necessary compare it to measured quantities.

Using Ohm's law

I = AMPERES (CURRENT)
R = OHMS (RESISTANCE)
E = VOLTS (ELECTROMOTIVE FORCE)

To apply Ohm's law use the nutshell method as shown. Simply cover the unknown factor to reproduce the three formulae.

Understanding circuit loads is crucial, particularly when dealing with electronic control units (ECU) and computers to ensure current flows through sensitive electronics are not excessive.

Circuit loads

A circuit load is used to perform work (heat, light, magnetism, ie motors), and has a very specific amount of resistance.

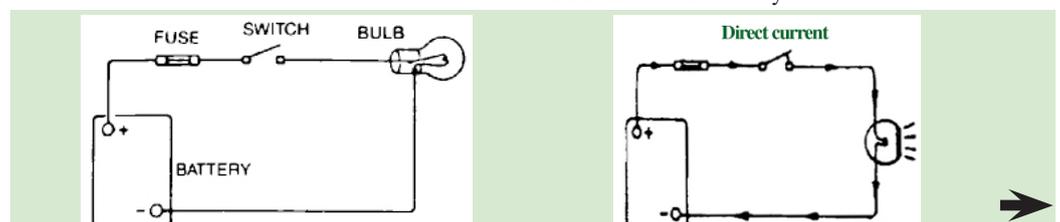
The specific resistance allows a specified amount of current flow through the circuit and will consequently result in a certain amount of work being done.

Resistances and Ohm's law

A circuit is a complete path for electric current.

The circuit includes the power source (voltage supply), wiring, switching and component (load). If the circuit is completed, via a switch closing, direct current will flow.

Direct current (DC) flows in one direction only from the + to the battery -.



It is common for systems to incorporate both earthing systems into their design – a partial insulated return to a point where a body can be connected.

It is important to note that in negatively switched circuits the component has a permanent supply (12V, 24V).

This does not mean the component will work. We need current flow for work to be done, ie the circuit completed.

Switching methods

Positive or supply switching is when the component is permanently earthed and the switch controls the power supply.

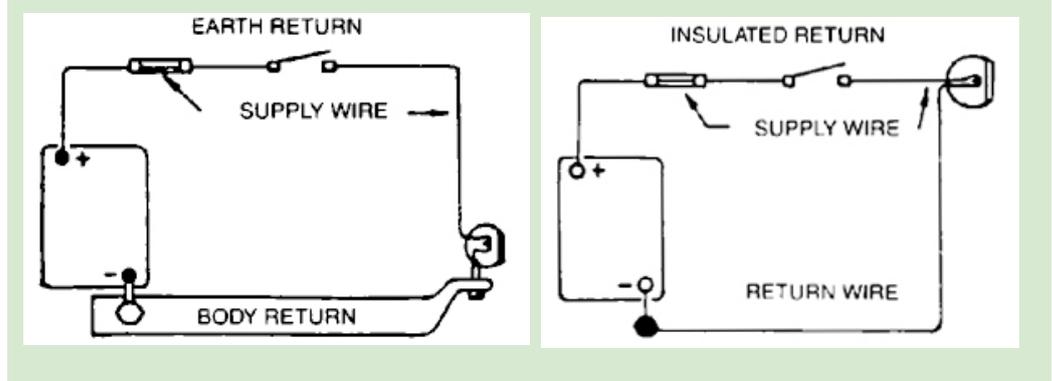
Negative or earth switching is when the component has a

Earthing circuit

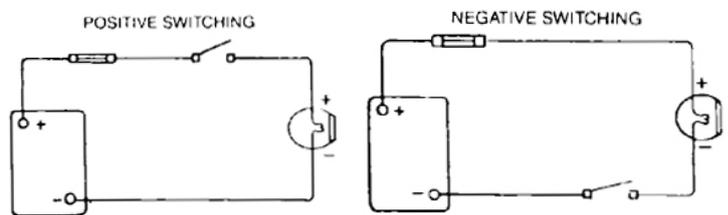
The circuit that 'joins' the component (load) to the negative (-) battery terminal is called the earth circuit or return circuit.

Most systems use a one-wire system where a single wire feeds current to a component and the earth return circuit is via the vehicle body/engine which is a conductive material.

With the increased use of plastics in the automotive industry an increasing number of circuits are using insulated return or two-wire systems, due to the vehicle/componentry having non-conductive properties.



permanent power supply and the switch controls the earth return. Computer controlled circuits (ECM/ECU) normally are earth switched with the ECM/ECU switching the circuit to allow current flow.



