CHAPTER 90

POLICE VERSION

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CHAPTER 90

POLICE VERSION

90-00 Description

The Police Version is equipped with a nose-mounted gyro-stablized infrared camera, a flat screen monitor for viewing camera images, a video recorder, and a belly-mounted searchlight. Optional FM transceivers, a PA/Siren, Lojack equipment, and a GPS mapping system may also be installed. A dedicated, non-essential electrical bus distributes power to police equipment, and extended landing gear provides additional ground clearance for the camera and searchlight.

The R66 is a four-place helicopter when police equipment is installed.

Basic descriptions of police equipment and systems are given below. More detailed information can be found in manufacturer's documents supplied with individual pieces of equipment.

Some aircraft have a cockpit configuration that does not include the left side cyclic grip in order to prevent interference with the observer's LCD monitor.

There are two basic cockpit configurations (refer to R66 Pilot's Operating Handbook Section 9 Police Version Supplement for illustrations). One configuration uses a modified cyclic control without a left-side grip because the flat screen monitor would interfere. The second configuration uses the standard cyclic control with a left-side grip.

An additional circuit breaker panel on the ledge just forward of the pilot's seat contains all circuit breakers for police equipment. Depending on installed police options, the outboard section of the aft row of circuit breakers may be a 14-volt bus powered by a 28- to 14-volt converter. The police equipment master switch on the left side of the panel controls power to all police equipment.

NOTE
Police circuit breaker panel will not be powered by police equipment master switch unless avionics switch is also on.

Wiring for police equipment is in a separate harness and occupies portions of the main baggage compartment, right side under seat compartments, and right rear footwell. Protective covers isolate the wiring harness as appropriate.

Audio control panel(s) to accommodate police radios and other equipment are installed. The audio system receives power from the audio breaker on the main (left hand) circuit breaker panel. It is not connected to the police equipment master switch.

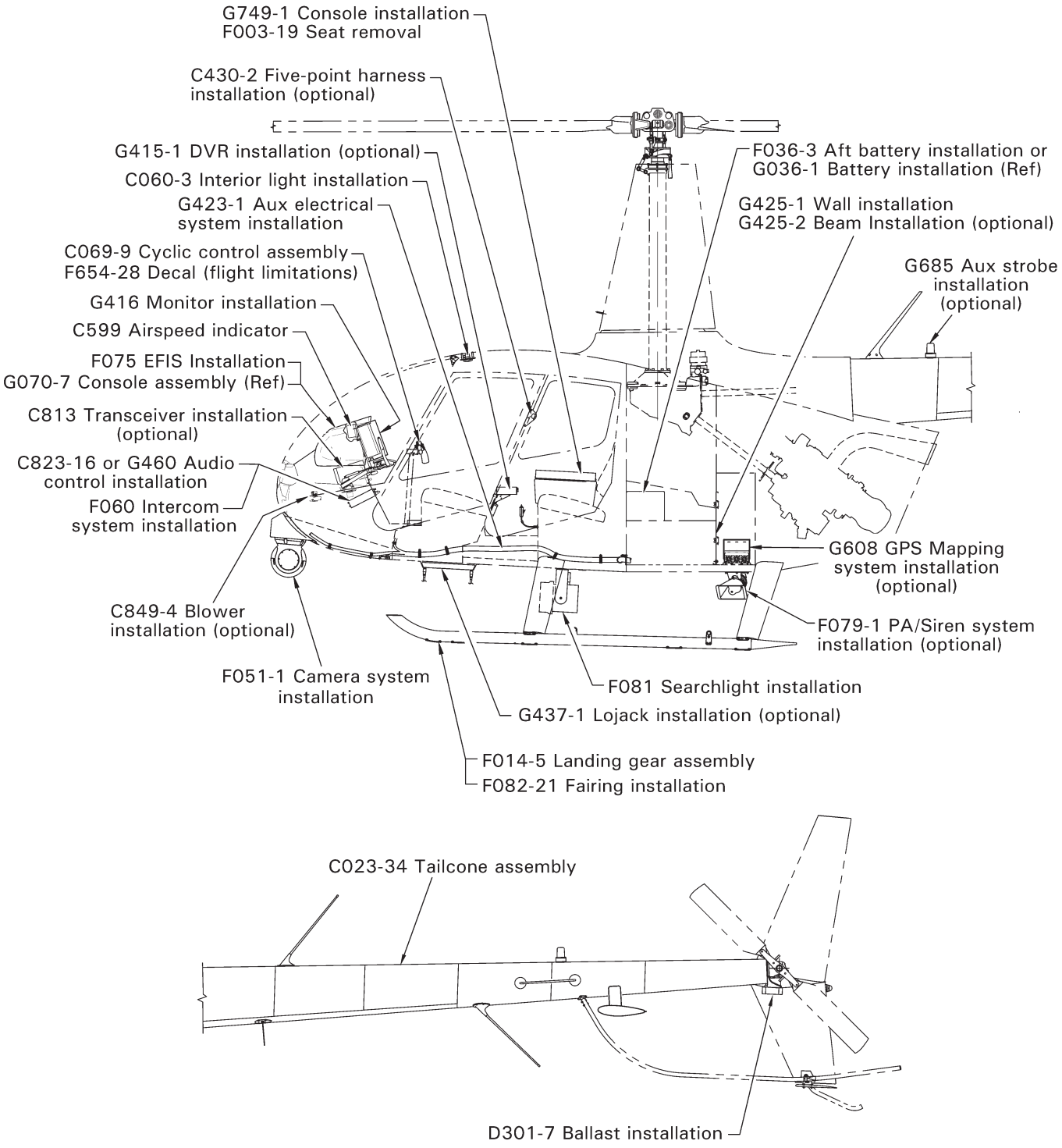


FIGURE 90-1 POLICE VERSION

90-00 Description (continued)

A transmit switch for the left front seat is provided on the floor near the observer's right heel. An intercom switch for the left front seat is provided either near the observer's right heel or at the outboard base of the seat box. An optional transmit switch for the left rear seat is also available. The optional switch is handheld on a cord which plugs into a jack beneath the left rear seat ICS button. Transmit functionality is tied to the selection on the observer's audio panel.

The center rear seat has been replaced with an arm rest and storage console.

Baggage is not permitted in the right rear under-seat compartment due to electronic equipment and wiring in that compartment.

An interior wall has been added to the main baggage compartment to create an electronic equipment compartment at the aft end.

Extended forward landing gear struts provide additional ground clearance for the camera and searchlight. The ground clearance at the tail is reduced by approximately 8 inches with the helicopter parked.

The infrared camera system consists of a gyro-stabilized, gimbal-mounted infrared/video camera in the chin and a power junction box in the main baggage compartment behind the interior wall. The camera is operated by the observer in the left front seat via a handheld controller. A tray and strap forward of the circuit breaker panel are provided for controller stowage when not in use.

A flat screen LCD monitor is located in front of the left front seat to display camera images.

For the earlier cockpit configuration, the monitor is equipped with a visor to minimize glare. The monitor mount is hinged to retract forward and down, out of the observer's way, when not in use.

For the later cockpit configuration, the monitor has no visor but is easily dimmed using a knob on its front face. The monitor mount is hinged on its inboard edge, and the monitor folds back against the left side of the instrument console, out of the observer's way, when not in use.

The optional digital video recorder (DVR) is mounted just aft of the space between the front backrests and controlled by a switch at the observer's station. The DVR can record images from the camera and play them back on the LCD monitor.

90-00 Description (continued)

The searchlight is installed on a motorized gimbal under the belly. The searchlight power junction box is located in the right rear under-seat compartment. The searchlight is steerable in azimuth and elevation and is operated from the left front seat via a remote control. An optional slaving system allows the searchlight to be slaved to follow the camera. The searchlight should be stowed horizontally when not in use to minimize chance of damage during a hard landing.

CAUTION

The searchlight is very bright and can disorient other pilots or ground personnel at long distances.

CAUTION

The searchlight beam is hot. Exposure to the beam at close range for more than a few seconds can result in burns.

An additional observer-side interior light is operated via a momentary foot switch on the left-hand forward floor. Power is supplied to the interior light via the "GAGES" breaker in the left hand circuit breaker panel and is not disconnected by the police equipment master switch.

A 100-watt speaker is located on the aircraft belly near the left rear landing gear strut. The PA system control panel is located in the avionics stack and allows the pilot or observer to select PA, radio, yelp, or siren for broadcast through the speaker.

A multi-band FM transceiver may be mounted either next to the LCD monitor or in the main avionics stack. The FM transceiver band(s) are selectable from the audio control panel(s).

The Lojack installation consists of a receiver installed in the main baggage compartment behind the interior wall, a display and control unit on the right side of the instrument console, and four belly-mounted stub antennas. Lojack is used to track stolen vehicles equipped with Lojack transmitters.

The GPS mapping computer is installed in the main baggage compartment behind the interior wall and allows an overhead view of the helicopter's area of operation to be displayed on the LCD monitor. The computer contains a database of streets, landmarks, and topography enabling direct navigation to street addresses and other points on the ground. The computer is accessed using a keyboard below the LCD monitor. An optional inertial monitoring unit can interface with the computer to keep the camera and/or searchlight trained on a fixed ground location while the helicopter maneuvers.

90-10 C023-34 Tailcone Assembly

Refer to Figure 90-1. The C023-34 tailcone assembly has provisions for two upper-mounted antennas and two lower-mounted antennas and NAV. Refer to § 6-80 for antenna locations.

Refer to § 53-40 for tailcone assembly maintenance procedures.

90-20 C060-3 Interior Light Installation

Refer to Figure 90-1. The C060-3 interior light installation is installed above the observer's seat, and has a floor-mounted switch.

A. Schematic

Refer to Figure 90-2 for C060-3 interior light installation wiring schematic.

90-30 C069 Cyclic Control Assembly

Refer to Figure 90-1. On earlier Police helicopters, the C069-9 cyclic control assembly was modified for clearance with the LCD monitor. The copilot removable grip assembly (transmit wiring) was omitted and the C058-11 grip weldment was plugged. A second grip was installed on the cyclic stick.

Refer to § 67-10 for cyclic control and grip assembly maintenance procedures.

A. Schematic

Refer to Figure 90-3 for C058-11 grip assembly wiring schematic.

90-40 C430-2 Five-Point Harness Installation (Optional)

Refer to Figure 90-1. The C430-2 five-point harness installation was optional equipment for earlier Police helicopters, and now is optional for all R66 Turbines (see § 6-10 for version descriptions).

Refer to § 25-10 for seat harness maintenance procedures.

90-50 C599 Airspeed Indicator

Police version airspeed limitations (130 knot Vne, KM/H) differ from standard version helicopters (140 knot Vne, KM/H) due to external equipment. On earlier Police helicopters, two indicators were available: one with kilometers per hour for primary markings and one with miles per hour for primary markings. On later Police helicopters, only an indicator with miles per hour for primary markings is approved.

Refer to § 95-42 for maintenance procedures. Refer to § 90-150 or § 90-155 EFIS Installation for equipment removal instructions prior to removing instrument face.

90-60 C813 Transceiver Installation (Optional)

A. Description

The Technisonic TDFM-600/6000/7000 series (C813-2; 5-band) and TDFM-9000 series (C813-4 and C813-5; 6-band) airborne transceivers are wired through the Technisonic A711L series audio control panel to allow for separate and simultaneous operation on each band. The C813-2 transceiver (earlier Police helicopters) is located at the observer's station. The C813-4 and C813-5 transceivers (separate installations) are located in the instrument panel for pilot and observer access.

B. Schematic

Refer to Figure 90-4 for C813-2 transceiver installation wiring schematic.

Refer to Figure 90-5 for C813-4 transceiver installation wiring schematic.

Refer to Figure 90-6 for C813-5 transceiver installation wiring schematic.

C. Removal

C813-2 (Technisonic TDFM-600) Transceiver:

1. Refer to Figure 90-1. Turn battery & avionics switches off and pull out (7.5 amp) circuit breaker at panel.
2. Remove screws securing D413-2 cover to D413-1 box assembly.
3. Disconnect D613-4 harness assembly from C813-2 transceiver.
4. Release slotted turnlock fasteners securing transceiver to box assembly and remove transceiver.

C813-4 (Technisonic TDFM-9000) Transceiver:

1. Refer to Figure 90-1. Turn battery & avionics switches off and pull out (10 amp) circuit breaker at panel.
2. Release slotted turnlock fasteners securing C813-4 transceiver to avionics tray and remove transceiver.

C813-5 (Technisonic TDFM-9000) Transceiver:

1. Refer to Figure 90-1. Turn battery & avionics switches off and pull out (10 amp) circuit breaker at panel.
2. Remove screws securing G413-14 cover to G070 console assembly and remove cover.
3. Disconnect G458-1 harness assembly and antenna cables from C813-5 transciever.
4. Release slotted turnlock fasteners and remove transceiver.

90-60 C813 Transceiver Installation (Optional; continued)

D. Installation

C813-2 (Technisonic TDFM-600) Transceiver:

1. Refer to Figure 90-1. Turn battery & avionics switches off and pull out (10 amp) circuit breaker at panel.
2. Position C813-2 transceiver in D413-1 box assembly and engage slotted turnlock fasteners. Verify security.
3. Connect D613-4 harness assembly to transceiver and verify security.
4. Position D413-2 cover on box assembly and install screws; verify security.
4. Push in (7.5 amp) circuit breaker at panel. Turn battery & avionics switches on.
5. Perform appropriate functional checks per Technisonic Industries Limited Installation and Operating Instructions (supplied with unit). Turn battery & avionics switches off.

C813-4 (Technisonic TDFM-9000) Transceiver:

1. Refer to Figure 90-1. Turn battery & avionics switches off and pull out (10 amp) circuit breaker at panel.
2. Position C813-4 transceiver in avionics tray and engage slotted turnlock fasteners. Verify security.
3. Push in (10 amp) circuit breaker at panel. Turn battery & avionics switches on.
4. Perform appropriate functional checks per Technisonic Industries Limited Installation and Operating Instructions (supplied with unit). Turn battery & avionics switches off.

C813-5 (Technisonic TDFM-9000) Transceiver:

1. Refer to Figure 90-1. Turn battery & avionics switches off and pull out (10 amp) circuit breaker at panel.
2. Position C813-5 transciever in G070 console assembly and engage slotted turnlock fasteners. Verify security.
3. Connect G458-1 harness assembly and antenna cables to transciever. Verify security.
4. Install screws securing G413-14 cover to console assembly; verify security.
5. Push in (10 amp) circuit breaker at panel. Turn battery & avionics switches on.
6. Perform appropriate functional checks per Technisonic Industries Limited Installation and Operating Instructions (supplied with unit). Turn battery & avionics switches off.

90-60 C813 Transceiver Installation (Optional; continued)

E. Scheduled Maintenance and Inspections

Refer to Technisonic Industries Limited Installation and Operating Instructions.

F. Special Maintenance and Inspections

1. Turn battery & avionics switches off. Open circuit breaker panel and remove transceiver per Part C, as required.
2. Inspect condition of and verify no obvious damage to transceiver, avionics tray (if installed), copper bus bars, circuit breaker, and wiring. Verify no loose, chafed, or broken wires or terminals. Verify no evidence of arcing. Verify equipment security.
3. Secure circuit breaker panel and install transceiver per Part D, as required. Perform ground checks per last two steps of Part D.

90-70 C823-16 Audio Control Installation

A. Removal

1. Refer to Figure 90-1. Turn battery switch off. Pull-out associated circuit breaker.
2. Release four slot-head fasteners securing C823-16 audio control to radio tray, and remove audio control.

B. Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Position C823-16 audio control into appropriate radio tray support and lock four slot-head fasteners.
3. Push-in associated circuit breaker & turn battery switch on. Perform post-installation function checks per the appropriate Northern Airborne Technology (NAT) Installation and Operation Manual (supplied with unit).

C. Schematic

Refer to Figure 90-7 for C823-16 audio control installation wiring schematic.

90-80 C849-4 Blower Installation (Optional)

Refer to Figure 90-1. The C849-4 blower installation is optional equipment for the Police Version.

A. Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Remove screws securing securing B050-22 or -23 upper console assembly to F033-1 lower console assembly and hinge upper console aft. Protect instrument face with foam support or equivalent.
3. Cut and discard ty-raps as required and disconnect TB1-1.5D blower wiring from harness wiring at connectors.
4. Pull hose off of blower and tape hose and blower openings to prevent contamination.
5. Remove hardware securing blower to D651-1 bracket, and remove blower.

B. Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Without pinching wiring, position TB1-1.5D blower on D651-1 bracket and install hardware. Verify security.
3. Remove tape and push hose onto blower. Verify security.
4. Connect blower wiring to harness at connectors and install ty-raps as required. Cinch ty-raps until snug without over-tightening and trim tips flush with heads.
5. Remove support and hinge B050-22 or -23 upper console assembly forward. Install screws securing upper console to F033-1 lower console assembly.
6. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.

90-90 D301 Ballast Installation

CAUTION

Altering fixed ballast can appreciably affect helicopter center of gravity (CG).

CAUTION

Maximum allowable empennage ballast is 21.00 lb on Police Versions. One upper and one lower weight are required. Available combinations provide total weight of 3, 6, 9, 12, 15, & 21 lb.

Refer to Chapter 8-00 for weight and balance information.

90-100 F003-19 Seat Removal

A. Description

Police version helicopters have no aft center seat installed. The following equipment is omitted: F628-4 connector assembly, center F628-6 buckle assembly, F931-1 seat assembly, A752-3 angle, and associated hardware.

90-110 F014-5 Landing Gear Installation

Refer to Figure 90-1. The F014-5 (extended) landing gear installation provides clearance for the F081 searchlight installation. F239-5 and -6 forward struts (extended gear) are approximately 2 inches taller than F239-3 and -4 forward struts (standard gear).

Refer to Chapter 32 for landing gear maintenance procedures, and for extended gear minimum tail skid height.

90-120 F036-3 Battery Installation

Refer to Figure 90-1. The F036-3 (aft) battery installation was the only approved battery configuration for earlier Police Version helicopters, for weight and balance purposes. Additional installation configurations are permissible on later Police Version helicopters.

Refer to § 96-10 for battery maintenance procedures.

90-130 F051-1 Camera System Installation

A. Gimbal Assembly Removal

NOTE

Removal of nose-mounted camera causes a large shift in CG of empty helicopter. Calculate weight and balance prior to flight with camera removed to assure aft CG limit is not exceeded.

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Remove screws securing G412-1 fairing to chin. Carefully lower fairing until clear of gimbal assembly, and remove fairing.
3. Disconnect cables from gimbal assembly.
4. Supporting gimbal assembly, remove fasteners securing D349-3 plate to D349-1 supports, and remove gimbal.

B. Gimbal Assembly Installation

NOTE

Removal of nose-mounted camera causes a large shift in CG of empty helicopter. Calculate weight and balance prior to flight with camera removed to assure aft CG limit is not exceeded.

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Position gimbal assembly's D349-3 plate between D349-1 supports and install fasters. Standard torque nuts per Section 20-32 and torque stripe per Figure 5-1. Verify security.
3. Connect cables to gimbal assembly.
4. Carefully raise G412-1 fairing around gimbal assembly, position fairing on chin, and install screws. Verify security.
5. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.

C. Controller Assembly Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Disconnect D616-1 (FLIR camera) controller assembly plug from G458 harness receptacle and remove controller.
3. As required, remove screws securing D417-5 box to circuit breaker panel and remove box.

90-130 F051-1 Camera System Installation (continued)

D. Controller Assembly Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. If removed, position D417-5 box on circuit breaker panel and install screws. Verify security.
3. Connect D616-1 (FLIR camera) controller assembly plug to G458 harness receptacle. Verify security.
4. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.
5. Holster controller assembly and secure with B219-4 strap assembly.

E. Electronics Control Unit Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Remove G428-1 wall assembly per § 90-220.
3. Disconnect cable assemblies from 19206-2XX electronics control unit.
4. Remove MS27039C0805 screws securing control unit to D428-16 brackets and G429-10 support, and remove control unit.

F. Electronics Control Unit Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Remove G428-1 wall assembly per § 90-220, if not previously accomplished.
3. Position 19206-2XX electronics control unit on G429-1 support assemblies. Align control unit, D428-16 brackets, and G429-10 support fastener holes and install MS27039C0805 screws. Verify security.
4. Connect cable assemblies to control unit. Verify security.
5. Install wall assembly per § 90-220.
6. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.

G. Schematic

Refer to Figures 90-8 for F051-1 camera system installation wiring schematic.

90-140 F060 Intercom System Installation

Refer to Figure 90-1. The F060 intercom system installation includes a second floor switch.

Refer to § 90-70 for C823-16 audio control installation maintenance procedures.

90-150 F075-2 EFIS Installation

90-151 C831-12, -13, & -14 (GTN-XXX Series) GPS/NAV/COM Installation

A. Description

The Garmin GTN 6XX/7XX-series GPS for the Police version with Garmin G500H integrated display system is installed in the pilot-side console location.

B. Maintenance

Refer to § 97-31 for maintenance procedures.

90-152 G060-4 (Garmin G500H) Upper Console Assembly Installation

A. Opening Console

1. Remove Garmin GDU 620 display per § 97-75.
2. Remove C813-4 transceiver per § 90-60.
3. Remove perimeter screws securing instrument face to console.
4. Disconnect instrument pitot-static lines. Plug lines.
5. Remove screws securing console assembly to keel panels and hinge console aft.

B. Securing Console

1. Hinge console assembly forward and install screws securing console to keel panels.
2. Position instrument face in helicopter, remove plugs, and connect pitot-static lines.
3. Install perimeter screws securing face to console. Verify security.
4. Install C813-4 transceiver per § 90-60.
5. Install Garmin GDU 620 display per § 97-75.
6. Perform pitot-static system leak check per § 95-30.

90-155 F075-8 EFIS Installation

90-156 F817-9 (Garmin G500H) GDU 1060 Display (R66 Police) Installation

A. Description

The Garmin GDU 1060 Display is installed in the pilot-side console location for the Police Version F075-8 EFIS installation.

B. Maintenance

Refer to § 97-76 for maintenance procedures.

90-157 F818-11 (G070 Console) GTN 6XX-series GPS/NAV/COM Installation

A. Description

The Garmin GTN 6XX-series GPS/NAV/COM is installed in the G070 upper console location for the Police Version F075-8 EFIS installation.

B. Maintenance

Refer to § 97-31 for maintenance procedures.

90-158 G070-7 (8-Instrument, High) Upper Console Assembly

A. Removing Upper Console

1. Remove C813-5 transceiver per § 90-60.
2. Remove GTN 650Xi GPS/NAV/COM per § 97-31.
3. Remove perimeter screws securing instrument face to console.
4. Disconnect instrument pitot-static lines. Plug lines.
5. Remove hardware securing console assembly to keel panels and lower console. Disconnect airframe harnesses from console harnesses and remove console.

B. Installing Upper Console

1. Connect airframe harnesses to console harnesses and position upper console on lower console and keel panels. Install hardware; verify security.
2. Position instrument face in helicopter, remove plugs, and connect pitot-static lines.
3. Install perimeter screws securing face to console. Verify security.
4. Install GTN 650Xi GPS/NAV/COM per § 97-31.
5. Install C813-5 transceiver per § 90-60.
6. Perform pitot-static system leak check per § 95-30.

90-160 F079-1 PA/Siren System Installation

A. Speaker Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Cut safety wire securing speaker cone to F644-1 bracket.
3. Unscrew cone and remove cone and speaker horn. Cut and discard remaining safety wire from inside of cone.
4. Slide back nipples and wire receptacles off of speaker electrical turrets.
5. Cut and discard speaker mounting bolt safety wire and remove bolts. Supporting speaker, remove two remaining mounting screws and hardware, and remove speaker.

B. Speaker Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Remove cone and speaker horn from speaker. Position speaker with drain hole down in F644-1 bracket and install mounting hardware. Special torque two bolts to 60 in.-lb., install 0.032-inch diameter lockwire, and safety bolts together. Verify speaker security.
3. Slide wire receptacles on speaker electrical turrets. Slide nipples over connections.
4. Install 0.032-inch diameter lockwire inside of cone and prepare safety. Position speaker horn, drilled hole on top, on speaker and install and tighten cone. Thread safety through hole and safety cone to bracket. Verify security.

CAUTION

Hearing loss can result if personnel do not wear appropriate hearing protection when in close proximity to an operating PA/Siren.

5. Push-in associated circuit breaker & turn battery switch on. Wearing appropriate hearing protection, perform appropriate post-installation function checks. Turn battery switch off.

C. Amplifier Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Open baggage compartment door. Remove aft left back rest per § 25-22.
3. Disconnect airframe wiring from amplifier at connectors. Remove hardware securing amplifier to G259-1 bulkhead and remove amplifier.

90-160 F079-1 PA/Siren System Installation (continued)

D. Amplifier Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Open baggage compartment door; remove aft left back rest per § 25-22, if not previously accomplished.
3. Position amplifer on G259-1 bulkhead and install mounting hardware. Verify security. Close baggage compartment door.
4. Connect airframe wiring to amplifier at connectors. Verify security. Install aft left back rest per § 25-22.

