

# TOYOTA

## SERVICE BULLETIN

TOYOTA MOTOR SALES, U.S.A., INC.

VOLUME

9

REFERENCE ENGINE \_\_\_\_\_  
NUMBER 020 \_\_\_\_\_  
DATE 05-27-88 \_\_\_\_\_  
MODEL YR '86, '87, '88 \_\_\_\_\_

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### POOR IDLE/HARD STARTING AFTER HOT DEAD SOAK

A field fix procedure is being provided for YR models that may exhibit the following condition:

- Rough idle and/or hard starting after the vehicle has reached normal operating temperature then is turned off and allowed to hot soak for 15 to 30 minutes before being re-started.

High ambient temperatures and/or poor quality fuel contribute to these conditions.

#### GENERAL INFORMATION ON FIELD FIX:

The following parts have been made available:

- 1) Regulator kit (P/N 04239-73010) to provide higher fuel pressure. Used on all 86 and 87 vans.
- 2) Valve kit (P/N 04239-73020) to provide fuel pressure up control. Used on 86, 87, and 88 vans without A/C.
- 3) Water temperature sensor (TSW) (P/N 89428-26020) to reduce its activation temperature. Used alone for 88 vans.

#### HOW IT WORKS

The main objective of this fix is to increase fuel pressure during the fuel pressure up period on hot restart, and expand the engine temperature operating range for the pressure up system.

This was accomplished by the following methods:

- 1) Increase available fuel pressure by use of a new fuel pressure regulator:

Old Spec

2.55 Kg/cm<sup>2</sup> (36 Psi)

New Spec

2.90 Kg/cm<sup>2</sup> (41 Psi)

- 2) Reduce the temperature where the TSW switch activates from 110°C to 60°C.
- 3) Provide a fuel pressure up system for vehicles without A/C. The Valve kit provides this by preventing manifold vacuum from acting on the fuel pressure regulator after a hot restart for a period of approximately two minutes.

NOTE: Parts application on '88 vans is different because they are equipped with the 2.90 Kg/cm<sup>2</sup> (4 Psi) fuel pressure regulator from the factory. Use the following application chart carefully.

## POOR IDLE/HARD STARTING AFTER HOT DEAD SOAK (CONT'D)

### PART NUMBER INFORMATION 1986 AND 1987 VAN:

KIT NUMBER	KIT COMPONENTS (REF)		Q'TY/ KIT	'86 & '87	
	PART NAME	PART #		AC	W/O AC
<b>Regulator Kit</b> <u>04239-73010</u>	Reg assy, fuel press	23280-73020	1	<b>R E Q U I R E D</b>	<b>R E Q U I R E D</b>
	Gasket	90430-08009	1		
	Gasket	90430-08011	1		
	Switch, Water temp	89428-26020	1		
	Packing	90980-09152	1		
<b>Valve Kit</b> <u>04239-73020</u>	Valve, VSV	Non-Service	1	<b>N O T U S E D</b>	<b>R E Q U I R E D</b>
	Bolt	91611-60814	1		
	Vacuum hose	95411-19995	1		
	Clamp	90464-00082	1		
	Clamp	90464-00210	1		
	Label, E/G Vacuum hose	17792-73380	1		

### 1988 VANS BUILT PRIOR TO, AND INCLUDING FOLLOWING:

<u>VIN</u>	<u>ENDING MONTH</u>
JT3YR2#W*5047499	APRIL '88
JT3YR3#W*0008379	APRIL '88
JT4YR2#V*5063719	APRIL '88
JT4YR3#V*0003256	APRIL '88

KIT NUMBER	KIT COMPONENTS (REF)		Q'TY/ KIT	88VAN	
	PART NAME	PART #		AC	W/O AC
<b>'88 VAN</b>	Switch Water temp	<u>89428-26020</u>	1	○	○
	Packing	<u>90980-09152</u>	1	○	-
	Valve Kit	<u>04239-73020</u>	1	-	○

○ Required      - Not Used

## POOR IDLE/HARD STARTING AFTER HOT DEAD SOAK (CONT'D)

### FIELD FIX METHOD

#### REPLACEMENT OF FUEL PRESSURE REGULATOR (1986 AND 1987 VAN)

**1. RAISE VEHICLE**

CAUTION: Be sure the vehicle is securely supported.

