

**INSPECTION MANUAL**  
**for the**  
**JOINT PRIMARY AIRCRAFT TRAINING SYSTEM (JPATS)**  
**FLIGHT TRAINING DEVICES (FTD)**  
**CONTRACT FA8621-15-D-6258**  
**TASK ORDER #FA8617-17-F-6230**



**CHANGE 6**  
**Re-baselined**

- INTRODUCTION
- SECTION 1 DAILY INSPECTIONS
- SECTION 2 CALENDAR INSPECTIONS

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**LIST OF EFFECTIVE PAGES**

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Removed 409 requirement in 1.4.2. Added inspection step for the O2/Comm strap.

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## INTRODUCTION

### SCOPE

This manual contains the requirements for accomplishing scheduled maintenance on the JPATS OFT, IFT, and UTD flight training devices during their entire service life. At the time of this publication's release, several configurations of the A-model devices exist: VITAL 1100 using DRI, DAS, or DAS II and various Microsoft Windows operating systems.

The requirements prescribed by this manual are general in nature. The conditions listed are intended to direct attention to known problem areas where defects or malfunctions would prevent the equipment from performing their designed function within required limits.

These requirements were developed for new training devices through maintenance engineering experience and comparison of similar installations on in-service equipment. They will be changed, and/or refined, during the service life of the training device by continually evaluating the performance of the equipment. Performance of the equipment is determined by evaluating the results of scheduled maintenance and through studying operating data for the primary use of the training device.

The requirements and inspection intervals for the JPATS flight training devices are minimum requirements. The interval between inspections identifies the longest period of time that an item or component can safely operate without an inspection or observation. Local conditions (type of mission, special utilization, and geographical location) may dictate more frequent or more thorough inspections.

### PURPOSE

The inspection requirements in this manual specify what equipment to inspect, when to inspect, and what tolerances must be met. The requirements are designed to direct attention to components and areas where defects are suspected to exist as a result of normal usage.

Because this manual pertains to more than one component of the system, it contains requirements applicable to specific equipment that is not installed on individual components. In this case, requirements that are not applicable should be disregarded. Compliance with the provisions of this manual is recommended to assure that latent defects are discovered and corrected before malfunctioning occurs.

While performing the inspection procedures, observe both the equipment being inspected and the components in the surrounding area for defects or irregularities not within the scope of the requirements. This manual does not contain detailed instructions for troubleshooting to find causes for malfunctions; nor does it contain instructions for repair, adjustments, or other means of rectifying defective conditions. Proper installation of a piece of equipment or accessory is not necessarily within the scope of this manual as adequacy and completeness of installation will have been determined at the time of installation.

In the event of any inconsistency between this technical manual and other vendor technical manuals, the contents of this manual will take precedence. Refer to the JPATS Operation and Maintenance Manual, TM-JPATS-01-000-100, as applicable.



## CHANGE SYMBOLS

A vertical line in the adjacent margin to indicate the affected area indicates changes to existing text and additions of new text. Pointing hands indicate changed or new graphics. Change symbols are not used for blank spaces resulting from deletions, tabular data where changes cannot be identified, or relocation of material.

## WARNINGS, CAUTIONS, AND NOTES

The following definition applies to warnings, cautions, and notes found in this manual.

---

### **WARNING**

**AN OPERATING OR MAINTENANCE PROCEDURE, PRACTICE, CONDITION, OR STATEMENT OF WHICH, IF NOT STRICTLY OBSERVED, COULD RESULT IN INJURY OR DEATH OF PERSONNEL.**

### **CAUTION**

**AN OPERATING OR MAINTENANCE PROCEDURE, PRACTICE, CONDITION, OR STATEMENT OF WHICH, IF NOT STRICTLY OBSERVED, COULD RESULT IN DAMAGE TO OR DESTRUCTION OF EQUIPMENT, OR LOSS OF MISSION EFFECTIVENESS.**

### **NOTE**

An essential operating or maintenance procedure, practice, condition, or statement of which must be highlighted.

## SAFETY PRECAUTIONS

Certain safety precautions must be observed during disassembly, handling, and assembly of equipment and components. These precautions are necessary to prevent severe injury to personnel and damage to equipment or components. Observe certain precautions when handling electrical components. Do not attempt to service any equipment, unless adequate personnel or lifting equipment is readily available.

## WARNING AND CAUTION STATEMENTS

WARNING and CAUTION statements have been appropriately placed throughout this text. WARNING and CAUTION statements occur prior to procedures, practices, or conditions considered essential for the protection of personnel. CAUTION statements contain information necessary to prevent equipment and property damage. A WARNING or CAUTION will apply each time the related step is repeated. Review and understand all WARNING and CAUTION statements prior to proceeding with the task. Carefully observe all warnings and cautions within or preceding any procedural step in this manual for maximum personal and equipment safety.

## KEEP AWAY FROM LIVE CIRCUITS

Ensure all maintenance performed is in compliance with Lockout/Tagout system policies. Hazardous voltages are present within this equipment. Do not replace components or make adjustments inside the equipment with the electrical supply turned on. Under certain conditions, dangerous potentials may exist in circuits even with power controls in the off position due to charges retained by capacitors, inductors and batteries. To avoid injuries, always disconnect power and discharge capacitors and inductors before touching any parts.

## JEWELRY AND LOOSE CLOTHING

Remove rings, watches, and other metallic objects to reduce the risk of shock and to prevent snagging on moving machinery. Do not wear loose clothing that could become entangled in moving machinery. Tie up long hair or tuck it under a cap while performing maintenance.

## CLEANERS, CHEMICALS, AND FLUIDS

Some cleaners, chemicals, and fluids have an adverse effect on skin, eyes, and respiratory tract. All handling of hazardous material should be in compliance with the HAZMAT program for your facility as regulated by the Military Installation policies. Observe manufacturers' WARNING labels. Use only in authorized areas. Unless otherwise indicated in the text, use of these fluids should not result in any immediate health concerns. In general, avoid prolonged skin contact and prolonged inhalation of mist or vapors. Wash affected areas with soap and water, and launder contaminated clothing. Some fluids become very hot during normal system operation. Use caution when disconnecting fluid lines and allow the system time to cool before performing maintenance. Finally, make sure firefighting equipment is readily available and in working order.

## ELECTROSTATIC DISCHARGE

This equipment contains semiconductor devices and circuit card assemblies that may be damaged by seemingly undetectable electrostatic discharge. Care must be exercised during handling and repair of these items. A reasonable level of device protection can be achieved by using a grounded wrist strap when handling ESD sensitive devices, working on an ESD protected workbench, and using ESD protective packaging for shipping and storing ESD sensitive devices. Detailed electrostatic discharge (ESD) guidelines are provided in DOD-HDBK-263B. Web site address is:

[https://www.dau.mil/cop/e3/\\_layouts/15/WopiFrame.aspx?sourcedoc=/cop/e3/DAU%20Sponsored%20Documents/MIL%20HDBK%20263B.pdf&action=default&DefaultItemOpen=1](https://www.dau.mil/cop/e3/_layouts/15/WopiFrame.aspx?sourcedoc=/cop/e3/DAU%20Sponsored%20Documents/MIL%20HDBK%20263B.pdf&action=default&DefaultItemOpen=1)

## ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used in this manual.

AC – Alternating Current

ATD – Aircrew Training Device

DAS – Data Acquisition System

DC – Direct Current

DMS – Display Management System

DRI – Digital Remote Interface

DRT – Daily Readiness Test

ECLS – Electric Control Loading System

ESD – Electrostatic Discharge

FVS – FlightSafety International Visual Systems

FTD – Flight Training Device

GBTS – Ground Based Training System

IFT – Instrument Flight Trainer

IOS – Instructor Operator Station

JPATS – Joint Primary Aircraft Training System

LED – Light Emitting Diode

MCP – Master Control Panel

OFT – Operational Flight Trainer

PCI – Peripheral Component Interconnect

PCL – Power Control Lever

UPS – Uninterruptible Power Supply

UTD – Unit Training Device

## LIST OF CONSUMABLES

Below is a list of consumables that will be required during performance of the inspections. This list reflects minimums. Local sites may find other materials useful and/or necessary.

- Kim-wipes towels
- Lint free cloth
- Cotton swabs
- Sponges
- Anti-static spray cleaner
- Glass Cleaner (Windex type spray cleaner)
- Detergent (409 type spray cleaner)
- Isopropyl alcohol
- Denatured alcohol

## LIST OF TOOLS AND TEST EQUIPMENT

Digital Multi Meter (DMM)	Fluke	Model 80 series or equivalent.
Oscilloscope	Tektronix	Model TDS220 or equivalent
Vacuum Cleaner		
Soft Bristle Brush		

## APPLICABLE TECHNICAL PUBLICATIONS

Procedures listed in the inspection tasks contain a direct reference to the publication containing the procedure. Publications are shown in parenthesis.

- 1) JPATS O&M Manual (TM-JPATS-01-000-100)
  - a) Section 1
  - b) Section 5
- 2) Visual System Maintenance Manuals (See TM-JPATS-01-000-100, Paragraph 1.3)
- 3) Vendor Manuals (See TM-JPATS-01-000-100, Paragraph 1.3)

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## SECTION 1. DAILY INSPECTION

### 1.1. DAILY INSPECTION AND DAILY READINESS TEST

---

Daily Inspection and Daily Readiness Test (DRT) should be performed after the last operation of the day, prior to maintenance activity, and again after maintenance activity prior the first operation of the following day. These tasks should be conducted within twenty-four hours of the following operational day.

Tasks include checking the training device operation by performing the visual examination and operational test to discover defects and adjustments, which if not corrected, could cause delays to training operation.

### 1.2. SAFETY PRECAUTIONS

---

#### 1.2.1. PRECAUTIONS

To prevent injury to personnel or damage to equipment, the following precautions must be observed whenever maintenance is performed.

---

#### **WARNING**

---

**BEFORE PERFORMING ANY  
MAINTENANCE ENSURE ANY AND ALL  
STORED ENERGY IS PROPERLY  
HARNESSED IN ACCORDANCE WITH  
THE SITE LOCKOUT/TAGOUT POLICIES.**

1) Electrical System

- a) High Voltage System. When working on any equipment requiring exposure to live terminals which meets or exceeds 600v, a second person must be in attendance.
- b) Circuit Breakers. Circuit breakers must be tagged when continuous surveillance is not possible and operation thereof may put personnel and/or equipment at risk.

#### **NOTE**

Circuit breakers located in the cockpit are for simulation purposes only. They do not isolate any circuitry directly.

2) Control Loading

- a) Tag flight deck controls so controls will not be moved while work is being performed in the student station frame area.

### **1.3. PREPARATION FOR USE AND DAILY INSPECTION**

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The Daily Inspection Requirements detail the station, system, and the inspection task required to ensure the simulator and related equipment operate efficiently. If a technical manual contains detailed procedures for tasks listed here, that manual will be referenced.

