DESCRIPTION & OPERATION

CAUTION: To prevent scratching, wet the windshield before turning on wipers.

Wipers use a depressed-park system (wipers park below bottom of windshield). System uses a 2-speed wiper motor. A washer motor is attached to the washer fluid reservoir. A circuit board on the wiper motor cover controls power to the washer motor and delay function.

ADJUSTMENTS

WIPER ARMS

1. Move wipers to outer position (top of sweep). Measure distance between top of wiper blade and windshield molding. Distance should be as follows:
   - Left wiper blade should be about 2" (50 mm).
   - Right wiper blade should be about 13/16" (20 mm).
2. Move wipers to park position. Distance between inboard tip of right wiper blade and center of left wiper blade should not exceed about 2" (50 mm). While wipers are operating, wiping pattern of right blade should overlap wiping pattern of left blade.
3. If distance is not as specified, remove right wiper arm. Loosen adjusting nuts securing both transmission links to crank arm. Rotate left wiper arm to a position slightly below its stop. Tighten adjusting nuts. Lift both wiper arms over their respective stops. Ensure wiping pattern and parking position are correct.
4. Wiper arm tip pressure (force needed to lift wiper arm perpendicular to windshield) should be 26-33 oz. (7.2-9.2 N) checked at tip of arm with wipers at mid-wipe position and wiper blade assemblies removed.

SYSTEM CHECK

1. Turn ignition switch to RUN position. With wiper switch off, press washer switch for 2-4 seconds and release. Washer should spray as long as switch is held in ON position. Wipers should run at low speed. After switch is released, washer stops, and wipers return to park after 2-4 sweeps.
2. Move wiper switch to INT position. Move wiper switch through delay range. Wipers should make one complete sweep, then pause for 1-22 seconds (depending on delay setting) before making next sweep. With wiper switch in INT position, depress washer switch. Washer should spray as long as switch is held. Wipers should run at low speed while spraying and continue 2-4 sweeps after switch is released. Wipers should then return to pulse operation.
3. Move wiper switch to LO position. Wipers should operate continuously at low speed. Move wiper switch to HI position. Wipers should operate continuously at high speed.
4. Move wiper switch to OFF position. Wipers should return to park at low speed. Move wiper switch to

MIST position and release. Wipers should make one complete sweep and return to park position.

TROUBLE SHOOTING

PRELIMINARY CHECK

Before performing any test on wiper/washer system, check the following items to eliminate common problems:

- Check wiper/washer related fuses.
- Check washer reservoir level.
- Check for kinked or damaged washer hoses.
- Check for damaged washer pump.
- Check for damaged, loose or corroded connections.
- Check for damaged wiring harness.
- Ensure washer nozzles are not plugged.
- Check for binding or damaged wiper arm linkage.

Correct any obvious problems before continuing testing. If problem still exists, identify wiper/washer symptom and perform appropriate test. See TESTING.

TESTING

NOTE: Before testing, ensure wiper motor is securely mounted. Ensure washer hoses are not kinked, disconnected or broken. Ensure fuses are okay. See WIRING DIAGRAMS for terminal location.

WIPERS DO NOT OPERATE IN ANY MODE

1. Locate wiper/washer switch 6-pin connector C219 at base of steering column. Turn ignition switch to RUN position. Using test light, backprobe between ground and wiper switch connector terminal "C" (Yellow wire). If test light is on, go to next step. If test light does not come on, check for blown fuse or fault in Yellow wire circuit.
2. Turn wiper switch to LO. Connect jumper wire between wiper motor housing and ground. If wiper motor does not operate, replace wiper motor. If wiper motor operates, repair open circuit in Black wire.