CAUTION

Hearing loss can result if personnel do not wear appropriate hearing protection when in close proximity to an operating PA/ Siren.

5. Push-in associated circuit breaker. Turn battery switch on. Wearing appropriate hearing protection, perform appropriate post-installation function checks. Turn battery switch off.

E. Schematic

Refer to Figure 90-9 for F079-1 PA/Siren system installation wiring schematic.

90-170 F081 Searchlight Installation

CAUTION

The searchlight is very bright and can disorient other pilots or ground personnel at long distances.

CAUTION

The searchlight beam is very hot. Exposure to the beam at close range for more than a few seconds can result in burns.

A. D432-1 or -3 Gimbal Assembly Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Disconnect large wiring connector from aft side of 024711-31 searchlight assembly.
3. Hinge aft right seat assembly forward. Disconnect searchlight wires connected to D432-2 or -4 gearmotor assembly at connectors.
4. Cut and discard ty-raps as required and remove spirap to separate gearmotor and searchlight harnesses. Pull gearmotor wiring thru hole in belly, toward searchlight.
5. Cut and discard safety wire securing mounting nut to adjacent screw.
6. Have a second person support the searchlight assembly, and prevent it from rotating. Remove nut, washer, searchlight, and spacer washer.

B. D432-1 or -3 Gimbal Assembly Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Install spacer washer (shoulder facing up), 024711-31 searchlight assembly, flat washer, and nut.
3. Align the searchlight canister with the helicopter fore-to-aft axis. Have a second person support the searchlight assembly, and prevent it from rotating. Special torque nut to 20 ft-lb, install 0.032-inch diameter lockwire, and safety nut to adjacent screw. Verify security.
4. Connect large wiring connector to aft side of searchlight assembly.
5. Hinge aft right seat assembly forward. Route D432-2 or -4 gearmotor assembly wiring thru hole in belly and connect wiring at connectors.
6. Install spirap. Install one ty-rap near each end of spirap to secure harnesses together. Cinch ty-raps until snug without over-tightening and trim tips flush with heads. Hinge seat assembly forward.
7. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.

C. Schematic

Refer to Figures 90-10 and 90-11 for F081 searchlight installation wiring schematic.

90-180 F082-21 Fairing Installation

Refer to § 90-80. The F082-21 fairing installation have (longer) fairing skins for extended landing gear.

Refer to § 32-40 for fairing assembly maintenance procedures.

90-190 G415-1 DVR Installation (Optional)

A. DVR Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Disconnect cables from UDVP-PRO DVR connectors.
3. Remove hardware securing DVR to D856-5 brackets, and remove DVR.

B. DVR Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Position UDVP-PRO DVR on D856-5 brackets and install hardware. Verify security.
3. Connect cables to DVR connectors.
4. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.

C. Converter Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Cut and discard ty-raps, as required, securing XM-DVR PRO converter output cable and input wiring to harness. Disconnect output cable from UDVP-PRO DVR. Disconnect input wiring from harness at connectors.
3. Remove F680-3 collective cover assembly. Remove hardware securing converter to F370-1 panel, and remove converter.

D. Converter Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Remove F680-3 collective cover assembly, if not previously accomplished.
3. Position XM-DVR PRO converter on F370-1 panel and install hardware. Verify security. Install F680-3 collective cover assembly.
4. Connect converter input wiring to harness at connectors. Connect output cable to DVR. Install ty-raps as required to secure wiring and cable to harness. Cinch ty-raps until snug without over-tightening and trim tips flush with heads.
5. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.

E. Schematic

Refer to Figure 90-12 and 90-13 for G415-1 DVR installation wiring schematic.

90-200 G416 Monitor Installation

A. Description

The G416-1 monitor installation (earlier helicopters) hinges forward and down for stowing. The G416-4 and G416-5 monitor installation hinges forward at the right edge to stow alongside the console.

B. Schematic

Refer to Figure 90-12 for G416-1 monitor installation wiring schematic.

Refer to Figure 90-13 for G416-4 monitor installation wiring schematic.

Refer to Figure 90-14 for G416-5 monitor installation wiring schematic.

C. Removal

G416-1 Monitor Installation

1. Turn battery switch off and pull-out MONITOR (2 amp) circuit breaker at panel.
2. Disconnect cables from V-R1041-RH monitor.
3. Remove hardware securing MS21919WDG8 clamp to monitor.
4. Support monitor. Remove A483-1 knob with associated hardware, and DK-225 knob with associated hardware, securing monitor to D409-8 pivot assembly. Remove monitor.
5. Remove screws securing D763-3 visor assembly to monitor.

G416-4 Monitor Installation

1. Turn battery switch off and pull-out MONITOR (2 amp) circuit breaker at panel.
2. Disconnect G458 harness assembly cables from DVI 10LDB_RH monitor.
3. Remove screws securing monitor to G417-1 pivot assembly and G417-4 tray assembly and remove monitor.

G416-5 Monitor Installation

1. Turn battery switch off and pull-out MONITOR (2 amp) circuit breaker at panel.
2. Disconnect G458 harness assembly cables from BHB12HDR15 monitor.
3. Remove screws securing monitor to G417-5 pivot assembly and G417-7 tray assembly and remove monitor.

90-200 G416 Monitor Installation (continued)

D. Installation

G416-1 Monitor Installation

1. Install screws securing D763-3 visor assembly to V-R1041-RH monitor. Verify security.
2. Turn battery switch off and pull-out MONITOR (2 amp) circuit breaker at panel. Position monitor on D409-8 pivot assembly; install A483-1 knob with associated hardware, and DK-225 knob with associated hardware, securing monitor to pivot assembly. Adjust angle as desired. Verify security.
3. Install hardware securing MS21919WDG8 clamp to monitor.
4. Connect cables to monitor.
5. Push in (2 amp) circuit breaker at panel. Turn battery & avionics switches on. Perform appropriate post-installation function checks. Turn battery & avionics switches off.

G416-4 Monitor Installation

1. Turn battery switch off and pull-out MONITOR (2 amp) circuit breaker at panel.
2. Position DVI 10LDB_RH monitor on G417-1 pivot assembly and G417-4 tray assembly and install screws. Verify security.
3. Connect G458 harness assembly cables to monitor.
4. Push in (2 amp) circuit breaker at panel. Turn battery & avionics switches on. Perform appropriate post-installation function checks. Turn battery & avionics switches off.

G416-5 Monitor Installation

1. Turn battery switch off and pull-out MONITOR (2 amp) circuit breaker at panel.
2. Position BHB12HDR15 monitor on G417-5 pivot assembly and G417-7 tray assembly and install screws. Verify security.
3. Connect G458 harness assembly cables to monitor.
4. Push in (2 amp) circuit breaker at panel. Turn battery & avionics switches on. Perform appropriate post-installation function checks. Turn battery & avionics switches off.

E. Scheduled Maintenance and Inspections

On condition.

F. Special Maintenance and Inspections

Contact Marshall Electronics or Boland Communications Technical Support for assistance.

90-210 G423-1 Aux Electrical System Installation

A. Schematic

Refer to § 90-280 for aux electrical system schematics.

90-220 G425-1 Wall Installation

A. Removal

1. Refer to Figure 90-1. Open baggage compartment door. Release quarter-turn slot and wing head fasteners securing G428-1 wall assembly to G238-1 bulkhead and G428-2 angles. Carefully remove wall.

B. Installation

1. Refer to Figure 90-1. Open baggage compartment door. Verify no foreign objects aft of wall mounting points. Verify proper installation and security of equipment.
2. Align G428-1 wall assembly quarter-turn slot and wing head fasteners with receptacles on G238-1 bulkhead and G428-2 angles, and lock fasteners. Verify security. Close baggage compartment door.

90-230 G437-1 Lojack Installation

A. Display Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Disconnect cable from 4106-0006-00 display.
3. Remove screws securing D600-3 visor assembly and display to D436-6 support. Remove visor and display.

B. Display Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Connect cable to 4106-0006-00 display.
3. Position D600-3 visor assembly and display on D436-6 support and install screws. Verify security.
4. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.

C. Receiver Removal

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Remove G428-1 wall assembly per § 90-220.
3. Remove screws securing two cable backshells to 4107-0003-10 receiver. Disconnect all cables from receiver.
4. Remove screws securing receiver to G429-3 and G429-4 support assemblies, and remove receiver.

D. Receiver Installation

1. Refer to Figure 90-1. Turn battery switch off & pull-out associated circuit breaker.
2. Remove G428-1 wall assembly per Section 90-220, if not previously accomplished.
3. Position 4107-0003-10 receiver on G429-3 and G429-4 support assemblies and install screws. Verify security.
4. Connect all cables to receiver. Install screws securing two cable backshells to receiver. Verify security.
5. Install G428-1 wall assembly per § 90-220.
6. Push-in associated circuit breaker & turn battery switch on. Perform appropriate post-installation function checks. Turn battery switch off.

E. Schematic

Refer to Figure 90-15 for G437-1 Lojack installation wiring schematic.

90-240 G460 Audio Control Installation

A. Description

Two Technisonic A711L-series audio control panels are installed. The observer's audio control panel is installed in the main avionics stack, and the pilot's panel is installed in the pilot's side console. (Earlier police version helicopters had a dual audio panel located in the avionics stack; refer to § 90-140).

B. Schematic

Refer to Figure 90-17 for G460 audio control installation wiring schematic.

C. Removal

1. Turn battery switch off and pull out ICS (3 amp) circuit breaker at panel.
2. Loosen radio key securing Technisonic A711L-series audio control to avionics tray.
3. Carefully unplug/remove audio control from tray.

D. Installation

1. Turn battery switch off and pull out ICS (3 amp) circuit breaker at panel.
2. Carefully plug-in/install Technisonic A711L-series audio control in appropriate location in avionics tray.
3. Tighten radio key securing audio control to tray. Verify equipment security.
4. Push in ICS (3 amp) circuit breakers at panel. Turn battery & avionics switches on.
5. Perform appropriate functional checks per Technisonic Industries Limited Installation and Operating Instructions. Turn battery & avionics switches off.

E. Scheduled Maintenance and Inspections

Refer to Technisonic Industries Limited Installation and Operating Instructions.

F. Special Maintenance and Inspections

1. Turn battery & avionics switches off. Open circuit breaker panel and upper or pilot's side console.
2. Inspect condition of and verify no obvious damage to audio control, radio tray, copper bus bars, circuit breaker, and wiring. Verify no loose, chafed, or broken wires or terminals. Verify no evidence of arcing. Verify equipment security.
3. Secure circuit breaker panel and upper or pilot's side console. Perform ground checks per Part D steps 4 and 5.

90-250 G608 GPS Mapping System Installation

A. Description

The GPS mapping computer is installed in the main baggage compartment behind the interior wall and allows an overhead view of the helicopter's area of operation to be displayed on the LCD monitor. The computer contains a database of streets, landmarks, and topography enabling direct navigation to street addresses and other points on the ground. The computer is accessed using a keyboard below the LCD monitor. An optional inertial monitoring unit can interface with the computer to keep the camera and/or searchlight trained on a fixed ground location while the helicopter maneuvers.

B. Schematic

Refer to Figures 90-18 for G608 GPS mapping and MDT installation wiring schematic.

C. Removal

Viewsync3D Computer

1. Turn battery switch off and pull out VIEWSYNC (5 amp) circuit breaker at panel.
2. Remove G428-1 wall assembly per § 90-220.
3. Disconnect cables from Viewsync3D computer.
4. Remove hardware securing computer to isolator mounting tray and remove computer.

UC-5300/6000 Computer

1. Turn battery switch off and pull out GPS MAP (5 amp) circuit breaker at panel.
2. Remove G428-1 wall assembly per § 90-220.
3. Disconnect cables from UC-5300/6000 computer.
4. Remove hardware securing computer to isolator mounting tray and remove computer.

IMU Sensor (if installed)

1. Turn battery switch off and pull out GPS MAP (5 amp) circuit breaker at panel.
2. Remove F445-1 and F680-3 cover assemblies and hinge forward left seat forward.
3. Remove hardware securing G702-9 cover assembly to seat assembly.
4. Disconnect cables from IMU Sensor.
5. Remove hardware securing IMU Sensor to G429-15 support assembly and remove IMU Sensor.

90-250 G608 GPS Mapping System Installation (continued)

D. Installation

Viewsync3D Computer

1. Turn battery switch off and pull out VIEWSYNC (5 amp) circuit breaker at panel.
2. Position Viewsync3D computer on isolator mounting tray and install hardware. Verify security.
3. Connect cables to computer.
4. Install G428-1 wall assembly per MM § 90-220.
5. Push in VIEWSYNC (5 amp) circuit breakers at panel. Turn battery & avionics switches on.
6. Perform appropriate functional checks per Aerocomputers Airborne Systems UC-5300 Operating Instructions. Turn battery & avionics switches off.

UC-5300/6000 Computer

1. Turn battery switch off and pull out GPS MAP (5 amp) circuit breaker at panel.
2. Position UC-5300/6000 computer on isolator mounting tray and install hardware. Verify security.
3. Connect cables to computer.
4. Install G428-1 wall assembly per MM § 90-220.
5. Push in GPS MAP (5 amp) circuit breakers at panel. Turn battery & avionics switches on.
6. Perform appropriate functional checks per Aerocomputers Airborne Systems UC-5300/6000 Operating Instructions. Turn battery & avionics switches off.

IMU Sensor (if installed)

1. Turn battery switch off and pull out GPS MAP (5 amp) circuit breaker at panel.
2. Position IMU Sensor on G429-15 support assembly and install hardware. Verify security.
3. Connect cables to IMU Sensor.
4. Install hardware securing G702-9 cover assembly to seat assembly.
5. Install F445-1 and F680-3 cover assemblies and hinge forward left seat aft.
6. Push in GPS MAP (5 amp) circuit breakers at panel. Turn battery & avionics switches on.
7. Perform appropriate functional checks per Aerocomputers Airborne Systems UC-5300 Operating Instructions. Turn battery & avionics switches off.

90-250 G608 GPS Mapping System Installation (continued)

E. Antenna

Refer to § 6-80 for antenna locations & R66 Illustrated Parts Catalog (IPC) Chapter 6.

NOTE
Antenna installation depends on optional equipment installed.

Removal

1. Turn battery switch off and pull out GPS MAP (5 amp) circuit breaker at panel.
2. Remove hardware securing G796-1 duct assembly to cabin and remove duct.
3. Disconnect antenna cable from antenna. Remove screws securing antenna to cabin and remove antenna.

Installation

1. Turn battery switch off and pull out GPS MAP (5 amp) circuit breaker at panel.
2. Position antenna on cabin and install hardware. Verify security. Connect antenna cable.
3. Position G796-1 duct assembly on cabin and install hardware. Verify security.
4. Perform ground checks per Part D IMU Sensor steps 6 and 7.

F. Scheduled Maintenance and Inspections

On condition.

G. Special Maintenance and Inspections

Contact Aerocomputers Airborne Systems Technical Support for assistance.

90-260 G685 Aux Strobe Light Installation

Refer to § 33-11 for maintenance procedures.

90-270 G749-1 Console Installation

A. Removal

1. Refer to Figure 90-1. Unlatch G750-1 tray and remove contents from G749-2 console assembly. Latch tray.
2. Remove screws securing console assembly to F377-1 support assembly, and remove console.

B. Installation

1. Refer to Figure 90-1. Unlatch G750-1 tray and remove contents from G749-2 console assembly. Latch tray.
2. Position console on F377-1 support assembly and install screws. Verify security.

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90-280 Wiring Schematics

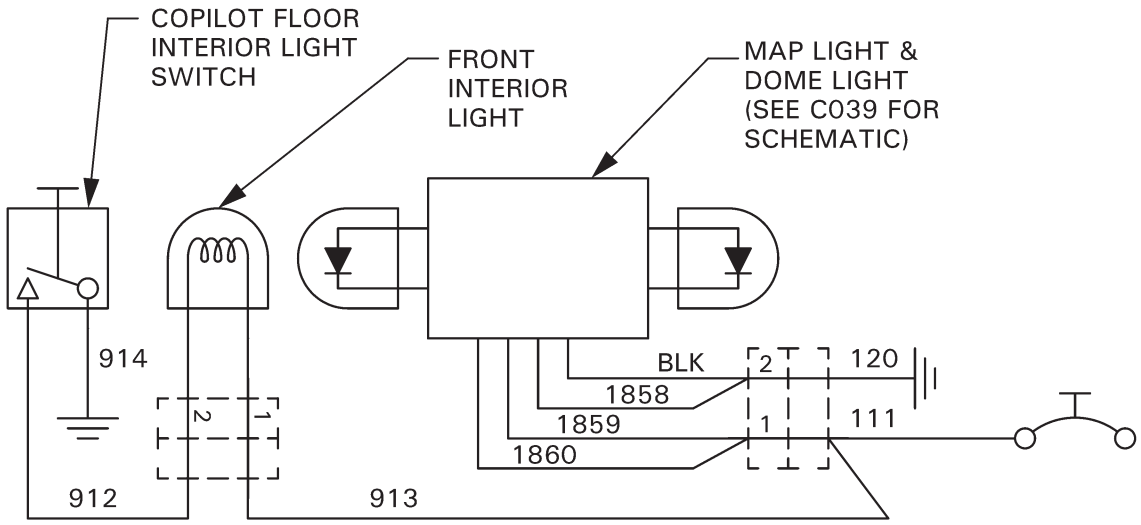
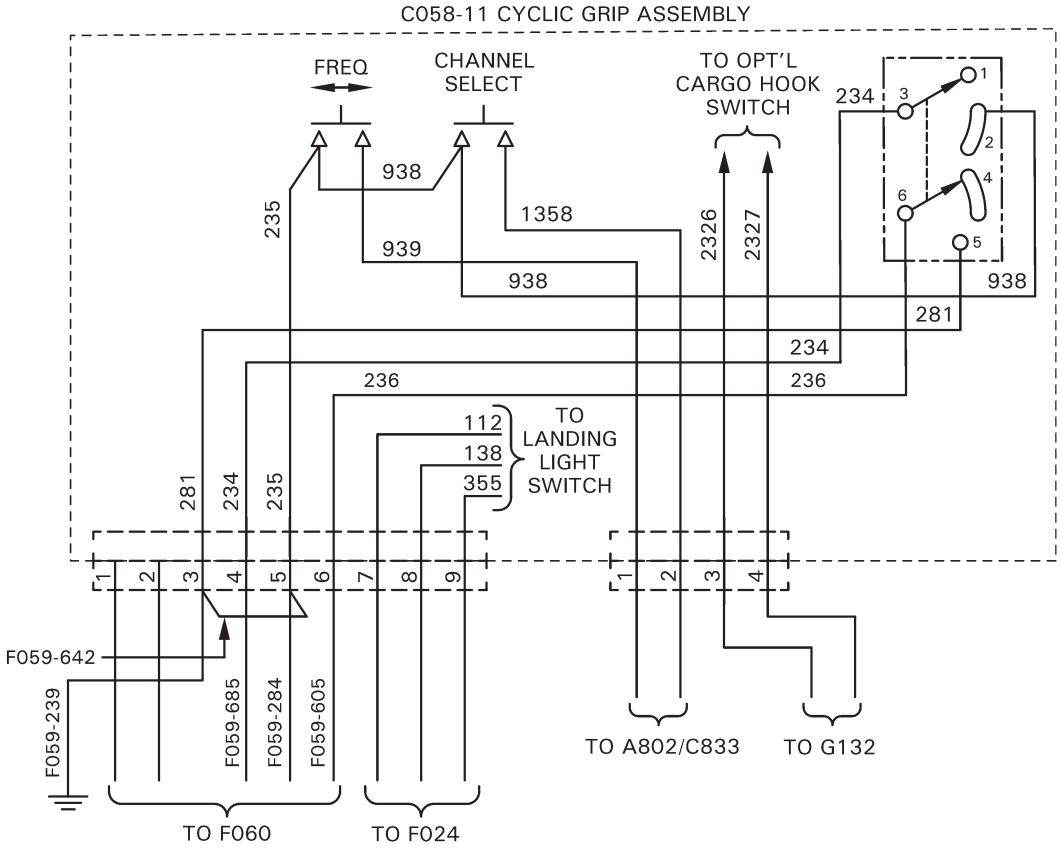


FIGURE 90-2 CO60-3 INTERIOR LIGHT INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

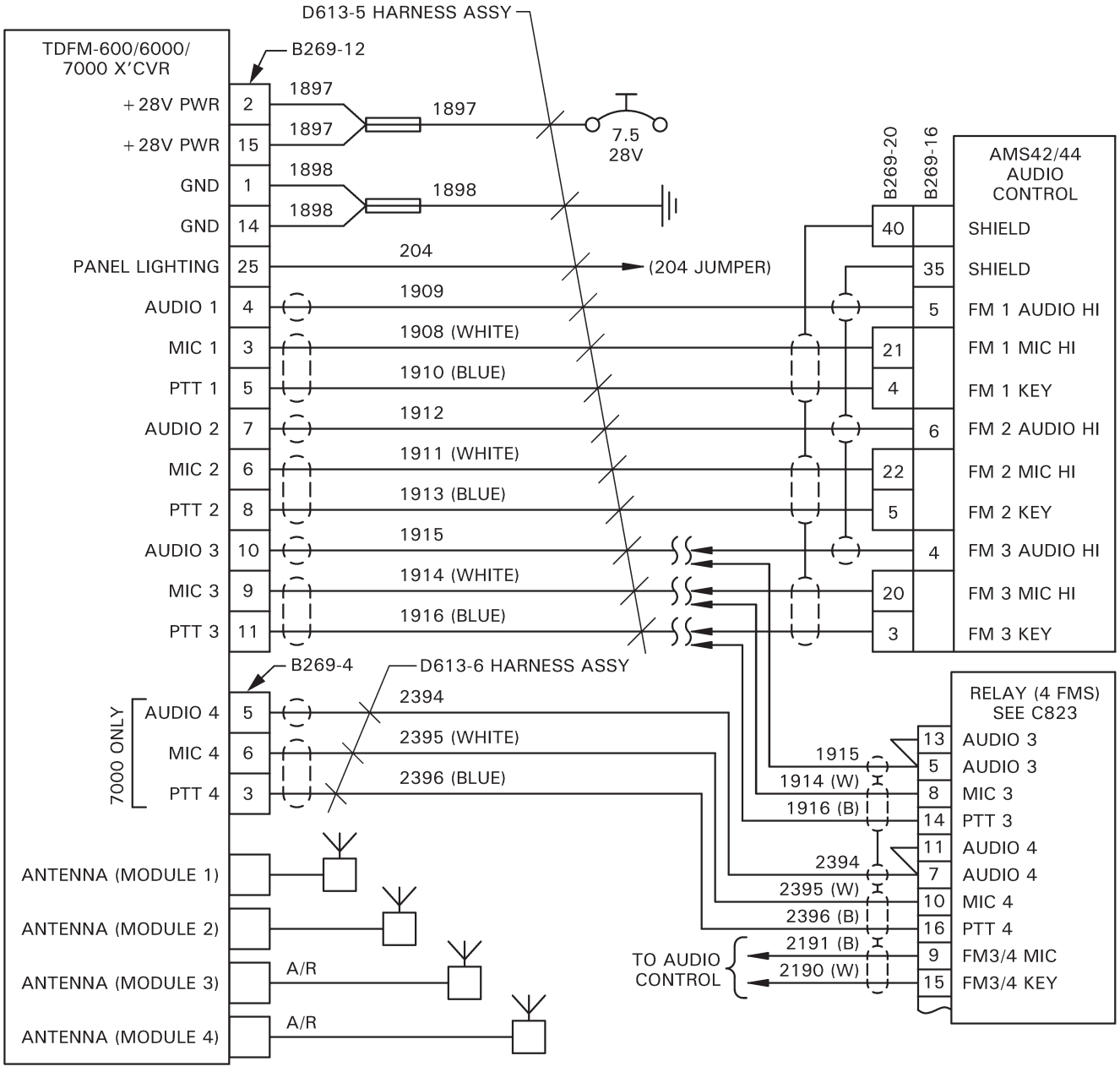


F060 REV C

FIGURE 90-3 C058-11 GRIP ASSEMBLY WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

