

## IMMEDIATE ACTION

# SERVICE

October 16, 1947



# BULLETIN

Bulletin No. 102

Subject: Electrical System - Model PA-12

To: Owners of Model PA-12 Airplanes Serial Nos. 12-1 to 12-1989 incl., 12-1991 to 12-1993 incl., 12-1997, 12-1999, 12-2001 to 12-3443 incl., 12-3445 to 12-3450 incl., 12-3452 to 12-3457 incl., 12-3461 to 12-3465 incl., 12-3481, 12-3535 to 12-3542 incl., 12-3553, 12-3901, 12-3903 to 12-3934 incl., 12-3936, 12-3940, 12-3941, 12-3943 to 12-3954 incl., 12-3961, 12-3964 to 12-3970 incl., 12-3988.

The following is a summary of service difficulties experienced with the electrical system in the Model PA-12 and recommendations as to how to remedy these difficulties.

Correspondingly numbered sketches (Opposite side bulletin) illustrate Items 1 to 4 inclusive.

### 1. Starter Cable Installation

- a. With the compression of the rubber stop blocks in the landing gear, there is a possibility that the starter cable insulation may be damaged where it passes between the landing gear and the fuselage member; This condition is aggravated on some airplanes by the omission of the flattening operation on the starter cable (tube) at this point.

We, therefore, recommend that an immediate inspection be made of the starter cable insulation at this point. Flatten cable, as shown on sketch, if this has not been accomplished; and, where damage or wear is found, wrap with several layers of tape.

- b. Check all other attachments of the starter cable to fuselage members, and where it passes through firewall; reinforcing these areas with tape, as in point 1a.
- c. An interference has occurred on some installations between the joint in the starter cable and the cowl channel just forward of the firewall. Bend the cable to provide 1/2" clearance with cowl channel.

A revised starter cable installation has been developed to eliminate any possibility of pinching the cable at the landing gear and the interference mentioned above. We recommend that this change be made as soon as is practical. Replacement parts, Part No. 11416-00 (One (1) Req'd.) are available free of charge through your distributor.

- d. Fiber insulating plates, Part No. 11422-00 (one (1) Req'd.), are also available free of charge, to replace the rubber grommets supporting the starter cable at the firewall and, Part No. 10129-04 on earlier airplanes,

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at the battery box, (two (2) req'd). The fiber plates will provide a more serviceable support at these points.

2. An inspection should be made of all other wiring in the fuselage and engine compartment, especially at attachments. Critical points are shown on sketch. Worn or damaged insulation should be generously wrapped with tape.
3. It has been found that when starting the engine with a partially discharged battery, the starter solenoid, Part No. 1456, contacts have a tendency to arc and occasionally to stick. A replacement solenoid, Part No. 1453, which will correct this trouble, is available through the engine manufacturer on a no charge basis providing the old solenoid, Part No. 1456, is returned for credit. We recommend that this change be made as soon as possible.
4. The battery box drain should be inspected to assure the proper attachment of the hose to the drain tube. Neglecting to replace the hose after a battery change has resulted in acid damage to the structure and fabric on a number of airplanes.
5. Refer to Bulletin No. 101 for information on ignition wire short circuit.
6. Refer to Bulletin No. 98 for information on battery box short circuit.
7. Refer to Bulletin No. 96 for information on relocation of voltage regulator.

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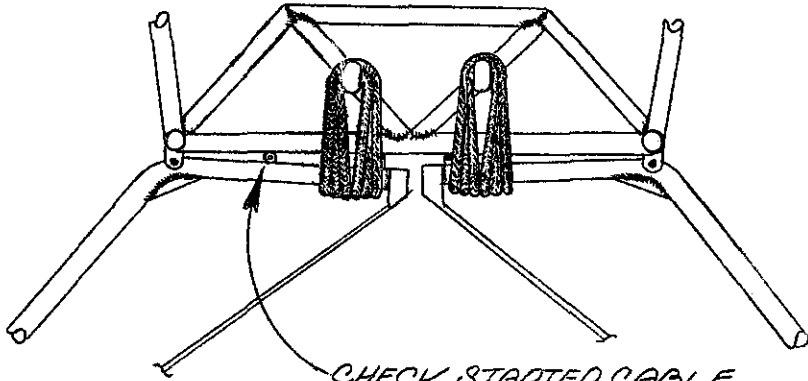
The importance of the electrical system justifies extra care in inspection and maintenance of the units and wiring. The major units such as starter, generator and voltage regulator, should be serviced by repair stations equipped for such work.

