

AUTO TRANS DIAGNOSIS - F4A21, F4A22 & F4A23

Article Text

1992 Mitsubishi Mirage

For Dan's Transmission Service 10 Jefferson Place Fort Walton Beach FL 32548

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Monday, April 01, 2002 09:08AM

ARTICLE BEGINNING

AUTOMATIC TRANSMISSIONS

Mitsubishi - F3A20 Series & F4A20 Series - Diagnosis

TRANSAXLE APPLICATION & IDENTIFICATION

TRANSAXLE APPLICATION

TRANSAXLE APPLICATION TABLE

Vehicle Application	Transmission Model
Colt 3-Speed (1990-94)	F3A21
Colt Vista 2WD (1990-92)	F3A22
Colt Wagon (1990-92)	F3A21
Summit 3-Speed (1990-94)	F3A21
Mirage 1.5L (1990-94)	F3A21
Colt 4-Speed (1990-92)	F4A21 & F4A22
Colt Vista 2WD (1990-94)	
1.8L & 2.0L	F4A22
2.0L Turbo	F4A23
Eclipse FWD (1990-94)	
1.8L & 2.0L	F4A22
2.0L Turbo	F4A23
Expo FWD (1992-94)	
1.8L	F4A22
2.4L	F4A23
Galant FWD	
DOHC (1990-93)	F4A22
SOHC	
(1990-93) (1)	F4A22
(1994)	F4A23
Laser Non-Turbo (1991-94)	F4A22
Mirage	
1.6L (1990-92)	F4A21
1.8L (1993-94)	F4A22
Summit FWD	F4A21 & F4A22
Sigma (1990)	F4A23
Summit Wagon 2WD (1990-94)	
1.8L & 2.0L	F4A22
2.0L Turbo	F4A23
Talon Non-Turbo (1991-94)	F4A22

(1) - Some 1990-92 Galant models with SOHC engine may be equipped with a KM175 model automatic transmission.

IDENTIFICATION

Vehicle information code plate is riveted to firewall in engine compartment area. See Fig. 1.

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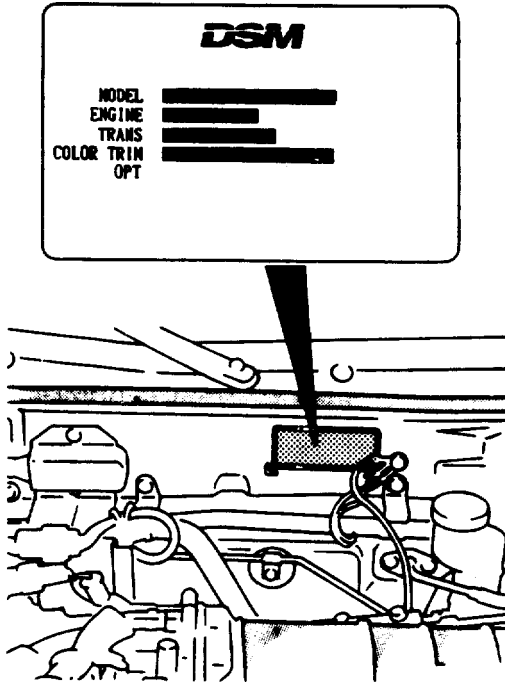
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Fig. 1: Locating Vehicle Information Code Plate

Courtesy of Mitsubishi Motor Sales of America.

F3A20 SERIES TESTING

* PLEASE READ THIS FIRST *

NOTE: See Fig. 2 for clutch, band and brake application chart.

ELECTRONIC COMPONENT TEST (F3A20 SERIES)

ELECTRONIC COMPONENT TESTING FLOWCHART INDEX (F3A20 SERIES)

Component	Illustration
Damper Clutch	Fig. 1
System Wiring	Fig. 2
Coolant Temperature Sensor	Fig. 2
Throttle Position Sensor	Fig. 2
Pulse Generator "A" Or "B"	Fig. 3
Damper Clutch Control Solenoid Valve (DCCSV)	Fig. 4
Transaxle Control Unit	Fig. 4

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F4A20 TRANSAXLE

Selector lever position	Overdrive control switch	Shifting gear	Engine start	Parking mechanism	Clutch				Brake	
					C1	C2	C3	OWC	B1	B2
P	—	Neutral	Possible	●						
R	—	Reverse			●					●
N	—	Neutral	Possible							
D	ON	1st				●		●		
		2nd				●			●	
		3rd			●	●	●			
		OD					●		●	
D	OFF	1st				●		●		
		2nd				●			●	
		3rd			●	●	●			
2	—	1st				●		●		
L	—	2nd				●			●	
		1st				●				●

NOTE:

C1 - Front Clutch

C2 - Rear Clutch

C3 - End Clutch

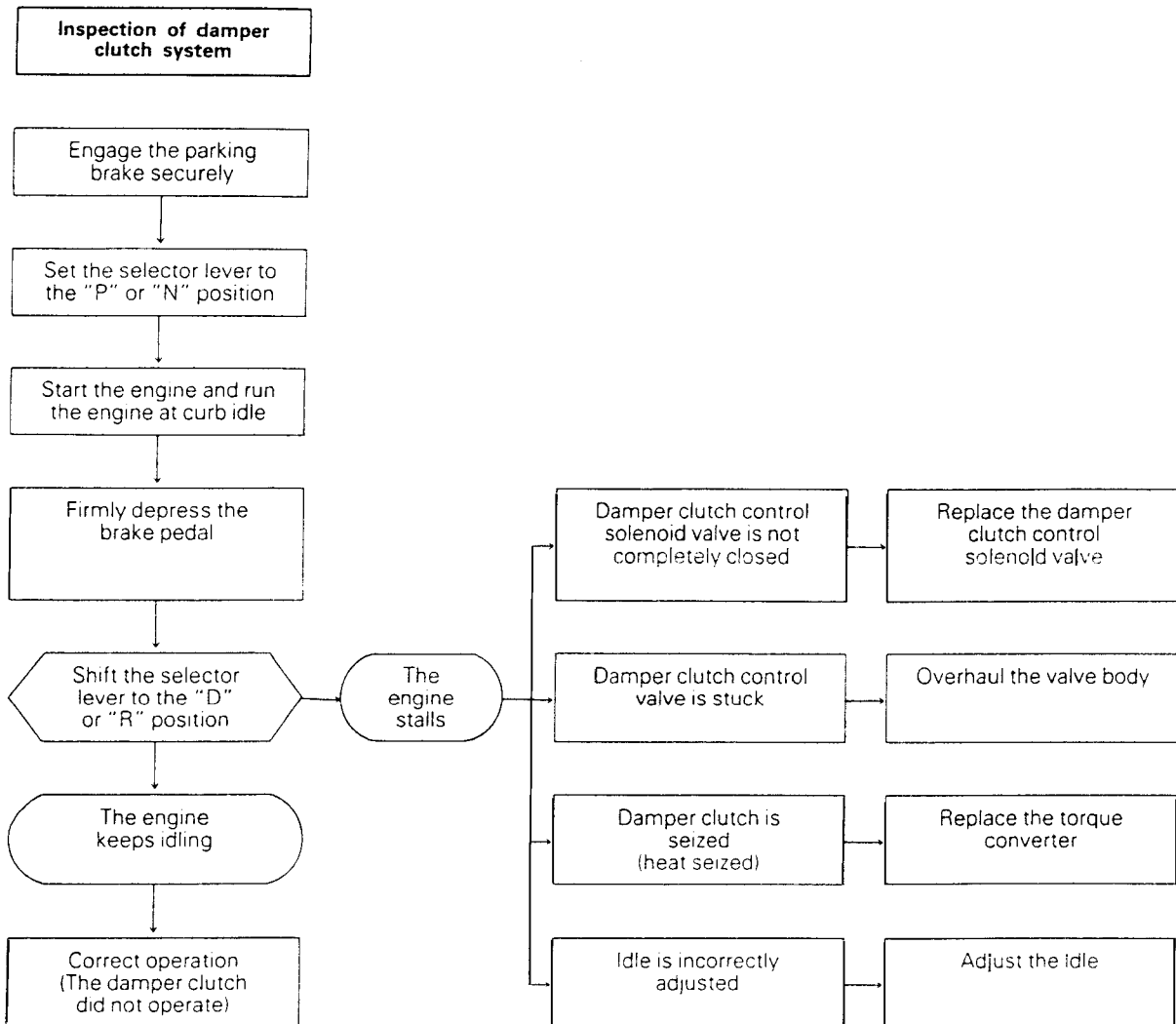
OWC - One-Way Clutch

B1 - Kickdown Brake

B2 - Low-Reverse Brake

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Fig. 2: Clutch, Band & Brake Application Chart
Courtesy of Mitsubishi Motor Sales of America.



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Fig. 3: Electronic Component Testing (F3A20 Series - 1 of 4)
Courtesy of Mitsubishi Motor Sales of America.

