

QUADRANT ASSEMBLY AND CONTROLS - MAINTENANCE PRACTICES

1. General

- A. This section provides removal and installation instructions for the quadrant assembly, power control cable, fuel condition control cable, propeller speed control cable and emergency power control cable. For rigging procedures, refer to Engine Controls Rigging - Adjustment/Test.

2. Control Quadrant Removal/Installation

- A. Remove Control Quadrant (Refer to Figure 201 and Figure 202).
- (1) Make sure the electrical power is OFF.
 - (2) Remove the nut and washer from the center of the elevator trim control wheel.
 - (3) Remove the elevator trim control wheel from the airplane.
 - (4) Remove the nut, screw, washer and support, from the pedestal structure and quadrant cover.
 - (5) Remove screws that attach the emergency power control knob, propeller speed control lever knob, fuel condition lever knob and the flap control lever knob to their respective levers.
 - (6) Remove each knob from its lever.
 - (7) Remove the flap control lever knob.
 - (a) Rotate the knob clockwise.
 - (b) Remove knob from the airplane.
 - (8) If installed, remove the throttle quadrant LED panel from the throttle quadrant. Refer to Chapter 33, Throttle Quadrant LED Panel - Removal/Installation
 - (9) Remove the quadrant cover from the pedestal by removing the screw and washer.
 - (10) Remove the friction knob, flap control lever and associated parts.
 - (11) Disconnect the electrical wires from the go-around switch.
 - (12) Disconnect the fuel condition control clevis, propeller speed control clevis, power control clevis and emergency power control cable by removing cotter pins, washers and clevis pins.
 - (a) Retain all hardware, except cotter pins, for reinstallation.
 - (13) Remove the quadrant attach screws, washers, nuts that secure the quadrant assembly.
 - (14) Remove the quadrant assembly from the airplane.
- B. Install Control Quadrant (Refer to Figure 201 and Figure 202).
- (1) Set the quadrant assembly onto the pedestal and secure using quadrant attach screws, washers and nuts.
 - (2) Connect the fuel condition control clevis, propeller speed control clevis, power control clevis and emergency power control cable clevis to control lever arms using nuts, washers and new cotter pins.
 - (3) Connect the electrical wires to the go-around switch.
 - (4) Install friction knob, flap control lever, and associated parts. Refer to Chapter 27, Elevator Trim - Maintenance Practices.
 - (5) Install the quadrant cover on the pedestal and secure using screws and washers.
 - (6) If removed, install the throttle quadrant LED panel on the throttle quadrant. Refer to Chapter 33, Throttle Quadrant LED Panel - Removal/Installation
 - (7) Install the flap lever knob by rotating knob clockwise.
 - (8) Attach the emergency power control knob, propeller speed control lever knob, fuel condition lever knob and the flap control lever knob to their respective levers using screws.
 - (9) Set the support to the pedestal structure and quadrant cover and secure using screw, washer and nut.
 - (10) Attach the elevator trim control wheel using washer and nut.

3. Power Control Cable Removal/Installation

- A. Remove Power Control Cable (Refer to Figure 202).
- (1) Open the upper cowling doors.
 - (2) In the cockpit, remove the carpet and upholstery panels as required to access the cable retention area aft of the

control pedestal and at the cabin side of the firewall where the control cables route. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation and Chapter 25, Cabin Upholstery - Maintenance Practices.

- (3) Get access to power control cable connection at power control lever located inside control pedestal. Refer to Control Quadrant Removal/Installation.
- (4) In engine compartment, loosen jam nuts at power control cable bracket and fuel control unit.
- (5) Remove the cotter pin, washer and clevis pin from power control clevis and disconnect cable.
- (6) Remove power control clevis and jam nut.
- (7) Cut and remove the safety wire, cotter pin, nut, washers, retaining washer, spacer and lever arm bolt, from lever arm.
 - (a) Retain hardware, except cotter pin, for reinstallation.
- (8) Cut and remove the tie straps and remove the cabin side power control jam nut.
- (9) Withdraw and remove the power control cable from the cabin by pulling through to the engine compartment.

B. Install Power Control Cable (Refer to Figure 202).

- (1) Insert the power control cable through the hole in the firewall and route to the pedestal in the cabin.
 - (a) Install jam nut over power control cable in cabin area.
- (2) Put the power control cable through the power control cable bracket and connect it and the cable rod end to the lever arm using bolt, spacer, washers, retaining washer, and nut. Do not install cotter pin, or safety wire at this time.
- (3) Tighten the jam nuts using your fingers.
- (4) In the cabin, route power control cable up through pedestal structure to the control quadrant.
- (5) Connect the power control cable clevis to the power lever arm in the quadrant assembly and secure using clevis pin, washer, and new cotter pin.
- (6) Tighten jam nut and install tie-straps.
- (7) Adjust the power control linkage. Refer to Engine Control Rigging - Adjustment/Test.
- (8) Tighten jam nuts, install new cotter pin and safety wire nut.
- (9) Install previously removed carpet and upholstery panel. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation and Chapter 25, Cabin Upholstery - Maintenance Practices.
- (10) Close upper cowling.

4. Fuel Condition Control Cable Removal/Installation

A. Remove Fuel Condition Control Cable (Refer to Figure 202).

- (1) Open the upper cowling doors.
- (2) In the cockpit, remove the carpet and upholstery panel as required to access the cable retention area aft of control pedestal and at cabin side of firewall where control cables route. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation and Chapter 25, Cabin Upholstery - Maintenance Practices.
- (3) Cut the tie straps and remove the cabin side fuel condition control cable jam nut.
- (4) Get access to the fuel condition control cable connection at the fuel condition control lever inside control pedestal. Refer to Control Quadrant Removal/Installation.
- (5) Remove the cotter pin, washer and clevis pin from the fuel condition control clevis.
- (6) Disconnect the fuel condition control cable and remove the fuel condition control clevis and jam nut.
- (7) In engine compartment, remove the screw and washer securing fuel condition control cable to the fuel condition control bracket.
- (8) Cut and remove the safety wire and remove the cotter pin, nut, washers, retaining washer, and lever arm bolt, to disconnect the fuel condition control cable rod end from the lever arm.
 - (a) Retain all hardware, except the cotter pin, for reinstallation.
- (9) Remove the fuel condition control cable through to engine compartment.

B. Install Fuel Condition Control Cable (Refer to Figure 202).

- (1) Insert the fuel condition control cable, through the hole in firewall and route to the pedestal in the cabin. Install jam nut over cable in cabin area.