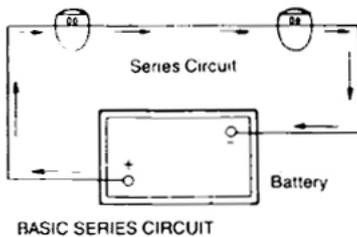
Circuit types

Circuits can be broadly classified into three types: series, parallel and compound (series/parallel).

Series circuits

When two or more electrical components are connected one after another in a circuit they are said to be in series.

The same amount of current will flow through each component and the current flow through the complete circuit will be determined by the total circuit resistance.

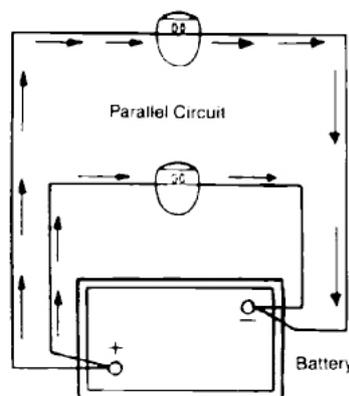


A failure of one component in a series circuit will cause the entire circuit to fail because there is no longer a circuit for current to flow.

Parallel circuits

When two or more electrical components are connected so that they have the same source of current, but have independent circuits through each component, they are said to be connected in parallel.

An inoperative condition in one circuit (ie break/open) does not affect other circuits. Current flows through all circuits at once or through the individual circuits as desired, controlled by switching of the nominated circuit or circuits.

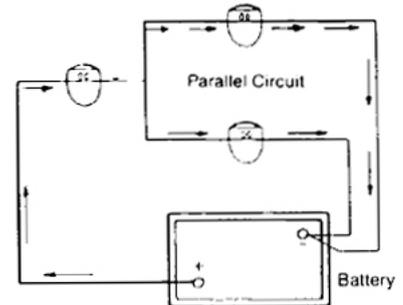


A failure in one circuit of a parallel circuit will still allow for current flow through the other circuits.

Compound circuits

When a number of electrical components are connected in both a series and parallel configuration (see diagram) the circuit is said to be connected in series/parallel or is a compound circuit.

Note: In future editions we will look at fan circuits that are series/parallel switched. This does not mean they are connected as above – it means they are switched (via relays) to be connected in either series (low speed) or parallel (high speed).



In this and the previous issue of Hot Air, we were able to cover the whole of Electrical Volume 1, Bulletin 1 of the famous Registered Technicians Program. In the next issue we move to Bulletin 2 which covers the principles of electronics



NEW BOARD MEMBER CATHERINE TELLS IT LIKE IT IS

Following my expression of interest, I replaced long-standing VASA board member, Barry Rogers, in late 2010.

I want to let VASA members in New Zealand and Australia know about my introductory experience to the VASA board.

My first board meeting was at St Kilda in Melbourne. I arrived late evening to a cheery note from Ken Newton (VASA CEO) asking me to get in touch. While everyone was ready to turn in, the acknowledgement was appreciated and we arranged to meet for breakfast before the board meeting.

Everyone at breakfast was bright and cheerful and the subject matter changed enthusiastically from one air-conditioning-related subject to another. The other members ensured I was included and had a chance to participate. This sentiment continued when we moved to the meeting.

I felt very welcomed and included but most particularly I noted how passionate the board members are about the industry.

It's obvious that they care about all the VASA members and what the VASA network means.

Almost every discussion relates to how VASA can provide benefits to members, with lots of great ideas.

If the progress made at the first two meetings I attended is anything to go by – I can see plenty of action ahead.

We continue to look for other interested members to join the board. Some of the senior and

long serving directors are keen to move their energy elsewhere if they could get the opportunity.

Clearly they are passionate enough not to walk away without handing over to a decent replacement. The board has invited any interested member to attend a board meeting to find out how they might contribute.

So if anyone is so inclined, get in touch with Ken or the board member closest to you.

Over the busy summer season the two meetings I have attended so far have been pretty high-speed trips. We typically meet from 10am until 4pm and then race away to travel home or back to business. In the wintertime, I hope to be able to slow down a bit before and after the meeting and enjoy my surroundings.

You'll be pleased to know that members will be reimbursed for reasonable out-of-pocket expenses such as travel and accommodation if required.

This certainly had a bearing on my availability because if my entire contribution were voluntary I am pretty sure my interest would have been quite reduced.

I am very pleased to give my time to this organisation at present. I am keen to learn from the Australian experience about refrigerant licencing schemes and how they may have a bearing on the future for NZ as we look to develop our own program for compliance with the NZ Hazardous Substances Regulations and Hazardous Substances and New Organisms Act.