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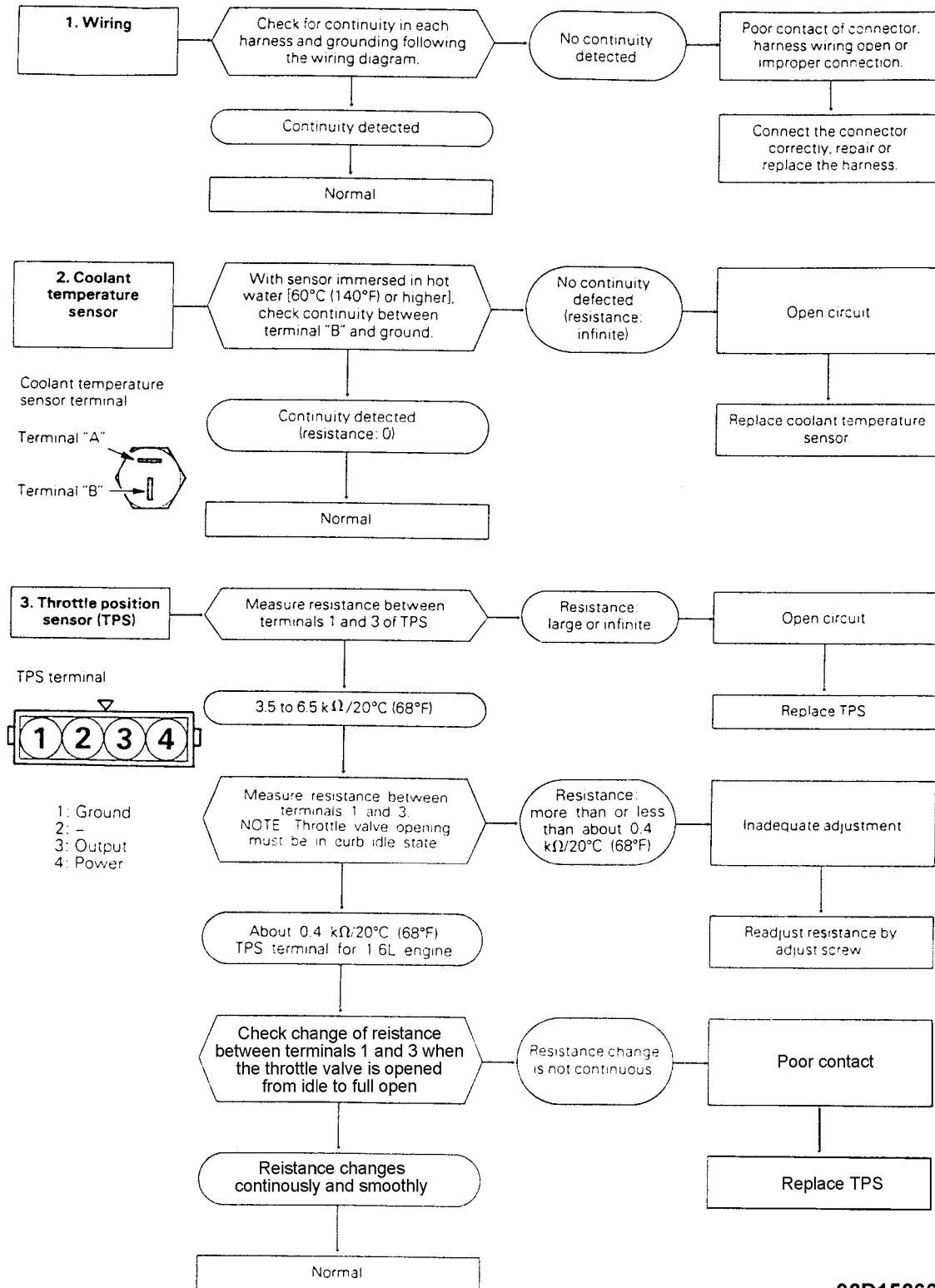
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Fig. 4: Electronic Component Testing (F3A20 Series - 2 of 4)
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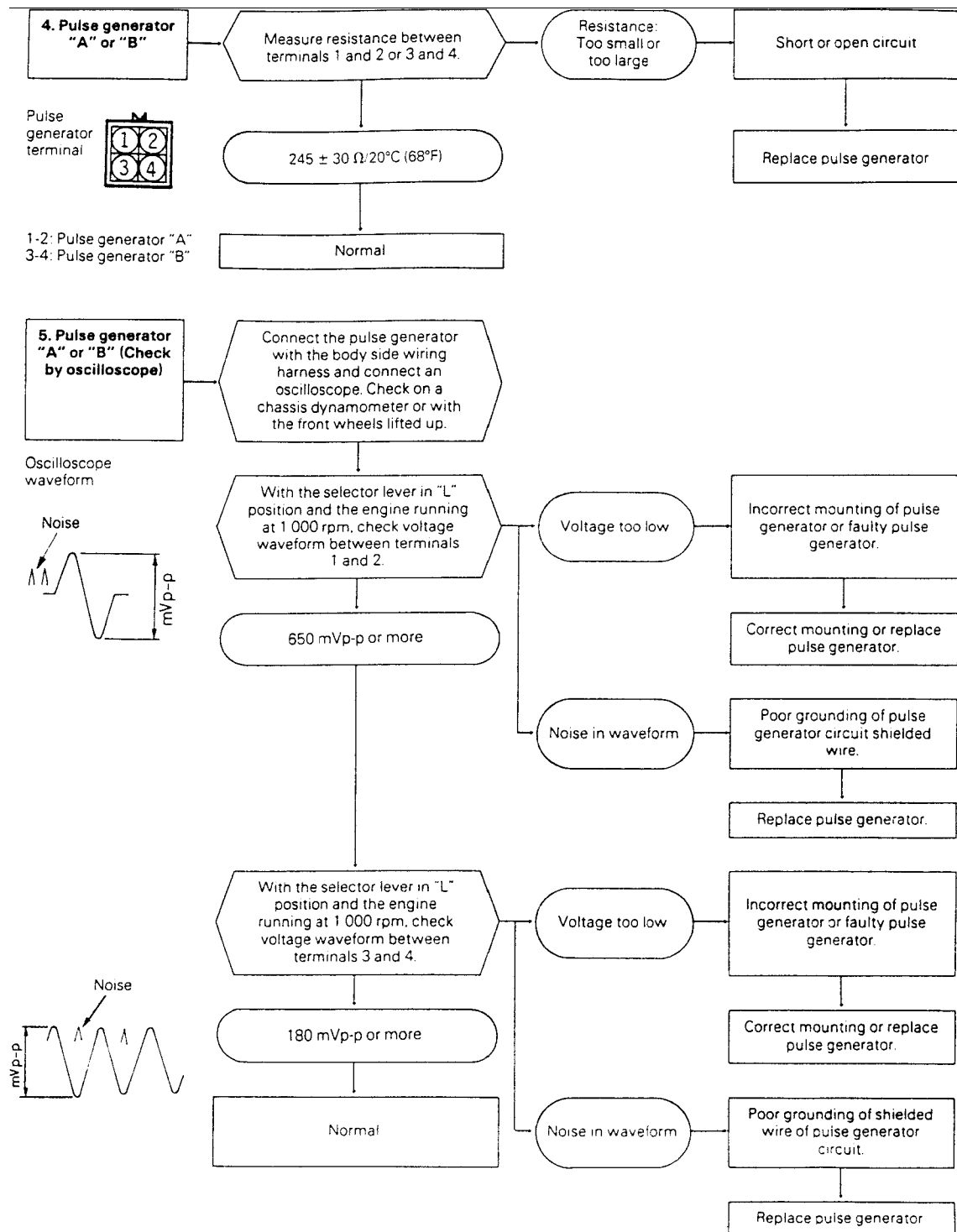
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Fig. 5: Electronic Component Testing (F3A20 Series - 3 of 4)
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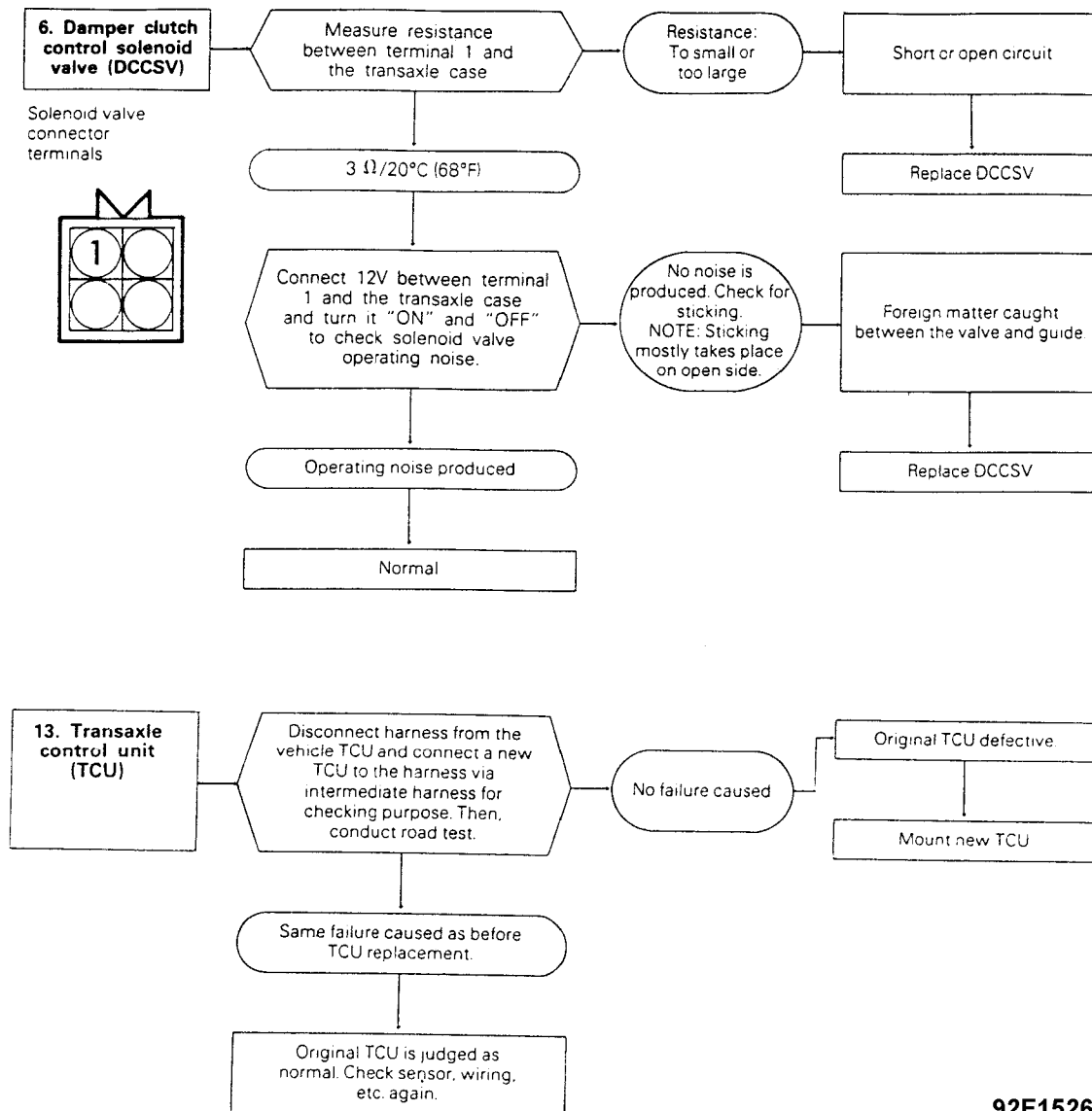
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Fig. 6: Electronic Component Testing (F3A20 Series - 4 of 4)
Courtesy of Mitsubishi Motor Sales of America.

FAULT CODE IDENTIFICATION (F3A20 SERIES)

Code	Condition
11	Abnormal Increase Of TPS Output
12	Abnormal Decrease Of TPS Output
13	Incorrect Adjustment Of TPS System
15	Open Circuit Of Low Oil Temperature Sensor Circuit
16	Short Circuit Of High Oil Temperature Sensor Circuit
17	Open Circuit Of High Oil Temperature Sensor Circuit
21	Open Circuit Of Kickdown Servo Switch Circuit
22	Short Circuit Of Kickdown Servo Switch Circuit
23	No Ignition Pulse Pick-Up Signal
24	Misadjustment Or Short Circuit Of Accelerator Switch
31	No Pulse Generator "A" Signal
32	No Pulse Generator "B" Signal
41	Open Circuit Of Shift Control Solenoid Valve "A"
42	Short Circuit Of Shift Control Solenoid Valve "A"

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43	Open Circuit Of Shift Control Solenoid Valve "B"
44	Short Circuit Of Shift Control Solenoid Valve "B"
45	.....	Open Circuit Of Pressure Control Solenoid Valve
46	.....	Short Circuit Of Pressure Control Solenoid Valve
47	.....	Open Circuit Of Damper Clutch Control Solenoid Valve
48	.....	Short Circuit Of Damper Clutch Control Solenoid Valve
49	.....	Malfunction Of Damper Clutch System
51	.....	1st Gear Non-Synchronous - Pulse Generator(s) Or Kickdown Brake
52	.....	2nd Gear Non-Synchronous - Pulse Generator "A" Or Kickdown Brake
53	.....	3rd Gear Non-Synchronous - Pulse Generator(s) Or Front Or Rear Clutch
54	.....	4th Gear Non-Synchronous - Pulse Generator "A" Or Kickdown Brake

FAIL SAFE CODE IDENTIFICATION (F3A20 SERIES)

Code	Condition
81	..... Open Circuit Of Pulse Generator "A"
82	..... Open Circuit Of Pulse Generator "B"
83	..... Shift Control Solenoid Valve "A" Short Circuit
84	..... Shift Control Solenoid Valve "B" Short Circuit
85	..... Pressure Control Solenoid Valve Circuit Failure
86	..... Shift Steps Non-Synchronous

F4A20 SERIES TESTING

NOTE: See Fig. 2 for clutch, band and brake application chart.