Inspections of the wiring installation recommended should be repeated periodically - (at least every 100 hours of operation). In addition, care should be taken to insure that wire terminals are not mislocated so that they, or the adjacent wire contacts nearby structure. Wire insulation is subject to deterioration from contact with fuels, oils and acid; and from high temperatures abrasion and general aging. Tapes are similarly affected. Wiring with extensively damaged insulation should be replaced with new wire.

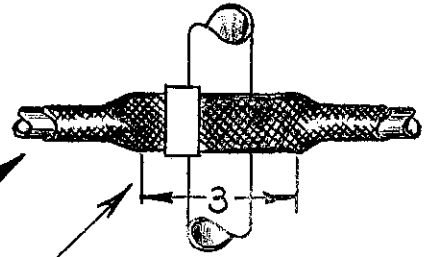
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Any changes made in accordance with this Service Bulletin should be covered by appropriate entries in the Aircraft Log Book.

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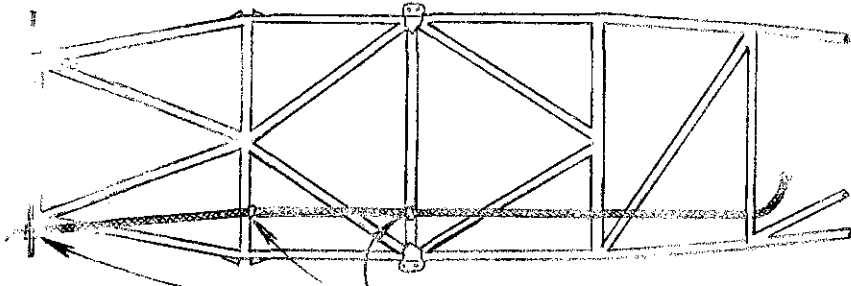
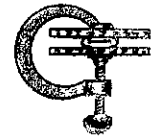


CHECK STARTED CABLE FOR INSULATION DAMAGE: FLATTEN AS SHOWN.



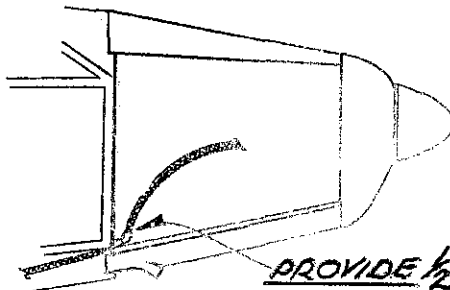
REMOVE CABLE FROM CLIP & FLATTEN AS SHOWN. USE WOODEN BLOCKS TO AVOID DAMAGE TO INSULATION.

FIGURE 1a



CHECK THESE POINTS FOR INSULATION DAMAGE

FIGURE 1b



PROVIDE 1/2" CLEARANCE BETWEEN CABLE JOINT & COUPLER CHANNEL.