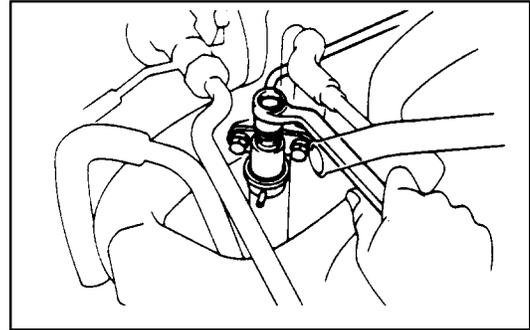
**2. DISCONNECT VACUUM SENSING HOSE FROM THE FUEL PRESSURE REGULATOR.**

a) Release fuel tank pressure by opening then closing the fuel filler cap.

**3. DISCONNECT FUEL RETURN HOSE**

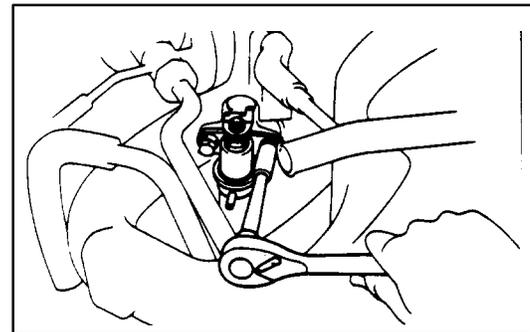
- a) Put a suitable container or shop towel under the pressure regulator.  
 b) Disconnect the fuel return pipe from the pressure regulator.

NOTE: Slowly loosen the fuel return pipe.



**4. REMOVE FUEL PRESSURE REGULATOR**

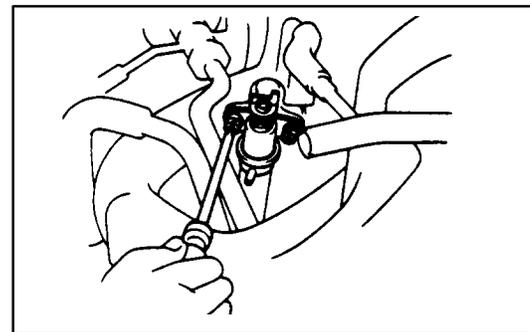
- a) Remove the two bolts and pull out the pressure regulator from the delivery pipe.



**5. INSTALL NEW FUEL PRESSURE REGULATOR**

- a) Install the pressure regulator with the two bolts. **Torque: 60 kg-cm (52 in.-lb)**

NOTE: Always use new gaskets.



**6. CONNECT FUEL RETURN PIPE**

**Torque: 200 kg-cm (14 ft-lb)**

**7. CONNECT VACUUM SENSING HOSE TO FUEL PRESSURE REGULATOR.**

## POOR IDLE/HARD STARTING AFTER HOT DEAD SOAK (CONT'D)

### REPLACEMENT OF FUEL PRESSURE REGULATOR (CONTINUED) (1986 AND 1987 VAN)

#### 8. LOWER VEHICLE

### REPLACEMENT/INSTALLATION OF WATER TEMPERATURE SWITCH (TSW) (1986, 1987, 1988 VAN)

#### 1. RAISE ENGINE ACCESS PANEL (DRIVERS SEAT)

#### 2. RELEASE COOLING SYSTEM PRESSURE AT RADIATOR CAP

CAUTION: High pressure, high temperature engine coolant may spill out during radiator cap removal.

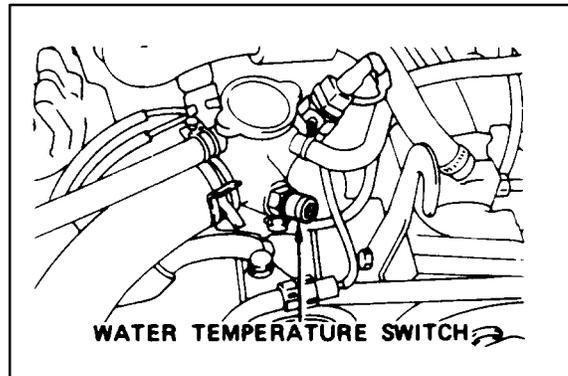
a) Reinstall radiator cap after releasing system pressure.

