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with Change 3

PARACHUTE RIGGER

Practical Test Standards

June 2003

FLIGHT STANDARDS SERVICE
Washington, DC 20591

PARACHUTE RIGGER
PRACTICAL TEST STANDARDS

2003

FLIGHT STANDARDS SERVICE
Washington, D.C. 20591

NOTE

Material in FAA-S-8080-25 Parachute Rigger Practical Test Standards will be effective February 2006. After this date the previous Parachute Rigger Practical Test Standards booklets will be obsolete and the new practical test standards are mandatory.

Record of Changes

Change 1: 6/3/2004

Introduction

Page 3—Practical Test Standard Description: Added reference.

Page 4—Use of the Practical Test Standards Book: Changed text.

Page 6—Examiner Responsibility: Added text.

V. Area of Operation: Parachute Construction Details

TASK B. Webbing Joint Construction

Reason for change: To expand project selection.

TASK E. French Fell Seam Construction

Reason for change: To expand project selection.

TASK H. Fastener Tapes

Reason for change: To modernize project selection.

V. Area of Operation: Parachute Repair

TASK B. Replacement of Lower Control Line (Ram-air Canopy)

Reason for change: To modernize project selection.

TASK C. Application of Non-Destructive Test Method TS-108

Reason for change: To expand project selection.

TASK I. Internal Splice of Braided Line. DELETED

Reason for deletion: Obsolete practice.

TASK J. Replacement of Continuous Suspension Line

Reason for change: To expand project selection.

TASK N. Ram-air Canopy Patch Repair Adjacent to a Seam

Reason for change: To expand and modernize project selection.

Change 2: 1/11/2005

V. Area of Operation: Parachute Repair

TASK E. French Fell Seam Construction

Reason for change: Clarification of TASK Objective.

TASK J. Radial Seam Construction

Reason for change: Clarification of TASK Objective.

VII. Area of Operation: Parachute Alterations

TASK E. Install an Automatic Activation Device (Container not Factory Ready)

Reason for change: Clarification of TASK Objective.

TASK I. Fabricate a Canopy Deployment Bag

Reason for change: Clarification of TASK Objective.

TASK J. Convert Throw-out Pilot Chute from Rear of Leg Position to the Bottom of Container Position

Reason for change: Clarification of TASK Objective.

Change 3: 3/2/2006

Note—revised.

Introduction

- Order Rearranged.
- Web site address updated.
- Practical Test Standard Description. Reason for change: Clarification of description.
- Reference section. Reason for change: adding new reference: FAA-H-8083-17, Parachute Rigger Handbook (Federal Aviation Administration).
- Use of the Practical Test Standards Booklet. Reason for change: Clarification of text.
- Conducting the Practical Test. Reason for change: To align PTS instructions with revised Order 8610.5, Parachute Rigger Examiner Handbook.

FOREWARD

Parachute Rigger Practical Test Standards booklet has been published by the Federal Aviation Administration (FAA) to establish the standards for the Parachute Rigger Certification Practical Test for the Senior and Master Certificates. FAA inspectors and Designated Parachute Rigger Examiners (DPRE) shall conduct practical tests in compliance with Order 8610.5 (latest version) Parachute Rigger Examiner Handbook and this Practical Test Standards. Instructors and applicants should find these standards helpful in practical test preparation.

/s/ 2-13-2003

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INTRODUCTION

The Flight Standards Service of the Federal Aviation Administration (FAA) has developed this practical test book as a standard to be used by FAA inspectors and Designated Parachute Rigger Examiners when conducting practical test. Instructors are expected to use this book when preparing applicants for the practical test. Applicants should be familiar with this book and refer to these standards during their training.

Information considered directive in nature is described in this practical test book in terms, such as “shall” and “must” indicating the actions are mandatory. Guidance information is described in terms, such as “should” and “may” indicating the actions are desirable or permissive, but not mandatory.

The FAA gratefully acknowledges the valuable assistance provided by many individuals and organizations throughout the parachuting community who contributed their time and talent in assisting with the revision of these practical test standards.