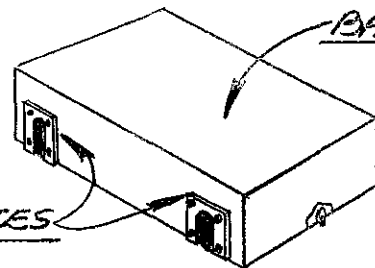
FIGURE 1c

FIBER PLATE #11422



FIREWALL

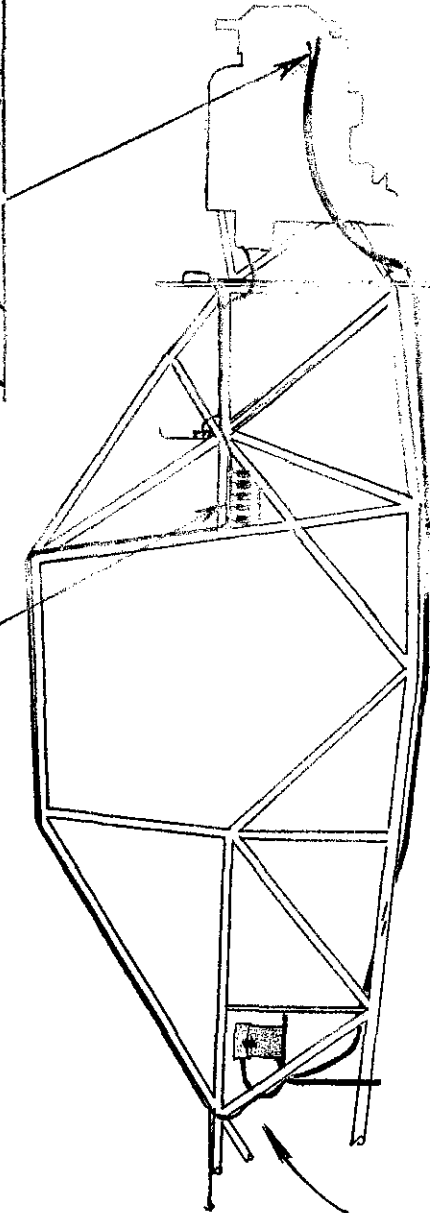
FIBER PLATES #10129-4



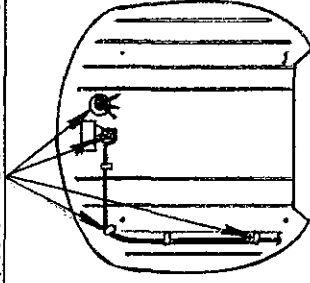
BATTERY BOX COVER

CHECK SWITCH PANEL FOR  
TERMINAL & WIRE CLEARANCES  
WITH ADJACENT STRUCTURE

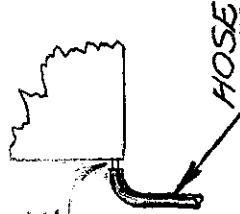
CHECK GENERATOR WIRE  
FOR CLEARANCE WITH  
ADJACENT PARTS.



CHECK WIRE INSULATION AT  
FIREWALL GROMMETS &  
ATTACHMENT POINTS.



BATTERY BOX  
DRAIN TUBE - SEE  
PARAGRAPH 4



SOLENOID - SEE PARAGRAPH 3

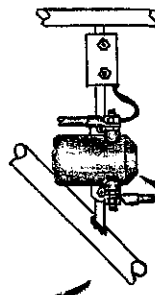
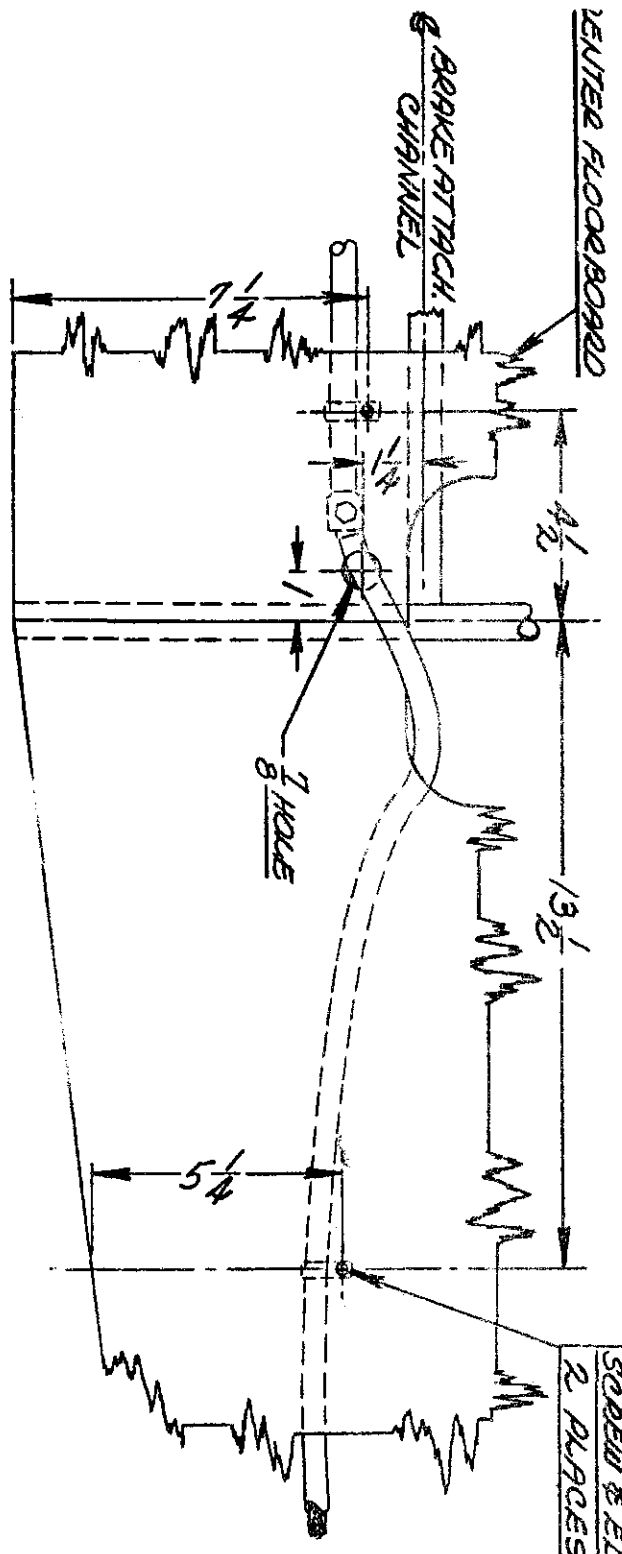
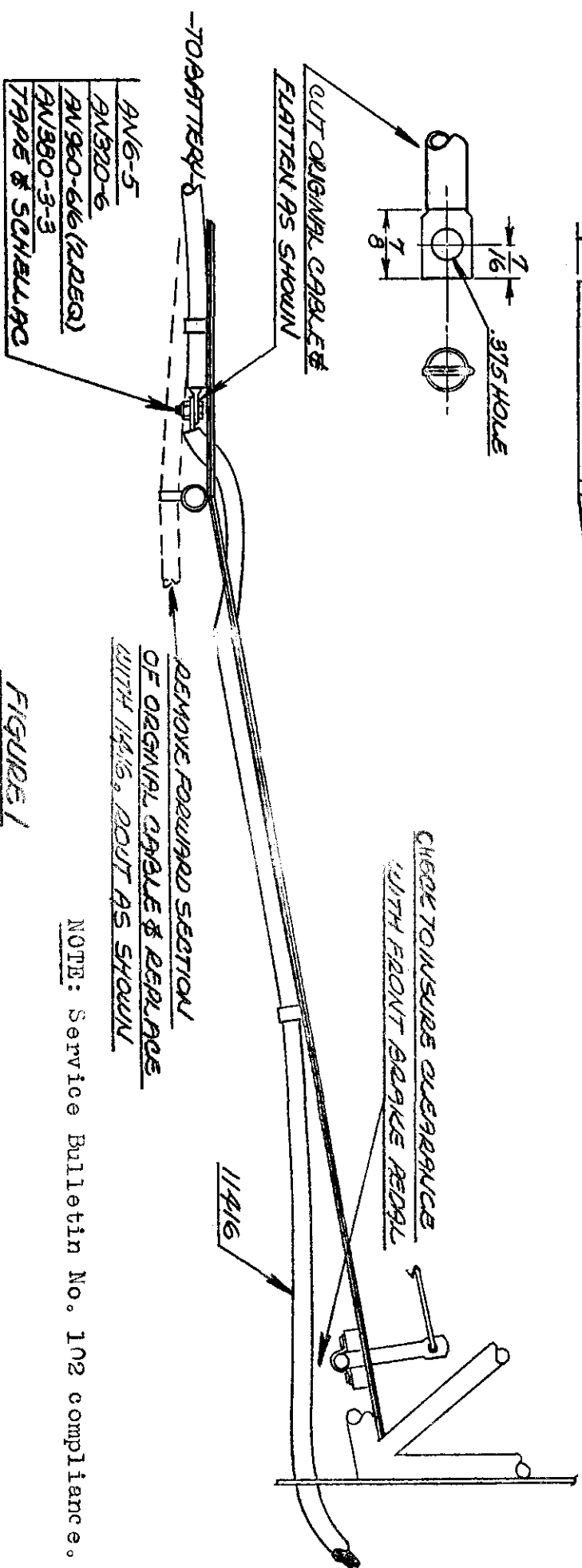
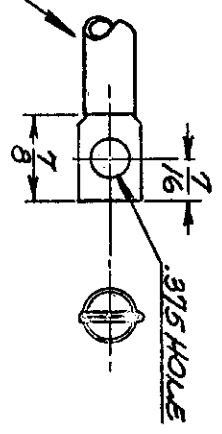


FIGURE 2



80032-4 CLAMP ATTACHED WITH #10-32x 5/8 ROUND HEAD 1 3/4 SORBEL & ELASTIC STOP-NUT 2 PLACES



- AN6-5
- AN320-6
- AN960-6/6 (2 PLACES)
- AN380-3-3
- TAPES & SCHLUBAC

FIGURE 1  
STARTER CONDUCTOR INST.  
(AFT OF FIDELURALL)

NOTE: Service Bulletin No. 102 compliance.

