CHAPTER 74

IGNITION

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CHAPTER 74

IGNITION

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IGNITION SYSTEM - DESCRIPTION AND OPERATION

WARNING: THE CURRENTS INVOLVED IN THE IGNITION SYSTEM CAN BE FATAL. BE SURE POWER IS REMOVED FROM SYSTEM AT LEAST 3 MINUTES BEFORE MAKING DISCONNECTIONS. AFTER DISCONNECTING ANY LEAD, ASSURE DISCHARGE OF CAPACITORS BY IMMEDIATELY SHORTING TERMINAL TO GROUND.

1. General

A. The ignition system converts 28-volt dc power into high voltage pulsating current, which produces a high energy spark at spark igniters to initiate fuel combustion in the engine. The system is a high energy capacitor type, generating a sufficiently hot spark for engine starts at high altitudes and under wet conditions.

B. Ignition for each engine is accomplished by two identical circuits, each consisting of an exciter unit and a spark igniter (Fig. 1). Successful starts may be made with one circuit inoperative.

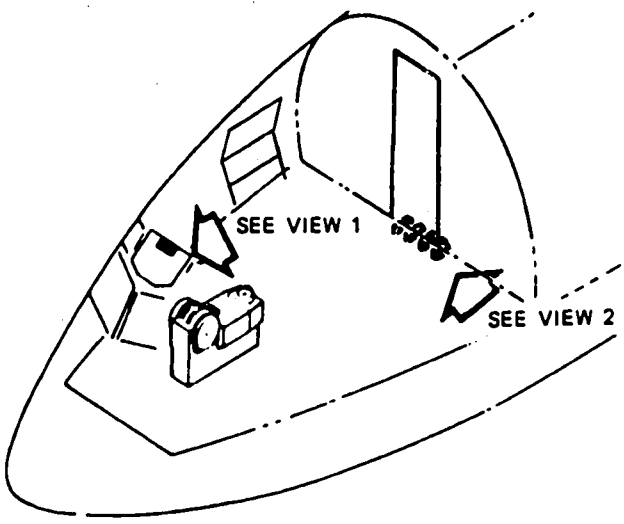
C. Control of the ignition system is provided by two switches for each engine. These are the engine start and ignition switches (View 1, Fig. 1) on the overhead panel and the cam-operated engine start lever switches in the lower nose compartment (View 2, Fig. 1). Each engine start lever switch is cable operated by a start lever on the control stand.

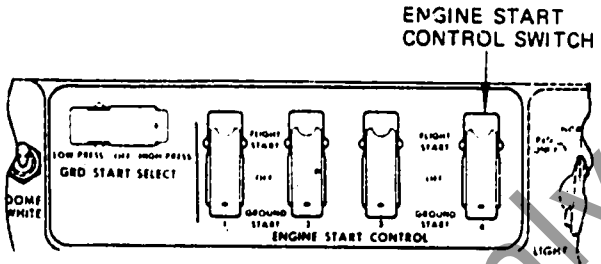
2. Engine Ignition Exciter Units

A. Each exciter unit includes an input radio noise filter, one vibrator, one vibrator transformer, a rectifier, and a triggering transformer. On SV HZ-ACC and HZ-ACD, a navigation receiver noise filter is provided at the receiver dc input to prevent erroneous localizer standoff signals caused by ignition ignitor interference (Ref Chapter 34). On SV HZ-ACC, HZ-ACD, HZ-ACG and on, HZ-HM1 and on, plus airplanes incorporating SB 2798, an additional radio noise filter for each exciter unit is provided at the wing leading edge area (Fig. 2). The exciter unit is housed in a hermetically-sealed metal container, providing protection against weather and the possibility of flashover at altitude. Both exciter units (Detail A, Fig. 1) are mounted on the right side of the N1 compressor case.

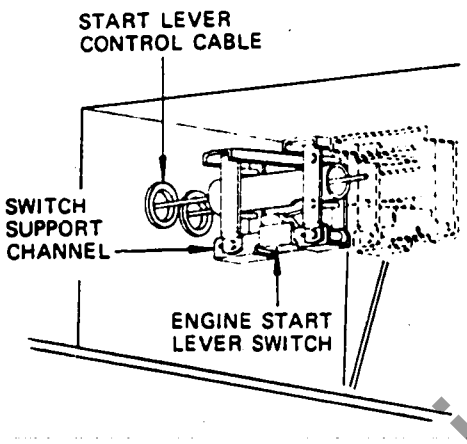
3. Spark Igniters

A. The spark igniters initiate combustion in the wettest fuel area during engine starting. The flame propagates to the remaining combustion chambers through interconnected flame tubes. The principal parts of the spark igniter are a two piece outer shell, a center electrode and a ceramic insulator. The spark that jumps across the annular nonadjustable gap between the shell and the center electrode is of sufficient intensity to vaporize wet fuel and break down carbon deposits. The spark igniters (Detail B, Fig. 1) are installed in combustion chambers No. 4 and 5.

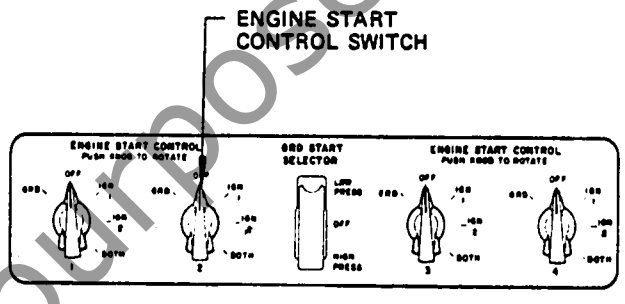




PILOTS' OVERHEAD PANEL 2

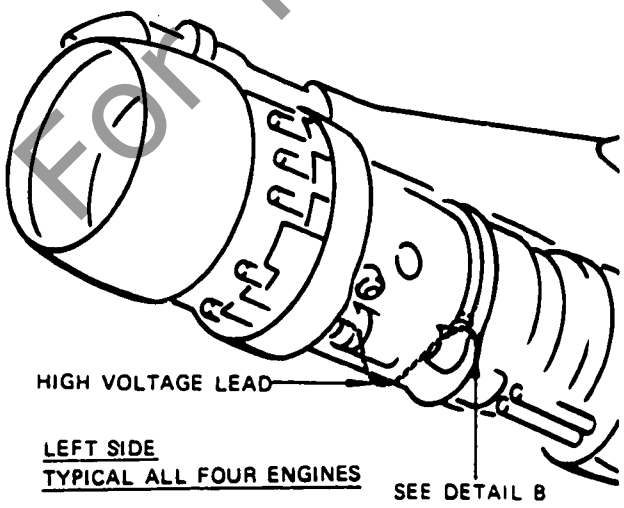


VIEW 2



PILOTS' OVERHEAD PANEL 1

VIEW 1

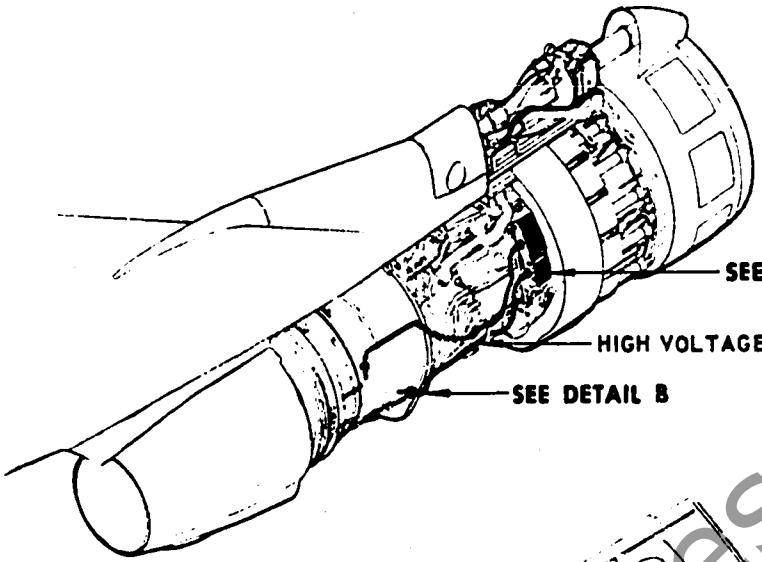


LEFT SIDE
TYPICAL ALL FOUR ENGINES

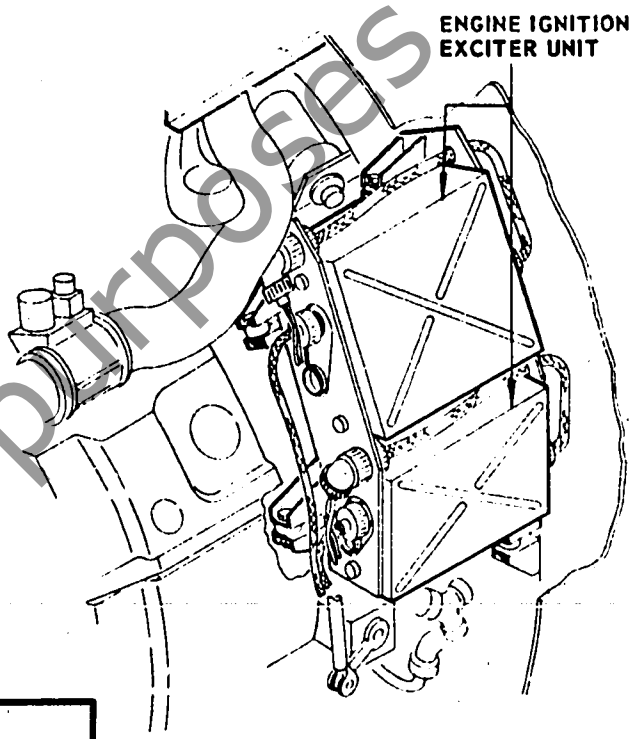
1 SV HZ-ACC, HZ-ACD, HZ-ACG AND ON, HZ-HM1 AND ON

