

GENTEX
Auto Dimming Rearview Mirrors
by MITO CORPORATION

Instructions for Universal Harness

These instructions have been prepared to provide you with details necessary for complete installation for all aftermarket Gentex mirrors sold by MITO Corp. Be sure to read all instructions prior to beginning the installation. Follow all the safety guidelines outlined in this instruction book as well as those set forth by industry and government. Please direct all operational or troubleshooting questions to our MITO Customer Service Department toll-free at 1-800-433-6486.

This Gentex Rearview Mirror Universal Harness is designed for use in applications where a custom harness is not available for your vehicle.

**IT IS IMPORTANT THAT YOU OBTAIN THE CORRECT INFORMATION FOR YOUR
VEHICLE OR DAMAGE TO THE WIRING SYSTEM COULD OCCUR.**

PARTS NEEDED

One (1) Mirror Head
One (1) Harness
One (1) Hang Tag
One (1) Temp Probe Harness (Only with comp/temp mirrors)
One (1) Temp Sensor (Only with comp/temp mirrors)

Tools Required for Installation

Safety Glasses	Flashlight	Power Drill	9/16" Drill Bit	Knife
DC Voltmeter	Crimping Pliers	#20 Torx Bit	Phillips Screwdriver	
Wire Strippers				

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1.0 PREPARATION

- 1.1 Inspect mirror for damage
- 1.2 Check Parts List for accuracy.

2.0 PREPARATION FOR ROUTING THE HARNESS (Inside the Driver's Side Area)

- 2.1 Remove the "A" pillar (windshield post) trim molding, upper windshield trim molding (if applicable), and kick panel trim.

INSTALLATION PRECAUTIONS/NOTES:

- Do not use excessive force when removing OE mirror from windshield. The windshield button may separate from the windshield or the windshield may break.
- Do not use excessive force if removal of OE mirror button is necessary.
- Do not route wiring over sharp metal edges or allow to be pinched behind trim to avoid causing an electrical short or break in the wire.
- Manufacturer/distributor not responsible for installation-related damage to vehicle.
- Contact original purchase source if additional information is desired regarding these products.
- For installation situations that installer is not familiar with, a qualified installation technician or mechanic should be consulted for assistance.
- Use wire ties to hold wires away from hot engine and critical parts such as brake and steering systems.
- If the green temp wires become cut for any reason, they must be soldered back together, not butt spliced.
- Contact your local auto dealership or auto sound center to obtain detailed information pertaining to your specific automobile wire color information.

3.0 REMOVE ORIGINAL EQUIPMENT (OE) REARVIEW MIRROR

CAUTION: DO NOT USE EXCESSIVE FORCE WHEN REMOVING MIRROR FROM WINDSHIELD. THE WINDSHIELD BUTTON MAY SEPARATE FROM THE WINDSHIELD OR THE WINDSHIELD MAY BREAK.

- 3.1 Screw mount mirror removal procedure. Note that there are several versions of mirror mount systems. If unfamiliar with mirror removal, seek professional assistance.
 - Using a Philips screwdriver or #20 torx bit, loosen the screw in the base of the mirror.
 - After loosening screw, gently lift upward to slide mirror off of mirror mount.

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3.2 Wedge mount mirror removal procedure: (Common for screw less mount).

- Using a small 1/8" (4 mm) flat-blade screwdriver, insert the flat end into the opening at the bottom of the mirror mount at the windshield.
- Slide the screwdriver into the center of the mirror mount until resistance is felt.
- Gently apply a small amount of additional upward force to lift away locking spring in the mount.
- While still applying upward pressure with the screwdriver, grasp the mirror bracket and wiggle side to side. Lift mirror up toward the headliner and off the windshield mount button.

3.3 Camlock Mirror Removal procedure: (Common Method)

- Grasp the base of the mirror.
- Rotate 90 degrees left or right.
- Slide mirror downward toward dash to remove.

4.0 INSTALL NEW INTERIOR MIRROR

4.1 Wedge Mount Mirror Installation:

- Slide the mirror bracket over the mirror button on the windshield.
- Rock mirror side to side to aid installation until mirror fits tightly onto mirror button.
- Use #20 Torx bit to tighten mirror mount set screw.

NOTE: *If Gentex Mirror does not fit button on your windshield, it is possible that one of our adapter plates may, i.e. for some foreign manufactured vehicles. It may also be possible that the mirror button will have to be replaced with one that is compatible with the Gentex mirror, i.e. Fords built prior to 1996. If you need information concerning one of our Gentex adapter plates or a mirror button kit, please contact your Gentex mirror retailer.*

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5.0 ROUTING OF THE GENTEX UNIVERSAL POWER HARNESS

Locate the universal power harness.

- 5.1 From the bottom of the driver's side dash, near the post location, feed the flat connector up along the side of the dash to the opening at the "A" pillar near the base of the windshield.
- 5.2 Pull the harness up far enough to reach the mirror location. Route the harness straight up to the headliner.
- 5.3 Gently pull down the front edge of the headliner and tuck the harness up under the edge of the headliner.
- 5.4 Continue tucking the harness under the headliner along the top of the windshield working your way over to the driver's side "A" pillar. Dress the harness along the "A" pillar down to the dash opening.

NOTE: *It will probably be necessary to tape these wires in place, or wire tie them to the existing factory harness.*

