FUJITSU

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Service Flyer

AUSTRALIA'S FAVOURITE AIR™

In this issue of our Service Flyer we want to concentrate on technical tips by explaining how to test electronic expansion valves and PCB testing on the AOTR24LCC\LCL\LFC\LFL and AOTS24LDL.

Technical Tips

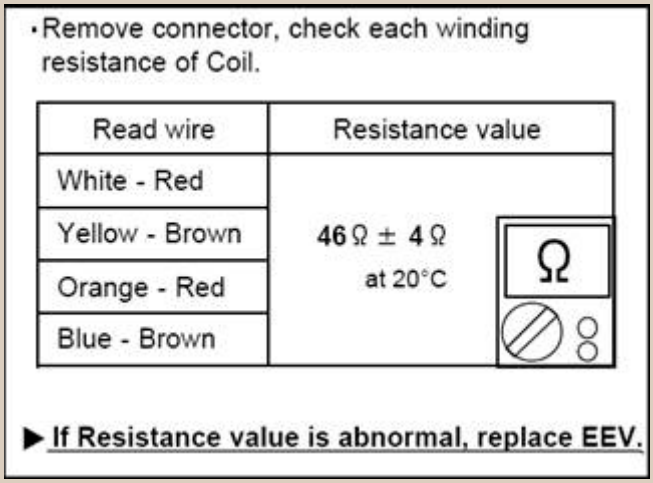
Electronic Expansion Valves

Incorrectly operating EEV's will cause refrigerant blockages and low suction pressure. These symptoms are commonly misdiagnosed as the unit being low on refrigerant.

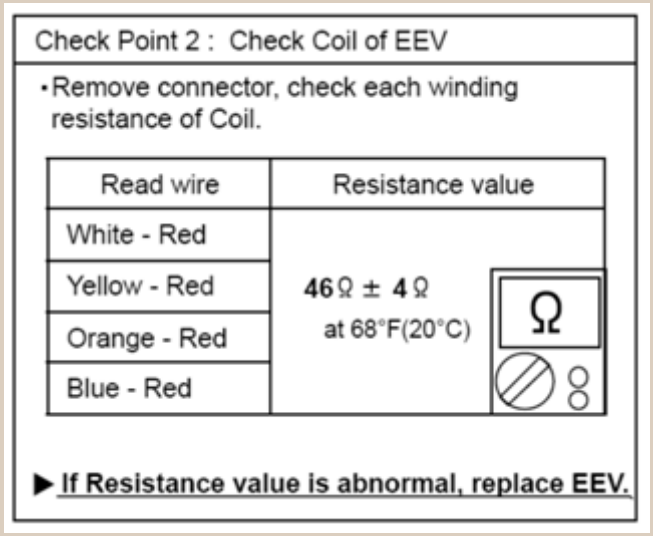
Before assessing refrigerant charge, please carry out the following simple tests on the EEV.

- On power up of the system, check for the "tick-tick-tick" noise as the valve is driven fully closed then opened to its maximum position.
- The EEV coil must be seated correctly on the body of the valve, it is held in place either by a clip over the inlet pipe or a tab screwed to the body of the valve.
- The winding resistances of the coils of the expansion valve can be measured as per checks below.