SELF-DIAGNOSTIC TEST (F4A20 SERIES)

Self-Diagnostic Capabilities

1) Use an analog voltmeter or tester and diagnostic connector located at fuse block to read fault codes. See Fig. 7.

2) Random Access Memory (RAM) of TCU is capable of storing up to 10 different fault codes. Fault codes are stored in order of occurrence. One fault code can be stored up to 3 times.

3) If 10 fault codes have already been stored, addition of one or more new fault codes will cause the oldest codes to be cleared.

4) Stored fault codes are cleared when battery is disconnected. Fail-safe system activation locks transaxle in 3rd gear and allows vehicle operation in event of system malfunction.

5) Fail-safe fault codes are also stored in RAM. Up to 3 fail-safe codes can be stored.

6) Fail-safe operation (locked in 3rd) is cancelled when ignition switch is cycled OFF, but fail-safe code is retained in RAM.

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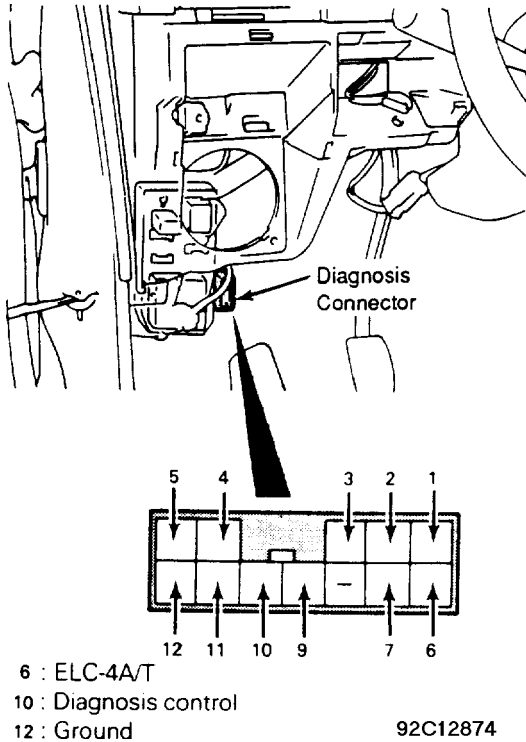


Fig. 7: Locating A/T Diagnostic Connector (F4A20 Series)
Courtesy of Mitsubishi Motor Sales of America

Self-Diagnostic Test Procedure (F4A20 Series)

Connect voltmeter to diagnostic connector terminal No. 10.

See Fig. 7. Turn the ignition switch to the ON position, and TCU memory contents will start immediately. Obtain the fault code(s) and refer to the descriptions in both the FAULT CODE IDENTIFICATION (F4A20 SERIES) table and the FAIL-SAFE CODE IDENTIFICATION (F4A20 SERIES) table.

FAULT CODE IDENTIFICATION (F4A20 SERIES)

Code	Condition
11	..... Abnormal Increase Of TPS Output
12	..... Abnormal Decrease Of TPS Output
13	..... Incorrect Adjustment Of TPS System
15	.... Open Circuit Of Low Oil Temperature Sensor Circuit
16	.. Short Circuit Of High Oil Temperature Sensor Circuit
17	... Open Circuit Of High Oil Temperature Sensor Circuit
21	..... Open Circuit Of Kickdown Servo Switch Circuit
22	..... Short Circuit Of Kickdown Servo Switch Circuit
23	..... No Ignition Pulse Pick-Up Signal
24	.. Misadjustment Or Short Circuit Of Accelerator Switch
31	..... No Pulse Generator "A" Signal
32	..... No Pulse Generator "B" Signal
41	..... Open Circuit Of Shift Control Solenoid Valve "A"
42	..... Short Circuit Of Shift Control Solenoid Valve "A"
43	..... Open Circuit Of Shift Control Solenoid Valve "B"
44	..... Short Circuit Of Shift Control Solenoid Valve "B"
45 Open Circuit Of Pressure Control Solenoid Valve
46 Short Circuit Of Pressure Control Solenoid Valve

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47 .. Open Circuit Of Damper Clutch Control Solenoid Valve
48 . Short Circuit Of Damper Clutch Control Solenoid Valve
49 Malfunction Of Damper Clutch System
51 1st Gear Non-Synchronous - Pulse Generator(s) Or
Kickdown Brake
52 2nd Gear Non-Synchronous - Pulse Generator "A" Or
Kickdown Brake
53 3rd Gear Non-Synchronous - Pulse Generator(s) Or
Front Or Rear Clutch
54 4th Gear Non-Synchronous - Pulse Generator "A" Or
Kickdown Brake

FAIL-SAFE CODE IDENTIFICATION (F4A20 SERIES)

Code	Condition
81	Open Circuit Of Pulse Generator "A"
82	Open Circuit Of Pulse Generator "B"
83	Shift Control Solenoid Valve "A" Short Circuit
84	Shift Control Solenoid Valve "B" Short Circuit
85	Pressure Control Solenoid Valve Circuit Failure
86	Shift Steps Non-Synchronous

ELECTRONIC COMPONENT TEST (F4A20 SERIES)

ELECTRONIC COMPONENT TESTING FLOWCHART INDEX (F4A20 SERIES)

Component	Illustration
System Wiring	See Fig. 8
Oil Temperature Sensor	See Fig. 8
Throttle Position Sensor	See Fig. 8
Pulse Generator "A" or "B"	See Fig. 9
Pressure Control Solenoid Valve (PSCV)	See Fig. 10
Shift-Control Solenoid Valve (SCSV) "A" Or "B"	See Fig. 10
Damper Clutch System	See Fig. 11
Damper Clutch Control Solenoid Valve (DCCSV)	See Fig. 12
Accelerator Switch	See Fig. 13
Inhibitor Switch	See Fig. 13
Kickdown (K/D) Servo Switch	See Fig. 14
Transaxle Control Unit (TCU)	See Fig. 14

