STUDENT HANDOUT

OH-58 TRANSITION/GUNNERY IPQC

JUNE 1971

UNITED STATES ARMY AVIATION SCHOOL

FORT RUCKER, ALABAMA

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

TABLE OF CONTENTS

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

June 1971
File No. 41-4525-1
56-4525-1

TRAINING OBJECTIVES

INTRODUCTION AND GENERAL INFORMATION, OH-58A

1. OBJECTIVE: Given a drawing of the OH-58A with structural sections numbered, the student, with the aid of notes and references, will be able to write the nomenclature of structural sections in accordance with TM 55-1520-228-10.

2. OBJECTIVE: Given a drawing of the OH-58A with major components numbered, the student, with the aid of notes and references, will be able to write the correct nomenclature of at least 25 of 25 components in accordance with TM 55-1520-228-10.

3. OBJECTIVE: Given a series of questions on the description and location of components and equipment used on the OH-58, the student, with the aid of notes and references, will be able to answer at least seven of eight questions correctly in accordance with TM 55-1520-228-10.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

June 1971
File No. 41-4525-2
56-4525-2

STUDENT OUTLINE

INTRODUCTION AND GENERAL INFORMATION, OH-58A

1. Introduction to the course.

2. Description.

   a. Manufacturer.

   b. Type.

3. Structure

   a. Forward section.

b. Intermediate section

c. Aft or Tail Boom section

4. Dimensions.

5. Capabilities.

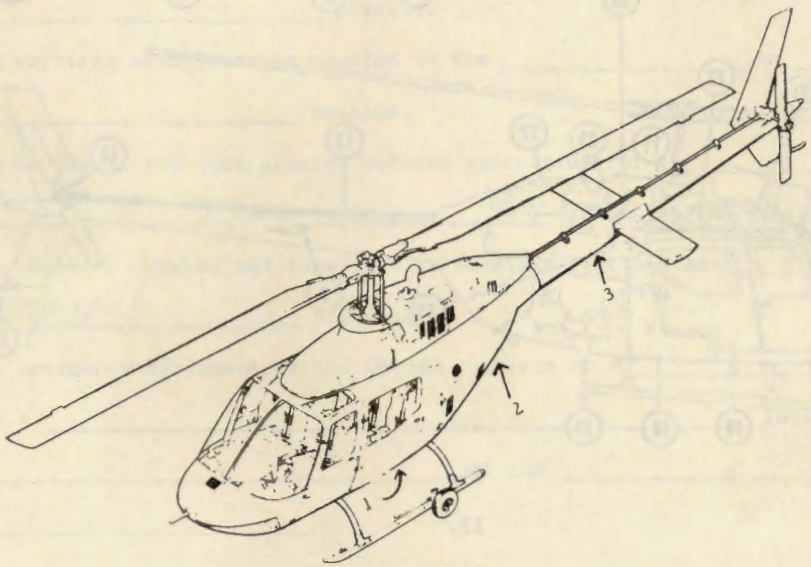
UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

June 1971
File No. 41-4525-1
56-4525-1

COMPREHENSION CHECK

INTRODUCTION AND GENERAL INFORMATION, OH-58A

1. Fill in the nomenclature of the numbered fuselage sections of the OH-58A helicopter on the attached drawing, in the spaces provided below.

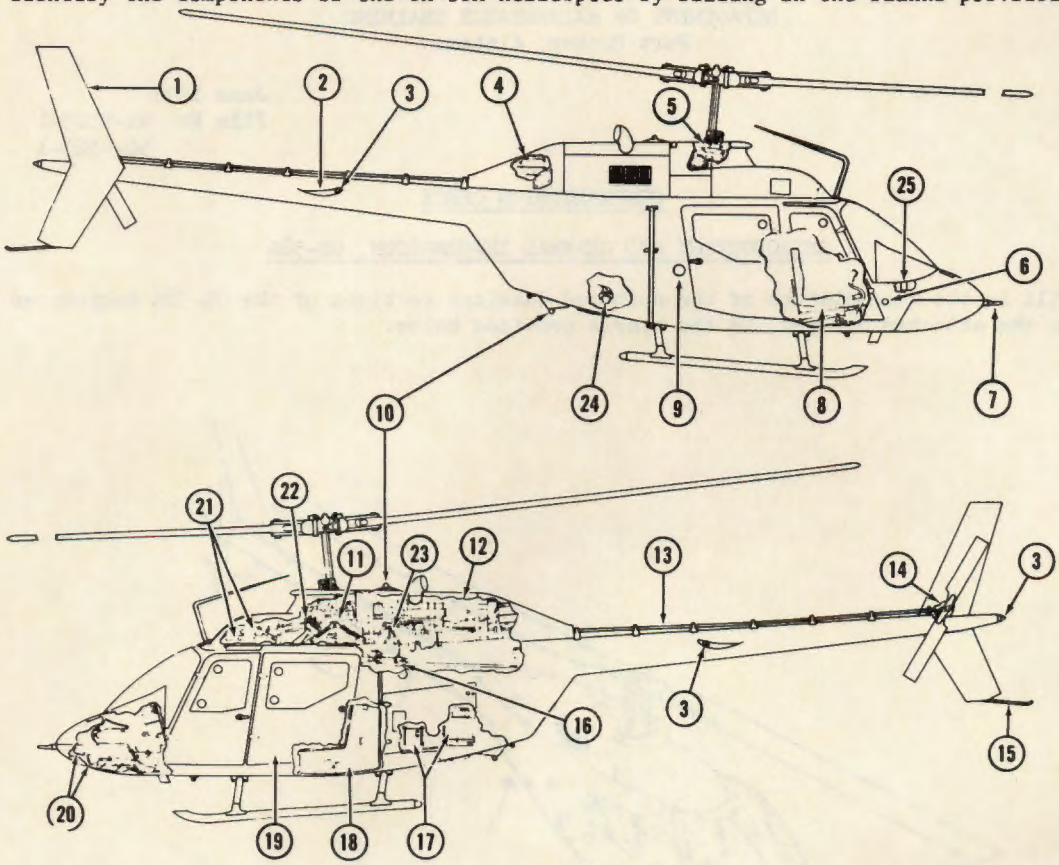


1. _____.

2. _____.

3. _____.

2. Identify the components of the OH-58A helicopter by filling in the blanks provided.



1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.
23.
24.
25.

3. Enter word or phrase in blank spaces or complete the statements.

a. The OH-58A is an _____ type helicopter.

b. The OH-58A structucture is composed of the Forward Section, intermediate section and aft or tail boom section.

c. The skid-type landing gear is attached to the forward aft bulkheads of the helicopter structure.

d. The windshield and lower windows are constructed of _____ _____. The sky light windows are made of _____ _____ plastic.

e. The vertical stabilizer is mounted to the _____ or _____ _____ section.

f. The OH-58A is provided passive defense protection for the _____, _____ and _____ section of the engine.

g. The OH-58A's forward and intermediate fuselage sections are honeycomb structures.

h. The emergency equipment of the OH-58A consists of a _____ _____ and a _____ _____ _____ located on the _____ _____ of the _____ _____ _____.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4535-1

TRAINING OBJECTIVES

INSPECTIONS

1. OBJECTIVE: Given TM 55-1520-228-10 (CL) and an OH-58A helicopter the student will be able to point out any before flight inspection point on the aircraft and explain the inspection requirement when called upon by the instructor.

2. OBJECTIVE: Given TM 55-1520-228-10 (CL) and an OH-58A helicopter the student will be able to perform a before flight inspection (excluding engine runup).

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4535-1

STUDENT OUTLINE

INSPECTIONS

1. Preparation for flight.

2. Exterior check.

3. Interior check.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4526-3

TRAINING OBJECTIVES

T-63 POWER PLANT AND RELATED SYSTEMS

1. OBJECTIVE: Given a series of questions on the description and operation of the T63-A-700 engine and accessories, the student, without the aid of notes and references, will be able to answer at least 8 of 10 questions correctly in accordance with TM 55-1520-228-10, -20.

2. OBJECTIVE: Given a drawing of the T63-A-700 engine with 4 major sections numbered, the student, without the aid of notes and references, will be able to write the correct nomenclature of the 4 engine sections in accordance with TM 55-1520-228-10, -20.

3. OBJECTIVE: Given a drawing of the T63-A-700 engine and accessories, the student, without the aid of notes and references, will be able to write the correct nomenclature of at least 6 numbered accessories in accordance with TM 55-1520-228-10, -20.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4526-4

STUDENT OUTLINE

T-63 POWER PLANT AND RELATED SYSTEMS

1. General Information.

2. **Engine assemblies.**

3. **Lubrication system.**

4. **Fuel system.**

5. **Engine electrical system.**

6. **Engine instruments.**

7. **Engine out warning system.**

8. **Engine controls.**

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4526-4

STUDENT WORKSHEET

T-63 ENGINE MAINTENANCE

1. Rigging N1 power controls.

   a. Procedures.

      (1) Initial rigging, install related components, leaving the adjustable ends disconnected.

      (2) Position twist grip throttle to the flight idle position.

      (3) Position the bell crank 15" forward of its centerline, then adjust the aft end of the controlex cable to fit.

      (4) Position the arm on the fuel control .5" below parallel of its pivot point with the fuel control pointer at the 30° mark and secure.

      (5) Adjust the aft control tube as necessary to assure that the fuel control stops are contacted prior to the twist grip throttle bottoming. This sometimes is referred to as throttle cushion.

      (6) Run the throttle through full travel and assure that full OFF the pointer indicates 0-5°; at flight idle. The pointer should indicate 30°; and at full open the pointer should indicate 90°. Read just as necessary.

   b. Rigging after engine run-up.

      (1) Check gas producer tachometer rpm gage. At the flight idle position, the gage should read 62½% and the pointer on the fuel control should indicate 30°.

      (2) Adjust the idle screw as necessary on the fuel control to obtain a 62½% reading on the N1 gage. 1/8 of a turn clockwise on the idle screw will increase the rpm approximately 5%.

2. Rigging N2 power controls.

   a. Procedure: Insure that collective system is properly rigged.

      (1) Inspect and insure that shear rivit is intact.

      (2) Adjust the control tube between the torque tube and linear actuator to its normal length which is rod end at mid travel.

      (3) Install the same tube in the middle hole on the outboard end of the torque shaft.

      (4) Adjust the washer on linear actuator to obtain 3/4" travel, and install the forward end of the actuator in the middle hole of the bellcrank.

      (5) Adjust the lower stop screw on the governor so that .06" threads are

exposed. Beyond the mounting boss (do not adjust the upper stop screws).

(6) Install BHC arm 90° to the centerline of the governor stop arm.

(7) Position the collective stick full up, the actuator to full retract. (Full increase); position the governor arm 30° forward of its vertical axis; then adjust the actuator rod end to fit and secure.

3. Rigging after engine run-up.

a. Place collective in full down position. Move actuator control (BEEP) switch from full decrease to full increase. The N2 tachometer gage should indicate an rpm spread of 6%. Adjust the actuator washer to obtain the correct rpm spread. Two (2) turns of the stop screw will change the rpm spread approximately 1%. Place the actuator somewhere in the mid travel to prevent internal damage to the actuator while making adjustments.

b. Adjust the rod end on the aft end of the actuator to position the rpm spread between 97% and 103%. Do not exceed 3/4" adjustment on the rod end of the actuator. Reposition the arm on the governor, if necessary. One turn on the rod end equals approximately 1/2% N2.

c. At full down collective and full decrease position on the actuator, position the lever stop screw and bolt to provide a 010" clearance.

