



Department of National Defense
PHILIPPINE AEROSPACE DEVELOPMENT CORPORATION
MAINTENANCE PROCEDURE MANUAL



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CHAPTER 7

CALIBRATION PROCEDURE



CALIBRATION PROCEDURES

7.1 CALIBRATION PROCEDURE FOR VERNIER CALIPER

CALIBRATION ROOM ENVIRONMENTAL CONDITIONS

1. Room temperature controlled to standard condition 20 to 25 deg. C.
2. Humidity not more than 70%.
3. Strictly "NO SMOKING".

APPARATUS

Vernier Caliper, Gauge Blocks – Grade A, Magnifying Glass and Gauge Block Holder.

PROCEDURE

1. Check for the cleanliness of all the apparatus.
2. Check for any damage on the vernier caliper. If any damage is observed, make necessary steps to remedy or to dispose the vernier caliper.
3. The slider shall slide smoothly without slackness throughout the entire stroke.
4. Make sure that the reference lines of scales coincide when jaws are closed, and that no clearance is observed in between the jaws when exposed to the light.
5. When a slight is observed, the clearance may be estimated as 3-5 m.
6. The parallelism of the faces for internal measurement may be checked by means of a micrometer.
7. The accuracy of the vernier caliper may be checked with gauge block combinations of every 10 m. Take readings on a series of gauge blocks for the difference between the readings and the size of gauge block.
8. Enter the readings in the vernier caliper test report.
9. Repeat procedure 7 and 8 three (3) times.
10. Take the average readings of the three (3) measurements performed and calculate the errors.
 - a. Average reading = $\text{Test 1} + \text{Test 2} + \text{Test 3} \div 3$
 - b. Error = (vernier caliper reading) – (size of gauge block)
11. Graph the caliper reading error.
12. Return caliper to service.



CALIBRATION PROCEDURE

7.2 CALIBRATION PROCEDURE FOR DIAL GAUGES

CALIBRATION ROOM ENVIRONMENTAL CONDITIONS

1. Room temperature controlled to standard condition 20 to 25 deg. C.
2. Humidity should not be more than 70%.
3. The room shall be "NO SMOKING".

IMPORTANT

Leave all the necessary calibrating instruments in the controlled calibration room for at least an hour before performing calibration.

APPARATUS

Dial Gauge, Gauge Blocks – Grade "A", Measuring Plate

PROCEDURE

1. Check for the cleanliness of all the equipment.
2. Check for appearance and functions.
 - a. The plating and coating on all parts shall be free from peeling or rusting.
 - b. All parts shall be free from arising disorder during practical use at any changes of temperature and humidity on usual use condition.
 - c. Stamping and graduations shall be free from defects.
 - d. Covering plate shall be tightly fixed to the outside of the frame.
 - e. The dial gauge shall be in good condition and free from slackness when moved several times throughout the entire stroke.
 - f. When the spindle is pressed, the long needle shall rotate in clockwise direction.
 - g. The clearance between the head of the long needle and the graduation plate must be at least 1.0mm and shall be uniform throughout the rotation.



CALIBRATION PROCEDURE

7.2 CALIBRATION PROCEDURE FOR DIAL GAUGES

- h. In case of reading the whole movement of spindle by the rotation of long needle, the reference point of the measurement shall be 0.2mm removed point of the measurement shall be 0.1 mm removed point from the point of repose of long needle and the terminus shall be at 0.2mm minimum passing through the prescribe measuring range respectively.

NOTE: For dial gauges, whose measuring range is from 1-5 mm, reference point shall be 0.02 mm removed point from the point of repose of the long needle and the terminus shall be at 0.05 mm.

- i. The movement of the outside frame shall be smooth and the plate of graduation shall be fitted at any place at will.
 - j. The fit of the short needle shall be constructed to show the rotation number of the long needle or to show the available distance of the spindle.
 - k. When there is a limit-compass needle, the dial gauge shall be constructed so as to be adjusted easily, accurately and immovable during measurement.
 - l. The clamping device shall provide positive locking of outside frame causing no error in measurement.
3. Hold dial gauge on stand.
 4. Place the measuring face on the measuring plate in a vertical position.
 5. Rotate the spindle five (5) times hastily and mildly within the measuring range and take the largest value of difference between readings.
 6. Zero set the dial gauge.
 7. Place gauge block on the measuring plate and bring the measuring face in contact vertically.
 8. Take readings on the difference of indication between dial reading and the size of gauge block by removing the series of gauge block before and behind, to the left and right.



CALIBRATION PROCEDURE

7.2 CALIBRATION PROCEDURE FOR DIAL GAUGES

Note: The permissible design accuracy of the dial gauge in the measuring scope of 1-5 mm is 0.3m. For the ranges 5 – 10 mm of 3.00 m is acceptable.

9. Enter the readings in dial gauge test report.
10. Repeat Procedures No7. to 9 three (3) times.
11. Take the average readings of the three (3) measurements performed and calculate error.

$$\text{Average Reading} = \frac{\text{Test 1} + \text{2} + \text{3}}{3}$$

1. Error= (Dial Gauge Ave. Reading) – (Size of Gauge Block)
12. Graph the dial gauge reading error.



CALIBRATION PROCEDURE

7.3 CALIBRATION PROCEDURE FOR DIFFERENTIAL PRESSURE GAGE

CALIBRATION ROOM ENVIRONMENTAL CONDITIONS

1. Room temperature controlled to standard condition 20 to 25 deg. C.
2. Humidity not is less then 70%.
3. The room shall be "NO SMOKING".

CALIBRATION EQUIPMENT

Differential pressure Gage, Deadweight Pressure Tester-AMETEK Model No. 10-5525, Set of Deadweight, Pressure Tester Comparator-BARFIELD Instrument Type 2311F (Optional), Fittings.

PROCEDURE

1. Check validity of the Master Reference.
2. Check for cleanliness of all the measuring equipment.
3. Check integrity of all units to be calibrated. If any damage is observed, make necessary steps to remedy or to dispose the unit.
4. Insert appropriate fittings to the gage and connect High pressure valve to the pressure tester. Leave Low pressure side vented to the atmosphere.
5. Place weight and purge/bleed the system by applying a slight pressure at the source. Repeat bleeding process as many times as possible to completely release residual air within the system.
6. After bleeding, select at least five (5) test points within the normal operating range for which the gage is used.
7. Slowly, apply pressure on the dead weight pressure tester while watching the dial/pointer for smooth action up to the scale reading. Approach each test reference from a lower value, do not overshoot and come back.



CALIBRATION PROCEDURE

7.3 CALIBRATION PROCEDURE FOR DIFFERENTIAL PRESSURE GAGE

NOTE:

1. Pressure tester piston travel should not exceed the required travel limits. A band on the piston indicates maximum piston travel.
2. For data reliability, in case the gage to be calibrated is old, use Pressure Tester Comparator (Barfield Instrument Type 2311F) together with the Deadweight Pressure Tester. Connect Low pressure line of the gage to the Pressure Tester Comparator and assign a certain low pressure value. Compare the difference between the High and Low pressures to the reading on the gage undergoing calibration. Use the same low pressure value during the entire calibration process as constant.

Pressure gage reading "MUST" be the same with the Master Reference or within 2% of the scale reading. Record the result on the test report form.

4. Repeat Procedure No.7, setting to the next selected value and so on, progressively.
5. Compute percentage error by averaging three (3) test values on each selected test points.

$$\% \text{ERROR} = \frac{\text{Reference Setting} - \text{Average Gage Value}}{\text{Reference Setting}} \times 100$$

6. Remove and replace all calibration deal. Indicate tool number or control number, date of calibration, next due date and impress inspection stamp. Seal all gage openings.
7. Return differential gage to service.



CALIBRATION PROCEDURE

7.4 CALIBRATION PROCEDURE FOR DIFFERENTIAL PRESSURE GAGE (INCHES OF KEROSENE)

CALIBRATION ROOM ENVIRONMENTAL CONDITIONS

1. Room temperature controlled to standard condition 20 to 25 deg. C.
2. Humidity not be more than 70%.
3. The room shall be "NO SMOKING".

IMPORTANT

Leave all the necessary calibrating instruments in the controlled calibration room for at least an hour prior to calibration.

APPARATUS

Differential Pressure Gauge (Inches of Mercury), Dry Air (Nitrogen), Water Manometer, Mercury Manometer, Pressure Generator (Meriam Model A-841), Fitting & Hoses.

CONVERSION FACTORS

1 in H ₂ O	=	0.738 in. Hg.
	=	1.2195 in. Kerosene
1 in Hg.	=	13.60 in. H ₂ O
	=	345.44 mm. H ₂ O
1 in Kerosene	=	0.03 psia
	=	0.061 in. Hg



CALIBRATION PROCEDURE

7.4 CALIBRATION PROCEDURE FOR DIFFERENTIAL PRESSURE GAGE (INCHES OF KEROSENE)

PROCEDURE

1. Check for cleanliness of all the measuring equipment.
2. Check integrity of all units to be calibrated. If any damage is observed, make necessary steps to remedy or to dispose the unit.
3. Check manometer mounting for being absolutely vertical
4. Place Pressure Generator operating handles on the most rearward position. Adjust manometers to zero (0) scale reading, with no pressure applied. Slide scale or adjust liquid level.