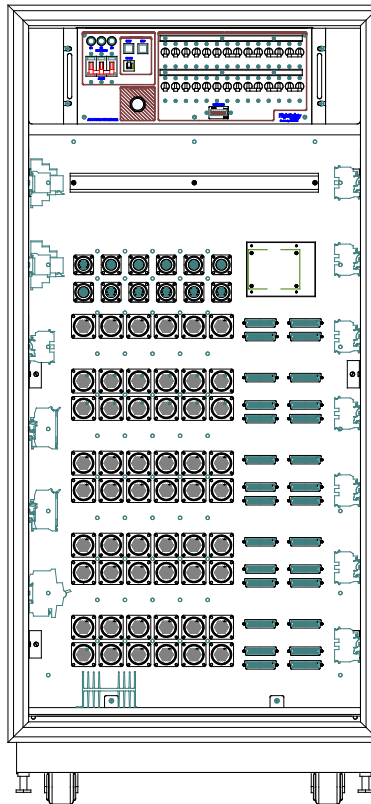
In addition to the tasks listed, a visual inspection should be performed to check the condition of equipment for signs of damage, wear, and overheating. It is also essential to ensure that the whole complex is kept clean.

## 1.4. DAILY INSPECTION

### 1.4.1. Equipment Cabinets

#### 1.4.1.1. 9A1 Equipment Cabinet Layout

See Figure 1.4.1.1-1.



**Figure 1.4.1.1-1. 9A1 Cabinet – Front View**

- 1) If installed, verify the surge protection device between facility power and the fire detection panel has an illuminated green LED. (No light may indicate a power surge event has occurred. Contact CE and check the simulator for electrical overload damage.)
- 2) Check that the “ESSENTIAL POWER” main circuit breaker is in the ON position. See Figure 1.4.1.1-2.
- 3) Check that the 3-phase power indicators are illuminated.
- 4) Check that the “MAIN POWER” circuit breakers with labels are in the ON position.
- 5) Press the “START” button to begin power up.

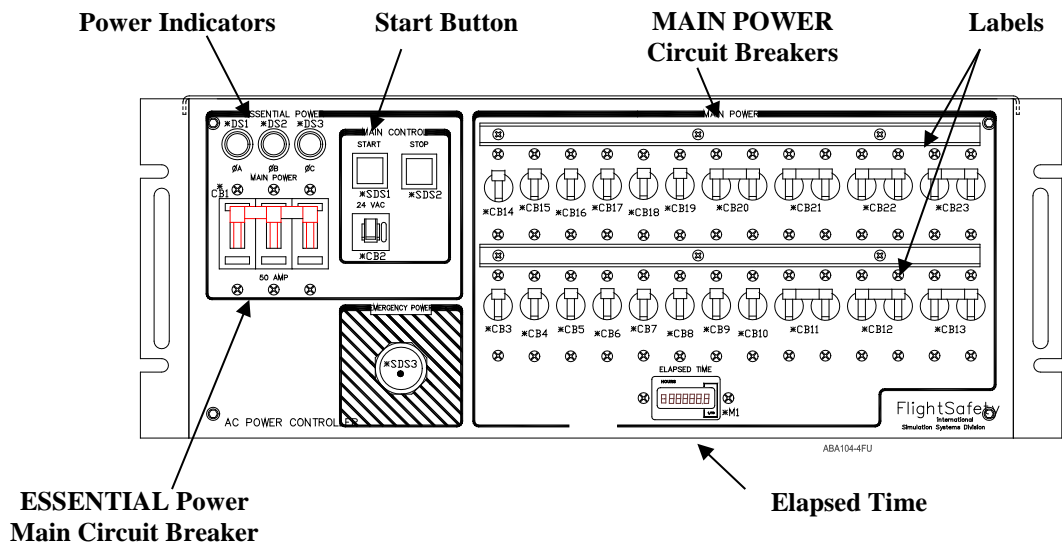
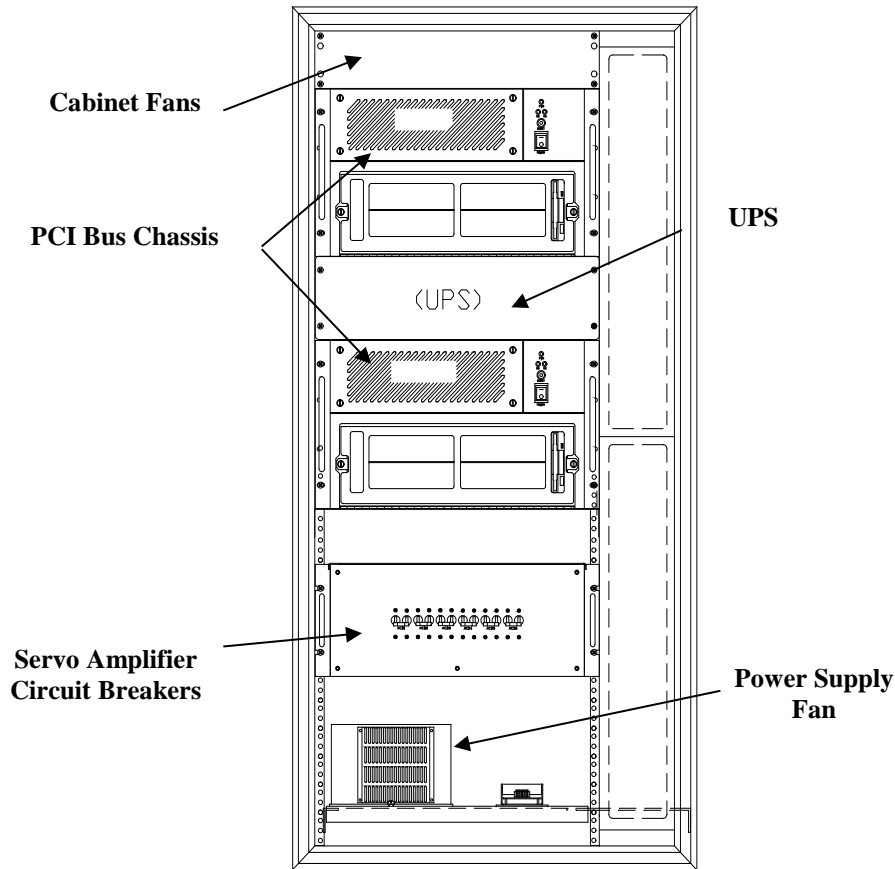


Figure 1.4.1.1-2. Power Control Panel



### 1.4.1.2. 9A2 Equipment Cabinet Layout

See Figure 1.4.1.2-1.

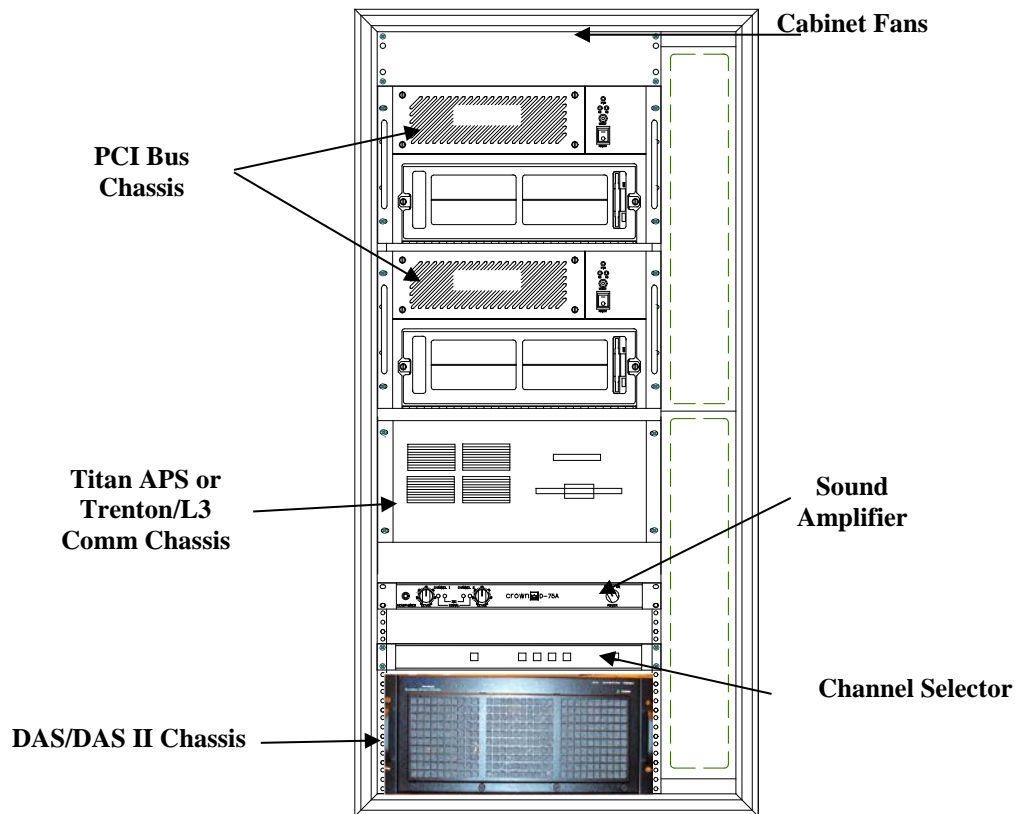


**Figure 1.4.1.2-1. 9A2 Cabinet – Front View**

- 1) Check the input power indicator (ON LINE LED) to the UPS is illuminated.
- 2) Check that each PCI Chassis is powered up.
- 3) Check that the Servo Amplifier Circuit Breakers are in the ON position. (Any calibration, such as the Monthly Inspection described in Section 5 of the O&M, must take place within five (5) minutes.)
- 4) Check that the Power Supply Fan is working.
- 5) Check that the Cabinet Fans are working.

### 1.4.1.3. 9A3 Equipment Cabinet Layout

See Figure 1.4.1.3-1.



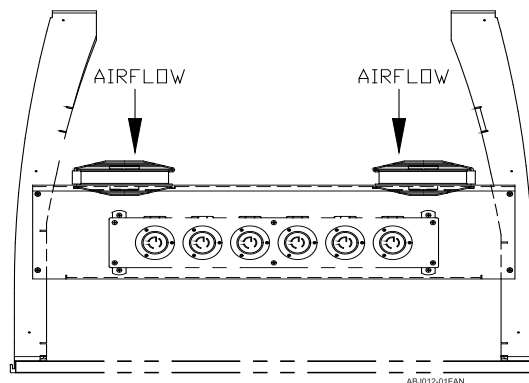
**Figure 1.4.1.3-1. 9A3 Cabinet – Front View**

- 1) Check that each PCI Chassis is powered up.
- 2) Check that the Titan APS or Trenton/L3 Comm chassis is powered up.
- 3) Check that the Channel Selector is powered up.
- 4) Check the Sound Amplifier is switched ON.
- 5) Check that the DAS or DAS II chassis is powered up (if installed).
- 6) Check that the Cabinet Fans are working.