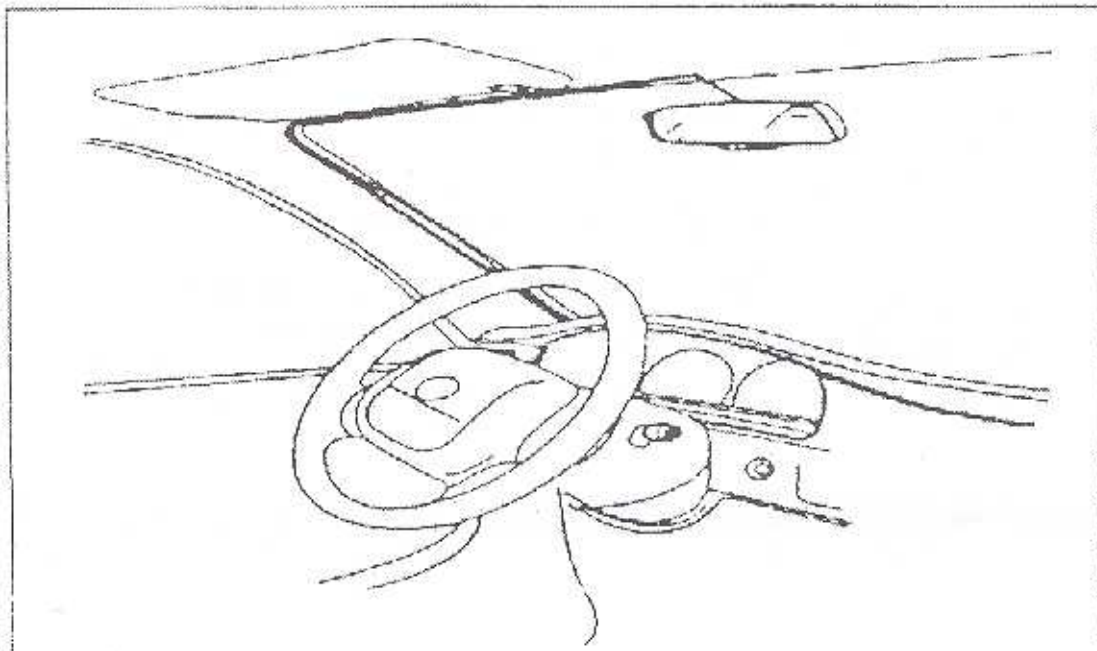


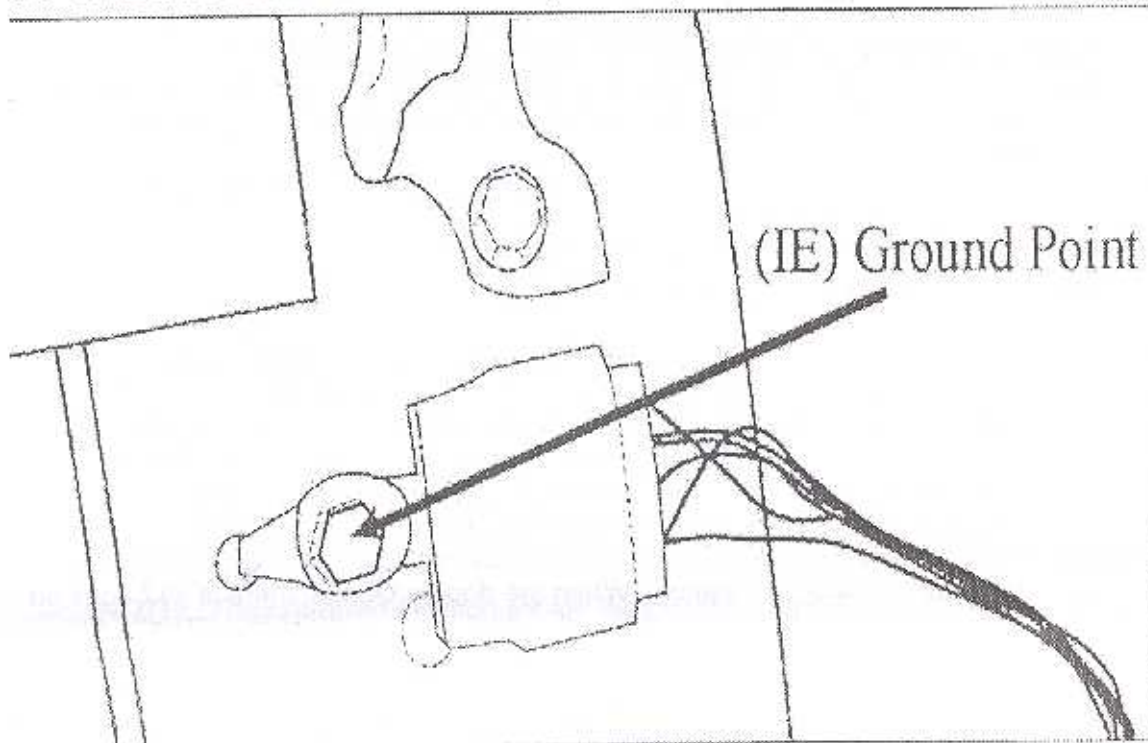
Fig. 5.4

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<u>Wire Color</u>	<u>Connection</u>
Black	Ground Wire
Red	+12V supply (switched by ignition)
Green	Temp. probe wires (temperature mirrors only)

The following wires included <u>only</u> in harness for mirrors with map lights and/or HOMELINK® features.	
Yellow	+12V constant power (battery)
Brown	Dome light circuit

6.0 GROUND WIRE CONNECTION (BLACK)



- 6.1 Locate an existing bolt or screw that is in contact with the vehicles metal body in the area of the driver's step well.
- 6.2 Route the mirror ground wire (black) to the ground point.
- 6.3 Remove the bolt or screw from the ground point and install the ring terminal over the ground bolt/screw. Scrape off paint from mounting surface, if necessary, to obtain a solid connection.
- 6.4 Reinstall and tighten the bolt or screw.

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7.0 +12-VOLT IGNITION WIRE CONNECTION (RED)

- 7.1 Using a multi-meter, find a wire exiting fuse block that tests 12 volt positive and is controlled by the ignition switch. Make sure this 12 volt source remains as you turn on each accessory on the vehicle. Some vehicles circuits will show +12 volts until a certain accessory is turned on, then the +12 volts will go to 0 volts. This power source must turn off only when the vehicles ignition is in the OFF position.
- NOTE:** *If mirror remains on at all times, it will drain the car's battery.*
- 7.2 Route the red wire (12-volt ignition) to an ignition controlled wire.
- 7.3 Using a butt connector, scotch lock or t-tap connector connect the red ignition wire at this time.