This PTS may be purchased from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402-9325, or from GPO’s web site at: <http://bookstore.gpo.gov>

This PTS is also available for download, in pdf format, from the Regulatory Support Division’s (AFS-600) web site:

http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs600

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PRACTICAL TEST STANDARD CONCEPT

Title 14 of the Code of Federal Regulations (14 CFR) specify the areas in which knowledge and skill must be demonstrated by the applicant before the issuance of a Parachute Rigger Certificate with the associated type rating. The CFRs provide the flexibility that permits the FAA to publish practical test standards containing AREAS OF OPERATION and specific TASKS in which competency must be demonstrated. The FAA will revise this booklet whenever it is determined that changes are needed in the interest of safety. **Adherence to the provisions of regulations and the practical test standards is mandatory for the evaluation of parachute rigger applicants.**

PRACTICAL TEST BOOK DESCRIPTION

This test book contains the following Parachute Rigger Practical Test Standards.

- Senior Parachute Rigger
- Master Parachute Rigger

PRACTICAL TEST STANDARD DESCRIPTION

The AREAS OF OPERATION contained in this booklet are subject areas in which a parachute rigger must have knowledge and/or demonstrate skill. This booklet contains seven AREAS OF OPERATION beginning with CERTIFICATION REQUIREMENTS and ending with PARACHUTE ALTERATIONS.

Each AREA OF OPERATION will have several TASK listed. TASKS are titles of knowledge areas, skills, and job functions appropriate to an AREA OF OPERATION.

There are 3 types of TASK that may appear under an AREA OF OPERATION, they are:

- “Knowledge Task” which consists totally of oral elements (questions) and may be recognized by the term *“Exhibits knowledge of ...”* in the objective description.
- “Skill Task” which consists totally of skill elements (project demonstrations) and may be recognized by the use of the word *“Demonstrates...”* in the objective description.
- “Combined Task” which consist of elements of both knowledge and skill.

Each TASK has an objective(s). The objective lists the important knowledge and/or skill elements that must be satisfactorily performed to demonstrate competency in a TASK.

The objective includes:

1. Specifically what the applicant shall know or be able to do.
2. Conditions under which the TASK is to be performed.
3. Minimum acceptable standards of performance.

The examiner determines that the applicant meets the TASK Objective through the demonstration of competency in various elements of knowledge and/or skill.

NOTE is used to emphasize special considerations required in the AREA OF OPERATION or TASK.

The **REFERENCE** identifies the publication(s) that describes the TASK. Descriptions of TASKS are not included in the parachute rigger standards because this information can be found in references listed for each TASK. Publications other than those listed may be used as references if their content conveys substantially the same meaning as the referenced publications.

References listed in this practical test book include the current revisions of the following publications:

| | |
|------------------------|---|
| 14 CFR part 1 | Definitions and Abbreviations |
| 14 CFR part 21 | Certification Procedures for Products and parts |
| 14 CFR part 43 | Maintenance, Preventive Maintenance Rebuilding, and Alteration |
| 14 CFR part 65 | Certification: Airmen Other Than Flight Crewmembers |
| 14 CFR part 91 | Air Traffic and General Operating Rules |
| 14 CFR part 105 | Parachute Jumping |
| AC 105-2 | Sport Parachute Jumping |
| TSO-C23b | Parachutes |
| TSO-C23c | Personnel Parachute Assemblies |
| TSO-C23d | Personnel Parachute Assemblies |
| TS 108 | Parachute Industry Association Publication |
| AS 8015B | Aerospace Standard |
| NAS 804 | National Aircraft Standards Specification |
| PPM | Poynter Parachute Manual Vol. I, 3rd edition |
| PPM VOL. II | Poynter Parachute Manual Vol. II |
| FAA-H-8083-17 | Parachute Rigger Handbook (Federal Aviation Administration) |

USE OF THE PRACTICAL TEST STANDARDS BOOKLET

The FAA requires that all practical tests be conducted in accordance with the Parachute Rigger Practical Test Standards, and the current revision of FAA Order 8610.5, Parachute Rigger Examiner Handbook.

This practical test booklet contains standards for the issuance of both Senior and Master Parachute Rigger Certificates.

When using the practical test book, the examiner must evaluate the applicant's knowledge and skill in sufficient depth to determine that the Objective for each selected TASK is met. The examiner must personally observe all elements of each TASK being performed by the applicant.

When planning the test, the examiner is not required to follow the precise order in which the AREAS OF OPERATION and TASKS appear in this book. The examiner may change the sequence or combine TASKS with similar Objectives to have an orderly and efficient flow of the practical test. If the elements in one TASK have already been evaluated in another TASK, they need not be repeated. For example: the applicant need not be evaluated in AREA OF OPERATION VI, TASK F, "SEWING MACHINE OPERATION" if that TASK was sufficiently observed during the completion of AREA OF OPERATION V, TASK J, "RADIAL SEAM CONSTRUCTION."

