

INSTRUMENTS

	Page
DESCRIPTION	15- 1
SPEEDOMETER & TACHOMETER	15- 2
Removal	15- 2
Inspection - Speedometer	15- 2
Inspection - Tachometer	15- 3
Installation	15- 3
AMMETER, FUEL GAUGE, OIL PRESSURE GAUGE, OIL TEMPERATURE GAUGE & WATER TEMPERATURE GAUGE	15- 3
Removal	15- 3
Inspection	15- 4
Installation	15- 4
IGNITION SWITCH	15- 4
Removal	15- 4
Installation	15- 4
LIGHTING & WIPER SWITCHES	15- 4
Removal	15- 4
Installation	15- 4
TOGGLE SWITCH	15- 4
Removal	15- 4
Installation	15- 5
BACK-UP LIGHT SWITCH	15- 5
HEATER	15- 5
Description	15- 5
Trouble Shooting	15- 7
Removal	15- 7
Disassembly & Assembly	15- 8
Inspection	15- 8
Installation	15- 8
RADIO	15- 8
Removal	15- 9
Installation	15-10

	Page
MOTOR ANTENNA	15-10
Trouble Shooting	15-10
Removal	15-11
Disassembly	15-11
Assembly	15-12
Installation	15-12
CLOCK & STOP WATCH	15-12
Removal	15-12
Installation	15-12

DESCRIPTION

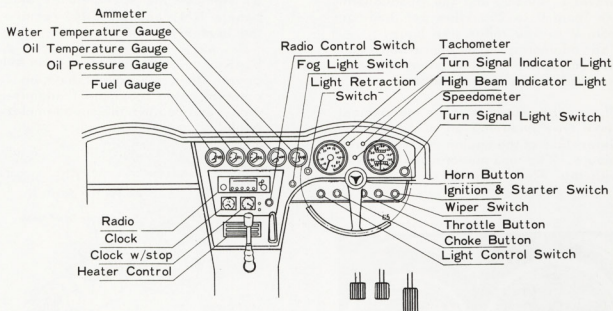


Fig.15-1 Instruments

G0069

The instrument panel is installed with all circular shape instruments to incorporate a sporty appearance, and the center console panel is constructed over the middle of the X-frame.

The circular speedometer placed in front of the driver is integrally built with the odometer, and trip meter with the maximum graduation of 250 kilos per hour or 160 miles per hour. At the left is the tachometer with the maximum registration of 9,000 rpm of the engine.

The Red zone is from 7,000 to 9,000 rpm. The graduations are indicated in 1/100. These two instruments are deeply installed within the hood with transparent plastic concave covers obstructing the light reflection for easy visibility.

The five circular shape gauges are located to the left of these two instruments. From the right is the ammeter, water temperature gauge (the pilot light for the fan operation) oil temperature gauge, oil pressure gauge, and the fuel gauge. Glass covers are utilized for these gauges, and are located for easy visibility from the driver.

The turn signal switch is installed at the right lower of the speedometer, and the headlight retracting switch is at the left lower of the tachometer. Left of this switch is the fog light switch.

From the right below the main instrument panel are the ignition switch, two-speed wiper switch incorporating a windshield washer switch, throttle button, choke button, lighting switch (turn the knob to dim the instrument light).

On the center console panel is the radio (with antenna switch at the right), right lower is the stop watch, two buttons at the right, upper to operate, and the lower for reset. The electric clock is provided at the left of the stop watch.

SPEEDOMETER, TACHOMETER

The speedometer indicates the car's forward speed, and the graduations are from 0 to 250 kilos per hour or from 0 to 160 miles per hour.

The odometer is incorporated, and the trip meter is also integrally constructed within the speedometer.

The tachometer is of a mechanical drive type ensuring an accurate registration of the engine revolution per minute. The graduations are in 1/100 with the Red for 70 to 90.

