

MINI GA 6F21 WA (TF60SN)

OBDII HEX AND DEZ CODES

COMPLAINT: Difficulties arise when diagnosing solenoid electrical codes with BMW Mini Coopers equipped with Generation 1 TF60-SN 6 speed FWD Asian transmission.

CAUSE: This is attributed to vague electrical information regarding connector terminal identification and solenoid designations, location and code assignment.

CORRECTION: Use Figure 1 for solenoid names and locations for Audi, VW and BMW Mini applications. One of the difficulties that arises is that BMW Mini refers to these solenoids differently than Audi and VW and that two different names per solenoid have been given. Example: the N92 number 5 solenoid is called by BMW Mini an SLC1 or Pressure Control Solenoid (PCS) C. Use figure 2 for solenoid circuit checks from the external transmission case connectors. Use figure 3 to make complete solenoid circuit checks from the TCM located under the left side of dash. Transmission related OBD2, Hexadecimal and Decimal codes are provided in figures 4, 5 and 6.

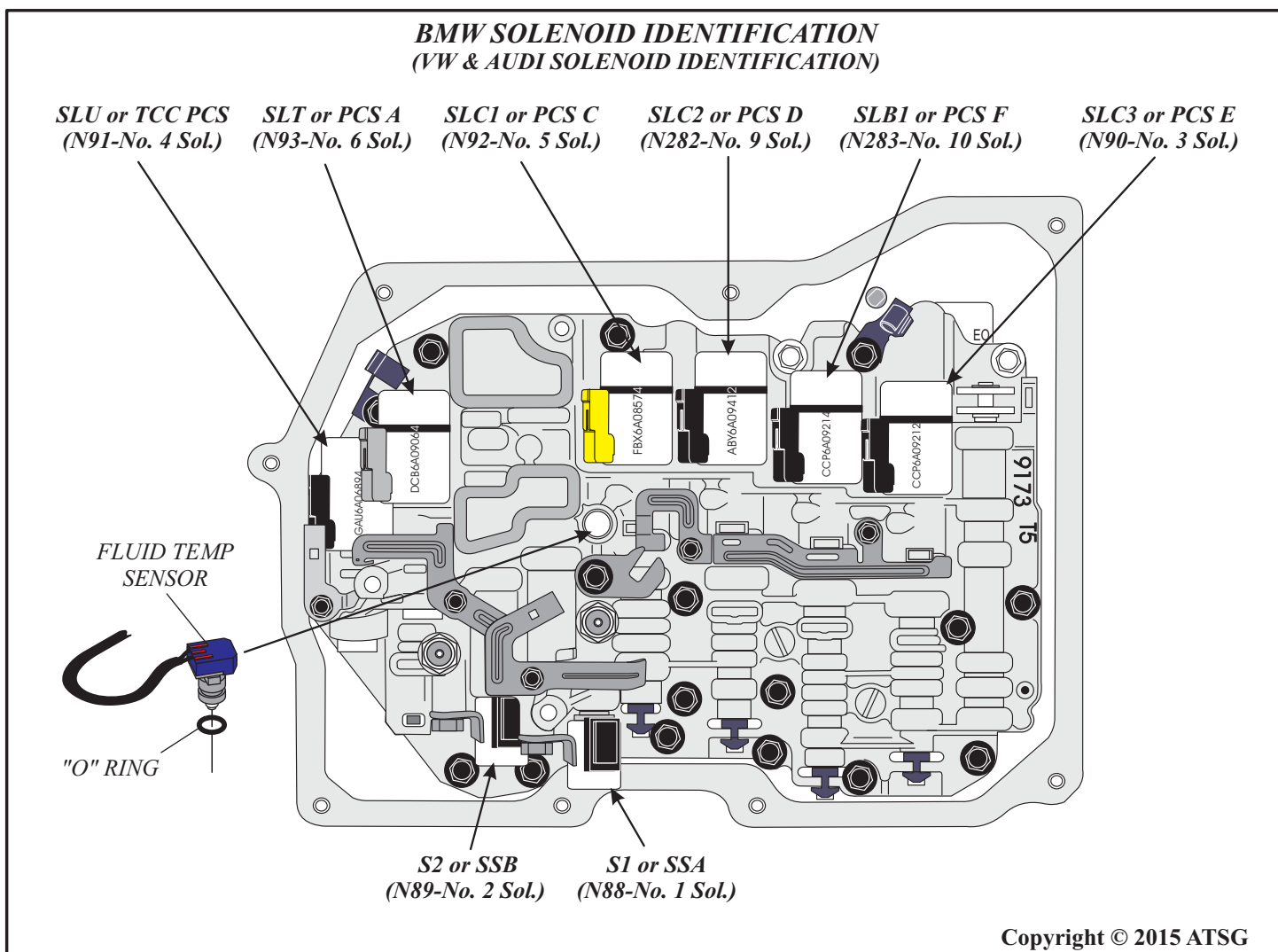
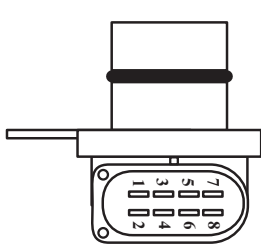