#### 3. REMOVE THE OLD WATER TEMPERATURE SWITCH (WITH AC)

a) Disconnect the wire harness connector from the water temperature switch located in the water outlet housing.

b) Loosen and remove the old water temperature switch then quickly install the new switch to prevent excess coolant loss.

c) Connect the wire harness connector to the switch.

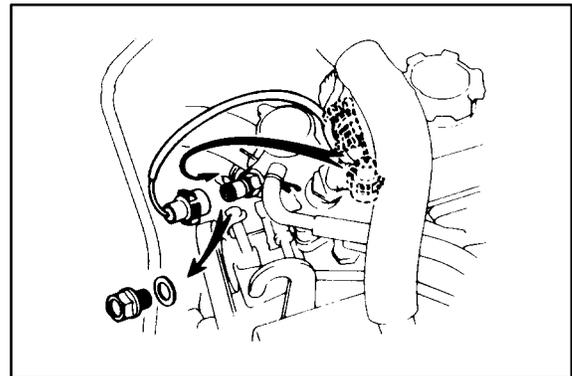


NOTE: The new temperature switch does have a different color code: Old = Black New = White

#### 4. REMOVE PLUG FROM WATER OUTLET HOUSING (WITHOUT AC)

a) Loosen and remove the plug and washer from the housing then quickly install the new switch and washer to prevent excess coolant loss.

b) Remove the tape from the wire harness near the radiator and connect the water temperature switch connector to the switch (Black connector with green wire).



## POOR IDLE/HARD STARTING AFTER HOT DEAD SOAK (CONT'D)

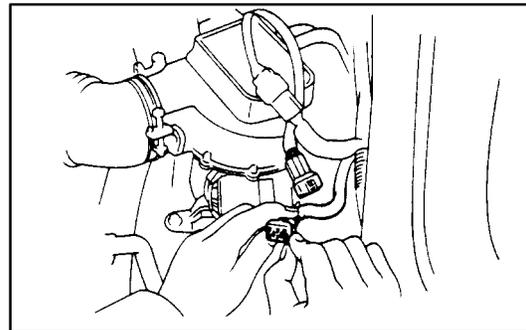
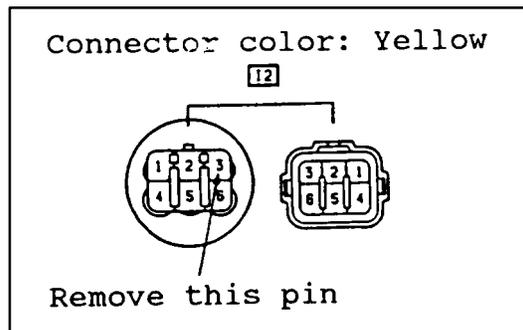
### A/C IDLE UP WIRING CHANGE (1986, 1987, & 1988 VAN WITH A/C)

#### CAUTION

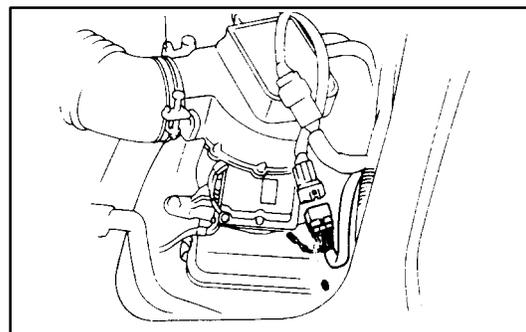
**THIS SECTION OF THE PROCEDURE INVOLVES A WIRE HARNESS MODIFICATION, CARE SHOULD BE USED TO PREVENT DAMAGE TO THE ELECTRICAL SYSTEM.**

1. **IF THE VEHICLE IS EQUIPPED WITH AND ELECTRONICALLY TUNED RADIO RECORD THE STATION SETTINGS.**
2. **DISCONNECT THE NEGATIVE TERMINAL OF THE BATTERY.**
3. **LOCATE CONNECTOR I2 (YELLOW) NEAR THE AIR FLOW METER.**

- a) Using an appropriate tool remove pin No. 3 (Blue-Black).