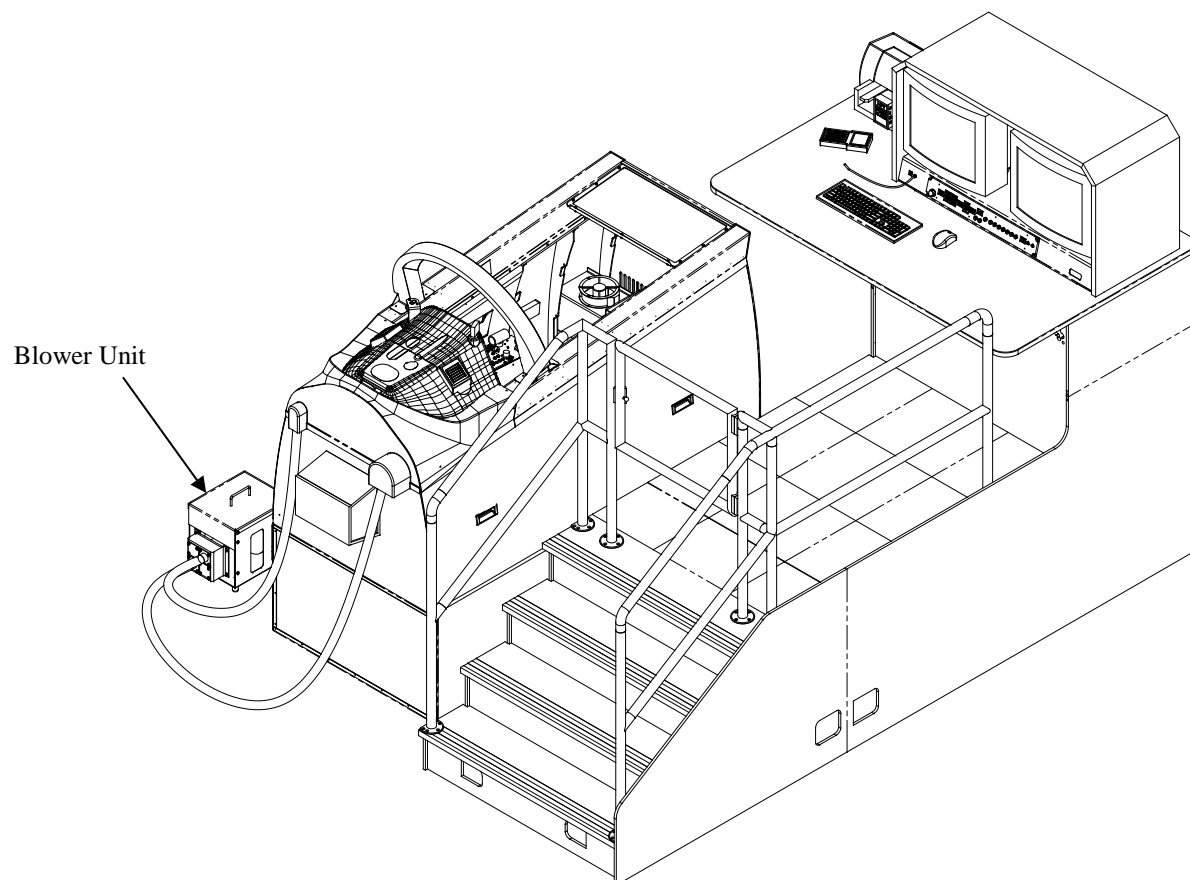
### 1.4.3. Student Station Frame Area

- 1) Check that the servo actuator fans are working. See Figure 1.4.3-1.



**Figure 1.4.3-1. Servo Actuator Fans**

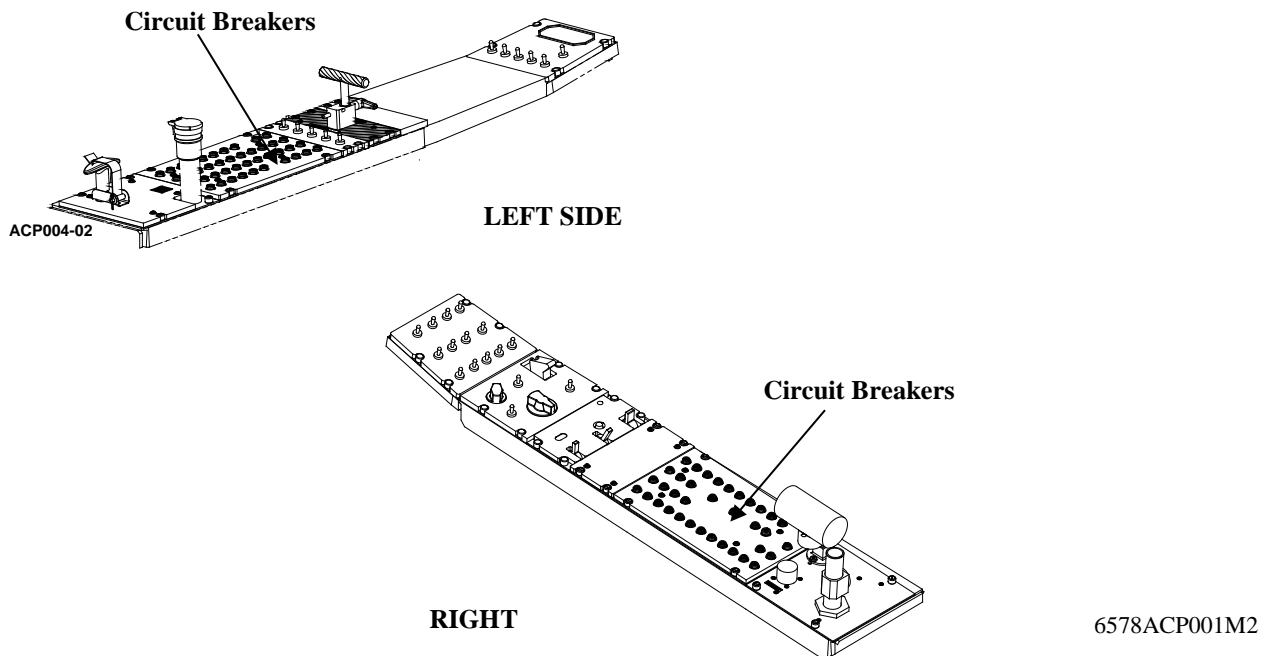
- 2) Check that the blower unit is working. See Figure 1.4.3-2.



**Figure 1.4.3-2. Main Instrument Panel Blower Unit**

#### 1.4.4. Student Station

- 1) Inspect for damage to instruments, indicators, and switches.
- 2) Ensure all circuit breakers have been reset. See Figure 1.4.4-1.
- 3) Check the Power Control Lever for proper operation.
- 4) Ensure seat is clean, secure, and free of obstruction.
- 5) Check the seatbelt and shoulder harness for wear, serviceability, and security.
- 6) Inspect O2/Comm cord strap and mounting hardware for security and serviceability. Secure the O2 hose/Comm cord in the strap.
- 7) Inspect the seatbelt proximity switch and cable assembly for damage.
- 8) Set all switches to normal or as required by aircraft function.
- 9) Ensure aileron, elevator, and rudder controls move freely in all directions.
- 10) Fly go-around.
  - a) Check Visual System for proper alignment and image integrity.
  - b) Check controls for proper reaction, feel, sound, and function.
  - c) Check Aural Cues for proper sounds.
- 11) Vacuum flight deck floor as needed. Ensure flight deck floor is clean and free of debris.
- 12) Place controls at static conditions after completing preflight.



**Figure 1.4.4-1. Side Console Circuit Breaker Panels Locations**

### **1.4.5. 10A Sony Projectors**

See Figure 2.2.1-1 DMS Matrix Table.

- 1) Perform DMS visual jobs: Spatial Alignment if necessary.
- 2) Check image for integrity, clarity, brightness, and position.

## **SECTION 2. CALENDAR INSPECTIONS**

### **2.1. INTRODUCTION**

---

Periodic inspections are a thorough and searching inspection of the entire JPATS Trainer. They include requirements that are also applicable to the daily inspection. Each task indicates how thorough the inspection or task should be and refers to the technical publications to be used.

Operation tempos and student populations at the various training sites may require some inspections to be conducted more often than mandated in this manual and related checklists. Nothing in this document or in the related checklists prohibit a greater frequency of inspection than presented.


















### **2.2. INSPECTION MATRIX – VITAL 1100 AND DMS**

---

The VITAL 1100 visual system uses failure-tolerant components and redundant features facilitating a rapid return-to-service.

#### **2.2.1. Maintenance – Display Management System (DMS)**

The following matrix describes correction and hardware tests for the DMS. The software installed maintains the high level of fidelity in this system.

<b>DMS Matrix</b>						
	Bulb Failure	With Scheduled Bulb Change	Daily	Weekly	Monthly	Semi-Annual
Brightness Target Calculation						
Native-White Measurement						
Color Correction						
Bulb shut-down period (1 hour)						
Electro Optical Response (EOR)						
All Hardware Tests						
Spatial Alignment						
Air Filters						
Uniformity						

**Figure 2.2.1-1. DMS Matrix Table**

Refer to FVS vendor documentation and DMS system User Manual, Chapter 5.

## 2.3. CALENDAR INSPECTIONS

This section contains tables that indicate the periodicity of the inspections on the JPATS Trainer.

In addition to the tasks listed, perform visual inspections to check the condition of equipment, security of installation, signs of damage, wear, and/or overheating. For the more detailed inspection intervals (weekly, monthly, etc.), it is recommended to prepare the devices for inspection by removing the left and right side panels. Also, remove the front speaker plate assembly for the IFT and UTD.



Perform inspections on calendar intervals. The inspection intervals listed below are designed to provide maximum trainer performance and longevity. Accomplish the calendar inspections at the designated intervals in order to minimize unscheduled down time. Document inspection results in the maintenance data collection system. Inspections are to be performed in the following intervals.

- Daily (Reference Section 1.4 Daily Inspection)
- Weekly
- Monthly (One Month)
- Quarterly (Three Month) – No quarterly inspections exist for the ATDs.
- Semi-Annually (Six Month)
- Annually (Twelve Month) – No annual inspections exist for the ATDs.

