



# Technical Service Information

## BMW - A4S (THM 4L30-E) DIAGNOSTIC TROUBLE CODE 40 (Pressure Control Solenoid Circuit)

*Adapted from BMW's Service Bulletin 24 06 94*

**COMPLAINT:** BMW's A4S transmission is otherwise known as the 4L30-E. This transmission is found in BMW's 3 and 5 series models. In 3 series vehicles the transmission is referred to as the A4S/270R and the 5 series as the A4S/310R indicating torque capacity. Some model vehicles have been producing intermittent pressure control solenoid code 40. If the vehicle is equipped with an AGS version controller E34 the "Trans Program" may be displayed in the matrix (Driver Information Center). If it is equipped with the E36 version controller the transmission fault indicator may be illuminated. Cycling of the ignition switch many times restores the operation back to normal condition.

**CAUSE:** *Possible Causes:*

1. A bad ground or power supply to the TCM.
2. A faulty electrical circuit for the pressure control solenoid to the TCM.
3. The parameters engineered into the PROM for the TCM are too sensitive.

**CORRECTION: Step 1. Locate the TCM:**

- a. 1992 to 1995 318i & 325i vehicles, the unit can be found in the passenger side engine compartment behind a cover plate as seen in Figure 1.
- b. 1991 to 1993 525i vehicles, the unit is behind the passenger side kick panel.
- c. 1994 to 1995 525i vehicles, it is the middle unit located in an electrical box in the engine compartment front of passenger side firewall.

**Ground Check:**

Once the TCM is located, unplug the 55 pin connector and identify pin locations using Figure 2. With the ignition OFF and a DVOM set to ohms, check the ground circuit for continuity from terminal 19 in the vehicle harness connector to ground. If continuity is not observed, provide a permanent ground for wire 19. To ensure that a good ground exists, plug the harness back into the TCM. Start up the vehicle and turn on as many electrical loads as possible. Switching your DVOM to DC volts, place the negative lead to ground and probe wire 19 with the positive lead. Less than 0.3 volts should be observed. Repair ground wire as necessary. Once the ground wire check is acceptable and code 40 persists, perform the following excessive voltage check procedure.

**Excessive Voltage Check:**

If an alternator is malfunctioning such as intermittent spikes, a code 40 could be produced. With most vehicles, a quick method in checking for this possibility would be to erase the code and run the vehicle with the alternator disconnected. If a chronic solenoid code problem is resolved with a disconnected alternator, the problem area has been located. Another alternative would be to use a DVOM equipped with a "MIN/MAX" option. With the meter attached to the charging system the min/max setting can present any spikes that may occur.

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**CORRECTION: (Cont'd From Page 1)*****Excessive Voltage Check: (Cont'd)***

Another quick check that should be employed is to see the amount of AC voltage riding on top of the DC signal produced by the alternator. In other words, check the charging system for excessive "ripple". Simply observe the amount of AC voltage that is in the charging system with your DVOM set to AC volts. Most BMW vehicles utilize a Bosch alternator and depending on factors such as model type and the amount of electrical load being placed on the system, an approximate acceptable level of AC voltage would be between 0.3 to 0.6 volts. In a perfect world 0 volts should be observed. Since this is not the case, the most you should allow would be approximately 0.7 to 0.8 AC volts. Anything more is a definite concern.

**Caution:** With all BMW's, the best way to erase codes is with a scanner. The problem here is that most generic scan tools are not capable of attaching to and erasing codes from BMW computer systems. Disconnecting the battery to erase the codes may seem to be an option, but be prepared to encounter new problems afterwards such as a loss of radio or memorized stations and/or, a loss of memorized seat and mirror positions. But most importantly, you could lose memorized engine control parameters producing a poor running vehicle. ***Disconnecting the battery is not recommended.*** Obviously the best choice would be to use an appropriate scanner.

***TCM Voltage Supply:***

Once the alternator passes examination, switch the meter to DC volts and check TCM terminal 37 for system voltage. If voltage is not observed, a wiring problem via the ignition switch, and through a fuse will need to be corrected. Once corrected, clear code and drive the vehicle. If code 40 returns, continue on to step two.