NOTE: With mercury, read to the highest indicated liquid level and with any other liquid, i.e. water, the lowest visible level should be used.

5. Insert appropriate fittings. Connect low pressure line from the gate to the water manometer and high pressure line to the mercury manometer.
6. Turn the Pressure Generator operating handle in a clockwise direction until mercury level reaches 1.0 in. Hg. Open gate valve of the nitrogen cylinder and slowly turn-on the control handle of the water manometer until pressure reaches 345.44 mm. H₂O. Shut off nitrogen cylinder valve and turn-off water manometer control handle. A zero (0) pressure indication will be observe in the gage to be calibrated.
7. Apply approximate full scale pressure at the high pressure source.
8. Stabilized for at least five (5) minutes. A gradual drop in the manometer level will indicate a leak at some point in the system. Troubleshoot if necessary, no leaks are allowed.
9. After leak test, release pressure by loosening first the high pressure fitting followed by the low pressure fitting in the differential pressure gauge.



CALIBRATION PROCEDURE

7.4 CALIBRATION PROCEDURE FOR DIFFERENTIAL PRESSURE GAGE (INCHES OF KEROSENE)

10. Replace Pressure Generator operating handle on the rearward position. Tighten both high and low fittings and repeat procedure no. 6. Select at least five-(5) test point within the gage normal operating range.
11. Slowly apply pressure on the high-pressure line (mercury) until it reaches the selected test reference.

NOTE: Pressure in the Water Manometer should "ALWAYS" be maintained at 345.44 mm. H₂O throughout the entire calibration cycle. Pressure gage reading "MUST" be the same with the Master Reference or within 2% of the scale reading.

12. Record the result on the test report form.
13. Repeat procedure no. 11 and 12, setting to the next selected test value and so on, progressively.
14. Compute the percentage error by averaging the three (3) test values on each selected test points.

$$\% \text{ERROR} = \frac{\text{Reference Setting} - \text{Average Gage Value}}{\text{Reference Setting}} \times 100$$

15. Remove and replace all calibrating decal. Indicate tool number or control number, date of calibration, next due date, and impress inspection stamp. Seal all gauge openings.
16. Return pressure gauge to service.



CALIBRATION PROCEDURE

7.5 CALIBRATION PROCEDURE FOR MICROMETER

CALIBRATION ROOM ENVIRONMENTAL CONDITIONS

1. The temperature of the calibration room shall be maintained and constantly monitored to 20 C (68 F) +- ½ C. Humidity standard conditions.
2. The room shall be "NO SMOKING".

IMPORTANT

Leave all the necessary calibrating instruments in the controlled calibration room for at least an hour before performing the calibration.

APPARATUS

Micrometer, Micrometer Stand, Gauge Block – Grade A, Magnifying Glass and Optical Parallels.

PROCEDURE

1. Check for the cleanliness of all the measuring equipment.
2. Check for the appearance and functions.
 - a. The plating and coating on all parts shall be free from peeling or rusting.
 - b. Stamping and graduations shall be free from defects.
 - c. The screw threads shall be well engaged to provide smooth travel of spindle throughout the entire stroke without slack.
 - d. The clearance between thimble and sleeve shall be uniform and any deflection caused by turning the thimble shall be minimum.
 - e. The beveled edge of the thimble shall be finished so as to provide correct reading of the sleeve graduation
 - f. The ratchet or friction stop shall rotate smoothly.
 - g. The clamping device shall provide positive locking of spindle causing no error in measurement.



CALIBRATION PROCEDURE

7.5 CALIBRATION PROCEDURE FOR MICROMETER

3. Flatness of measuring face

Bring the optical parallel into close contact with the measuring face and take reading of the number of red interference fringes by white light.

A band represents the flatness of 0.32m.

The permissible maximum flatness of measuring face is two (2) bands for range up to 250 mm. and four (4) bands for range over 250 mm.

Enter the readings in the micrometer test record

4. Parallelism of the measuring faces

The parallelism of the measuring faces of the micrometer is tested by means of a set of four optical parallel faces and thickness that differ by approximately a quarter of a pitch so that the test is carried out at four positions of a complete rotation of the micrometer spindle face.

These optical parallels are placed in turn between the measuring faces under the pressure of its ratchet or friction drive. By carefully moving the optical parallel between the faces, the number of interference bands visible on one face should be reduced to a minimum and those on the opposite face then be counted. This procedure should be repeated with optical parallel in the set.



CALIBRATION PROCEDURE

7.5 CALIBRATION PROCEDURE FOR MICROMETER

A band represents the parallelism of 0.32m. and in no case should the total number of bands exceed eight.

The same method may be use for testing the parallelism of the faces of larger micrometers. In this case, two of the optical parallels are the wrung on to the measuring faces of a suitable combination of gauge blocks and the whole combination thus formed is used as a parallel-ended test pieces between the measuring faces.

Enter the readings in the micrometer test record.

5. Overall Accuracy

The accuracy of micrometer is usually checked by taking readings on a series of gauge blocks.

- Hold a micrometer by a micrometer stand.
- Zero set the micrometer
- Take readings on a series of gauge blocks for the difference between the readings and the size pf gauge blocks.

Error = (micrometer reading) - (size of gauge block)

Series of gauge block for testing micrometer

- For metric measurement (mm) 1.0, 2.0, 3.0, 4.0, 5.1, 7.7, 10.3, 12.9, 15.0 17.6, 20.2, 22.8 and 25.0
- For English measurement (inch) 0.050, 0.119, 0.139, 0.150, 0.250, 0.350, 0.450, 0.550, 0.650, 0750, 0.850 and 1.00

6. Enter the readings in the micrometer test report.

7. Repeat procedures 5 and 6 three (3) times.

8. Take the average readings of the three (3) measurements performed and calculate the error.

- Average reading = (Tests 1+2+3) / 3
- Error = (micrometer reading) – (size of gauge block)

9. Graph the micrometer reading error

10. Return micrometer to service.



CALIBRATION PROCEDURE

7.6 CALIBRATION PROCEDURE FOR PRESSURE GAUGE - ABSOLUTE

CALIBRATION ROOM ENVIRONMENTAL CONDITIONS

1. Room temperature controlled to standard condition 20 to 25 deg. C.
2. Humidity not be more than 70%.
3. The room shall be "NO SMOKING".

IMPORTANT

Leave all the necessary calibrating instruments in the controlled calibration room for at least an hour before performing the calibration.

APPARATUS

Pressure Gage, Deadweight Pressure Tester, Pressure Tester Comparator, Set of deadweights, Fittings.

PROCEDURE

1. Check validity of the Master Reference.
2. Check for cleanliness of all the measuring equipment.
3. Check integrity of all unit to be calibrated. If any damage is observed, make necessary steps to remedy or to dispose the unit.
4. Insert appropriate fittings to the gage and connect pressure gage to the pressure tester.
5. Place a weight on the tester. Apply pressure and open the drain valve to release pressure and fluid. Repeat operation as many times as possible to release residual air within the system (Bleeding Procedure).
6. After bleeding, select at least five (5) test points within the normal operating range for which the gage is used.
7. Slowly, apply pressure on the deadweight pressure tester while watching the dial/pointer for smooth action up to the scale reading. Approach each test reference from a lower value, do not overshoot and come back.



CALIBRATION PROCEDURE

7.6 CALIBRATION PROCEDURE FOR PRESSURE GAUGE - ABSOLUTE

NOTE:

1. Travel of the pressure tester piston travel should not exceed the required travel limits. A band on the piston indicates maximum piston travel.
2. When using the Pressure Tester Comparator, always set the condition on gage to be calibrated and compare with the reading on the master reference.

Pressure gage reading "MUST" be the same with the deadweight tester or within 2% of the scale reading. Record the result on the test report form.

8. Repeat Procedure No.7, setting to the next selected value and so on, progressively.
9. Compute percentage error by averaging three (3) test values on each selected test points.

$$\frac{\% \text{ERROR} = \text{Reference Setting} - \text{Average Gage Value}}{\text{Reference Setting}} \times 100$$

10. Remove and replace all calibration deal. Indicate tool number or control number, date of calibration, next due date and impress inspection stamp. Seal all gage openings.
11. Return differential gage to service.