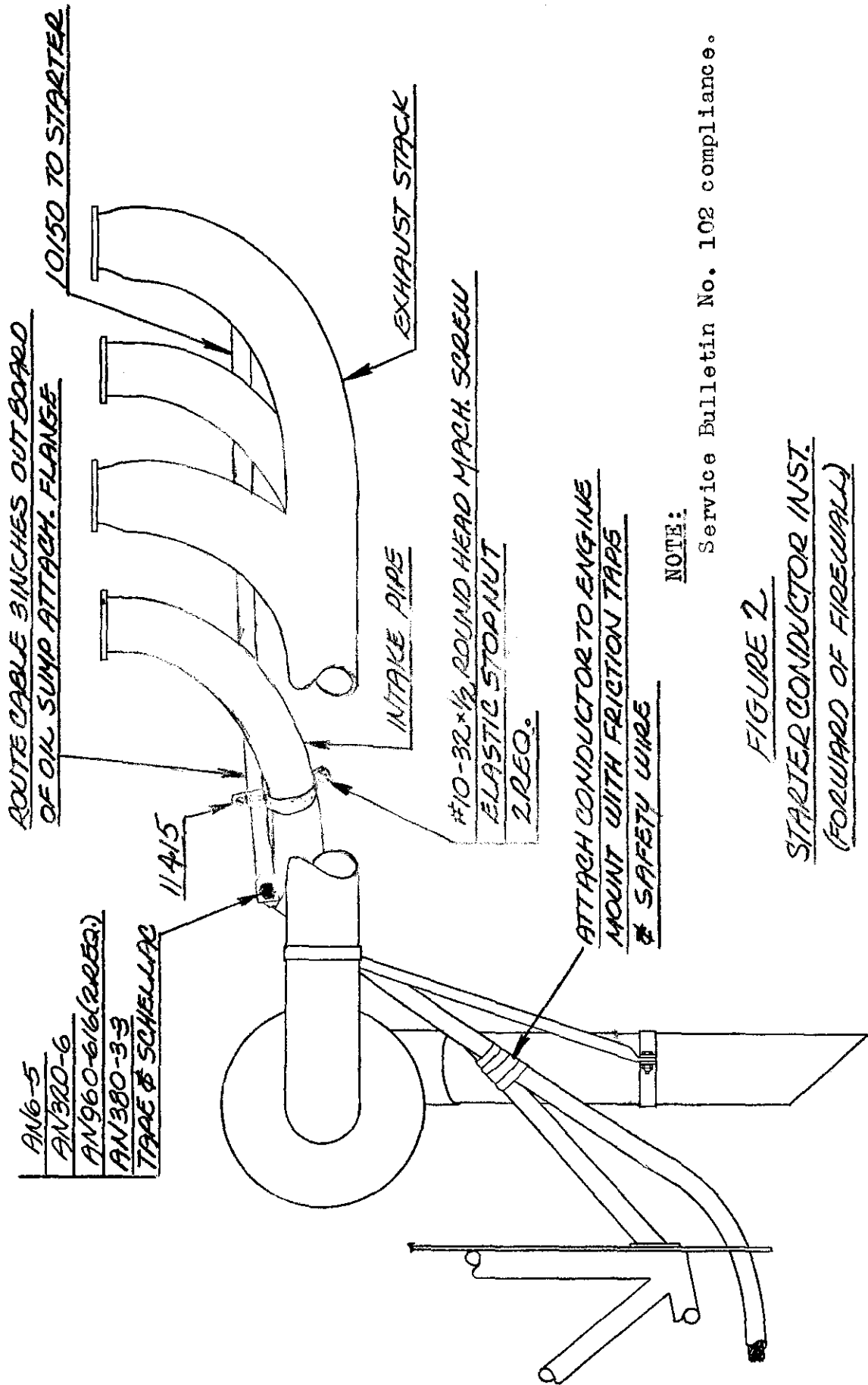


FIGURE 2  
STARTER CONDUCTOR INST.  
(FORWARD OF FIREWALL)