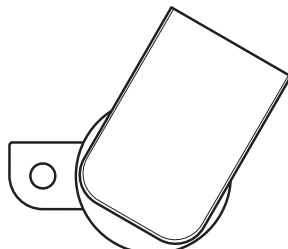
Figure 1

MINI GA 6F21 WA (TF60SN)

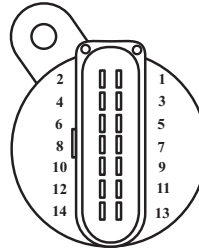
OBDII HEX AND DEZ CODES



X11631 8-Way Connector



X11630 14-Way Connector



RESISTANCE CHART THROUGH 14-WAY X11630 CASE CONNECTOR

<i>Solenoid Names</i>	<i>Positive Meter Lead Terminal No.</i>	<i>Negative Meter Lead Terminal No.</i>	<i>Ohms Resistance</i>
S1 or SSA	1	Case Ground	10.0 - 16.0
S2 or SSB	2	Case Ground	10.0 - 16.0
SLC3 or PCS E	7	8	4.0 - 8.0
SLU or TCC PCS	11	12	4.0 - 8.0
SLC1 or PCS C	3	4	4.0 - 8.0
SLT or PCS A	13	14	4.0 - 8.0
SLC2 or PCS D	5	6	4.0 - 8.0
SLB1 or PCS F	9	10	4.0 - 8.0

*When comparing resistance readings of On/Off solenoids, the resistance should be within .5 Ohms of one another.
When comparing resistance readings of PWM solenoids, the resistance should be within .5 Ohms of one another.*

RESISTANCE CHART THROUGH 8-WAY X11631 CASE CONNECTOR

<i>Sensor ID</i>	<i>Positive Lead Term. No.</i>	<i>Negative Lead Term. No.</i>	<i>Temperature F° (C°)</i>	<i>Ohms Resistance</i>
TFT (OT)	1	2	-22°F (-30°C)	37K - 51K Ohms
			50°F (10°C)	5K - 8K Ohms
			77°F (25°C)	3K - 5K Ohms
			230°F (110°C)	230 - 265 Ohms
			293°F (145°C)	100 - 120 Ohms
ISS (NIN)	3	4	77°F (25°C)	5.0M Ohms*
OSS (NOUT)	5	6	77°F (25°C)	5.0M Ohms*

** The ISS and OSS are Hall Effect Sensors and should be checked using a scope under operating conditions. The resistance values provided in the chart are from new sensors. Resistance checks on these type of sensors would, at best, inform you of either open or grounded circuits within the sensor itself.*

2010 Mini Cooper S 1.6LT

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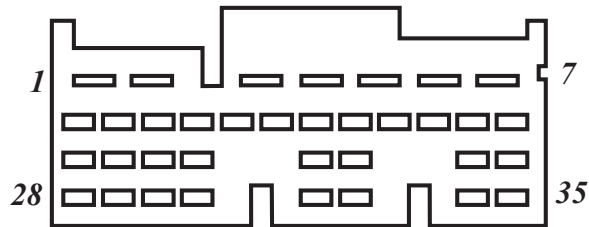
Figure 2

MINI GA 6F21 WA (TF60SN)

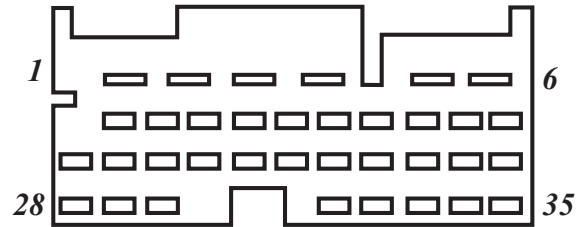
OBDII HEX AND DEZ CODES

2005 Mini Cooper S L4-1.6L

TCM A7000a
35 AND 35 PIN CONNECTORS



X11633
(Harness Face View)



X11634
(Harness Face View)