2 SV HZ-ACA, HZ-ACB, HZ-ACE AND HZ-ACF

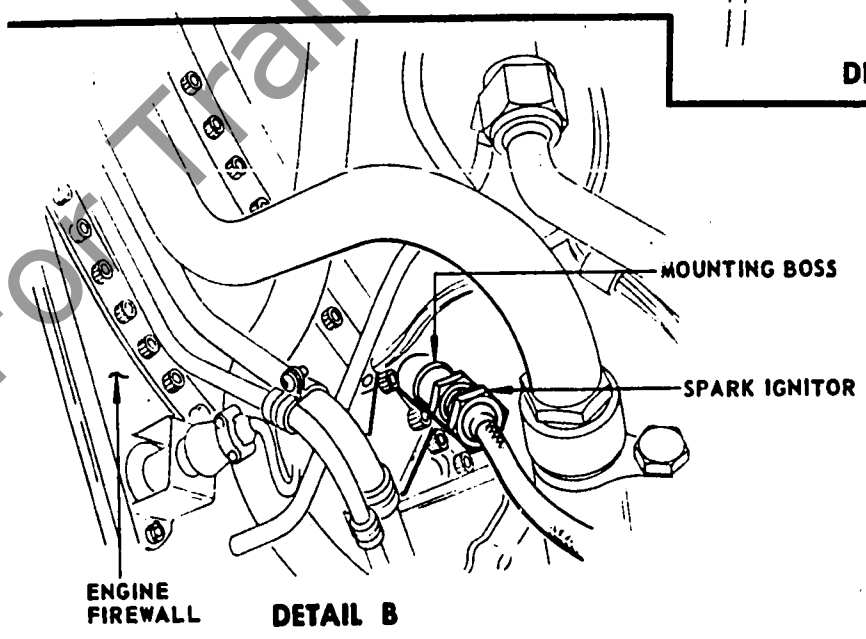
Ignition System Equipment Location
Figure 1 (Sheet 1)