CALIBRATION PROCEDURE

7.7 CALIBRATION PROCEDURE FOR TORQUE WRENCH

CALIBRATION ROOM ENVIRONMENTAL CONDITIONS

1. The temperature of the calibration room shall be maintained and constantly monitored to 20 – 25 deg. C
2. Humidity not more than 70%
3. Strictly "NO SMOKING" area

APPARATUS

Torque wrench tester, torque wrench, drive adapters

PROCEDURE

1. Check cleanliness of all apparatus.
2. Check integrity of the unit to be calibrated.
3. Insert appropriate adapter to the torque tester
4. Set torque tester reaching to "0".

NOTE 2: Select at least five (5) test points on the torque wrench from minimum to maximum setting.

5. Set torque wrench to minimum scale setting, then insert drive to the adapter horizontally.
6. Slowly pull down handle until click sound is heard, simultaneously observe torque tester reading. Torque tester reading "MUST" be the same to the torque wrench setting or within 4% of the scale reading. Record the reading on test report form.



CALIBRATION PROCEDURE

7.7 CALIBRATION PROCEDURE FOR TORQUE WRENCH

Note 3: Dial type torque wrenches are checked by direct reading comparison to the tester indicator – tolerance of +- 2% is acceptable.

7. Repeat procedure No. 6, setting torque to the next selected torque to the next selected torque wrench test value and so on, progressively.
8. Compute the percentage error by averaging the three (3) test values on each selected test points.

$$\% \text{ERROR} = \frac{\text{Tester Setting Value} - \text{Average Wrench Value}}{\text{Tester Setting Value}} \times 100$$

9. Remove all calibration decal and replace. Indicate tool number or control number, date of calibration, next due date and impress inspection stamp.
10. Return torque wrench to service.



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CHAPTER 8

QUALITY SYSTEM PROCEDURES



QUALITY SYSTEM PROCEDURES

8.1 OVERVIEW:

The established Quality System must be implemented and maintained as an effective means of ensuring that the services and products provided by conform to specified regulatory requirements.

The Quality System places heavy emphasis on the prevention of problems rather the dependence on detection once the problems have arisen.

OBJECTIVE:

- 1) To insure good maintenance practices and compliance with all relevant requirements in these regulations such that aircraft and aeronautical products may be properly returned to service.
- 2) To monitor compliance with and adequacy of the procedures and by providing a system of inspection to ensure that all maintenance is properly performed.
- 3) Compliance monitoring shall include a feedback system to the designated management person or group of persons directly responsible for the quality system and ultimately to the accountable manager to ensure, as necessary, corrective action.
- 4) It shall be sufficient to review all maintenance procedures as described in the Procedures Manual in accordance with an approved program once a year for each aircraft type maintained.



8.2 QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.1 QUALITY AUDIT PROCEDURES

Quality is the responsibility of all persons in the organization who play a part in the accomplishment of work activities undertaken by the company. The license /authorization holder forms a key link in the chain of activities by virtue of his expertise and responsibility towards airworthiness under the authority granted to him by the Regulatory Authorities and Quality Assurance Department. The Audit System provides the basis for the establishment of conformity to regulatory requirements and accepted standards of work under the authorization ratings granted by the Civil Aviation Authority of the Philippines.



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.2 FACILITY QUALITY AUDIT

Facility Quality Audit is conducted **annually** to evaluate and ensure the effectiveness of the current quality control system thereby assuring consistent delivery of acceptable products and services at minimum cost. Audit of the facility is conducted every month.

The audit system is extensively designed to suit the purpose thus, making it responsive to the actual needs of the facility.

The audit will be conducted by the Quality Assurance representatives using the prepared "Sub-System" checklists. Checklists are sufficiently detailed to ensure that all maintenance functions are addressed. Each Sub-System is composed of questions designed to evaluate a particular aspect or characteristic. These questions are numbered and are assigned with a possible maximum point in accordance with the level of importance in the whole sub-system.

Audit results are submitted to the Department Head/s concern thru a memorandum citing all the discrepancies found during inspection. A period of one (1) month will be given to the Department Head/s for the reply on the memorandum given by the Department Head of Quality Assurance. A copy is furnished to the President for his information.

Discrepancies noted during the audit are monitored, re-inspected quarterly to ensure compliance or corrective actions taken. Discrepancies corrected are then removed from the audit report and take note of the date of correction. "Open" discrepancies are reported again to the concerned work center head. It will remain "Open" until such time it is corrected.

The conduct of the **annually** evaluation is a major responsibility of the Quality Assurance Department.



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.3 QUALITY AUDIT PROGRAM

The audit program shall be planned and controlled to ensure all areas are adequately monitored. To accomplish them, the updated Audit Schedule program is prepared on annual basis



In any case, all work areas and procedures will be audited **annually**.

1. Line Maintenance
2. Engine Overhaul Shop
3. Radio/Electronic/Instrument Shop
4. Fuel Accessories/Calibration Shop
5. Propeller & Hydraulic Shop
6. Machine Shop
7. Electrical Shop
8. Test Cell
9. Warehouse Store 3
10. NDT shop
11. Control of PME



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.4 REVIEW OF QUALITY SYSTEM

Accountable Manager is to hold regular meeting, at least twice a year with the Officer-In-Charge, Maintenance & Engineering Department and Officer-In-Charge, Quality Assurance to review the overall performance of the company, and the effectiveness of the quality system.



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.5 ANNUAL REVIEW OF MAINTENANCE PROCEDURE MANUAL

On a half yearly basis, the Quality Assurance Department will review the Company's Maintenance Procedures Manual vis-à-vis the requirements of CAAP CARP Part 6 concerning approval of the Aircraft Maintenance Organization.

This audit will monitor compliance and adequacy of the procedures to meet the relevant updates in the airworthiness requirements.

The Maintenance Procedures Manual will be amended as necessary to meet new requirements.



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.6 QUALITY ASSURANCE PROGRAM

The Quality Assurance Program should include procedures to ensure that corrective actions developed in response to findings. These Quality Procedures should monitor such actions to verify their effectiveness and that they have been completed by the Acting Head of Maintenance and Engineering Department together with the Quality Assurance Department Officer-In-Charge in the report identifying the finding. Quality Assurance Program shall ensure that all referenced procedures remain applicable and effective and address the need for manual amendments resulting from such changes.

The Accountable Manager will have ultimate responsibility for ensuring, that corrective actions has been re-established compliance with the standard required by the Authority and any additional requirements established by the CAAP

The Quality Assurance Program should address the need for or when the training is required by the organization and review of such training.



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.7 REVIEW AND ANALYSIS OF AUDIT FINDINGS PERIODIC REVIEW

Internal audit findings are to be analyzed periodically to identify significant quality issues, recurring causal factors and or significant trends. Officer-In-Charge, Quality Assurance will review the data to determine if it is necessary to take additional action. Significant findings and review analysis data will be monitored and reported to the Accountable Manager.



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.8 QUALITY AUDIT REPORT

All discrepancies found during quality audit of the organization and aircraft shall be duly recorded by the auditor and findings submitted to the appropriate section for corrective actions:

- Non-conformity : Must be rectified immediately within 5 working days.
- Major : To be resolved in the shortest practical time frame
but not more than 15 calendar days from date of Audit
Finding report.
- Major : To be resolved in the shortest practical time frame but not
more than 30 calendar days from date of Audit Finding
report
- Minor : To be addressed at earliest convenient opportunity, but
not more than 30 calendar days from date of Audit
Finding Report issuance.
- Observation : To be addresses at the most convenient opportunity, but
not more than 45 calendar days from the date of AFR
issuance.



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.8 QUALITY AUDIT REPORT

1. All Internal and External Audit report conducted shall be handled by the Quality Assurance Department for distribution and compliance to the requirements.
2. Internal and External audit findings will be relayed to concerned department for their information and for the Root Cause and Corrective /Preventive action.
3. Complied AFR with the Root Cause and Corrective/Preventive Action taken must be submitted to Quality Assurance Department within the target date of compliance provided.
4. Extension request need to be requested for non-compliance before the given target date. Extension Request is one time request.

FEEDBACK SYSTEM:

The Quality system includes a feedback system to ensure that corrective actions are both identified and promptly addressed. Discrepancies and non-compliance are required to be rectify within the target date of compliance provided.



QUALITY AUDIT OF ORGANIZATION PROCEDURES

8.2.9 CORRECTIVE ACTION AND FOLLOW –UP

All Discrepancies shall be followed up, making sure that timely and appropriate corrective actions are taken and priority is accorded to Non-conformity and Major discrepancies, Status columns are provided against the discrepancies listed in the Non-conformance report so that all actions can be monitored.

Quality Assurance Department will forward the closed audit reports to the Accountable Manager for his information

Significant findings from internal and external audit reports are also highlighted to the Accountable Manager.

NOTE: Please refer to PADC QUALITY MANUAL for detailed Quality System Procedures



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CHAPTER 9

TRAINING



9.0 TRAINING

9.1 CERTIFYING STAFF QUALIFICATION AND TRAINING PROCEDURES

EXPERIENCE, TRAINING AND COMPETENCE REQUIREMENTS

Certifying staff is the person who has authority to certify aircraft during transit after completion of maintenance of inspection. He must have CAAP license in Airframe and Powerplant with appropriate type of training and the line authorization approval.