RESISTANCE CHART THROUGH TCM CONNECTOR X11633 (*X11634)

<i>Solenoid Number</i>	<i>Positive Meter Lead Terminal No. (Wire Color)</i>	<i>Negative Meter Lead Terminal No. (Wire Color)</i>	<i>Ohms Resistance</i>
S1 or SSA	4 (VI/BL)	3 (BR)	10 - 16
S2 or SSB	5 (VI/GN)	3 (BR)	10 - 16
SLU or TCC PCS	12 (BR/WH)	15 (GR/WH)	4.0-8.0
SLT or PCS A	13 (BL/VI)	16 (GR/BL)	4.0-8.0
SLC1 or PCS C	11 (YL/VI)	17 (BL/WH)	4.0-8.0
SLC2 or PCS D	10 (YL/GN)	19 (VI)	4.0-8.0
SLC3 or PCS E	9 (YL/GR)	19 (VI/GN) (*X11634)	4.0-8.0
SLB1 or PCS F	8 (GN)	13 (YL/BK)-(YL/GN) (*X11634)	4.0-8.0

RESISTANCE CHART THROUGH TCM CONNECTOR X11634

TFT (OT)	1 (BL/BR)	7 (BL/BK)	See Figure 2
ISS (NIN)	6 (GN)	12 (BK)	5.0M
OSS (NOUT)	24 (BK/BR)	17 (WH)	5.0M

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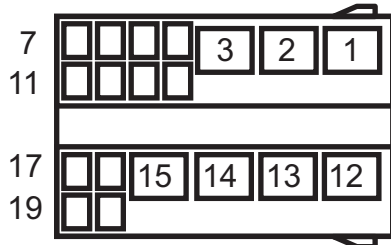
Figure 3

MINI GA 6F21 WA (TF60SN)

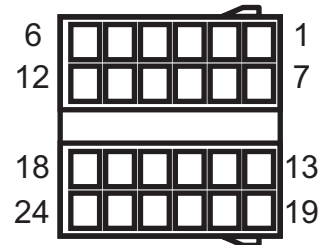
OBDII HEX AND DEZ CODES

2008 Mini Cooper L4-1.6L

TCM A7000a
19 AND 24 PIN CONNECTORS



X11633
(Harness Face View)



X11634
(Harness Face View)

RESISTANCE CHART THROUGH TCM CONNECTOR X11633 (*X11634)

<i>Solenoid Number</i>	<i>Positive Meter Lead Terminal No. (Wire Color)</i>	<i>Negative Meter Lead Terminal No. (Wire Color)</i>	<i>Ohms Resistance</i>
S1 or SSA	4 (VI/BL)	3 (BR)	10 - 16
S2 or SSB	5 (VI/GN)	3 (BR)	10 - 16
SLU or TCC PCS	12 (BR/WS)	15 (GR/WS)	4.0-8.0
SLT or PCS A	13 (BL/VI)	16 (GR/BL)	4.0-8.0
SLC1 or PCS C	11 (GE/VI)	17 (BL/WS)	4.0-8.0
SLC2 or PCS D	10 (GE/GN)	19 (VI)	4.0-8.0
SLC3 or PCS E	9 (GE/GR)	19 (VI/GR) (*X11634)	4.0-8.0
SLB1 or PCS F	8 (GN)	13 (GE/GN) (*X11634)	4.0-8.0

RESISTANCE CHART THROUGH TCM CONNECTOR X11634

TFT (OT)	1 (BL/BR)	7 (BL/SW)	See Figure 2
ISS (NIN)	6 (GN)	12 (SW)	5.0M
OSS (NOUT)	24 (SW/BR)	17 (WS)	5.0M

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Figure 4



Technical Service Information

MINI GA 6F21 WA (TF60SN)

OBDII HEX AND DEZ CODES

System Voltage

DTC P0562 System Voltage Low - hex: 0x5015 dez: 20501
DTC P0563 System Voltage High - hex: 0x5014 dez: 20500

TCM

DTC P0604 Internal Control Module Random Access Memory (RAM) Error - hex: 0x4FB3 dez: 20403
DTC P0605 Internal Control Module Read Only Memory (ROM) Error - hex: 0x4FB0 dez: 20400

Transmission Range Sensor (TRS) [Electrical and Performance Codes]