- (2) Attach the fuel condition control cable to the fuel condition control cable bracket, using washer and screw.
- (3) Connect the fuel condition control cable and rod end to the lever arm, using bolt, washers, retaining washer, and nut. Do not install cotter pin or safety wire at this time.
- (4) In the cabin, route fuel condition control cable up through pedestal structure to quadrant.
- (5) Connect the fuel condition control clevis to the fuel condition control lever arm in quadrant assembly and secure using a clevis pin, washer, and new cotter pin.
- (6) Tighten jam nut and install tie straps.
- (7) Adjust the fuel condition control linkage. Refer to Engine Control Rigging - Adjustment/Test.
- (8) Tighten jam nuts, install new cotter pin and safety wire nut.
- (9) Install previously removed carpet and upholstery panel. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation and Chapter 25, Cabin Upholstery - Maintenance Practices.
- (10) Close upper cowling.

5. Propeller Speed Control Cable Removal/Installation

A. Remove Propeller Speed Control Cable (Refer to Figure 202).

- (1) Open the upper cowling doors.
- (2) In the cockpit, remove carpet and upholstery panels as required to access the cable retention area aft of control pedestal and at cabin side of firewall where the control cables route through. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation and Chapter 25, Cabin Upholstery - Maintenance Practices.
- (3) Cut tie straps and remove the cabin side propeller speed control cable jam nut.
- (4) Get access to propeller speed control cable connection, at the propeller speed control lever inside the control pedestal. Refer to Control Quadrant Removal/Installation.
- (5) Remove the cotter pin, washer and clevis pin from the propeller speed control clevis and disconnect the cable.
- (6) Remove the power control clevis and jam nut.
- (7) In the engine compartment, loosen the jam nuts on the propeller speed control cable bracket at the propeller governor.
- (8) Cut and remove the safety wire and remove the cotter pin, nut, retaining washers and, washers, spacer and lever arm bolt, to disconnect propeller speed control cable, rod end, from lever arm.
 - (a) Retain hardware, except cotter pin, for reinstallation.
- (9) Remove the remaining clamps securing the propeller speed control cable to the engine as required.
- (10) Withdraw and remove the propeller speed control cable from the cabin by pulling through the firewall to the engine compartment.

B. Install Propeller Speed Control Cable (Refer to Figure 202).

- (1) Put the propeller speed control cable through the hole in the firewall and route to the pedestal in the cabin. Install a jam nut over the propeller speed control cable, in the cabin area.
- (2) Put the propeller speed control cable, through the propeller speed control bracket and connect the propeller speed control cable rod end to the lever arm using the lever arm bolt, spacer, retaining washer, washers, and nut. Do not install the cotter pin or safety wire at this time.
- (3) Tighten the jam nuts with finger pressure.
- (4) In the cabin, route the propeller speed control cable, up through the pedestal structure to the quadrant.
- (5) Connect the propeller speed control cable clevis, to the propeller speed lever arm in the quadrant assembly and secure with a clevis pin, washer, and new cotter pin.
- (6) Tighten the jam nut and install the tie straps.
- (7) Adjust the propeller speed control linkage. Refer to Engine Control Rigging - Adjustment/Test.
- (8) Install previously removed clamps. Tighten jam nuts, install new cotter pin and safety wire nut.
- (9) Install previously removed carpet and upholstery panel. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation and Chapter 25, Cabin Upholstery - Maintenance Practices.
- (10) Close upper cowling.

6. Emergency Power Control Cable Removal/Installation

- A. Remove the Emergency Power Control Cable (Refer to Figure 202).
- (1) Open the upper cowling doors. Refer to Chapter 71, Engine Cowling and Nose Cap - Maintenance Practices.
 - (2) In the cockpit, remove carpet and upholstery panels as necessary to access the cable retention area aft of the control pedestal and at the cabin side of the firewall where the control cables are found. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation and Chapter 25, Cabin Upholstery - Maintenance Practices.
 - (3) Cut the tie straps, then remove the cabin side emergency power control cable jam nut.
 - (4) Get access to the emergency power control cable connection at the emergency power control lever inside control pedestal. Refer to Control Quadrant Removal/Installation.
 - (5) Remove cotter pin, washer and clevis pin from the emergency power control clevis, then disconnect the emergency power control cable.
 - (6) Remove the emergency power control clevis and jam nut.
 - (7) For Airplanes 20800396 and On and 208B1171 and On, do the steps that follow:
 - (a) In the engine compartment, remove the nut, washer and bolt from the mount that attaches the emergency power control cable to the airplane.
 - (8) For Airplanes 20800001 thru 20800395 and 208B0001 thru 208B1170, do the steps that follow:
 - (a) In the engine compartment, cut the safety wire from the nuts that attach the inner and outer brackets.
 - (b) Remove the nuts that attach the inner and outer brackets, then remove the inner bracket and outer bracket that attach the emergency power control cable from the airplane.
 - (9) For Airplanes 20800131 and On and Airplanes 208B00087 and On and Airplanes 20800001 thru 20800130 and Airplanes 208B00001 thru 208B00086 incorporating CAB89-6 that have the bushing installed in the manual override arm, do the steps that follow:
 - (a) Cut and remove the safety wire.
 - (b) Remove the cotter pin, nut, retaining washer, washers, lever arm bolt and bushing.
 - (c) Keep all of the hardware other than the cotter pin for installation.
 - (10) Disconnect the emergency power control cable and rod end from the manual override arm.
 - (11) Pull the emergency power control cable through the firewall toward the engine compartment to remove the emergency power control cable from the airplane.
- B. Install the Emergency Power Control Cable (Refer to Figure 202).
- (1) Put the emergency power control cable through the hole in the firewall, and route it to the pedestal in the cabin.
 - (2) Install the jam nut over the emergency power control cable in the cabin area.
 - (3) For Airplanes 20800131 and On and Airplanes 208B00087 and On and Airplanes 20800001 thru 20800130 and Airplanes 208B00001 thru 208B00086 incorporating CAB89-6 that have the bushing installed in the manual override arm, do the steps that follow:
 - (a) Install the lever arm bolt, retaining washer, washers, nut and install bushing.
 - (b) Connect the emergency power control cable and rod end to the manual override arm.
 - (c) Do not install the cotter pin or wire at this time.
 - (4) For Airplanes 20800001 thru 20800395 and 208B0001 thru 208B1170, do the steps that follow:
 - (a) Attach the emergency power control cable, to inner bracket and outer bracket using nuts.
 - (b) Safety the nuts with wire.
 - (5) For Airplanes 20800396 and On and 208B1171 and On, do the steps that follow:
 - (a) In the engine compartment, install the nut, washer and bolt in the mount that attaches the emergency power control cable to the airplane.
 - (6) In the cabin, install the emergency power control cable up through the pedestal structure to the control quadrant.
 - (7) Connect the emergency power control cable clevis to the emergency power control lever arm in the control quadrant assembly, then attach it with the clevis pin, washer, and new cotter pin.
 - (8) Tighten the jam nut.