AUTHORIZATION SYSTEM

Company Authorization will only be granted to persons with approved license and ratings, and comply with the requirements stated in this section. Manager –Quality Assurance Department will issue Company Certificate of Authorization individually to the suitable person recommended for such authorization.

All Authorization holders will carry out his authority limitation on behalf of Phil. Aerospace Development Corporation (PADC) and will be monitored and controlled to maintain his capabilities standard required by the regulation. Company Certificate Authorization may be cancelled, suspend or revoked anytime as deemed by PADC.

The Certificate of Release to Service (CRS) shall be only be signed by the holder of a valid CAAP license or equivalent license acceptable to authority with appropriate aircraft type authorization.

The scope of work or limitation and individual's responsibilities is stated in each authorization limitation in accordance to the assessment result.



TRAINING

9.2 ASSESSMENT AND VERIFICATION REQUIREMENTS

Certificate of Authorization shall be issued under the following procedure:

1. Airframe and Engine – Full Authorization

- a) At least 21 years of age
- b) Be able to understand , read and write English
- c) Be a holder of CAAP or equivalent License acceptable to the authority at least six (6) months.
- d) Be a person who has passed and satisfactorily completed the aircraft type training including practical experiences for which he/she is going to apply for the type of Authorization. The type of training to be conducted by a facility /school acceptable to CAAP as appropriate.
- e) Be a person who has passed Human Factor Training and company procedure training
- I** f) Must be assessed by Quality Assurance Officer-In-Charge as being qualified.



TRAINING

9.3 CONTINUATION TRAINING

The continuation training or recurrent training shall be conducted at least every two years to the Authorization Certificate Holders for the re-issue/extension of the certificate expiry date. The place to derive continuation training will be selected and implemented to comply with the requirements of the type of authorization being reissued/extended.

Requirements to be considered:

1. Type of training on respective aircraft or component
2. Human Factors Course
3. Current CAAP License (Airframe and Powerplant or Avionics)
4. Current training list



TRAINING

9.4 TRAINING PROGRAM POLICY

OBJECTIVE:

To develop the knowledge and skills of all aircraft technical personnel of the company in order to be able to perform all the required maintenance checks, troubleshoot and safety dispatch the aircraft for flight.

The Training Program aims at developing technical skills through advanced instructional techniques of training, and retraining for new and existing equipment.

POLICY

1. It is the policy of PADC to provide training to all personnel responsible for the performance and direct supervision of aircraft maintenance and inspection requirements of the customer's aircraft.
2. The company training program for all personnel to be assigned to the technical aspect of the aircraft are designed primarily to aid employees in their introduction to the company, its policies, equipment and procedures. The training will further ensure that all personnel are aware of determining the adequacy of work performed and are fully informed with respect to all procedures and techniques with new equipment introduced into service.
3. The company will provide current training as necessary, which will ensure that personnel are kept up-to-date with regards to aircraft, engine, systems and procedural improvement and changes.
4. The company reserves the right to determine the requirement for and scope for specific training to be scheduled and to establish priorities relative to personnel selected. Shop supervisors are responsible for evaluation of their technician's trainings and qualifications for work under process.
5. Qualified instructors may be assigned to facilitate specialized training course provided they are rated.
6. Written examination will complete the training course as applicable. One time re-examination shall be given for those who failed.



TRAINING

9.4 TRAINING PROGRAM POLICY

7. Designated Technical Trainers/Instructors may be assigned by the Officer-In-Charge, Quality Assurance to facilitate specialized training courses.
8. Written examination will complete the training course as applicable. One-time re-examination shall be given for those who failed.
9. Training Schedule will be available semi-annually.
10. Training announcements with participant's name shall be released one (1) month prior start of the class.
11. Participants per training course shall be minimum of six (6) and maximum of twenty (20). Unless with prior approval from the Officer-In-Charge, Quality Assurance.
12. A failing grade will be given to a training participant if they fail to attend more than 20% of the total number of training days or hours.

Please refer to Training Manual and Procedure Manuals for details of training program.



TRAINING

9.5 COURSES, RATINGS AND RECURRENT TRAININGS

TRAINING COURSES:

1. AIRCRAFT MAINTENANCE POLICIES AND PROCEDURES FAMILIARIZATION

This course is designed to provide the participants with a basic knowledge of the various requirements per aircraft type of maintenance. It includes policies, maintenance and quality policies, airworthiness rules and Civil Air Regulations and other technical services requirements.

The participants are newly hired technical and non-technical, contractual/Job Order personnel and those undergoing on-the Job Training and those personnel who's who are assigned at maintenance organization of the company but with little or no work experience in aircraft maintenance or knowledge on the technical aspect requirements of the aircraft.

2. HUMAN FACTORS AND ERROR MANAGEMENT

This course is designed to provide participants the understanding on the importance of people and their contribution to the Quality and Safety culture. It will propose practical solutions that will tackle human element difficulties.

The participants are technical certifying and non-certifying staff, regular, contractual, Job Order, On-The Job Training, who are assigned at the maintenance organization of the company.

3. QUALITY INSPECTION TRAINING

This course is designed to familiarize the participants of the various technical policy and procedure requirements for aircraft airworthiness and the required inspection items during the performance of all scheduled and unscheduled maintenance checks and including parts and components replacements during trouble shooting prior to aircraft release to service

The participants are A&P Licensed aircraft technical personnel assigned to handle the release of the aircraft and various routine and non-routine checks on customer's aircraft.



9.5 COURSES, RATING AND RECURRENT TRAINING

TRAINING COURSES

4. ELECTROSTATIC DISCHARGE SENSITIVE COMPONENT HANDLING FAMILIARIZATION COURSE

This course is designed to have participants an understanding of static electricity including its generation and protection required from its static discharges to the component and provide a level of knowledge for proper handling Electrostatic Discharges Sensitive Component.

5. RECURRENT TRAINING (REFRESHER COURSE)

- 1) All aircraft certifying staff that completed the Initial type rating course on aircraft/components and continuously working for the same aircraft/component shall have to undergo an equivalent design of recurrent training to refresh and enhance their capabilities and skills within the preceding 24 months.
- 2) The recurrent training shall include continuous training requirements comprising in-service experiences, AMO procedures and changes in the standard of aircraft and /or aeronautical products maintained.
- 3) In the event where in concerned personnel will not be able to attend the scheduled class due to conflict of schedule, Read and Sign process shall apply as interim compliance.
- 4) Refresher Course will be conducted to all technical personnel who was not able to work on a particular aircraft type/model/component he is being rated for at least six months preceding the 24 months period

6. MAINTENANCE AND PROCEDURE MANUAL FAMILIARIZATION COURSE

This course is designed to familiarize all PADCO employees technical, non-technical whether regular, contractual, job order employees, regarding the procedures stated in Maintenance Procedure Manual.

7. SUSPECTED UN-APPROVED PARTS

This course is designed to have participant an understanding the importance of identifying "Un-approved Parts", to eliminate the potential safety risk posed by un-approved parts. Certifying Staff are required to attend this course.



TRAINING

9.6 CERTIFICATE AND RECORDS

CERTIFICATES

Training Certificates are to be issued to all participants who had satisfactorily completed the requirement of an aircraft type training courses.

RECORDS

A record of all technical training courses conducted or coordinated by PADC shall be maintained and must be updated.

Yearly updates of training records for Certifying Staff shall be completed every January and will be submitted to the Quality Assurance Officer-In-Charge. Unless permitted by the QA Officer-In-Charge, Administrative and Records Officer is authorized to sign and endorses the updated training records.

The Technical Training shall maintain the records of each person who has undergone training and must contain the following information.

A. Course Particular

1. Type of Training
2. Training Entity and location
3. Duration and length of training
4. List of participants

B. Individual Record

Individual Record or summary of the result of each training course conducted or coordinated and completed must be prepared and disseminated to all concerned. A copy of the Individual Record must be retained in the Quality Assurance Department. A complete summary training record of individual technical personnel will be maintained and updated and considered the official record.



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PHILIPPINE AEROSPACE DEVELOPMENT CORPORATION
MAINTENANCE PROCEDURE MANUAL



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CHAPTER 10

MAINTENANCE & ENGINEERING DEPARTMENT CAPABILITY LISTS



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS:

POWERPLANT:

C. REPAIR AND OVERHAUL OF LYCOMING AND CONTINENTAL PISTON ENGINES UP TO 400 HORSEPOWER RATING

MODEL	MANUFACTURER
- 235, -290, -320, -340, -360, -540, -541, -480, -580 All Series	AVCO Lycoming
C75, C85, C90, C125, C145, E165, E185, E225, -200, -240, -300, -360, -470, -520, -550 All Series	Continental

A. REPAIR /OVERHAUL OF AIRCRAFT PROPELLER ** FOUR BLADED LIGHTWEIGHT TURBINE PROPELLER

MODEL	MANUFACTURER
HC-D4N-2A, HC-D4N-2AA, HC-D4N-2D, HC-D4N-2E, HC-D4N-2F, HC-D4N-2G, HC-E4A-2, HC-E4A-2A, HC-E4N-2, HC-D3F-7	HARTZELL PROPELLER INC.