WIPERS WILL NOT SHUT OFF

1. Turn ignition switch to RUN position. Turn wiper switch to OFF position. Disconnect wiper switch 6-pin connector C219 located at base of steering column. If wiper motor is still operating, go to next step. If wiper motor stops operating, check for short to battery voltage in Yellow wire circuit. If no faults are found, replace wiper switch.
2. Connect voltmeter between chassis ground and wiper switch 6-pin connector C219, terminal "B" (Gray wire). If voltage is one volt or more, go to next step. If measured voltage is less than one volt, go to step

4).

3. Reconnect wiper switch 6-pin connector C219. Disconnect wiper motor connector. Connect voltmeter between chassis ground and wiper switch connector terminal "D" (Gray wire). If voltage is one volt or more, repair circuit short to battery voltage in Gray wire circuit. If voltage is less than one volt, replace wiper motor cover.
4. Reconnect wiper switch connector C219. Disconnect wiper motor connector. Connect voltmeter between chassis ground and wiper motor switch connector terminal "C" (Purple wire). If voltage is 12 volts or more, repair short to battery voltage in Purple wire circuit. If voltage is less than 12 volts, replace wiper motor cover.

WIPERS RUN AT HIGH SPEED ONLY

1. Turn ignition switch to RUN position. Turn wiper switch to LO position. Locate wiper switch connector C219 at base of steering column. Using DVOM, backprobe from wiper switch connector terminal "E" (Pink wire) to ground. If one volt or less is present, go to next step. If more than volt is present, go to step 3).
2. Check for bad connection at wiper/washer switch connector C219. Check for fault in Yellow wire circuit. If no faults are found, replace wiper/washer switch.
3. Disconnect wiper switch. Using DVOM, measure voltage between ground and wiper switch connector terminal "D" (Gray wire) to ground. If one volt or less is present, repair open circuit in Gray wire. If one volt or more is present, replace wiper motor cover.

WIPER INTERMITTENT MODE INOPERATIVE

1. Turn ignition off. Locate wiper/washer switch connector C219 at base of steering column. Disconnect wiper switch harness connector C219. Turn wiper switch to DELAY position. Connect ohmmeter between wiper switch connector terminals "A" (Dark Green wire) and "C" (Yellow wire).
2. Move wiper switch through entire delay range. Resistance should change smoothly from about 39 k/ohms to 680 k/ohms. If resistance is not as specified, replace wiper switch. If resistance is as specified, go to next step.
3. Reconnect wiper/washer switch connector. Disconnect wiper motor connector. Turn ignition switch to RUN position. Measure voltage between ground and wiper motor connector terminal "E" (Dark Green wire). If battery voltage is present, replace wiper motor cover. If battery voltage is not present, check for open circuit or poor connection in Dark Green wire circuit. If no faults are found, replace wiper motor cover.

WIPERS DO NOT PARK WHEN SHUT OFF

1. Turn ignition switch to RUN position. Turn wiper off. Disconnect wiper/washer switch connector C219. If wipers do not park, go to next step. If wipers park, replace wiper/washer switch.
2. Measure voltage from ground and wiper/washer switch connector C219 terminal "B" (Gray wire). If voltage is more than one volt, check for short to battery voltage in Gray wire circuit. If voltage is less than one volt, replace wiper motor cover.

WASHER MOTOR DOES NOT OPERATE

1. Disconnect washer motor connector. Turn ignition switch to RUN position. Connect test light between terminals of washer motor connector. While observing test light, activate washer switch. If test light is off, go to next step. If test light is on, check for poor wiring connection at washer motor. If connection is okay, replace washer motor.
2. Connect test light between chassis ground and washer motor connector terminal "A" (Pink wire). Activate washer switch. If test light is off, go to next step. If test light is on, check for open circuit in Black wire between washer motor and ground. If wire is okay, replace wiper motor.
3. Connect test light between chassis ground and washer motor connector terminal "B" (Black wire). Activate washer switch. If test light is off, replace wiper switch. If test light is on, check for open circuit in Black wire between washer motor and wiper motor. If wire is okay, replace wiper motor.

REMOVAL & INSTALLATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in the GENERAL INFORMATION section before disconnecting battery.

