



1. Description

This procedure describes methods for the repair, replacement, and inspection of instrument panel gauges and instrument clusters.



2. Purpose

The purpose of this procedure is to provide industry-accepted requirements for performing high-quality repair of instrument panel gauges and instrument clusters. This procedure is intended for use by professionals who are qualified through training and experience.



3. Referenced Documents

The following documents are considered part of this procedure by reference.

3.1 Procedures

- EL01 Wire Repair
- EL11 Troubleshooting
- EL21 Self-Diagnostics
- IP01 Instrument Panel
- PS01 Personnel Safety

3.2 Other Information

- Equipment-specific information
- Vehicle-specific repair information



4. Equipment And Material Requirements

4.1 Electronic Equipment

Use electronic testing equipment as described in **EL11** or **EL21**.



5. Damage Analysis

5.1 General Damage

Inspect instrument panel gauges for these types of damage:

- improper operation
- visible damage
- improper previous repairs
- damaged or non-functioning controls
- damaged or burned-out indicator bulbs or fluorescent tubes
- damaged or missing trim or mounting fasteners
- damaged or loose lens cover

The instrument panel or instrument cluster may have to be partially disassembled to determine the condition of the gauges and other parts. For removing and installing the instrument panel, see **IP01**.

Plan to replace any damaged parts. Verify the availability of replacement parts.

5.2 Electrical Parts

Inspect the gauges or instrument cluster for these conditions:

- blown fuses
- cut, pinched, or corroded wires
- damaged or corroded switches
- loose or corroded grounds or connectors
- bulbs that fail to illuminate

It may be necessary to partially disassemble a gauge or the instrument cluster to determine the condition of the connectors and other electrical parts. If any gauge or the instrument cluster does not function properly follow the vehicle maker's diagnostic and repair procedures.

Determine the parts that will be replaced and the wiring that will be repaired. See **EL01** for wire repair procedures. Verify the availability of replacement parts. Damaged parts may require replacement of the complete instrument cluster.



6. Personnel Safety

6.1 General Safety

General safety information is in **PS01**.

6.2 Electrical Testing Safety

Electrical testing safety information is in **EL11** or **EL21**.

Some vehicles use fluorescent tubes to illuminate gauges and pointers which may be powered by high voltage supplies (1,000 volts or more). Follow the vehicle maker's recommendations when working with such systems.



7. Environmental Safety

Does not apply.



8. Vehicle Protection

8.1 Gauges, Instrument Cluster, And Adjacent Parts

To protect the gauges, instrument cluster, and adjacent parts:

- Avoid damaging the gauges or instrument cluster when removing, storing, and installing the instrument panel.
- Make sure there is enough working space when removing or installing the gauges or instrument cluster.
- Use care when removing or installing fasteners. Do not over tighten.

8.2 Electronic Parts

To protect computers, and other sensitive parts from damage:

- Follow the vehicle maker's recommendations for recording and resetting electronic memories.
- Ensure that the ignition is in the LOCK position, and the key is removed.
- Disconnect and isolate the negative battery cable, and disarm the passive restraint system. Follow the vehicle maker's recommendations.
- Protect modules, connectors, and wiring from dirt, heat, static electricity, and moisture.
- Loosen or remove any wiring harnesses or electrical parts that could be damaged during the repair process.



9. Repair Procedure

9.1 Gauge Or Instrumentation Cluster Removal

To remove a gauge or instrument cluster:

- 1. Follow the vehicle maker's recommendations for recording and resetting electronic memories.
- 2. Disconnect and isolate the negative battery cable and disarm the passive restraint system. Follow the vehicle maker's recommendations.
- 3. Make sure the passive restraint system is disabled before disconnecting the driver and passenger airbag connectors. Follow the vehicle maker's recommendations.
- 4. Disconnect the gauge or instrument cluster wiring harness.
- 5. Remove or reposition the instrument panel, if required. Follow the vehicle maker's recommendations.
- 6. Remove the fasteners holding the gauge or instrument cluster. Plan to replace any damaged fasteners with the same type, grade, and size as the original fasteners.
- 7. Carefully remove the gauge or instrument cluster from the vehicle.

9.2 Gauge Or Instrument Cluster Installation

To install a replacement gauge or instrument cluster:

- 1. Reconnect the gauge or instrument cluster wiring harness.
- 2. Carefully install the gauge or instrument cluster, duplicating the original mounting method. Torque all fasteners to the vehicle maker's recommendations.
- 3. Reinstall the instrument panel, if required. Torque all fasteners to the vehicle maker's recommendations.
- 4. Reconnect the driver and passenger airbag connectors. Follow the vehicle maker's recommendations.
- 5. Reconnect the battery.
- 6. Reset electronic memories and re-activate the passive restraint system. Follow the vehicle maker's recommendations.



10. Use Of Recycled (Salvage) Parts

10.1 Salvage Part Requirements

Do not install a salvage gauge or instrument cluster having any of these defects:

- unrepairable damage
- corrosion
- improper previous repairs
- missing mounting locations
- evidence of flood or fire damage

Follow state or provincial rules for documenting the odometer readings of the original and replacement gauges or instrument clusters.



11. Inspection And Testing

11.1 Inspection Of A Replaced Gauge Or Instrument Cluster

After installation, inspect a gauge or instrument cluster for these conditions:

- proper position
- proper operation of all instruments, gauges, and warning lamps
- proper visibility through the lens
- proper installation of all trim and fasteners
- proper routing of electrical wiring
- proper illumination and control

A road-test may be required to identify squeaks and rattles.

Correct any defects.