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**WARNING**

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**BEFORE PERFORMING INSPECTIONS DESCRIBED IN THIS SECTION, READ AND OBSERVE THE SAFETY PRECAUTIONS IN PARAGRAPH 1.2.**

---

**WARNING**

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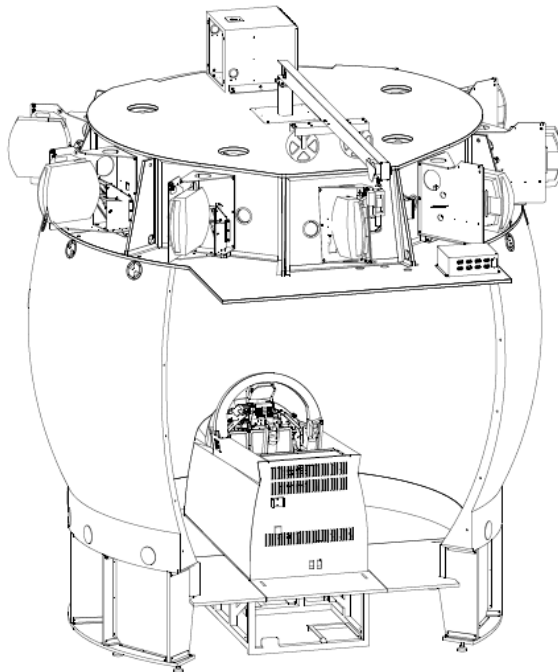
**BEFORE PERFORMING ANY MAINTENANCE, ENSURE ANY AND ALL STORED ENERGY IS PROPERLY HARNESSSED IN ACCORDANCE WITH THE SITE LOCKOUT / TAGOUT POLICIES.**

## **2.4. WEEKLY INSPECTION**

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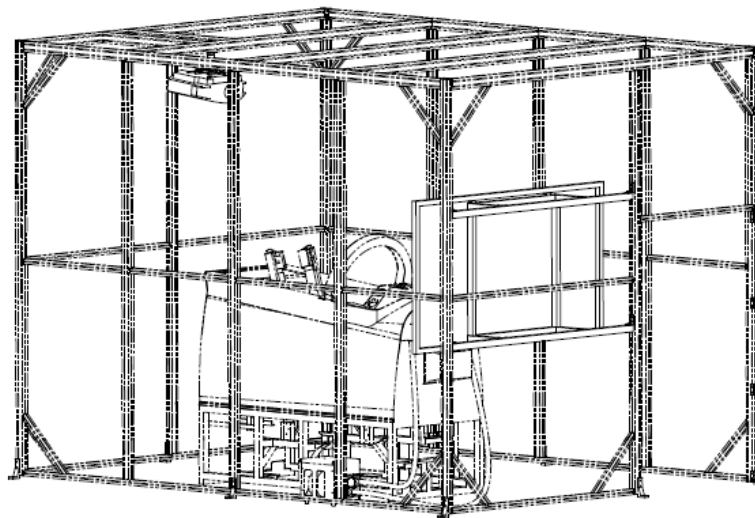
### **2.4.1. Visual System**

- 1) DMS: At a minimum, perform a Spatial Alignment as needed. Brightness, Native-White, and Color are recommended at this time: perform as needed.
- 2) Check Visual System Power Supply fans for damage and proper operation. Clean as necessary.
- 3) Inspect OFT Visual Projection Dome and projector housing for structural integrity. See Figure 2.4.1-1.



**Figure 2.4.1-1. OFT Visual System Projection Structure**

- 4) Inspect IFT trainer enclosure tarps are secured. See Figure 2.4.1-2.



**Figure 2.4.1-2. IFT Visual Projection Structure**

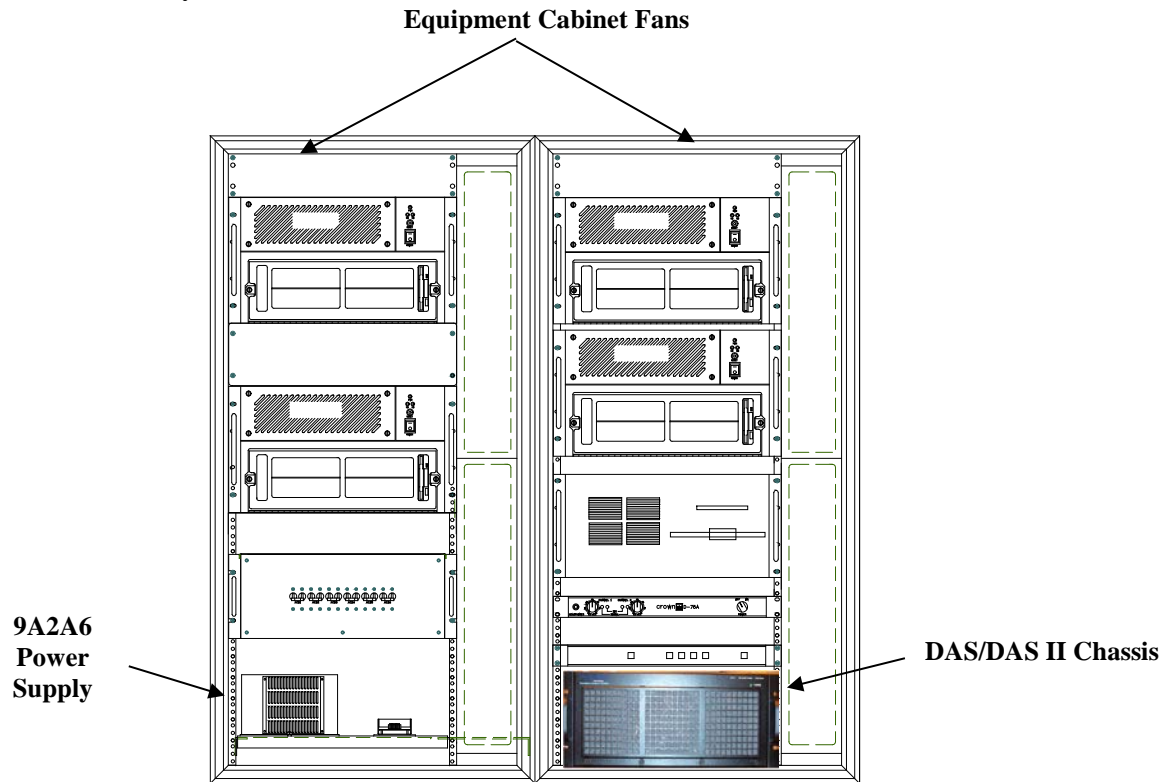
- 5) Every second week (not to exceed 14 days) perform a complete backup of the VITAL 1100 for both OFTs and IFTs.

## 2.4.2. Equipment Cabinets

### **CAUTION**

**When removing cabinet air filter for cleaning, wear gloves.**

- 1) Check equipment cabinet fans in 9A2 and 9A3 for proper flow and clean as necessary. See Figure 2.4.2-1.
- 2) Check power supply fans at 9A2A6 for proper operation. See Figure 2.4.2-1.
- 3) Inspect cabinet door filters and clean as necessary.
- 4) Vacuum, clean and wipe as necessary all equipment cabinet doors and surfaces.
- 5) Inspect all equipment cabinets for loose or missing hardware.
- 6) Check Visual System equipment cabinets cooling fans for damage and proper operation. Clean as necessary.

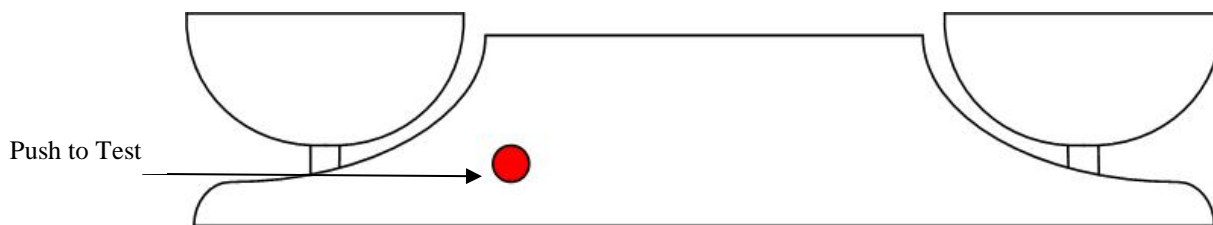


**Figure 2.4.2-1. Equipment Cabinets**

### 2.4.3. Instructor Station

#### 2.4.3.1. Emergency Lighting (9A9A2)

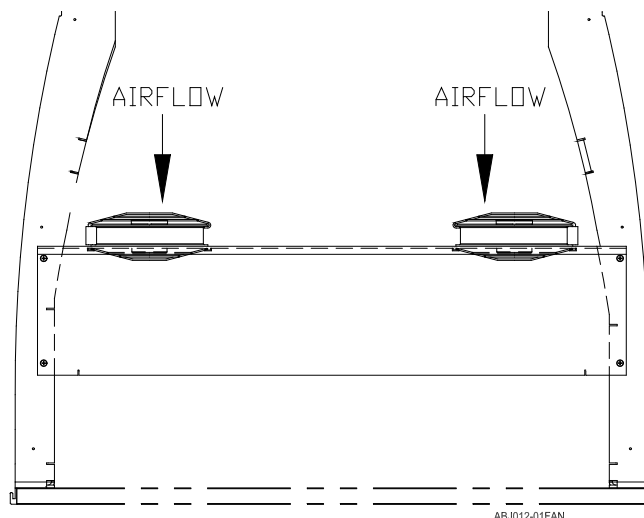
Test emergency lighting for proper operation. Momentarily depress the emergency lighting "Push to Test" button. Verify emergency lamps illuminate.



**Figure 2.4.3.1-1. Emergency Lighting Panel**

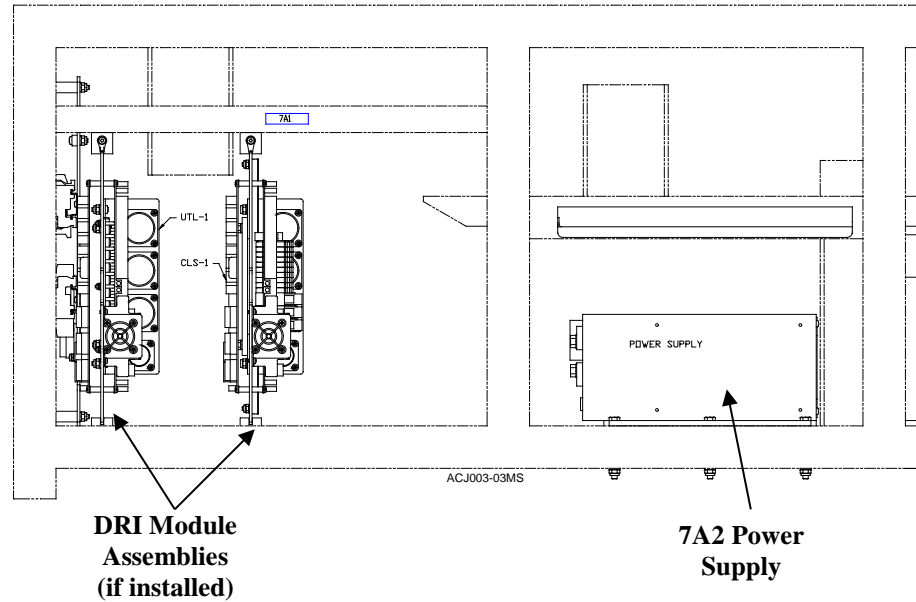
### 2.4.4. Student Station Frame Area

- 1) Check fans at 6A2 for proper operation, clean as necessary. See Figure 2.4.4-1.