TAFE students snap up offer of free VASA membership



Long time VASA member Peter Stubley, now a teacher of automotive electrical technology at TAFE NSW – Northern Sydney Institute, has a large number of students already enrolled in VASA.

That's Peter on the left, helping students interpret air conditioning saturation temperatures with a set of hand held gauges and live data using a scan tool.

Others (from left) are Michael Wardle (Newcastle Auto Electrical), Hayden Lawrie (GB Auto Electrical) and John Sullivan (Newcastle Auto Electrical).

When the students finish their courses they will be invited to join VASA as a full member either in their capacity as an employed technician or, if they decide to become a sole trader, as a service centre member.

In the meantime, the students will receive regular Hot Air newsletters, will be able to access technical papers in the members' area of the VASA website, and will be invited to attend any VASA functions and training events, on a special student rate.

They won't be asked to pay any fees until they finish their studies and even then membership of VASA will be optional.

This initiative has two aims, the first to introduce trainees to real industry issues as part of their regular college work and the second to encourage them to take a real interest in joining industry networks which will help them later in their careers.

The first invitation for student members will be to the big Wire & Gas Training Convention in Melbourne on the June long weekend this year. The board of VASA has set the student rate at \$100 plus GST, for a full weekend of exposure to top trainers in four key subjects, plus

Board offer still stands

VASA president Ian Stangroome is still hoping to find members willing to put their hand up for future active involvement as a director or committee member.

member to attend, and participate in the meeting and learn first hand what the association is all about.

Apply to:
secretary@vasa.org.au

The next board meeting will be held in Melbourne on Wednesday 6 April and VASA will pay the out-of-pocket expenses for a



VASA will offer its services to TAFE colleges around Australia to provide an employer's viewpoint on training syllabus reviews.

The move was the result of a healthy debate at a recent VASA board meeting about the varying standards of training which was thought, in some cases, to be producing graduates with either insufficient or the wrong kind of knowledge required in today's modern auto aftermarket workshop.

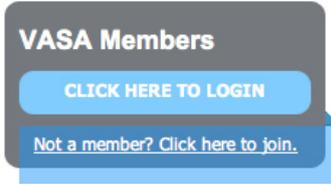
Web access for members

Follow this simple logon procedure to www.vasa.org.au

full stop, comma or any other accidental key stroke.

1. On the front page of the site, you will see this box. Click on the top blue panel to login.

Remember that after five password attempts the site will lock you out, and you will need to wait 10 minutes before trying again.



VASA members need to be very clear about what they are looking for on the web. Here's a general rule:

2. Type your member number in the first box. In the password box type, in lower case, the first four letters of the suburb in which your membership has been listed.

For matters affecting your membership of VASA, technical archives containing the Registered Technicians Program, consumer information about VASA and a full listing of all members by location and type of membership, the website address is:

www.vasa.org.au

Member Log In

Member Number:

Password:

[LOG IN](#)

If that doesn't work, please check your membership number and suburb and try again.

If you have a serious technical problem with a particular vehicle, no matter what the problem is, and for access to a growing library of vehicle faults and solutions, the website address is:

www.tat.net.au

New Code of Service for your workshop

The VASA mission
To provide a professional, efficient and cost-effective service to our members and the automotive industry.

Customer Code of Service

- The customer will be treated with respect.
- Service will be provided with a high quality of service and a professional attitude.
- Diagnosis will be explained and explained in full consultation with the customer.
- Parts to be replaced will be explained and explained in full consultation with the customer.
- When a complete diagnosis is required, the customer will be advised of any charges for diagnostic tests and a written report.
- Additional repairs are required to be necessary, the cost of which would exceed the amount quoted or estimated, the customer will be contacted to explain what is required and to seek authorisation for any additional work before further work proceeds.
- All parts replaced will be available for inspection by the customer, where practicable, and a replacement of any parts have failed will be offered.
- Service or repairs will be guaranteed against any failure due to defective recommended parts or faulty workmanship.
- Any dispute between the Service Centre and the customer will be resolved quickly and amicably.

The VASA mission
To provide a professional, efficient and cost-effective service to our members and the automotive industry.

1. Members of VASA Service Centres will engage in sufficient training, education or skills development to enable them to keep pace with the technological requirements to repair modern vehicles.

2. Members are responsible for applying the professional integrity and work ethics of the VASA network and the automotive industry, and will not accept any conduct that may bring discredit to VASA and its members.

3. Members will not work with heavy, heavy and professional machinery in all dealings with the public, other VASA members and fellow technicians.

4. Members will apply best work practices as set in relevant technical resources and Codes of Practice and will promote the use of approved and recommended parts, equipment and consumables in all repair and maintenance.