IF YOU ARE INSTALLING A GENK 20A MIRROR PROCEED TO STEP 10.0 – ROUTING TEMP HARNESS

8.0 +12-VOLT BATTERY WIRE CONNECTION (YELLOW)

ONLY ON MIRRORS WITH MAP LIGHTS and/or HOMELINK®

- 8.1 Using a multi-meter, check for a wire at the fuse block that tests positive for +12 volts. The +12 volts must be present even when the ignition is in the OFF position.
- 8.2 Connect the yellow wire labeled battery to a constant power source.

9.0 MAP LIGHT WIRE CONNECTION (BROWN)

ONLY ON MIRRORS WITH MAP LIGHTS

- 9.1 There are two (2) types of dome light circuits used in automobiles.
- Type A.** All General Motors, most Chrysler, and some Ford import vehicles use a circuit that puts a constant +12 volts to the dome light. When the door is opened, the door jam switch provides a path to ground and the light comes on. In this case the wire at the switch will have +12 volts when the door is closed and 0 volts when the door is open.
- Type B.** Most full-size Ford and some Chrysler vehicles use a circuit that has two wires at the door jam switch. When the door is closed, there is +12 volts on one wire but not the other. When the door is open, there is +12 volts on both wires.
- 9.2 Using a multi-meter, check the power at the door switch wire(s) and determine if the circuit is Type A or Type B. Contact your local auto dealership or auto center to obtain detailed information pertaining to your specific automobile wiring.
- 9.3 Route the brown wire to a location so it can be connected to the proper wire at the door switch. The wire at the door switch must change from +12 volts to 0 volts or 0 volts to +12 volts when the door is opened and closed!
- 9.4 Use a scotch lock or t-tap to connect the brown wire or butt connector.
- 9.5 Compare map lights on the mirror with the vehicle's dome light. Both the mirror map lights and dome lights should turn on and off together.
- 9.6 If the mirror map lights work opposite of the dome light, open the black box connected to the brown wire and change the position of the switch inside.

NOTE: *If the map light on the Gentex mirror does not turn off and you have changed the position of the switch (9.6), disconnect brown wire and repeat step 9.2.*

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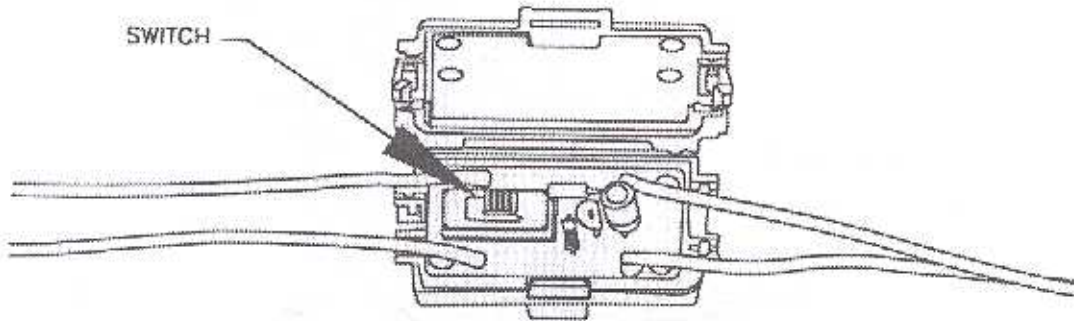


Figure 9.6

10.0 ROUTING THE TEMPERATURE HARNESS

ONLY ON MIRRORS WITH TEMPERATURE FEATURE

10.1 Open the hood of the vehicle.

10.2 Locate a grommet in the firewall near the interior harness location and remove it.

NOTE: *If a grommet is not available, drill a 9/16" hole in a safe and convenient place to feed the 2-pin connector through. Take care not to cause damage to objects in the passenger compartment when drilling.*

10.3 Locate the temperature probe harness and lay it out with the square, black 2-pin connector toward the firewall. Pass this connector through the hole or grommet access to the inside the passenger compartment.

