

1. Basic Diagnostic Procedure

A: BASIC PROCEDURES

1. GENERAL DESCRIPTION

The most important purpose of diagnostics is to quickly determine which part is malfunctioning, to save time and labor.

2. IDENTIFICATION OF TROUBLE SYMPTOM

Determine what the problem is based on the symptom.

3. PROBABLE CAUSE OF TROUBLE

Look at the wiring diagram and check the system's circuit. Then check the switch, relay, fuse, ground, etc.

4. LOCATION AND REPAIR OF TROUBLE

- 1) Using the diagnostics, narrow down the causes.
- 2) If necessary, use a voltmeter, ohmmeter, etc.
- 3) Before replacing certain component parts (switch, relay, etc.), check the power supply, ground, for open wiring harness, poor connectors, etc. If no problem is encountered, check the component parts.

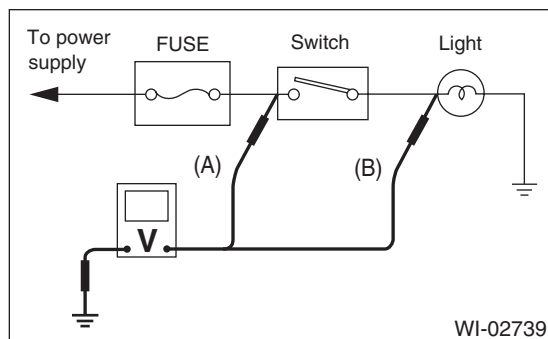
5. SYSTEM OPERATION CHECK

After repairing, ensure that the system operates properly.

B: BASIC INSPECTION

1. VOLTAGE MEASUREMENT

- 1) Using a voltmeter, connect the negative lead to a good ground point or negative battery terminal and the positive lead to the connector or component terminal.
- 2) Contact the positive lead of the voltmeter on connector (A). The voltmeter will indicate a voltage.
- 3) Shift the positive lead to connector (B). The voltmeter will indicate no voltage.



- 4) With the test set-up held as it is, turn the switch ON. The voltmeter will indicate a voltage and, at the same time, the light will come on.

- 5) The circuit is in good order. If a problem such as a light failing to illuminate occurs, use the procedures outlined above to track down the malfunction.

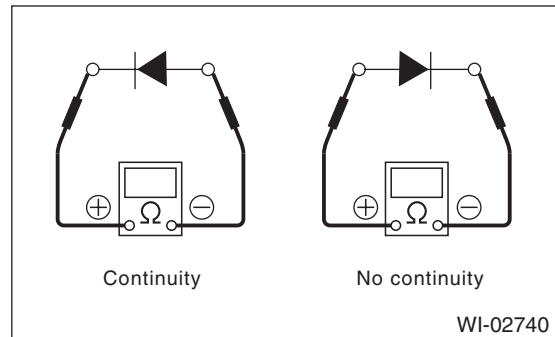
2. CIRCUIT CONTINUITY CHECKS

- 1) Disconnect the battery terminal or connector so there is no voltage between the check points. Contact the two leads of an ohmmeter to each of the check points.

If the circuit has diodes, reverse the two leads and check again.

- 2) Use an ohmmeter to check for diode continuity. When contacting the negative lead to the diode positive side and the positive lead to the negative side, there should be continuity.

When contacting the two leads in reverse, there should be no continuity.

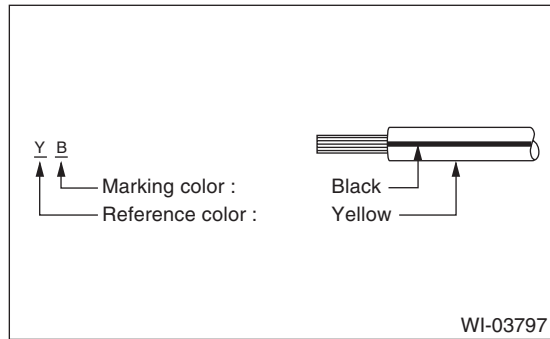


- 3) The symbol "○ — ○" indicates that continuity exists between two points or terminals. For example, when a switch position is at "3", continuity exists among terminals 1, 3 and 6, as shown in the table below.

| Terminal | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------|-------|-------|-------|-------|-------|-------|
| Switch Position | | | | | | |
| OFF | | | | | | |
| 1 | ○ — ○ | | | | ○ — ○ | |
| 2 | ○ — ○ | | | ○ — ○ | | ○ — ○ |
| 3 | ○ — ○ | | ○ — ○ | | | ○ — ○ |
| 4 | ○ — ○ | ○ — ○ | | | | ○ — ○ |

WI-02741

- The wire color code, which consists of two letters (or three letters including Br or Lg), indicates the standard color (base color of the wire covering) by its first letter and the stripe marking by its second letter.



- The table lists the nominal sectional areas and allowable currents of the wires.

CAUTION:

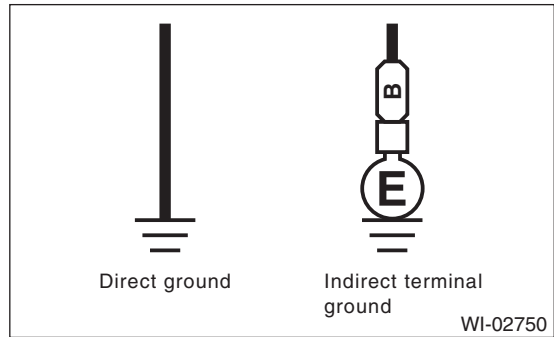
When replacing or repairing a wire, be sure to use the same size and type of the wire which was originally used.