**Figure 2.4.4-1. Cooling Fans 6A2**

- 2) Inspect all cables for loose and missing hardware and that they are in good repair.
- 3) Check Main Instrument Panel Blower Unit for proper operation. Clean as necessary.
- 4) Check power supply fan at 7A2 for proper operation. See Figure 2.4.4-2.
- 5) If installed, check DRI IP GSnet module assembly fans at 7A1 for proper operation. If DAS II is installed, inspect fault-protection fuses in the Control Loading Patch Assembly.

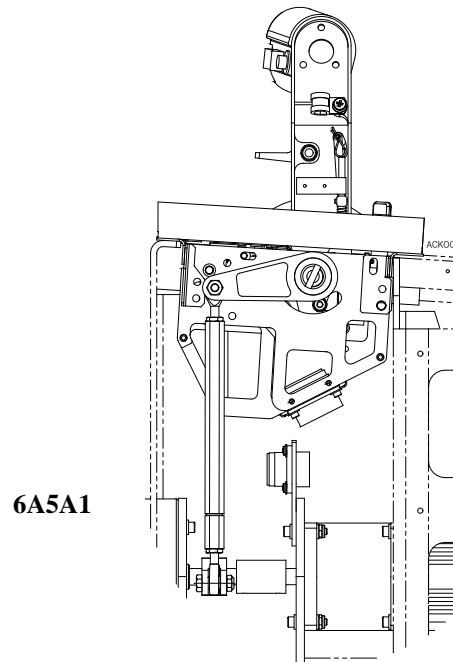


**Figure 2.4.4-2. 7A2 Power Supply**

- 6) Ensure that all flight control linkages, cables and pulleys are free from interference and are in good repair. Pay particular attention to the flight control push rod jam nuts, especially the elevator push rod upper jam nut. If excessive play exists, control problems will occur.
- 7) Ensure Control Stick pin set screws are tight and pins have not vibrated loose. Check under stick boot for foreign objects and cleanliness.
- 8) Check under sims for oil leaks and foreign objects; clean as needed.

### 2.4.5. Student Station

- 1) Inspect Power Control Lever control linkages at 6A5A1 and ensure they are free from interference and are in good repair. See Figure 2.4.5-1.



**Figure 2.4.5-1. Power Control Lever Assembly**

- 2) Vacuum, clean, and wipe as necessary all cockpit instrumentation glass and panel surfaces with an approved anti-static cleaning solution as needed.
- 3) Inspect pilot seat restraints for proper operation and condition and loose, broken, or missing hardware.
- 4) Vacuum, clean, and wipe pilot seat, stick grip, and cockpit handles. Pay particular attention to the control stick boot for cleanliness.
- 5) Inspect all knobs and switches for proper operation and loose or missing hardware.
- 6) Inspect and clean the O2 Regulator filter.
- 7) Vacuum flight deck floor as necessary.

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## 2.5. MONTHLY INSPECTION

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### 2.5.1. Visual System

- 1) Inspect and clean power supplies as necessary. Inspect filters and clean as necessary; check lamp hours.
- 2) Check power supplies for correct voltage.
- 3) Check projectors and CCE for loose and missing hardware and clean projector mirrors. Dust IFT screens as needed.
- 4) Check overhead cooling fans for proper operation.
  - a) OFT Top Cap - 10A0B1, 10A0B2, 10A0B3, 10A0B4, 10A0B5
  - b) IFT - 9A12B1, 9A12B2, 9A12B3
- 5) Inspect Visual System cooling fans for proper operation.
- 6) Perform Monthly alignments per DMS Matrix: DMS Electro-Optical Response, Brightness Target Calculation, Native White Measurement, and Color Correction as necessary.
- 7) Inspect Visual System cables for fraying, loose, missing, or damaged hardware.
- 8) Vacuum, clean, and wipe exterior dome walls and exterior projector housings as necessary.

### 2.5.2. Equipment Cabinets

#### 2.5.2.1. PCI Bus Chassis

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- 1) Filter maintenance may be performed with PCI Bus chassis in operation.

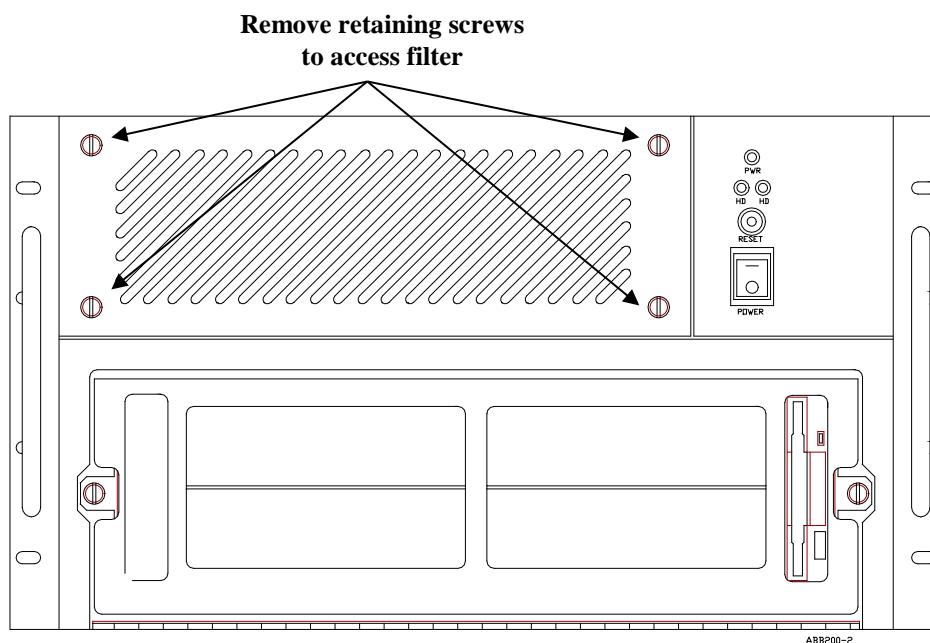
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### **WARNING**

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**TO AVOID PERSONNEL INJURY OR  
DAMAGE TO EQUIPMENT, VERIFY THE  
FAN BLADE IS NOT ROTATING BEFORE  
REMOVING FILTER ELEMENT.**

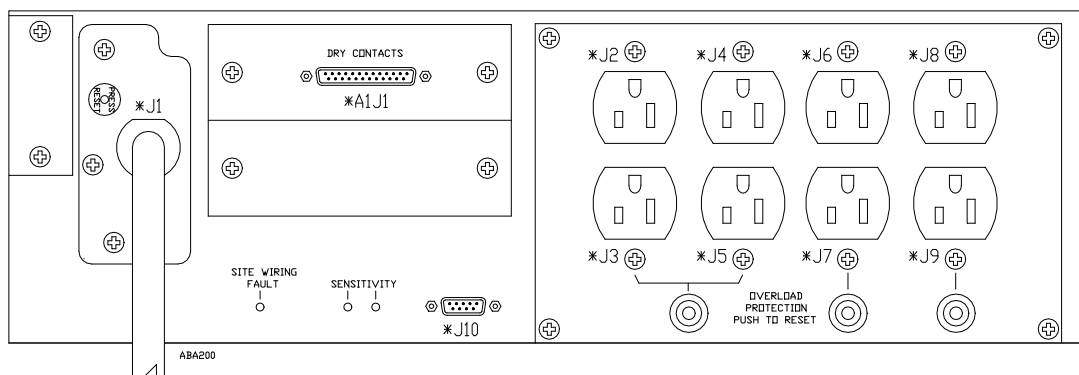
- 2) Remove filter elements. See Figure 2.5.2.1-1.
- 3) Clean filters thoroughly in soap and water solution and dry as required.
- 4) Install filters.



**Figure 2.5.2.1-1. PCI Bus Chassis**

### 2.5.2.2. UPS

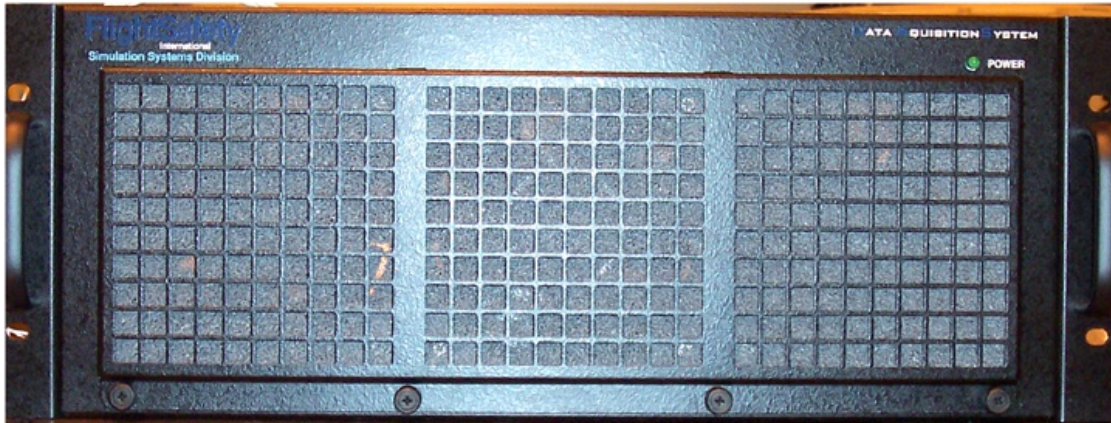
- 1) Inspect for loose, damaged, or missing hardware. See Figure 2.5.2.3-1.
- 2) Clean as required.



**Figure 2.5.2.3-1. Uninterruptable Power Supply**



### 2.5.2.3. DAS (for units with DAS) in location 9A3A6



**Figure 2.5.2.4-1. DAS Front Panel**

- 1) Check internal +24VDC, multi-output power supply power output. Use drawing 6520ACJ855 for proper settings.
- 2) Adjust the PSSCB +5VDC voltage as necessary using the steps below.
  - a) Attach the ground (black) lead to the “TPGND2” test point and attach the red lead to the “TP+5” test point near the P8 Connector of the PSSCB board.
  - b) Adjust Pot1 for +5.00 VDC, tolerance  $\pm 0.2$  VDC.
- 3) Clean the DAS chassis air filter.

### 2.5.2.4. DAS II (for units with DAS II) in location 9A3A6

- 1) Check internal +12VDC power supply output to the control loading and seat motion circuits.
- 2) Clean the DAS II chassis air filter.

### 2.5.2.5. Sound System

- 1) Clean the filters on the front of the Sound System computer.
- 2) Clean the sound amplifier cooling fans and air intake louvers.
- 3) Clean the fan air intake on the back of the Audio Processing System unit.

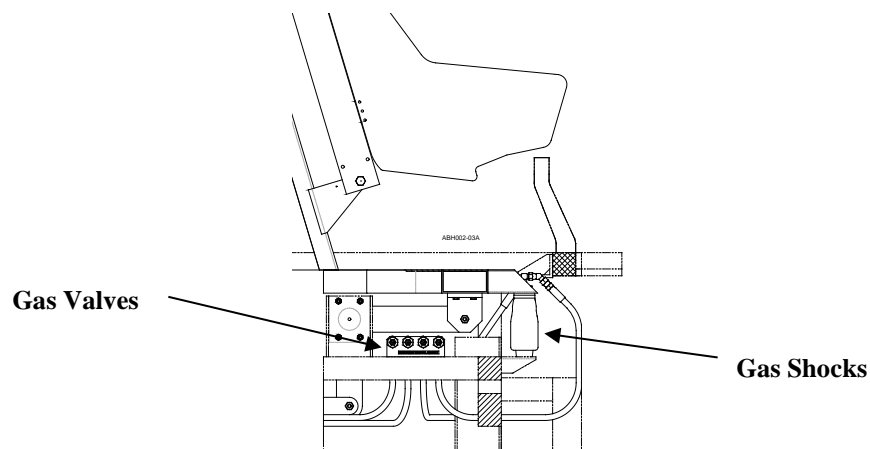
## 2.5.3. **Instructor Station**

### 2.5.3.1. Printer

- 1) Inspect for obvious damage to printer components.
- 2) Print a test page and perform the cleaning procedures listed under printer maintenance.

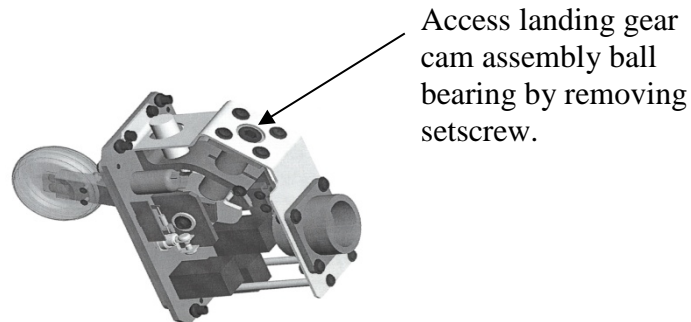
#### 2.5.4. Student Station Frame Area

- 1) Check power supply at 7A2PS1 for +24 VDC and AC ripple. Adjust power as necessary in accordance with procedures in Section 5 of the JPATS O&M manual. Clean power supply as necessary.
- 2) Inspect and clean Oxygen panel air filter, located at the right hand console Oxygen panel. Remove, wash, dry, and replace as necessary.
- 3) Inspect stick shaker for loose or missing hardware. Inspect connector for wear.
- 4) Inspect 7A2 patch assembly (7A1 for DAS and DAS II) for loose connections and loose or missing hardware.
- 5) Inspect all flight control actuator mounting hardware for loose or missing hardware. Check and verify Emergency Gear Handle for 1.125"  $\pm$  .02" pull length and 35 lbs.  $\pm$  4 lbs. pull force.
- 6) Vacuum under raised flooring, as needed. Vacuum flight deck, as needed.
- 7) Remove, clean, and re-install filter on instrument cooling blower (See drawing 6648ABJ100, item 13).
- 8) Perform Rudder Pedal Stature lubrication procedure in accordance with Section 5 of the JPATS O&M manual.
- 9) Perform ECLS Servo Calibration procedures per Section 5 of the JPATS O&M. Inspect wire connection to the CONTROL LOADING reset button.
- 10) Ensure Trainer Frame mounting hardware is tight. Ensure the frame is correctly located in reference to the floor mounts for the seat servo actuator. Look for signs of frame or actuator trunnion movement.
- 11) Inspect the gas shocks. Ensure the air pressure at each gas valve reads 25 psi  $\pm$  5 psi with no weight on the seat in accordance with procedures in Section 5 of the JPATS O&M manual. See Figure 2.5.4-1.



**Figure 2.5.4-1. Seat Shock and Valve Locations**

- 12) Remove landing gear handle cam assembly ball bearing. Liberally grease with lithium grease and reassemble IAW 6520ACK101.

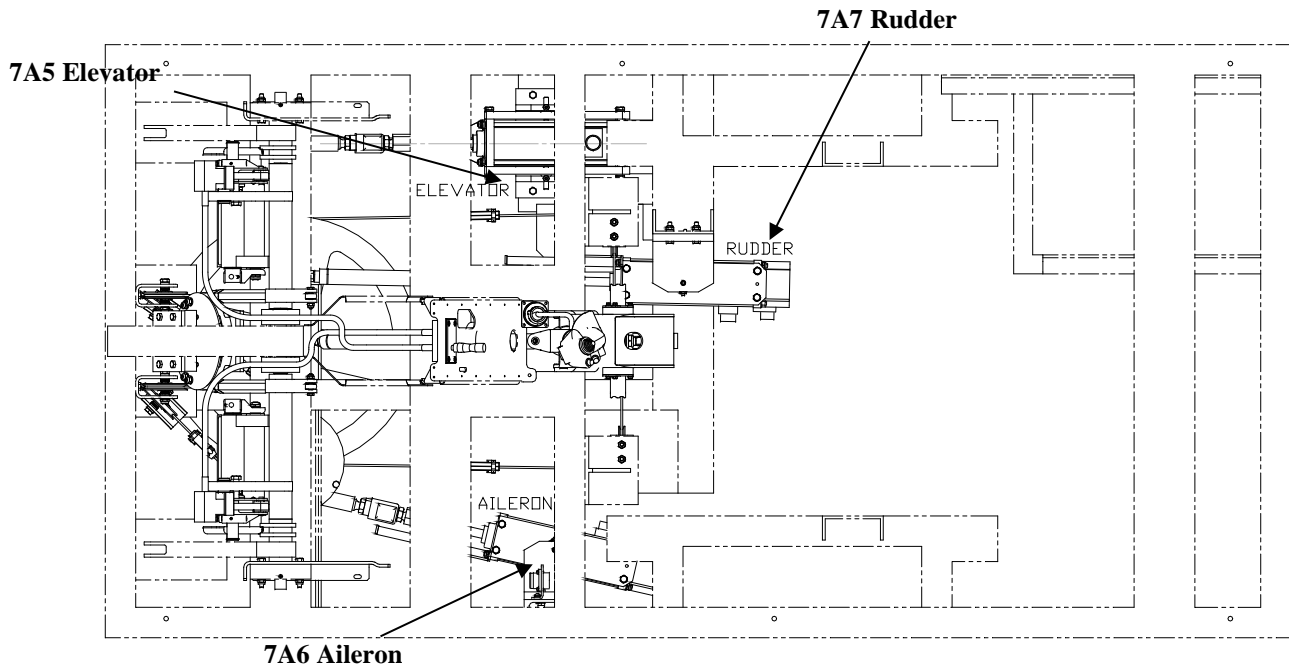


**Figure 2.5.5-2. Landing Gear Handle Cam Assembly**

- 13) Visually inspect the aileron and rudder systems for loose or frayed cables. Rotate Cable pulleys 180 degrees to prevent flat spots from developing on the pulleys.

#### 2.5.4.1. Control Loading Subsystems

- 1) For each of the following systems, inspect the mechanical components for condition, security of installation, and signs of damage or wear. Using a tensiometer, ensure 60 lbs  $\pm$  2 lbs of tension on each cable per procedures in Section 5 of the JPATS O&M manual. See Figure 2.5.4.1-1.
  - a) Aileron System
  - b) Rudder System
- 2) Inspect the elevator mechanical components for security of installation and signs of damage or wear. See Figure 2.5.4.1-1.



**Figure 2.5.4.1-1. Control Loading Assemblies**

## **2.6. THREE MONTH INSPECTION (Quarterly)**

No quarterly inspections exist for the ATDs.

## **2.7. SIX MONTH INSPECTION (Semi-Annual)**

### **2.7.1. Visual System**

- 1) Inspect projection dome hardware for broken or worn materials.
- 2) Perform “All Hardware Test” per DMS Matrix (See Figure 2.2.1-1).
- 3) Check the counter for the Sony optical block. If it shows 20,000 hours or more, notify the Inventory Control Specialist and the System Engineer.

#### **NOTE**

Refurbishing an optical block does not reset the counter.

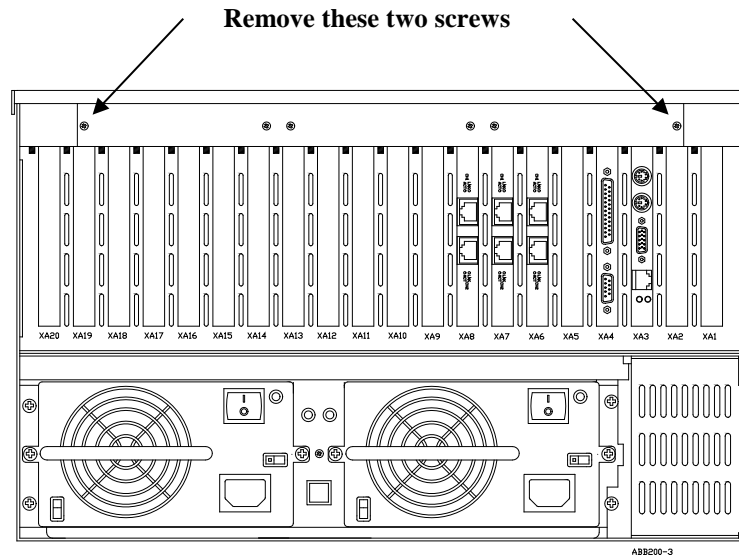
- 4) Check lamp hours. If over 3,000 hours, replacing the lamp is recommended. Perform alignments as required per the DMS Matrix.
- 5) Inspect and clean inside of CPC and VCC computer chassis and cabinet as necessary.

### **2.7.2. Equipment Cabinets**

#### **2.7.2.1. PCI Bus Chassis**

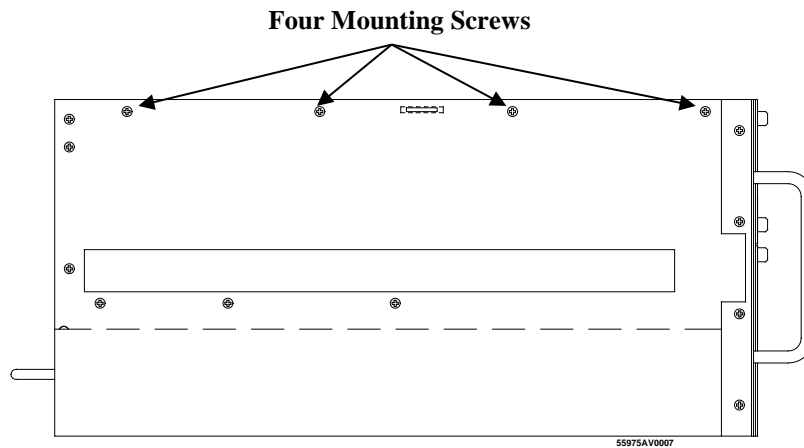
Reference the JPATS O&M manual for the following procedure. Perform this inspection only as necessary.