Any TASKS selected for evaluation during the practical test shall be evaluated in its entirety.

There is no standard length of time prescribed for parachute rigger practical tests. However, the testing period must be long enough to make a valid determination in each AREA OF OPERATION for the certificate and/or rating(s) sought. Progressive tests are not to be given. Although it may be necessary to continue a test for more than 1 day, tests should not be allowed to continue for long periods of time. Before starting the test, advise the applicant when the day's activities will be terminated and when testing will resume if more than 1 day is needed.

The applicant should be prepared to demonstrate ability in **all** TASKS included in the AREAS OF OPERATION appropriate to the certificate and/or rating(s) sought.

PARACHUTE RIGGER PRACTICAL TEST PREREQUISITES

An applicant for a **Senior Parachute Rigger** practical test is required to present to the examiner:

1. Two original applications (FAA form 8610-2) signed by an FAA Aviation Safety Inspector (airworthiness), verifying experience requirement evaluation.
2. Proof of having passed the RIG (senior parachute rigger) knowledge test by presenting a certified original Airman Knowledge Test Report.
3. Identification with a photograph and a signature.

An applicant for a **Master Parachute Rigger** practical test is required to present to the examiner:

1. Senior Parachute Rigger Certificate or proof of having passed the RMP (Master Parachute Rigger) knowledge test if not a Senior Parachute Rigger, by presenting a certified original Airman Knowledge Test Report.
2. Two original applications (FAA form 8610-2) signed by an FAA Aviation Safety Inspector (airworthiness), verifying experience requirement evaluation.
3. Identification with a photograph and a signature.

A Senior or Master Parachute Rigger requesting an **additional type rating**, shall present two original applications (FAA form 8610-2) signed by an FAA Aviation Safety Inspector (airworthiness), verifying experience requirement evaluation and identification with a photograph and a signature.

RETEST REQUIREMENTS

When application is made for a retest after failure of a previous test or incomplete test, the applicant must:

1. Complete two FAA Forms 8610-2's (both originals) in accordance with the instructions furnished by the DPRE or Inspector.

NOTE: FAA Form 8610-2, block V does not need to be signed by an inspector again when the original FAA Form 8610-2 (with authorizing signature) is attached to the file.

2. Present the appropriate knowledge test report. The applicable knowledge test must have been passed within the previous 24-calendar months.
3. Present the original FAA Form 8610-2 from the previous test showing the ratings passed or failed.
4. If the retest is within 30 days of the previous test, present a statement by a person authorized in 14 CFR section 65.19, that the applicant has received additional instruction for each AREA OF OPERATION failed and that the applicant is ready for retesting. This statement of training is required only when the applicant failed portions of the previous test and is NOT required if the applicant did not complete the previous test.

NOTE: Applicants who apply for retest within 60 days to the same DPRE who administered the failed test may, at the option of the DPRE, be tested in only the TASK(S) failed on the previous test provided the applicant has successfully passed all other TASKS. During a retest and at the discretion of the examiner, any TASK may be re-evaluated, including those previously passed.

REQUIRED MATERIAL FOR THE PRACITICAL TEST

The DPRE shall provide all tools, equipment, and reference materials to support the test. These materials shall include, but are not limited to, 14 CFRs, Airworthiness Directives, Advisory Circulars, manufacturer's technical and parts manuals, service information, and any other instructions and/or reference materials that are necessary for the objective accomplishment of the assigned TASK(S). All reference material shall be unmarked and in good condition. The applicant's use of other reference material that the DPRE has NOT provided is prohibited. Use of nonprogrammable calculators is permitted where appropriate. Applicants may use personal tools and equipment at the discretion of the DPRE.

EXAMINER RESPONSIBILITY

The examiner who conducts the practical test is responsible for determining that the applicant meets acceptable standards of knowledge and skill in the assigned TASKS.

CONDUCTING THE PRACTICAL TEST

The DPRE shall conduct the test in accordance with the latest version of the Order 8610.5, Parachute Rigger Examiner Handbook, Chapter 5, "Conducting and Grading Tests."

In general the DPRE will test the applicant on each AREA OF OPERATION corresponding to the requirements for the certificate and/or rating sought. In AREAS OF OPERATION where a "Required Task" is identified, the examiner must test the applicant on that TASK, additional TASKS may be selected at any time if deemed necessary.

1. Original issuance of a Senior Parachute Rigger Certificate.

The examiner shall select at least one TASK from each AREA OF OPERATION, except AREA OF OPERATION VII. A senior applicant is not tested in AREA OF OPERATION VII Parachute Alteration.

In AREA OF OPERATION III, the examiner will select the corresponding packing TASK for each rating requested.

2. Original issuance of a Master Parachute Rigger Certificate to a non-certificated applicant (applicant not holding a senior certificate).

The examiner shall select at least two type rating TASKS from AREA OF OPERATION III, two TASKS from AREA OF OPERATION VII, and at least one TASK from each of the other AREAS OF OPERATION.

3. Original issuance of a Master Parachute Rigger Certificate to the holder of a Senior Certificate.

Senior applicant holding two or more ratings.

If the applicant currently holds two ratings and is not requesting any additional rating(s) the examiner shall select one TASK from each AREA OF OPERATION, except in AREA OF OPERATION VII where two TASKS are required. In AREA OF OPERATION III, the examiner should select one of the alternate packing TASK, item E, F, or G. However, the examiner may at his/her discretion require the applicant to demonstrate the packing of any type rating current held.

Senior applicant holding one rating.

If the applicant holds only one rating on his/her Senior Parachute Rigger Certificate, the examiner shall select one TASK from each of the AREAS OF OPERATION, except in AREA OF OPERATION VII, where two TASKS are required. The examiner shall select the type-rating TASK that is sought by the applicant from AREA OF OPERATION III.

4. Additional Ratings

For an added rating to either a Senior or Master Parachute Rigger Certificate the applicant shall be tested from AREA OF OPERATION III on the type rating sought. The examiner may at his/her discretion require the applicant to demonstrate any TASK(s) appropriate to the certificate held.

5. For military competence test no practical test is required.

Satisfactory Performance

The practical test is passed if, in the judgment of the examiner, the applicant has achieved at least the minimum performance standards proscribed for certification in the Order 8610.5, Parachute Rigger Examiner Handbook.

Unsatisfactory Performance

If, the applicant does not meet the prescribed proficiency level on each assigned TASK in each required AREA of OPERATION, the associated AREA of OPERATION is failed; therefore, the practical test is failed. When it becomes obvious during the test that an applicant does not possess sufficient proficiency and is failing an AREA of OPERATION, the examiner may discontinue testing. However, in some cases it may be advantageous to continue the test to the end. The test will be continued only with the consent of the applicant.

The applicant is entitled credit for only those AREAS of OPERATION satisfactorily performed. However, during the retest and at the discretion of the examiner, any TASK may be re-evaluated, including those previously considered satisfactory.

I. AREA OF OPERATION: CERTIFICATION

A. TASK: PARACHUTE RIGGER CERTIFICATE REQUIREMENTS

REFERENCE: 14 CFR section 65.111.

Objective. To determine that the applicant exhibits knowledge of who may pack, maintain, or alter any main parachute of a dual parachute by listing:

1. certificate requirements.
2. appropriate supervision.
3. personal usage.
4. tandem operations.

B. TASK: SENIOR PARACHUTE RIGGER CERTIFICATION REQUIREMENTS

REFERENCE: 14 CFR section 65.115.

Objective. To determine that the applicant exhibits knowledge of the senior parachute rigger certification requirements by describing the:

1. required number of parachutes to be packed per type.
2. required method of packing.
3. appropriate supervisors for a student rigger.
4. what tests are required.
5. the subject areas of each test.

C. TASK: MASTER PARACHUTE RIGGER CERTIFICATION REQUIREMENTS

REFERENCE: 14 CFR section 65.119

Objective. To determine that the applicant exhibits knowledge of the master parachute rigger certification requirements by describing the:

1. years of experience required.
2. required method of packing.
3. minimum number and types of parachutes packed.
4. appropriate supervisor for the packing instruction (non-certificated applicant).
5. when a written test is required.
6. what subject areas the written test covers.
7. what the practical test requires.

D. TASK: ADDITIONAL RATING REQUIREMENTS

REFERENCE: 14 CFR section 65.123.

Objective: To determine that the applicant exhibits knowledge of additional ratings requirements by describing the:

1. required number of parachutes to be packed per type.
2. required method of packing.
3. appropriate supervisor for packing instruction.
4. test requirement.