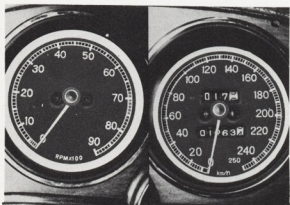


Fig.15-2 Speedometer & Tachometer

Removal

- Loosen the steering column tube attaching bolt at the toe-board. Remove the steering column clamp by removing the steering column attaching bolts, then remove the steering column clamp sub-assembly.
- Disconnect the wires from the wire connections, and disconnect the speedometer and tachometer drive cables from the speedometer and tachometer.
- Remove the speedometer and tachometer by removing the speedometer and tachometer attaching bolts.

4. To remove the speedometer cable follow the following procedures.

- Remove the speedometer side panels RH, and LH, and remove the heater assembly.
- Remove the tunnel access hole cover, then disconnect the speedometer cable from the transmission, and remove the speedometer cable.

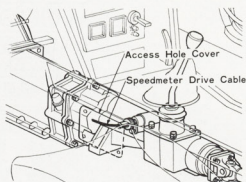


Fig.14-3 Speedometer Drive G0428 Cable Removal

5. Remove the tachometer cable from the front side of the engine.

Inspection - Speedometer

- Inspect the speedometer unit with the speedometer tester. The speedometer should register 60 kph at 637 rpm of the speedometer drive shaft revolution. If necessary, replace the speedometer.
- Check the speedometer registration on the car. Before testing, check the tires for proper inflation, and wear. Install the speedometer onto the car, and inspect with a tester. The registration error should not exceed the allowable differences. If defective, replace the speedometer.

Standard registration	20 kph (13 mph)
Allowable error	0 ~ 3.0 kph
	0 ~ 1.9 mph

Standard registration	40 kph (25 mph)
Allowable error	0 ~ 4.5 kph (0 ~ 2.8 mph)
Standard registration	60 kph (38 mph)
Allowable error	0 ~ 5.0 kph (0 ~ 3.1 mph)
Standard registration	80 kph (50 mph)
Allowable error	0 ~ 5 kph (0 ~ 3.1 mph)

Standard registration	100 kph (63 mph)
Allowable error	0 ~ 5 kph (0 ~ 3.1 mph)

Standard registration	140 kph (88 mph)
Allowable error	0 ~ 6.5 kph (0 ~ 4.0 mph)

3. If the speedometer needle vibrates, check the speedometer cable.
If necessary, replace the cable.

Inspection - Tachometer

1. Inspect the tachometer with a speedometer tester.
When the tachometer drive shaft is at 1,000 rpm, the tachometer should register 4,000 rpm.
The registration error should not exceed the allowable errors.
If defective, replace the tachometer.

Standard registration	1,000 rpm
Allowable error	-90 ~ +90 rpm
Standard registration	3,000 rpm
Allowable error	-90 ~ +90 rpm
Standard registration	5,000 rpm
Allowable error	-130 ~ +130 rpm
Standard registration	7,000 rpm
Allowable error	-140 ~ +140 rpm

2. If the tachometer needle vibrates check the tachometer drive cable.
If necessary, replace the drive cable.

Installation

Follow the removal procedures in the reverse order.

AMMETER, FUEL GAUGE, OIL PRESSURE GAUGE, OIL TEMPERATURE GAUGE & WATER TEMPERATURE GAUGE

Removal

1. Remove the instrument side panels RH and LH by removing the instrument side panels attaching screws.
2. Remove the heater blower motor assembly.
3. Remove the instrument lay-out center panel.
4. Remove the meter attaching bolts from each meter.
Turn the gauge retainer hood counterclockwise, and remove it from the meter.

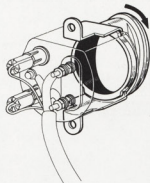


Fig.15-4 Meter Hood Removal G0429

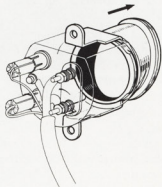


Fig.15-5 Meter Hood Removal G0430

- Remove the meter from the rear of the instrument panel by turning the meter to prevent contacting the other meters, and the meter stay.