- 1) With power removed from the PCI Bus chassis, slide the chassis rack drawer forward. See Figure 2.7.2.1-1.
- 2) Remove the two screws on the back of the chassis that secure the cover to the chassis.



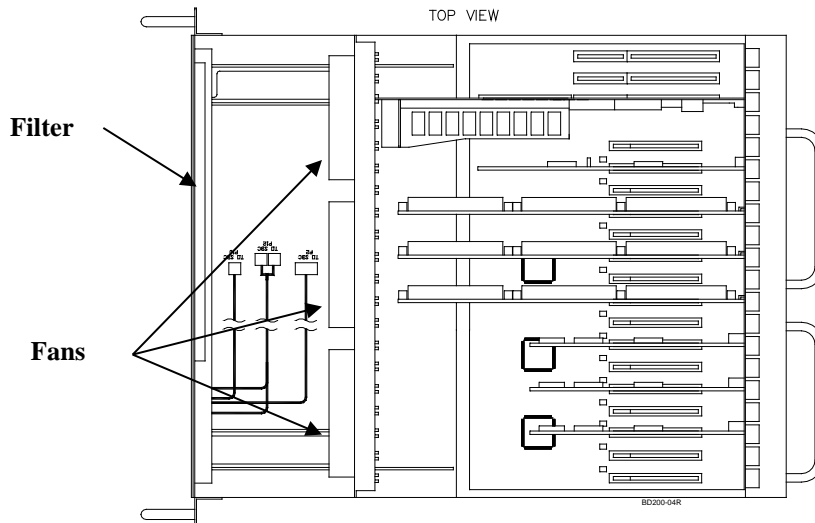
**Figure 2.7.2.1-1. PCI Bus Chassis Rear View**

- 3) Loosen the four screws on each side, which secure the top cover. It is not necessary to remove the screws. See Figure 2.7.2.1-2.



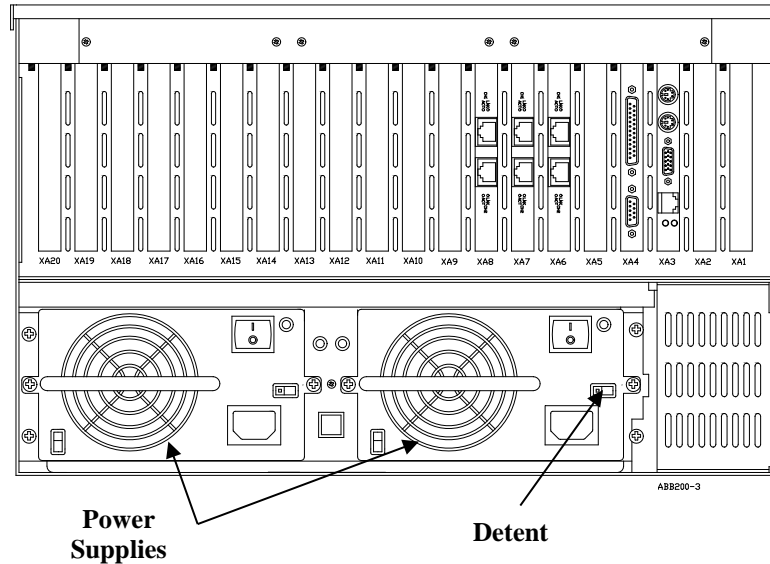
**Figure 2.7.2.1-2. PCI Bus Chassis Side View**

- 4) Using a small brush and vacuum cleaner, clean the fans and the area between the fans and filter. Gently vacuum the bus area with a non-conductive, soft brush vacuum attachment. See Figure 2.7.2.1-3.
- 5) Replace the top cover and tighten the screws.



**Figure 2.7.2.1-3. PCI Bus Chassis Inside View**

- 6) Return the drawer to its normal position and secure.
- 7) Remove the filter from the front of the chassis, clean, and replace.
- 8) Clean each power supply in the rear of the chassis. It is not necessary for the chassis to be powered down to remove a power supply, however, only one power supply may be removed when the unit is operating. The power supplies are redundant “hot swappable.” One may be removed with the chassis in operation with no adverse effect.
- 9) Silence the alarm by momentarily depressing the red button, located on the chassis between the power supplies. See Figure 2.7.2.1-4.
  - a) Unplug the voltage supply cable from the power supply.
  - b) Grip the handle and pull the detent toward the handle. Remove the power supply from the chassis.
  - c) Clean the power supply using a vacuum cleaner.
- 10) Return the power supply to service and repeat the procedure for the remaining power supply.



**Figure 2.7.2.1-4. PCI Bus Chassis Power Supplies**

#### 2.7.2.2. Power Supplies in Location 9A2

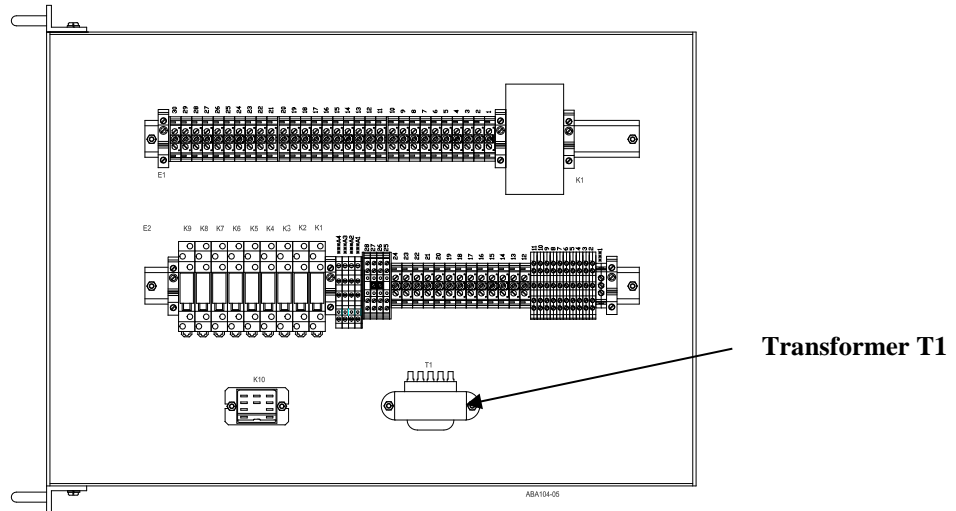
Clean, check, and adjust power supplies as needed in accordance with procedures in paragraph 5.8.1 of the JPATS O&M manual.

#### 2.7.2.3. Power Controller

### **WARNING**

**BEFORE PERFORMING ANY MAINTENANCE, ENSURE ANY AND ALL STORED ENERGY IS PROPERLY HARNESSSED IN ACCORDANCE WITH THE SITE LOCKOUT/TAGOUT POLICIES.**

- 1) Check condition of power contactors, switches, and relays. Repair or replace defective components. See Figure 2.7.2.3-1.
- 2) Inspect transformer T1 for indications of swelling, leaking, or overheating.
- 3) Check the controller AC power and the 24 VDC power supply for burned or discolored components.
- 4) Examine all connections to component and terminal boards for proper seating.
- 5) Carefully inspect interior of controller and power supply unit. Vacuum as required.



**Figure 2.7.2.3-1. Power Controller Internal View**

### **2.7.3. Instructor Station**

#### **2.7.3.1. Door Knob (OFT only).**

- 1) Check for proper operation.
- 2) Clean and lubricate as necessary.

#### **2.7.3.2. Emergency Light Panel Batteries**

- 1) Check batteries for proper operation and leaks.
- 2) Replace as necessary.

#### **2.7.3.3. Emergency Power Off Switch**

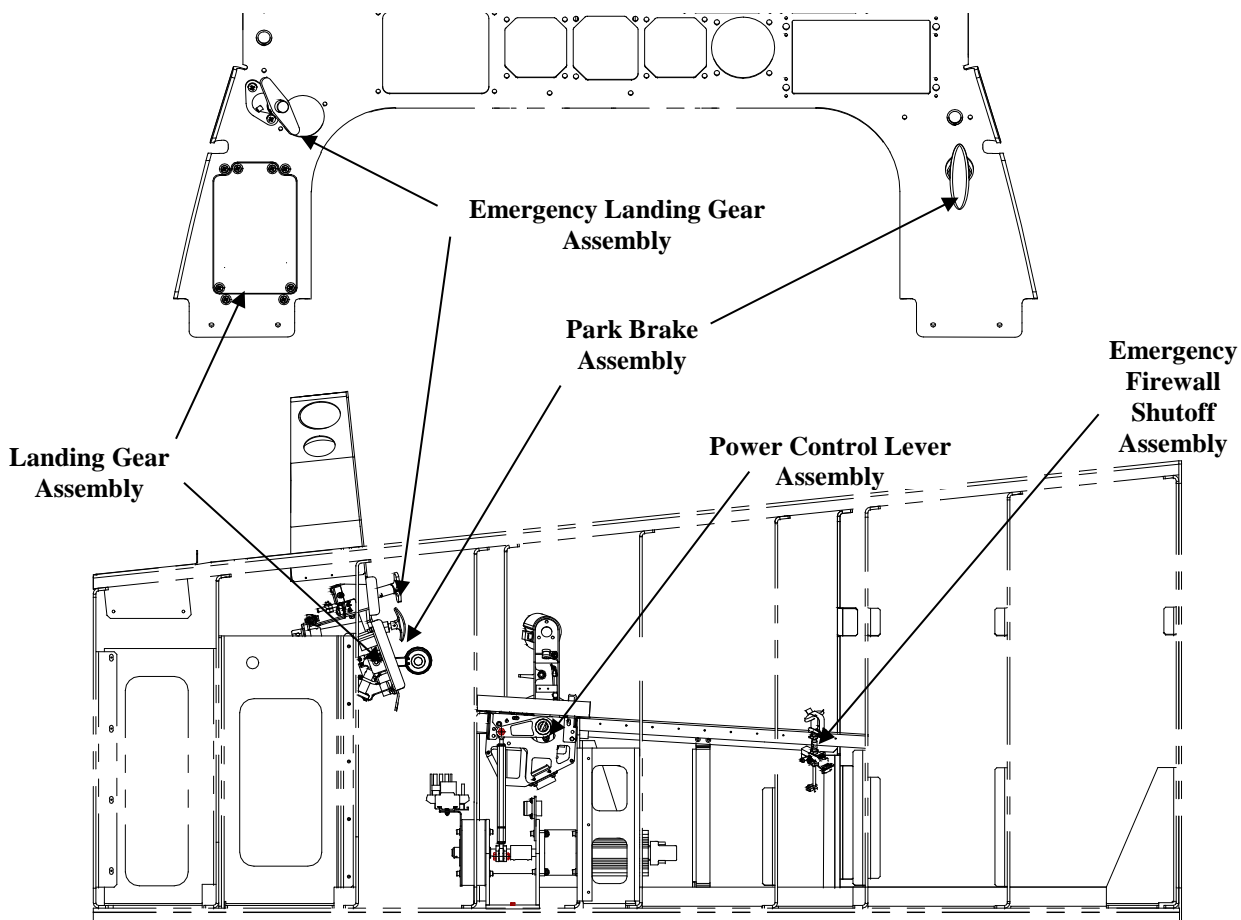
Test IOS Emergency Power Off Switch IAW 5.2.7.3 in Section 5 of the JPATS O&M.