E. TASK: 14 CFR PART 105 PARACHUTE EQUIPMENT AND PACKING REQUIREMENTS.

REFERENCE: 14 CFR section 105.43

Objective: To determine that the applicant exhibits knowledge of Title 14 CFR part 105 with regard to the use of singleharness, dual parachute systems by listing:

1. configuration.
2. main parachute packing requirements.
3. reserve parachute packing requirements.
4. automatic activation device requirements.

II. AREA OF OPERATION: PRIVILEGES, LIMITATIONS, AND OPERATING RULES

A. TASK: SENIOR PARACHUTE RIGGER CERTIFICATE PRIVILEGES AND LIMITATIONS.

REFERENCE: 14 CFR part 65.

Objective. To determine that the applicant exhibits knowledge of Senior Parachute Rigger Certificate privileges and limitations by describing:

1. which parachute types may be packed.
2. which parachute types may be maintained.
3. what repairs may be accomplished.
4. who the senior rigger may supervise.
5. what the supervised person may accomplish.

B. TASK: MASTER PARACHUTE RIGGER CERTIFICATE PRIVILEGES AND LIMITATIONS.

REFERENCE: 14 CFR part 65.125.

Objective. To determine that the applicant exhibits knowledge of Master Parachute Rigger Certificate privileges and Limitations by describing:

1. which parachute types may be packed.
2. which parachute types may be maintained.
3. what repairs may be accomplished.
4. who the master rigger may supervise.
5. what the supervised person may accomplish.

C. TASK: REQUIRED FACILITIES AND EQUIPMENT

REFERENCE: 14 CFR section 65.127.

Objective. To determine that the applicant exhibits knowledge of required facilities and equipment by listing:

1. packing table requirements.
2. packing environment requirements
3. tool and equipment requirements
4. housing requirements.

D. TASK: PERFORMANCE STANDARDS

REFERENCE: 14 CFR section 65.129.

Objective. To determine that the applicant exhibits knowledge of the required performance standards of 14 CFR part 65, section 65.129 by describing what the rule state concerning certificated parachute rigger with regard to:

1. requirements for type rating.
2. unsafe parachutes.
3. drying and airing requirement.
4. alteration of parachutes.
5. requirements to exercise privileges.

E. TASK: RECORDATION

REFERENCE: 14 CFR section 65.131

Objective. To determine that the applicant demonstrates knowledge of recordation by making an example record of a:

1. packing record.
2. maintenance record.

F. TASK: MANUFACTURER'S PACKING INSTRUCTIONS

REFERENCE: Parachute manufacturer's Instructions and 14 CFR section 65.133.

Objective. To determine that the applicant demonstrates use of manufacturer's packing instructions by:

1. layout and inspection.
2. folding canopy and stowing lines.
3. closure of pack flaps and routing of ripcord.
4. sealing pack.

(This TASK maybe demonstrated simultaneously with any packing TASK from AREA OF OPERATION III.)

G. TASK: REPAIR CLASSIFICATIONS

REFERENCES: 14 CFR part 1; AC 105-2.

Objective. To determine that the applicant exhibits knowledge of repair classifications by listing:

1. what constitutes a major repair.
2. three examples of major repairs.
3. who may perform major repairs.
4. what data is used to make the repair.

H. TASK: ALTERATIONS

REFERENCE: AC 105-2.

Objective. To determine that the applicant exhibits knowledge of alterations by describing:

1. what constitutes a parachute alteration.
2. what is the certificate requirements for a rigger to perform alterations.
3. what data is required.
4. how alteration approval may be obtained.
5. who besides riggers may perform alterations.

I. TASK: TSO 23c REQUIREMENTS

REFERENCES: TSO 23c; Aerospace Standard 8015A.

Objective. To determine that the applicant exhibits knowledge of TSO 23c requirements by listing the:

1. seven major components.
2. required marking and location of marking on stowage container.
3. required marking and location of marking on canopy.
4. required marking on primary actuation device/ripcord.

III. AREA OF OPERATION: PACKING PARACHUTES

NOTE: EXAMINER MUST SELECT THE CORRESPONDING PACKING TASK FOR EACH TYPE RATING SOUGHT.

A. TASK: PACKING SEAT TYPE PARACHUTE (SEAT TYPE RATING)

REFERENCE: Manufacturer's instructions.

Objective. To determine that the applicant demonstrates the procedure for packing a seat type parachute in accordance with manufacturer's instructions by:

1. inspecting complete assemble to include a pull test.
2. flaking canopy.
3. folding canopy.
4. diaper closure (where applicable).
5. canopy and line stowage (sequence dependent on model).
6. placement of pilot chute.
7. container closure.
8. sealing pack.
9. recordation.

B. TASK: PACKING BACK TYPE PARACHUTE, excluding piggyback (BACK TYPE RATING)

REFERENCE: Manufacturer's instructions.

Objective. To determine that the applicant demonstrates the procedure for packing a back type parachute in accordance with manufacturer's instructions by:

1. inspecting complete assembly to include a pull test.
2. flaking canopy.
3. folding canopy.
4. installation of deployment bag or diaper (where applicable).
5. canopy and line stowage (sequence dependent on model).
6. placement of pilot chute.
7. container closure.
8. sealing pack.
9. recordation.

C. TASK: PACKING CHEST TYPE PARACHUTE (CHEST TYPE RATING)

REFERENCE: Manufacturer's instructions.

Objective. To determine that the applicant demonstrates the procedure for packing a chest type parachute in accordance with manufacturer's instructions by:

1. inspecting complete assembly to include a pull test.
2. flaking canopy.
3. folding canopy.
4. closure of diaper (where applicable).
5. canopy and line stowage (sequence dependent on model).
6. placement of pilot chute.
7. container closure.
8. sealing pack.
9. recordation.

D. TASK: PACKING LAP TYPE PARACHUTE (LAP TYPE RATING)

REFERENCE: Manufacturer's instructions.

Objective. To determine that the applicant demonstrates the procedure for packing a lap type parachute in accordance with manufacturer's instructions by:

1. inspecting complete assemble to include a pull test.
2. flaking canopy.
3. folding canopy.
4. canopy and line stowage (sequence dependent on model).
5. placement of pilot chute.
6. container closure.
7. sealing pack.
8. recordation.

E. TASK: PACKING ROUND PARACHUTE

REFERENCE: Manufacturer's instructions.

Objective. To determine that the applicant demonstrates the procedure for packing a round parachute in accordance with manufacturer's instructions by:

1. inspecting complete assembly to include a pull test.
2. flaking canopy.
3. folding canopy.
4. closure of diaper (where applicable).
5. canopy and line stowage (sequence dependent on model).
6. placement of pilot chute.
7. container closure.
8. sealing pack.
9. recordation.

F. TASK: PACKING RAM-AIR PARACHUTE

REFERENCE: Manufacturer's instructions.

Objective. To determine that the applicant demonstrates the procedure for packing a ram-air parachute in accordance with manufacturer's instructions by:

1. inspecting complete assembly to include a pull test.
2. flaking canopy.
3. folding canopy.
4. installation of deployment bag or diaper closure (where applicable).
5. canopy and line stowage (sequence dependent on model).
6. placement of pilot chute.
7. container closure.
8. sealing pack.
9. recordation.

G. TASK: PACKING PIGGYBACK CONTAINER PARACHUTE

REFERENCE: Manufacturer's instructions.

Objective. To determine that the applicant demonstrates the procedure for packing a piggyback container type parachute assembly in accordance with manufacturer's instructions by:

1. inspecting complete assembly to include a pull test.
2. flaking canopy.
3. folding canopy.
4. installation of deployment bag or diaper closure (where applicable).
5. canopy and line stowage (sequence dependent on model).
6. placement of pilot chute.
7. container closure.
8. sealing pack.
9. recordation.

IV. AREA OF OPERATION: PARACHUTE OPERATION AND CARE

A. TASK: PARACHUTE STORAGE

REFERENCES: 14 CFR part 65; AC 105- 2; PPM.

Objective. To determine that the applicant demonstrate preparing a parachute for extended storage by:

1. unpacking parachute.
2. roll packing the canopy.
3. positioning slider if installed.
4. daisy chaining lines.
5. removing rubber bands from assembly.
6. separating canopy assembly from container (if necessary).
7. placing assembly in storage carton (canopy on the bottom, lines, pack and harness on top).

B. TASK: PARACHUTE DRYING AND AIRING

REFERENCES: 14 CFR part 65; PPM Vol. II.

Objective. To determine that the applicant:

1. Exhibits knowledge of procedure for drying and airing parachute assemblies by describing—
 - a. recommended airing time.
 - b. method and conditions when airing time maybe reduced.
 - c. recommended atmospheric conditions in the packing area.
2. Demonstrates hanging a round canopy and chaining the suspension lines.
3. Demonstrates hanging a ram-air canopy.

C. TASK: PARACHUTE ASSEMBLY INSPECTION

REFERENCES: PPM Vol.; Canopy manufacturer manual; Container manufacturer manual.

Objective. To determine that the applicant:

1. Exhibits knowledge of parachute assembly inspection by—
 - a. layout and straightening of the complete canopy, container and harness assembly.
 - b. ensure all components are compatible, complete, free from manufacturer's errors and in compliance with approved changes.
2. Demonstrates inspection of the following components—
 - a. pilot chute.
 - b. pilot chute bridle.
 - c. deployment device (bag, diaper, ect.)
 - d. lines (suspension-steering).
 - e. risers and links.
 - f. harness.
 - g. container.
 - h. ripcord.
 - i. ram-air canopy.

D. TASK: CLEANING PARACHUTE CANOPIES.

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant:

1. Exhibits knowledge of cleaning parachute canopies by describing—
 - a. which canopies could be washed if absolutely necessary.
 - b. the effect washing would have on the permeability of a ram-air canopy.
 - c. how hard water maybe softened.
 - d. the washing process (including the handling of the canopy during the wash).
 - e. how the canopy should be dried and the maximum temperature and time a heated drying room maybe used.
2. Demonstrates spot cleaning a sample piece of nylon canopy material soiled with grease.

E. TASK: PARACHUTE HARNESS ADJUSTMENT

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant demonstrates parachute harness adjustment by:

1. selecting the correct size harness.
2. loosening adjustable back, chest, and leg straps.
3. donning harness and positioning pack over shoulders.
4. position and tighten leg straps.
5. adjust main lift webs (if adjustable).
6. tighten diagonal back straps or horizontal adjustments (if adjustable).
7. adjust chest strap.
8. thread and tighten belly band if installed.
9. stow excess webbing.

F. TASK: PIN TYPE STATIC LINE REQUIREMENTS

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant:

1. Exhibits knowledge by describing the Federal Aviation Regulations requirements concerning—
 - a. when an assist device will be employed.
 - b. the length of the assist device.
 - c. the static load strength of the assist device.
 - d. who may attach an assist device to a main parachute.
2. Exhibits knowledge of pilot chute deployment by pin type static line by describing the sequence of events in the deployment cycle.
3. Demonstrates inspection of a pin type static line with attached assist device.

G. TASK: BREAK CORD STATIC LINE REQUIREMENTS

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant:

1. Exhibits knowledge by describing the Federal Aviation Regulations requirements concerning—
 - a. when an assist device will be employed.
 - b. the length of the assist device.
 - c. the static load strength of the assist device.
 - d. who may attach an assist device to a main parachute.
2. Exhibits knowledge of direct deployment of main parachute canopy by break cord static line, by describing the sequence of events in the deployment cycle.
3. Demonstrates inspection of a break cord static line with attached assist device.

H. TASK: CLEANING PARACHUTE HARNESS/CONTAINER

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant:

1. Exhibits knowledge of cleaning parachute harness/container assemble by describing—
 - a. how the harness/container maybe cleaned.
 - b. how velcro should be protected during washing.
 - c. the effect of washing the harness webbing in too hot water or too strong a soap solution.
 - d. how the hardware should be protected after cleaning.
 - e. effects of cleaning solvents on nylon and lexan plastic.
2. Demonstrates litmus testing an area of suspected acid contamination on a sample piece of container material.

V. AREA OF OPERATION: PARACHUTE CONSTRUCTION DETAILS

A. TASK: SEAM CONSTRUCTION DEFECTS

REFERENCE: PPM Vol. I or Vol. II.

Objective. To determine that the applicant exhibits knowledge of seam construction defects by identifying from examples:

1. a correctly sewn seam.
2. a raw edge defect.
3. excess material beyond desired seam width underfold condition (insufficient material inside seam width).
4. underfold condition (insufficient material inside seam width).
5. overfold condition (excess material inside seam width).