NOTE:

- The allowable current in the table indicates the tolerable amperage of each wire at an ambient temperature of 40°C (104°F).
- The allowable current changes with ambient temperature. Also, it changes if a bundle of more than two wires is used.

| Nominal sectional area mm ² | No. of strands/ strand diameter | Outside diameter of wiring mm | Allowable current Amps/ 40°C (104°F) |
|---|------------------------------------|----------------------------------|--|
| 0.3 | 7/0.26 | 1.8 | 7 |
| 0.5 | 7/0.32 | 2.2 (or 2.0) | 12 |
| 0.75 | 30/0.18 | 2.6 (or 2.4) | 16 |
| 0.85 | 11/0.32 | 2.4 (or 2.2) | 16 |
| 1.25 | 16/0.32 | 2.7 (or 2.5) | 21 |
| 2 | 26/0.32 | 3.1 (or 2.9) | 28 |
| 3 | 41/0.32 | 3.8 (or 3.6) | 38 |
| 5 | 65/0.32 | 4.6 (or 4.4) | 51 |
| 8 | 50/0.45 | 5.5 | 67 |

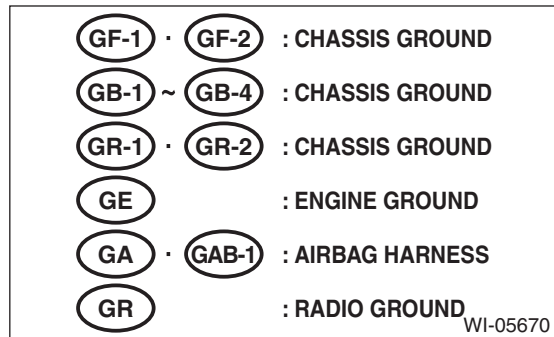
- Each unit is either directly grounded to the body or indirectly grounds through a harness ground terminal. Different symbols are used in the wiring diagram to identify the two grounding systems.



- The ground points shown in the wiring diagram refer to the following:

NOTE:

All wiring harnesses are provided with a ground point which should be securely connected.



F: ABBREVIATION IN WIRING DIAGRAMS

| Abbr. | Full name |
|--------|---|
| A/B | Airbag |
| A/C | Air Conditioner |
| A/F | Air/Fuel (Air fuel ratio sensor) |
| ABS | Antilock Brake System |
| ABSCM | Antilock Brake System Control Module |
| ACC | Accessory |
| AT | Automatic Transmission |
| ATF | Automatic Transmission Fluid |
| AUX | Auxiliary Audio Input Terminal |
| AVCS | Active Valve Control System |
| AWD | All Wheel Drive |
| B | Battery |
| CAN | Controller Area Network |
| COM | Computer |
| CPC | Canister Purge Control |
| CPU | Central Integrated Circuit |
| D | Drive Range or Down |
| E | Ground |
| EBD | Electric Brake Distribution |
| ECM | Engine Control Module |
| EEPROM | Electronically Erasable and Programmable Read Only Memory |
| EGI | Electric Gasoline Injection |
| EGR | Exhaust Gas Recirculation |
| ELR | Emergency Locking Retractor |
| F/B | Fuse & Relay Box |
| FL | Front Left Hand |
| FLD | Front Left Down |
| FLU | Front Left Up |
| FR | Front Right Hand |
| FRD | Front Right Down |
| FRU | Front Right Up |
| FWD | Front Wheel Drive |
| GND | Ground |
| H/L | Headlight |
| HI | High |
| HID | High Intensity Discharge |
| I/F | Interface |
| IG | Ignition |
| INT | Intermittent |
| LCD | Liquid Crystal Display |
| LH | Left Hand |
| LO | Low |
| M | Motor |
| M/B | Main Fuse Box |
| MT | Manual Transmission |
| N | Neutral Range |
| NA | Natural Aspiration |

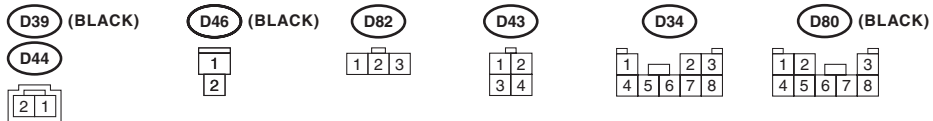
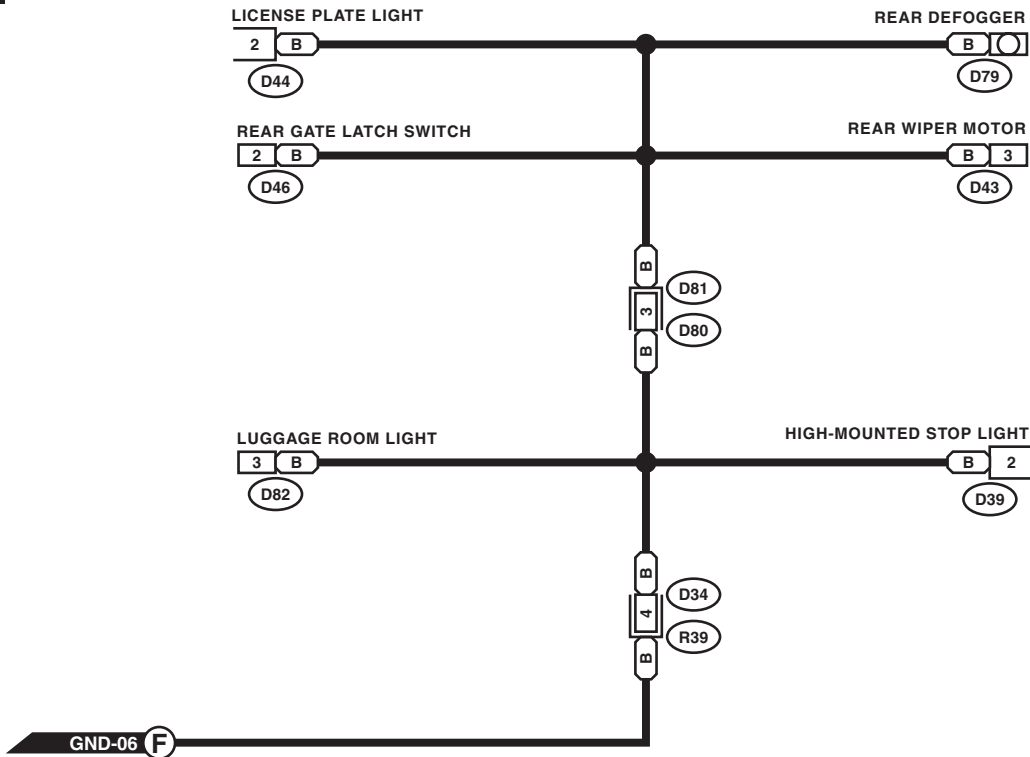
| Abbr. | Full name |
|--------|------------------------|
| OP | Optional Parts or Open |
| P | Parking Range |
| PASS | Passing |
| PCV | Purge Control Valve |
| P-VIGN | P-V Ignition Relay |
| R | Reverse Range |
| RH | Right Hand |
| RL | Rear Left |
| RLD | Rear Left Down |
| RLU | Rear Left Up |
| RR | Rear Right |
| RRD | Rear Right Down |
| RRU | Rear Right Up |
| SBF | Slow Blow Fuse |
| ST | Starter |
| TCM | AT Control Module |
| TGV | Tumble Generator Valve |
| U | Up |
| WASH | Washer |