Standard 6 Wire EEV



Newer 5 Wire EEV



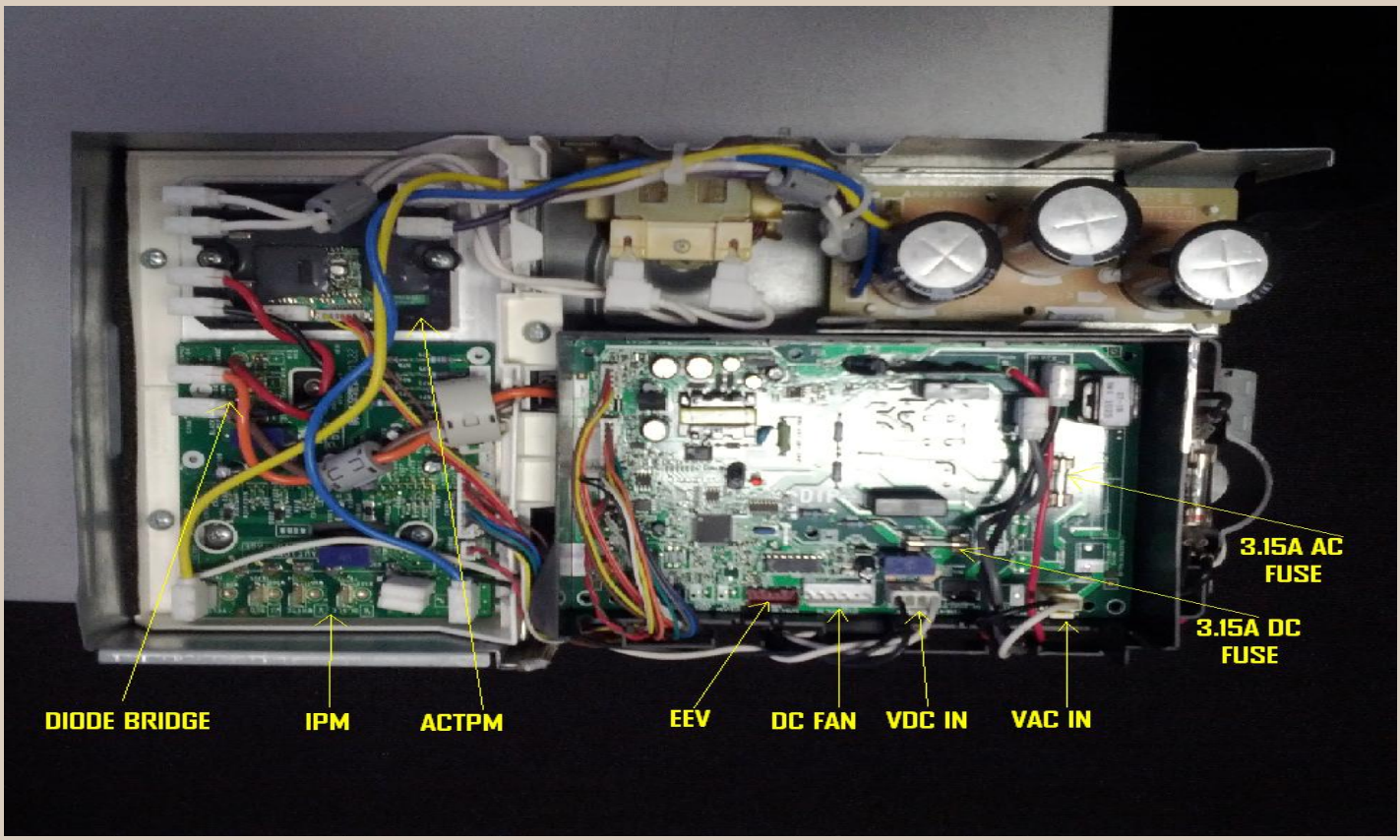
Older model 24 Volt EEV

Read Wire	Resistance value
White - Red	187Ω ± 4Ω at 20°C
Yellow - Brown	
Orange – Red	
Blue – Brown	

If resistance value is abnormal, replace EEV.

PCB Testing for AOTR24LCC\LCL\LFC\LFL and AOTS24LDL

By removing the top panel off the condensing unit, you can test DC voltage across black and white wires on CN200(VDC IN) to test if the outdoor has DC voltage (Standby ~330VDC, operating ~380 – 400VDC) if it displays as 0VDC it indicates component failure in condensing unit.



ISOLATE POWER SUPPLY FOR AT LEAST 5MIN BEFORE TESTING

DC FAN

The first check point is usually the 3.15A DC fuse. If it is blown, it usually indicates a failure of the DC fan motor. The fan motor can be tested out using the "Diode test" . Fan test results will vary depending on the model of the unit.

	Multimeter lead connections		Test Values
	Positive lead	Negative lead	Expected values
DC FAN MOTOR PLUG WIRES	RED	BLACK	Open (OL)
	BLACK	RED	~ 0.8-0.9
	WHITE	BLACK	~1.2-1.3 or Open (OL)
	BLACK	WHITE	~0.4-0.5

	Multimeter lead connections		Test Values
	Positive lead	Negative lead	Expected values
DC FAN MOTOR PLUG WIRES	RED	BLACK	Open (OL)
	BLACK	RED	~ 0.8-0.9
	WHITE	BLACK	~0.5-0.6
	BLACK	WHITE	~0.4-0.5

<u>The top chart above is for most models, followed by a chart specific to AOTR24LCC and LCL</u>

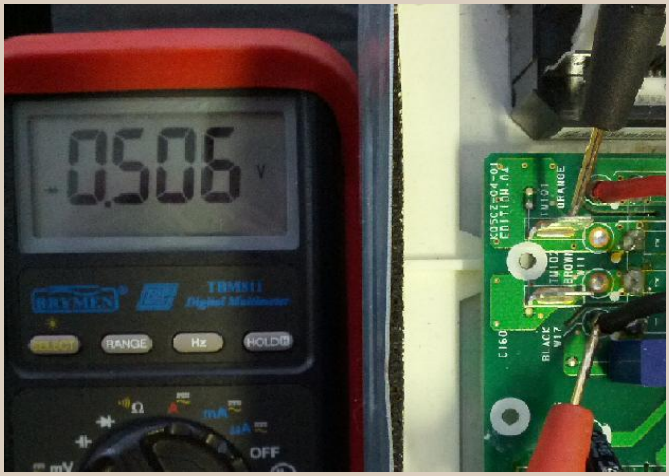
DIODE BRIDGE

The next recommended testing point would be the Diode Bridge, which is located on the TR PCB, where the AC wires from the power relay connect (Orange and Brown) and where the DC wires from the ACTPM also connect (Red and Black).

When testing the Diode Bridge, you will need to use "Diode test" and it is recommended to disconnect the Black and Red wires off the ACTPM as they may affect the readings of the meter, and remove the Orange and Brown from the TR PCB as it makes it easier to get good contact.

The Red and Black for testing purposes are (+ and -) and the Brown and Orange are the AC Supply and Neutral (~ x 2) the following results apply.