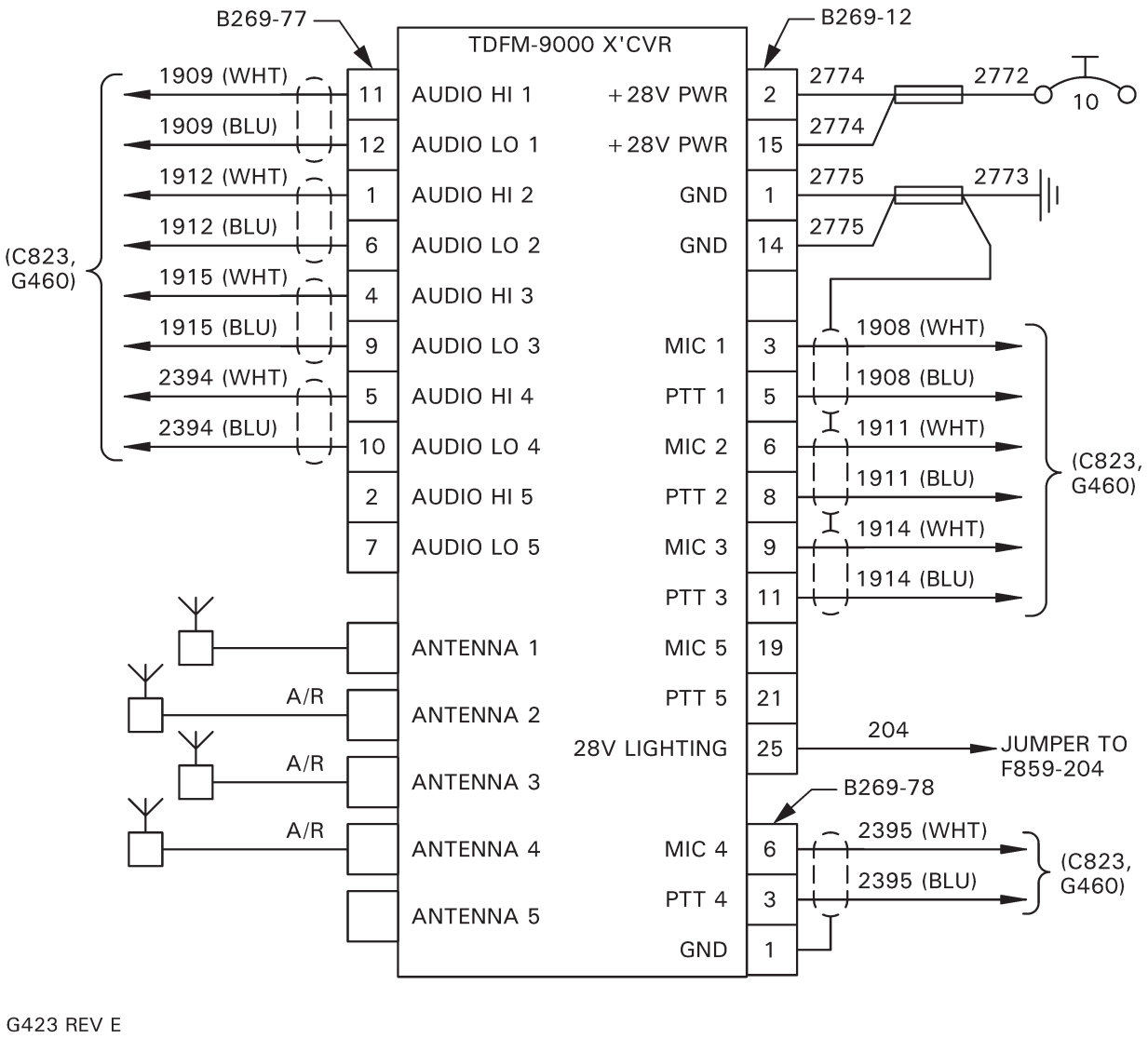


G423 REV E

FIGURE 90-4 C813-2 TRANSCEIVER INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)



G423 REV E

FIGURE 90-5 C813-4 TRANSCEIVER INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

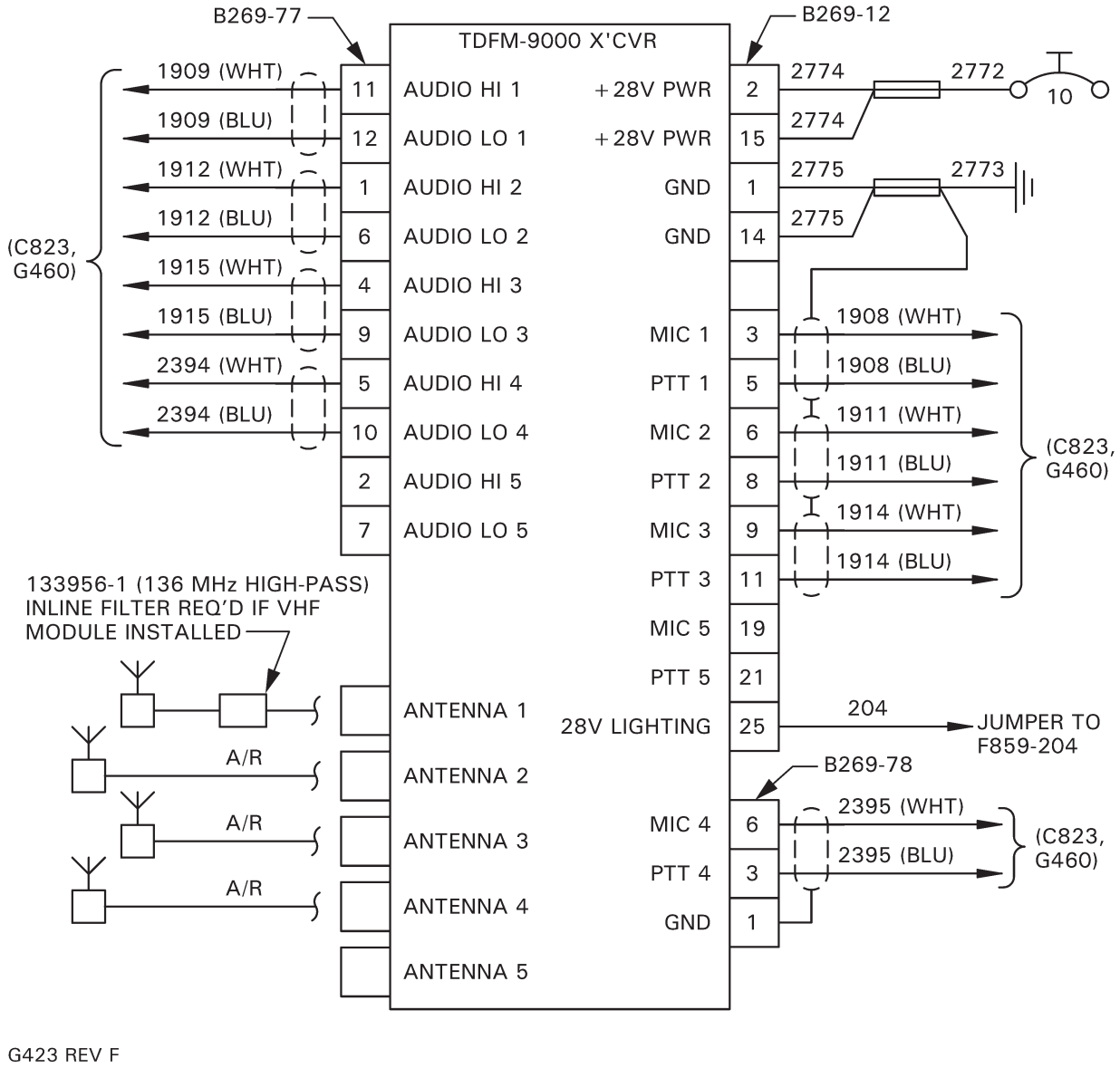


FIGURE 90-6 C813-5 TRANSCEIVER INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

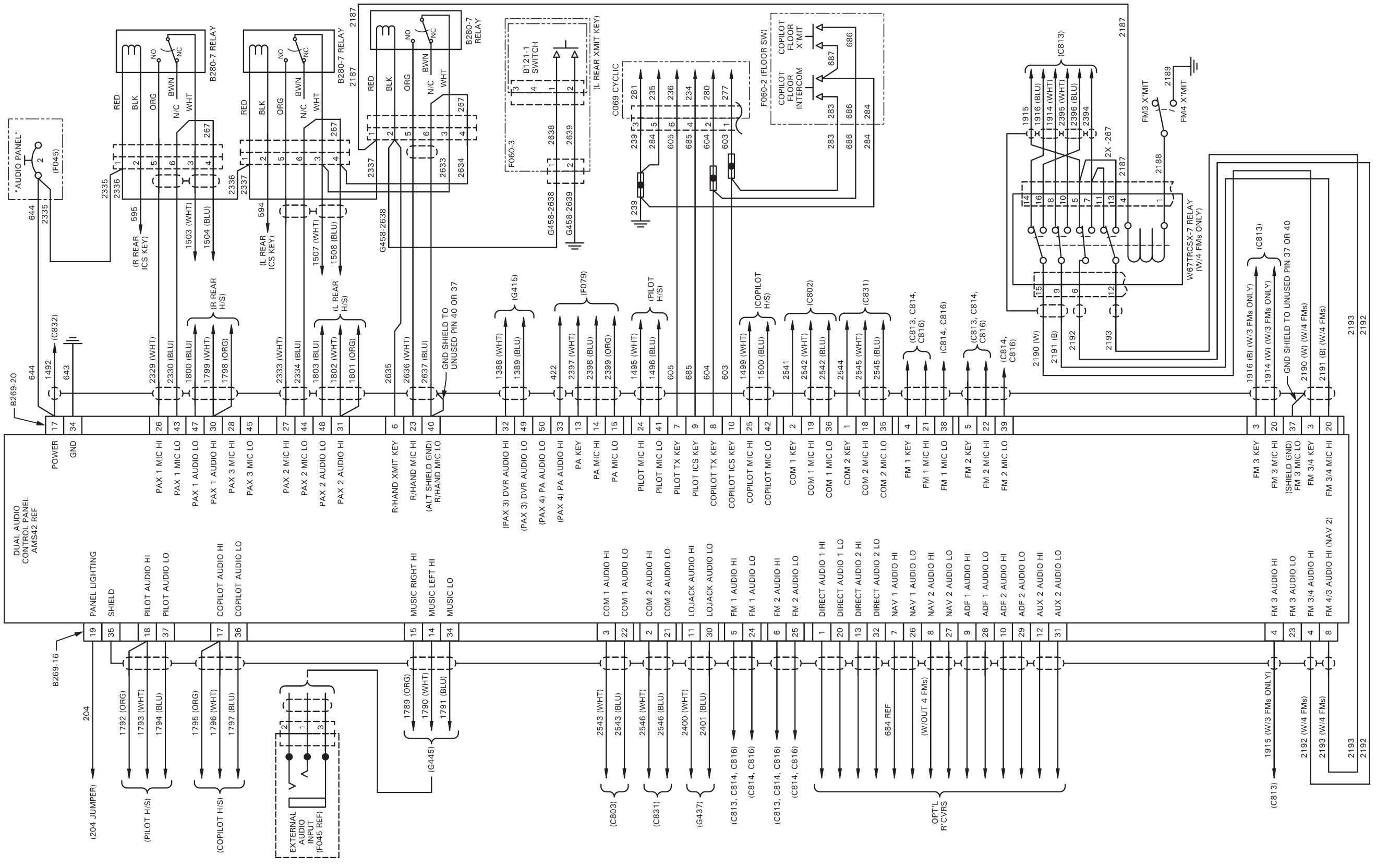


FIGURE 90-7 C823-16 AUDIO CONTROL INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