Ground Circuit

WIRING SYSTEM

GND-07

GND-07



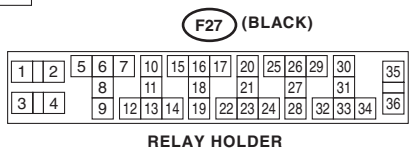
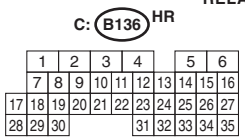
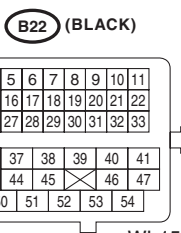
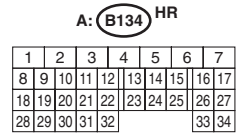
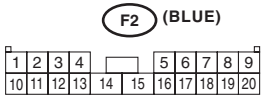
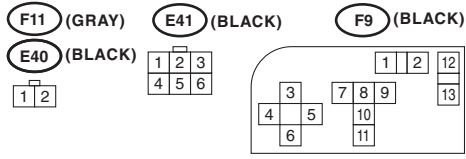
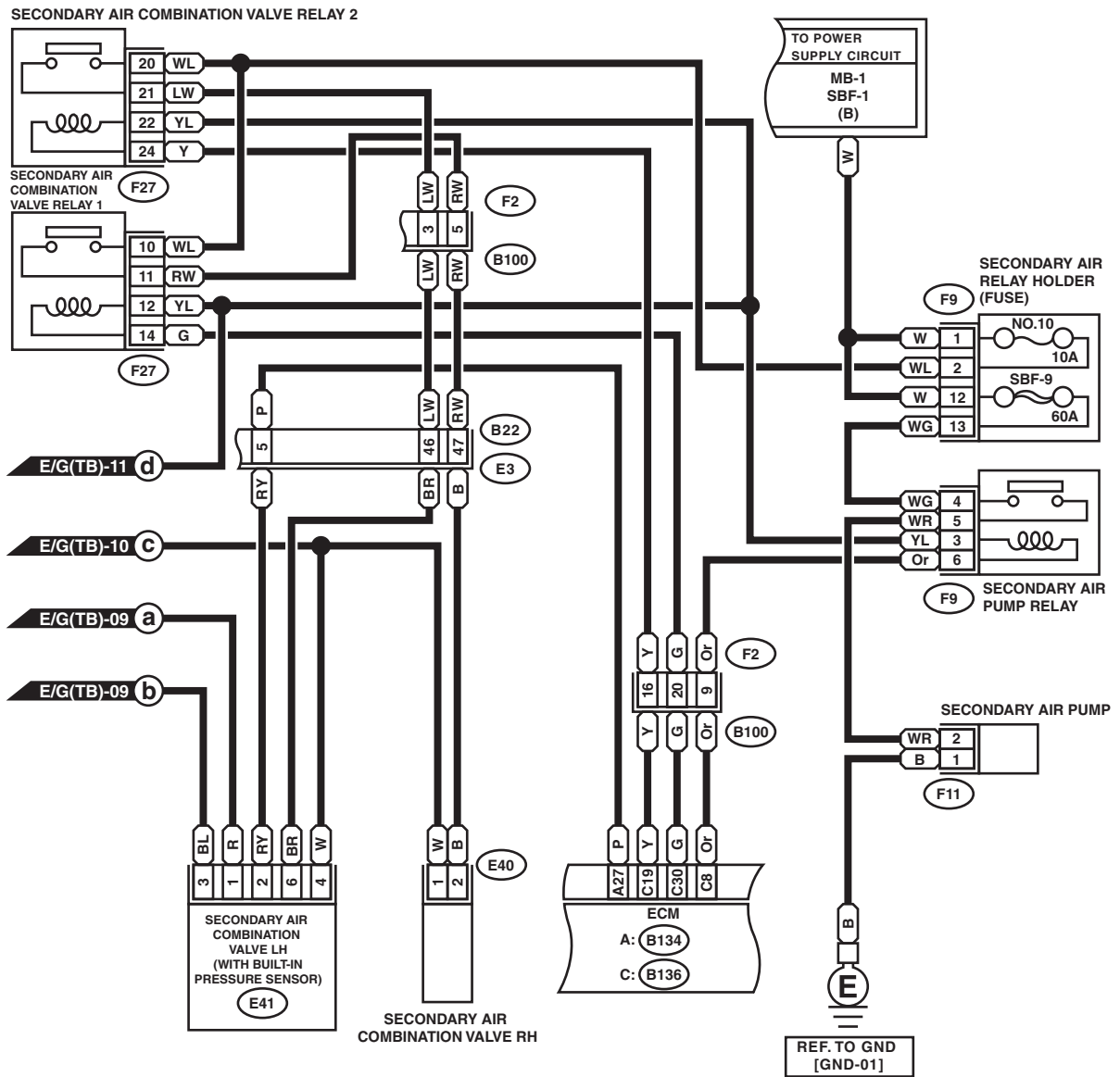
WI-13100

Engine Electrical System

WIRING SYSTEM

E/G(TB)-12

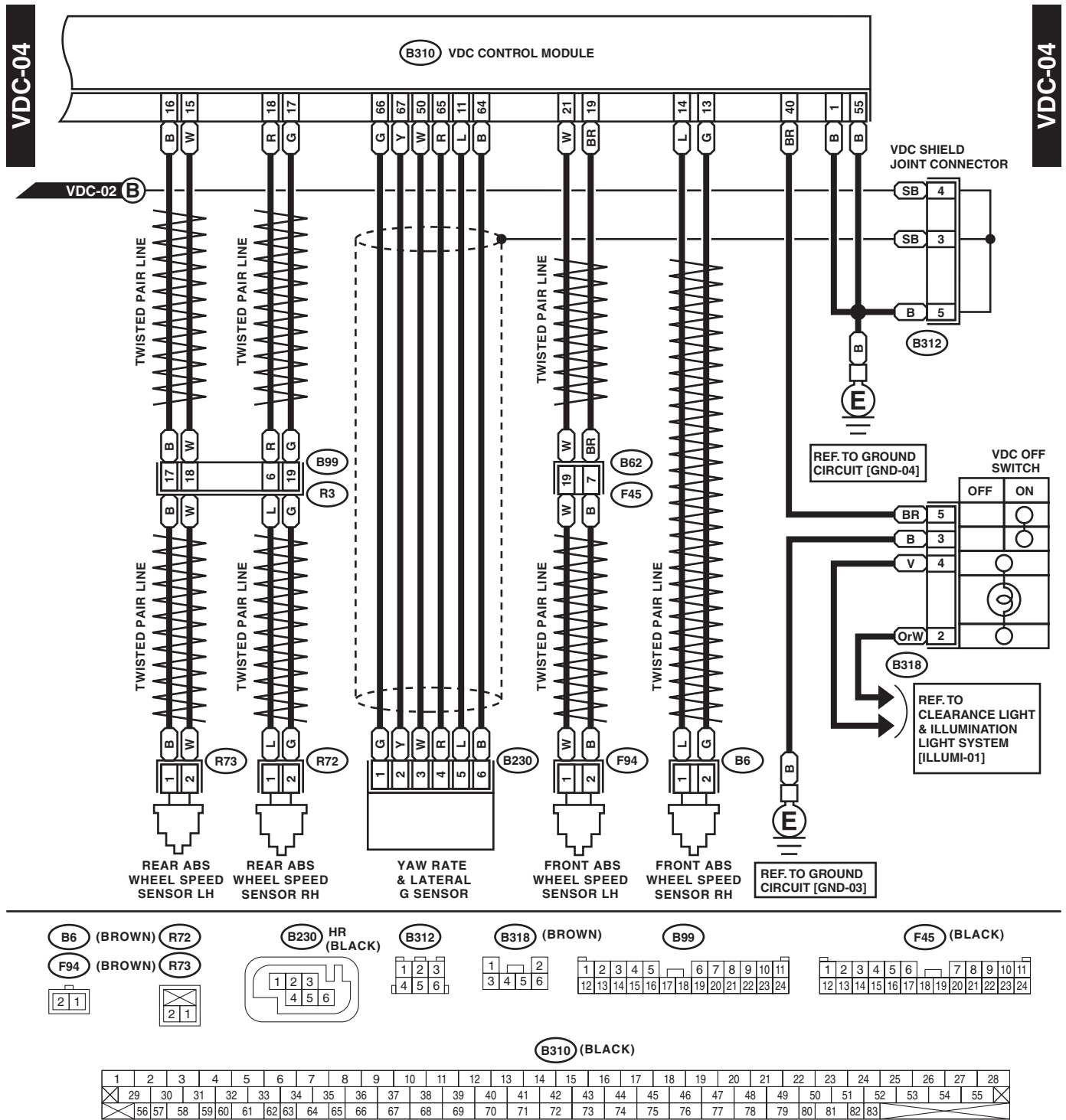
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WI-15001