NOTE: *It is important that the 2-pin connector be inside the vehicle to prevent moisture from coming in contact with it.*

10.4 Route the rest of the harness towards the front of the vehicle over the fender well to an area in front of the radiator.

NOTE: *The preferred location for the temperature probe is in the center of the grille or some place where it will be in free air in front, or to the side, of the radiator. Down near the bumper may also be used. Avoid locating it inside or in front of the wheel well, engine compartment, or too close to the headlamps. Try to locate the probe no higher than the center of radiator, and no lower than 8" above the pavement. Always try to keep the temperature probe in the center of the vehicle; never locate it outside of the frame rails.*

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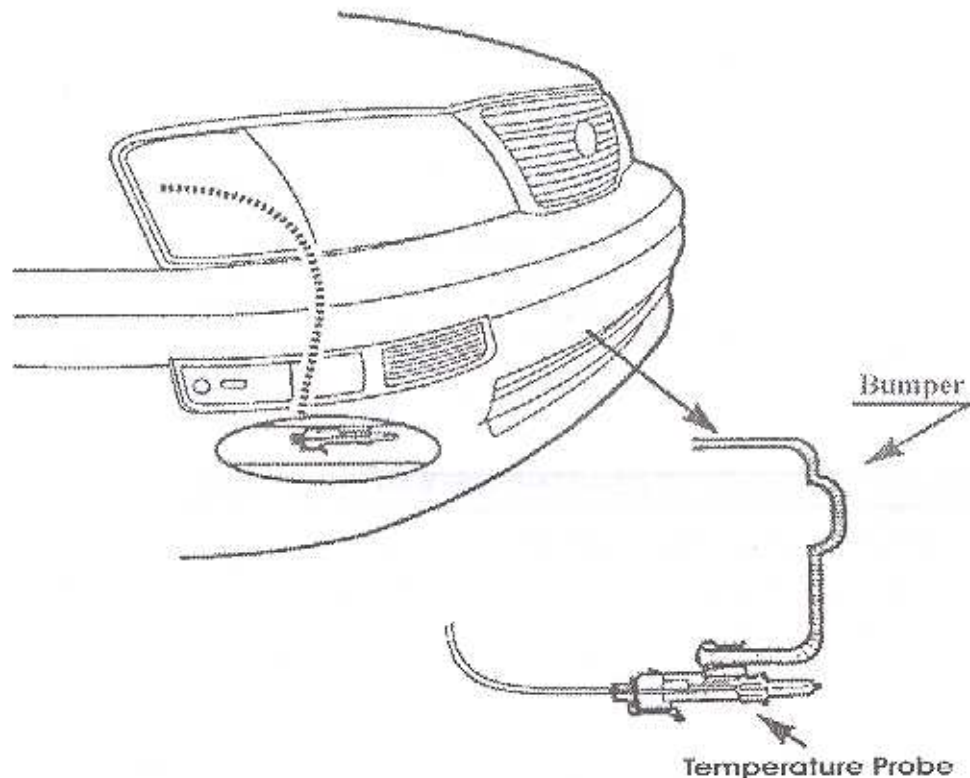


Fig. 10.5

10.5 Mount the temperature sensor probe. See figure 10.5

NOTE: Make sure that the ignition is turned off before you plug in the probe into the mirror harness.

10.6 Plug the probe on the connector making sure that the gray moisture seal seats inside the probe collar.

10.7 Clip on the temperature sensor probe. Do not install the probe pointing toward the rear of the car or pointing down, as water may get past the connector seals. Pull the excess temperature sensor harness back into the engine compartment.

10.8 Use wire ties to secure the temperature sensor harness.

NOTE: Take care to route away from the accelerator and brake area so that the harness does not in any way interfere with their operation.