TYPICAL ALL FOUR ENGINES



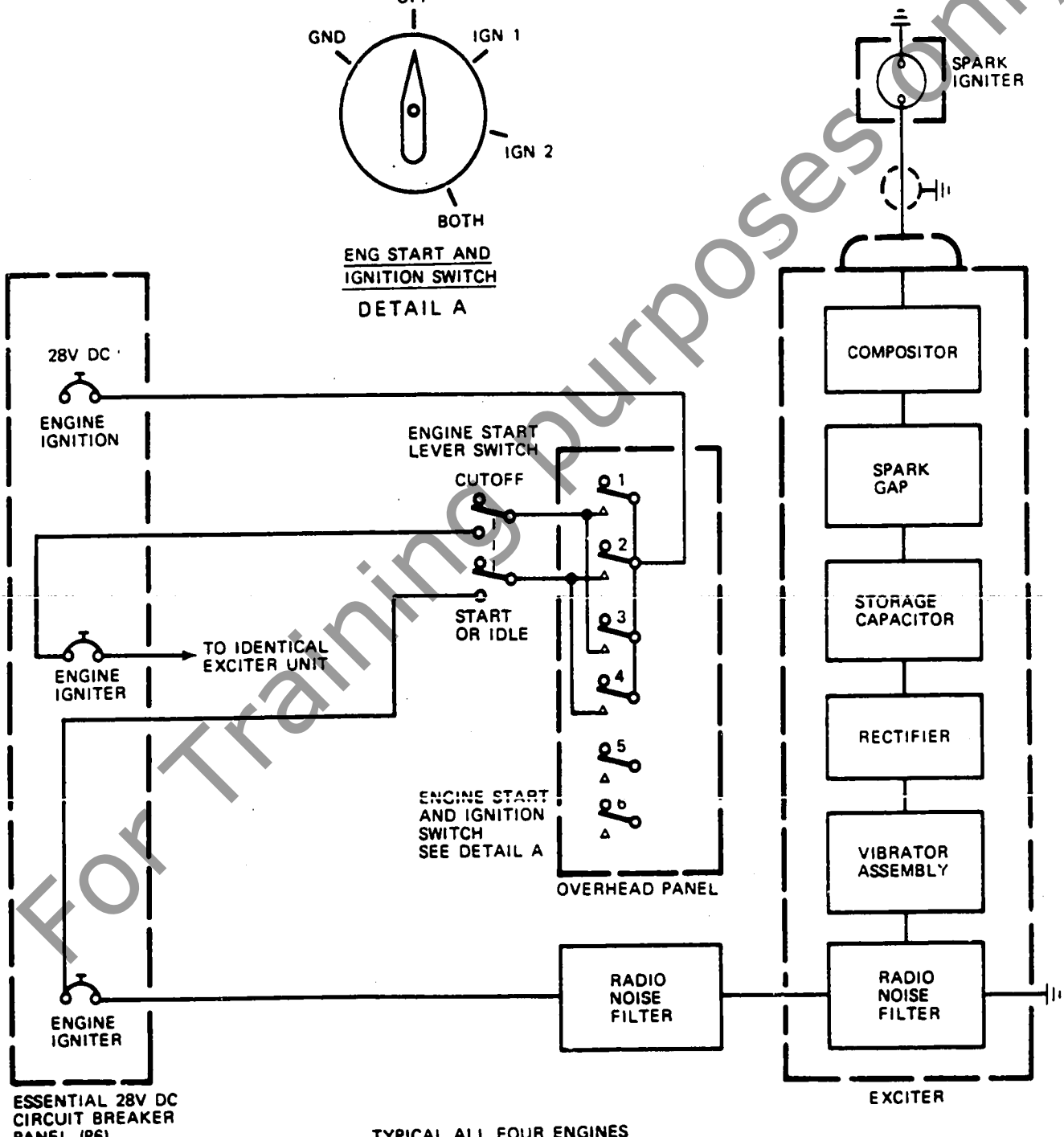
DETAIL A



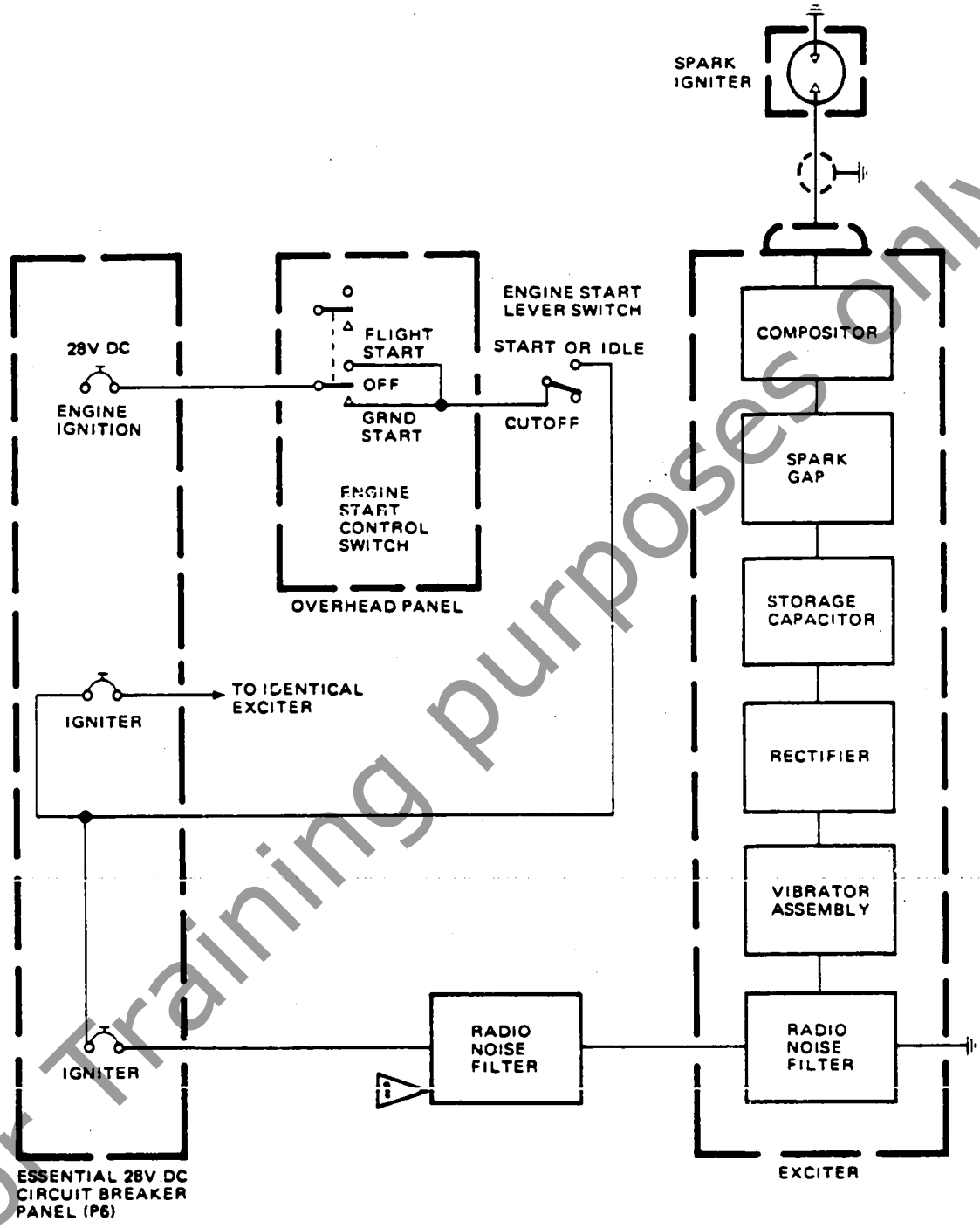
DETAIL B

SWITCH POSITION	CONTACT(S) CLOSED
GND	1-2-5-6
OFF	AS SHOWN
IGN 1	3
IGN 2	4
BOTH	3-4

ENG START AND IGNITION SWITCH
DETAIL A



TYPICAL ALL FOUR ENGINES



TYPICAL ALL FOUR ENGINES

1 SV ON AIRPLANES INCORPORATING SB 2798

4. High Voltage Leads

A. Two high voltage leads connect the exciter units to the spark igniters. The leads consist of a single wire cable encased in braided conduit with insulated, threaded connectors at both ends. The leads and connectors are shielded to prevent radio interference.

5. Start Lever Switch

A. The start lever switches control the application of ignition for engine starting. Each start lever switch assembly consists of a cam guide tube, a cam, a switch actuator, a start lever switch and a support bracket assembly. The cam is attached to the start lever control cable and passes through each start lever switch assembly. As the cable is actuated by the start lever on the captain's control stand, the cam depresses a follower on the switch actuator arm causing the switch to open or close.

B. The start lever switch is rigged to close when the start lever is at least 12 ±2 degrees ahead of the CUTOFF detent up through the IDLE detent (Ref 74-2-1, Maintenance Practices). There are four start lever switch assemblies, one for each engine, located in the lower nose compartment.

6. Operation

A. On SV HZ-ACC and HZ-ACD, HZ-ACG and on, HZ-HM1 and on, the ignition system is energized for ground starting when the engine ignition and igniter circuit breakers on the essential 28-volt circuit breaker panel are closed, the engine start and ignition switch is in GRD, and the start lever is at least 12 ±2 degrees ahead of CUTOFF detent. The system is also energized for inflight starting when the circuit breakers are closed, the engine start and ignition switch is in IGN 1, IGN 2 or BOTH, and the start lever is at least 12 ±2 degrees ahead of CUTOFF detent. The ignition system may be operated continuously for periods up to 10 minutes with a 20 minute OFF cooling period for each igniter when used together or alternately.

B. On SV HZ-ACA, HZ-ACB, HZ-ACE and HZ-ACF, the ignition system is energized for ground starting when the circuit breakers on the essential 28-volt circuit breaker panel are closed, the engine start control switch is in GROUND START and the start lever is at least 12 ±2 degrees ahead of CUTOFF detent. The system is also energized when the circuit breakers are closed and the engine start control switch is in FLIGHT START and the start lever is at least 12 ±2 degrees ahead of CUTOFF detent. The ignition system may be operated continuously for periods up to 10 minutes with a 20 minute OFF cooling period for each igniter when used together or alternately.

C. On SV HZ-ACC, HZ-ACD, HZ-ACG and on, HZ-HM1 and on, plus airplanes incorporating SB 2798, when the ignition system is energized, 28-volt dc power is fed through a radio noise filter located at the wing leading edge area and then to another radio noise filter ahead of a vibrator in the exciter unit.

D. Pulsating current from the filter and vibrator in the exciter is then fed through a transformer where the voltage is raised to about 2000 volts and is then fed through a gas-charged rectifier tube to storage capacitors. When the storage capacitors become fully charged, an air gap breaks down and allows a surge of current to pass through the primary coil of a high voltage transformer. The secondary of this transformer delivers a voltage to the spark igniters of a value sufficient to break down the igniter air gap and allow the discharge of a high energy spark.

E. The ignition system is used in conjunction with the engine starting system for ground starts and with engine windmilling for flight starts.

WARNING: THE CURRENTS INVOLVED IN THE IGNITION SYSTEM CAN BE FATAL. BE SURE POWER IS REMOVED FROM SYSTEM AT LEAST 3 MINUTES BEFORE DISASSEMBLY OF ANY CONNECTORS. ON DETACHING ANY LEAD ASSURE COMPLETE DISCHARGE OF CAPACITORS BY IMMEDIATELY SHORTING TERMINAL TO GROUND.

1. General

A. The high energy spark developed by the ignition system is easily audible. Therefore, it is best to begin trouble shooting by making an audible check of the spark igniters. If no spark is heard at either igniter, check that the proper circuit breakers are closed and then proceed according to the trouble shooting charts.

WARNING: TO AVOID INJURY DUE TO POSSIBLE IGNITION OF TRAPPED FUEL, IT IS IMPERATIVE THAT THE THRUST REVERSER DOORS ARE IN THE FORWARD THRUST POSITION WHEN PERFORMING THE ABOVE CHECK. REFER TO CHAPTER 78, "EXHAUST," FOR FURTHER INFORMATION.

CHECK OF IGNITION SYSTEM MUST NOT BE PERFORMED WHEN AIRPLANE IS IN HANGER, NEAR BUILDINGS AND/OR OTHER AIRPLANES, OR DURING AIRPLANE FUELING. ENSURE THAT NO PERSONNEL ARE IN OR NEAR ENGINE INLET AND EXHAUST OF APPLICABLE ENGINE DURING IGNITER PLUG CHECK.

IGNITION VOLTAGE IS DEADLY. DO NOT TOUCH IGNITER PLUGS OR LIVE PORTION OF IGNITION EXCITER OR LEADS DURING OPERATION.

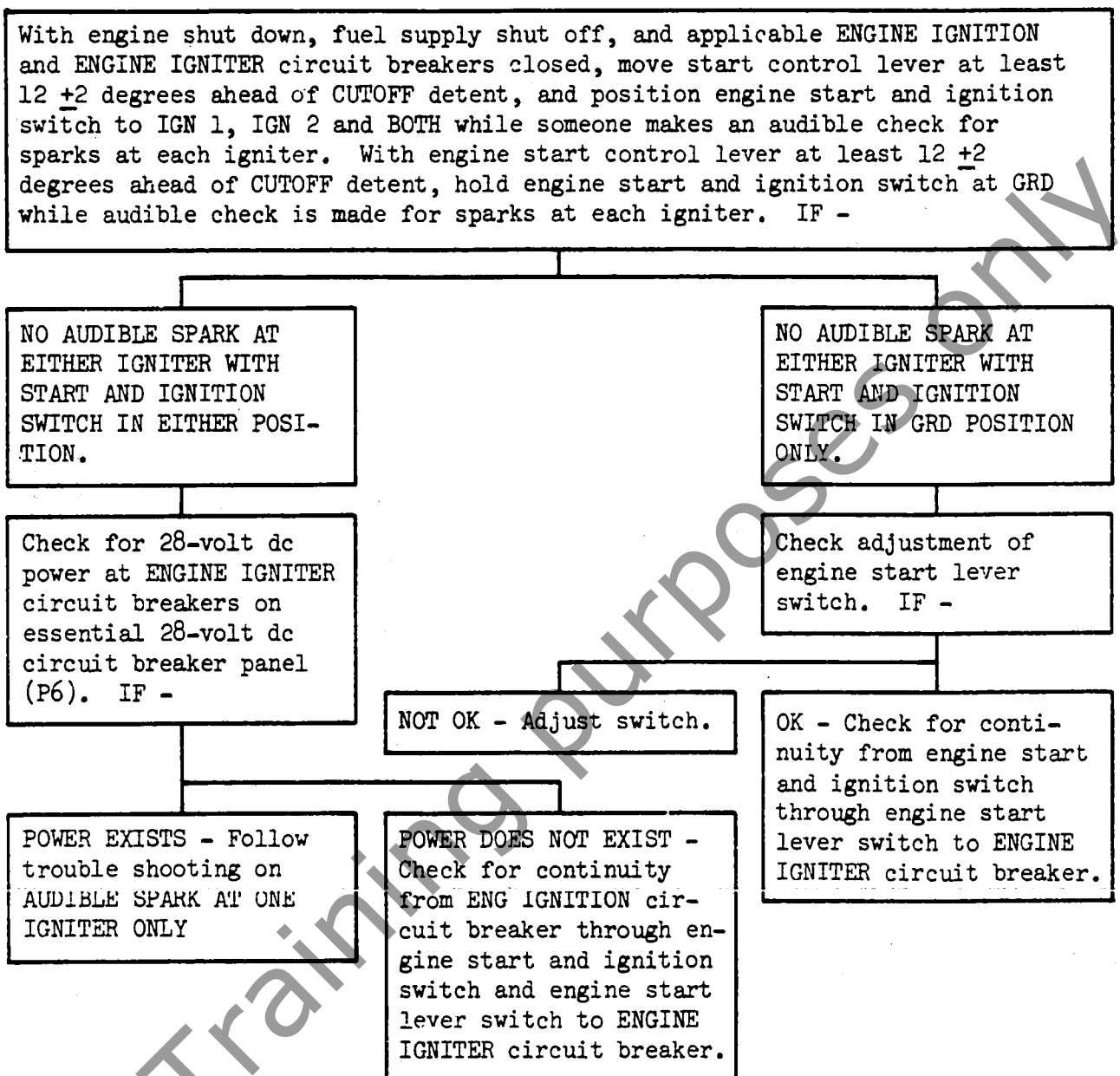
CAUTION: DO NOT ENERGIZE IGNITION SYSTEM UNLESS IGNITER IS CONNECTED TO EXCITER UNIT. TO DO SO MAY DAMAGE TRANSFORMER IN EXCITER UNIT.