***Step 2. Checking solenoid resistance:***

Turn ignition to the OFF position. Using a DVOM set to ohms, check the pressure control solenoid circuit between terminals 40 and 41 at the TCM. Solenoid resistance should be 2 to 6 ohms. If solenoid resistance is out of range, unplug the transmission case connector (See Figure 3), and recheck the pressure control solenoid resistance between terminals 1 and 3 (See Figure 4). If the resistance is still out of range, an inspection of the internal harness and solenoid will need to be performed and repaired. If the resistance is within range from the case connector but does not check correctly at the TCM, wires 40 and 41 at the TCM to the transmission will need to be individually inspected and repaired. If code 40 persists after all previous checks and necessary repairs have been made, continue on to step 3.

***Step 3. Replace the EPROM:***

It is now time to replace the EPROM inside the TCM. These new EPROM's are very inexpensive and ***they have been re-calibrated.*** The EPROM inside the TCM is year, make and model sensitive. Refer the chart in Figure 5 for the proper EPROM Replacement Part Number.

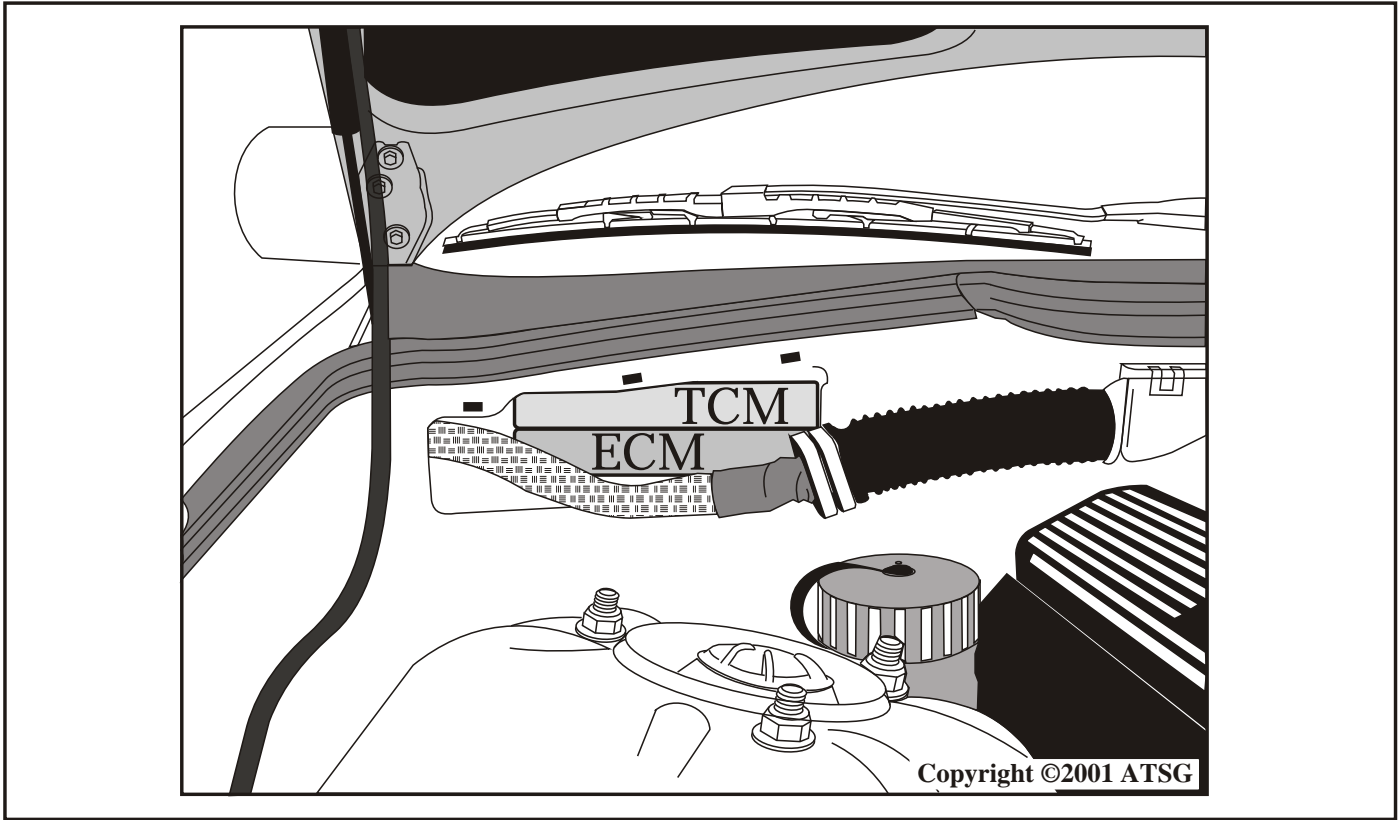


Figure 1

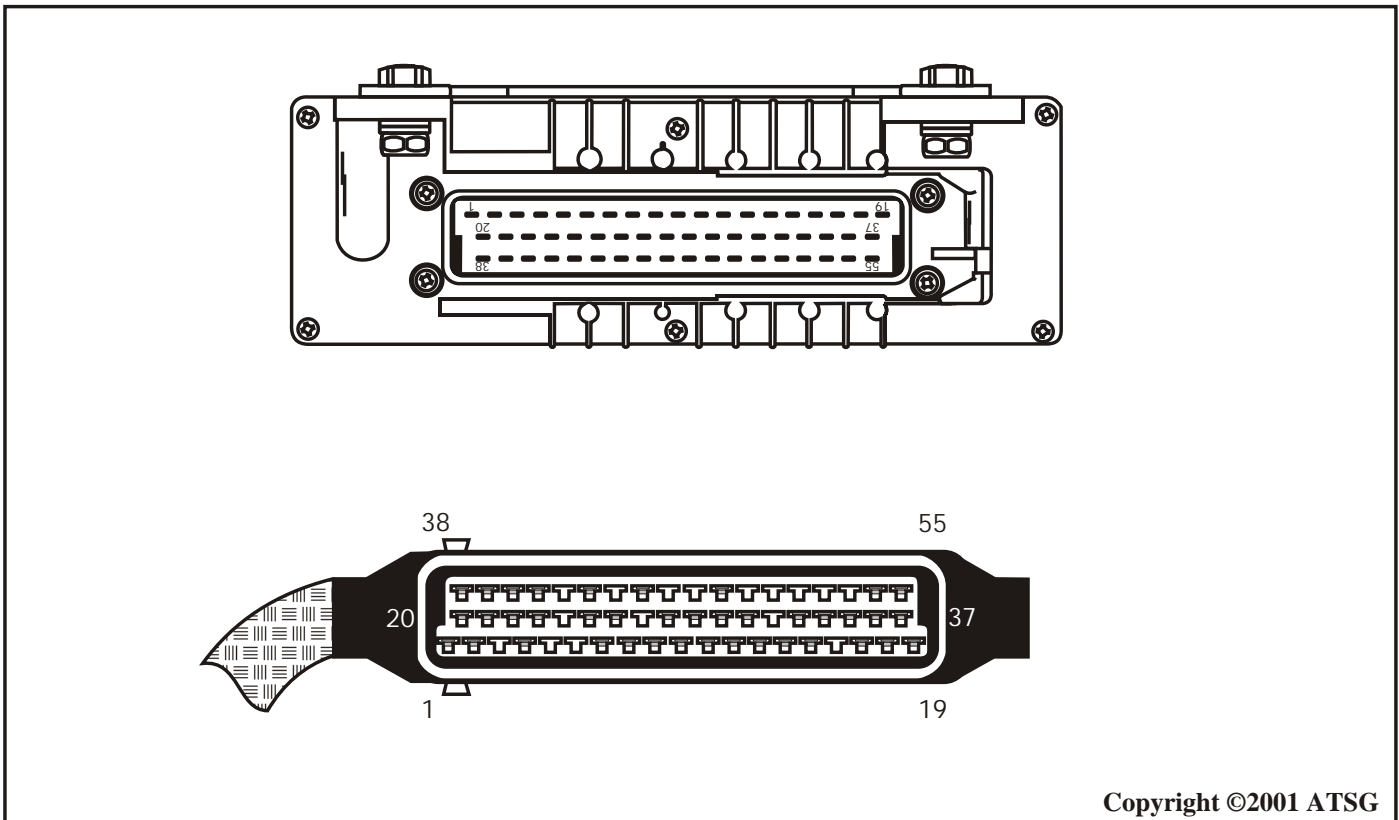


Figure 2

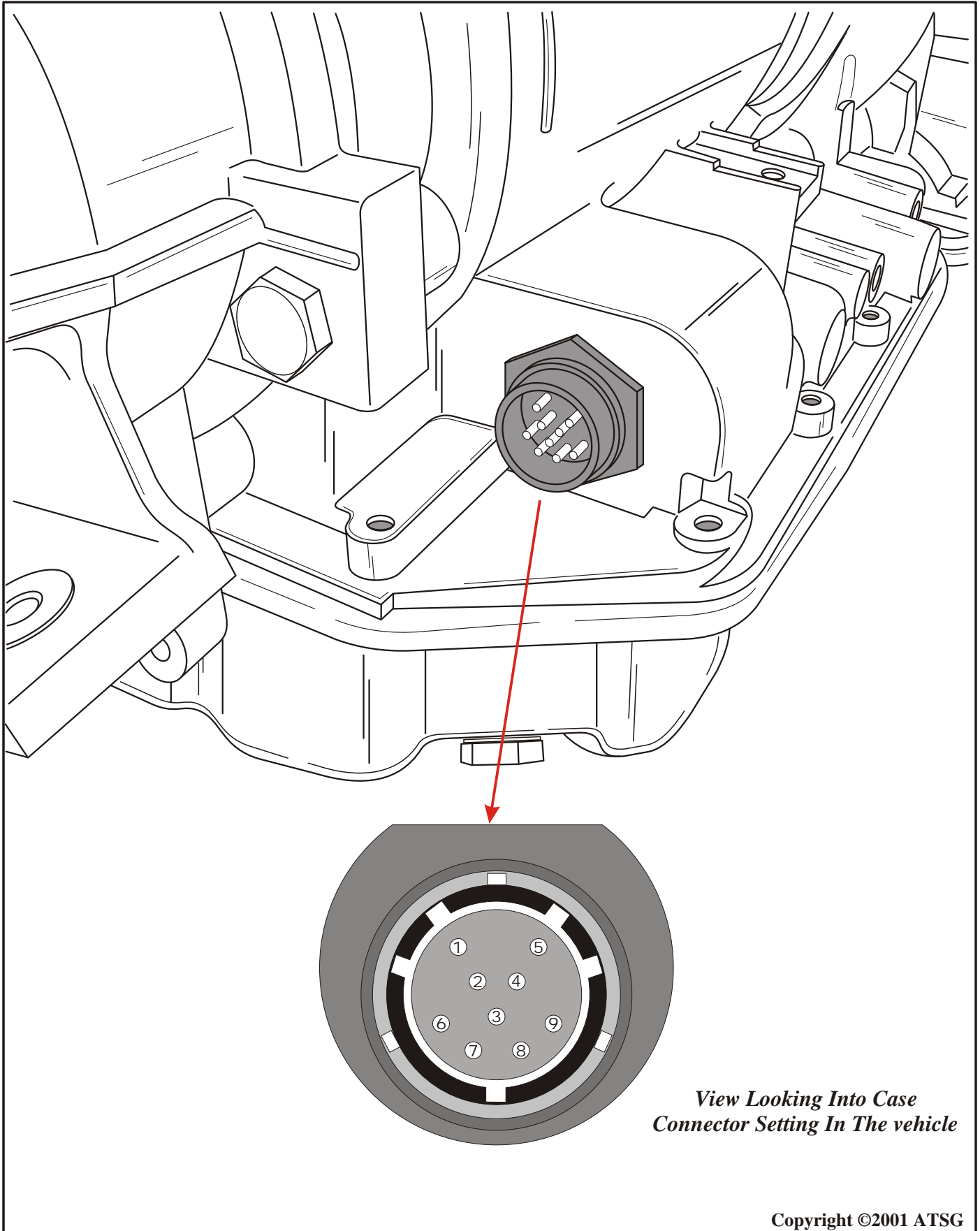
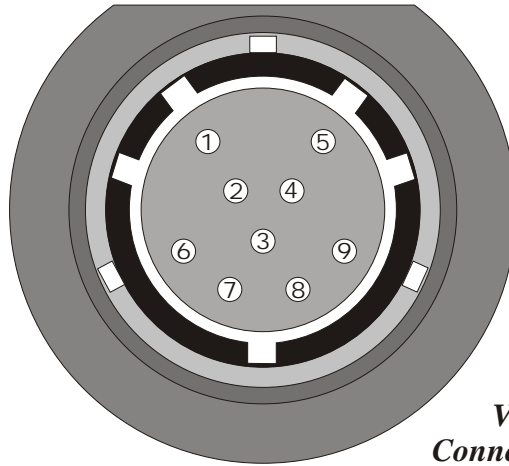
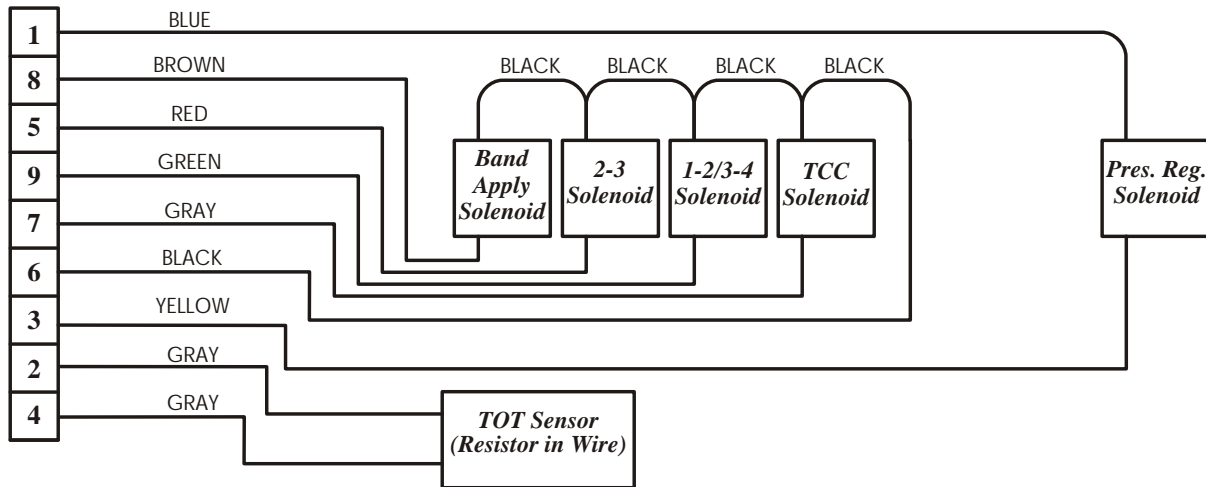