4. Rigging after test flight.

a. N2 rpm should remain constant as selected throughout collective travel in flight.

b. Reposition the control tube at the torque tube attach point on the actuator in the bellcrank attach point if droop should occur. Both attach points have three holes for droop compensation. Any combination of the attaching points may be used.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4526-3

COMPREHENSION CHECK

T-63 POWER PLANT AND RELATED SYSTEMS

1. In his own words, the student will fill in blank spaces of the following questions:

   a. The power plant is designated as T63 A700 Internal combustion free turbo shaft engine

   b. What is one advantage of a free turbine? _____

   c. The compressor is composed of how many stages? 7 Axial / centrifugal

   d. What section gives main support to the rest of the engine? Accessory Gear Box

   e. What is the purpose of the air bleed valve? Prevents compressor stall

   f. The continuous operating engine oil pressure is? 110-130 PSI

   g. Fuel to the fuel nozzle is metered within what unit? GPFC

   h. Igniter firing ceases when Trigger is released.

   i. All internal combustion engines must have four principles in order to operate. They are intake, compression, combustion, and exhaust.

   j. Normal engine operation is at what throttle setting? Full Open

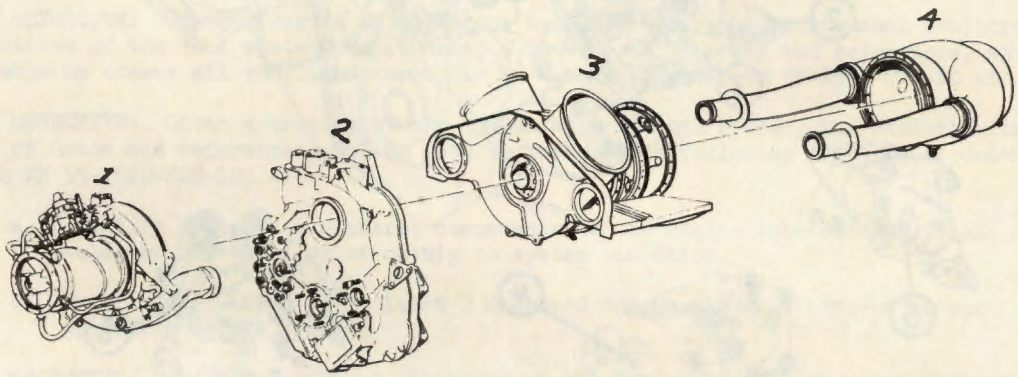
2. Without the use of references, the student will match correctly the number of each section in the diagram below with its related number adjacent to section nomenclature.

4 Combustion section

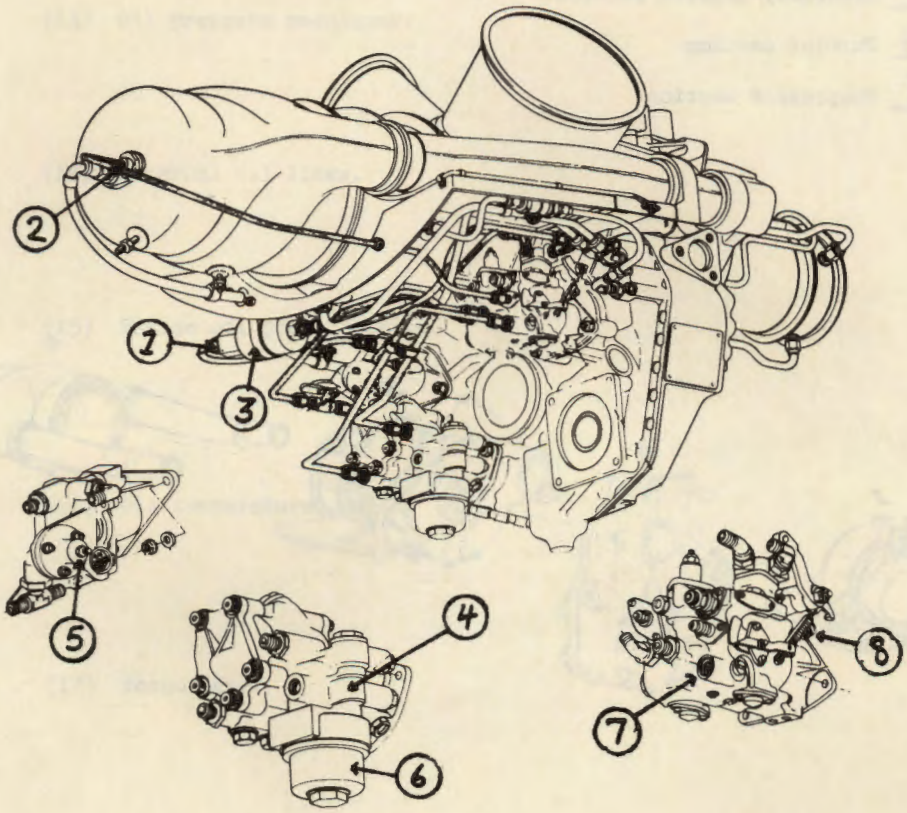
2 Accessory gearbox section

3 Turbine section

1 Compressor section



3. Match names of components with items on Schematic Drawing.



4 Fuel pump

8 Power turbine governor

____ GPFC indicator lever

____ Check valve assembly

____ Gas producer fuel control

6 Fuel filter

3 Accumulator

2 Fuel nozzle

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4527-2

TRAINING OBJECTIVES

OH-58A FUEL AND ENGINE LUBRICATING SYSTEMS

1. OBJECTIVE: Given a drawing of the OH-58A aircraft fuel system, the student, with the aid of notes and references, will be able to perform the following tasks in accordance with TM 55-1520-228-10, -20.

   a. Identify at least 7 numbered components of the fuel system selected for their relationship to system operation.

   b. Write the function of at least 4 numbered components from which instrument or caution light indications are received to monitor system operation.

2. OBJECTIVE: Given a series of questions on the description, instrument monitoring and operation of the fuel system, the student, with the aid of notes and references, should be able to answer all questions correctly in accordance with TM 55-1520-228-10 and -20.

3. OBJECTIVE: Given a drawing of the OH-58A aircraft oil system, the student, with the aid of notes and references, will be able to perform the following tasks in accordance with TM 55-1520-228-10, -20.

   a. Identify at least 6 numbered components of the engine lubrication system selected for their relationship to system operation.

   b. Write the function of at least 3 numbered components that affects proper operation of the system.

4. OBJECTIVE: Given a series of questions on the description, instrument indication, and operation of the engine lubricating system, the student, with the aid of notes and references will be able to answer all questions in accordance with TM 55-1520-228-10, -20.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4527-2

STUDENT OUTLINE

OH-58A FUEL AND ENGINE LUBRICATING SYSTEMS

1. Fuel system, OH-58A.

   a. Type.

   b. Capacity.

   c. Components.

      (1) Fuel cell.

      (2) Boost pump.

      (3) Fuel quantity transmitters.

      (4) Sump valve.

(5) Auxiliary fuel cell connector.

(6) Low level switch.

(7) Pressure switch.

(8) Vent line.

(9) Fuel shut off valve.

(10) Engine inlet fuel hose.

(11) Fuel pump.

(12) Fuel filter.

(13) Gas producer fuel control and power turbine governor.

(14) Engine fuel lines.

(15) Fuel nozzle.

2. Oil system, OH-58A.

a. Type.

b. Capacity.

c. Components.

(1) Oil tank.

(2) Oil cooler.

(3) Oil cooling fan and shaft assembly.

(4) Oil bypass valve.

(5) Low level switch.

(6) One-way check valve.

(7) Temperature bulb.

(8) Drain valve.

(9) Oil supply system hoses, fittings and tubing.

(10) Chip detector.

(11) Engine oil pump assembly.

(12) Oil filter.

(13) Oil pressure regulator.

(14) External oil lines.

(15) Engine oil pressure gage.

(16) Oil temperature gage.

(17) Torquemeter.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

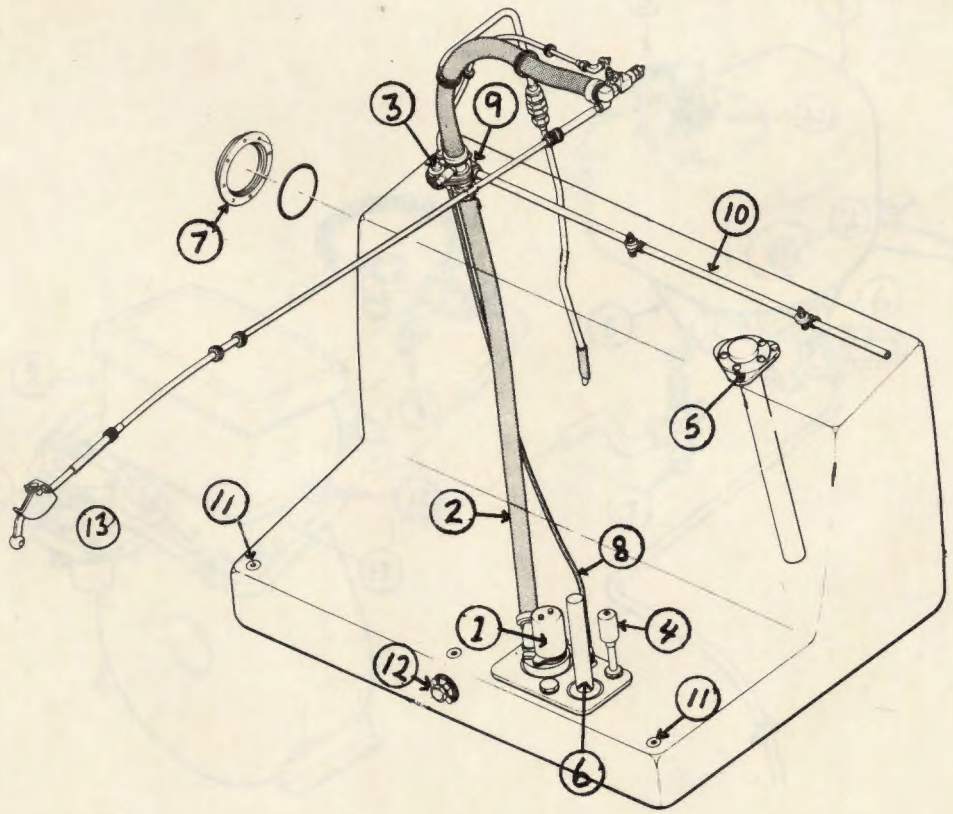
File No. 41/56-4527-2

COMPREHENSION CHECK #1

OH-58A FUEL AND ENGINE LUBRICATING SYSTEMS

1. Identify the components of the fuel system by filling the blanks provided below.

a. (1) Boost pump
b. (2) Fuel hose
c. (3) pressure switch
d. (4) Low level switch
e. (5) upper transmitter
f. (6) lower transmitter
g. (7) Filler cap adapter
h. (8) Hose
i. (9) Fuel fittings
j. (10) Vent pipe
k. (11) Tank Attach Point
l. (12) attach point
m. (13)



2. Write the purpose of the following: (See drawing)

a. Item No. 3.

b. Item No. 4.

c. Item No. 6.

d. Item No. 12.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

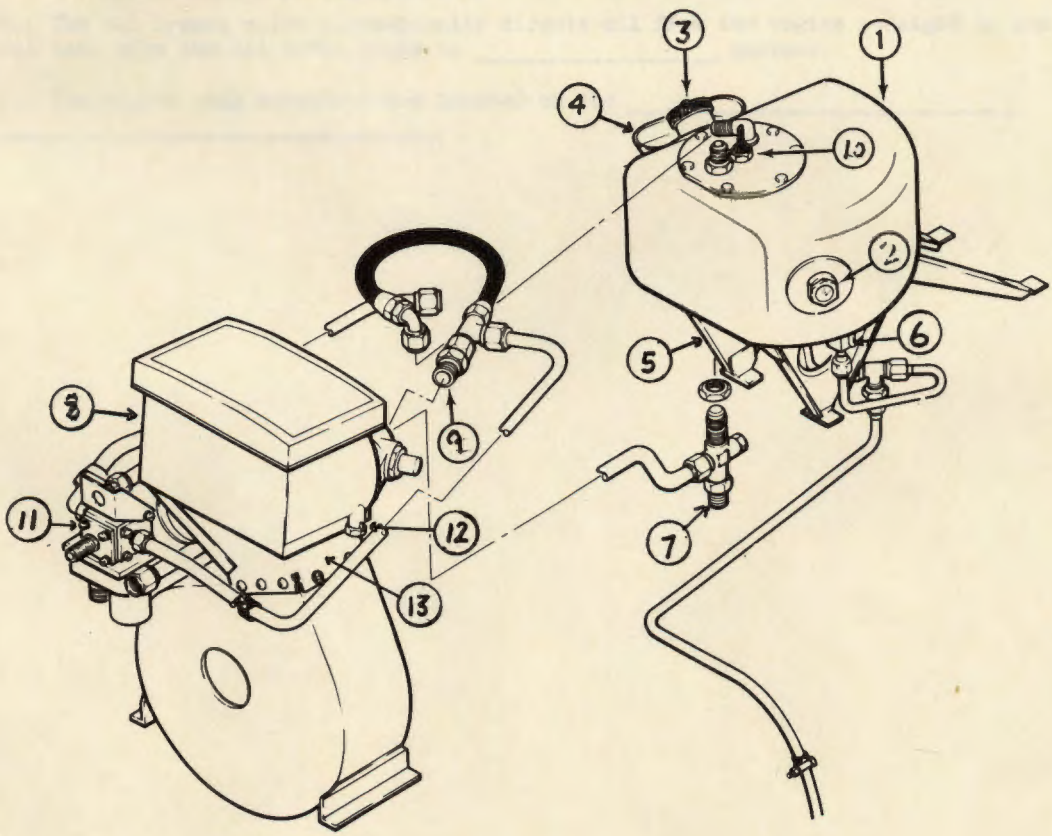
File No. 41/56-4527-2

COMPREHENSION CHECK #2

OH-58A FUEL AND ENGINE LUBRICATING SYSTEMS

1. Identify the components of the oil system by filling in the blanks provided below:

a. (1) Oil tank reservoir
b. (2) sight gauge
c. (3) Filler cap
d. (4) Scupper
e. (5) Support assembly
f. (6) Drain valve
g. (7) Temperature bulb
h. (8) Oil cooler
i. (9) Check valve
j. (10) low level switch
k. (11) bypass valve
l. (12) Drain plug
m. (13) Blower duct extension