PRIOR TO PERFORMING IGNITER PLUG CHECK, DRY MOTOR ENGINE TO REMOVE UNBURNED FUEL, (REF 71-5-0 A/T) UNBURNED FUEL COULD RESULT IN ENGINE INTERNAL OR EXHAUST FIRE. DO NOT PERFORM IGNITER PLUG CHECK IF N2 IS ROTATING. WITH N2 ROTATION, FUEL ENTRY INTO COMBUSTION CHAMBER IS POSSIBLE WHEN START LEVER IS ADVANCED TO IDLE AND INADVERTENT LIGHTUP DURING IGNITER CHECK COULD RESULT.

B. Ignition System Limitations

(1) The ignition system may be operated continuously for periods up to 10 minutes with a 20 minute OFF cooling period for each igniter when used together or alternately.

2. Ignition System Trouble Shooting Chart



EFFECTIVITY

SV HZ-ACC, HZ-ACD, HZ-ACG AND ON,
HZ-HM1 AND ON

2. Ignition System Trouble Shooting Chart

With engine shut down, fuel supply shut off, and applicable ENGINE IGNITION and one of the ENGINE IGNITER circuit breakers closed and engine start lever at least 12 ±2 degrees ahead of CUTOFF detent, hold engine start control switch to GROUND START make audible check for sparks at each igniter. With start lever at least 12 ±2 degrees ahead of CUTOFF detent, place engine start control switch to FLIGHT START, make audible check of each igniter plug. Repeat check with above ENGINE IGNITER CB pulled and the other one pushed in. IF -

NO AUDIBLE SPARK AT EITHER IGNITER WITH START CONTROL SWITCH IN EITHER POSITION

Check for 28-volt dc power at ENGINE IGNITER circuit breaker on essential 28-volt dc circuit breaker panel (P6). IF -

POWER EXISTS - Follow trouble shooting on AUDIBLE SPARK AT ONE IGNITER ONLY

POWER DOES NOT EXIST - Check for continuity from ENG IGNITION circuit breaker through engine start control switch and engine start lever switch to ENGINE IGNITER circuit breaker

NO AUDIBLE SPARK AT EITHER IGNITER WITH START CONTROL SWITCH IN GROUND START POSITION ONLY

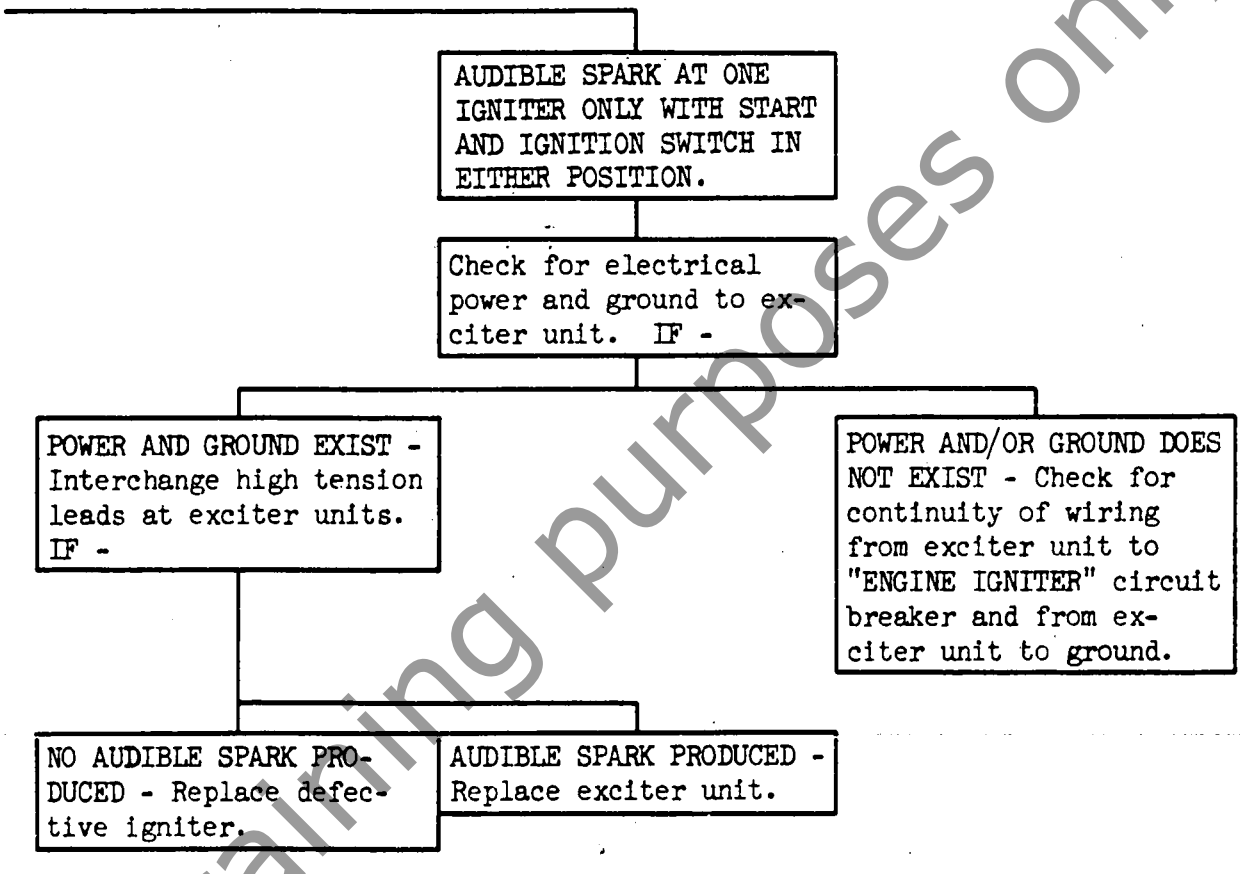
Check adjustment of engine start lever switch. IF -

NOT OK - Adjust switch

OK - Check for continuity through engine start lever switch, engine start control switch to ENGINE IGNITER circuit breaker

EFFECTIVITY

SV HZ-ACA, HZ-ACB, HZ-ACE and HZ-ACF



IGNITION SYSTEM - ADJUSTMENT/TEST

1. General
   A. Test the ignition system by checking for audible sparking sound.
      (1) The test will consist of checking for individual spark igniter operation (one spark igniter firing).
      (2) The test applies to any engine. Ensure sequence is applied to the engine being tested.
2. Test Ignition system (Fig. 501, 502)

WARNING: CHECK OF IGNITION SYSTEM MUST NOT BE PERFORMED WHEN AIRPLANE IS IN HANGER, NEAR BUILDINGS AND/OR OTHER AIRPLANES, OR DURING AIRPLANE FUELING. ENSURE THAT NO PERSONNEL ARE IN OR NEAR ENGINE INLET AND EXHAUST OF APPLICABLE ENGINE DURING IGNITER PLUG CHECK.

IGNITION VOLTAGE IS DEADLY. DO NOT TOUCH IGNITER PLUGS OR LIVE PORTION OF IGNITION EXCITER OR LEADS DURING OPERATION.