10.9 Find the grommet that was removed in order to feed the temperature sensor harness through the firewall. Using a knife, carefully cut a slit in the grommet and slide the wires into the grommet. Reinstall the grommet back to its original position in the firewall.

10.10 If you have not already plugged the temperature sensor harness into the main power harness mating plug, do so at this time.

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11.0 SECURING WIRE HARNESS

11.1 Now that all wires from the temperature probe harness and the main harness have been connected, they will need to be secured with wire ties.

- Under hood – be sure to keep wires away from moving parts such as steering and brake mechanisms.
- Keep away from extremely hot engine components.
- Interior – wire tie all wires out of the way, making sure to avoid steering and brake components.

12.0 TESTING

12.1 Turn the ignition switch to ON.

12.2 With the vehicle in a fairly well lit area, perform the following:

- Make sure the auto-dimming feature of the mirror is active. Auto-dimming is enabled when green LED is on. Refer to the instructions on the hangtag if auto-dimming needs to be enabled.
- Cover the forward-looking photocell located on the back side of the mirror with your finger or a piece of black tape. Now shine a flashlight on the photocell next to the green LED.
- After a few seconds, the mirror will begin to darken (time may vary with ambient light levels).
- Remove finger or tape from the forward photocell and turn off the flashlight. The mirror will begin to un-dim.
- If you installed a mirror with compass and temperature, make sure the display is illuminated.
- Confirm the mirror is displaying an accurate temperature reading.
- If you installed a mirror with map lights, make sure the map lights can be turned on and off properly.
- Mirror testing is now complete

13.0 Final Assembly

13.1 You are now ready for final assembly of vehicle panels and components. Operating instructions for your mirror are located on a hang tag provided with your mirror kit.

13.2 Calibrate your mirrors compass if equipped with feature.

13.3 Program your HOMELINK® buttons if equipped with feature.

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Complete Parts List Required for Installation

Mirror Kit	Harness and Parts
GENK 20A 50-9050549001M	Wire Harness(50-517198G), Instructions(72-120), Hang Tag(72-102), Temp Harness(50-517GTEMP), Temp Probe(50-9RT1H832)
GENK 30 50-9050620001M	Wire Harness(50-517102G), Instructions(72-120), Hang Tag(72-110), Temp Harness(50-517GTEMP), Temp Probe(50-9RT1H832)
GENK 40A 50-9050652001M	Wire Harness(50-517101G), Instructions(72-120), HomeLink® Instructions(72-109)
GENK 50A 50-9050548001M	Wire Harness(50-517101G), Instructions(72-120), Hang Tag(72-106), Temp Harness(50-517GTEMP), Temp Probe(50-9RT1H832), HomeLink® Instructions(72-109)
GENK 60 50-9050673001M	Wire Harness(50-517103G), Instructions(72-120), Hang Tag(72-132), Temp Harness(50-517GTEMP), Temp Probe(50-9RT1H832), HomeLink® Instructions(72-109)

Troubleshooting Tips

Problem	SOLUTION
Temperature reading of -20 degrees F or lower.	Turn off ignition for 2 ½ hours. Do not unplug mirror. This problem is most often caused by connecting or disconnecting the temperature circuit while mirror is powered on.
Temperature reading higher than ambient air temperature and or rises after vehicle engine has warmed up.	Temp probe location improper. Move probe away from heat sources; radiator, engine, etc. Mount probe so it is exposed to free outside airflow.
Temperature reading low.	Clean corrosion from temp probe contacts and/or at harness connection. Corrosion changes the resistance in the temp circuit. Never use butt splices where wires are exposed to road spray – always use solder and heat shrink if green wires are cut.
Temperature display shows OC.	There is an open circuit in the temperature wires. Confirm that temperature probe and temp harness are plugged in. Make sure mirror is not powered when connecting/disconnecting the temperature circuit. Check green wires for break or damage. Ohm test temperature probe; if open replace probe.
Temperature display shows SC	There is a short circuit in the green temperature wires. Check green wires for pinch and or short to ground.