Vehicle Dynamics Control System

WIRING SYSTEM



WI-15240

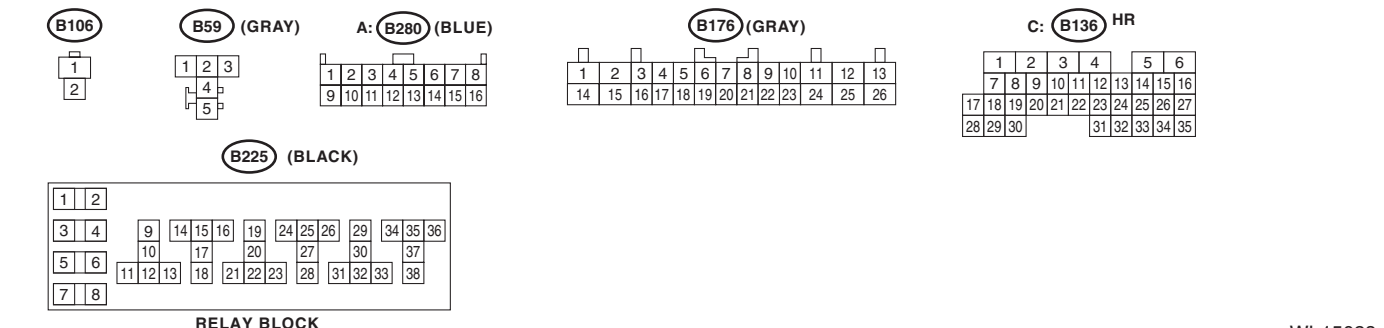
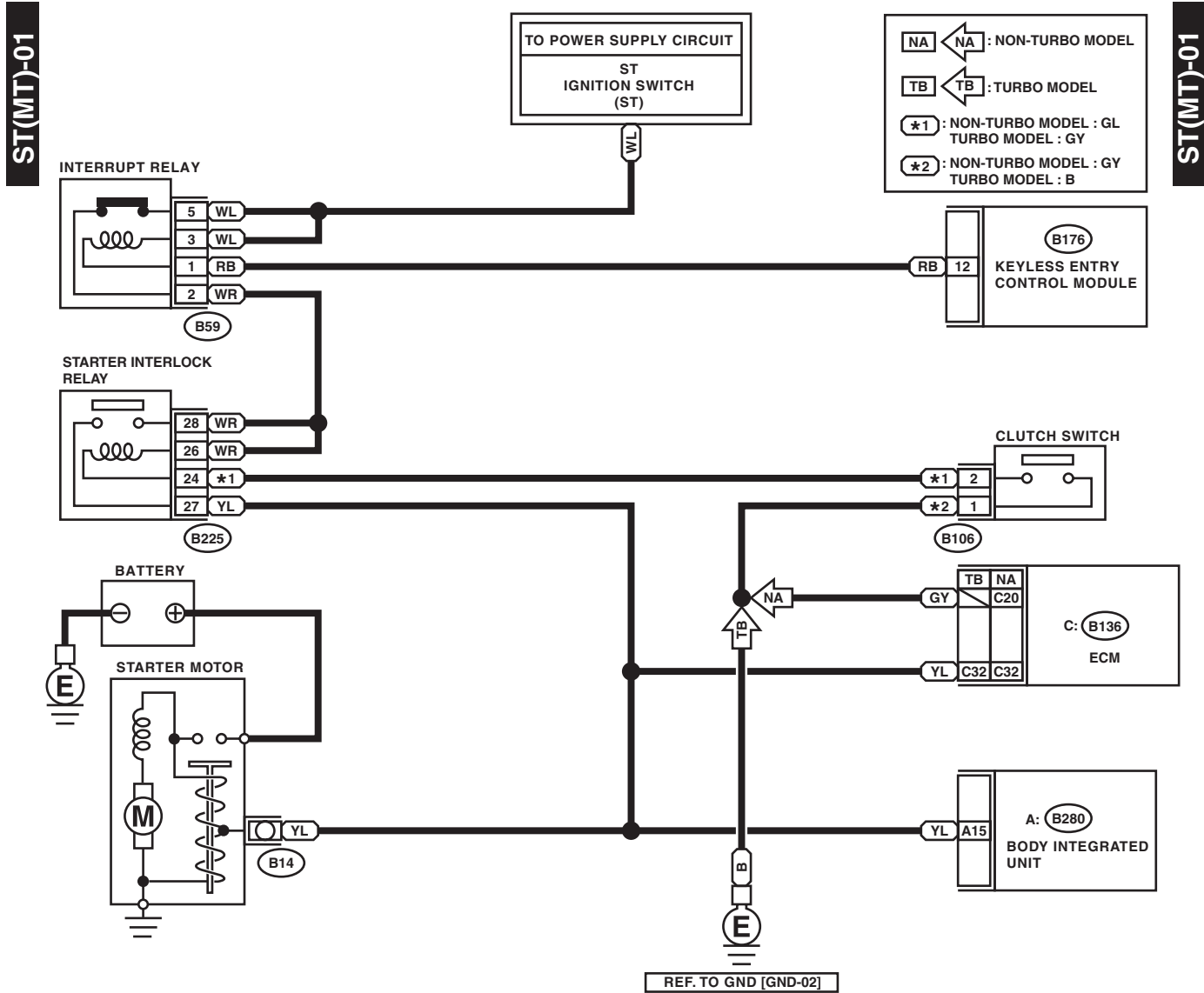
Starter System

WIRING SYSTEM

17. Starter System

A: WIRING DIAGRAM

1. MT MODEL



WI-15028

Horn System

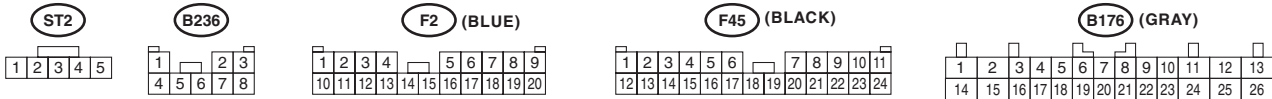
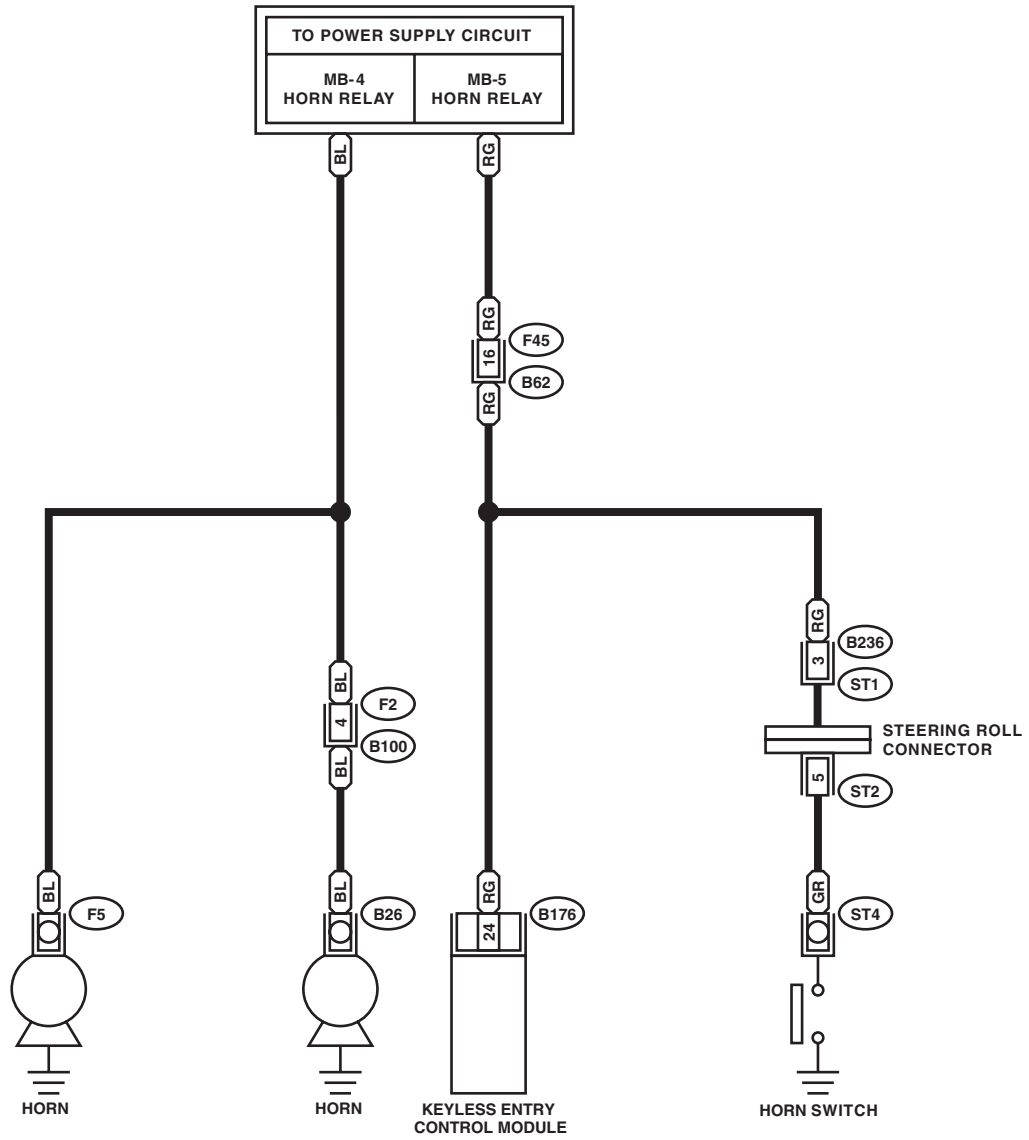
WIRING SYSTEM

36.Horn System

A: WIRING DIAGRAM

HORN-01

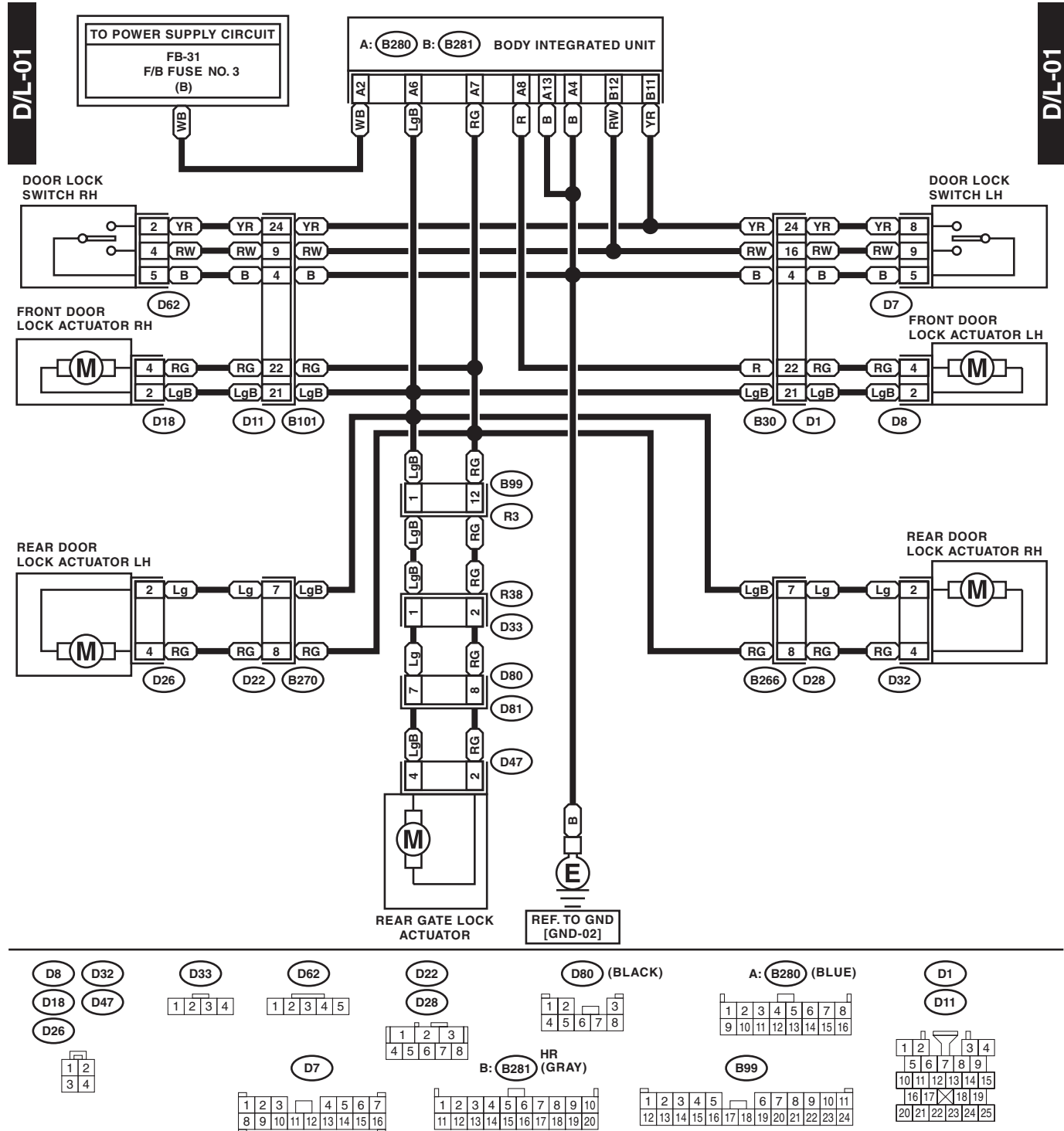
HORN-01



WI-12296

50. Door Lock System

A: WIRING DIAGRAM



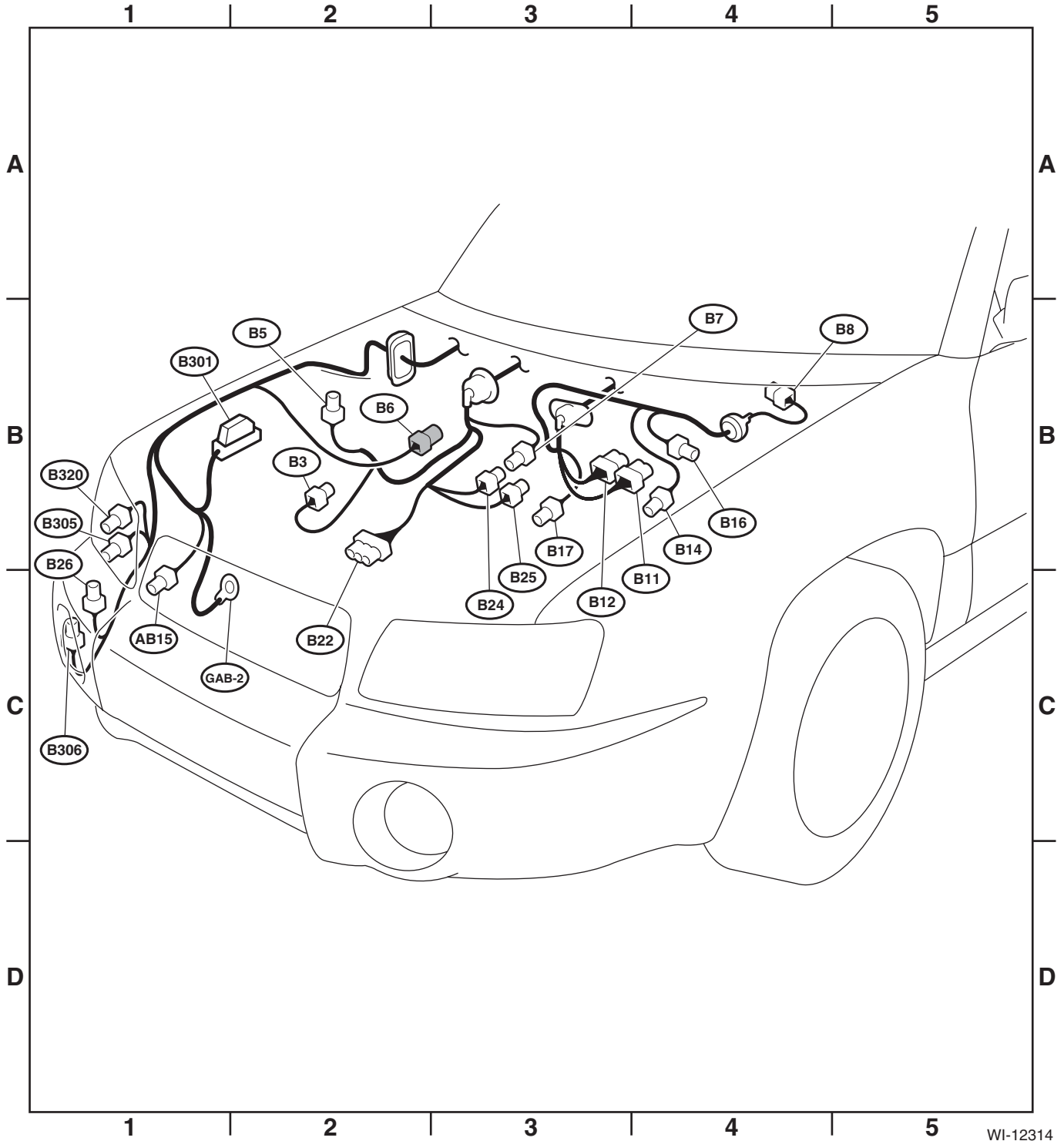
WI-15052

Bulkhead Wiring Harness (In Engine Compartment)

WIRING SYSTEM

Airbag wiring harness

| Connector | | | | Connecting to | |
|-----------|------|--------|------|---------------|---------------------|
| No. | Pole | Color | Area | No. | Description |
| AB15 | 2 | Yellow | C-1 | | Front sub sensor RH |



WI-12314

Bulkhead Wiring Harness (In Engine Compartment)

WIRING SYSTEM

2. TURBO MODEL

Bulkhead wiring harness

| Connector | | | | Connecting to | |
|-----------|------|-------|------|---------------|----------------------------------|
| No. | Pole | Color | Area | No. | Description |
| B3 | 5 | Black | B-2 | | Air flow sensor |
| B5 | 2 | Gray | B-2 | | Daytime running light register |
| B6 | 2 | Gray | B-2 | | Front ABS wheel speed sensor RH |
| B7 | 4 | ★ | B-3 | | A/C pressure switch |