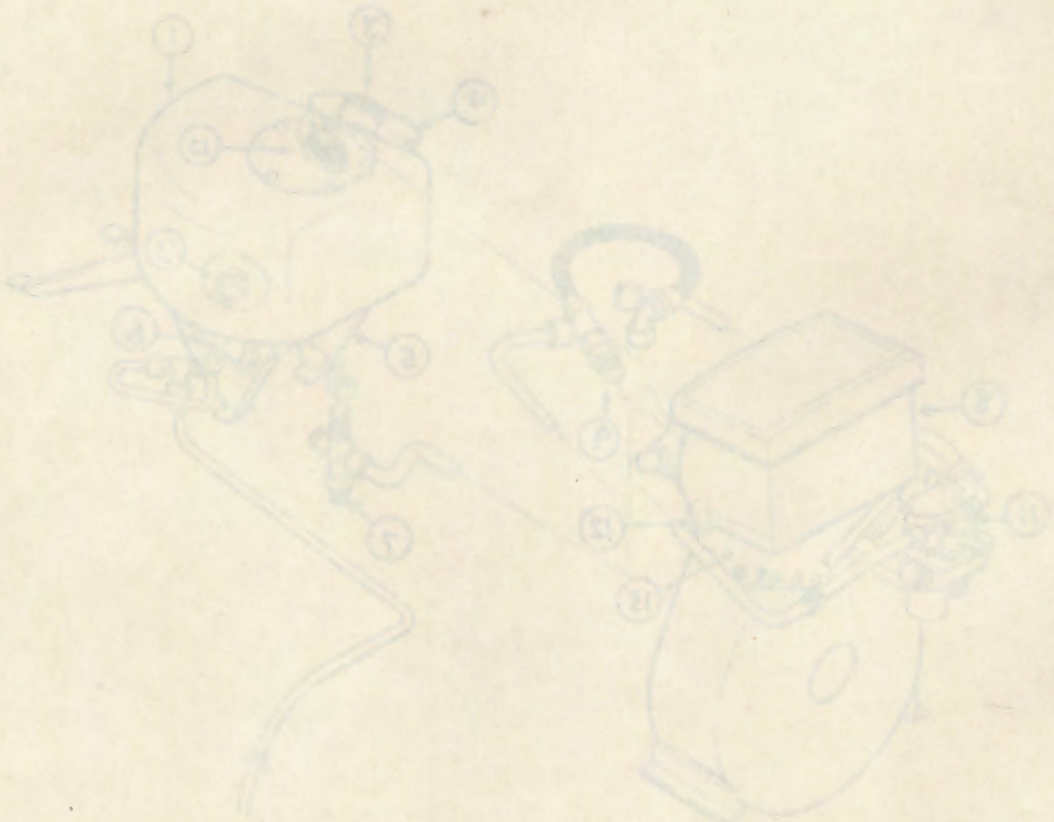


2. Write purpose of the following: (See drawing)

   a. Item No. 9.

   b. Item No. 10.

   c. Item No. 11.



UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4527-2

COMPREHENSION CHECK #3

OH-58A FUEL AND ENGINE LUBRICATING SYSTEMS

Enter word or phrase in the blank spaces to complete the statements.

1. The fuel boost pump supplies a _____ _____ of fuel to the engine fuel pump.

2. When the fuel level drops low enough to activate the _____ _____ _____. The "20 min fuel" caution light will be illuminated.

3. The fuel shut off valve is controlled, _____.

4. When the "Fuel Filter" caution light comes on it will indicate to the pilot that the fuel filter has _____ _____.

5. The oil cooling fan provides cooling air for the _____ and _____ oil coolers.

6. The oil bypass valve automatically directs oil from the engine straight to the oil tank when the oil level drops to _____ gallons.

7. The engine chip detectors are located on the _____ _____.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4528-2

TRAINING OBJECTIVES

OH-58A POWER TRAIN SYSTEM

1. OBJECTIVE: Given a drawing of the main transmission and engine to transmission drive, the student, without the aid of notes and references, will be able to identify and state the function of numbered components of the system in accordance with TM 55-1520-228-10, -20.

2. OBJECTIVE: Given a drawing of the tail rotor drive shaft and gear box, the student, without the aid of notes and references, will be able to identify functional components and inspection points in accordance with TM 55-1520-228-10, -20.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training

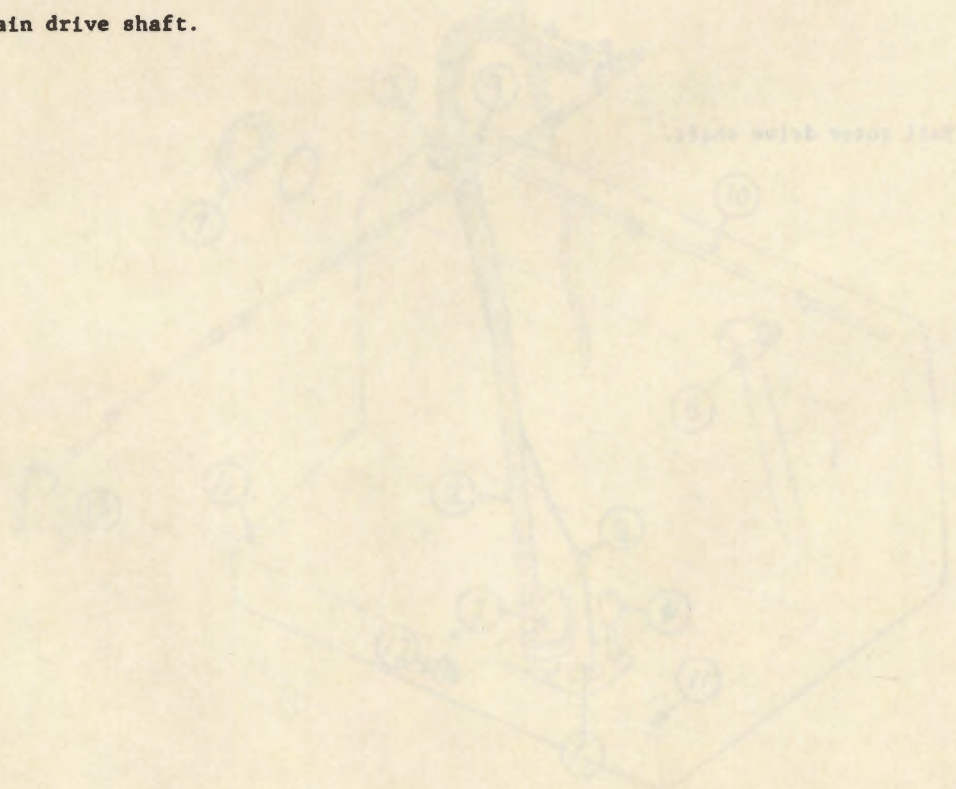
File No. 41/56-4528-2

STUDENT OUTLINE

OH-58A POWER TRAIN SYSTEM

1. Free wheeling unit.

2. Main drive shaft.



3. **Main transmission.**

4. **Main rotor mast assembly.**

5. **Tail rotor drive shaft.**

6. Tail rotor gear box.

7. Splined adapters.

8. **Disc assemblies.**

9. **Bearings.**

10. **Bearing hangers.**

11. **Oil cooling fan and shaft assembly.**

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4528-2

COMPREHENSION CHECK #1

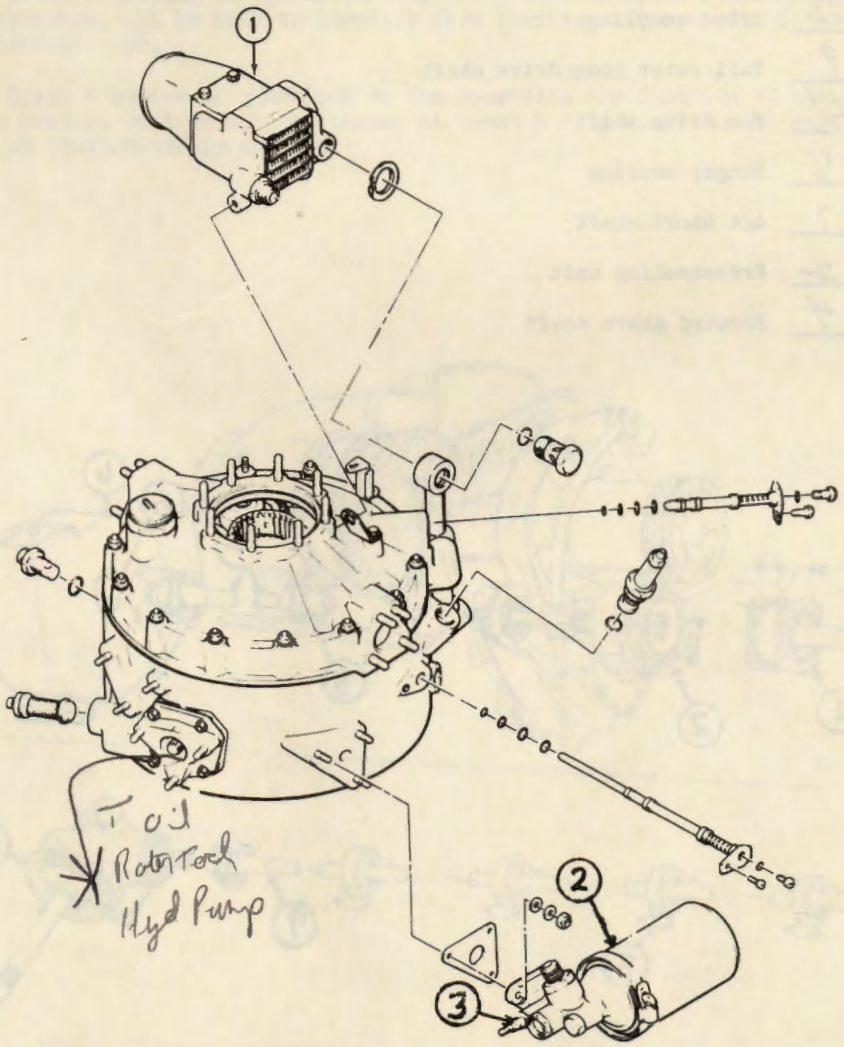
OH-58A POWER TRAIN SYSTEM

With the aid of notes and references TM 55-1520-228-20, identify the numbered components in the spaces provided below (use drawing below).

(1) Trans oil cooler

(2) C.S. filter

(3) Trans mtd



UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4528-2

COMPREHENSION CHECK #2

OH-58A POWER TRAIN SYSTEM

With the aid of drawing below, match numbered components with listed items below.