WIPER ARMS

Removal & Installation

Raise hood. Place a piece of masking tape on windshield at tip of each wiper blade for reassembly reference. Remove retaining nut cover and nut. Disconnect washer hose from nozzle. Separate wiper arm from wiper transmission shaft using Separator (J-39637). To install, reverse removal procedure. Ensure wiper arms are correctly positioned. See **WIPER ARMS** under ADJUSTMENTS.

WIPER DRIVE MODULE ASSEMBLY

Removal & Installation

Raise hood. Disconnect negative battery cable. Remove wiper arms. See **WIPER ARMS** . Remove cowl vent screen. Remove bolts and wiper motor module mounting bolts. Disconnect wiper motor electrical connector and module assembly. To install, reverse removal procedure. Ensure wiper arms are correctly positioned. See **WIPER ARMS** under ADJUSTMENTS.

WIPER MOTOR ASSEMBLY

Removal & Installation

Disconnect negative battery cable. Disconnect electrical connectors from wiper motor. Remove wiper arms. See **WIPER ARMS** . Remove left cowl vent screen. Remove wiper motor module. See **WIPER DRIVE MODULE ASSEMBLY** . Disconnect wiper transmission linkage from crank arm. Remove bolts and wiper motor from wiper module. Remove crank arm. To install, reverse removal procedure. When installing crank arm to wiper motor, ensure position of park latch is .157-197" (4-5 mm) from park tab. Ensure wiper arms are

correctly positioned. See **WIPER ARMS** .

WIPER MOTOR COVER (CIRCUIT BOARD)

Removal & Installation

Remove wiper motor assembly (if necessary). Remove screws and wiper motor cover. Ensure wiper motor is in park position. To complete installation, reverse removal procedure.

WIPER/WASHER SWITCH

Removal & Installation

Wiper/washer switch is an integral part of multifunction switch. See **STEERING COLUMN SWITCHES** article.

WASHER MOTOR

Removal & Installation

Drain and remove washer fluid reservoir. Remove washer motor from reservoir. To install, reverse removal procedure.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	**Ft. Lbs. (N.m)**
Wiper Arm Assembly-To-Shaft Nut	18 (25)
Wiper Motor Crank Arm Screw	11 (15)
	INCH Lbs. (N.m)
Washer Solvent Tank Assembly Mounting Screws	66 (7.5)
Wiper Drive System Module Screw	88 (10)
Wiper Motor Cover Assembly Screw	18 (2)
Wiper Motor-To-Bracket Screw	88 (10)
Wiper Transmission To Frame Screws	88 (10)