| B8 | 5 | Gray | B-4 | | Front wiper motor |
| B11 | 20 | Gray | B-4 | T4 | Transmission code (AT model) |
| B12 | 12 | Gray | B-3 | T3 | |
| B14 | 1 | Black | B-4 | | Starter motor (Magnet) |
| B16 | 2 | Gray | B-4 | | Brake fluid level warning switch |
| B17 | 4 | Black | B-3 | | Vehicle speed sensor (MT model) |
| B18 | 4 | Gray | B-3 | T5 | Rear oxygen sensor |
| B20 | 16 | Brown | B-2 | E1 | Engine wiring harness |
| B22 | 54 | Black | B-2 | E3 | |
| B26 | 1 | Black | C-1 | | Horn |
| B127 | 2 | Blue | B-2 | | Wastegate solenoid |
| B128 | 4 | Gray | B-3 | T9 | Transmission code (MT model) |
| B262 | 4 | Gray | B-2 | | Front oxygen (A/F) sensor |
| B301 | 26 | Black | B-2 | | ABS control module |
| B305 | 2 | Gray | B-1 | | Front turn signal light RH |
| B306 | 2 | Brown | C-1 | | Front fog light RH |
| B320 | 2 | Gray | B-1 | | Side marker light RH |
| B368 | 16 | Black | B-2 | | VDC hydraulic unit |
| B369 | 2 | Gray | B-2 | | |
| B370 | 6 | Black | B-2 | | |