6 Cooling fan scroll

10 Tail rotor gear box

1 Drive shaft (eng to XMSN)

3 Drive coupling

9 Tail rotor long drive shaft

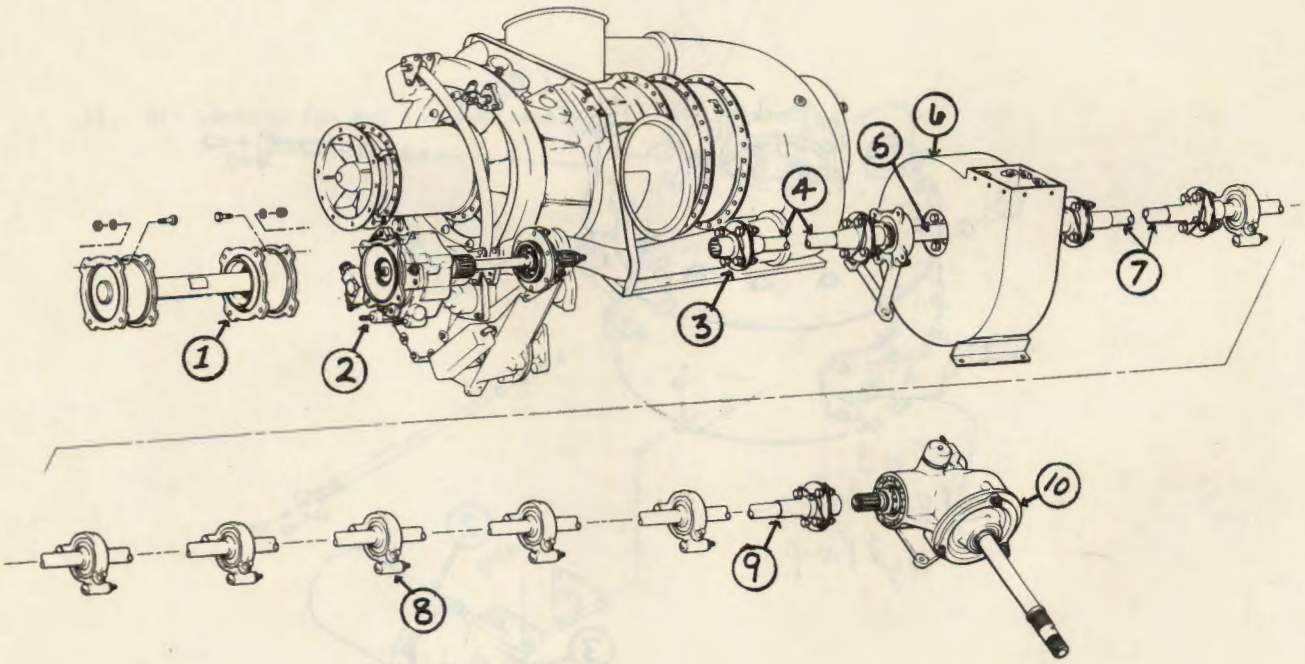
5 Fan drive shaft

8 Hanger bearing

7 Aft short shaft

2 Freewheeling unit

4 Forward short shaft



UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4529-2

TRAINING OBJECTIVES

OH-58A ROTOR SYSTEMS

1. OBJECTIVE: Given a drawing of the OH-58A main rotor assembly, the student, with the aid of notes and references, will be able to identify nine functional components in accordance with TM 55-1520-228-10, -20.

2. OBJECTIVE: Given a series of questions on the operation and function of the main rotor system, the student will be able to answer at least 6 of 8 questions correctly in accordance with TM 55-1520-228-10, and -20.

3. OBJECTIVE: Given a drawing of the OH-58A tail rotor assembly, the student, with the aid of notes and references, will be able to identify five functional components in accordance with TM 55-1520-228-10, -20.

4. OBJECTIVE: Given a series of questions on the operation and function of the tail rotor system, the student will be able to answer at least 4 of 5 questions correctly in accordance with TM 55-1520-228-10 and -20.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4529-2

STUDENT OUTLINE

OH-58A ROTOR SYSTEMS

1. General characteristics of main rotor assembly.

   a. Description

   b. Diameter

   c. Rotor rpm.

2. Components

   a. Main rotor retaining nut

   b. Trunnion

   c. Pillow blocks

   d. Yoke

   e. Tension torsion strap

   f. Pitch horn

g. Grips

h. Latch assembly

i. Static stop

j. Main rotor blades

3. Tracking main rotor blades

4. Tail rotor assembly

a. Description

b. Purpose

c. Components

(1) Trunnion

(2) Tyflon bearing

(3) Thrust washer

(4) Rosan stud

(5) Hub

(6) Pitch change horn

(7) Pitch change link

(8) Crosshead

(9) Tailrotor blades

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

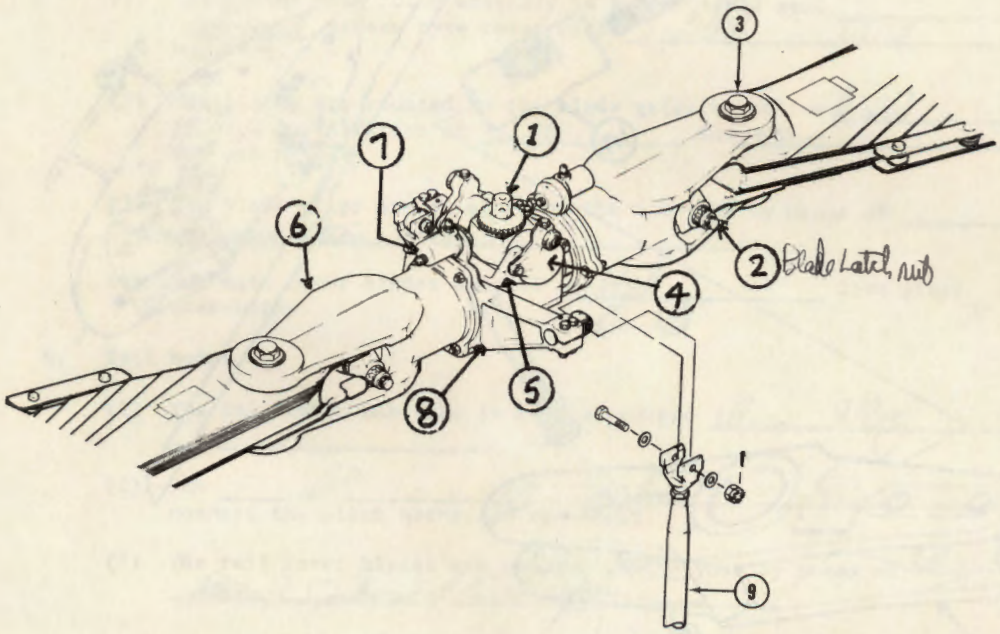
File No. 41/56-4529-2

COMPREHENSION CHECK

OH-58A ROTOR SYSTEMS

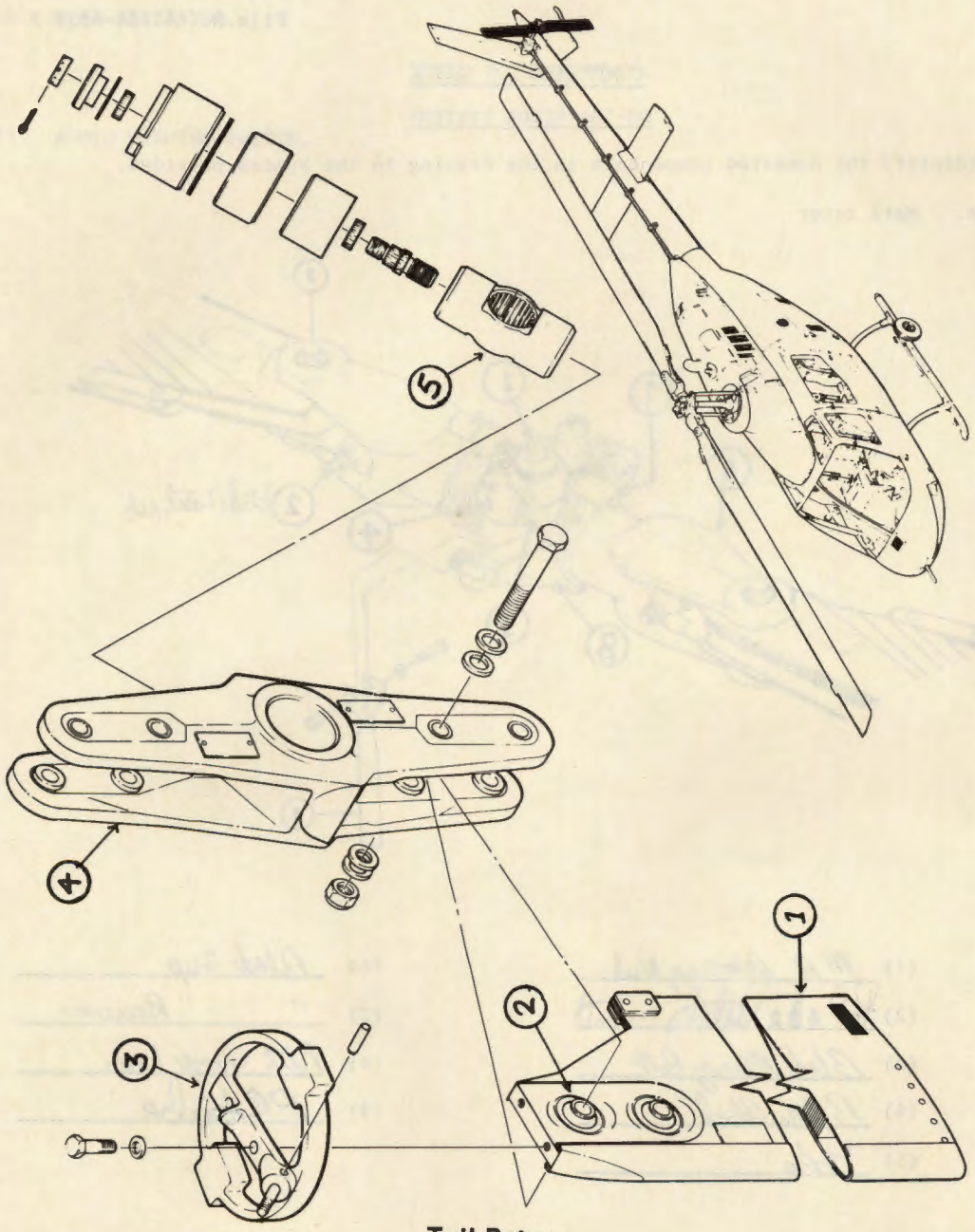
1. Identify the numbered components in the drawing in the spaces provided.

   a. Main rotor



(1) M R Retaining Nut
(2) Blade Latch nut
(3) Blade Retaining Bolt
(4) Pillow Block
(5) Yoke
(6) Blade Grip
(7) " " Reservoir
(8) Pitch Change horn
(9) PC tube

b. Tail rotor - identify numbered components (see drawing).



Tail Rotor

(1) Blade

(2) Bearing

(3) Pitch change horn

(4) Yoke

(5) Trunion

2. Fill in the blanks to complete the following statements.

a. Main rotor

(1) The OH-58A main rotor assembly is a two-bladed semi _____ seesaw type rotor with _____ mounting.

(2) The blades are mounted to the blade grips by hollow _____ for the installation of _____ to _____ the hub.

(3) The blade grips are retained on the hub yoke by means of _____.

(4) The main rotor blades are all _____ five piece assemblies.

b. Tail rotor

(1) The tail rotor hub yoke is made of forged _____.

(2) The _____ connect the pitch horns and crosshead.

(3) The tail rotor blades are mounted in the yoke by means of _____.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4531-2

TRAINING OBJECTIVES

OH-58A ELECTRICAL SYSTEM

1. OBJECTIVE: Given a schematic drawing of the OH-58A electrical system, the student, with the aid of notes and references, will be able to identify and write the purpose of at least 10 components of the electrical system selected for their relationship to operation and instrument monitoring of the system in accordance with TM 55-1520-228-10, -20.

2. OBJECTIVE: Given a series of questions on description and recognition of malfunctions in the electrical system, the student, without the aid of notes and references, will be able to answer at least 6 of 8 questions correctly in accordance with TM 55-1520-228-10,-20.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4531-2

STUDENT OUTLINE

OH-58A ELECTRICAL SYSTEM

1. TYPE.

   a. D.C. Power Control.

   b. D.C. Power System Indicator.

   c. D.C. Power System Indicator Protection.

2. ESSENTIAL BUS.

3. NON-ESSENTIAL BUS.

4. OVERHEAD CONSOLE.

5. WARNING SYSTEM.

6. CAUTION SYSTEM.

7. ELECTRICAL SYSTEM.

a. External Power System.

b. Battery - Generator System.

c. Starter - Generator System.

d. A.C. Power System.

8. TACHOMETER GENERATORS.

9. RPM SENSOR.

10. TONE GENERATOR.

11. AUDIO WARNING SWITCH.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

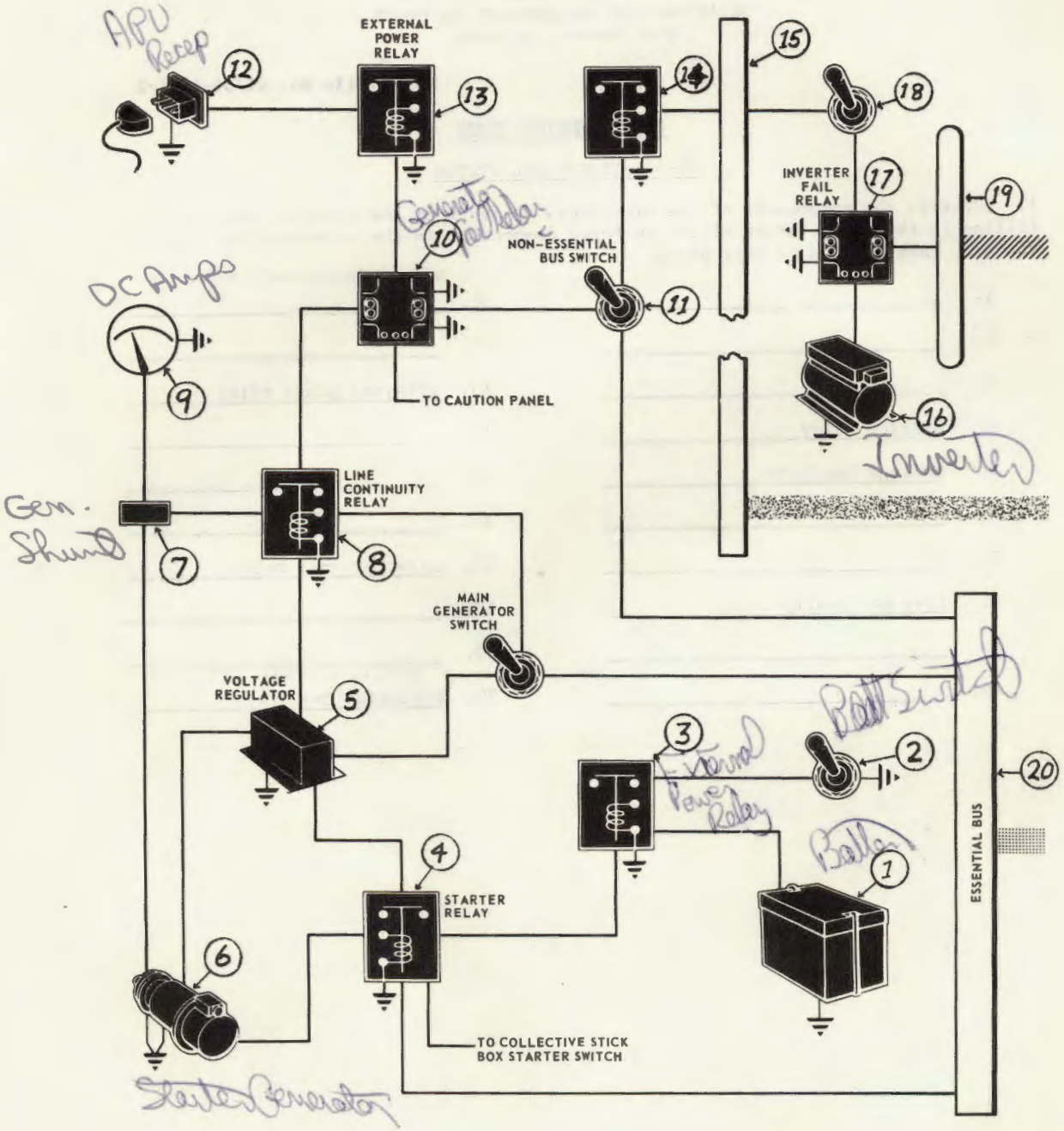
File No. 41/56-4531-2

COMPREHENSION CHECK

OH-58A ELECTRICAL SYSTEM

1. Identify the components of the electrical system from the attached drawing by filling in the nomenclature of the numbered components in the corresponding numbered spaces. (See drawing on next page).

1.	_____	11.	_____
2.	_____	12.	_____
3.	_____	13.	External power relay
4.	Starter Relay	14.	_____
5.	Voltage Regulator	15.	_____
6.	_____	16.	_____
7.	_____	17.	Inverter fail relay
8.	Line continuity relay	18.	_____
9.	_____	19.	_____
10.	_____	20.	Essential Bus


APU Recep
EXTERNAL POWER RELAY
12
13
14
15
18
INVERTER FAIL RELAY
17
19
Generator Failure
10
NON-ESSENTIAL BUS SWITCH
11
DC Amps
9
TO CAUTION PANEL
16
Inverter
Gen. Shunt
7
LINE CONTINUITY RELAY
8
MAIN GENERATOR SWITCH
VOLTAGE REGULATOR
5
3
2
Batt Switch
External Power Relay
20
ESSENTIAL BUS
4
STARTER RELAY
Battery
1
6
TO COLLECTIVE STICK BOX STARTER SWITCH
Starter Generator

2. With the aid of notes and references write the answer to the following questions.

a. The electrical system of the OH-58A is a 28 VDC system consisting of the: Dual bus supplied by starter gen and battery

b. Each electrical circuit of the OH-58A is protected by: circuit breakers

c. The battery generator system provides a means of:

d. When the battery switch is placed to the "Bat" position it will close the circuit to the: ~~actuating~~ coil of battery relay

e. The primary purpose of the battery on the OH-58A is to:

f. The battery used in the OH-58A is capable of supplying electrical ~~power for~~: 22 minutes

g. The non-essential bus relay is an electrical switch between the essential bus and non-essential bus and is controlled by either the: Non essential bus switch

h. The voltage regulator prevents the generator from being connected to the line until operating voltage is attained and:

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4536-1

TRAINING OBJECTIVES

OH-58A UTILITY AND AUXILIARY EQUIPMENT

1. OBJECTIVE: Given a drawing of the OH-58A heating and ventilating system with 7 key components numbered and a listing of the components, the student, with the aid of notes and references, will be able to match the numbered component with the correct nomenclature with 100% accuracy in accordance with TM 55-1520-228-10, -20.

2. OBJECTIVE: Given five questions on the operation of the heating and ventilating system, the student, without the aid of notes and references, will be able to answer all questions correctly in accordance with TM 55-1520-228-10, -20.

3. OBJECTIVE: Given four questions on the location and operation of the OH-58A auxiliary equipment, the student, without the aid of notes and references, will be able to answer all questions correctly in accordance with TM 55-1520-228-10.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4536-1

STUDENT OUTLINE

OH-58A UTILITY AND AUXILIARY EQUIPMENT

1. Heating and ventilating system.

   a. Description

   b. Location.

   c. Operation.

2. Anti-icing, deicing, and defrosting system.

   a. Engine anti-icing system.

      (1) Description.

      (2) Location.

      (3) Operation.

b. Pitot heater.

(1) Description.

(2) Location

(3) Operation

3. Auxiliary equipment.

a. Emergency equipment.

(1) Description

(2) Location.

(3) Operation.

b. Mounting facilities for the XM27E1 armament system.

(1) Description.

(2) Location

(3) Operation

c. Cargo platform

(1) Description

(2) Location

(3) Operation

d. Lighting equipment.

(1) Position light

(2) Anti-collision light

(3) Landing light

(4) Instrument lights

(5) Console lights.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4536-1

COMPREHENSION CHECK

OH-58A UTILITY AND AUXILIARY EQUIPMENT

1. With the aid of drawing on following page match designated components on drawing with list of components given below:

   a. Air distribution valves. _____

   b. Bleed air tube. _____

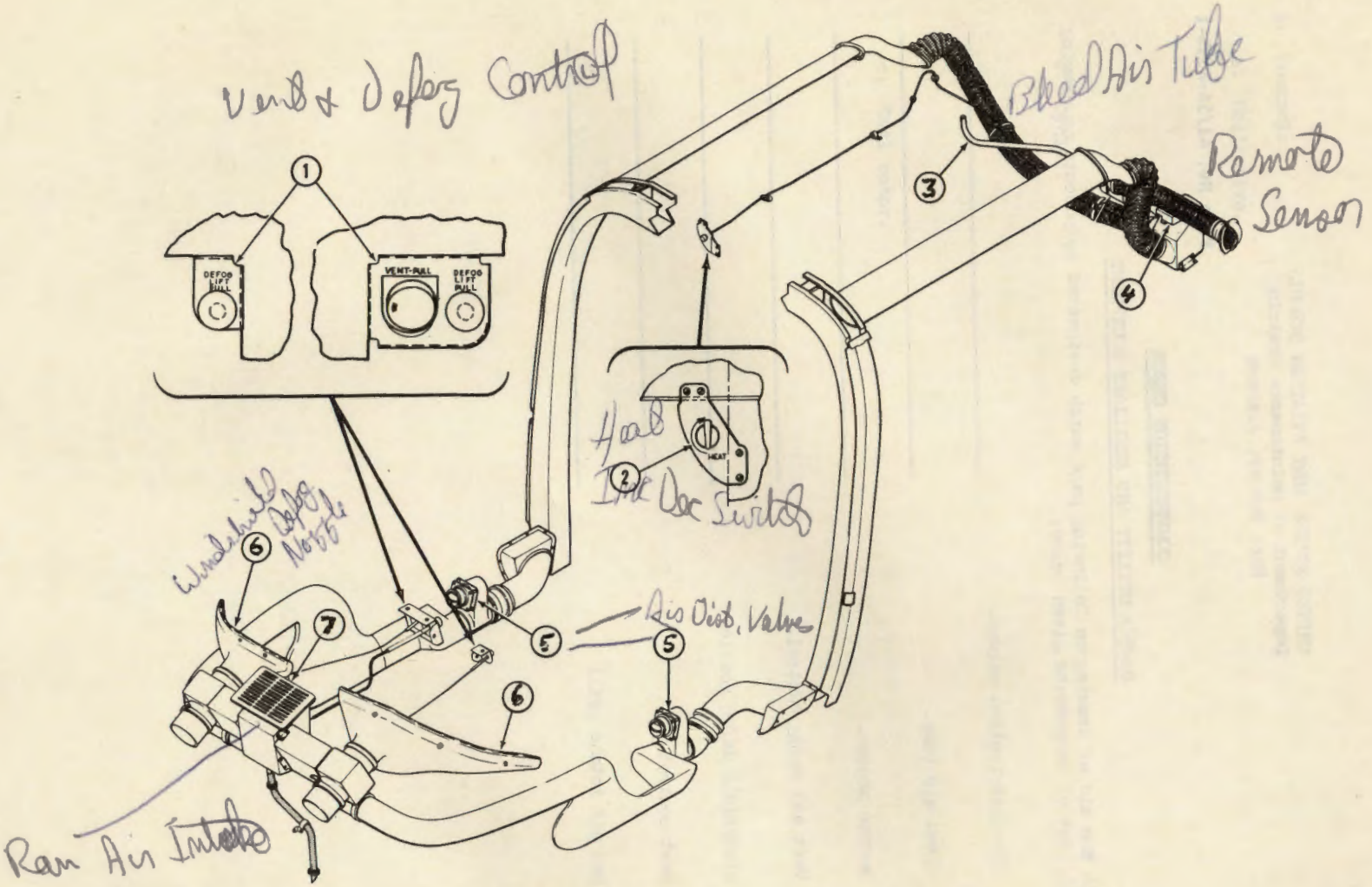
   c. Remote sensor. _____

   d. Vent and defog control. _____

   e. Windshield defog nozzle. _____

   f. Heat control _____

   g. Ram air intake grill _____


Vent & Defog Control
Bleed Air Tube
Remote Sensor
Heat Inlet Door Switch
Windshield Defog Nozzle
Air Distr. Valve
Ram Air Intake
1
2
3
4
5
6
7
DEFOG LIFT PULL
VENT-PULL
DEFOG LIFT PULL
HEAT

2. Enter word or phrase in blank spaces to complete statement or questions.

a. The bleed air heater is installed in the _____.

b. After pilot selects desired temperature what device in the heating system maintains the selected temperature _____.

c. The purpose of the pitot heater is to prevent _____.

d. The purpose of the anti-ice system is to _____.

e. What forces air through the ducts of the heating and ventilating system _____.

f. Where is the fire extinguisher and first aid kit located on the OH-58A _____.

g. Where is the mount assembly for XM27E1 armament system located on the OH-58A _____.

h. The cargo platform has a carrying capacity of 450 100 lbs/sq ft.

i. Name four of the five lighting systems on the OH-58A _____.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4532-2

TRAINING OBJECTIVES

OH-58A FLIGHT CONTROLS AND HYDRAULIC SYSTEMS

1. OBJECTIVE: Given a drawing of the OH-58A collective control system, the student, with the aid of notes and references, will be able to write the nomenclature of seven primary functional components in the system in accordance with TM 55-1520-228-10, -20.

2. OBJECTIVE: Given a drawing of the OH-58A cyclic control system, the student, with the aid of notes and references, will be able to identify nine functional components in the system in accordance with TM 55-1520-228-10, -20.

3. OBJECTIVE: Given a drawing of the OH-58A tail rotor control system, the student, with the aid of notes and references, will be able to identify six primary functional components in accordance with TM 55-1520-228-10, -20.

4. OBJECTIVE: Given a series of questions on the description and operation of the flight control system, the student, with the aid of notes and references, will be able to answer at least 7 of 8 questions correctly in accordance with TM 55-1520-228-10, -20.

5. OBJECTIVE: Given a drawing of the OH-58A hydraulic system, the student, with the aid of notes and references, will be able to identify nine functional components in accordance with TM 55-1520-228-10, -20.

6. OBJECTIVE: Given a series of questions on the description and operation of the hydraulic system, the student, with the aid of notes and references, will be able to answer at least 4 of 5 questions correctly in accordance with TM 55-1520-228-10, -20.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4532-2

STUDENT OUTLINE

OH-58A FLIGHT CONTROLS AND HYDRAULIC SYSTEM

1. Swashplate assembly. aluminum alloy changes non rotating movements to rotating

   a. Collective components.

      (1) Support. Non Rotating located at base of transmission

      (2) Sleeve. 2 Teflon bearings slides on coll. support 20 thou. play provided uniball permits tilting of swashplate

      (3) Collective lever. attached to sleeve

   b. Cyclic components.

      (1) Inner ring. outer bearings cap shim for preload

      (2) Swashplate bearings.

      (3) Uniball bearings.

(4) Inner ring cap.

(5) Shims.

(6) Outer ring cap.

(7) Dust boot.

(8) Drive collar.

(9) Idler link.

(10) Drive link.

(11) Pitch change link.

2. Hydraulic system.

a. Purpose. Reduces m/R feedback forces aids in application of controls

b. Components.

(1) Reservoir. 1.375 pints
2.25 in sys

(2) Pump. stack mounted forward side of transmiss
585-625 psi
1 way check valve maintains pressure

(3) Filters.
pressure type and return type
at 70±10 psi above 625 filter button pops up
Return filter has bypass valve

(4) Relief valve.
670 - 770 full open

(5) Solenoid valve. failsafe system
plunger type valve

(6) Pressure switch.
hyd. press lite
on below 400 psi.

(7) Servo. double action power cylinder
dampens m/R feedback
irreversible valve dampens feedback in hyd. off

3. Controls.

a. Collective.

b. Cyclic.

c. Tail rotor.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4532-2

COMPREHENSION CHECK #1

OH-58A FLIGHT CONTROLS AND HYDRAULIC SYSTEM

1. Identify the numbered components in the collective control in the spaces provided.

a. _____

b. _____

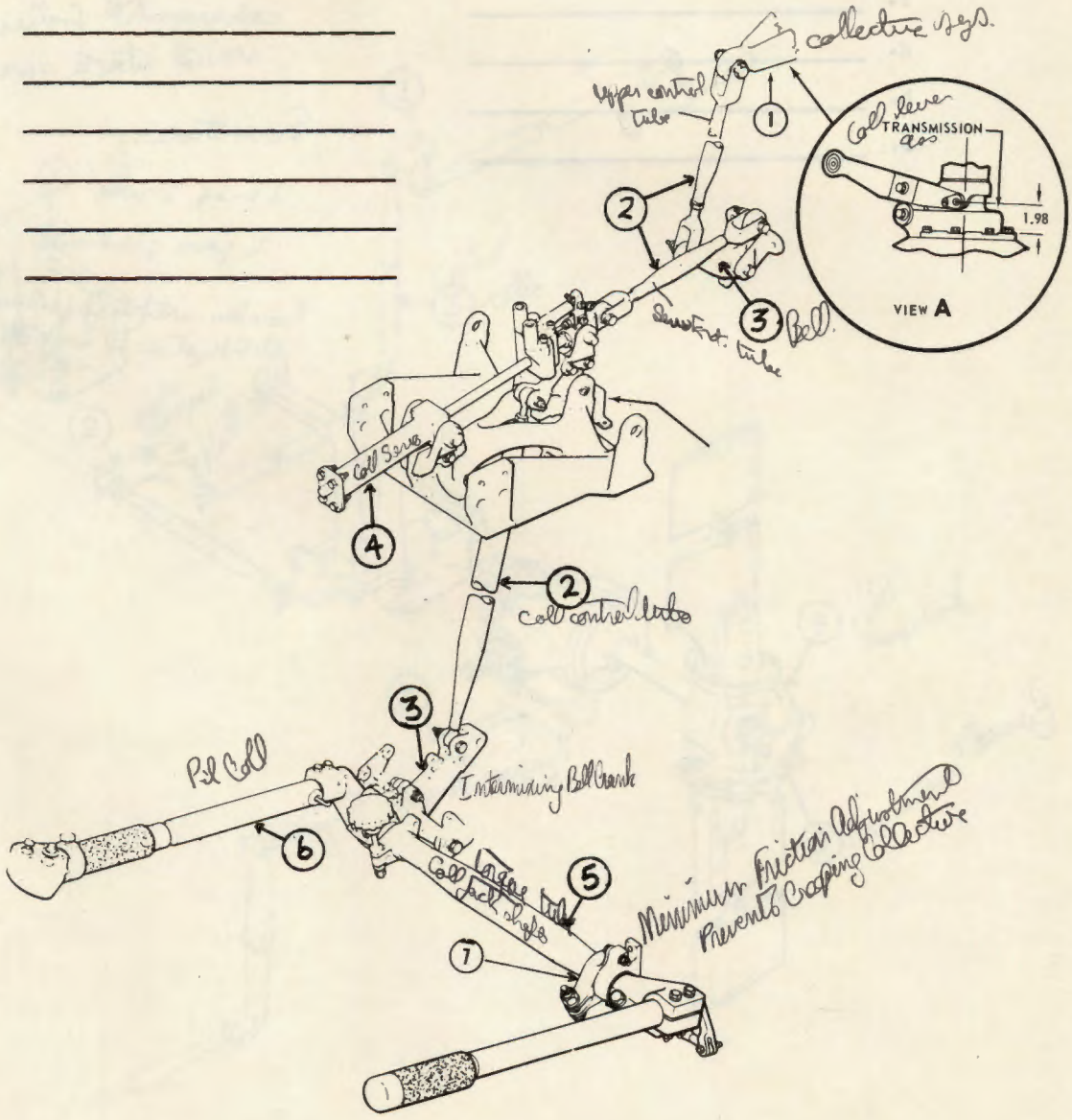
c. _____

d. _____

e. _____

f. _____

g. _____



2. **Identify the numbered components in the cyclic control system in the spaces provided.**

a. _____ cyclic

b. _____ longer tube

c. _____ brake

d. _____ 2 control tubes

e. _____ 2 power cylinders

f. _____ 2 servo actuator tube

g. _____ cabin mounted bellcranks

h. _____ control tubes to servoplate

i. _____ Force trim

2 mag brake

2 force gradients

Provides artificial feel and stabilization of controls

directional control at hover & low speeds

3. **Identify the numbered components in the tail rotor system in the spaces provided.**

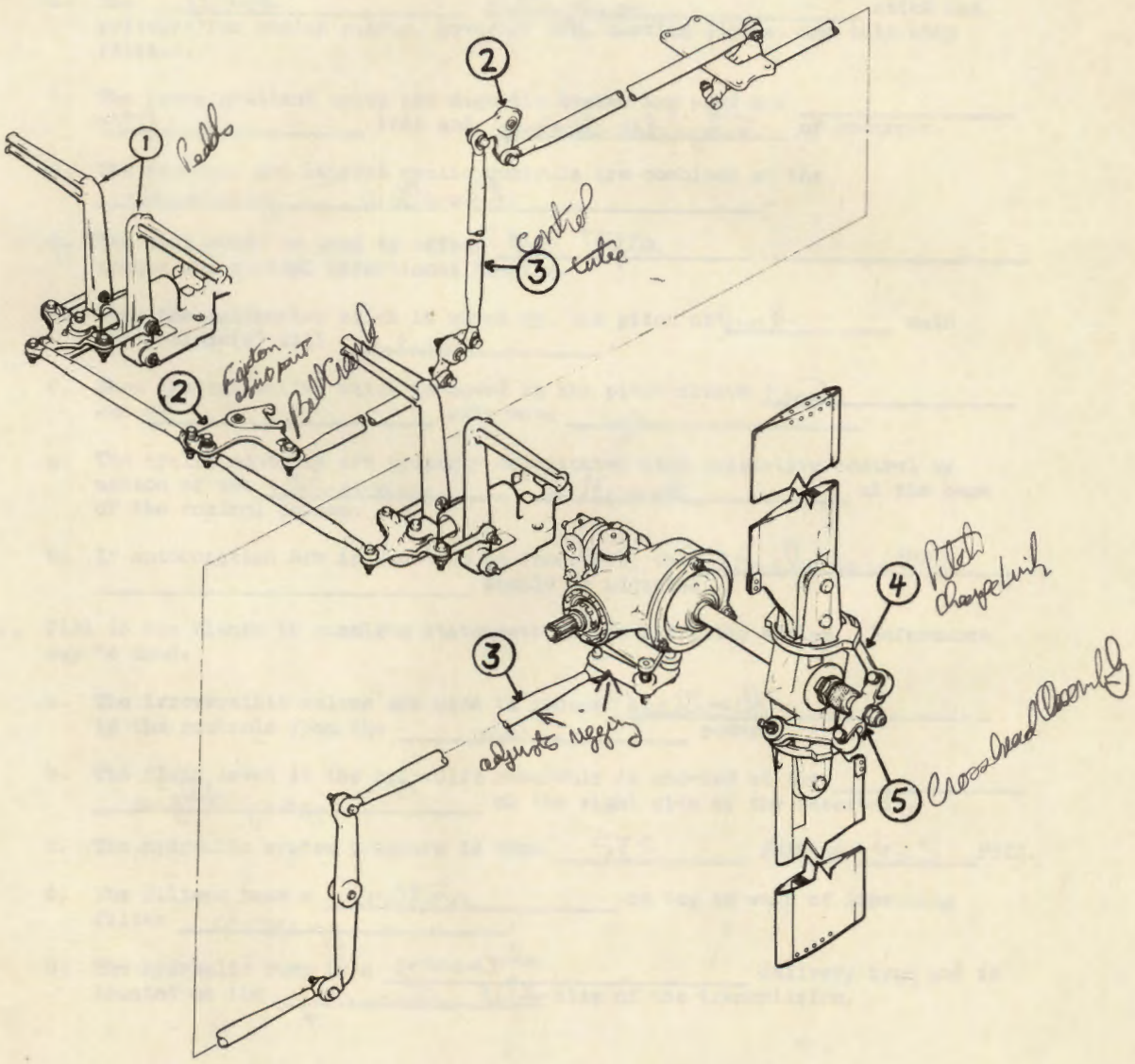
a. _____

b. _____

c. _____

d. _____

e. _____



4. Identify the numbered components in the hydraulic system in the spaces provided.

a. _____

b. _____

c. _____

d. _____

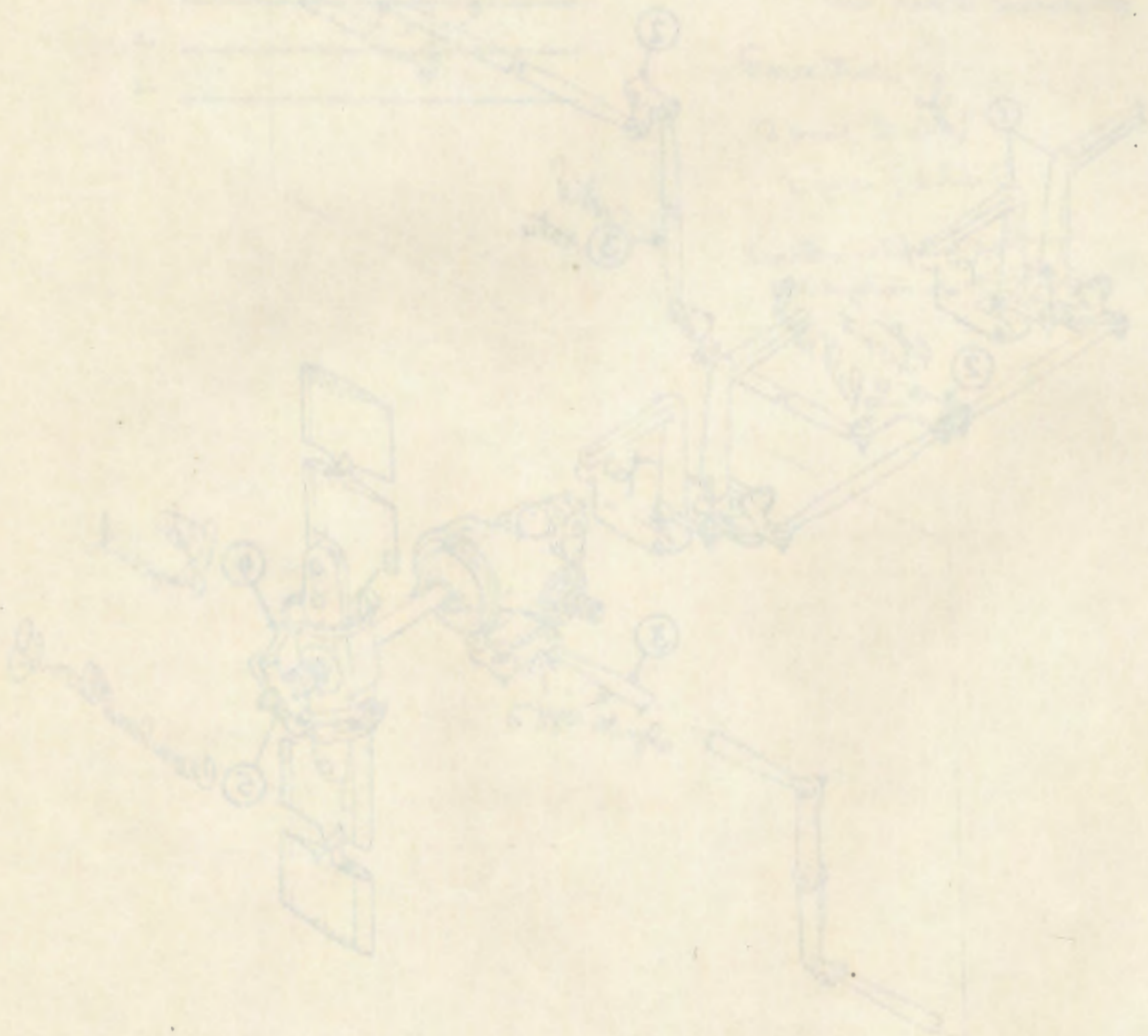
e. _____

f. _____

g. _____

h. _____

i. _____



UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4532-2

COMPREHENSION CHECK #2

OH-58A FLIGHT CONTROLS AND HYDRAULIC SYSTEM

1. Fill in the blanks to complete statements on the flight control systems. References may be used.

   a. The pilot collective stick has switches for engine starts, governor RPM, landing lights, and idle stop release.

   b. The force gradient units and magnetic brakes are used for artificial feel and control stabilization of controls.

   c. The fore-aft and lateral cyclic controls are combined at the intermixing bellcrank.

   d. The tail rotor is used to offset M/R torque torque and control directional heading.

   e. When the collective stick is moved up, the pitch of both main rotor blade(s) will increase.

   f. When the collective stick is moved up the pivot sleeve does and swashplate will move up.

   g. The cyclic controls are properly coordinated with collective control by action of the intermixing bellcrank at the base of the control column.

   h. If autorotation RPM is found to be incorrect, the pitch change rotor should be adjusted.

2. Fill in the blanks to complete statements on the hydraulic system. References may be used.

   a. The irreversible valves are used to reduce feedback in the controls from the main rotor.

   b. The fluid level in the hydraulic reservoir is checked at the sight gauge on the right side of the reservoir.

   c. The hydraulic system pressure is from 575 PSIG to 625 PSIG.

   d. The filters have a button on top to warn of impending filter clogging.

   e. The hydraulic pump is a variable delivery type and is located on the forward left side of the transmission.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4533-1

TRAINING OBJECTIVES

WEIGHT AND BALANCE, OH-58A

1. OBJECTIVE: Given a list of terms applicable to computing CG of the OH-58, the student, without the aid of notes and references, will be able to write the definition of at least 7 of 9 terms correctly in accordance with TM 55-405-9.

2. OBJECTIVE: Given a series of questions on procedures for computing the center of gravity on the OH-58A, the student, without the aid of notes and references, will be able to answer at least 6 of 7 questions correctly in accordance with TM 55-1520-228-10 and TM 55-405-9.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4533-1

STUDENT OUTLINE

WEIGHT AND BALANCE, OH-58A

Period one.

1. Definitions and terms in weight and balance.

   a. Weight.

   b. Reference datum line (RDL).

   c. Arm.

   d. Moment.

   e. Center of gravity (C.G.).

   f. C.G. limits.

   g. Basic weight.

   h. Operating weight.

   i. Gross weight.

j. Tare weight.

2. Weighing Porcedures.

3. Publications and Charts, weight and balance.

a. AR 95-16.

b. TM 55-405-9.

c. TM 55-1520-228-10.

4. Weight and balance forms.

a. DD Form 365

b. DD Form 365A (Chart A).

c. DD Form 365B.

d. DD Form 365C.

e. DD Form 365F.

5. Personnel loading.

a. Load limits.

b. C.G. limits.

6. Ballast

a. Permanent

b. Temporary

7. Safety precautions.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4533-1

COMPREHENSION CHECK

WEIGHT AND BALANCE, OH-58A

1. With the use of notes or references, define in writing the following weight and balance terms:

   a. Weight.

   b. Reference datum line (RDL).

   c. Arm.

   d. Moment.

   e. Center of gravity (C.G.).

   f. Basic weight.

   g. Operating weight.

   h. Gross weight.

   i. Tare weight.

2. From memory, list in writing by number and title the two publications giving weight and balance information on the OH-58A.

   a. Chart C

   b. Chart E

3. From memory, list all five weight and balance forms.

   a. 365 C

   b. 365 F

   c.

   d.

   e.

UNITED STATES ARMY AVIATION SCHOOL
DEPARTMENT OF MAINTENANCE TRAINING
Fort Rucker, Alabama

File No. 41/56-4534-1

TRAINING OBJECTIVES

TEST FLIGHT REQUIREMENTS

1. OBJECTIVE: Without the aid of notes and references, the student will be able to list at least 4 of 5 of the reference publications giving information on test flights and MOC's for the OH-58A.

2. OBJECTIVE: With the aid of notes and references, the student will be able to write in his own words the eight major topics covered in TB 55-1500-311-25 with 100% accuracy.

3. OBJECTIVE: Given a series of incomplete statements, the student, with the aid of notes and references, will be able to complete the statements with 100% accuracy.

4. OBJECTIVE: Given a set of partially completed DA Form 2408-13's and a series of problem questions on test flights and MOC's, the student, without the aid of notes and references, will be able to complete the forms without error.

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4534-1

STUDENT OUTLINE

TEST FLIGHT REQUIREMENTS

1. Functions:

a. Test flights.

Functional check flight

b. Maintenance operational checks.

Ground operational checks
when ~~test~~ flight isn't required

2. Publications.

a. TB 55-1500-311-25.

(1) TM 38-750

(2) Aircraft -10

(3) -20

(4) FAR 91, 93

(5) TB 55, 1500 311 - 25 Primary Ref Pub. for Army Aircraft

covers 8 ∩

Requirements
When
Checklist
Post TF/t. Torque test flights
Recording conditions

(6) condition requiring MOC

(7) Accomplishment of MOC

(8) Recording of MOC

b. TM 55-1520-228-10 Chapt 7 Limitations

c. TM 55-1520-228-20 Test flight checksheets

d. FAR 91.93 Regulations

e. TM 38-750 The Army Maintenance Management System

3. Test flight checksheets.

a. Found in -20

b. Reproduced locally

c. is part of -12 upon completion

d. Not required if only a few specific items checked

e. Four parts.

(1) Ground Check (Part I)

(a) daily

(b) preflight

(c) runup

(d) engine

(e)

(2) Inflight Check (Part II)

(a) tail rotor check

(b) hover check

(c) ~~instrument~~ ch

forward fl.

(d)

(e) Auto

Comm
Nav. Aids

(f)

(g)

(h)

(i)

(3) After test flight (Part III)

(a)

(b)

(c)

(4) Remarks (Part IV)

(a) Clarify any discrepancies

(b) Delon -13

f. Completing DA Form 2408-13

(1)

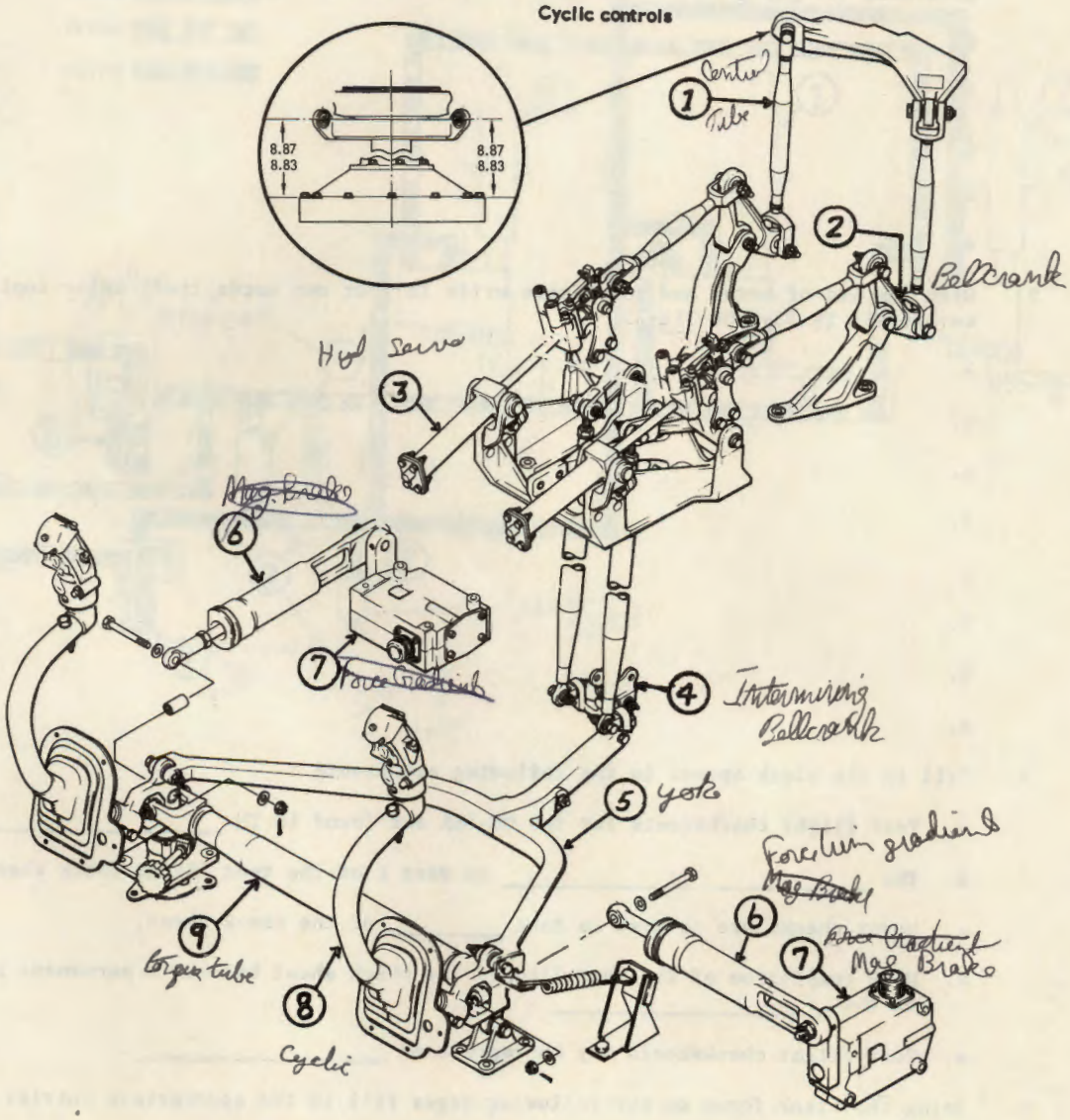
(2)

4. Maintenance operational checks.

a.

b.