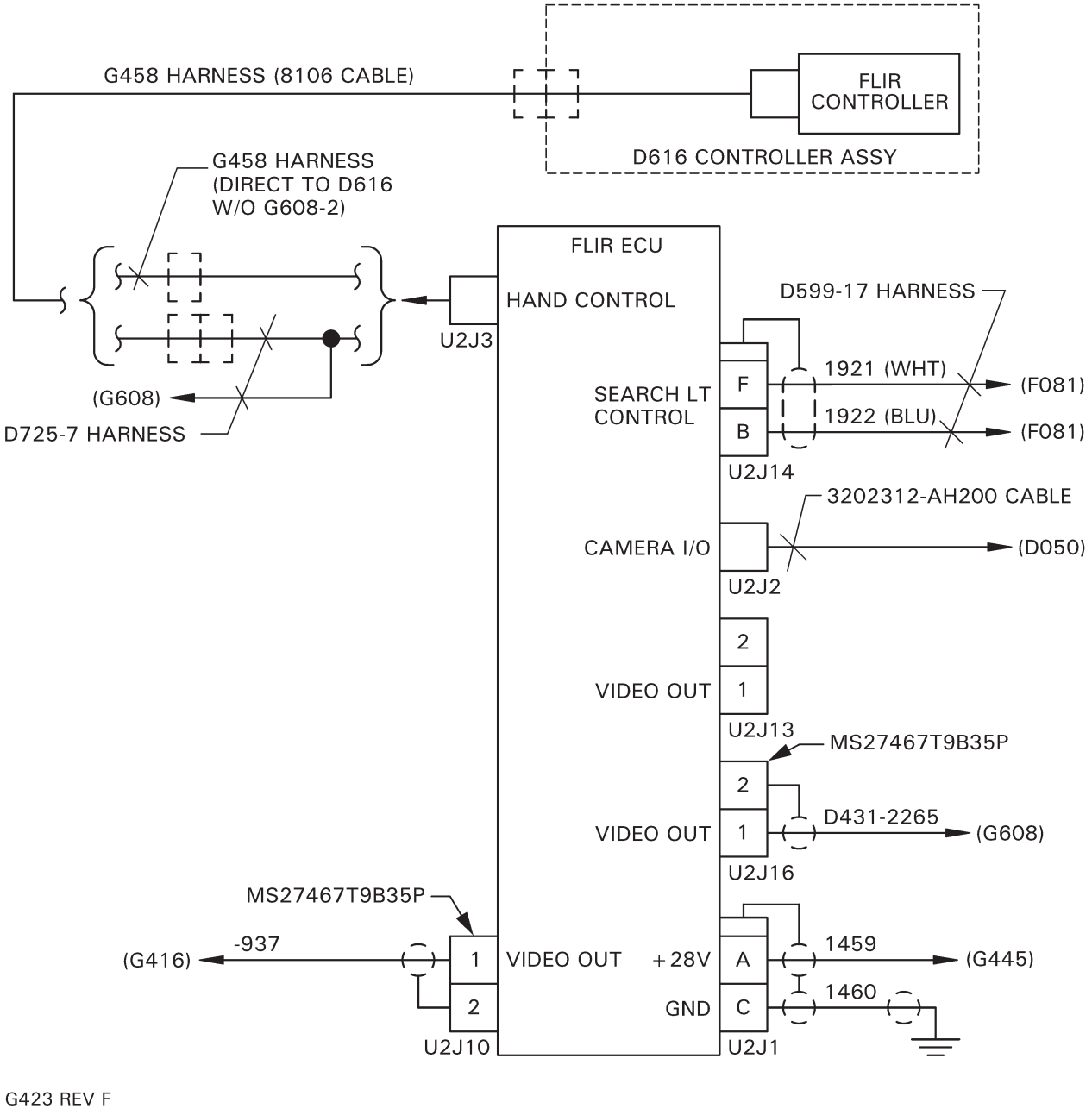
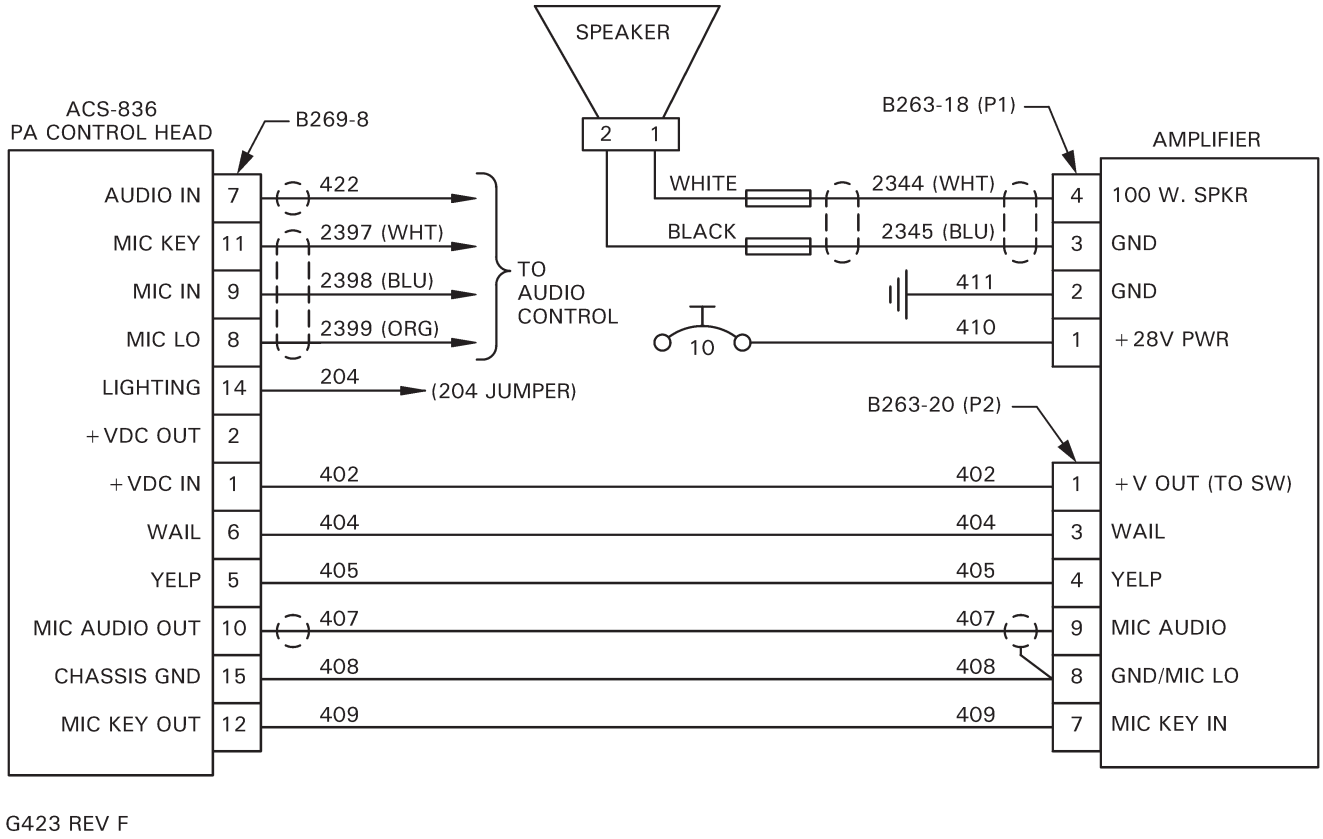


FIGURE 90-8 F051-1 CAMERA SYSTEM INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

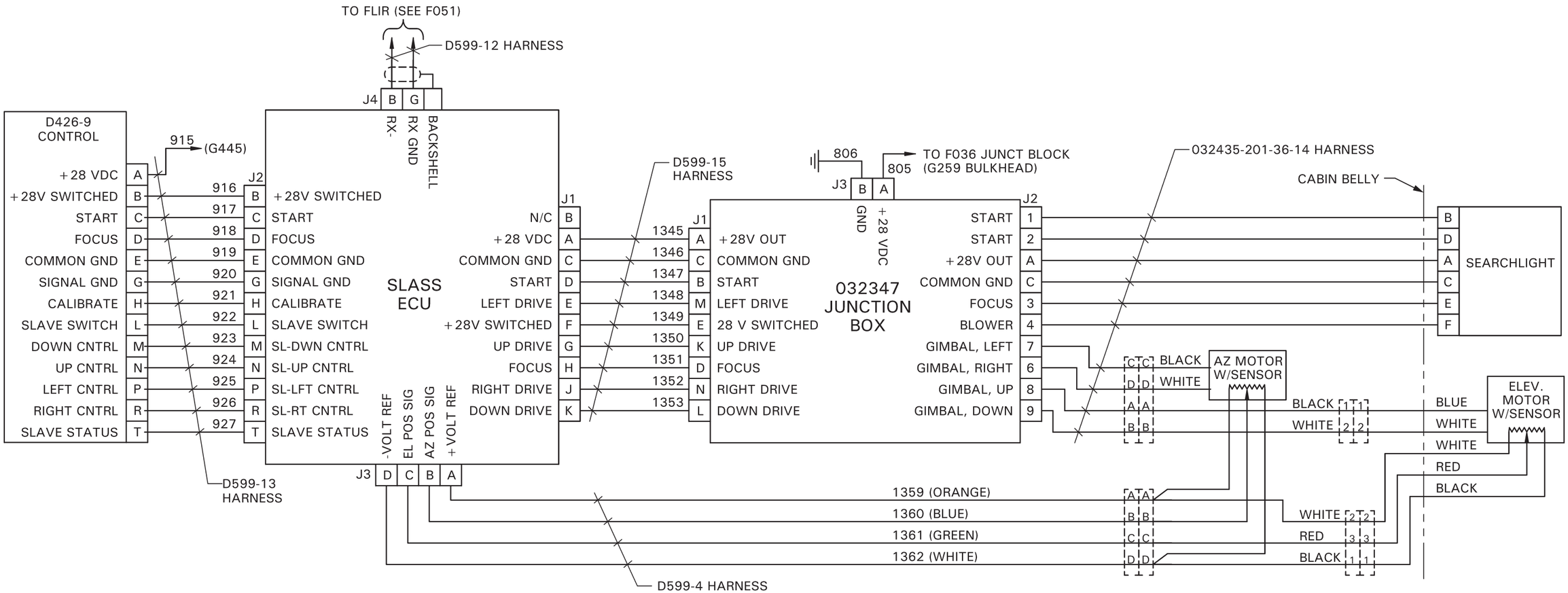


G423 REV F

FIGURE 90-9 F079-1 PA/SIREN SYSTEM INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)



G423 REV D

FIGURE 90-10 F081-1 SEARCHLIGHT INSTALLATION WIRING SCHEMATIC

90-280 Wiring Schematics (continued)

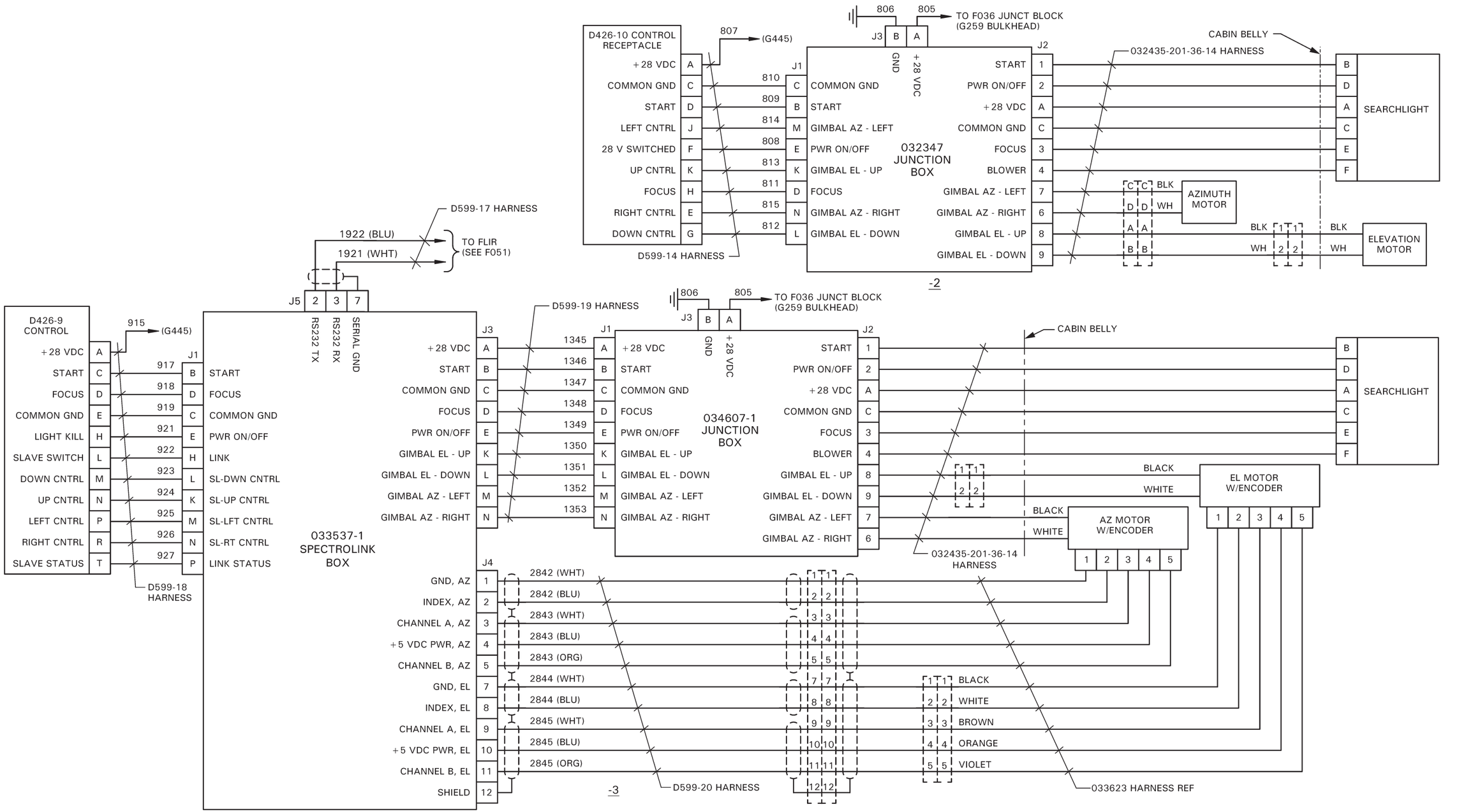


FIGURE 90-11 F081-2 AND F081-3 SEARCHLIGHT INSTALLATION WIRING SCHEMATIC

90-280 Wiring Schematics (continued)