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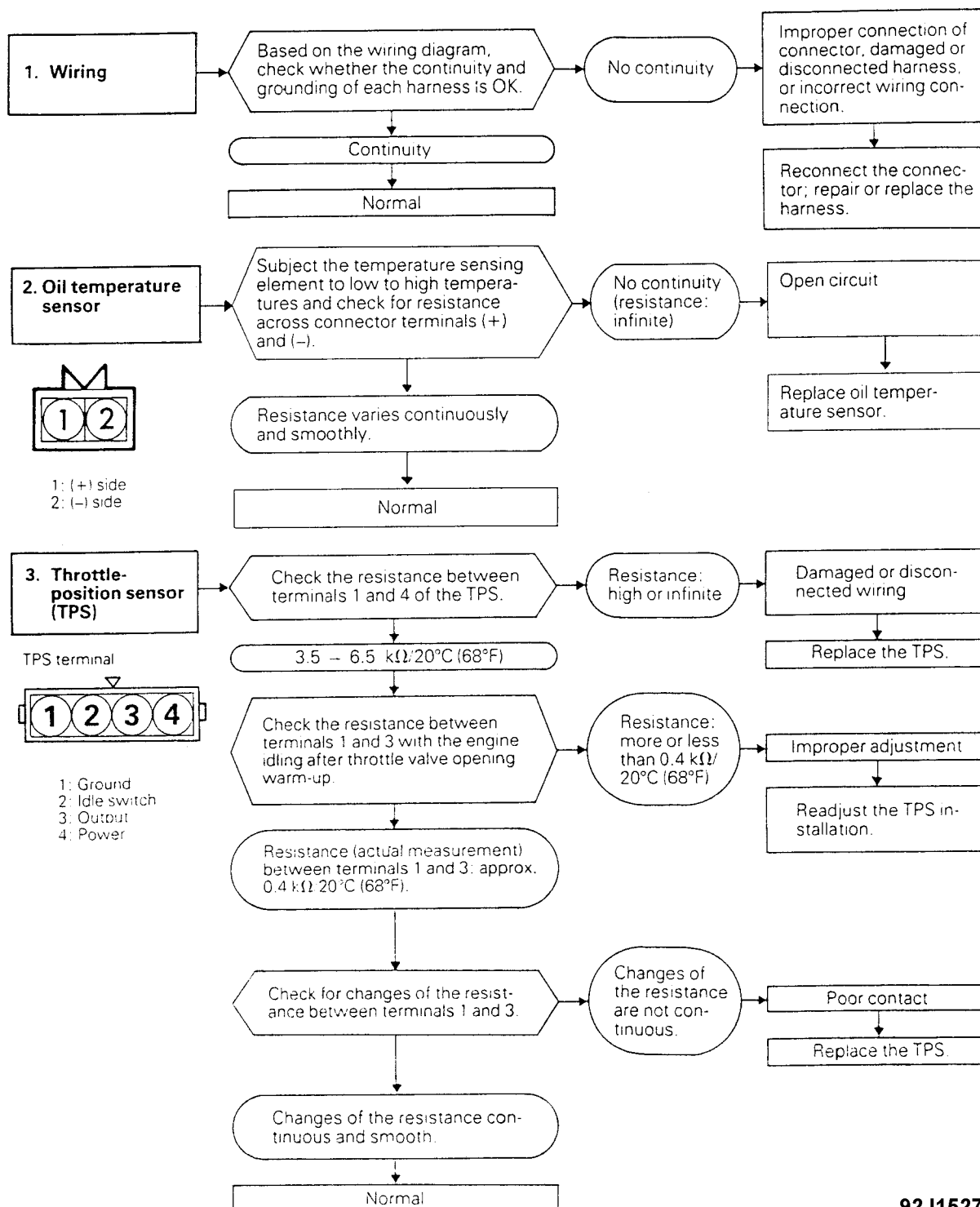


Fig. 8: Electronic Component Testing (F4A20 Series - 1 of 7)
Courtesy of Mitsubishi Motor Sales of America.