- (9) Install the tie straps.
- (10) Tighten the jam nuts, then install the new cotter pin and safety the nut with wire.
- (11) Install the carpet and upholstery panel. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation and Chapter 25, Cabin Upholstery - Maintenance Practices.
- (12) Adjust the emergency power control linkage. Refer to Engine Control Rigging - Adjustment/Test.
- (13) Close the upper cowling door.

7. Emergency Power Lever Frangible/Shear Wire Removal/Installation

A. Remove Frangible/Shear Wire (Refer to Figure 203).

NOTE: If the frangible/shear wire is missing or broken, determine if engine limitations have been exceeded. If so, perform all engine maintenance actions required by the Pratt & Whitney Maintenance Manual, Chapter 71-00.

- (1) The following airplanes incorporate frangible/shear wire, which is installed from the Emergency Power Lever (EPL) to the pedestal cover:
 - Airplanes 20800351 thru 20800395
 - Airplanes 208B0920 thru 208B1170
 - Airplanes 20800001 thru 20800350 Incorporating SK208-166
 - Airplanes 208B0001 thru 208B0919 Incorporating SK208-142.
- (2) The following airplanes do not incorporate frangible/shear wire installed from the Emergency Power Lever (EPL) to the pedestal cover:
 - Airplanes 20800396 and On
 - Airplanes 208B1171 and On
 - Airplanes 20800001 thru 20800395 Incorporating SK208-166
 - Airplanes 208B0001 thru 208B1170 Incorporating SK208-166.
- (3) Make sure the engine is not running.
- (4) Cut and remove the frangible/shear wire.

B. Install Frangible/Shear Wire (Refer to Figure 203).

- (1) If the wire was found to be broken and engine limitations have been exceeded, then perform all engine maintenance actions required by the engine maintenance manual. Refer to the Pratt & Whitney Maintenance Manual, Chapter 71-00.
- (2) Make sure the EPL is in the normal position.
- (3) Cut to length one MS20995CY15 or C489003 frangible/shear wire.
- (4) Install the wire from the EPL to the pedestal cover screw, using the double-twist method.

Figure 201 : Sheet 1 : Control Quadrant Installation

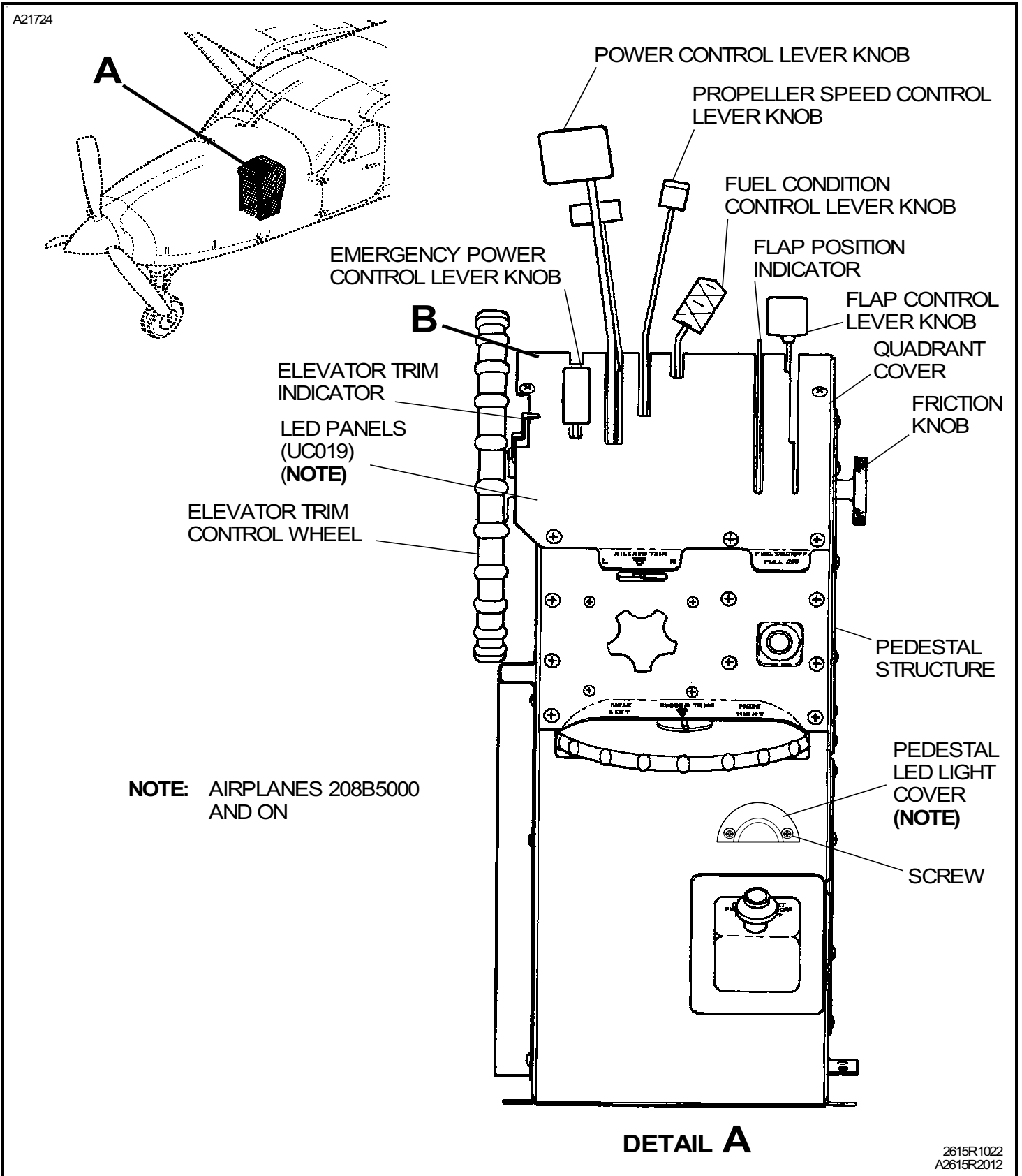
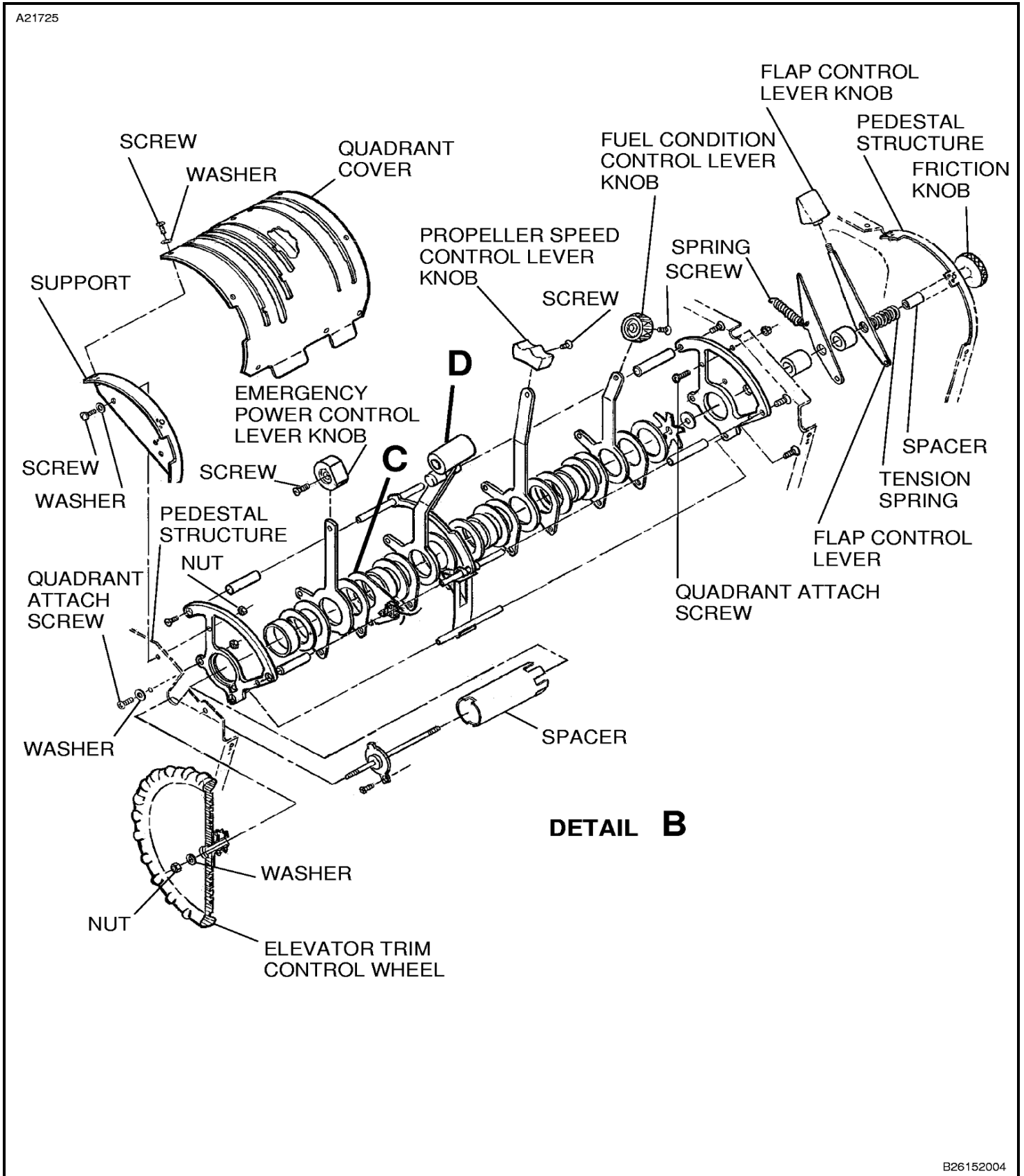