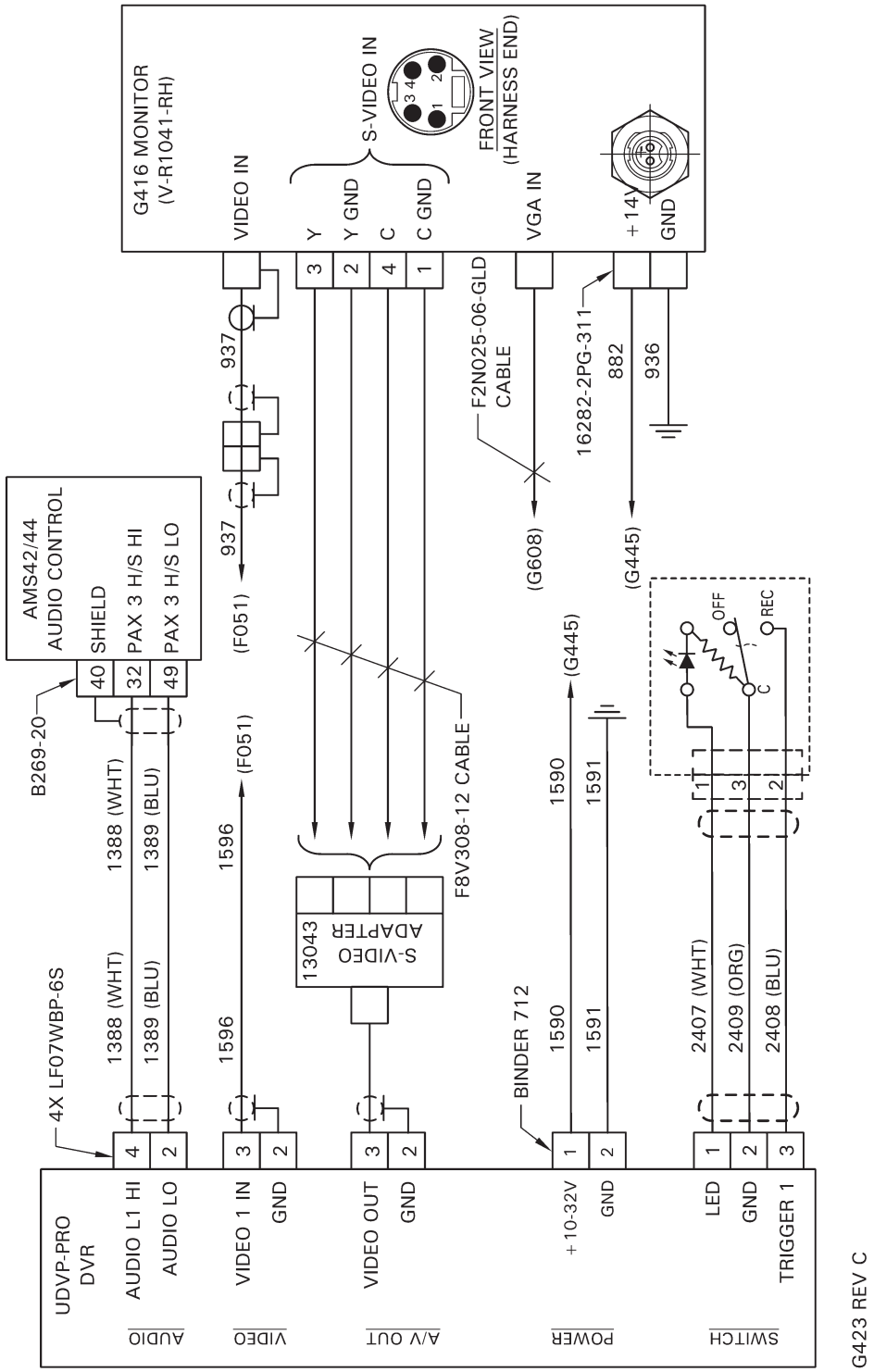
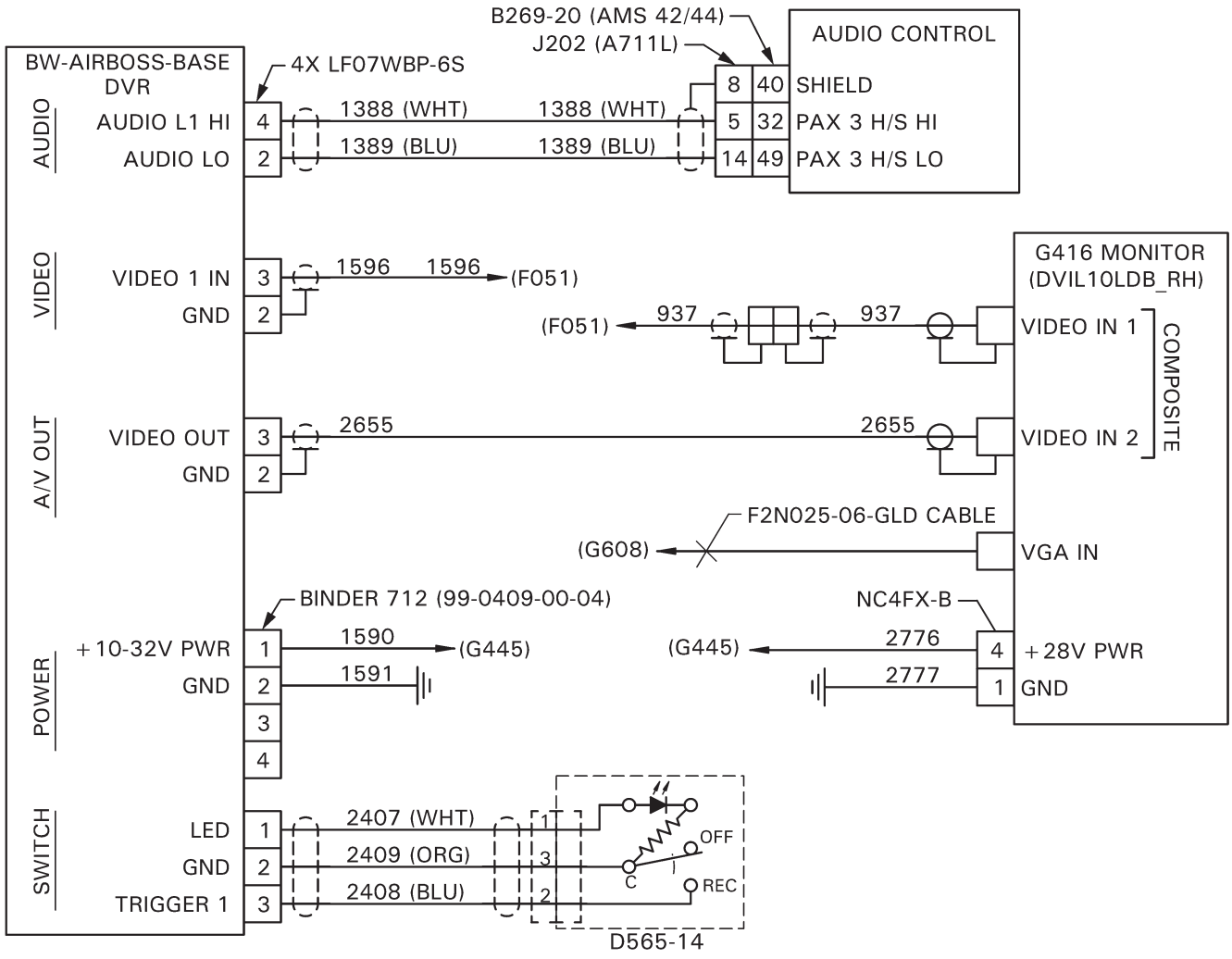


FIGURE 90-12 G415-1 AND G416-1 MONITOR INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

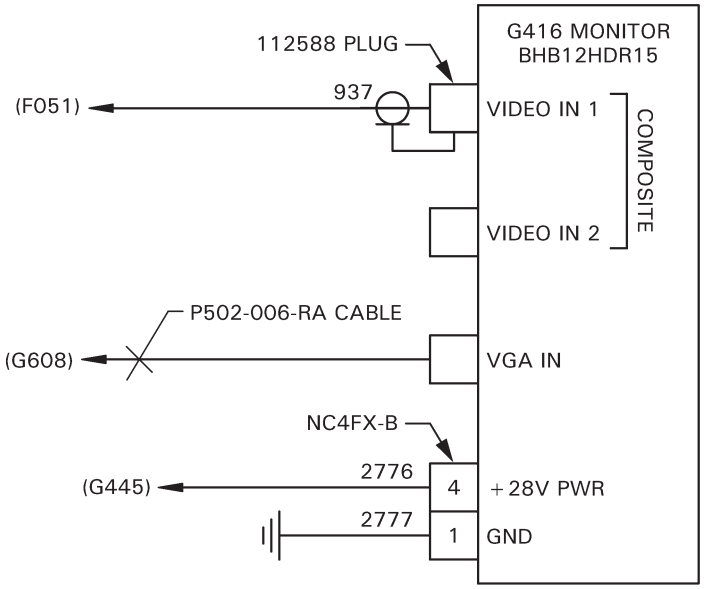


G423 REV E

FIGURE 90-13 G415-1 AND G416-4 AND MONITOR INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)



G423 REV F

FIGURE 90-14 G416-5 MONITOR INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

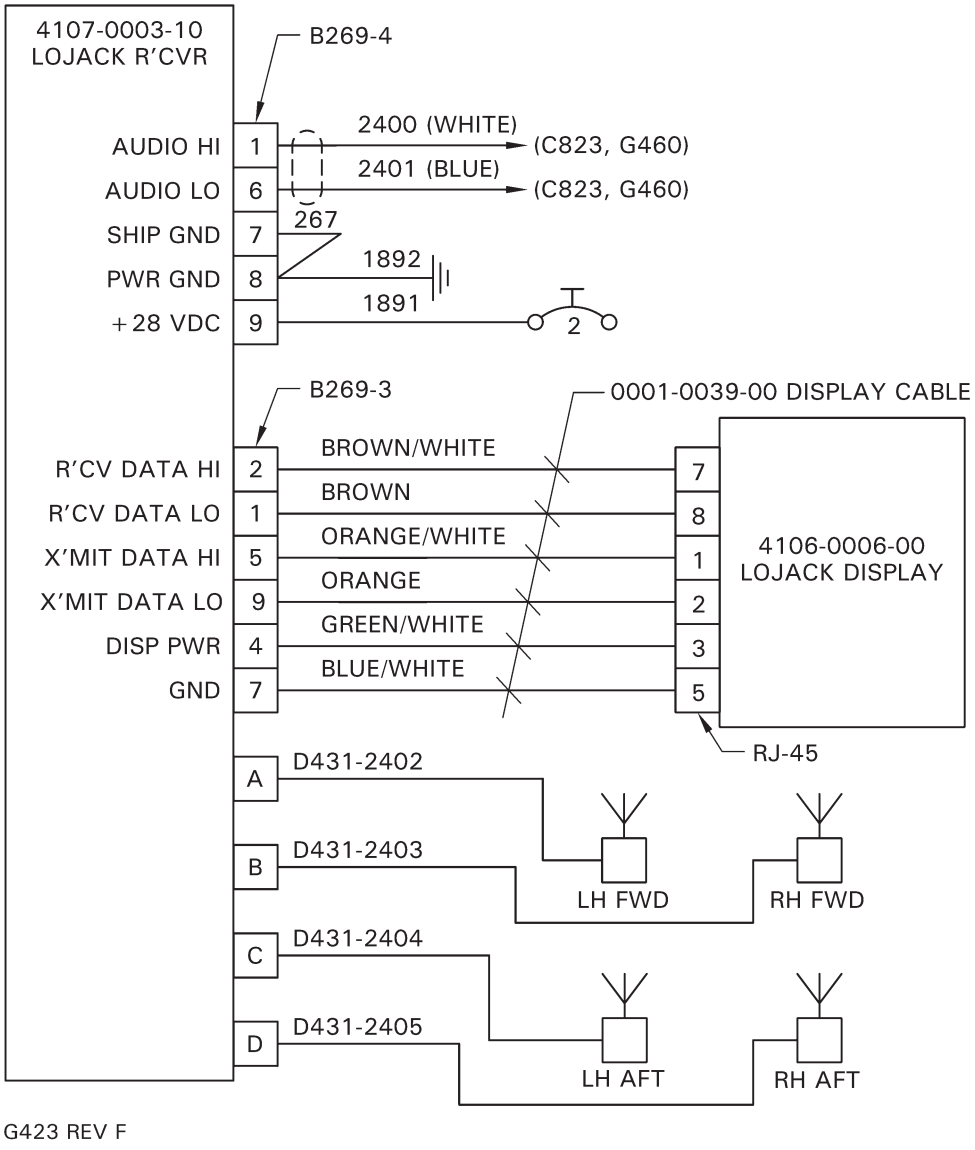


FIGURE 90-15 G437-1 LOJACK INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