DTC P0705 TRS 'A' Circuit (PRNDL Input) (1 Of 7) - hex: 0x5089 dez: 20617
DTC P0705 TRS 'A' Circuit Switch, Steptronic (2 Of 7) - hex: 0x523A dez: 21050
DTC P0705 TRS 'A' Circuit Switch, Steptronic (3 Of 7) - hex: 0x523B dez: 21051
DTC P0705 TRS 'A' Circuit Shift Response (4 Of 7) - hex: 0x526C dez: 21100 - *SLC1*
DTC P0705 TRS 'A' Circuit Shift Response (5 Of 7) - hex: 0x526D dez: 21101 - *S2*
DTC P0705 TRS 'A' Circuit Shift Response (6 Of 7) - hex: 0x526E dez: 21102 - *SLT*
DTC P0705 TRS 'A' Circuit Shift Response (7 Of 7) - hex: 0x526F dez: 21103 - *S1*
DTC P0706 TRS 'A' Circuit Range/Performance - hex: 0x5088 dez: 20616

Transmission Fluid Temperature Sensor (TFT)

DTC P0711 TFT Sensor 'A' Circuit Range/Performance - hex: 0x4EF4 dez: 20212
DTC P0712 TFT Sensor 'A' Circuit Low - hex: 0x4EF2 dez: 20210
DTC P0713 TFT Sensor 'A' Circuit High - hex: 0x4EF3 dez: 20211

Input/Turbine Speed Sensor (ISS/TSS)

DTC P0715 ISS/TSS 'A' Circuit - hex: 0x4EE9 dez: 20201
DTC P0716 ISS/TSS 'A' Circuit Range/Performance - hex: 0x4EEA dez: 20202
DTC P0717 ISS/TSS 'A' Circuit No Signal - hex: 0x4EE8 dez: 20200

Output Speed Sensor (OSS)

DTC P0720 OSS Circuit - hex: 0x4EEC dez: 20204
DTC P0721 OSS Circuit Range/Performance - hex: 0x4EED dez: 20205
DTC P0722 OSS Circuit No Signal - hex: 0x4EEB dez: 20203

Gear Ratio

DTC P0729 Gear 6 Incorrect Ratio - hex: 0x4F97 dez: 20375
DTC P0732 Gear 2 Incorrect Ratio - hex: 0x4F93 dez: 20371
DTC P0733 Gear 3 Incorrect Ratio - hex: 0x4F94 dez: 20372
DTC P0734 Gear 4 Incorrect Ratio - hex: 0x4F95 dez: 20373
DTC P0735 Gear 5 Incorrect Ratio - hex: 0x4F96 dez: 20374

Torque Converter Clutch (TCC)

DTC P0741 TCC - hex: 0x4F54 dez: 20308
DTC P0741 TCC Circuit Performance/Stuck Off - hex: 0x4F53 dez: 20307

Figure 5



Technical Service Information

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OBDII HEX AND DEZ CODES

Solenoids

SLT = Pressure Control Solenoid A (PCS 'A')

DTC P0961 PCS 'A' Control Circuit Range/Performance - hex: 0x4E22 dez: 20002
DTC P0962 PCS 'A' Control Circuit Low - hex: 0x4E21 dez: 20001
DTC P0963 PCS 'A' Control Circuit High - hex: 0x4E20 dez: 20000

SLU = TCC PCS

DTC P2762 Torque Converter Clutch PCS Control Circuit Range/Performance
hex: 0x4E2C dez: 20012
DTC P2763 Torque Converter Clutch PCS Control Circuit High - hex: 0x4E2A dez: 20010
DTC P2764 Torque Converter Clutch PCS Control Circuit Low - hex: 0x4E2B dez: 20011

Solenoid valve S1 = SSA

DTC P0973 Shift Solenoid 'A' Control Circuit Low (1 Of 3) - hex: 0x4E87 dez: 20103
DTC P0973 Shift Solenoid 'A' Control Circuit Low (2 Of 3) - hex: 0x4E86 dez: 20102
DTC P0973 Shift Solenoid 'A' Control Circuit Low (3 Of 3) - hex: 0x4E85 dez: 20101
DTC P0974 Shift Solenoid 'A' Control Circuit High - hex: 0x4E84 dez: 20100

Solenoid valve S2 = SSB

DTC P0976 Shift Solenoid 'B' Control Circuit Low - hex: 0x4E88 dez: 20104
DTC P0977 Shift Solenoid 'B' Control Circuit High - hex: 0x4E89 dez: 20105

SLC1 = Pressure Control Solenoid C (PCS 'C')

DTC P0969 PCS 'C' Control Circuit Range/Performance - hex: 0x4E36 dez: 20022
DTC P0970 PCS 'C' Control Circuit Low - hex: 0x4E35 dez: 20021
DTC P0971 PCS 'C' Control Circuit High - hex: 0x4E34 dez: 20020

SLC2 = Pressure Control Solenoid D (PCS 'D')

DTC P2719 PCS 'D' Control Circuit Range/Performance - hex: 0x4E40 dez: 20032
DTC P2720 PCS 'D' Control Circuit Low - hex: 0x4E3F dez: 20031
DTC P2721 PCS 'D' Control Circuit High - hex: 0x4E3E dez: 20030

SLC3 = Pressure Control Solenoid E (PCS 'E')

DTC P2728 PCS 'E' Control Circuit Range/Performance - hex: 0x4E4A dez: 20042
DTC P2729 PCS 'E' Control Circuit Low - hex: 0x4E49 dez: 20041
DTC P2730 PCS 'E' Control Circuit High - hex: 0x4E48 dez: 20040

SLB1 = Pressure Control Solenoid F (PCS 'F')

DTC P2737 PCS 'F' Control Circuit Range/Performance - hex: 0x4E54 dez: 20052
DTC P2738 PCS 'F' Control Circuit Low - hex: 0x4E53 dez: 20051
DTC P2739 PCS 'F' Control Circuit High - hex: 0x4E52 dez: 20050

Figure 6



Technical Service Information

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OBDII HEX AND DEZ CODES

Engine Speed

DTC P1727 CAN Engine Speed - hex: 0xCF2B dez: 53035
DTC P173B CAN Engine Coolant Temperature Invalid - hex: 0xCF2D dez: 53037

DTC P1772 Turbine Speed and Engine Speed in Transmission (1 OF 5) - hex: 0x4F83 dez: 20355
DTC P1772 Turbine Speed and Engine Speed in Transmission (2 OF 5) - hex: 0x4F90 dez: 20368
DTC P1772 Turbine Speed and Engine Speed in Transmission (3 OF 5) - hex: 0x4F91 dez: 20369
DTC P1772 Turbine Speed and Engine Speed in Transmission (4 OF 5) - hex: 0x4F92 dez: 20370
DTC P1772 Turbine Speed and Engine Speed in Transmission (5 OF 5) - hex: 0x4F81 dez: 20353

Wheel Speed

DTC P1774 CAN Wheel Speed Rear Wheel Left No Signal - hex: 0xCF30 dez: 53040
DTC P1775 CAN Wheel Speed Rear Wheel Right No Signal - hex: 0xCF31 dez: 53041
DTC P1776 CAN Wheel Speed Front Wheel Left No Signal - hex: 0xCF32 dez: 53042
DTC P1777 CAN Wheel Speed Front Wheel Right No Signal - hex: 0xCF33 dez: 53043
DTC P1782 CAN Brake Signal - hex: 0xCF2C dez: 53036

Torque Management

DTC P1791 Internal Transmission Control Module Memory Check Sum/EEPROM Error
hex: 0x4FB1 dez: 20401
DTC P2637 Torque Management Feedback Signal 'A' - hex: 0xCF16 dez: 53014

CAN BUS

DTC U0001 High Speed CAN Communication Bus - hex: 0xCF07 dez: 52999
DTC U0121 Lost Communication With Anti-Lock Brake System (ABS) Control Module
hex: 0xCF15 dez: 53013
DTC U112E Lost Communication With Pedal Position Sensor - hex: 0xCF18 dez: 53016
DTC U114A Message Monitoring Engine Control Torque 1 Alive Check - hex: 0xCF12 dez: 53010
DTC U114B Lost Communication With Engine Control Torque 1 - hex: 0xCF13 dez: 53011
DTC U114C Message Monitoring Engine Control Torque 1 Check Sum Error - hex: 0xCF14 dez: 53012
DTC U115A Message Monitoring Engine Control Torque 3 Alive Check - hex: 0xCF39 dez: 53049
DTC U115B Lost Communication With Engine Control Torque 3 - hex: 0xCF3A dez: 53050
DTC U115C Message Monitoring Engine Control Torque 3 Check Sum Error (1 OF 5)
hex: 0xCF3B dez: 53051
DTC U115C Message Monitoring Engine Control Torque (2 OF 5) - hex: 0xCF3C dez: 53052
DTC U115C Message Monitoring Engine Control Torque (3 OF 5) - hex: 0xCF3D dez: 53053
DTC U115C Message Monitoring Engine Control Torque (4 OF 5) - hex: 0xCF3E dez: 53054
DTC U115C Message Monitoring Engine Control Torque (5 OF 5) - hex: 0xCF42 dez: 53058
DTC U115E Lost Communication With Engine Data - hex: 0xCF43 dez: 53059

Figure 7