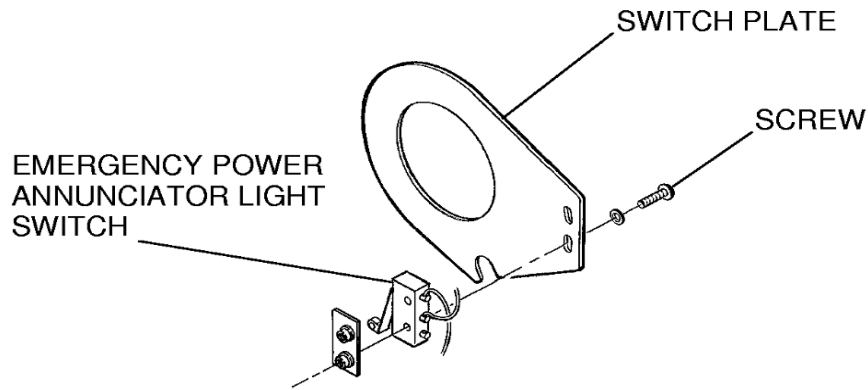
Figure 201 : Sheet 2 : Control Quadrant Installation



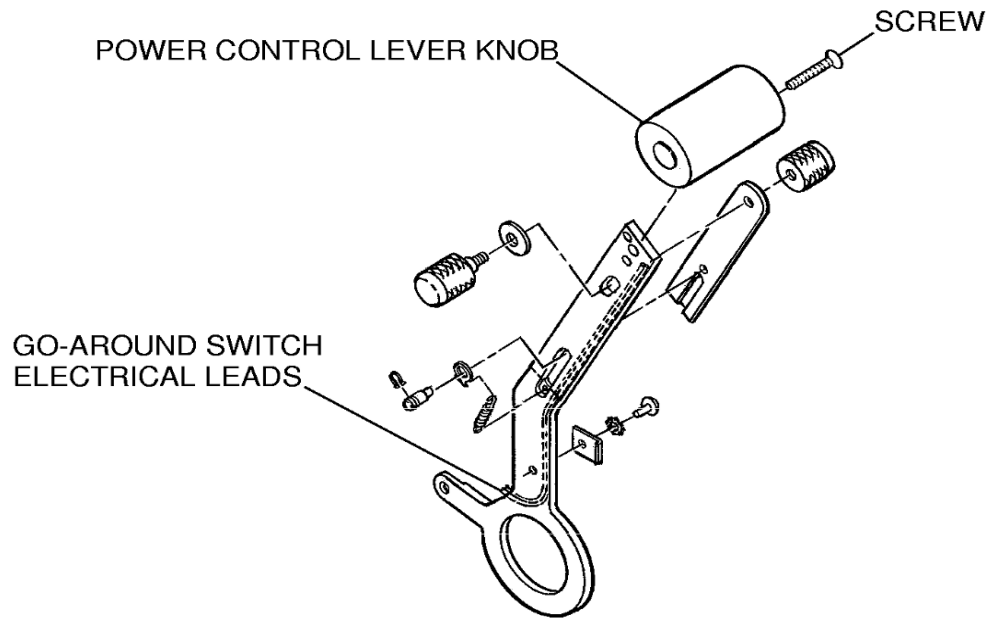
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Figure 201 : Sheet 3 : Control Quadrant Installation