WIRING DIAGRAMS

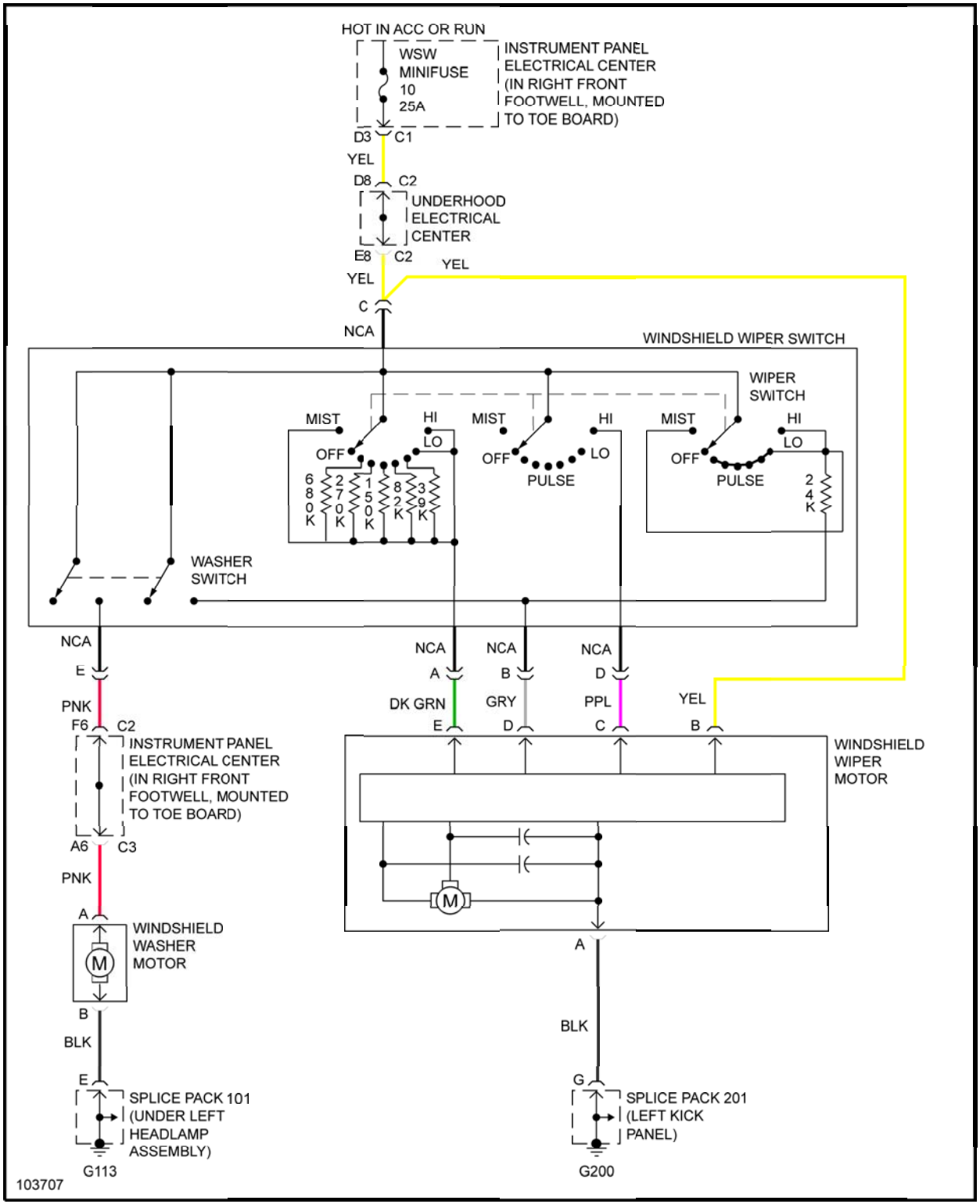
HOT IN ACC OR RUN
WSW
MINIFUSE
10
25A
INSTRUMENT PANEL
ELECTRICAL CENTER
(IN RIGHT FRONT
FOOTWELL, MOUNTED
TO TOE BOARD)
D3
C1
YEL
D8
C2
UNDERHOOD
ELECTRICAL
CENTER
E8
C2
YEL
YEL
C
NCA
WINDSHIELD WIPER SWITCH
WIPER
SWITCH
MIST
HI
LO
OFF
PULSE
6 8 0 K
2 7 0 K
1 5 0 K
8 2 K
3 9 K
2 4 K
WASHER
SWITCH
NCA
E
PNK
F6
C2
INSTRUMENT PANEL
ELECTRICAL CENTER
(IN RIGHT FRONT
FOOTWELL, MOUNTED
TO TOE BOARD)
A6
C3
PNK
A
WINDSHIELD
WASHER
MOTOR
B
BLK
E
SPLICE PACK 101
(UNDER LEFT
HEADLAMP
ASSEMBLY)
G113
NCA
A
NCA
B
NCA
D
DK GRN
GRY
PPL
YEL
E
D
C
B
WINDSHIELD
WIPER
MOTOR
M
A
BLK
G
SPLICE PACK 201
(LEFT KICK
PANEL)
G200
103707

Fig. 1: Front Wiper/Washer System Wiring Diagram