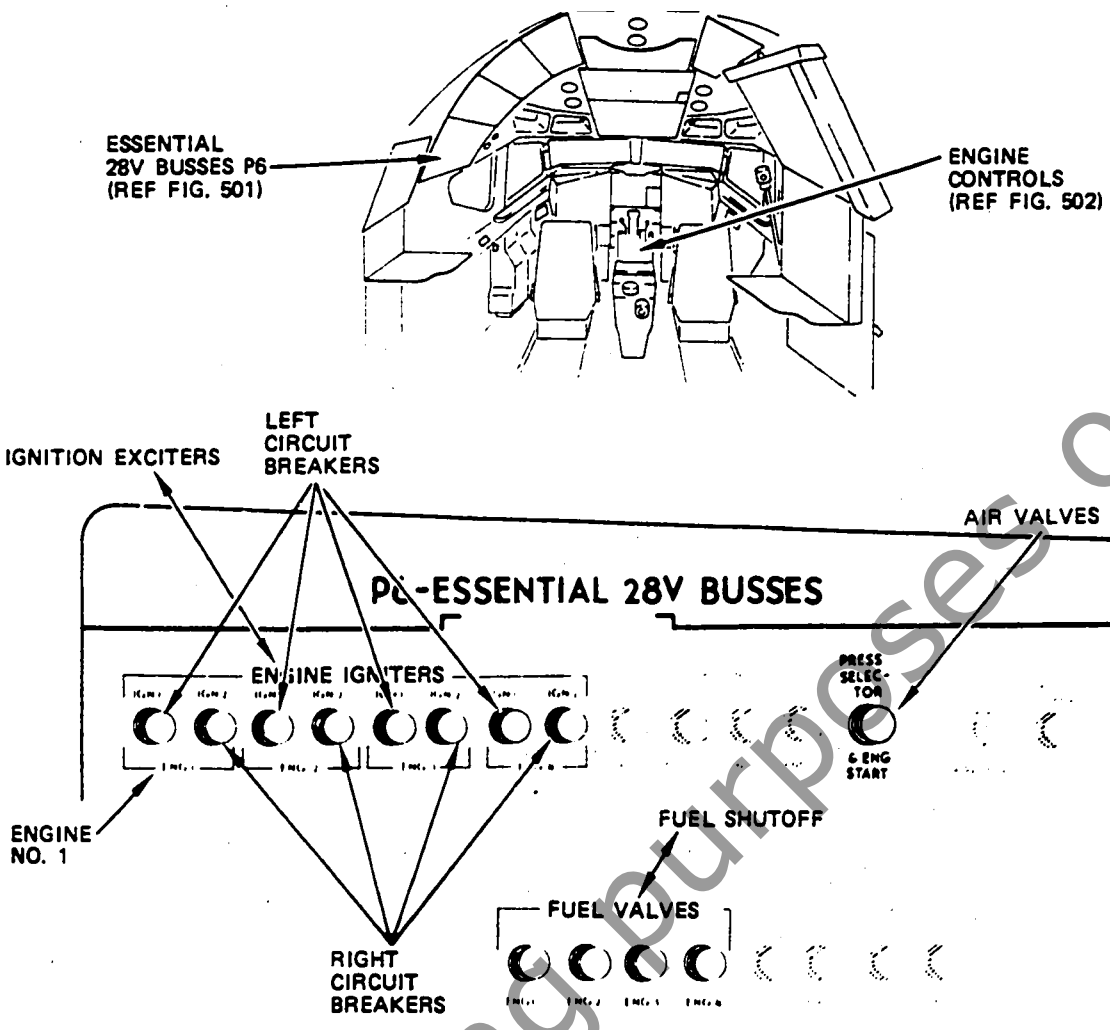
CAUTION: PRIOR TO PERFORMING IGNITER PLUG CHECK, DRY MOTOR ENGINE TO REMOVE UNBURNED FUEL (REF 71-5-0 A/T). UNBURNED FUEL COULD RESULT IN ENGINE INTERNAL OR EXHAUST FIRE. DO NOT PERFORM IGNITER PLUG CHECK IF N2 IS ROTATING. WITH N2 ROTATION, FUEL ENTRY INTO COMBUSTION CHAMBER IS POSSIBLE WHEN START LEVER IS ADVANCED TO IDLE AND INADVERTENT LIGHTUP DURING IGNITER CHECK COULD RESULT.

A. Provide dc electrical power.
B. Open FUEL SHUTOFF (FUEL VALVES) and PRESS SELECTOR & ENG START (AIR VALVES) circuit breakers for applicable engine located on circuit breaker panel P6 (Fig. 501).
C. Open left circuit breaker for applicable engine located on circuit breaker panel P6 (Fig. 501).
D. Close right circuit breaker for applicable engine located on circuit breaker panel P6 (Fig. 501).
E. Position applicable ENGINE START CONTROL switch on overhead panel to GROUND START position.

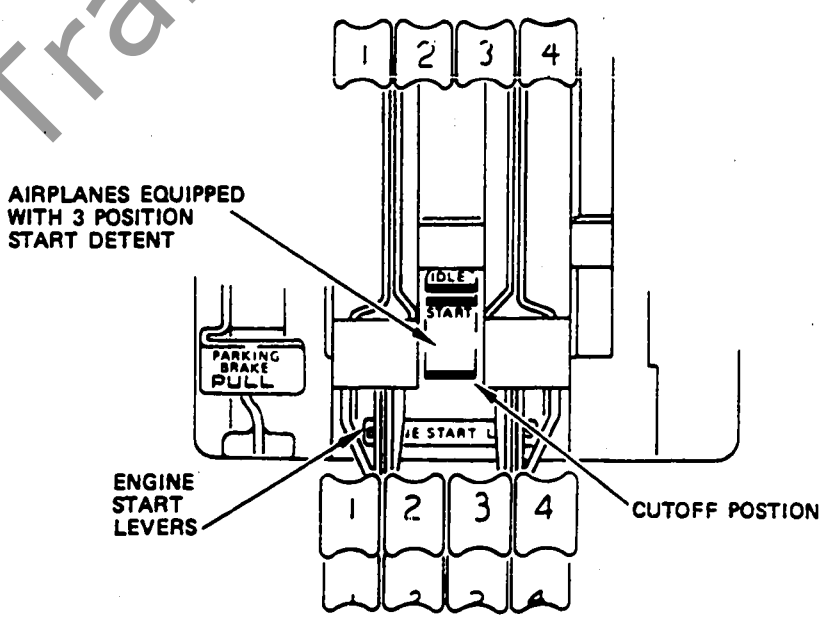
NOTE: Verify by audio check that neither spark igniter is firing.

F. Lift lever to START position (Fig. 502).

NOTE: Verify by audio check that spark igniter is firing (one spark igniter firing - LOWER spark igniter).



P6 Circuit Breaker Position
Figure 501



Engine Start Lever Postion
Figure 502

G. Open right circuit breaker for applicable engine located on circuit breaker panel P6 (Fig. 501).

NOTE: Verify by audio check that neither spark igniter is firing.

H. Close left circuit breaker for applicable engine located on circuit breaker panel P6 (Fig. 501).

NOTE: Verify by audio check that ignition plug is firing (one spark igniter firing - UPPER spark igniter).

I. Close right circuit breaker for applicable engine located on circuit breaker panel P6 (Fig. 501).

NOTE: Verify by audio check that left and right combustion chamber spark igniters are firing (two spark igniters firing).

J. Position applicable engine start lever to CUTOFF (Fig. 502).
K. Position applicable ENGINE START CONTROL switch on overhead panel to OFF position.
L. Close FUEL SHUTOFF (FUEL VALVES) and PRESS SELECTOR & ENG START (AIR VALVES) circuit breakers for applicable engine located on circuit breaker panel P6. (Fig. 501).
Disconnect electrical power, if no longer required.

ENGINE START LEVER SWITCHES - MAINTENANCE PRACTICES

1. Removal/Installation Engine Start Lever Switches

   A. Remove Engine Start Lever Switches (See figure 201.)

      (1) Open all "ENG IGNITION" circuit breakers on essential 28 volt DC circuit breaker panel (P6).

      (2) Disconnect switch electrical connections.

      (3) Support switch and switch actuator and remove mounting screws.

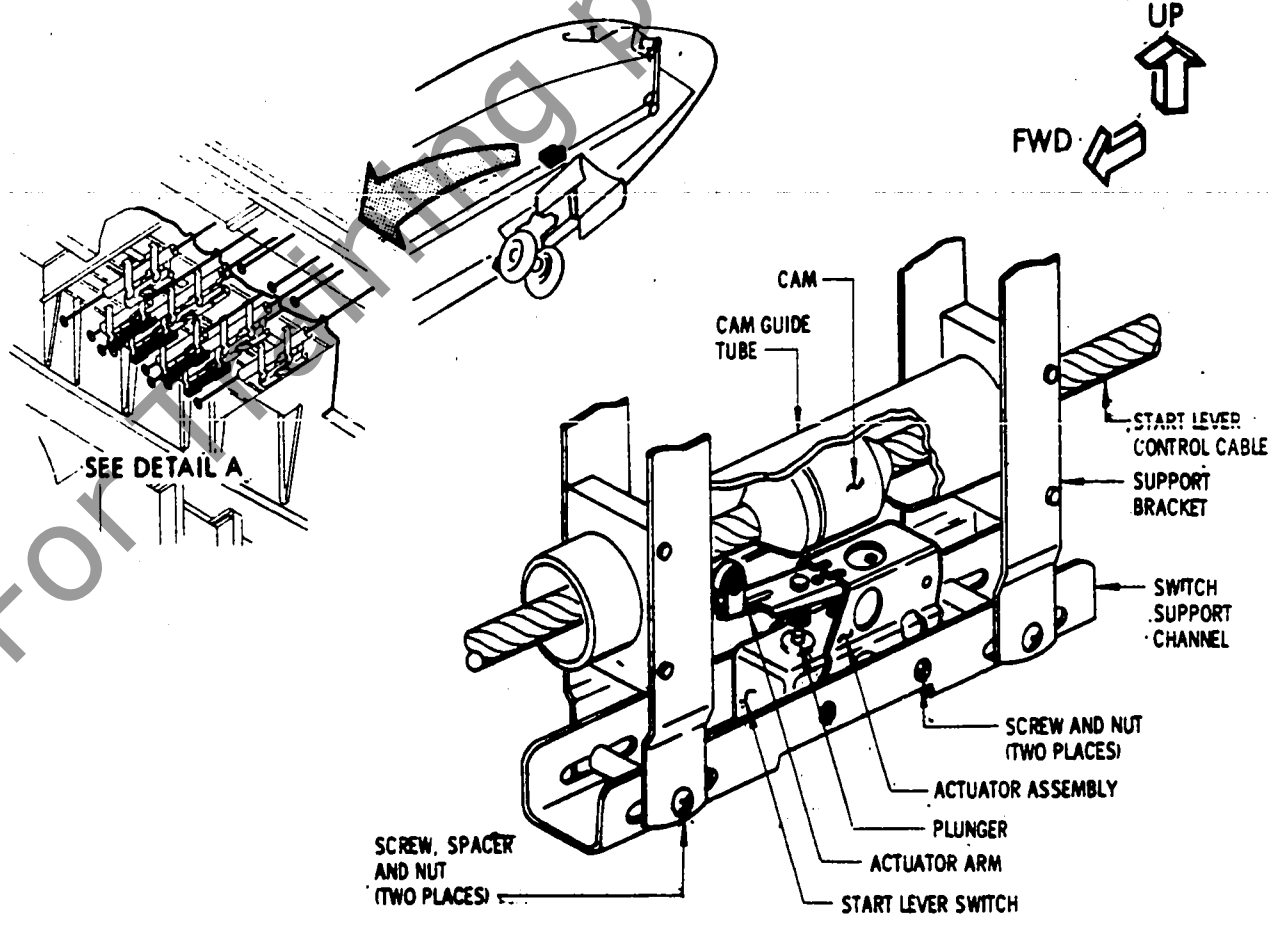
      (4) Remove switch and switch actuator.

   B. Install Engine Start Lever Switches (See figure 201.)

      (1) Position switch and switch actuator in support channel and install mounting screws.

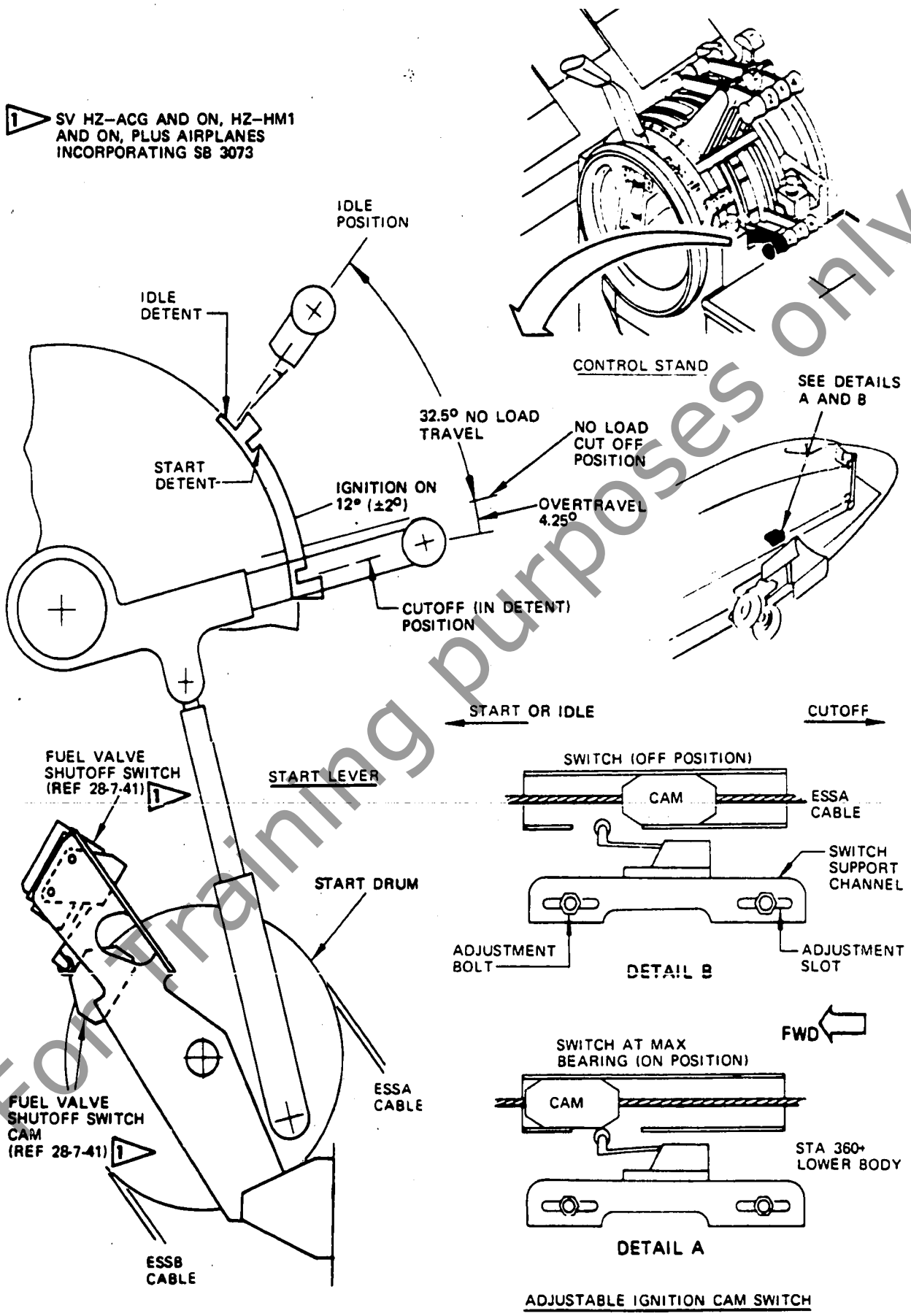
      (2) Connect electrical wiring.

      (3) Adjust switch. See "Adjust Engine Start Lever Switches."



DETAIL A

1 SV HZ-ACG AND ON, HZ-HM1 AND ON, PLUS AIRPLANES INCORPORATING SB 3073



ADJUSTABLE IGNITION CAM SWITCH

Engine Start Lever Switch Adjustment
Figure 202

2. Adjustment/Test Engine Start Lever Switch

NOTE: Start levers must be properly rigged prior to switch adjustments to ensure synchronization of fuel and ignition system operations. Refer to Chapter 76 for rigging procedures.

A. Adjust Engine Start Lever Switch (Fig. 202).

(1) Loosen fore and aft adjustment screws.

NOTE: A special tool with Phillips offset head is required to loosen switch adjustment screws (Fig. 203).

(2) Place start lever in START or IDLE detent.

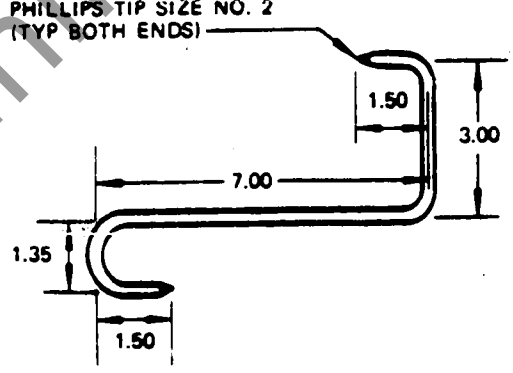
(3) Adjust switch to maximum bearing on switch actuating cam (detail A).

NOTE: Switch must be actuated when engine start lever is approximately 12 ±2 degrees forward of no-load cutoff position, equivalent to 0.84 ±0.14 inch cable travel and remain actuated up to and including the idle detent.

CAUTION: DO NOT BEND ACTUATOR ARM TO ADJUST SWITCH.

(4) Tighten adjustment screws.

(5) Slowly return start lever to cutoff position. (See detail B for relative cam switch position.)



MATERIAL: .250 DIA 4130 STEEL
H.T. 180,000–200,000 PSI

Suggested Special Offset Screwdriver
Figure 203

ENGINE IGNITION EXCITER UNIT - MAINTENANCE PRACTICES

WARNING: THE CURRENTS INVOLVED IN THE IGNITION SYSTEM CAN BE FATAL. BE SURE POWER IS REMOVED FROM SYSTEM AT LEAST 3 MINUTES BEFORE DISASSEMBLY OF ANY CONNECTORS. ON DETACHING ANY LEAD INSURE COMPLETE DISCHARGE BY IMMEDIATELY SHORTING TERMINAL TO GROUND.

1. Removal/Installation Engine Ignition Exciter Units

A. General

(1) Tag or note location of all brackets and clips to insure the installation in proper place.

B. Remove Engine Ignition Exciter Unit (See figure 201.)

(1) Detach all electrical leads from the rear of the exciter units.

(2) Remove four bolts and lock nuts securing the exciter units assembly to its vibration isolators; lift off the assembly.

(3) Separate the two exciters from their mount brackets by removing eight bolts and the forward electrical leads

NOTE: Ignition exciters are sealed units. Do not break the seal.

C. Install Engine Ignition Exciter Unit (See figure 201.)

(1) Check leads for fraying and loose connections. Examine receptacles for foreign material and clean as required.

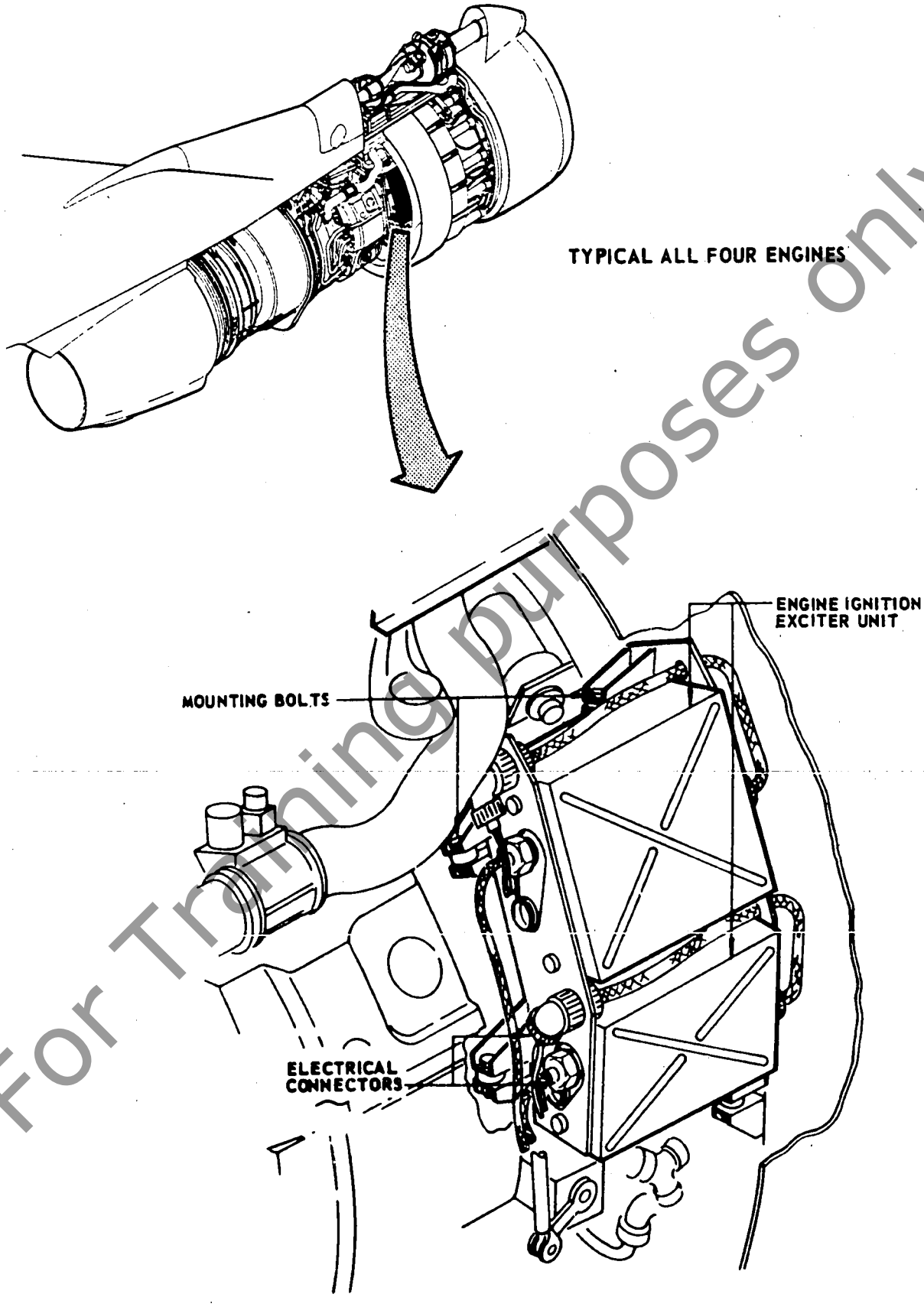
(2) Secure the two exciters to their mount brackets with eight bolts and lockwire.

(3) Install forward electrical leads removed in step 3 above, and lockwire.

(4) Mount the exciter assembly on its four vibration isolators with four bolts and lock nuts.

(5) Attach all remaining electrical leads to their respective connectors. Torque cigarette-type high voltage leads to a torque of 140 to 160 inch-pounds. Tighten and lockwire all other connectors

CAUTION: DO NOT ENERGIZE IGNITION CIRCUIT UNLESS SPARK IGNITER IS CONNECTED TO EXCITER UNIT. TO DO SO MAY DAMAGE TRANSFORMER IN EXCITER UNIT.



Engine Ignition Exciter Units Installation
Figure 201

SPARK IGNITERS - REMOVAL/INSTALLATION

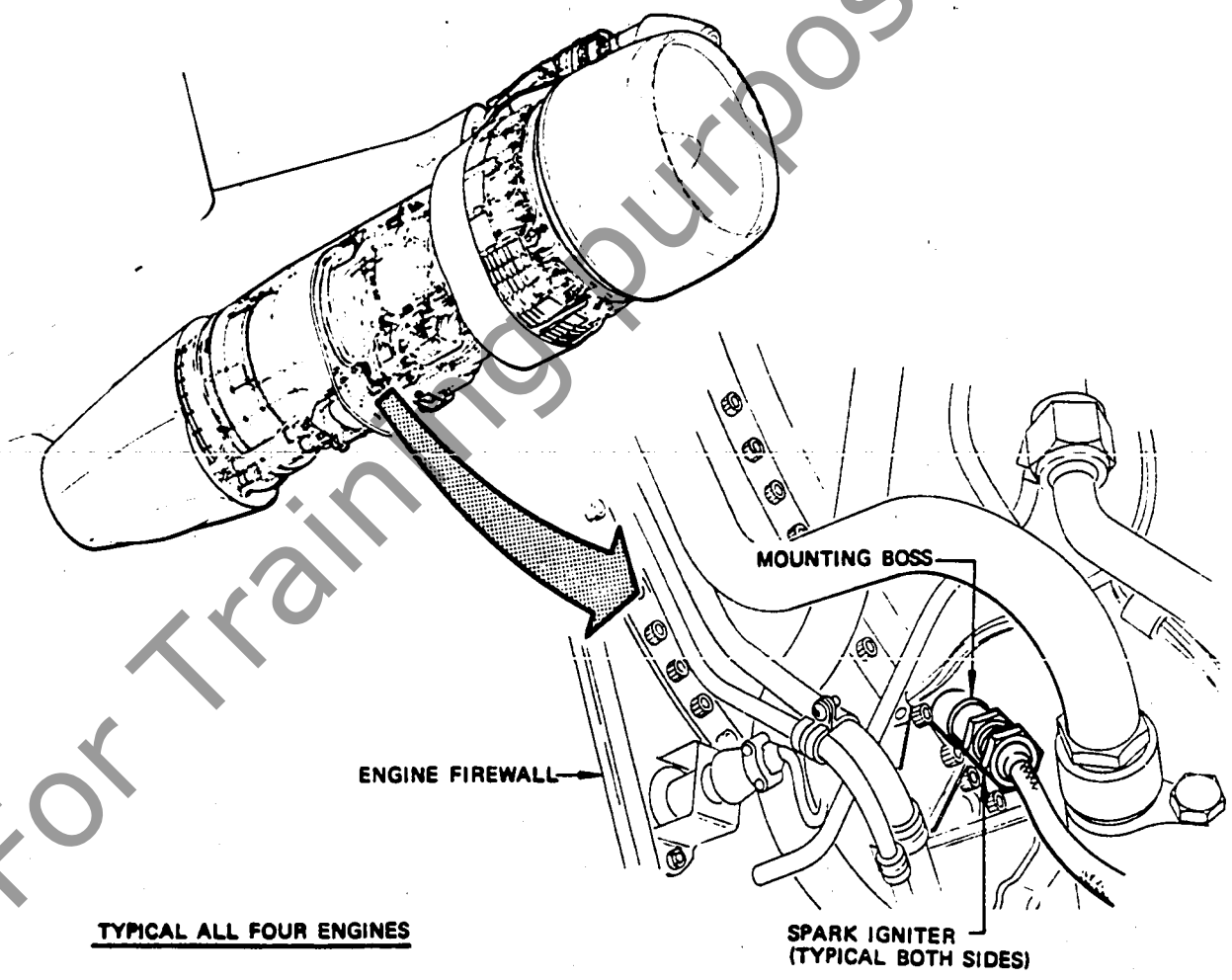
WARNING: THE CURRENTS INVOLVED IN THE IGNITION SYSTEM CAN BE FATAL. BE SURE POWER IS REMOVED FROM SYSTEM AT LEAST 3 MINUTES BEFORE DISASSEMBLY OF ANY CONNECTORS. ON DETACHING ANY LEAD ENSURE COMPLETE DISCHARGE OF CAPACITORS BY IMMEDIATELY SHORTING TERMINAL TO GROUND.

CAUTION: DO NOT ENERGIZE IGNITION CIRCUIT UNLESS SPARK IGNITER IS CONNECTED TO EXCITER UNIT. TO DO SO MAY DAMAGE TRANSFROMER IN EXCITER UNIT.

1. Equipment and Materials

   A. Powdered Molybdenum Disulfide - Molykote Type Z

   B. BG Mica Lube A-768 Anti-Seize Compound



TYPICAL ALL FOUR ENGINES

Spark Igniter Installation
Figure 401

2. Remove Spark Igniters (Fig. 401)

A. Remove electrical connector and install protective cap.

CAUTION: DO NOT TWIST LEAD. DIFFICULTY IN REMOVAL MAY BE CAUSED BY ADHESION OF THE SILICONE WASHER ON THE ELECTRICAL CONNECTOR TO THE CERAMIC BARREL OF THE IGNITER. WASHER SHOULD BE REPLACED BY A LATER TYPE WASHER INCORPORATING A TEFLON COATING. SHOULD FORCE HAVE BEEN APPLIED DURING REMOVING, CHECK CONDITION OF INSULATOR BENEATH WASHER AND REPLACE LEAD ACCORDINGLY.