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DETAIL C

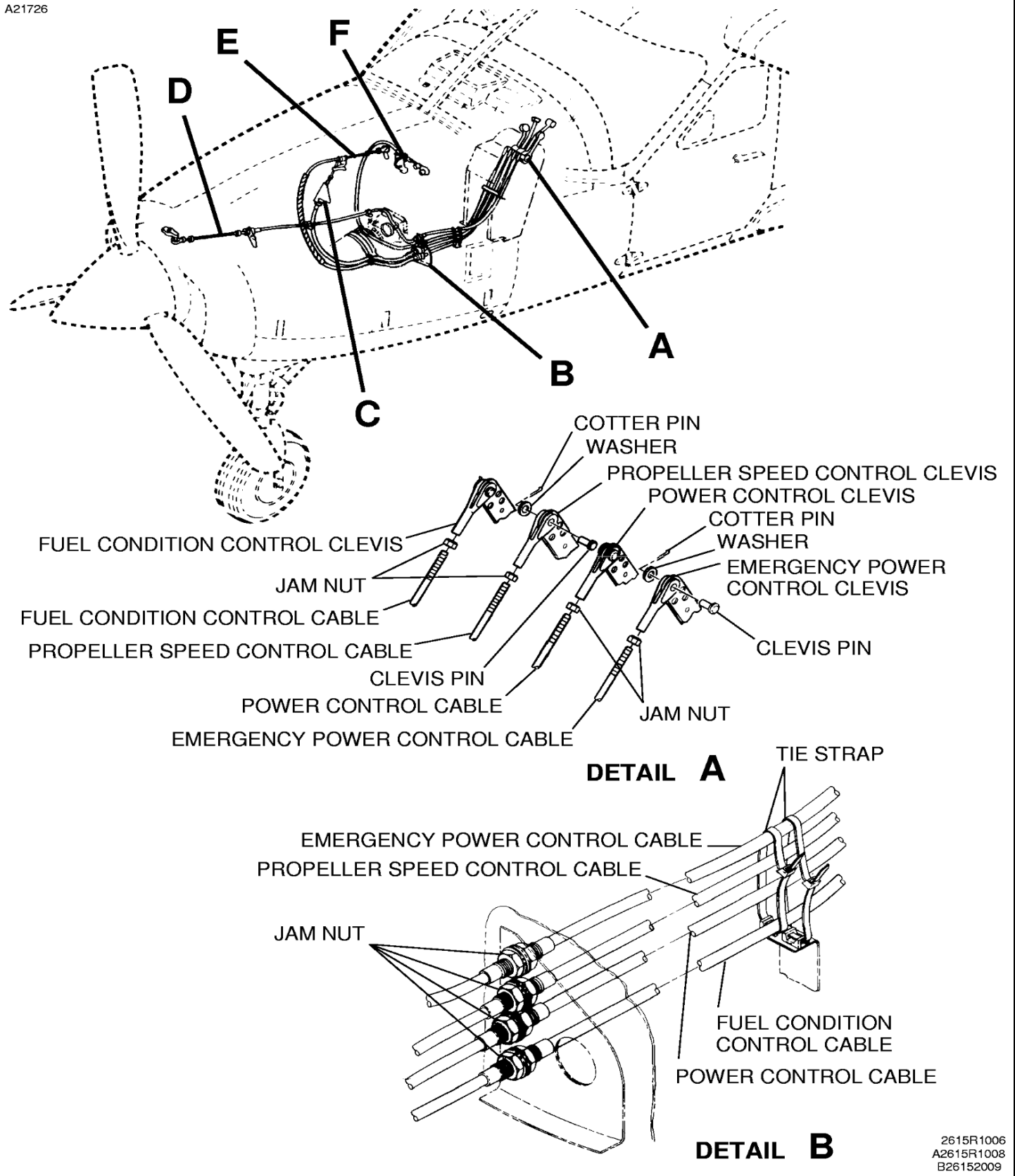


DETAIL D

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Figure 202 : Sheet 1 : Engine Control Cable Installation