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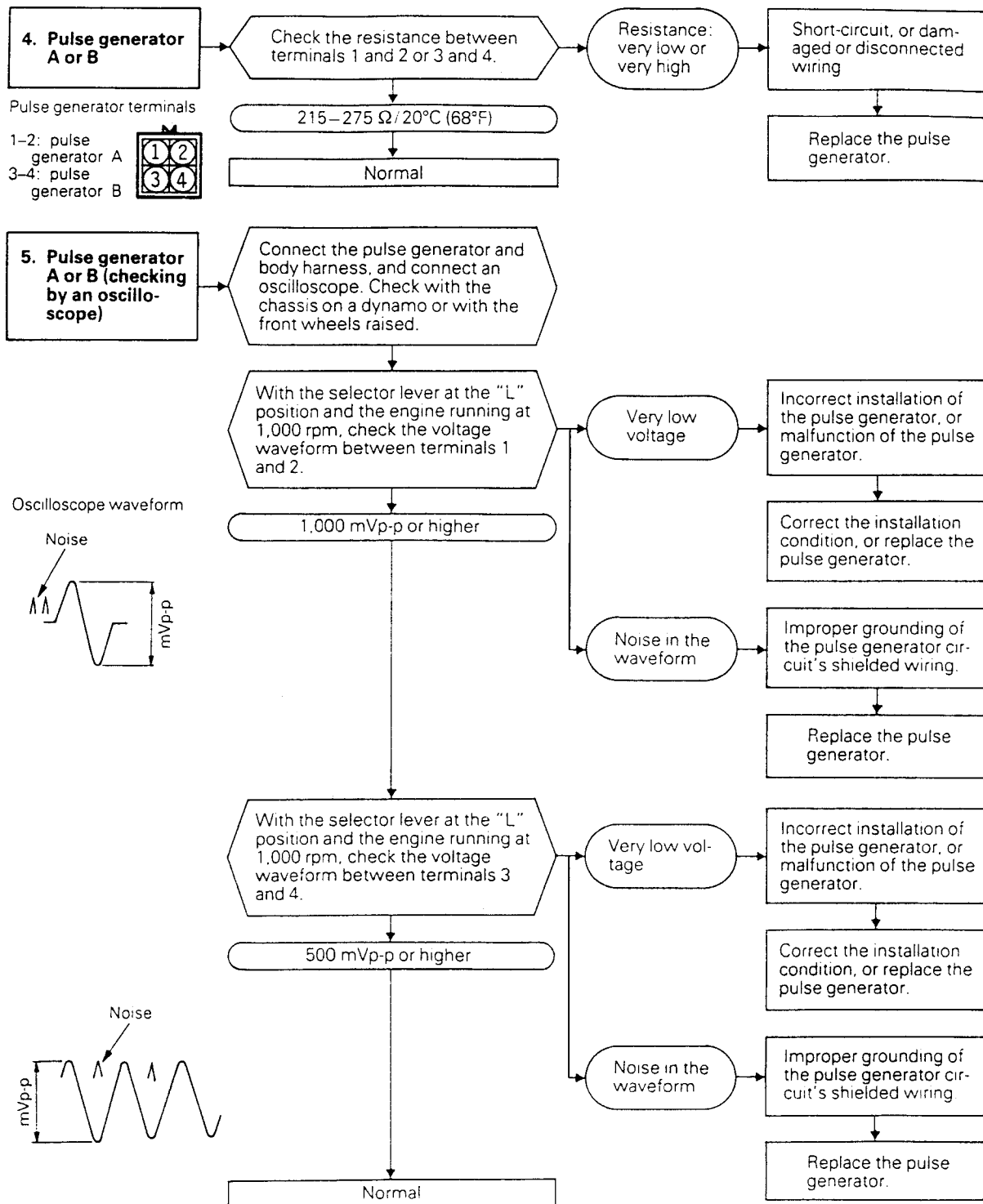
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Fig. 9: Electronic Component Testing (F4A20 Series - 2 of 7)
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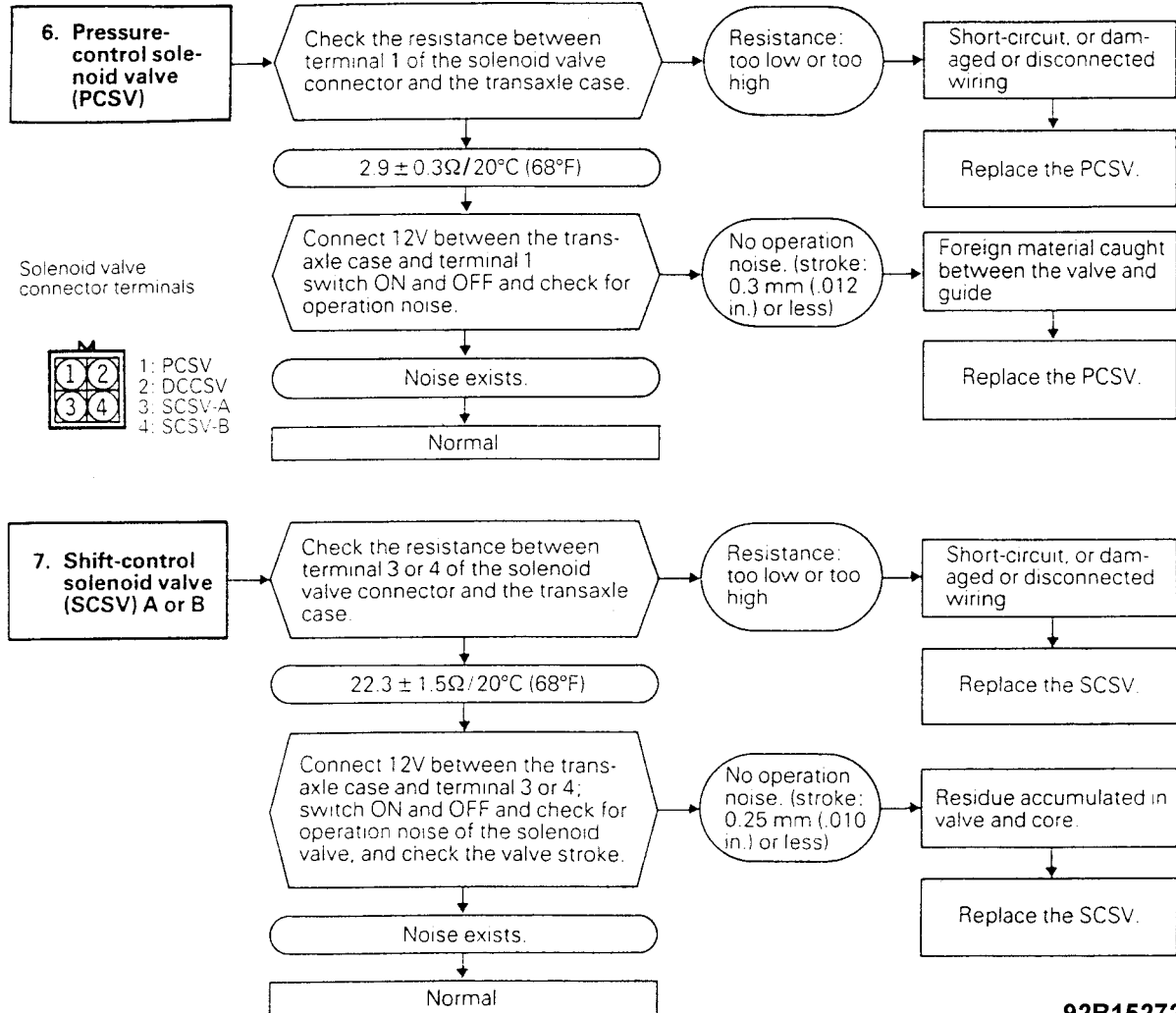
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Fig. 10: Electronic Component Testing (F4A20 Series - 3 of 7)
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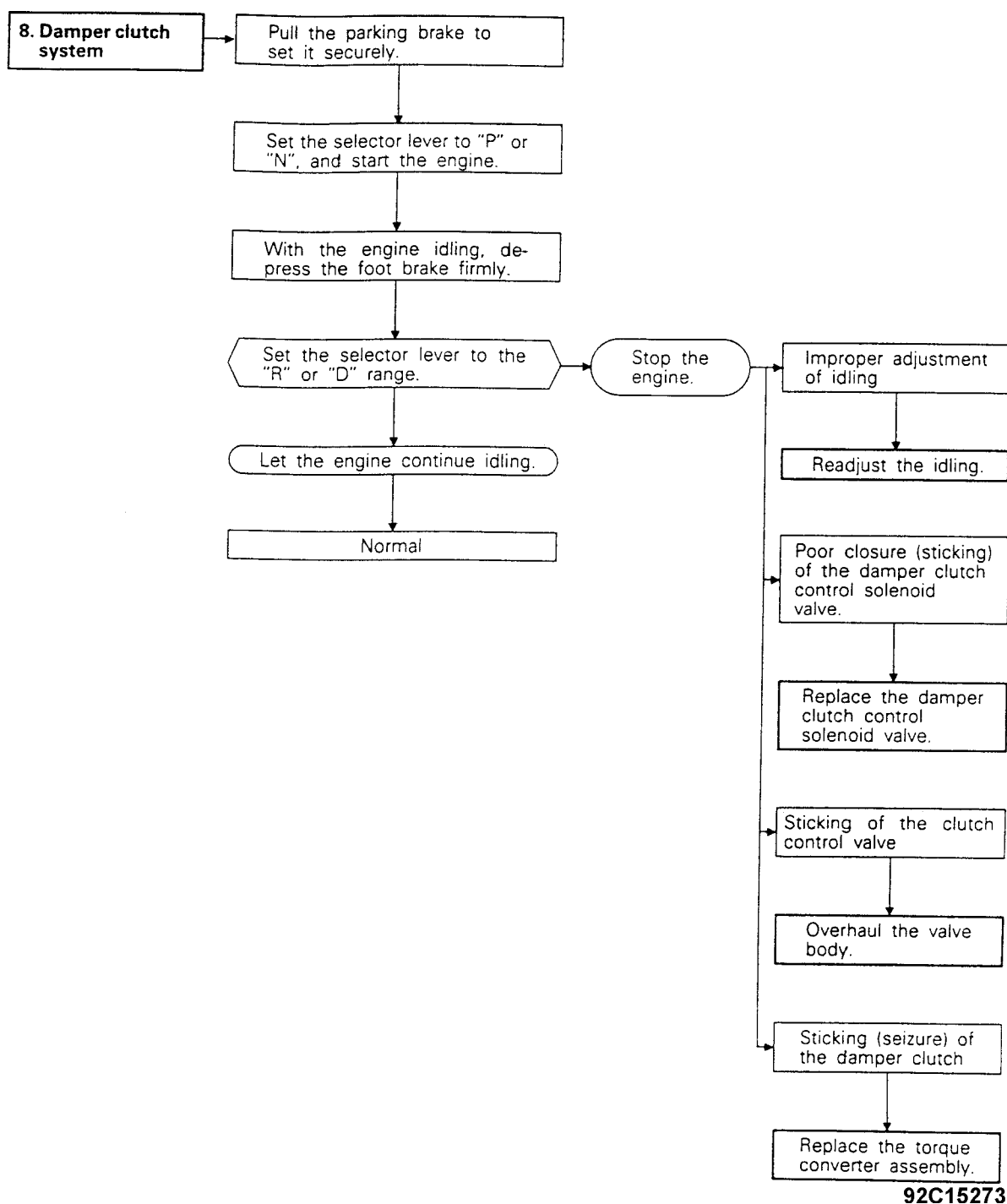
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Fig. 11: Electronic Component Testing (F4A20 Series - 4 of 7)
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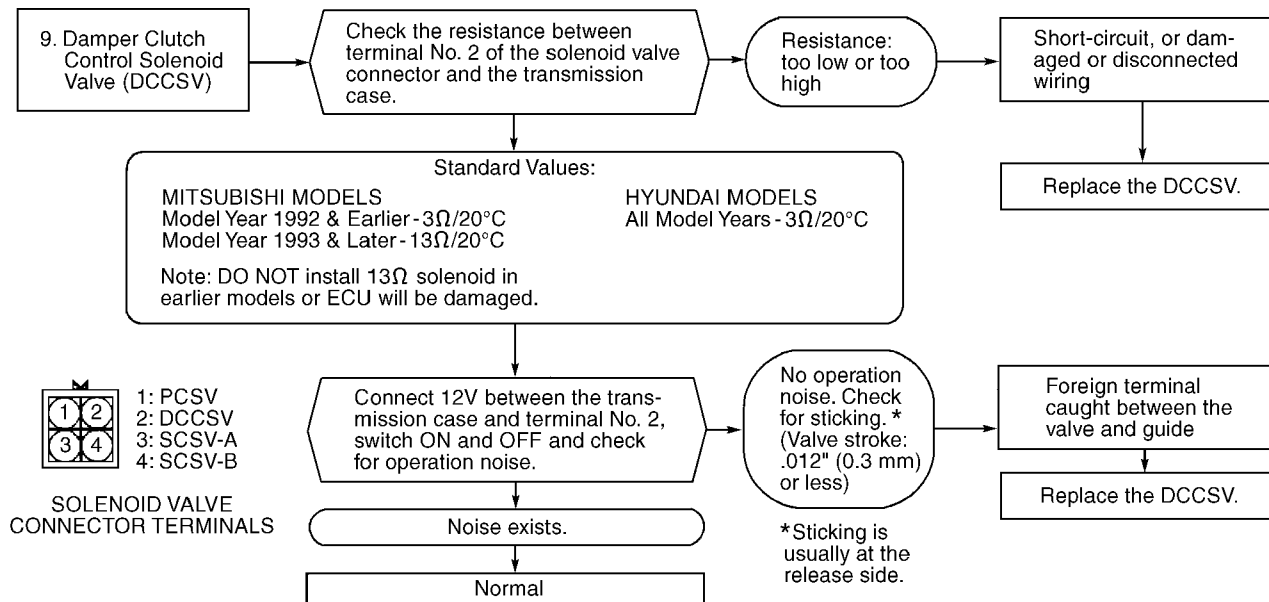
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Fig. 12: Electronic Component Testing (F4A20 Series - 5 of 7)
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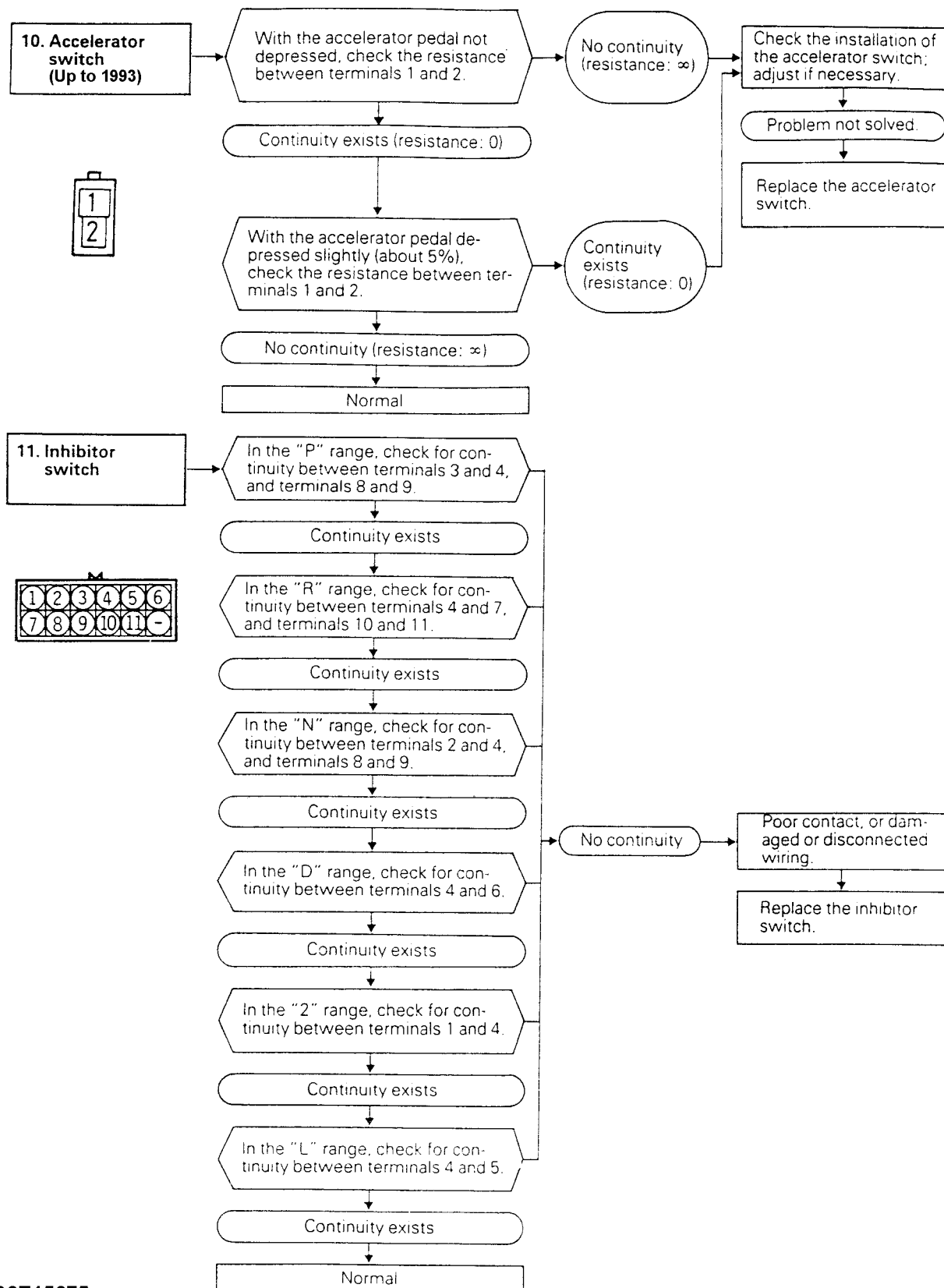
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Fig. 13: Electronic Component Testing (F4A20 Series - 6 of 7)
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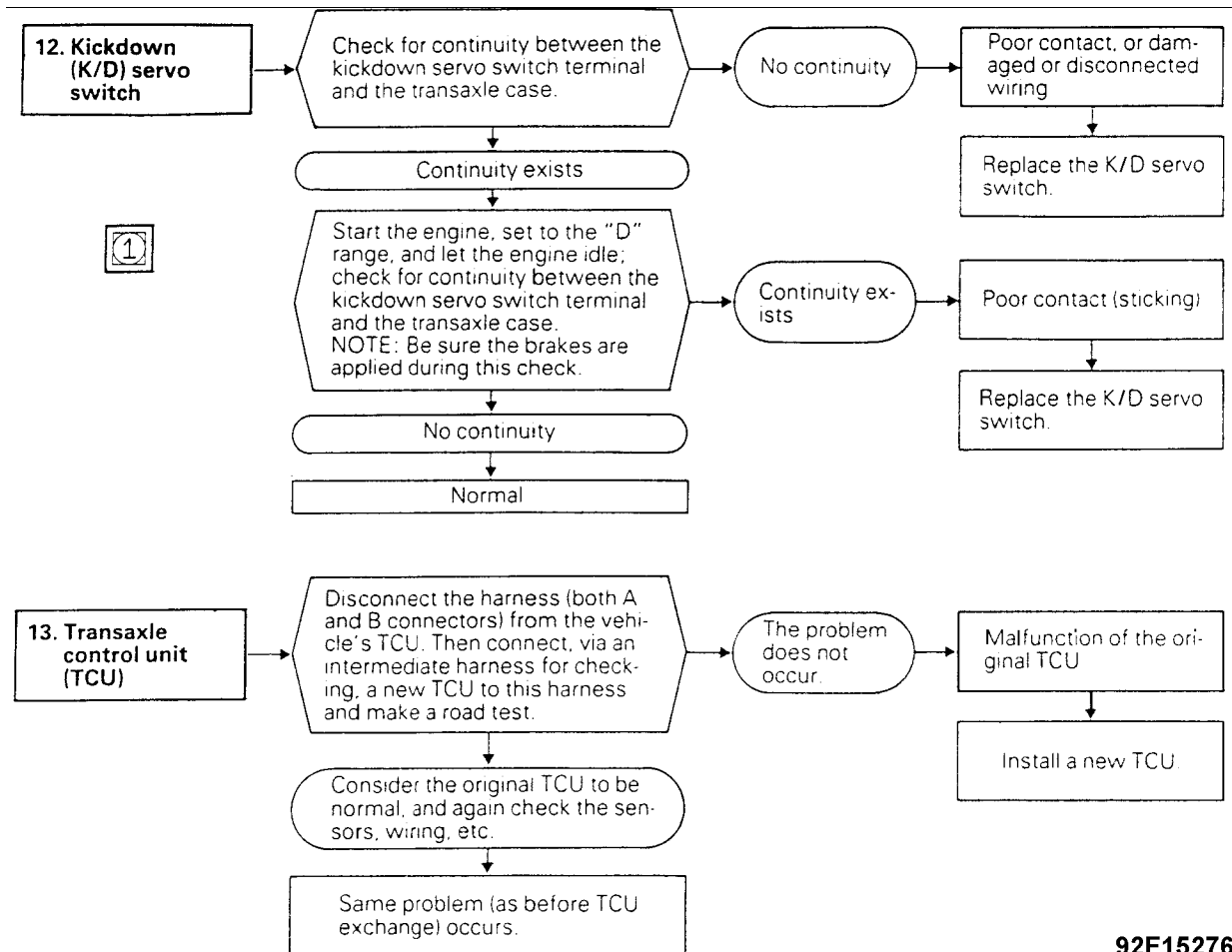
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Fig. 14: Electronic Component Testing (F4A20 Series - 7 of 7)
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WIRING DIAGRAMS