Figure 3

## INTERNAL WIRE SCHEMATIC



*View Looking Into Case Connector Setting In The vehicle*



**NOTE:** Some internal wire colors may vary.

Solenoid	Case Connector	Resistance In Ohms
	Pin Numbers - +	
Band Apply	6 and 8	9.5 - 10.5
2-3 Sol.	6 and 5	17.5 - 18.5
1-2/3-4 Sol.	6 and 9	17.5 - 18.5
TCC	6 and 7	17.5 - 18.5
Press. Sol.	1 and 3	3.7 - 4.7
TOT	2 and 4	20K @ 70°F

Figure 4



**SERVICE INFORMATION:**

<i>Model</i>	<i>Production Range</i>	<i>EPPROM Part Number</i>
<b>318i (E36)</b>	<b>9/92 - 4/93</b>	<b>01 00 1 469 120</b>
	<b>5/93 - 12/93</b>	<b>01 00 1 469 121</b>
	<b>1/94 - 12/95</b>	<b>01 00 1 469 811</b>
<b>325i (E36)</b>	<b>9/91 - 9/92</b>	<b>01 00 1 469 123</b>
	<b>10/92 - 9/93</b>	<b>01 00 1 469 124</b>
	<b>10/93 - 12/95</b>	<b>01 00 1 469 125</b>
<b>525i (E34)</b>	<b>9/91</b>	<b>01 00 1 469 126</b>
	<b>10/91 - 9/92</b>	<b>01 00 1 469 127</b>
	<b>10/92 - 9/93</b>	<b>01 00 1 469 128</b>
	<b>10/93</b>	<b>01 00 1 469 129</b>

**Pressure Control Solenoid (All Models) ..... 24 35 1 421 602**

Figure 5