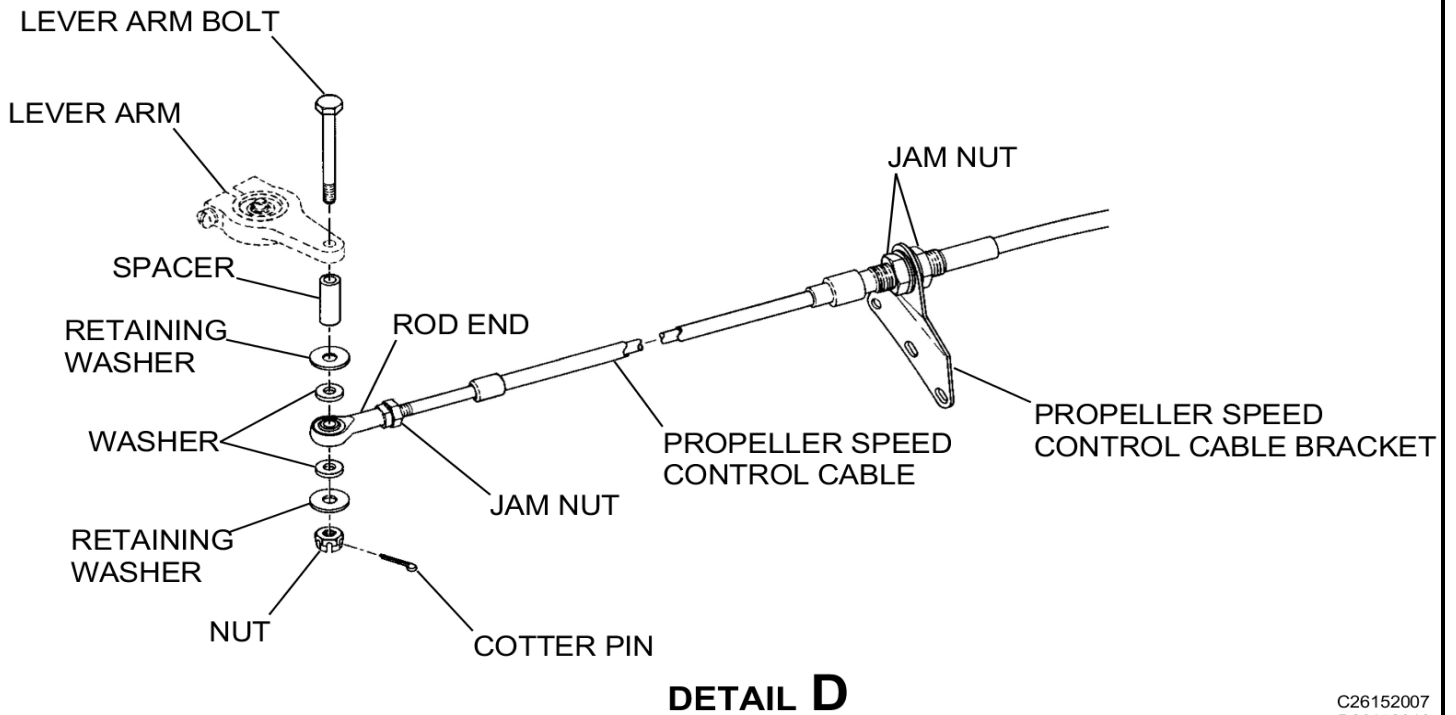
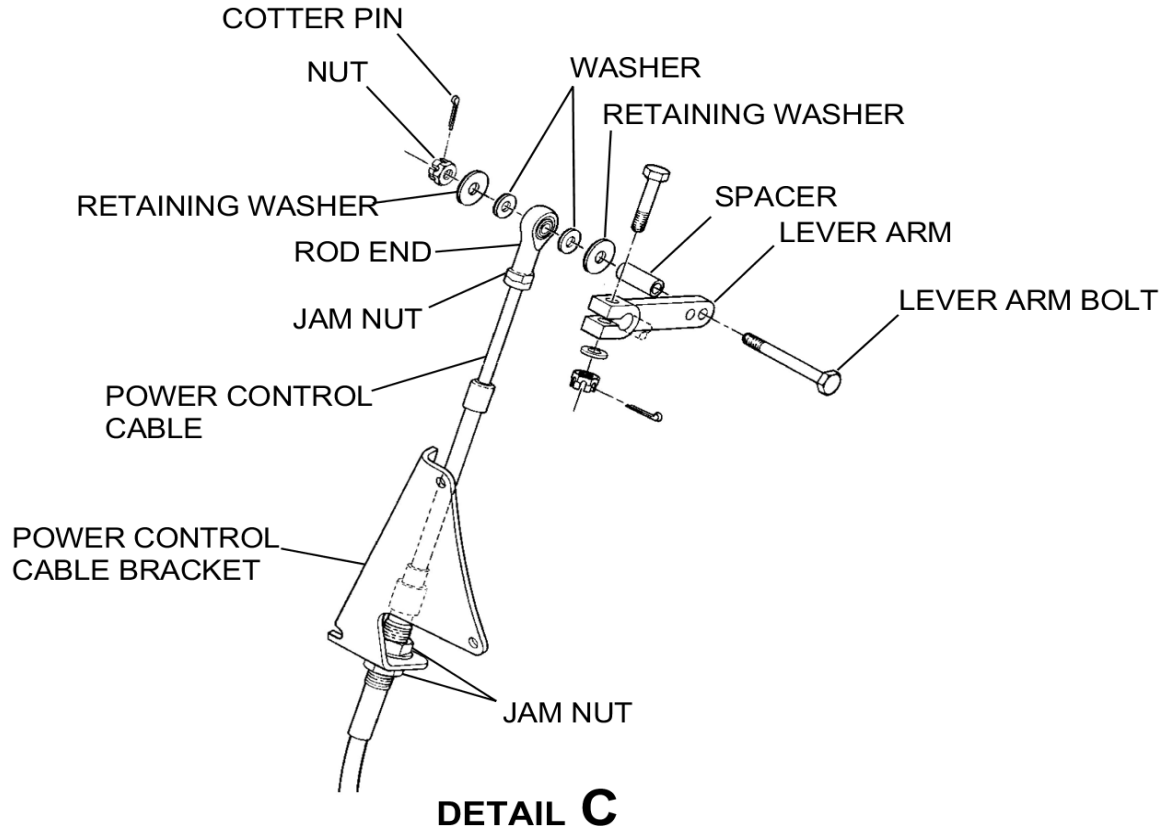
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Figure 202 : Sheet 2 : Engine Control Cable Installation

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Figure 202 : Sheet 3 : Engine Control Cable Installation