Inspection

Inspect the ammeter, fuel gauge, oil pressure gauge, oil temperature gauge and water temperature gauge for operation. If defective, repair or replace the meter or gauge/s.

Installation

Follow the removal procedures in the reverse order.

IGNITION SWITCH

Removal

- Disconnect the ignition switch connector.
- Remove the ignition switch from the rear of the instrument panel using the Ignition Switch Lock Nut Wrench 09802-62010.



Fig.15-6 Removing Ignition V1512 Switch

Installation

Follow the removal procedures in the reverse order.

LIGHTING & WIPER SWITCHES

Removal

- Remove the lock screw, and remove the knob.
- Remove the round nut (A) using the Lighting Switch Lock Nut Wrench 09810-62010.

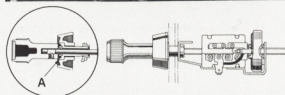


Fig.15-7 Removing Wiper V1513 Switch G0431

- Disconnect the wiring connector, and remove the switch from the instrument panel.

Installation

Follow the removal procedures in the reverse order.

TOGGLE SWITCH

Removal



Fig.15-8 Removing Toggle V1514 Switch G0432

1. Remove the ring nut on the toggle switch using the Toggle Switch Lock Nut Wrench 09811-62010.
2. Remove the toggle switch from the inside of the instrument panel, and disconnect the wiring connection.

Installation

Follow the removal procedures in the reverse order.

BACK-UP LIGHT SWITCH

The back-up light switch is mounted on the transmission extension No.2. Disconnect the wiring connection, and remove the back-up switch from under the car.

HEATER

Description

The heater is a fresh air, and recirculating type utilizing the heat of the cooling system. This heater can also be utilized for ventilation during the summer season. The heater consists of the corrugated type radiator with the air blower (fan) built integrally for compact construction. The heater controls are provided within easy reach of the occupants to enable comfortable temperature control for the car interior. The temperature control can be accomplished by the heater fan speeds, and also by the air control valve. Interior heating and defroster operation are controlled manually by the air damper butterfly valve at the instrument side panel.

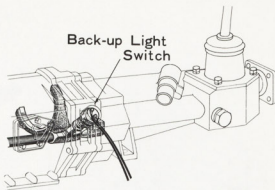


Fig.15-9 Back-up Light Switch Removal G0433

To install, follow the removal procedures in the reverse order.

Type: Hot water, fresh air & recirculating

Voltage: 12 volts

Blower capacity (cu. meters/hr)

Heater

High 280

Medium 220

Low 140

Ventilator

High 375

Medium 280

Low 220

Load (watts)

Heater

High 140

Medium 100

Low 70

Ventilator

High 140

Medium 100

Low 70

Motor speed (rpm)

Heater

High 3,000

Medium 2,200

Low 1,500

Ventilator

High 2,800

Medium 2,000

Low 1,500

Heating capacity (Kcal/hr)

Heater

High 3,100

Medium 2,500

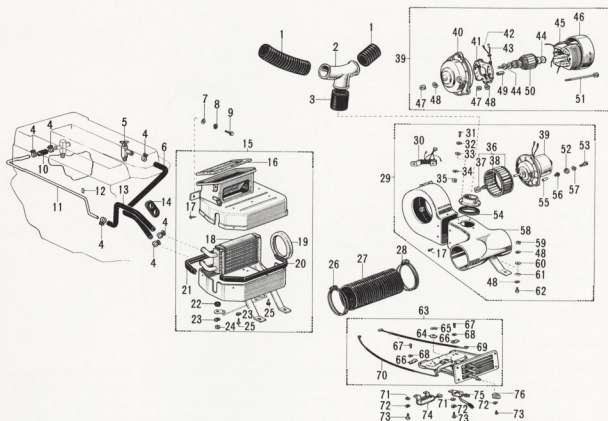
Low 1,700

Note: Heater testing factors:

Coolant capacity: 6 l/min

Coolant temperature rise:

65°C (149°F)



- | | | |
|-----------------------------|------------------------------|--------------------------|
| 1. Defroster hose | 27. Air duct | 53. Bolt |
| 2. Defroster hose connector | 28. Hose clamp | 54. Blower case gasket |
| 3. Defroster hose | 29. Heater blower | 55. Collar |
| 4. Hose clamp | 30. Heater blower resistance | 56. Blower case cushion |
| 5. Water hose valve joint | 31. Screw | 57. Washer |
| 6. Water hose | 32. Washer | 58. Blower case |
| 7. Washer | 33. Washer | 59. Nut |
| 8. Washer | 34. Washer | 60. Washer |
| 9. Bolt | 35. Nut | 61. Washer |
| 10. Hose | 36. Blower fan | 62. Screw |
| 11. Water pipe | 37. Nut | 64. Washer |
| 12. Clamp | 38. Varnish pipe | 65. "E" ring |
| 13. Water hose | 39. Blower motor | 66. Clamp |
| 14. Grommet | 40. Motor housing | 67. Screw |
| 15. Heater radiator | 41. Motor brush holder | 68. Washer |
| 16. Blower case gasket | 42. Motor lead wire | 69. Heater control cable |
| 17. Screw | 43. Motor lead wire | 70. Control cable |
| 18. Radiator unit | 44. Washer | 71. Washer |
| 19. Blower case gasket | 45. Blower motor stator | 72. Washer |
| 20. Heater case gasket | 46. Blower motor housing | 73. Screw |
| 21. Heater case gasket | 47. Nut | 74. Blower motor switch |
| 22. Washer | 48. Washer | 75. Defroster switch |
| 23. Washer | 49. Bushing | 76. Control lever knob |
| 24. Nut | 50. Blower motor armature | |
| 25. Screw | 51. Bolt | |
| 26. Hose clamp | 52. Washer | |

Fig.15-10 Heater Components

Trouble Shooting

<u>Symptoms & Probable Causes</u>	<u>Remedies</u>
1. Insufficient heating	
a. Wiring poor connection or broken	Repair
b. Fuse burnt or poor contact	Repair or replace
c. Heater switch poor contact	Repair or replace
d. Motor not revolving	Repair or replace
e. Brush worn or poor contact	Repair or replace
f. Armature defective	Repair or replace
g. Field coil defective	Repair or replace
2. Insufficient incoming air	
a. Fan mounting nut loose	Tighten
b. Heater radiator clogged	Clean
c. Blower revolution insufficient	Repair or replace
3. Insufficient heating of coolant	
a. Thermostat defective	Replace
b. Weather extremely cold	Cover the radiator
4. Insufficient coolant	
a. Water pump capacity insufficient	Repair
b. "V" belt loose or slipping	Adjust
c. Hose bent excessively	Repair or replace
5. Leakage of hose or piping	
a. Water hose defective	Replace
b. Water hose clamp loose	Tighten
c. Heater radiator defective	Repair or replace
6. Insufficient defrosting	
a. Control cable incorrect	Correct
b. Defroster hose disconnected	Repair

Removal

- | | |
|---|--|
| 1. Drain the coolant. | 4. Disconnect the heater radiator inlet water hose, and the outlet water hose by removing the hose clamps. |
| 2. Remove the instrument panel RH, and LH. | 5. Remove the heater radiator assembly. |
| 3. Remove the blower motor by removing the heater blower motor attaching bolts. | 6. Remove the console panel, and the console plate. |

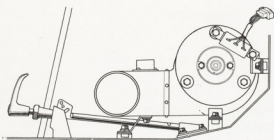


Fig.15-11 Heater Blower X6183 Removal

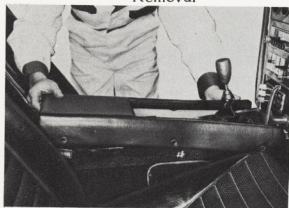


Fig.15-12 Console Panel W1271 Removal

7. Remove the control lever knobs.
8. Remove the heater control with the wires.

Disassembly & Assembly
(Heater Blower Motor)

1. Remove the blower motor from the blower motor case.
2. Remove the lock nut, and remove the blower fan by tapping the armature shaft lightly with a wooden mallet.
3. Remove the housing with the stay.
4. Replace the brush/es if necessary.
5. Install the motor.
6. Install the blower fan.

The fan installing height should be from the stay 75 ~ 77 mm (2.95 to 3.03").

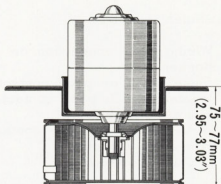


Fig.15-13 Fan Installing G0464 Height

Inspection (Blower Motor)

Inspect the following, and repair or replace the parts if necessary.

1. Check the armature for short with a growler tester.
Clean the commutator with an emery cloth.
2. Inspect the field coil for open circuit or for short circuit.
3. Check the brushes for wear and damage.

Installation

Follow the removal procedures in the reverse order.

RADIO

The radio equipped utilizes the highly efficient parts and transistors of latest design, and has high sensitivity, and beautiful tone.

Six push-buttons are incorporated for easy tuning in, and the tuning can also be operated by the automatic tuning control knob on the radio at the right. The antenna is an electric motor type antenna. The antenna, and the radio switch is installed at the lower side of the radio on the instrument layout panel.

To operate the switch, move the knob up or down.

The speaker is installed within the instrument panel.

Specification:

Frequency ranges	535 ~ 1,605 kilo-cycles
Intermediate frequency	455 kilo-cycles
Sensitivity	Less than 20 μ V (at 0.5 W output)
Selectivity	More than 20 phon (\pm 10 kilo-cycle Detuning)
Electrical fidelity	3 phon at 100 cycles -10 phon at 4,000 cycles
Power output	More than 2.7 watts (KF 10%)
Sensitivity at automatic tuning	Distance 22 ~ 34 phon Local sensitivity at distance 48 ~ 68 phon
Frequency deviation at automatic tuning	Within \pm 3 kilo-cycles
Speaker	16 centimeter permanent dynamic type
Power source	DC 12 ~ 15 Volts Negative Ground
Power consumption	8.5 watts approx. (at 13.2 volts)
Weight	Radio tuner 2.8 kg Speaker 0.7 kg
Transistors & diodes utilized	15 transistors & 4 diodes
RF amplifier	2SA275 transistor
Converter	2SA273 "
IF amplifier (1st)	2SA274 "
IF amplifier (2nd)	2SA274 "
Detector	IS446 diode
AGC & detector	IS446 "
Audio amplifier	2SB120 transistor
Oscillator	2SB120 "
Power amplifier	2SB446 (two) "
Trigger amplifier (1st)	2SA274 "
Trigger amplifier (2nd)	2SA274 "
Trigger detector	2SA274 "
Relay controller	2SB34 "
Multi-vibrator	2SB120 (two) "
Multi-buffer	2SB120 "
Noise detector	IS446 (two) diode

Removal

1. Remove the instrument side panels RH, and LH by removing the attaching screws.
2. Remove the blower motor assembly.

3. Remove the instrument lay-out panel with the radio, clock, and the stop watch.
4. Remove the radio from the lay-out panel.
5. Remove the speaker assembly from the instrument panel.

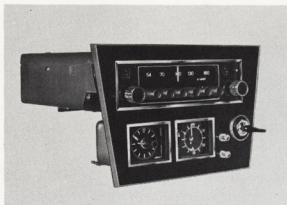


Fig.15-14 Layout Panel V1272
Removal

Installation

Follow the removal procedures in the reverse order.

MOTOR ANTENNA

Trouble Shooting

Symptoms & Probable Causes

Remedies

- | | |
|--|------------------------------------|
| 1. Antenna motor does not operate. | |
| a. Fuse burnt or poor contact | Repair or replace |
| b. Radio control switch poor contact | Replace |
| c. Connector poor contact | Repair or replace |
| d. Motor defective | Repair or replace |
| 2. Motor operates, but will not operate the antenna rod. | |
| a. Operation defective due to rust | Clean |
| b. Antenna rod bent | Repair or replace |
| c. Torque limiter incorrect | Replace |
| d. Cable broken | Replace antenna pole "A" and cable |
| 3. Antenna raising and lowering slow | |
| a. Weak battery | Recharge battery |
| b. Torque limiter slips | Replace |
| c. Poor movement of rod | Repair or replace |
| d. Motor defective | Repair or replace |
| 4. Noise in radio (static noise) | |
| a. Antenna poor ground contact | Repair |
| b. Antenna pole poor contact | Clean or replace |
| c. Connection of antenna to radio poor contact | Repair or replace |

Removal

1. Remove the right parcel floor panel.
2. Remove the antenna by removing the antenna holder attaching screws and antenna pole cap.



Fig. 15-15 Motor Antenna V1273
Removal

Disassembly

1. Remove the motor cover, and the antenna by removing the antenna pole attaching screws.
2. Remove the antenna pole from the antenna by removing the antenna pole attaching screws.

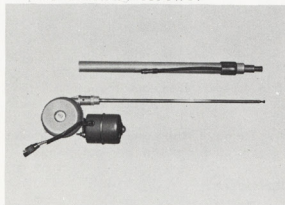


Fig. 15-16 Antenna Pole V1274
Removal

a. To disassemble the antenna motor, remove the through bolts, and disassemble the housing "B", and the housing "A".

b. Disconnect the brushes from the brush holders by melting the solder, and replace them if necessary.

4. Remove the antenna drum cover by removing the attaching nut.

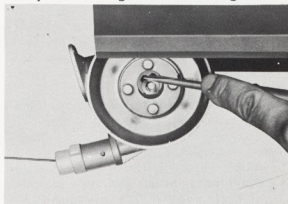


Fig. 15-17 Removing "E" Ring V1275

5. Remove the "E" ring, then remove the driving mechanism.

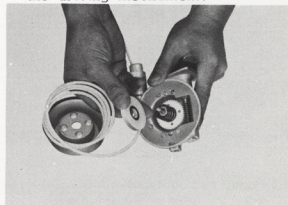


Fig. 15-18 Removing Driving V1276
Mechanism

3. Remove the antenna motor sub-assembly by removing the antenna motor attaching screws.

6. Remove the pole "A" and cable assembly from the driving mechanism.

7. Remove the worn shaft from the drum.

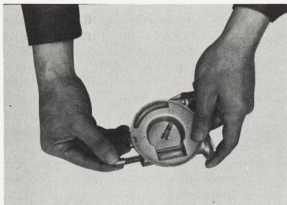


Fig.15-19 Removing Worm V1277 Shaft

Assembly

Follow the disassembly procedures in the reverse order.

Note:

1. Apply few drops of turbine oil #200 onto the left washers installed at both ends of the armature.

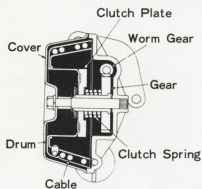


Fig.15-20 Driving Mechanism G0465

2. Apply and coat multipurpose grease onto the gear of the driving mechanism, and the clutch plate.
3. To adjust the thrust gap, screw in the worm shaft thrust screw

fully, then unscrew it. 1/2 turn from the fully screwed in position.

Thrust gap should be 0.05 ~ 0.20 mm (0.002 ~ 0.008").

Installation

Follow the removal procedures in the reverse order.

CLOCK, STOP WATCH

Removal

1. Remove the instrument side panel RH, and LH by removing the attaching screws.
2. Remove the blower motor assembly.
3. Remove the instrument lay-out panel with the radio, clock, and the stop watch.

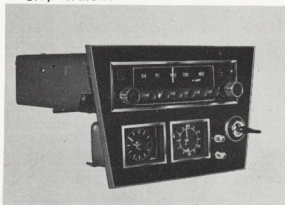


Fig.15-21 Lay-out Panel V1272 Removal

4. Remove the clock, and the stop watch from the lay-out panel.

Installation

Follow the removal procedures in the reverse order.