### **2.7.4. Student Station and Frame Area**

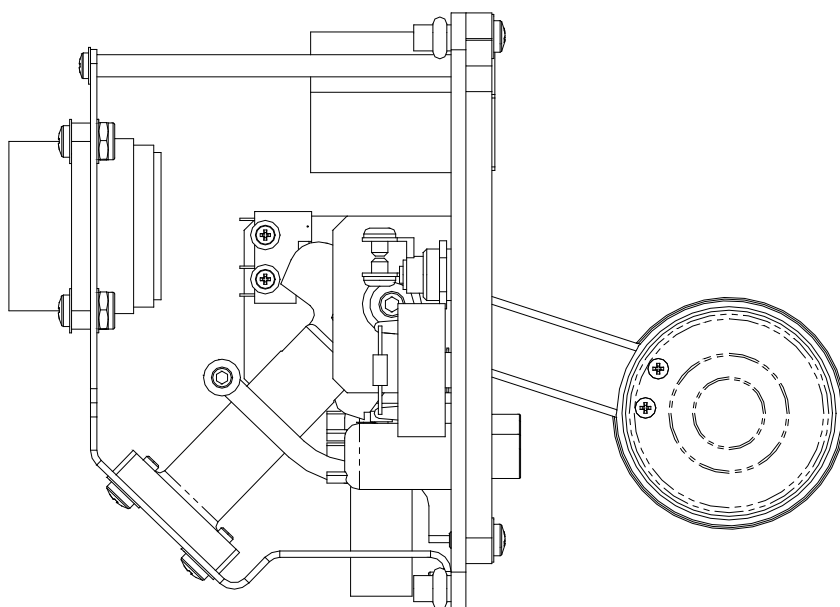
#### **2.7.4.1. Secondary Subsystems**

- 1) For each of the following systems, inspect the mechanical components for smooth operation, mechanical condition, security of installation, and signs of damage or wear. See Figure 2.7.4.1-1.
  - a) Landing Gear Control System. See Figure 2.7.4.1-2.
  - b) Emergency Landing Gear Control System. See Figure 2.7.4.1-3.
  - c) Parking Brake Control System. See Figure 2.7.4.1-3.
  - d) Power Control Lever Control System (PCL). See Figure 2.7.4.1-4.
  - e) Emergency Firewall Shut Off Control Assembly. See Figure 2.7.4.1-5.
  - f) Control Column Base Assembly.

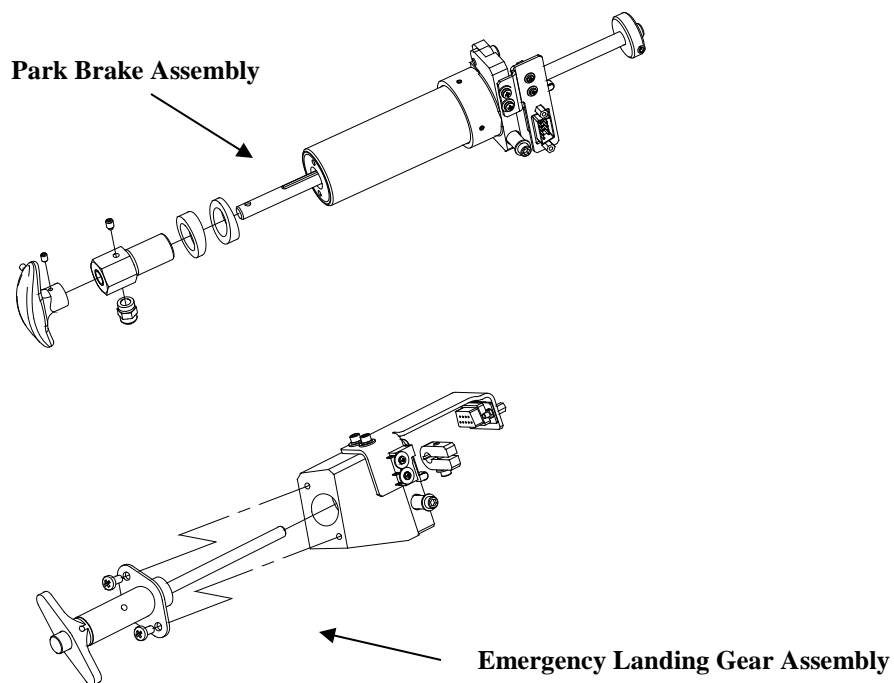




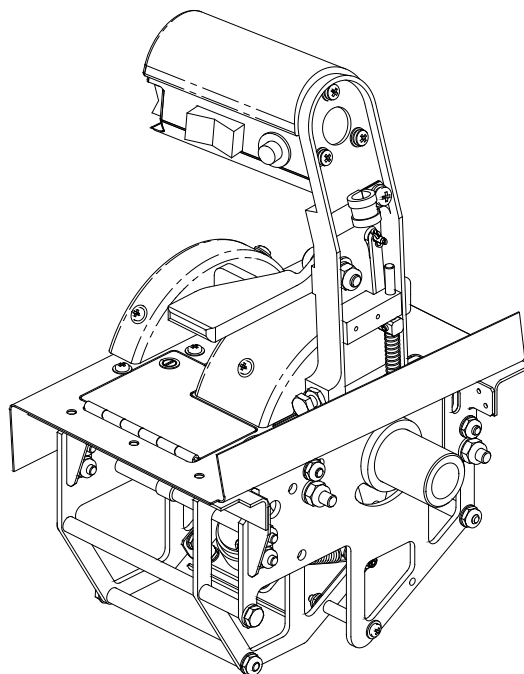
**Figure 2.7.4.1-1. Secondary Control Subsystem Assembly Locations**



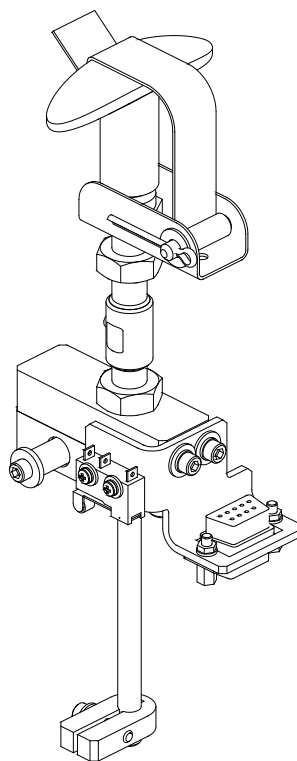
**Figure 2.7.4.1-2. Landing Gear Handle Assembly**



**Figure 2.7.4.1-3. Park Brake and Emergency Landing Gear Assemblies**



**Figure 2.7.4.1-4. Power Control Lever Assembly**



**Figure 2.7.4.1-5. Emergency Firewall Shutoff Assembly**

#### 2.7.4.2. Actuator Oil

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Perform Actuator Oil change procedures in accordance with procedures in Section 5 of the JPATS O&M manual.

The frequency of oil change:

Every 3000 hours as measured by the elapsed time indicator on the power controller in the 9A1-equipment cabinet or 6 months, whichever comes first.

Dispose of waste oil IAW local area HazMat requirements.

#### 2.7.4.3. General Inspection

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For a general inspection of trainer performance, perform a comprehensive flight of the trainer and check that no areas of concern exist with respect to onboard components feeling marginal or questionable. The scope of this inspection should exceed the scope of a typical daily preflight inspection.

#### **2.7.5. Fire Detection**

Locate the smoke and temperature sensors using Engineering Drawings.

- 6520ABP001-OFT
- 6520ABP002-IFT
- 6520ABP003-UTD

- 1) Inspect the smoke detectors. Clean if necessary in accordance with procedures in Section 5 of the JPATS O&M.
- 2) Inspect the temperature sensors. Clean if necessary in accordance with procedures in Section 5 of the JPATS O&M.
- 3) Inspect Master Control Panel for abnormalities.
- 4) Check Master Control Panel batteries; replace every four years.

#### **2.7.6. Emergency Power Off Switch**

Test Student Station Emergency Power Off Switch IAW 5.2.7.3 in Section 5 of the JPATS O&M.

### **2.8. TWELVE MONTH INSPECTION (Annual)**

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No annual inspections exist for the ATDs.

### **2.9. TWENTY-FOUR MONTH INSPECTION (Bi-Annual)**

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No bi-annual inspections exist for the ATDs.

## SECTION 3. AS REQUIRED

### 3.1. BRIGHTNESS AND BRIGHTNESS UNIFORMITY

Brightness and brightness uniformity checks are typically required following a lightbulb change. Other reasons to perform these checks include, but are not limited to, the installation of a new projector and complaints that the image is too dark.

The objective of this inspection is to verify that the brightness from the Pilot Eye Point is not less than 6 foot-Lamberts and the brightness uniformity is within 50% of center brightness.

- 1) Measure the brightness in the center of the center white square in each field-of-view using a spot photometer with a 1° aperture. The desired measurement is at least 6 foot-Lamberts.
- 2) Select and load the FULL SCREEN WHITE 7 (FSW7) test pattern.
  - a) Measure luminance of surfaces at nine points (center, left, right, top, bottom, and four corners) in each field-of-view.
  - b) Record in brightness uniformity table.
  - c) Take the corner/edge measurements 5° from the boundaries. (If any of the measurements are blocked by the cockpit structure, then note it on the form.)
  - d) Compute uniformity relative to the center luminance of the channel.
  - e) Record the results in the table.
- 3) Set the test pattern select to normal operation.

		Luminance (ft-L)	Uniformity (%)
FOV 1	CENTER		
	TOP		
	BOTTOM		
	LEFT SIDE		
	RIGHT SIDE		
	UL CORNER		
	LL CORNER		
	UR CORNER		
	LR CORNER		

**Figure 3.1-1. Brightness and Brightness Uniformity Table**

- 4) A final consideration: Upon completion of the preceding steps, verify the brightness levels for night scenes are acceptable for training.

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