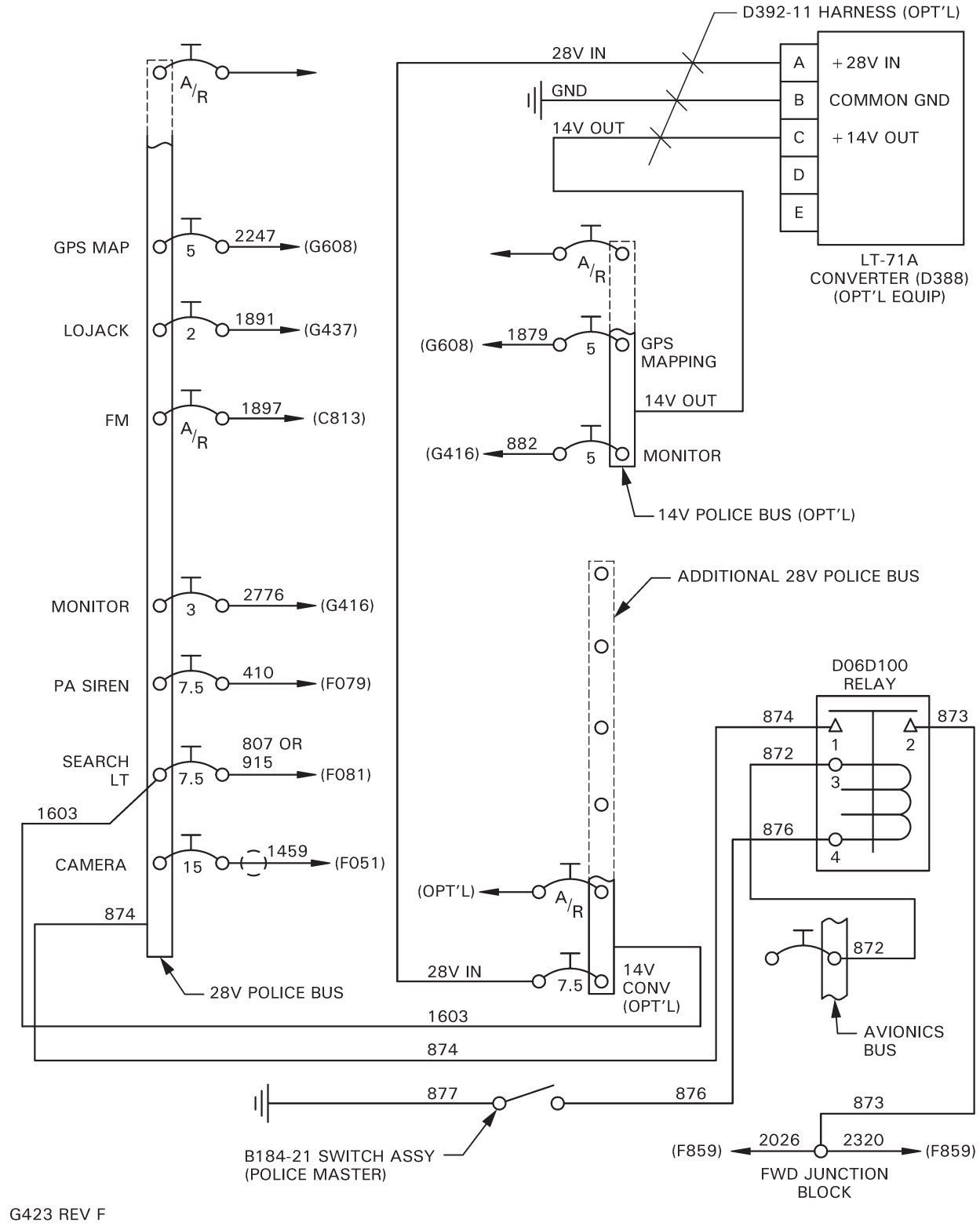


FIGURE 90-16 G445 AND G467 AUX ELECTRICAL AND CB WIRING INSTALLATION WIRING SCHEMATIC

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90-280 Wiring Schematics (continued)

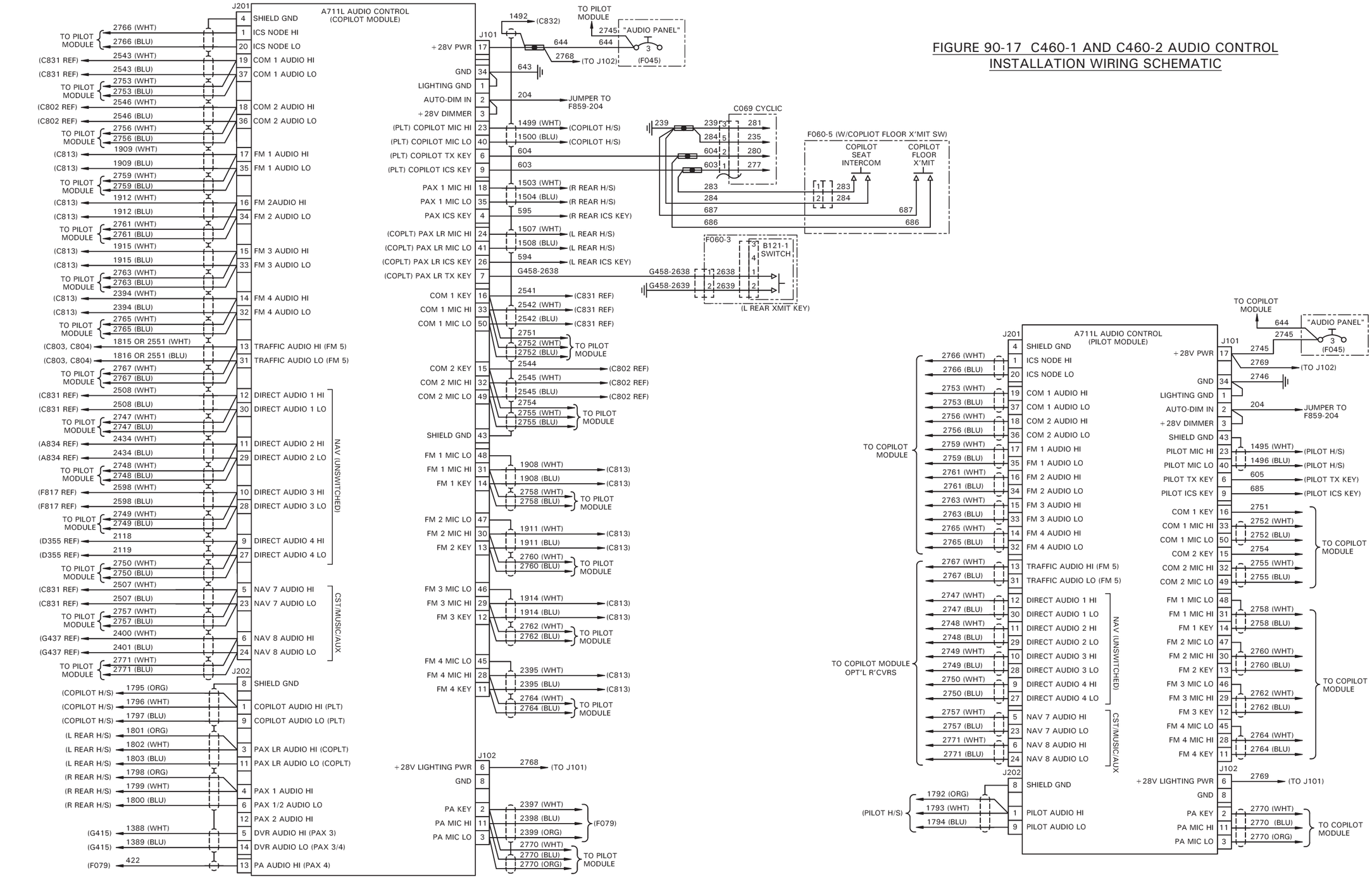


FIGURE 90-17 C460-1 AND C460-2 AUDIO CONTROL INSTALLATION WIRING SCHEMATIC

G423 REV F

90-280 Wiring Schematics (continued)

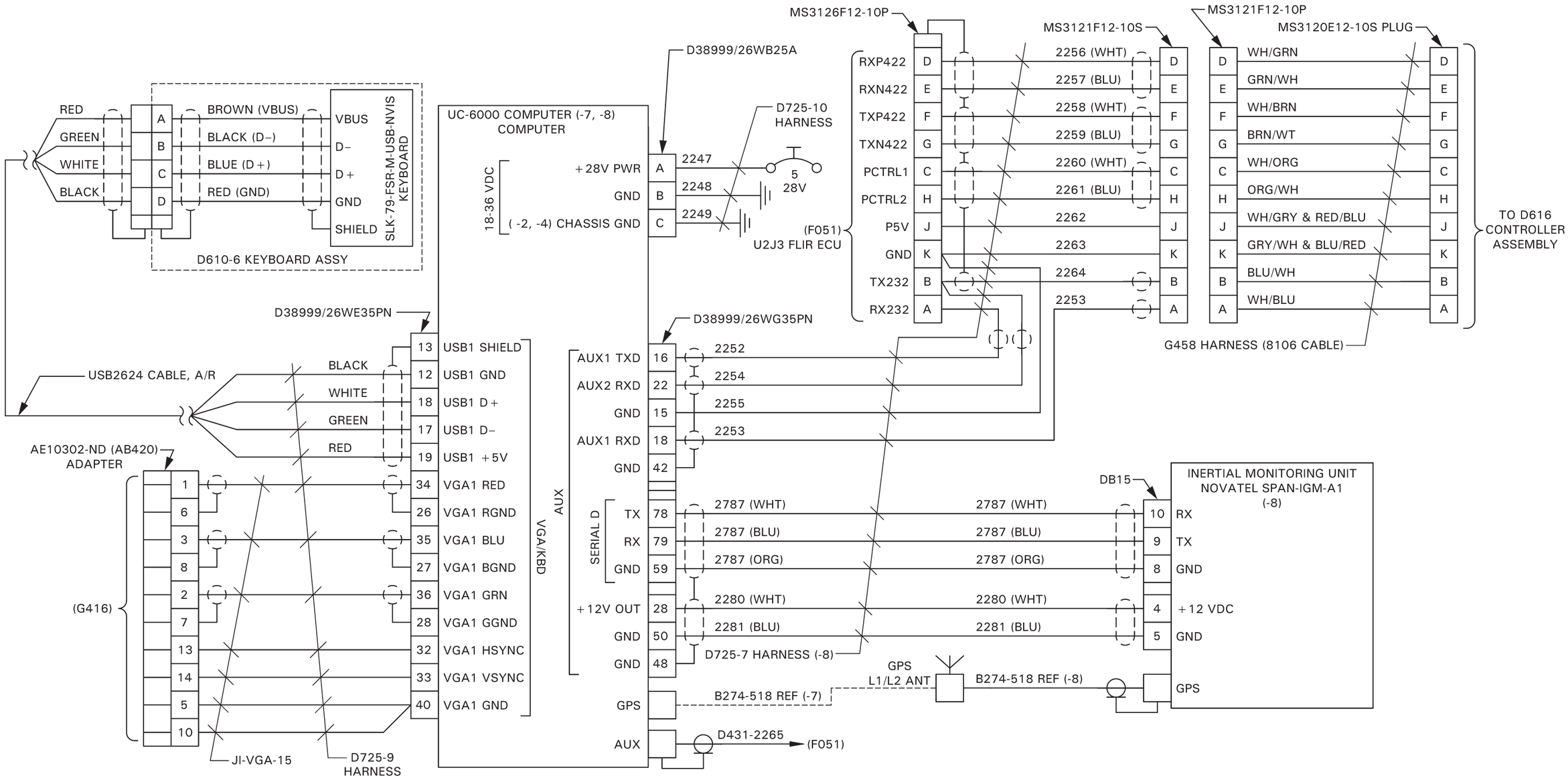


FIGURE 90-18 G608 GPS MAPPING AND MDT INSTALLATION WIRING SCHEMATIC