

The Shocker Album



The Sheriff - Ashley Teitzel - reckons that if every technician in the country adopted "restore to OEM standard" practices today, it would take about five years to undo the bodgied up equipment on cars and farming machinery.

"Here we are asking technicians to repair to OEM standard in a new Code of Practice. Do you reckon the guy who put together this fantastic collection of pipe work will be able to read it, let alone do it?" he asked.

"Garden variety hose clamps on air conditioning equipment went out with button-up boots,"

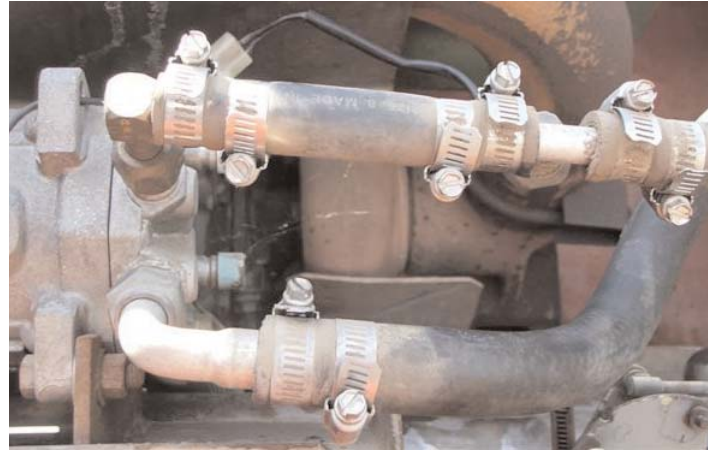
says the Sheriff.

In this one photograph inside the engine room of a Massey-Ferguson tractor, there were eight hose clamps, holding together a patchwork of pipes.

"It looks like they ran out of hose, so stuck in an aluminium piece of tubing to make the distance.

"The problem with this sort of workmanship is that it leaves the way open for moisture to enter the system through poor connections. In this case, the whole hose work should have been replaced, and crimped with proper tools to eliminate the possibility of leakage.

"If this was the standard of work performed in a passenger vehicle, the customer would be the one ultimately paying for unnecessary repair work and maintenance. So it's not just a matter of being fussy about pipework and fittings, but I believe there is an obligation on service technicians to do the



job properly and so avoid future failures with the system," asserts Ashley.

And it wasn't just the pipework that was dodgy in this case.

The Massey-Ferguson was fitted with a Delco-Remy compressor at the factory, but this was ultimately replaced by a down-sized compressor - to save money, or through ignorance.

The result is that the aircon

doesn't live up to its OEM expectations because it can't pull enough refrigerant through the system quickly enough.

"Compressor sizes and capacities are chosen for very good reasons. Why technicians chose to ignore the standards set for a particular piece of machinery is a source of constant amazement. Sooner or later, the owner of the equipment pays, and probably doesn't even know why."

A Falcon alternator riddle solved

From AAAE President Deyan Barrie and with thanks to Ray Shoetrim

It's a little known fact that the Mitsubishi alternator on the AU Falcon is different to the Mitsubishi alternator on the BA Falcon.

The difference can be found in the voltage regulators these alternators use.

The AU alternator is a battery sense type and uses a regulator that requires both a sense (S) and a lamp (L) connection, marked '435' on the regulator's heatsink.



The BA alternator is a machine sense type and uses a regulator that only requires a lamp (L) connection, marked '517' on the regulators heatsink.

A problem will occur if an AU regulator is used when servicing the BA alternator, as the wiring loom in the BA does

not provide a battery sense signal in the sense lead to the alternator. The warning light will stay on and a higher regulating voltage will be observed.

There is no problem using a BA regulator or BA alternator with the AU. They are backward compatible.

The BF Falcon uses a new generation 130 amp Mitsubishi alternator, 5R29-10300-AC, known as a smart alternator. It uses a voltage regulator with three terminals: A (or AS) terminal, SIG (or RC) terminal and FR (or LI) terminal.

The A terminal senses the voltage at the battery, the SIG terminal receives a pulse width modulated (PMW) signal of

frequency 128 Hz from the ECU to control regulating voltage and the FR terminal sends a signal to the ECU indicating how hard the alternator is working.

The Ford Focus also uses a smart alternator, manufactured by Magneti Marelli or Motorcraft. They use the same regulator plug as the 130 amp Mitsubishi alternator.

All of these alternators can be bench tested using a suitable PWM, as shown in the pic.

The tester in the pic is available to AAAE members at a good price. Those interested should fax Deyan Barrie on 02 94776026 or barrie_autoelectrics@bigpond.com

A new technical problem solving service from The Automotive Technician, under the guidance of AAAE leaders

PROBLEM 1

Make : BMW

Model : E39 535

Year : 04/1997

Customer Complaint

No interior fan operation on any setting

Problem Summary

Climate control interior fan motor not operating on any speed. All climate control

functions working and LCD display for fan control working correctly showing variable speeds, as the system has a variable speed interior fan.

Diagnostic Sequence

1) Test all fuses and circuit breakers in the fuse box to check power supply to fan control system. Then scan the



pic 1

electronic control systems with an appropriate scan tool.

2) Remove the under dash panels on the drivers side to access the fan variable speed controller (pic 1)

3) Find the variable fan speed resistor and check the wiring connections for power. (pic 2)



pic 2

Fault Description

The fault is in the variable resistor that controls the fan speed for the internal ventilation system. (pic 3)

Fault solution

First you need the replacement part from BMW, Resistor part no. 64116923204. List price \$181.45+ (May 2006) Make sure that you check the chassis no. with BMW on ordering because they do vary between models.



pic 3

Fit the new resistor into the hole with the two required screws, install the wiring and then test the fan operation. All should again be working correctly. You may also want to check that there are no error codes stored in the computer using an appropriate scan tool.

continued on page 27

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Recommended Time

Labour time was 2.5 hrs, taking into account research time, location of parts and the actual time spent fixing the problem.

PROBLEM 2

Make : Volvo

Model : 940 GLE

Year : 01/1994

Customer Complaint

Air Conditioning not cold.
Interior fan working OK.

Problem Summary

Vehicle A/C compressor not engaging. Interior fan motor operating and all other interior



pic 1

ventilation functions working. Check of refrigerant gas level showing good pressures on both low and high sides.

Diagnostic Sequence

1) Test all fuses and circuit breakers in the fuse box to check power supply to interior ventilation system.

2) Test power supply to A/C pressure switch/s. No power to pressure switch with A/C switched on.

Fault Description

The fault is in the A/C compressor relay, which in this

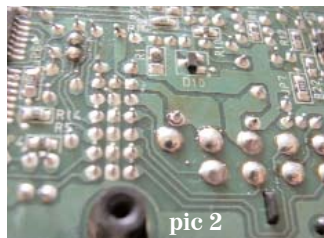
model is built into the main ventilation control panel.

All other functions for interior ventilation are working.

(pic 1)

Fault solution

Remove main ventilation control panel and dismantle as



pic 2

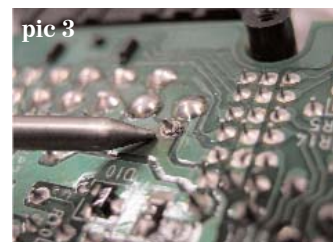
required to access main printed circuit board.

(pic 2)

Inspect printed circuit board and locate main solder points for A/C compressor.

Re solder any poor or dry solder points as required.

(pic 3)



pic 3

Reassemble control panel, reconnect and test. All should again be working correctly. Recheck A/C performance and service A/C system if required.

continued on page 28

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