CONSTANT SPEED AND FEATHERING

MODEL	MANUFACTURER
HC-82-Series, HC-83-Series, HC-92-Series, HC-93-Series HC-A2-Series, HC-A3-Series, HC-B3-Series	HARTZELL PROPELLER INC.

COMPACT CONSTANT SPEED PROPELLER

MODEL	MANUFACTURER
HC-BHC-C2YF-A, -1A, -B CHC-DHC-C2YF-1B, HC-C2YK-A, -1A, -1B, HC-C2YL-1, 1B HC-C2YR-1B, HC-E2YR-1B, HC-F2YR-1, HC-C2YF, K, L-4, HC-C3YF, R, N-1 HC-E2YL-1B, HC-M2YR-1	HARTZELL PROPELLER INC.



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS:

COMPACT CONSTANT SPEED PROPELLER

MODEL	MANUFACTURER
BHC-J2YF-1BF (B)HC-12YF-(1, 4) ()F (B) HC-L2YF-1, -2, -4 (E) PHC-L3YF-1R, (P) HC-C3YF-1R, HC-C3Y 9F,R,N) -4 ()	HARTZELL PROPELLER INC.

THREE BLADED , CONSTANT SPEED AND FEATHERING

MODEL	MANUFACTURER
HC-B3W30-2E, HC-B3P30-2E, HC-B3R30-2E, HA-B3P30-1B, HC-B3P30-1, HC-B3Z30-2E	HARTZELL PROPELLER INC.

** COMPACT NON-FEATHERING (-1) AND AEROBATIC (-4) PROPELLER

MODEL	MANUFACTURER
<p>TWO BLADE</p> <p>BHC-C2YF-1B (L) (F), CHC-C2YF-1-1B(L)(F) DHC-C2YF-1B(L)(F), HC-C2YF-1B(L)(F), HC-C2YK-1B (L)(F), HC-C2YL-1B(L)(F), HC-C2YR-1B(F), HC-E2YL-1B(L)(F) HC-E2YR-1(S)(F), HC-F2YL-1F, HC-F2YR-1(F), BHC-G2YF-1BF, BHC-12YF-1BF, HC-12YF-1BF, HC12YR-1BF, BHC-J2YF-1B(F), BHC-J2YF-1C, HC-M2YR-1BF,BHC-C2YF-4(B)(F), HC-C2YF-4 (B)(F) HC-C2YK-4 (A,B,C)(F), HC-C2YL-4(B)(F) HC,C2YR-4(A,B,C)(L)F, HC-C2YR-4E, HC-C2YR-4G, BHC-12YF-4(B)F, HC-12YF-4(B)F, BHC-L2YF-4(B)F, HC-L2YF-4(B)F</p> <p>THREE BLADE</p> <p>HC-C3YF-1®(L)(F), PHC-C3YF-1MF, PHC-C3YF-1R(F), HC-C3YN-1(F), HC-C3YR-1A, HC-C3YR-1MF, HC-C3YR-1®(L)(F), HC-E3YR-1R(L)F, PHC-G3YF-1E, HC-G3YF-1RF, PHC-G3YF-1RF, HC-H3YF-1RF, PHC-H3YF-1RF, HC-13YR-1E, HC-I3YR-1RF, PHC-J3YF-1MF, HC-J3YF-1RF, PHC-J3YF-1RF, EHC-L3YF-1RF, PHC-L3YF-1RF , HC-L3YF-1RF, HC-M3YR-1RF, HC-C3YF-4(B) F, PHC-C3YF-4(B)F,</p>	HARTZELL PROPELLER INC.



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS:

**** COMPACT NON-FEATHERING (-1) AND AEROBATIC (-4) PROPELLER**

MODEL	MANUFACTURER
HC-C3YN-4(B)F, HC-C3YR-4A, HC-C3YR-4(B)F, HC-C3YR-4G FOUR BLADE HC-C4YF-1(E), HCF4YR-1	HARTZELL PROPELLER INC.

**** COMPACT CONSTANT SPEED AND FEATHERING PROPELLER**

MODEL	MANUFACTURER
TWO BLADE BHC-C2YF-2 (), CHC-C2YF-2 (), DHC-C2YF-2 (), HC-C2YF-2 (), HC-C2YK-2 (), HC-C2YL-2 (), HC-E2YK-2 (), HC-E2YL-2 (), HC-E2YR-2 (), HC-F2YL-2 (), HC-F2YR-2 (), HC-I2YF-2 (), BHC-J2YF-2 (), BHC-L2YF-2 (), HC-L2YF-2 (), HC-M2YL-2 (), HC-M2YR-2 () THREE BLADE EHC-C3YF-2 (), HC-C3YF-2 (), PHC-C3YF-2 (), HC-C3YN-2 (), HC-C3YR-2 (), HC-E3YR-2 (), HC-F3YR-2 (), EHC-G3YF-2 (), HC-G3YF-2 (), PHC-G3YF-2 (), HC-H3YF-2 (), PHC-H3YF-2 (), HC-H3YN-2 (), HC-I3YF-2 (), PHC-I3YF-2 (), HC-I3YR-2 (), PHC-J3YF-2 () FOUR BLADE HC-C4YF-2 (), HC-C4YN-2 (), HC-C4YR-2 (), HC-F4YR-2 ()	HARTZELL PROPELLER INC.



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS:

**** STEEL HUB TURBINE PROPELLER**

MODEL	MANUFACTURER
THREE BLADE HC-A3VF-7, HC-A3VF-7A, HC-A3VF-7B, HC-A3MVF-7, HC-A3MVF-7A, HC-A3MVF-7B, HC-B3MN-3, HC-B3TN-2, HC-B3TN-2B, HC-B3TN-3, HC-B3TN-3A, HC-B3TN-3AE, HC-B3TN-3(Y), HC-B3TN-3B, HC-B3TN-3BY, HC-B3TN-3C, HC-B3TN-3D, HC-B3TN-3DL, HC-B3TN-3DY, HC-B3TN-3E, HC-B3TN-3F, HC-B3TN-3G, HC-B3TN-3H, HC-B3TN-3K, HC-B3TN-3M, HC-B3TN-3N, HC-B3TN-3P, HC-B3TN- 3S, HC-B3TN-3UL, HC-B3TN-3Z, HC-B3TN-5, HC-B3TN-5C, HC-B3TN-5CL, HC-B3TN-5D, HC-B3TN-5DL, HC-B3TN-5FL, HC-B3TN-5G, HC-B3TN-5K, HC-B3TN-5M, HC-B3TN-5ML, HC-B3TN-5N, HC-B3TN-5NL, HC-B3TN-5P, HC-B3TN-5SL, HC-B3TN-5U, HC-B3TN-5W, HC-B3TF-7, HC-B3TF-7A, HC-B3TF-B, HC-B3TF-7C HC-B3TF-7	HARTZELL PROPELLER INC.

**** STEEL HUB TURBINE PROPELLER**

MODEL	MANUFACTURER
FOUR BLADE HC-B4MP-3, HC-B4MP-3A, HC-B4MP-3B, HC-B4MP-3C, HC-B4TN-3, HC-B4TN-3A, HC-B4TN-3B, HC-B4TN-3C, HC-B4MN-5AL, HC-B4MN-5L, HC-B4TN-5, HC-B4TN-5A, HC-B4TN-5AL, HC-B4TN-5C, HC-B4TN-5CL, HC-B4TN-5DL, HC-B4TN-5EL,, HC-B4TN-5F, HC-B4TN-5FL, HC-B4TN-5GL, HC-B4TN-5HL, HC-B4TN-5JL, HC-B4TN-5KL, HC-B4TN-5ML, HC-B4TN-5NL,	HARTZELL PROPELLER INC



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS:

**** FULL FEATHERING CONSTANT SPEED PROPELLER**

MODEL	MANUFACTURER
2AF31C Series, 2AF34C Series, 2AF36C Series, 3AF32C Series, 3AF34C Series -200,-300,-400,-500 Series (threadless)	MC CAULEY.

**** FIXED PITCH PROPELLER**

MODEL	MANUFACTURER
1A90-CF, CH, 1A100-ACM, MCM, 1A101-DCM, GCM, HCM, 1A102-0CM, 1A105-BCM, SCM, SLM, 1A135-BRM, JCM, KCM, RM, 1A170-CFA, DF, DM, EFA, GM, L, LL, 1A175-ATM, DM, FC, GM, GMA, SFA, SFC, 1A200-AOM, DFA, FA, FM, 1B90-CM- ECM, FCM, LCM, 1B175-MFC, 1B200-HM, 1B235-BFAM\, DFC, Sensinich Propeller (Fixed Pitch) all series /Model	MC CAULEY SENSENICH
1C90-ALM-CLM, DLM, LF, LM, 1C160- CTM, EGM, 1C172-ACM, BTM, EM, MDM, MFA, MGM, MTM, SBTM, TM 1C200-FC, 1D200-OM, IP235-AFA, PFA	



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS:

**** CONSTANT SPEED PROPELLER**

MODEL	MANUFACTURER
2D34C-8, 2D34C9, B2D34-C11, 2D36C14, 2D36C14A, 2D36C14B, B2D34C16, 2A31C21, 2A34C22, 2A36C23, 2D36C28, 2D35C28A, 2A36C29, 2A36C29A, BD2A36C31, BD2A36C31A, C2A36C32, C2A36C32A, D2A36C33, D2A36C34, D2A36C45, D2A34C49, 2A34C50, B2D34C53, 2D34C53, D2A34C58, F2A34C58, E2A34C64, 2A34C66, D2A34C67, E2A34C70, E2A34C73, 3A32C76, D3A32C77, D2A34C78, D3A32C79, 2A36C82, D3A32C88, D3A32C90, D2006/90M, D2101/78KM CHg A, D2101/78KM CHg B. C, D2101/78KM CHg D, D-2286/80MM CHg C, D-2286/80MM CHg D, D-2341/90M CHg A D-2341/90M CHg B, D-2859/84B, D-2970/84S, D-3108/90A, D-3129/74E, D3223/90AT, D-3442/84AF, D-3450/76C, D-3542/82NK, D-3546/90AT, D3582/82NB, D-3591/84B, D-3663/82NC, D-3769/78FB, D-3784/84HF, D-3895/84HF/ D-4027-84JF, D-4296/78FBM, D-4182/84SF, A-1934, A-2961, B-3531, C-2232, C2343, C2414, C2446, C-2715, C-2795, C-2835, C-2959, C-3389, C-4195, C-4197, D-4199, C-4201, C-420, C-4204, D-4211, D-4216,, D4329, C-4356, C-4363, C-3103, C-3105, C-3128, C-3453, D-3522, D-3541, D3561, D3581, D-3768, C-3894, D3944, D3946, D-3948, C-3958, C-3960, C-3978, D-3980, C-3990, D-2137, D-2771, D-2771-1, D-2809, D-2822, D-2845, D-3290, D-3396, D-3584, D-3669, D-3683, D-3766, D-3867	MC CAULEY.

**** VARIABLE PITCH PROPELLER**

MODEL	MANUFACTURER
33LF-337, 33LF-33B	HAMILTON



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS:

C. REPAIR /OVERHAUL OF AIRCRAFT PROPELLER GOVERNOR (PISTON)

MODEL	MANUFACTURER
A-1, A-1B, A-1C, A-1-1, A-11B, B-0, B-1, B-2, B-3, B-3-1, B-3-2, B-4, B-3-4, B-4-1, B-4-2, B-4-3, B-4-5L, B-4-5R, B-4-6, B-4-7, B-4-8, B-4-9, B-4-10, B-4-11, B-5, B-8, B-8-1, C-1, C-2, C-3, C-3-1, C-4, C-4-1, D-1, D-1-1, D-1-2, D-1-3, D-1-4, D-1-5, D-1-7, D-1-8, D-1-9, E-1, E-2, E-3, E-3L, E-3-1, E-3-2, F-2-9A, F-3, F-3-2, F-4, F-4-1, F-4-1A, F-4-1B, F-4-1C, F-4-1D, F-4-2, F-4-3, F-4-3A, F-4-4, F-4-4A, F-4-5, F-4-5A, F-4-6A, F-4-6B, F-4-7A, F-4-8, F-4-10, F-4-11, F-4-11A, F-4-11C, F-4-16, F-4-18, F-4-20, F-4-21, F-4-23, F-6-3, F-6-3A, F-6-3AL, F-6-3S, F-6-4, F-6-4S, F-6-5, F-6-5A, F-6-5AB, F-6-5S, F-6-6, F-6-6A, F-6-6S, F-6-7, F-6-7A, F-6-7S, F-6-8, F-6-8A, F-6-8S, F-6-9, F-6-14A, F-6-14S, F-6-15A, F-6-16A, F-6-16S, F-6-17A, F-6-18A, F-6-18L, F-6-19, F-6-19, F-6-20, F-6-22, F-6-24, F-6-24L, F-6-25, F-6-26, F-6-27, F-6-31, F-6-33, F-6-34, F-6-35, F-6-36, F-6-37, F-6-38, F-6-39, F-6-40, F-6-43, F-6-44, F-6-46, F-6-47, F-8-3A, F-8-11A, F-8-24, F-8-24L, F-8-28, F-8-29, F-8-32, F-8-33, F-8-35, F-8-38, F-8-39, F-8-43, F-8-44, F-8-47, H-1, H-1-L, H-1-1, H-1-2.	HARTZELL PROPELLER INC.



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS

**** PISTON ENGINE CONSTANT SPEED PROPELLER GOVERNOR**

MODEL	MANUFACTURER
210055-AM1, 210105-1 AR1, 210110-G2, 210190-R1, 210285-R, B210310-N1, 210335-H, E210340-N, E210345-M, 210360-H, 210385-J, 210400-K, B210403-F, 210409-G, 210412-J, 210417-J, 210417-G, 210428-F, A210436-M2, D210439-T, B210444-F, B210446-H1, C210452-T, K210452-T, 210456-P1, 210467-C, C210472-H1B210473-N1, B210490-F1, 210497-R2, A210504-N2, A210512-F1, 210516-L2, B210529-V, 210456-M3, 210562-C, B210572-D, A210582-D, 210586-C2, B210595-D2, A210597-N1, R210652-J, C210655-V, B210659-M, G210659-M, 210665-M1, 210669-K, 210667-F, B210680-AB, 210681-AB, E210681-AB, 210682-G, 210060-AL2, B210105-AR1, 210115-AB3, 210240-Y1, 210290-T, C210310-N1, 210340-N, 210345-M, J210345-M2, A210360-H, A210385-H, A210400-K2, C210403-F, B210409-G, 210413-H1, 210419-G, 210433-T1, A210438-M1, 210443-F1, C210444-F, C210446-H, D210452-T1, L210452-T3, 210458-F, 210468-C1, D210472-H1, 210481-D, C210490-F, 210498-R1, 210505-S1, 210513-J1, 210521-A, C210529-V, 210550-B1, R210571-B, C210572-D1, B210582-D, 210587-E3, 210596-L, A210601-C, 210653-C, 210657-C, C210659-M, 210660-U, 210666-M, B210669-H1, L210679-D1, C210680-AB, A210681-AB, F210681-AB, 210685-V, 210080-AK1, C210105-AR1, 210120-AA1, 210245-P, 210305-V, A210315-R, B210340-N, B210345-M3, 210350-K, 210365-K1, 210390-W1, 210401-M1, 210404-V, 210410-H3, 210414-T2, A210419-G, 210434-S, B210438-M3, A210443-D2, F210444-F, 210452-T, F210452-T, M210452-T, 210460-G, 210472-H1, E210472-H1, 210484-NW2, E210490-F2, A210499-N1, 210506-N2, A210513-J1, A210521-A, D210529-V, A210550-B1, R210571-B, L210573-C1, 210-573-B, 210594-C1, B210596-L, 210609-C, 210655-V, 210658-D, D210659-M, 210662-M, A210666-M1, 210674-H, R210679-D1, D210680-AB, B210681-AB, G210681-AB, 210686-T, 210085-AG1, H210105-AR1, 210155-T1, 210275-E1, A210305-V, 210330-S, C210340-N,	WOODWARD



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS

**** PISTON ENGINE CONSTANT SPEED PROPELLER GOVERNOR**

MODEL	MANUFACTURER
C210345-M, A210355-AB2, A210375-K, A210390-W1, 210402-L2, 210405-F, B210410-H2, 210415-G1, B210419-G, B210434-S, 210439-T, 210444-F, A210446-H1, B210452-T, H210452-T, U210452-T1, 210464-E, B210472-H1, A210473-N1, A210490-F1, 210493-J, 210504-N1, 210512-F, 210515-L, A210529-V, 210533-J2, 210556-P1, A210572-D, 210582-D, 210585-D, A210595-D1, 210597-N1, L210652-J, B210,655-V, A210659-M, F210659-M, 210664-L1, 210668-R, 210676-F, A210680-AB, F210680-AB, D210681-AB, J210681-AB1, 210688-P, B210688-P, B210689-J, 210692-K, A210693-H, A210703-E, R210707-H1, C210710-V, 210712-K, D210713-J, 210716-F, B210719-E, 210722-M1, 210731-D, 210758-F, A210802-F, 210907-B, 210910-D, R210914-C1, R210924-C1, C210688-P, D210689-J, A210692-K, 210700-N, 210704-F, 210709-F, D210710-V, 210713-J, E210713-J, 210717-K, C210719-E, 210726-F, 210732-B1, D210760-D, L210880-B, L210908-B1, 210911-C, A210921-E, D210688-P, F210689-J, B210692-K, A210700-N, 210706-C, A210709-F, E210710-V, A210713-J, 210714-M, 210718-H, D210719-E, 210727-C, 210733-C1, E210760-D, R210880-B, R210908-B1, L210913-B2, B210921-E, 210689-J, 210690-K, C210692-K, 210702-L, A210706-C, A210710-V, F210710-V, B210713-J, 210715-D1, 210719-E, 210721-N1, 210728-G, 210752-D1, A210761-F, 210903-H, L210909-B, R210913-B2, 210923-C, A210689-J, 210691-H, 210693-H, 210703-E, 210707-H1, B210710-V, 210711-U, C210713-J, B210715-D1, A210719-E, A210721-N1, A210728-G, 210753-F, B210761-F, 210905-B, R210909-B, L210914-C1, L210924-C1.	WOODWARD



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS

D. REPAIR/OVERHAUL OF MAIN AND NOSE LANDING GEAR (BN-ISLANDER AND CESSNA)

**** NOSE UNDER CARRIAGE LEG**

MODEL	MANUFACTURER
AIR 48280/1, AIR 48280/2, AIR 48280/3, AIR 48280/4, AIR 48280/5, AIR 48280/6, AIR 48280/7, AIR 48282, AIR 46202/1, AIR 46202/2, AIR 46202/3, AIR 46202/4.	AP PRECISION HYDRAULICS

**** MAIN UNDER CARRIAGE LEG**

MODEL	MANUFACTURER
AIR 48934/1, AIR 48934/2, AIR 48934/3, AIR 48934/4 AIR 48934/5, AIR 48934/6, AIR 48934/7, AIR 48934/8 AIR 48934/9, AIR 48934/10, AIR 48934/11, AIR 46200/1, AIR 46200/2, AIR 46200/3, AIR 46200/4, AIR 46200/5, AIR 46200/6, AIR 48958/1, AIR 48958/2, AIR 48958/3, AIR 48958/4, AIR 48958/5, AIR 48958/6, AIR 48958/7, AIR 48958/8, AIR 48958/9, AIR 48958/10, AIR 83002/1, AIR 83002/2,	AP PRECISION HYDRAULICS

**** NOSE UNDER CARRIAGE LEG**

MODEL	MANUFACTURER
3501H SERIES, 3811H SERIES.	FAIREY

**** MAIN UNDER CARRIAGE LEG**

MODEL	MANUFACTURER
3499H SERIES, 3507 H1	FAIREY



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS

COMPONENTS/ACCESSORIES CAPABILITY LISTS:

A. Fuel Control Unit

Fuel Pump

MODEL	PART NUMBER	MANUFACTURER
Romec Pump	RG 17980	ROMECC

Fuel Injector

MODEL	PART NUMBER	MANUFACTURER
RSA10ED1	2524273/2524298/2524366/2524420/ 2524422/2549038/2524733/2524811/ 2524846/2524859/2524880/2524477/ 2524491/2524492/2524500/2524534/ 2524556/2524582/2524601/2524693/ 2524709	Precision Airmotive

Fuel Nozzle

MODEL	PART NUMBER	MANUFACTURER
Precision	2524107/2524864/2524369// 252370/2524703/2524865/ 2524866/2524881/2524917/ 2524923/2524925/2524926	Precision Airmotive

Fuel Manifold Valve/Fuel Flow Divider

MODEL	PART NUMBER	MANUFACTURER
Precision	2524231-2/252610- 2/2576526-1/2576532- 1/2576552-1/257556- 1/2576564-1/257662- 1/2576624-1	Precision Airmotive



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS

MAGNETO, STARTER AND ALTERNATOR

MODEL	PART NUMBER	MANUFACTURER
All series	S-1200, S-200, S-20	Bendix King
All brand & model	MHB, MHJ, MHZ, MZ	Prestolite
All brand & model	ALT, ALX, ALV, ALY & ALZ	Prestolite

C. Hydraulic Bench Check Flap Actuator, Flap Selector Valve, Steering Actuator

SPECIALIZED SERVICES:

AIRCRAFT NON-DESTRUCTIVE TESTING

- Visual Inspection
- Liquid Penetrant Inspection
- Magnetic Particle Inspection
- Eddy Current Inspection
- Ultrasonic Inspection



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS

A PRECISION MACHINING

- Contour machined on computer numerically lathe for precision dimensional control using Boehringer Lathe, Run master Lathe, Bridgeport Milling, Tos Hostivar Cylindrical Grinder and Henu hauser Jig Borer Machine
- Pilot diameter restored by machining the requirement as per standard acceptable procedure
- Mounting Flange machining as required to enhance the CEB requirement

B CALIBRATION

Traceable to National Standards

- Pressure Gauges - 0-5,000 PSI Wet Type
- Torque Wrenches- range 0-200 ft-lb / 0-200 in-lb
- Temperature Gauges
- Vernier Calipers
- Micrometers
- Dual Indicator
- Height indicator

C WELDING

- Electric Arc
- Tig Welding (deferred due to non availability of technician)
- Oxygen and Acetylene

D BATTERY CHARGING

- Lead Acid
- Nickel Cadmium

D. AIRCRAFT WEIGHING

Limited up to aircraft with 150,000 lbs empty weight capacity

ALL WORKS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH CURRENT MANUFACTURERS MANUAL.



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS

F FLIGHT AND ENGINE INSTRUMENTS BENCH CHECK/CALIBRATION

- Pitot static system testing (up to 400 knots airspeed/35,000 ft altitude)
- Altimeters (up to 35,000 ft)
- Airspeed indicators (up to 800 mph)
- Vertical speed indicators
- Voltmeters
- Ammeters
- RPM indicators
- Temperature gauges
- Fuel content indicators
- Fuel pressure gauges
- Oil pressure gauges
- Fuel Metering Unit

G AIRFRAME INSPECTION AND REPAIR

H AIRCRAFT STRUCTURAL COMPONENT ASSEMBLY

I FIBERGLASS FABRICATION/LAMINATION REPAIR

J AIRCRAFT IRAN AND PROGRESSIVE LINE MAINTENANCE SERVICES

- BN-Islander (BN-2A and BN-2B)
- Cessna 150, 152, 172, 206 , 206T and 421 series
- Piper Seneca, Cherokee, Tomahawk, Aztec Series
- Socata TB9C Tampico

K MODIFICATION OF AIRCRAFT INTERIOR

H. OXYGEN BOTTLE SERVICING (DE-CONTAMINATION AND REFILLING)



MAINTENANCE AND ENGINEERING DEPARTMENT

CAPABILITY LISTS

M HYDRAULIC SYSTEM CHECK

- Landing gears extension and retraction test
- Hydraulic actuators leak and functional testing

N Pitot Static System Test / ATC Transponder System Check, Compass Swing Test, Installation /Functional Operational check of Emergency Locator Transmitter of the following aircraft model:

- BN-Islander aircraft all model series
- Cessna aircraft all model series
- Piper aircraft all model series
- Beechcraft aircraft all model series
- Socata TB9C Tampico
- All other type of light aircraft and helicopter



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CHAPTER 11

APPENDICES



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MANAGEMENT INDIVIDUAL RECORD



Department of National Defense
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FORMS



Department of National Defense
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MANPOWER RESOURCES



11-C MANPOWER RESOURCES

PERSONNEL STRENGTH

As of 01 July 2021

OFFICE OF THE PRESIDENT

- | | | |
|----------|---------------------------|------------------------|
| I | 1. Mitra, Raymond L. | Acting President & CEO |
| | 2. Dizon, Gloria V. | P |
| | 3. Legaspi, Amiel Duke P. | COS |

TREASURY DEPARTMENT

- | | | |
|----|----------------|-----------------------|
| 1. | Cruz, Magie R. | P (Officer-In-Charge) |
|----|----------------|-----------------------|

COMPTROLLER DEPARTMENT

- | | | |
|----|------------------------|-----------------------|
| 1. | Cabangangan, Josefa R. | P (Officer-In-Charge) |
| 2. | Tarrayo, Maita T. | P |
| 3. | Duque, Nely | P |

ADMINISTRATIVE SERVICES DEPARTMENT

- | | | |
|----------|--------------------------|-----------------------|
| I | 1. Bersamira, Annie N. | P (Officer-In-Charge) |
| | 2. Aguinaldo, Corazon T. | P |
| | 3. Rosario, Ranier | P |
| | 4. Ivan T. Ramber | COS |

LOGISTICS / PROCUREMENT DEPARTMENT

- | | | |
|----|---------------------|---|
| 1. | Tedios, Drussela C. | P |
| 2. | Andong, Isidro G. | P |



11-C MANPOWER RESOURCES

GENERAL SERVICES DIVISION

- | | | |
|----|----------------------|---|
| 1. | Atesora, Rey | P |
| 2. | Banta, Danilo | P |
| 3. | Costelo, Valerio | P |
| 4. | Cruz, Perry Jannsen | P |
| 5. | Gaylonon, Manolito | P |
| 6. | Monteflor, Rocel | P |
| 7. | Pepito, Eddie | P |
| 8. | Villagorda, Leonardo | P |
| 9. | Villagorda, Ricardo | P |

QUALITY ASSURANCE DEPARTMENT

- | | | |
|----|------------------------|-----------------------|
| 1. | Fahigal, Flordelino V. | P (Officer-In-Charge) |
| 2. | Magbanua, Ricardo T. | P |

MANAGEMENT SERVICES DEPARTMENT / BOARD SECRETARIAT / INTERNAL AUDIT

- | | | |
|----|--------------------|-----------------------|
| 1. | Cruz, Rosemarie I. | P (Officer-In-Charge) |
|----|--------------------|-----------------------|

MARKETING DEPARTMENT

- | | | |
|----|-----------------------|---|
| 1. | Castaneda, Phyllis O. | P |
| 2. | Solomon, Jonathan G. | P |



11-C MANPOWER RESOURCES

MAINTENANCE & ENGINEERING DEPARTMENT

- | | | |
|----|-------------------------|-----------------------|
| 1. | Lina, Marc Andrew B | P (Officer-In-Charge) |
| 2. | Aguila, Richard F. | P |
| 3. | Alarcon, Conrado T. Jr. | P |
| 4. | Amion, Agapito S. II | P |
| 5. | Eclarinal, Elmer T. | P |
| 6. | Rago, Mario L. | P |
| 7. | Villafuerte, Erdi E. | P |

MANUFACTURING DEPARTMENT

- | | | |
|----|--------------------------|---|
| 1. | Cañeso, Winefredo C. | P |
| 2. | Delgado, Rodel M. | P |
| 3. | Ebasco, Francis Erick R. | P |
| 4. | Hicban, Teodorico M. | P |
| 5. | Oliquiano, Angelina M. | P |
| 6. | Sisik, Roger B. | P |

EMPLOYEE TURNOVER

GRAND TOTAL 40



List of NDT Equipment:

Item#	Description	Part Number	QTY	UNIT
1	Magnetic Bench Magnafkux D960-R		1	Ea
2	Ultra Violet Light System	ZB-100	1	Ea
3.	Magnetic Bench Magnaflux H-700		1	Ea
4	Ultra Violet Light System H4		1	Ea
5	Demagnetizer Horizontal		1	Ea
6	Ultra Violet Light Sytem Portable	Brent A1025	1	Ea
7	Ultra Violet Light System Portable	Ardrox BC-190-2	1	ea
8	Ultra Viloet Light Meter Ardrex	BC-195	1	ea
9	Ultra Violet Meter Black Ray		1	ea
10	Ultra Violet Light Meter Spectroline	DM365X	1	ea
11	Gauss Meter Magnaflux	E-0764-R	1	ea
12	Gauss Meter Magnaflux	2480 (old)	2	ea
13	Gauss Meter Magnaflux		1	ea
14	Digital AC/FW Meter Magnaflux		1	ea
15	Pie Field Gauge Magnaflux	16979	1	ea
16	Magnetic Particle testing bar	Magnaflux 189838	1	ea
17	Cotinous Method Test Block	Magnaflux 75130	2	ea
18	Small parts Adaptor (head and tail)	Magnaflux 28471	1	Pair
19	Ketos Ring	19999	2	ea
20	Centrifuge Tube	Magnaflux 8493	3	ea
21	Centrifuge Tube stand	1837A	3	ea
22	Copper Braided Pad with clip	Magnaflux 18949	1	ea
23	Central conductor Copper ½ dia	(1ST-H-700) 11124	1	ea
24	Central conductor Copper ¼ x 3/8x1/2		3	ea
25	Quick Break Test	Magnaflux 148335	1	ea
26	Eddy Current Flow Machine Hocking Mini		1	ea
27	Eddy Current AC Adapter , 220-12V		1	ea
28	Eddy Current Probe	DR. CSONI S-645	1	ea
29	Eddy Current Probe	DR. CASONI S-628	1	ea
30	Eddy Current probe	DR CASONI S-637	1	ea
31	Eddy Current Probe	DR. CASONI S-233	1	ea
32	Eddy Current Probe	DR. CASONI S-320	1	ea
33	Eddy Current Probe	DR. CASONI S-636	1	ea
34	Eddy Current Circular Test Piece	DR. CASONI ¼	1	ea



List of NDT Equipment:

Item#	Description	Part Number	QTY	UNIT
35	Eddy Current Circular Test Piece	DR. CASONI 7/16	1	ea
36	Eddy Current Circular Test Piece	DR. CASONI 3/8	1	ea
37	Eddy Current Circular Test Piece	DR. CASONI 5/16	1	ea
38	Eddy Current Circular Test Piece	DR. CASONI 9/16	1	ea
39	Eddy Current Circular Test Piece	DR. CASONI 1/2	1	ea
40	Eddy Current Bore	DR. CASONI 1/4	1	ea
41	Eddy Current Bore	DR. CASONI 7/16	1	ea
42	Eddy Current Bore	DR. CASONI 3/8	1	ea
43	Eddy Current Bore	DR. CASONI 5/16	1	ea
44	Eddy Current Bore	DR. CASONI 9/16	1	ea
45	Eddy Current Bore	DR. CASONI 1/2	1	ea
46	Eddy Current Reference Standard	S211 7075T6-4350R7	1	ea
47	Eddy Current Reference Standard	S211 7075T6-4349R4	1	ea
48	Eddy Current Reference Standard	S211 7075T6-4348R3	1	ea
49	Eddy Current Probe Leads Jaeger to Len		4	ea
50	Hocking Eddy Current Probe	105P4	1	ea
51	Hocking Eddy Current Probe	121P1A	1	ea
52	Hocking Eddy Current Probe	122P1A	1	ea
53	Hocking Eddy Current Probe	5P308	1	ea
54	Hocking Eddy Current Probe	700P16A	1	ea
55	Hocking Eddy Current Probe	29P158	1	ea
56	Hocking Eddy Current Probe	29P353	1	ea
57	Hocking Eddy Current Probe	5P301	1	ea
58	Hocking Balance Load	5A058	1	ea
59	Hocking Balance Load	5A083	1	ea
60	Probe Lead Eddy Current Hocking	ABS29A001	1	ea
61	Probe Lead Eddy Current Hocking Difference	5A018	1	ea
62	Probe Lead Eddy Current Hocking	ABS5A173	1	ea
63	Ferous Test Block Hocking	29A028	1	ea
64	Aluminum Test Block		1	ea
65	Guide Book with stand		1	ea
66	Test Panel Star Burst		1	ea
67	Aluminum Comparator		1	ea
68	Stainless Tank water washable 4x2		1	ea



List of NDT Equipment

Item#	Description	Part Number	QTY	UNIT
69	Stainless Tank 2x2 Meter Emulsifier		1	ea
70	Stainless Tank 2x2 Meter Emulsifier		1	ea
71	Stainless Rinsing Tank		1	ea
72	Stainless Tank , 4x2 , 667 Ardrex		1	ea
73	Water Displacing Fluid , 2x2 meter		1	ea
74	Degreasing Tank , Trichloro		1	ea
75	Washing Basket Stainless Steel		6	ea
76	Stainless Steel tray		4	ea
77	Chemical Aprons		1	ea
78	Inspection Table		1	ea
79	Inspection Booth		1	ea
80	UV Google Dura Guard American Optic		1	ea
81	Graduated Cylinder K Max		1	ea
82	Graduated Flash Pyrex		1	ea
83	Full Face Shield Fibre Metal		1	ea
84	MSA Full Face Filter Mask		1	ea
85	Oven Electric Qualtex		1	ea
86	Dust from cabinet developer		1	ea
87	Air Filter CKD ISOVG32/6J		1	ea
88	CKD Air Regulator		1	ea
89	Refractometer"Link" Handheld		1	ea
90	Ultrasonic Flaw Machine Krautkramer		1	ea
91	Transducer 40 deg S211 Shear/ 49 deg		1	ea
92	Transducer 54 deg. S211 Shear		1	ea
93	Kidney Reference Standard		1	ea
94	Adapter Krautkramer		1	ea
95	Lead Transducer LEMO 3/ LEMO 4		1	ea
96	Ultra Doc Flaw-Krautkramer Configuration		1	ea
97	UD 15 Cable Interface		1	ea
98	White Inspection Light Cord (6m)		1	ea