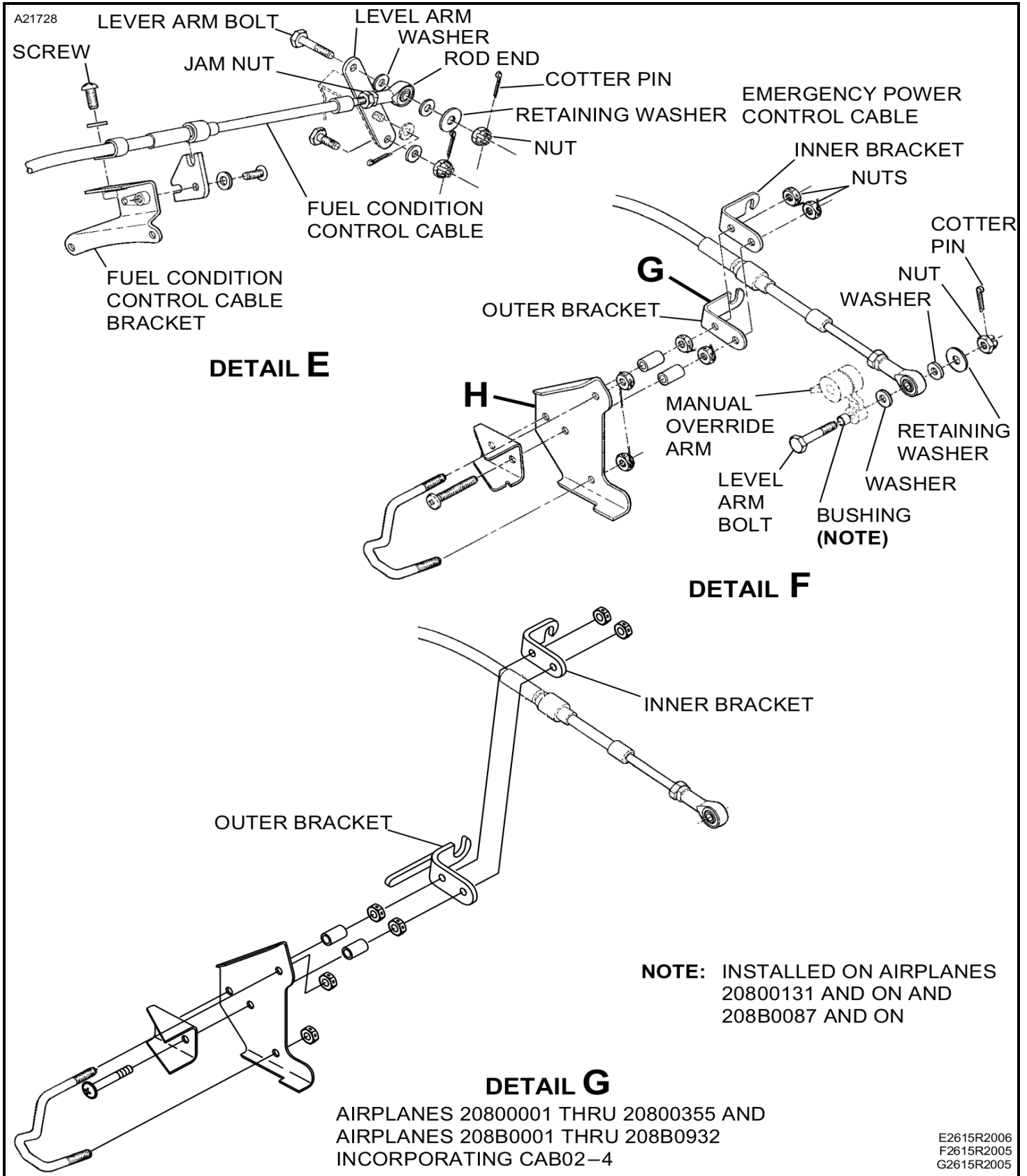


Figure 202 : Sheet 4 : Engine Control Cable Installation

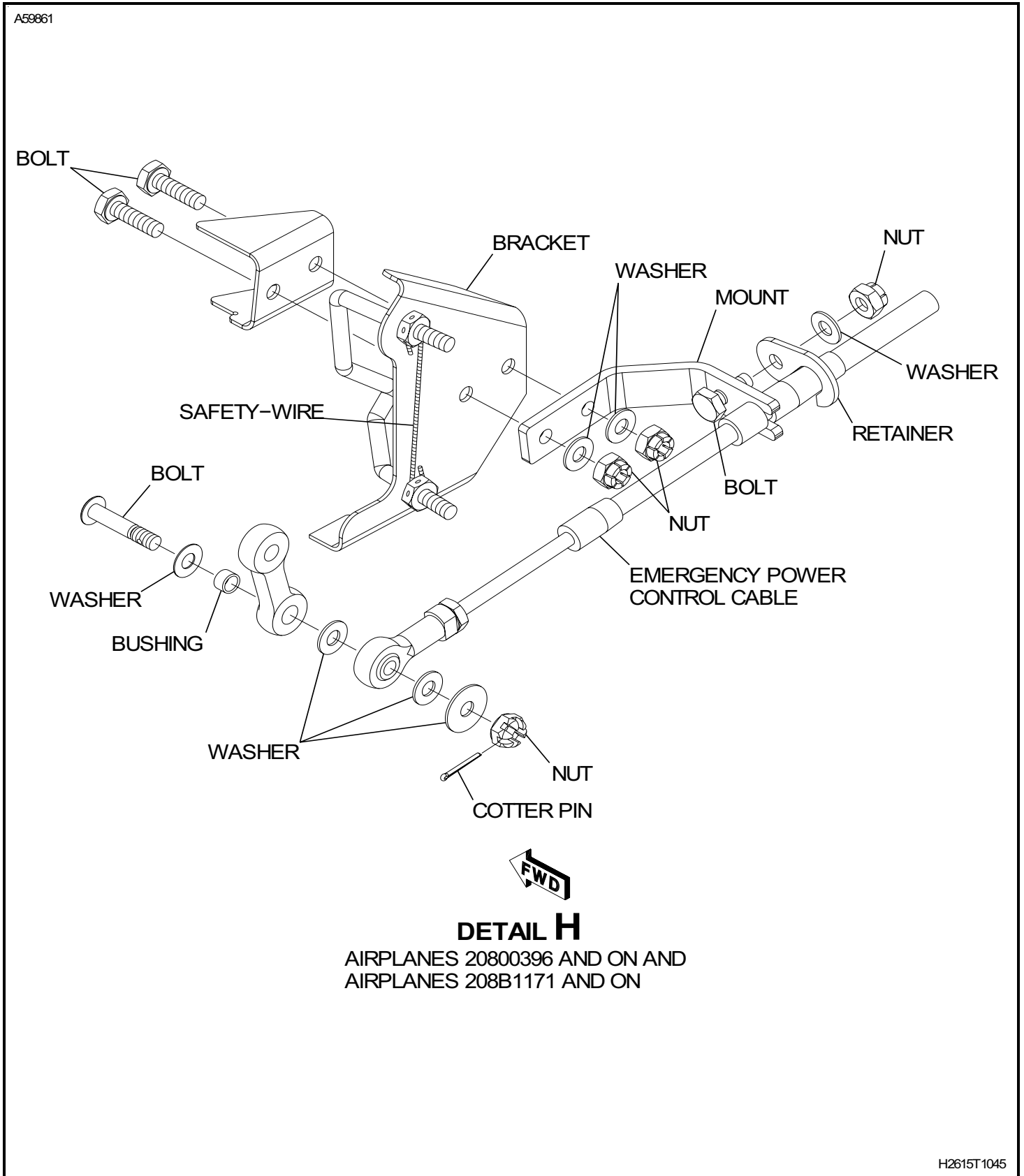
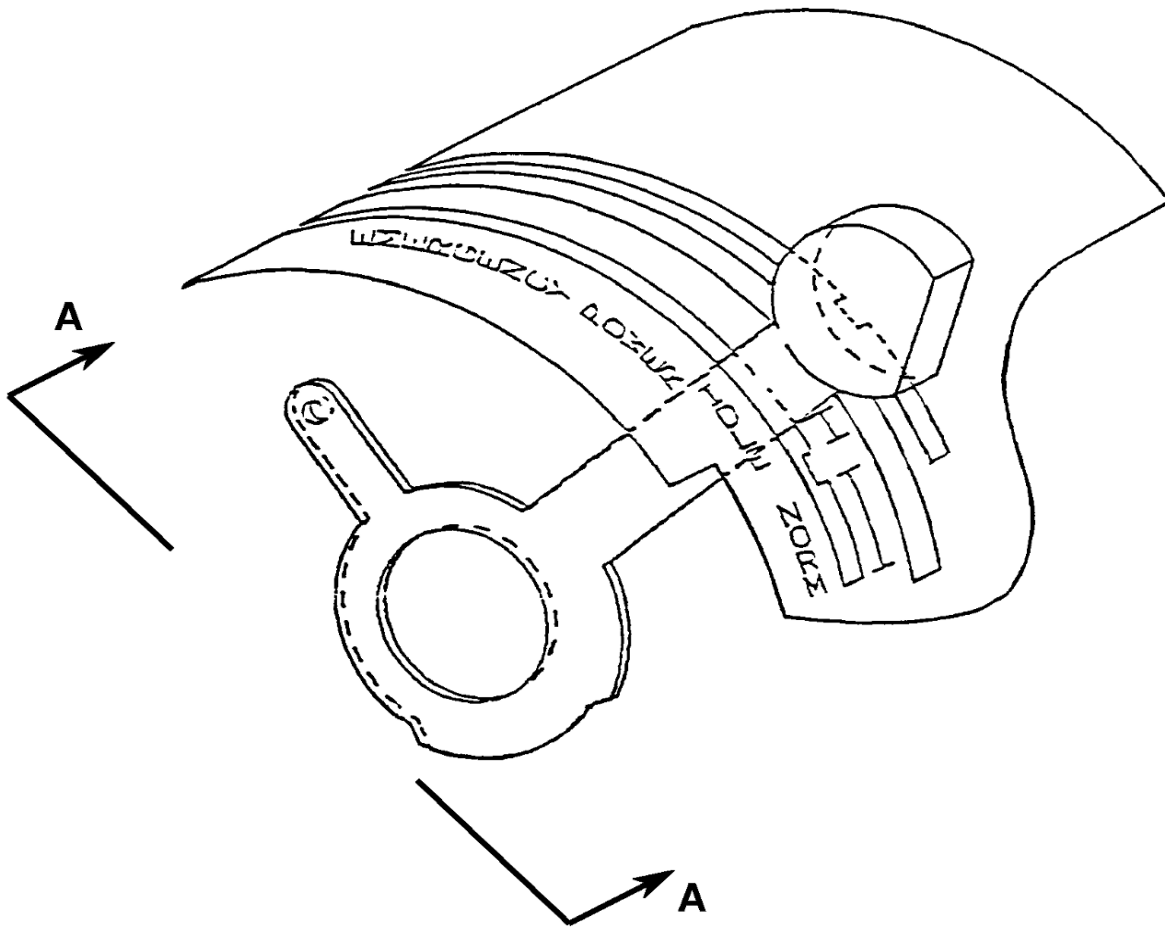


Figure 203 : Sheet 1 : Emergency Power Lever Frangible/Shear Wire

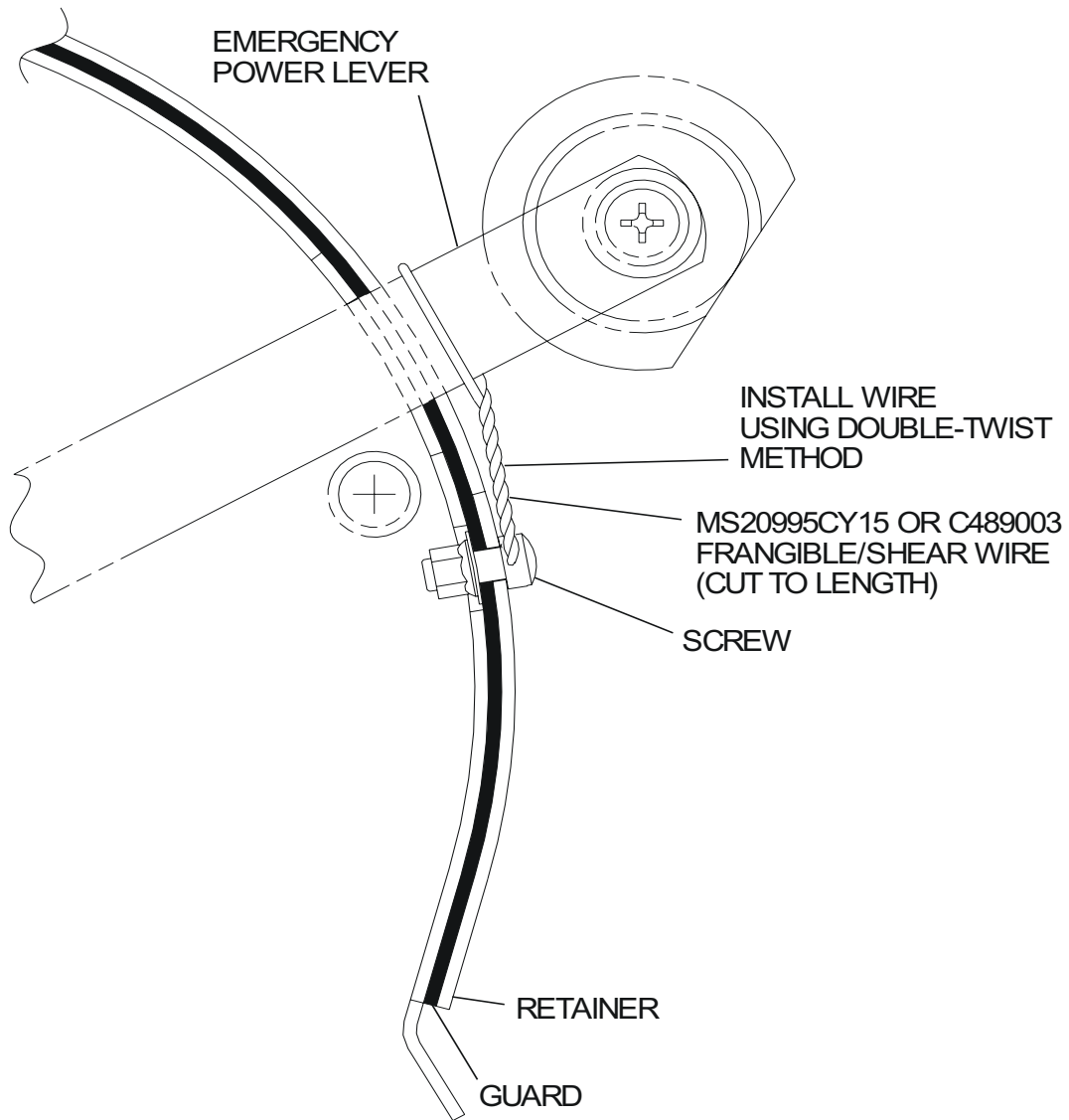
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Figure 203 : Sheet 2 : Emergency Power Lever Frangible/Shear Wire

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VIEW A-A

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