5. **Performance Check.**



UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 41/56-4534-1

COMPREHENSION CHECK

TEST FLIGHT REQUIREMENTS

1. Without the aid of notes and references list at least 4 of 5 publications governing test flights and maintenance operational checks.

   a.

   b.

   c.

   d.

   e.

2. With the aid of notes and references write in your own words the 8 major topics covered in TB 55-1500-311-25.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

   h.

3. Fill in the blank spaces in the following statements.

   a. Test flight checksheets for the OH-58A are found in TM _____.

   b. The _____ _____ is Part I of the test flight check sheet.

   c. Hover checks are covered in Part _____ of the check sheet.

   d. Upon completion of the test flight, the check sheet becomes a permanent part of the _____ .

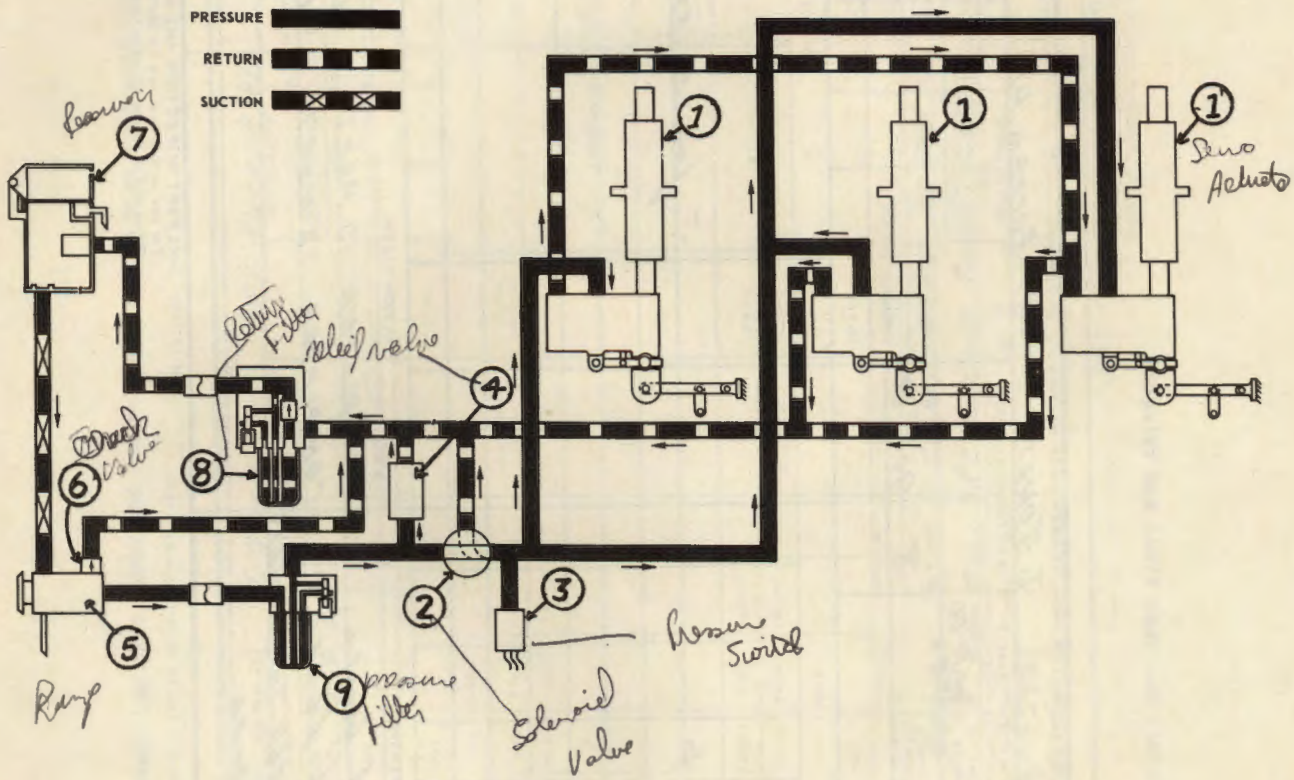
   e. Test flight checksheets may be reproduced _____.

4. Using the blank forms on the following pages fill in the appropriate entries on the forms.

a. After a PE the aircraft was test flown and released for flight. (You are the test pilot).

b. Aircraft test flown for an engine change and not released due to a high frequency vibration.

c. MOC performed by mechanic J. Jones, after he adjusted the voltage regulator.



4 a. Make entry to show that aircraft was test flown and released.

1. DATE	2 MODEL	3. SERIAL NO.	4 NAME OF CREW CHIEF/MECHANIC	5. STATION	6. PAGE NO	6a. NO OF PAGES
12 MAR 70	OH-58A	68-16720	J. JONES	FT. RUCKER, ALA	1	

STATUS TODAY						8 AIRCRAFT TIME		9 NEXT INSPECTION DUE		10	HOT STARTS a		LANDINGS b	OTHER c
AIRCRAFT			ELECTRONIC	ARMAMENT	OTHER						NO. 1 ENGINE	NO. 2 ENGINE		
1	—	4				TIME TO DATE	900:00	INTMED NO.	:					
2		5				TIME TODAY	:	P E NO	3 900:00	PREVIOUS				
3		6				TOTAL TIME	:	OTHER	:	TODAY				
										TOTAL				

11 FUEL (Gals or Lbs)				12 OIL (Quarts)						13	14	15 SERVICED	
SERVICE NO	GRADE	ADDED	TOTAL IN TANKS	GRADE	ADDED NO 1 ENG	TOTAL IN TANKS	ADDED NO 2 ENG	TOTAL IN TANKS	APU	OXYGEN (PSI)	ANTI-ICING FLUID (Gals)	BY	STATION
1	JP-4		73	23699		6						J. Jones	FT. RUCKER, ALA.
2													
3													
4													
5													
6													
7													
TOTAL													

16 STATUS	17 FAULTS AND OR REMARKS	18 ACTION TAKEN	19 SIGNATURE
✓	PMD DUE J. Jones	COMPLETED 12 MAR 70	J. Jones
✓	PMP #3 DUE J. Jones	COMPLETED 12 MAR 70	J. Jones
—	TEST FLIGHT REQUIRED TO COMPLETE #3 PMP J. Jones		

DA FORM 2408-13, 1 DEC 66 REPLACES EDITION OF 1 JAN 64, WHICH WILL BE USED (TM 38-750) AIRCRAFT INSPECTION AND MAINTENANCE RECORD

For use of this form, see TM 38-750; the proponent agency is Office of The Deputy Chief of Staff for Logistics.

4 b. **Make entry to show that aircraft was test flown and not released due to high frequency vibration.**

1. DATE	2 MODEL	3. SERIAL NO.	4 NAME OF CREW CHIEF/MECHANIC	5 STATION	6. PAGE NO	6a. NO. OF PAGES
22 MAR 70	OH-58A	68-16720	J. JONES	FT. RUCKER, ALA.	1	

7 STATUS TODAY				8 AIRCRAFT TIME		9 NEXT INSPECTION DUE		10	HOT STARTS a		LANDINGS b	OTHER c
AIRCRAFT	ELECTRONIC	ARMAMENT	OTHER						NO. 1 ENGINE	NO. 2 ENGINE		
1 — 4				TIME TO DATE	950 : 00	INTMED NO.	:					
2 X 5				TIME TODAY	:	P E NO 4	1200 : 00	PREVIOUS				
3 — 6				TOTAL TIME	:	OTHER	:	TODAY				
								TOTAL				

11 FUEL (Gals or Lbs)				12 OIL (Quarts)						13 OXYGEN (PSI)	14 ANTI-ICING FLUID (Gals)	15 SERVICED	
SERVICE NO	GRADE	ADDED	TOTAL IN TANKS	GRADE	ADDED NO 1 ENG	TOTAL IN TANKS	ADDED NO 2 ENG	TOTAL IN TANKS	APU			BY	STATION
1	JP-4		73	7808		6						J. Jones	FT. RUCKER, ALA.
2													
3													
4													
5													
6													
7													
TOTAL													

16 STATUS	17 FAULTS AND OR REMARKS	18 ACTION TAKEN	19 SIGNATURE
X	PMD DUE J. Jones	COMPLETED 22 MAR 70	J. Jones
X	ENGINE REMOVED J. Jones	REPLACED INSP. Y. RIGHT	J. Jones
—	TEST FLIGHT REQUIRED - ENGINE CHANGE J. Jones		

DA FORM 2408-13, 1 DEC 66 REPLACES EDITION OF 1 JAN 64, WHICH WILL BE USED

(TM 38-750) AIRCRAFT INSPECTION AND MAINTENANCE RECORD
For use of this form, see TM 38-750; the proponent agency is Office of The Deputy Chief of Staff for Logistics.

4 c. Make entry to show that J. Jones performed the MOC and that the MOC was O.K.

1. DATE	2. MODEL	3. SERIAL NO.	4. NAME OF CREW CHIEF/MECHANIC	5. STATION	6. PAGE NO	6a. NO. OF PAGES
28 MAR 70	OH-58A	68-16720	J. JONES	FT. RUCKER, ALA	1	

7. STATUS TODAY					8. AIRCRAFT TIME		9. NEXT INSPECTION DUE		10.	HOT STARTS a		LANDINGS b	OTHER c
AIRCRAFT		ELECTRONIC	ARMAMENT	OTHER						NO. 1 ENGINE	NO. 2 ENGINE		
1 — 4					TIME TO DATE	965 : 00	INTMED NO.	:					
2 / 5					TIME TODAY	:	P.E. NO.	4 1200 : 00	PREVIOUS				
3 6					TOTAL TIME	:	OTHER	:	TODAY				
									TOTAL				

11. FUEL (Gals or Lbs)				12. OIL (Quarts)						13.	14.	15. SERVICED	
SERVICE NO.	GRADE	ADDED	TOTAL IN TANKS	GRADE	ADDED NO. 1 ENG	TOTAL IN TANKS	ADDED NO. 2 ENG	TOTAL IN TANKS	APU	OXYGEN (PSI)	ANTI-ICING FLUID (Gals)	BY	STATION
1	JP-4		73	23699		6						J. Jones	FT. RUCKER, ALA.
2	JP-4	10	73									J. Jones	FT. RUCKER, ALA.
3													
4													
5													
6													
7													
TOTAL													

16. STATUS	17. FAULTS AND/OR REMARKS	18. ACTION TAKEN	19. SIGNATURE
X	PMD DUE J. Jones	COMPLETED 28 MAR 70	J. Jones
/	FLT / VOLTAGE ERRATIC P. Pilot	ADJUSTED VOLTAGE REGULATOR	J. Jones

DA FORM 2408-13, 1 DEC 66 REPLACES EDITION OF 1 JAN 64, WHICH WILL BE USED (TM 38-750) AIRCRAFT INSPECTION AND MAINTENANCE RECORD

For use of this form, see TM 38-750; the proponent agency is Office of The Deputy Chief of Staff for Logistics.