AUTO TRANS DIAGNOSIS - F4A21, F4A22 & F4A23

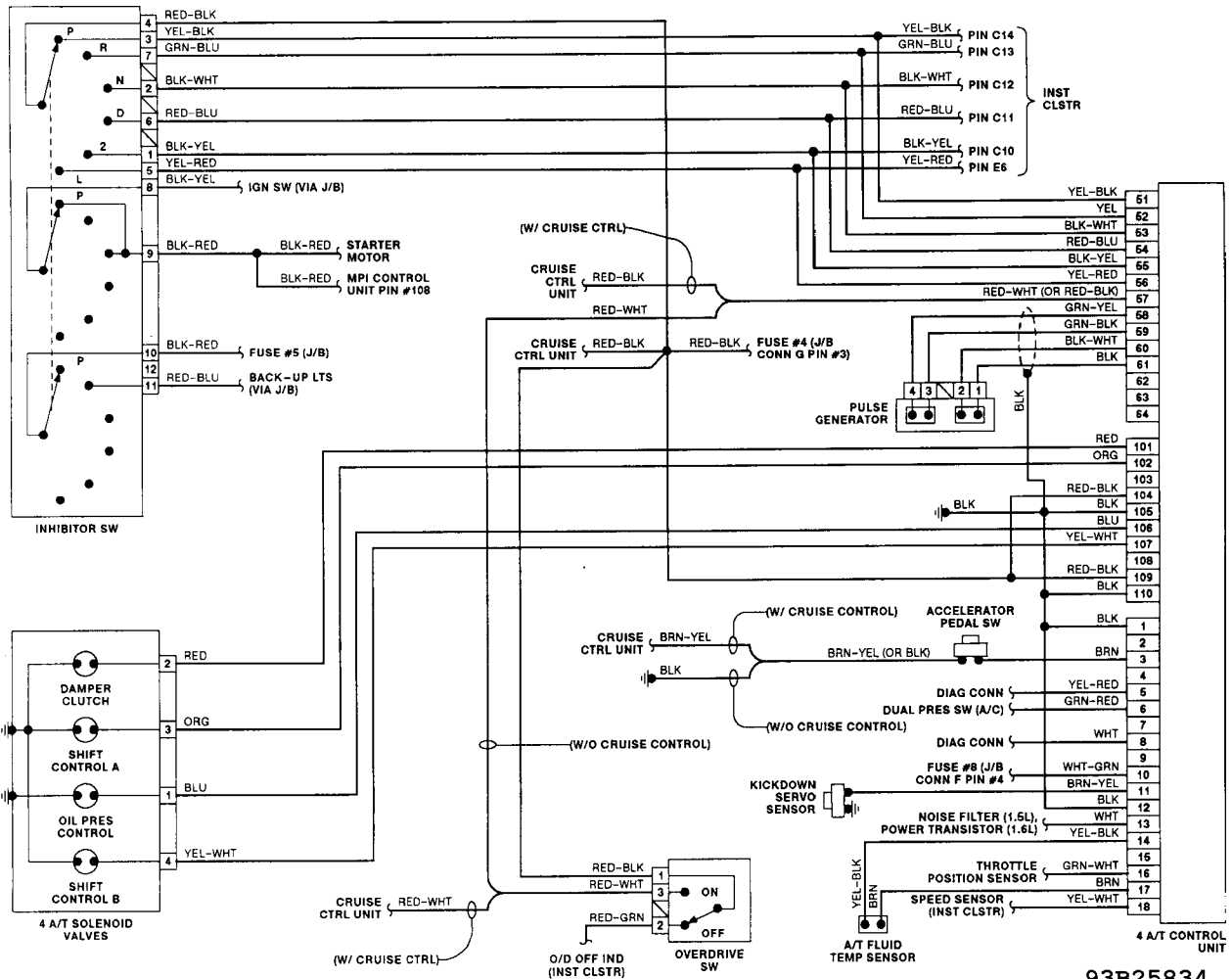
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Fig. 15: F4A21 Schematic (1991-92 Mirage Shown; Others Similar)