B. Remove spark igniter and heat shield. Cap lead end and wrap in protective paper.

3. Install Spark Igniters (Fig. 401)

A. Coat igniter threads with BG Mica Lube A-768 Anti-Seize Compound.

B. With the heat shield, install spark igniter in mounting boss and torque to 300 to 360 pound-inches.

CAUTION: THIS MUST BE DONE WITH CARE TO PRECLUDE THE POSSIBILITY OF DISLODGING THE NO. 4 AND/OR NO. 5 COMBUSTION CHAMBERS, CAUSING SUBSEQUENT DAMAGE. IF DIFFICULTY IS ENCOUNTERED INSTALLING SPARK IGNITERS, CHECK DIFFUSER CASE THREADS. IF NECESSARY, CHASE THREADS USING PWA-8597 TAP.

C. Apply molybdenum disulfide powder on the spark igniter lead coupling. Install connector and torque to 140 to 160 pound-inches, taking care not to twist the lead.

CAUTION: DO NOT TWIST HIGH VOLTAGE LEADS WHEN TURNING LEAD NUTS.

D. Perform ignition system (audible) check (Ref 74-2-0, Adjustment/Test).

SPARK IGNITERS - INSPECTION/CHECK

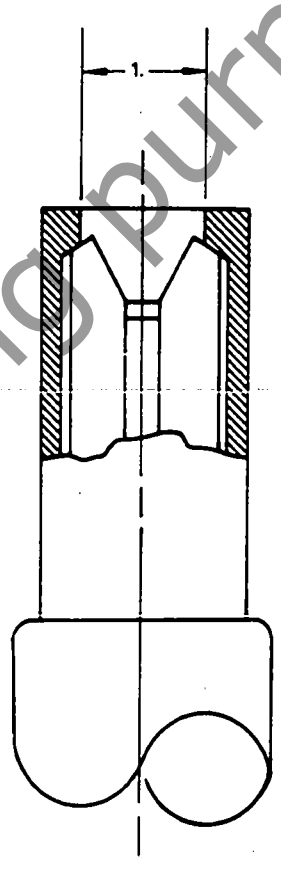
1. Spark Igniter Inspection

A. Visually examine the connector threads and shell threads of spark igniter. If damaged, chase threads using a 1.000-20NS-3A die for connector threads and a 0.9375-16NS die for shell threads.

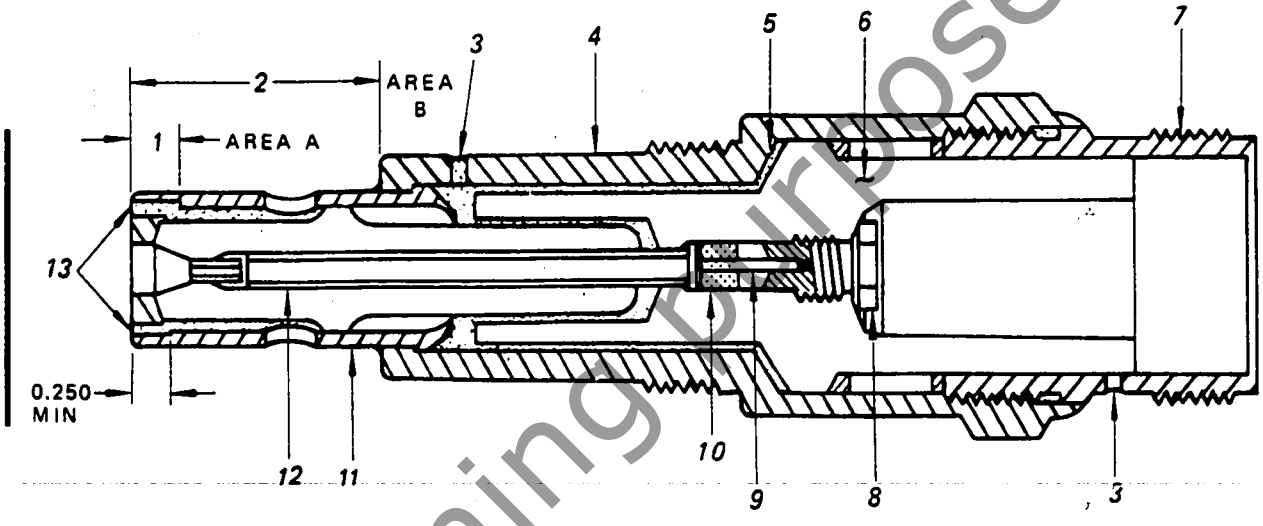
B. Examine ceramic for cracks on either end of igniter. Any cracks in ceramic are cause for rejection of spark igniter. Internal ceramic breaks or cracks are detected by shaking igniter and listening for rattle.

C. Maximum outer shell ID erosion is a physical limit to prevent possible loss of ceramic and ingestion by turbine.

D. Examine spark igniters in areas shown in accordance with figures 601 and 602 for abrasion. Reject igniters not meeting required abrasion wear limits shown in referenced figures.



1. 0.312 ID MAXIMUM OUTER SHELL EROSION



1 AREA A, EXPOSURE OF ONE AIR COOLING PASSAGE OR 0.030 WEAR DEPTH
2 AREA B, 0.030 MAXIMUM WEAR DEPTH
3 DRAIN HOLE
4 UPPER SHELL
5 GASKET
6 INSULATOR
7 COUPLING THREAD
8 TERMINAL SCREW
9 SEALING WIRE
10 CEMENT
11 LOWER SHELL
12 CENTER ELECTRODE
13 AIR COOLING HOLES, 0.250 INCH, MIN DEPTH

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SPARK IGNITERS - CLEANING/PAINTING

1. Clean Spark Igniter

   A. Degrease spark igniter, using methyl ethyl ketone solvent.

   B. Clean outer shell of spark igniter, using wire brush.

   C. Using methyl ethyl ketone solvent and nonmetallic brush, remove deposits from external surface of firing end of spark igniter. It is not necessary to restore ceramic to cleanliness of new ceramic surface.

      NOTE: Cleaning of recessed center electrode cavity is recommended only to extent ceramic is visible to allow inspection for cracks.

   D. Clean ceramic barrel on connector end of igniter with a soft swab dampened in a cleaning solvent conforming to AMS 3160 or equivalent.

      NOTE: Do not use abrasive blasting on the ceramic barrel as this will remove glaze.

   E. Remove all traces of solvent from spark igniter using air blast.

      CAUTION: MAKE SURE CONDENSATION DRAIN HOLES AND COOLING AIR HOLES ARE FREE FROM FOREIGN PARTICLES. BLOCKAGE OF DRAIN HOLES COULD CAUSE CERAMIC CRACKING OR IGNITER SHORTING. CLOGGED COOLING AIR HOLES WILL REDUCE EFFECT OF COOLING.

HIGH VOLTAGE LEADS - REMOVAL/INSTALLATION

1. General

   A. The high voltage leads connect the exciter units to the spark igniters. Access to the leads is gained by opening the engine right side cowl panel.

   WARNING: OPEN IGNITION SYSTEM CIRCUIT BREAKERS AT LEAST 3 MINUTES BEFORE DISASSEMBLY OF CONNECTORS. ON DETACHING LEAD ENSURE COMPLETE DISCHARGE BY IMMEDIATELY SHORTING TERMINAL TO GROUND. THE CURRENTS INVOLVED IN THE IGNITION SYSTEM CAN BE FATAL.

   CAUTION: DO NOT ENERGIZE IGNITION CIRCUIT UNLESS SPARK IGNITER IS CONNECTED TO EXCITER UNIT. TO DO SO MAY DAMAGE TRANSFORMER IN EXCITER UNIT.

2. Equipment and Materials

   A. Powdered molybdenum disulfide - Molykote Type Z (Alpha Molykote Corp., Stamford, Conn.)

3. Remove High Voltage Leads (See figure 401.)

   A. Open ignition system circuit breakers at P6 circuit breaker panel.

   B. Open engine right side cowl panel.

   C. Unfasten nuts securing high voltage leads to exciter units and spark igniters. Upon detaching lead, immediately short terminal to ground.

   CAUTION: DO NOT TWIST HIGH VOLTAGE LEADS WHEN TURNING NUTS.

   D. Remove high voltage leads from engine.

   NOTE: Visually examine grommets installed in terminals of all high tension connectors whenever coupling nuts are disconnected. Replace grommets if there is any indication or suspicion of damage.

4. Install High Voltage Leads (See figure 401.)

   NOTE: Apply molybdenum disulfide powder on the spark igniter lead coupling nuts. The powder is to be applied to both nuts of the lead at initial assembly and each time the nut is disengaged from its mating part. The powder may be deposited on either the OD or ID thread. Since it is a dielectric material, the hazard of inducing electrical leakage is not involved.

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A. Install high voltage leads to exciter units and spark igniters and tighten nuts to torque of 140 to 160 pound-inches. Secure lead to engine with clips. Tighten screws and nuts on clips to torque of 20 to 30 pound-inches.

CAUTION: DO NOT TWIST HIGH VOLTAGE LEADS WHEN TURNING LEAD NUTS.

B. Close engine right side cowl panel.

C. Close ignition system circuit breakers at P6 circuit breaker panel.

D. Perform ignition system (audible) check (Ref 74-2-0, Adjustment/Test).