	Multimeter lead connections		
	Negative lead (BLACK)	Positive lead (RED)	Normal / Expected values
DIODE BRIDGE WIRE CONNECTIONS (if discrete module) or SOLDER PADS (if part of PCB)	+ (Red)	~ (Grey)	All readings should be similar (~0.5v)
	+ (Red)	~ (White)	
	- (Black)	~ (Grey)	All readings should be open (OL)
	- (Black)	~ (White)	
	~ (Grey)	- (Black)	All readings should be similar (~0.5v)
	~ (White)	- (Black)	
	~ (Grey)	+ (Red)	All readings should be open (OL)

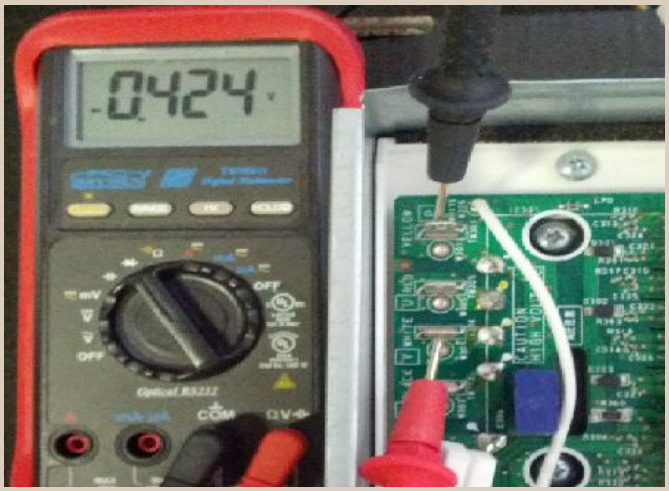


IPM

The next testing will be the IPM. The standard IPM testing procedures will be the same, ensure CN200 is disconnected from the control PCB and the plug between TR PCB and Capacitor PCB is unplugged.

I will post the generic readings for U, V, and W from P & N. If you get an incorrect reading, check Compressor as a potential cause.

	Multimeter lead connections		Normal values
	Negative lead (BLACK)	Positive lead (RED)	
IPM POWER WIRE CONNECTIONS (if discrete module) or SOLDER PADS (if part of Inverter PCB)	P (Yellow)	U (Red)	All readings should be similar (~0.35-0.4v)
	P (Yellow)	V (White)	
	P (Yellow)	W (Black)	
	N (Blue)	U (Red)	All readings should be open (OL)
	N (Blue)	V (White)	
	N (Blue)	W (Black)	
	U (Red)	N (Blue)	All readings should be similar (~0.35-0.4v)
	V (White)	N (Blue)	
	W (Black)	N (Blue)	
	U (Red)	P (Yellow)	All readings should be open (OL)
	V (White)	P (Yellow)	
	W (Black)	P (Yellow)	



ACTPM

The next test will be on the ACTPM. You will need to remove all wires from the ACTPM and also the small multi-wire plug to ensure you are getting the correct readings.

This test will be using resistance or Ohm (Ω) setting on the multimeter on the 20MΩ scale. (***make sure your meter can read above 200kΩ***).

The following readings apply.

Check the open or short-circuit

Terminal		Resistance value
Tester(+)	Tester(-)	
(+)	(—)	360kΩ ±20%
(—)	N1	0 Ω
P	(+)	720kΩ ±20%
L1	L2	Over 1MΩ
P	N1	360kΩ ±20%
L1,L2	Control Box	∞ Ω
L2	N2	Over 1MΩ

Check the diode

Terminal		Resistance value
Tester(+)	Tester(-)	
L2	P	Over 1MΩ
P	L2	Over 1MΩ

Administration

Please ensure you send all spare parts orders through to our email address spareparts@fujitsugeneral.com.au. This includes chargeable and warranty spare parts orders.

We are noticing some service agents are not showing start and finish dates or the exact fault and work done on their warranty claims. Please ensure such information appears on all warranty claims.

The latest Fujitsu General warranty document is available from our website as a downloadable PDF. Simply go to www.fujitsugeneral.com.au. Under the "Company" tab there is a link "Warranty Information" that will take you directly to the PDF.

It is most important you are aware of the terms and conditions of our warranty so you can determine if products are going to be covered under warranty.

Contact Information:

Spare Parts:

spareparts@fujitsugeneral.com.au

Technical Support:

technicalsupport@fujitsugeneral.com.au

Warranty Claims:

service@fujitsugeneral.com.au

Technical Support contact numbers:

Australia Wide Local

Call Technical Support: 1300 364 484 or

N.S.W. Office on 02 88222600

QLD Customer Support Engineer:

Mr. David Harper 0418788319 or

QLD Office on 07 32572800

VIC / TAS Customer Support Engineer:

Mr. Michael Tranter 0408400355 or

VIC Office on 03 95435899

SA/NT Customer Support Engineer:

Mr. Luke Meyers 0408220997 or

SA/NT Office 08 81721180

W.A. Customer Support Engineer:

Mr. Gurshwin Ontong 0407220492 or

WA Office on 08 92405877