5. Members will endeavour to reduce the public on the long term value of using approved replacement parts where a customer decides to have quality parts replaced. The Service Centre will take on the final decision that non-recommended parts have been installed by the customer. Therefore the Service Centre will accept no liability for any failure of parts or subsequent damage to vehicle systems.

6. Members will discharge their responsibility to their employer by observing safety and collective and individual employment contracts or agreements, and by providing effective, logical support and instruction to their production and efficient employees capable of contributing positively to the welfare of the business.

7. Members will provide adequate working conditions, equipment and facilities, and ensure proper operation of all safety standards and work practices.

8. Members reserve the right to refuse to undertake any repair that is beyond the Service Centre's equipment capability or that requires the use of specialist tools or equipment that the customer is not prepared to pay for. In the member's opinion, will put other components or systems at risk of failure. The member will inform the customer of any such refusal.

9. Members will take the time to educate customers on the need for proper maintenance of specific vehicle systems and make available technical literature or contact parts to generate a greater understanding of the need for individual maintenance.

10. Members will take responsibility for their own conduct and ensure that they are properly qualified for their practices, and the parts or equipment they fit in any repair, will provide the best performance level to be achieved with the manufacturer's specifications.

11. Members will adopt open and readily understood warranty practices as a integral part of their business operations.

12. Members will adhere to the ethical and moral standards of the industry, and will not engage in any unethical or illegal activities through the use of technical information and skills and offering assistance to fellow members who request.

13. Members will be environmentally responsible, ensuring compliance with environmental and energy efficiency guidelines or regulations.

Issued by the Board of Directors of VASA May 2010

A new two-part Code of Service has been finalised and will be distributed in print form ready for wall-mounting when membership certificates are posted in March.

One is a customer code and the other a workshop code and they can be displayed individually, or as a set.

The artwork will be available on the VASA website for those who want to print their own.

Hot Air is published every two months, and is posted to financial members of VASA, along with the current issue of the TaT magazine.

This newsletter contains information which will help you become a more productive technician. You are encouraged to leave past issues in your waiting room, so that your customers can see that you are a member of a professional repair network.

Automotive Air Conditioning PRACTICAL WORKBOOK

Refrigerants Australia logo

Practical Vehicle Air Conditioning Servicing 2008

- Professional AC service procedures
- Establishing a partnership with the customer
- Why components fail

Grant Hand wowed them at Wire & Gas conventions – you can see him at his best on this air conditioning servicing DVD that comes with a 24 page workbook. VASA member price is \$40.

To order your copy, email secretary@vasa.org.au with your name, membership number and phone number and we will post it to you immediately along with your invoice.

TaT assist technical support

One of the big benefits of being a VASA member is that you receive a free copy of the TaT magazine, and with it free access to the TaT assist service.

This is a web-only service, so to access technical help, members must go to www.tat.net.au and log in, using the form which will be generated when you click this link on the left of your screen.

If this is your first sign-in Click Here and enter the same email you gave with your subscription to generate your login details.

In your case, as a VASA member, your email is already installed in the TaT system, so if it matches, you will be provided with your own password for all future visits.

Welcome to VASA

English speaking members in countries located in Australia, Asia, Europe, Africa, South America, New Zealand, and other countries are invited to join the VASA Members program. This program is available to all members who are currently active in their country.

VASA Members
The Member Log In box

In the members' pages at www.vasa.org.au

- All 51 bulletins of the VASA RTP bible on vehicle air conditioning
- MACS Worldwide service bulletins from Feb 2005
- Hot Air newsletters back to May 2005

MACS SERVICE REPORTS
The Mobile Air Conditioning Society Worldwide
A monthly to members - 125 country to subscribers © World Air Conditioning Society Worldwide
By Peter Meier - MACS Technical Correspondent July 2010

MORE ELECTRICAL TROUBLESHOOTING TIPS

This month, we're going to look at some techniques and tests you can use today to help with electrical troubleshooting.

Locating Wiring Faults:
Open and Short Circuit Detection Tip
OK, you've performed voltage drop testing and a circuit with an open or short circuit. This means you'll probably find one to the conductor that you have an open circuit. Either there is power on the positive side of the component, or there is power on the ground side, which the second includes an open or a ground short circuit. The second includes an open or a ground short circuit. The second includes an open or a ground short circuit. The second includes an open or a ground short circuit.

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When you access the TaT assist form, you must fill in as much detail as possible to give the experts enough information to consider your problem.

VASA members can also access a growing database of vehicle faults and solutions in the members' pages of the TaT website.