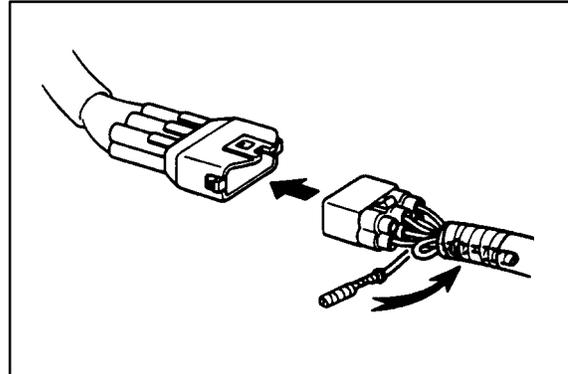
- b) Install the terminal packing supplied in the connector to prevent water entry.



## POOR IDLE/HARD STARTING AFTER HOT DEAD SOAK (CONT'D)

### A/C IDLE UP WIRING CHANGE (CONTINUED) (1986, 1987, & 1988 VAN WITH A/C)

- c) Apply electrical tape to the removed wire terminal. Place the wire terminal into the harness protector and secure it with electrical tape.
- d) Reconnect the I2 connector.



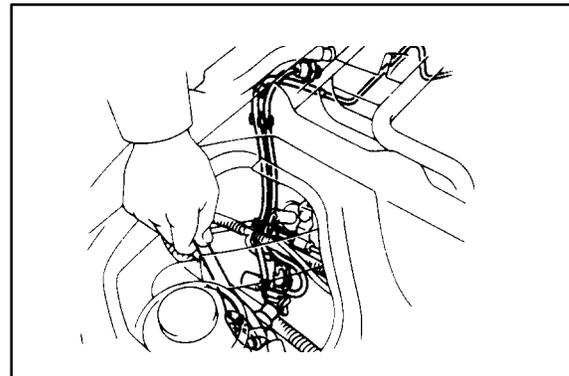
- 4. **CONNECT THE NEGATIVE CABLE TO THE BATTERY.**
- 5. **RESET THE RADIO STATION ON VEHICLES EQUIPPED WITH ELECTRONICALLY TUNED RADIOS.**
- 6. **RESET THE CLOCK.**

### INSTALLATION OF VSV FOR PRESSURE UP SYSTEM (P/N 04239-73020) (‘86, ‘87, & ‘88 VAN WITHOUT A/C)

- 1. **REMOVE NECESSARY PANEL TO GAIN ACCESS TO THE RIGHT REAR OF THE ENGINE BLOCK.**
- 2. **MOUNT THE VSV AT THE REAR OF THE ENGINE ON THE RIGHT SIDE.**

NOTE: If further information is needed on mounting location and vacuum hose routing refer to A/C installation manual.

- a) Use supplied bolt & washer to mount the VSV.
- b) Extract connector V from the wire harness and connect to the VSV (brown two wire connector with a black wire and a light blue-yellow wire).

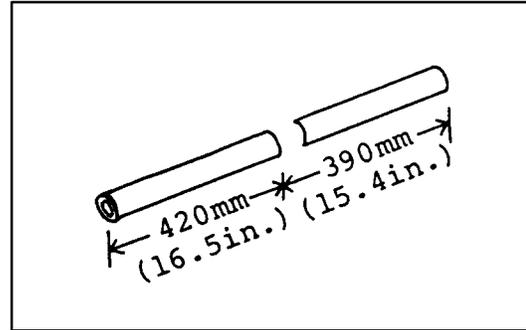


## POOR IDLE/HARD STARTING AFTER HOT DEAD SOAK (CONT'D)

### INSTALLATION OF VSV FOR PRESSURE UP SYSTEM (P/N 04239-73020) (CONT'D) ( '86, '87, & '88 VAN WITHOUT A/C)

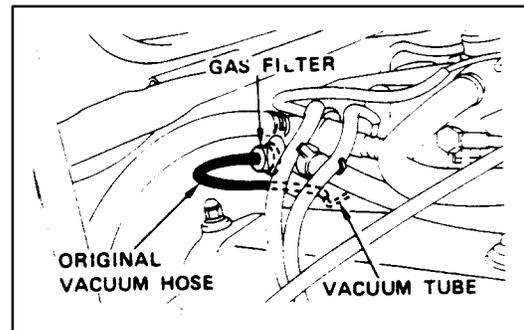
#### 3. CUT THE SUPPLIED VACUUM LINE INTO TWO SECTIONS.

