AIRFRAME 02

**PRESSURE PNEUMATIC SYSTEMS - PROJECT A2-II-B-LP-14**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Bin No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**References Required (manual and page)**

8083 V2 CH12

AC65-15A pp331-340

**Optional**

Jeppesen Airframe Textbook, pp 8-49 to 8-58

**A. HIGH PRESSURE PNEUMATICS SYSTEMS**

1. QUESTIONS

|  |  |  |
| --- | --- | --- |
| a. | What system pressures would you find in a high pressure pneumatic system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| b. | What is done to return pressure in a pneumatic system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| c. | What is provided on the compressor to aid in cooling? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| d. | What contains a sensing valve and directs compressor output air to the system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| e. | What component isolates the compressor lines when ground charging air is being supplied? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| f. | All high pressure pneumatic systems must also include what other device in the system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| g. | What is separated from the air so as not to cause freezing of operating units or to cause corrosion? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| h. | Approximately how much percent moisture will the moisture separator separate? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| i. | What unit releases the moisture in a high pressure system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| j. | What is provided in the above unit to prevent the moisture from freezing in the bottom? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| k. | What is provided to absorb any moisture which the moisture separator fails to remove? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |  |
| --- | --- | --- |
| l. | What is provided to insure that a fixed back pressure is maintained through the air-drying equipment? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| m. | What is provided to remove 10 micron or larger foreign matter from the compressor output air? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| n. | What is provided in the storage bottle to prevent withdrawal of accumulated moisture? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| o. | What is designed to relieve pressure as a metering device? Its rate of relief automatically increases with the amount of pressure. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| p. | What is provided so that the air pressure section can be isolated from subsystems so work can be performed without discharging the system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| q. | What is provided to reduce system pressure for some subsystems? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| r. | What is provided to relieve excessive charging pressure? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| s. | What type tubing is used in the high pressure section of the system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

2. **COMPRESSOR PNEUMATIC SYSTEMS (FIG 1)**

|  |  |  |
| --- | --- | --- |
| a. | As shown, can the emergency bottle supply air to the nose wheel steering? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| b. | As shown, can the primary bottle supply air to the brake system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| c. | The systems manifold has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ psi pressure when supplied by the primary bottle. |

3. BOTTLE STORAGE SYSTEM

 a. Cessna 310 Deice Boots (Fig. 2, 3)

|  |  |  |
| --- | --- | --- |
| -- | Where is the bottle located in the airplane? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| -- | How much pressure is the bottle serviced to for maximum duration? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| -- | How much pressure inflates the boots? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| -- | Where is the pressure regulator located in the airplane? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| -- | What are the metal lines into the bottle made of? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

 b. Cessna 441 Conquest Emergency Landing Gear Extension (Fig. 4, 5, 6)

|  |  |  |
| --- | --- | --- |
| -- | Where is the pressure bottle located in the airplane? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| -- | Where is the shuttle valve located in the airplane? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| -- | What prevents hydraulic fluid from getting into the discharge mechanism in the head of the bottle?  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| -- | **Color all lines Red that are under pressure in Fig. 7**. |

**B. MEDIUM PRESSURE PNEUMATIC SYSTEM (FIG. 7, 8)**

1. BLEED AIR SYSTEMS

|  |  |  |
| --- | --- | --- |
| a. | What system pressure would you find in a medium pressure pneumatic system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| b. | The Saberliner has an air control valve similar to the one shown in Fig. 8. Where is it located? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| c. | Are turbine engine instrument pneumatics the pressure type or the vacuum type? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| d. | Which type (pressure, vacuum) instrument system is best for high altitude aircraft? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**C. LOW PRESSURE PNEUMATIC SYSTEM (FIG. 9, 10)**

|  |  |  |
| --- | --- | --- |
|  1. | What system pressure would you find in a low pressure pneumatic system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  2. | Does the Model 152 in the hanger have a stand by vacuum system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  3. | What main component does the Model 310 vacuum system have that the Model 152 doesn’t have? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  | What is its function? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  4. | When wet-type pumps are used, where are the oil separators located (in the pressure or vacuum side of the pump)? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  5. | How does the vacuum pump cause the instrument gyros to spin? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  6. | Wet-type pumps filter the air before or after the air was pumped through the pump? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  7. | Dry-type vacuum pump systems filter the air in the pressure or vacuum side of the pump? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  8. | Emergency vacuum systems connected to the induction manifold work best at full power or reduced power? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  9. | Positive pressure instrument systems locate the inlet filter before or after the air goes through the pump? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 10. | Both pressure instrument systems and vacuum instrument systems control the pressure by adjusting a(n) | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |  |
| --- | --- | --- |
| 11. | Do turbine engine instrument pneumatics use inline filters or filters at the end of the line after the instruments? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 12. | The use of an external venturi to create a vacuum for instrument systems was or was not suitable for flight in clear air turbulence? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 13. | How the pump drive direction determined is: by looking at the drive end or the other end of the pump? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 14. | How often should the model 152 air filter be changed? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 15. | Which type of fitting connections to the pump should be used--5/8 AN or low loss fitting? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 16. | If you accidentally drop a pump, what should you do with the pump? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 17. | When should Teflon thread lube be used? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 18. | When restrictions occur in the line or on a dirty fitter, how does this affect the pumps? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 19. | How is ice removed from the venturi type vacuum system? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 20. | If the pump fails, what should you do with the inline filter? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| 21. | If you put on a new pump, what should you do about the engine drive pad seal? | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |