RESTRICTED

(01)

PRE- FLIGHT, THRU - FLIGHT & POST FLIGHT

INSPECTION WORK CARD

FOR

PT-6 AIRCRAFT

ENGINE

PUBLISHED UNDER AUTHORITY
OF THE ACAS MAINTENANCE
BANGLADESH AIR FORCE

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RESTRICTED

PRE- FLIGHT, THRU FLIGHT, POST FLIGHT AND SPECIAL INSPECTIONS WORK CARDS.

BAF SERIES

PT-6 AIRCRAFT

Art No	Amendment Incorporated	Signature & Date

INSTRUCTION

1. It is the responsibility of all personnel to report any unserviceability of item assembly and make necessary entry in AFTO Form 781A.

2. A visual inspection includes checking for all types of wear, damage, corrosion, security, chaffing, in fact for the complete well-bing of tile particular item in addition to cleanliness,

3. A Functional Check is where the operation of the item or service in question is required to determine its serviceabliry.

4. Suggestion affecting changes are to be forwarded to ACAS (M) Air HQ, Dhaka.

SECTION III - Post-Flight.
To be accomplished after the last flight of the day.

SECTION IV- Special Inspection.

4. Suggestion affecting changes are to be forwarded to ACAS(M) Air HQ, Dhaka.

Note:- If for some particular reason the "Inspection after the last flight of the day" has not been carried out, it is imperative that it be performed before the first flight of the following day.

SECTION-I
PRE-FLIGHT INSPECTION
WORK CARDS
PT-6 AIRCRAFT

INTRODUCTION

1. The Pre-Flighl Inspection will be accomplished prior to the first flight of the day. The inspection consists of checking the aircraft for flight preparedness by performing visual examination and operational checks of certain components to ensure no defect or mal-adjustment exists that could cause accident or aborted missions.

PRE - FLIGHT INSPECTION PREPARATION

1. AFTO Form 781 for reported discrepancies.
2. Engine and Propeller covers removed.
3. Exhaust pipe lid and air intake duct shield/covers removed
4. Necessary panels, cowling opened.
5. Fire extinguisher available

A. NOSE SECTION (Up to fire wall)

1. Inspect propeller for the following:
   a. Propeller fur damage, crack, dents, cleanliness and security.
   b. Oil container for leak, damage and cleanliness.
   c. Cap for security and cleanliness.
   d. Counter weight for security.
   e. Rotate propeller two cycles by hand for easy operation.
2. Inspect shutter for :
   a. Damage, crack, deformation, bent and security.
   b. Links tor engagement, bent and security.

c. Locking pin of quick removable shutter (access for CSU) for proper insertion and security.Ensure that it is wire laocked,

3. Inspect cowling for:

a. Damage, crack, deformation, loose rivets and cleanliness.

b. Lock clutches, for serv iceability and security,

c. Fastener for serviceability and security. Ensure the head cul portion of fastener is in line with the skin marking of the aircraft marking.

4. Engine exhasut piepe for cleanliness and security.

5. Check for a good lock out of cylinder studs.

a. To check the stud nuts and exhaust pipes of the cylinder meticulously.

Auth: Air HQ/6579-510/FS/Vol-1/E-46AB dt 27 Jun 06

6. Vent tube of gasoline tank for damage, creack & security Port for opening or any obstruction.

7. Air inlet heating box damage and security.

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8. Drain out sediment from AIR-water separator on the fire wall. Check for security,

9. Inspect oil tank for:

a. Quantity of oil specified limit (14 to 17 litres).

b. Cap seal for damage, locking and security.

c. Accessible components, pipe lines, connections, for locking, damage, chaffing fuel and oil leaks and security (up to fire wall).

d. To incl name or part no (as applicable) or incl hose and line which would assure more attn or grd crew to those during insp.

Auth: Air HQ/6579-108/FS/Vol-01/E-11AB dt. 29 Jan 08.

10. Check visually for firm fixation and secuirty of air compressor.

a. Engine mounting bushes are to he checked by the grd crew thoroughly during all pre-flight checks.

Auth: Air HQ/6579-624/FS/V-1/E-27AB A. 22 Scp 02.

11. Check generator/air compressor cooling duct for cleanliness, crack and security.

B. LEFT, RIGHT AND CENTRE WINGS

1. Inspect Right Wings for:

a. Fuel tank:

i. Tank quantity specified limit (20-30mm) below the filler neck.

ii. Cap seal for damage ,looking and security.

2. Main air intake for foreign bodies, dirt greass and cleanliness.

3. Inspect Right Wings for :

a. Fuel Tank:
   i. Repeat No 'B' 1 (a) (I) and (II).

4. Inspect centre wing for :

a. Drain pipe line hole in the bottom of the middle wing for obstruction, damage., cleanliness & seicurly.

b. Access panels for damage, cleanliness & security.

C. COCKPITS

1. Inspect Front Cockpit for:

a. Magneto switch is at 'ZERO' position.
b. Throttle for free smooth movement.
c. Remove all the covers of control levers for damage looseness locked and secured.
d. Inspect fuel and oil quantity as specified,
e. Mixture lever fully back and wire locked.

2. Inspect Rear Cockpit for;

a. Repeat No"C" I(a) - I(c)
b. Ignition selector switch for 'UP' position.

c. Mixture lever fully back and wire locked.

D. ALL AREAS

1. Fuel system for leakage, accessible pipe lines, components, connections for chaffing, damage and leak.

2. Oil system for leakage, pipe lines for chaffing, damage and security.

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3. Drain out the accumulated oil from 4,5 & 6 cylinder before ground run (Repeat the process of drain out of accumulated oil in similar manner if the ac remain idle for more than 19 mnts). Ensure drain plugs (03) are brought down before starting the engine.

4. All electric/radio cables are properly cleaned and ac./engine controls are free from obstruction.

5. Operate the hand pump to check the leakage in gasoline system.

FINAL OPERATION

1. Engine to be given ground run as per the ground run cycle and various parameters to be checked for normal operation.

(a) Start up Procedure

Fire extinguisher	:	In place
Main pneumatic pressure	:	35-45 Kg/Cm^2
Emergency pneumatic pressure	:	45-50 Kg/Cm^2.
Obtain clearance	:	From R/cockpit and ground crew.
Ignition	:	Off, Selector switch up, confirm from R/cockpit.
Prime	:	3-5 times in summer and 5 7 times in winter primer in & locked at 90^0.
Brakes & rudder	:	Hold.
First five switch from left	:	On
Magneto	:	1+2 position in both the cockpit & selector switch up in R/cockpit.
Propeller	:	Check clear.
Throttle	:	Place in 1 cm ahead from the rear.
Starting button	:	Press till eng starts (But not more than 30 sec)

Check rpm	: 800-900.
Minimum oil pressure	: 1.5 Kg/Cm^2.
Minimum fuel pressure	: 0.15 Kg/Cm^2.

(b) **Eng Wrmup**

Advance the throttle	: 1200 -1400 rpm
Generator light goes off	: 1000±50 rpm
Eng shutter	: Close (If CHT below120^{0}C)
Radiator shutter	: Close (If oil temp below 30^{0}C.
CHT	: 120^{0}C
Oil temp	: 30^{0}C

CAUTION : If oil pressure and fuel pressure do not build up within 01 min, shut down the eng immediately.

FALSE START

If false start occurs, make sure all the switches off (bail sw, both the magneto at zero), throttle and pitch lever fully forward position, Rotate the propeller 3 - 4 times in opposite direction and 6 - 8 times in normal direction. Follow the previous procedure upto 3rd tierns (do not try more than three limes). Hand over the ac for nec rect.

(c) Check the Generator Voltage

Advance the throttle	: 1600 - 1700 rpm
Next five switch	: On
Press the av meter knob	: Check generator voltage 27.5 ± 1volt.

(d) Check the Eng Operation in Rated

Advance the throttle	: 2300 rpm
Pull the pitch lever to decrease	: 50 rpm

Then advance the throttle fully open position at this moment.

Eng speed	: 2250±20rpm
Boost pressure	: PO+80±10mm
Oil pressure	: 4 - 7 Kg/Cm^2
Fuel pressure	: 0.2 - 0.5 Kg/Cm^2.
Oil inlet temp	: 30^0C - 75^0C
CHT	: Not more than 230^0

(e) CSU Check

Advance throttle to 2300 rpm, then:

(1) Adjust rpm to 2250 by pitch lever.

(2) Advance throttle fully forward, check rpm 2250.

(3) Retard the throttle by 100-150mm boost,
(4) RPM needle gain to 2250 rpm within 2-3 sec.

(f) Coarse Pitch Cheek

(1) Throttle fully forward.
(2) Pitch lever fully back.
(3) Check rpm 1500-1600 (Pitch fully coarse).

(g) Take Off Op Check

(1) Throttle and pitch lever-fully forward,

(2) Check : rpm 2350±1%.
: Boost amb press+85±
: 10mm Hg
Temp & press normal.

(h) Magneto Check

: RPM 1950
: Mag 2; rpm drop 75
: Mag(1+2);rpm 1950
: Mag1 ; rpm drop 75
: Mag (1+2); rpm 1950

Note : At -1950 rpm, let the left and the right magneto work individually for 15-20 sec. Before employing the left and the right magnetos alternatively, both magnetos should work 20-30 sec simultaneously.

(i) **Acceleration check**

(1) Open throttle from idle to full open in 2-3 sec.

(2) Check the engine rpm pick up evenly from idle to take off rating.

(j) **Idle Operation Check**

Throttle to idle position : RPM 500±50
: Oil press min 1.5 Kg/Cm^2
: Fuel press 0.15 Kg/cm^2

(k) **Cool Down the Eng**

(1) Throttle position : 700-800 rpm

CHT : 150°C (HOAT<25°C)
: 165°C (HOAT>25°C)

(l) **Shut Down the Eng**

(1) Throttle position : 1900 rpm (For 10-15 Sec).
(2) Retard tile throttle : 600 - 700 rpm

(3) Switch off the magneto.

(4) Advance the throttle fully open position rapidly.

(5) All the switch off.

(6) Throttle & pitch lever fully back.

(7) After grd run during pre fit insp of PT- 6 AC, all the hoses and lines are to be insp again opening the cowling for any oil or fuel leakage.

Auth: AirHQ/6579 - 108/FS/Vol-01/E-11AB dt. 29 Jan 08.

CAUTION : Do not touch the propeller when CHT remain above 80^0C to avoid accident.

2. Ail the removed panels, hatches, cowlings are reinstalled, Check for locking and security.

3. Exterior of the aircraft visually for any fuel, grease, dirt and spot.

4. Surrounding of the ac are cleared far any foreign bodies, rags, or loose equipment.

5. Check reverse current flow during ground run. (Not more than - 5 amps.)

6. Make necessary Pre-Flight entries in AFTO Form-781.

7. Checking of throttle position before hand cranking of engine.

8. On completion of pre flt insp, make sure no foreign object or tools are left in the cockpit. Close the canopy, use canopy cover during summer

SECTION-II

AFTER FLIGHT & THRU FLIGHT INSPECTION

WORK CARDS

PT-6 AIRCRAFT

INTRODUCTION

1. Thru-Flight Inspection will be accomplished after each flight when another flight is anticipated during the day. The inspection consists of checking the aircraft to determine if it is suitable for another flight by performing visual examination and Operational checks of certain components to assure that no defects exist which would be detrimental to further flight.

THRU FLIGHT INSPECTION

Accomplish immediately after landing.

1. Observe run down for unusual noises, and that engine comes to rest freely.

Note

Minimum run down periods 45 Sec.

2. Obtain pilot's report from previous flight.

3. All electrical switches 'OFF'

Note

If limits have been exceeded the requirement for inspection in accordance with current instruction to be accomplished.

If Aircraft is to fly more than once, service and inspect as follows :

1. Service aircraft with fuel and oil and make entries in F-781.
2. Propeller and Cap-visiually.
3. Guide vane and shutter-visually
4. Cowling and lock clutch-visually.

5. Engine exhaust pipe-visually.
6. Fuel and oil leak-visually.
7. All switches set to off.
8. Drain out the accumulated oil from 4.5 & 6 cylinder if the engine remain idle more than 19 mnts.
9. Oil quantity must be checked on third sorty of the day.

WORK CARDS

PT-6 AIRCRAFT

INTRODUCTION

1. The Post Flight Inspection will he accomplished after the last flight of the day. This inspection consists of checking the aircraft to determine if it is suitable for another flight by performing visual examination of certain components, areas or systems to assure that no defects exist which would be detrimental to further flight.

POST - FLIGHT INSPECTION PREPARATION

1. AFTO Form 781 for reported discrepancies.
2. Engine and propeller covers removed.
3. Exhaust pipe-lid and air intake duct shield covers removed if any.
4. Necessary panels, cowling opened.
5. Electrical switches "OFF".
6. Fire Extiguisher available.

A. NOSE SECTION (Up to fire wall)

1. Inspect the propeller for the following ;
   a. Propeller for damage, crack, dents, cleanliness and security.
   b. Propeller cap, oil container & counter weight for serviceability. Oil leak & security.
   c. Propeller for easy operation (rotate the propeller by two cycles. The compression force should not be less than 3.5 Kg/Sq Cm).

2. Inspect shutter for:

a. Guide vane and shutter for crack, deformation & security. (The gap between the shutters should not be more than 0.6 mm).
b. Links for engagement, bent & security.
c. Locking pin of quick removable shutter (access for CSU) tor proper insertion &. security. Ensure propel wire locking and security.

3 . Inspect Cowling for ;

a. Damage, deformation, loose rivets & cleanliness.
b. Lock clutches for serviceability & security.
c. Fasteners for serviceability & security. Ensure that the head cut portion of the fastener is in line with the skin marking of the aircraft.

4. Engine exhaust piple for cleanliness & security.

5. Vent tube of gasoline tank for damage crack & security.

6 Air inlet heating box for damage & security.

7. Speed adjuster for damage, crack and serviceability.

8. Rocker arm connection with the driving shaft and its security. Lubrication as necessary.

9. Sump and filter for leakage.

10. Visual check for firm fixation and security of air compressor.

11. Check generator and air compressor coling duct for cleanliness, crack and security.

12. Inspect the cylinder for the following:

a. Connected surface of cylinder and casing for leakage.

b. Push rod sleeve, rocker arm shaft and rocker arm chamber covet for leakage.

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c. Spark plug electric cable for looseness.

d. Shield for wear and damage.

e. Air intake lube for proper fixation, deformation (Ensure the gap between the air intake tube & engine support ring should not be less than 2 mm).

f. Cylinder baffle for proper fitting.

g. Check for a good look out of cylinder studs.

13. Accessible fuel system an accessories for leak, damage, piple lines for chaffing proper cleating serviceability and security.

14. Accessible oil system and components for leak, looseness of connection pipe line for chaffing, wear damage, cleanliness and security.

15. Air compressor & its vent pipes for serviceability, looseness and security.

16. Air filler for cleanliness (Remove filter & clean it properly)

17. Magneto & its switch for serviceability. Mounting seat for leakage.

18. Engine support for fixation, attachment lug & welded seam for cracks.

19. Oil tank for looseness, crack & leakage.

20. Fire wall oil filter, heat sensor & pipe lines for crack leak,damage and security

21. Bending wires for breakage.

22. Inspect deceleration casing tube to atmosphere for injection oil.

23 Carburetor for security & serviceability.

24. Starting distributor and its pipe for wear, damage & serviceability.

25. Inspect air tightness of the fuel system (Ensure no leakage in the system during pressurization by hand pump).

26. Cleaning and lubrication :

a. Remove air intake duct proof filter of carburetor and clean it. Apply a coat of liquid fuel and oil on it. Fit it back.

b. Remove the filter of the oil pump, clean and fit it back.

c. Drain out the sediment of the oil water separator.

d. Clean and apply a coat of anti-rust oil on the surface of the exhaust tube.

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B. COCKPIT

1. Inspect the front & rear cockpit for:

a. Magneto switch for serviceability at "ZERO" position.

b. Throttle for free & smooth movement. Lubricate as necessary.

c. Fuel and oil quantity as specified.

FINAL OPERATION

1. All the removed panels, cowlings are to be re-installed and check for locking and security.
2. Engine and Propeller covers are to he reinstalled.
3. Surroundings are cleared.
4. Make necessary post flight inspection entries in AFTO Form 781.

10 HRS INSP

High pressure spacer piece of both magnetos are to be insp in every after 10 hrs instead of 25±5 hrs pd insp of eng.

Auth: Air HQ/6579 - 412/FS/V -1/44AB dt. 28 Aug 07.

SECTION - IV
WEEKLY MAINTENANCE INSPECTION WORK CARDS

WEEKLY MAINTENANCE

1. External condition of the engine accessories are to be checked visually
2. Drain approx 0.5 ltr of oil from oil sump, clean and fitt it back.
3. Tightness of inlet and exhaust pipes is to be checked,
4. Check all locking points for proper security,
5. Check all engine nuts/bolts for missing/looseness.
6. Both inner and outer side of the engine cowling is to be cleaned properly and thoroughly check for dents, cracks, damage etc.
7. Anti-rust oil is to be applied to the exhaust pipes if required.
8. Filter screen of lower cowling is to be checked and cleaned in each weekly maint day.

MISC INFORMATION

MISC INFORMATION

ENGINE

Type	:	HOUSAI-6A
Number of cyl	:	9 Cylinders
Arrangement	:	Single row, radial.
Max HP (take of rating)	:	285-2%HP
Weight	:	200-2%Kg
0/H Sequence	:	600 lire, 500 hrs, 500 hrs 400hrs (life exp)
Life before 0/H	:	600 hrs.
Octane rating of fuel	:	Not less than 70
Oil type	:	HP-20 Aeroshell W-100 (AeroshellW-120)

Fuel Consumption

On ground	:	24 lit/hr
On air	:	60 lits/hr
Fuel capacity	:	162 lits(2x77+ 8)
Oil consumption	:	I·9 lits/hrs
Oil filled	:	14- 17 lits
Total life ofeng	:	2000 hrs

Propeller

Propeller type	:	J9-G1

Propeller diameter	:	2.4 m
Propeller direction of rotation	:	Counter clock wise from cockpit (viewed from the rear)
Fine pitch	:	16^0
Coarse pitch	:	31"30'
Setting angle of balance Wt	:	25^0

LIMITATION/TOLERANCE

CHT:

CHT difference between both cockpit	:	30^0C
CHT for continuous operation	:	230^0C
CHT for 15 min operation	:	240^0C
CHT for 05 min operation	:	250^0C
CHT for normal operation	:	140^0C-210^0C
Minimum op range CHT	:	120^0C

Oil Temp

Max for 15 min	:	85^0C
Max return oil temp	:	125^0C
Oil feeding temp	:	50^0C-65^0C
Max permissible	:	75^0C

Oil Pressure

Min	:	I.5 Kg/Cm^2
Normal	:	4-7 Kg/Cm^2
Max	:	7 Kg/Cm^2.

Fuel Pressure

Mim	:	0.15 Kg/ Cm^2
Normal	:	0.2-0.5 Kg/ Cm^2
Max	:	0.5 Kg/ Cm^2
Needle fluctuation	:	0.1 Kg/ Cm^2 allowed

RPM

Idle	:	500±50
Min (wrth coarse pitch)	:	1500-1600
Max in dive	:	2450±1% (boost 500mm)
Mag drop (max)	:	75
Fluctuation allowed	:	40
Cockpit tolerance	:	± 35