- a) Cut a section 420 mm (16.5 in) in length and a section 390 mm (15.4 in) in length.

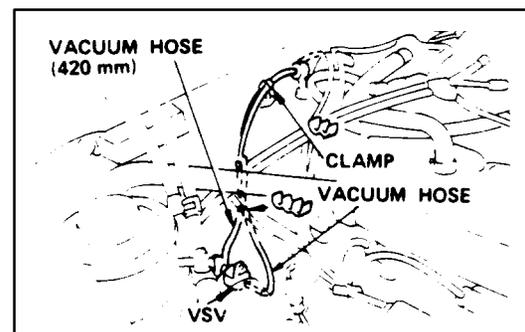


#### 4. CONNECT THE NEW VSV INTO THE VACUUM SUPPLY CIRCUIT FOR THE FUEL PRESSURE REGULATOR.

- a) Remove and discard the original vacuum hose between the gas filter and the vacuum tube leading to the fuel pressure regulator.



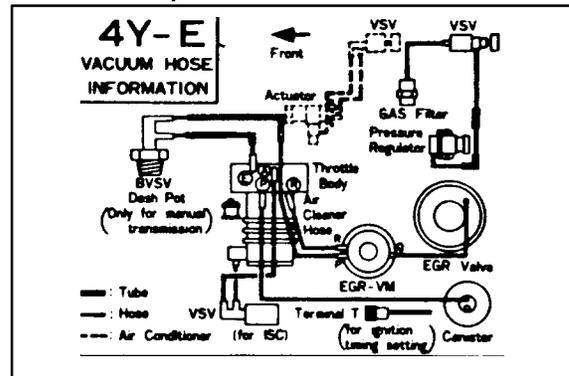
- b) Connect the 420 mm length of vacuum hose between the mid port on the VSV and the vacuum tube.
- c) Connect the 390 mm length of vacuum hose between the end port on the VSV and the gas filter.
- d) Clamp the vacuum hoses together and to the fuel pipe running along the engine block.



## POOR IDLE/HARD STARTING AFTER HOT DEAD SOAK (CONT'D)

### INSTALLATION OF VSV FOR PRESSURE UP SYSTEM (P/N 04239-73020) (CONT'D) (‘86, ‘87, & ‘88 VAN WITHOUT A/C)

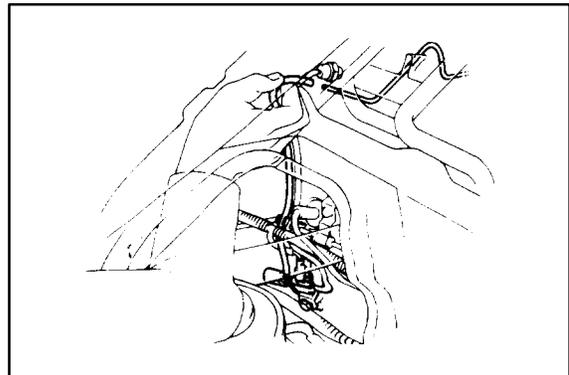
#### 5. INSTALL A NEW VACUUM ROUTING LABEL.



#### FINAL CHECKS (‘86, ‘87, & ‘88 VAN)

1. **START ENGINE AND CHECK FOR COOLANT AND FUEL LEAKS.**
2. **CHECK THAT COOLANT LEVEL IS FULL.**
3. **VERIFY FUEL PRESSURE UP SYSTEM OPERATION.**

- a) After restarting while hot disconnect the vacuum line from the vacuum tube leading to the fuel pressure regulator and check for vacuum. None should be present.
- b) After approximately 2 minutes of engine operation check for vacuum again. Vacuum should be present after approximately 2 minutes of engine operation.
- c) Reconnect vacuum hose.



4. **VERIFY THAT ENGINE IDLE IS WITHIN SPECIFICATION AFTER IT HAS REACHED NORMAL OPERATING TEMPERATURE.**

**NOTE:** If the A/C idle up appears to operate all the time after the engine has reached normal operating temperature check that the correct wire was disconnected during the wire harness modification section of the field fix.