★ : White or natural color

56.Engine Wiring Harness and Transmission Cord

A: LOCATION

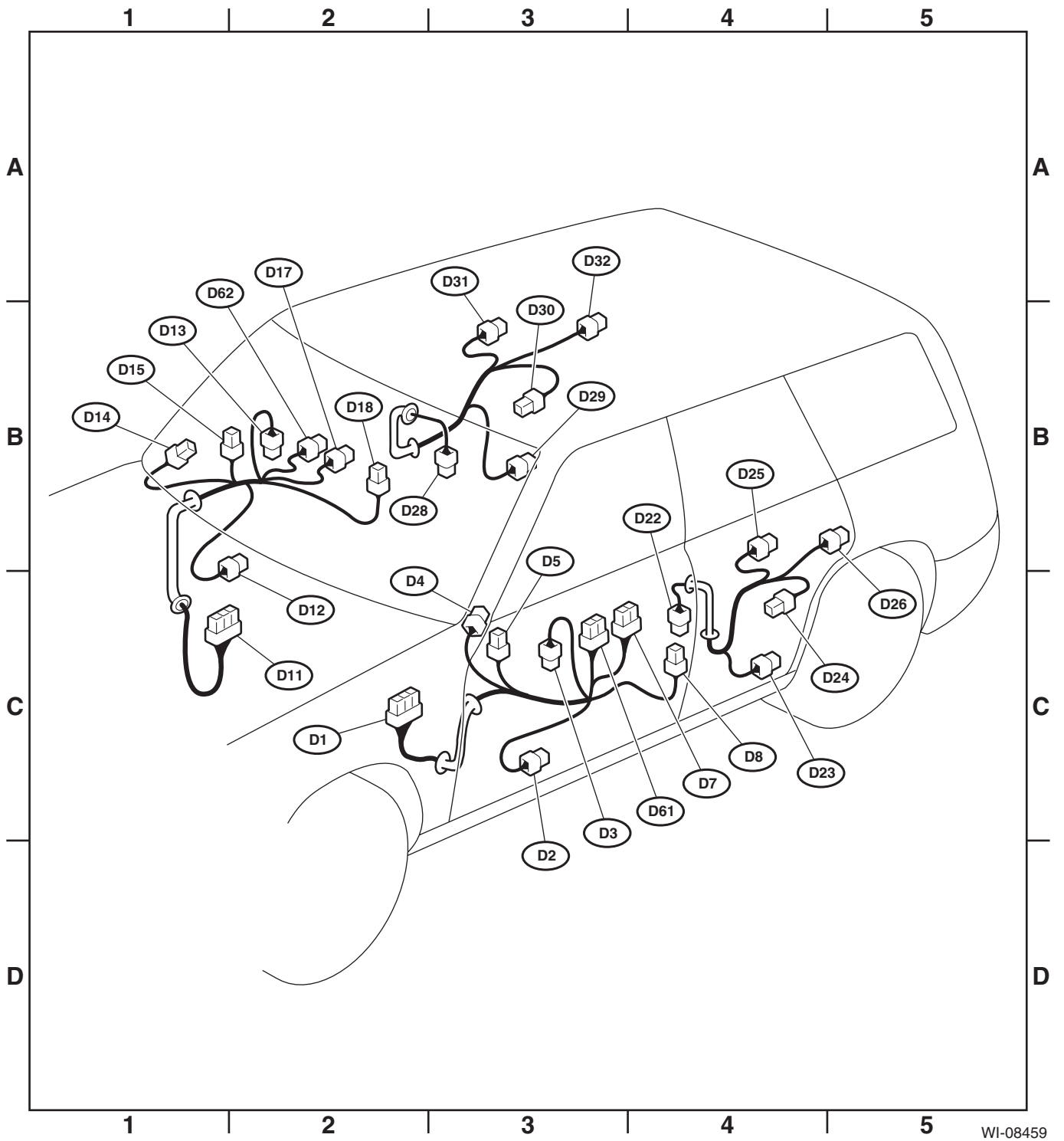
1. NON-TURBO MODEL

| Connector | | | | Connecting to | |
|-----------|------|------------|------|---------------|--|
| No. | Pole | Color | Area | No. | Description |
| E3 | 54 | Black | A-4 | B22 | Bulkhead wiring harness |
| E4 | 2 | Black | A-3 | | CPC Solenoid |
| E5 | 2 | Dark gray | A-2 | | Fuel injector No. 1 |
| E6 | 2 | Dark gray | A-3 | | Fuel injector No. 3 |
| E8 | 3 | Light gray | A-3 | | Engine coolant temperature sensor and thermometer |
| E10 | 2 | Light gray | B-3 | | Crankshaft position sensor |
| E11 | 1 | ★ | B-2 | | Oil pressure switch |
| E12 | 4 | Dark gray | A-3 | | Ignition coil and ignitor |
| E14 | 2 | Gray | A-4 | | Knock sensor |
| E15 | 2 | Gray | B-4 | | Camshaft position sensor |
| E16 | 2 | Dark gray | B-4 | | Fuel injector No. 2 |
| E17 | 2 | Dark gray | B-4 | | Fuel injector No. 4 |
| E18 | 6 | Dark gray | A-4 | | EGR solenoid valve |
| E19 | 1 | ★ | B-2 | | Power steering oil pressure switch |
| E21 | 3 | Black | A-3 | | Pressure sensor |
| E22 | 4 | Dark gray | A-2 | | Rear oxygen sensor |
| E23 | 6 | Black | A-2 | | Front oxygen (A/F) sensor |
| E57 | 6 | Black | A-3 | | Electronic throttle control |
| E61 | 2 | Dark gray | A-4 | | PCV diagnosis connector |
| E69 | 2 | Blue | A-3 | | Oil switching solenoid valve RH |
| E70 | 2 | Blue | B-4 | | Oil switching solenoid valve LH |
| E71 | 1 | ★ | A-3 | | Variable valve lift diagnosis oil pressure switch RH |
| E72 | 1 | ★ | B-4 | | Variable valve lift diagnosis oil pressure switch LH |
| E75 | 2 | Black | B-3 | | Oil temperature sensor |

★ : White or natural color

Door Cord

WIRING SYSTEM



WI-08459