B. TASK: WEBBING JOINT CONSTRUCTION

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant:

1. Exhibits knowledge of webbing joint construction by describing—
 - a. which yarns of the webbing material provide the load bearing capacity.
 - b. which stitches patterns provide the greatest strength in webbing.
 - c. the stitches per inch commonly used on webbing and the minimum edge distance.
 - d. why stitching on webbing should extend 1" over the end of the webbing material.
2. Demonstrates constructing a sewn sample harness chest strap joint, using 3 point W W stitching on Type 8 webbing.
3. Demonstrates constructing a sewn sample harness hip junction, using 4 point W W stitching on Type 7 webbing.

C. TASK: PARACHUTE CONSTRUCTION KNOTS

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates forming the following types of parachute construction knots.

1. Clove hitch.
2. Larks head.
3. Two overhand.
4. Bowline.
5. Surgeon's with locking

D. TASK: FABRIC CONSTRUCTION

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates fabric construction details by indicating on a sample of parachute cloth the:

1. fabric warp yarn.
2. fabric fill yarn.
3. selvage edge.
4. ripstop weave.

E. TASK: FRENCH FELL SEAM CONSTRUCTION

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant exhibits knowledge of 301 LSc-2 french fell seam construction by:

1. selecting the correct sewing machine.
2. setting up the sewing machine to sew with E size V-T-295 thread on MIL-C-4438 cloth at the correct stitches per inch.
3. constructing a bias 1 foot sample of a French fell seam on MIL-C-4438 cloth.
4. examining the sewn sample for any irregularities.

F. TASK: TECHNICAL STANDARD ORDER TSO-C23c

REFERENCES: TSO-C23c; Aerospace Standard 8015A.

Objective. To determine that the applicant exhibits knowledge of technical standard order requirements by listing:

1. types of parachutes specified.
2. categories of parachutes specified.
3. 7 major components of a parachute assembly.
4. primary actuation device test load and functional requirements.
5. marking requirements for stowage container, canopy, primary actuation device.
6. strength test requirements for a category B parachute assembly.

G. TASK: TECHNICAL STANDARD ORDER TSO-C23b

REFERENCE: TSO-C23b and NAS-804.

Objective. To determine that the applicant exhibits knowledge of technical standard order requirements by listing:

1. types of parachutes specified.
2. fitting material requirements.
3. maximum pull force required to open pack.
4. required information marking on pack.
5. required information marking on canopy.
6. ripcord tension test requirements.
7. requirement for inspection data pocket.
8. strength test requirement for a low speed parachute drop at 125 mph.

H. TASK: FASTENER TAPES

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant exhibits knowledge of fastener tapes (hook & loop) and factors that affect their functions by describing:

1. position at installation of the two sides.
2. one way hook tape.
3. effect of cutting the tape lengthwise .
4. effect of temperature on tapes.
5. effect of water on tapes

I. TASK: FINGER TRAP LOOP CONSTRUCTION

REFERENCE: PPM Vol. II.

Objective. To determine that applicant:

1. Exhibits knowledge of finger trap construction by describing—
 - a. tools necessary to form loop.
 - b. method of tensioning and marking cord.
 - c. types of stitching used to secure the loop.
 - d. method of trimming cord end.
 - e. length of stitching necessary to secure loop.
 - f. construction irregularities to be avoided.
2. Demonstrates constructing a 1 inch finger trap loop in a coreless dacron cord sample.

J. TASK: RADIAL SEAM CONSTRUCTION

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates construction of an LSc-4 radial seam by:

1. setting up a sewing machine to sew with E size MIL-C-7020 cloth at the correct stitch per inch.
2. constructing a bias 1 foot sample of a 301- LSc-4 radial seam enclosing a section of suspension line.
3. examining the sewn sample for any seam defects.

VI. AREA OF OPERATION: PARACHUTE REPAIR

A. TASK: SINGLE PATCH CANOPY REPAIR

REFERENCE: PPM Vol. I or II.

Objective. To determine that the applicant demonstrates constructing a single patch canopy repair by:

1. laying out and marking the damage area.
2. selecting proper material.
3. orientating patch material warp and filler threads to the canopy.
4. cutting and folding the patch.
5. sewing inside seam.
6. removing damaged area.
7. sewing outside seam.
8. thoroughly inspecting, and ensure the stitching has not captured a line or adjacent material.

B. TASK: REPLACEMENT OF LOWER CONTROL LINE (RAM-AIR CANOPY)

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant demonstrates replacement of a lower steering control line on a ram-air canopy by:

1. cutting a new line.
2. finger-trapping one end of the line.
3. attaching finger-trapping to upper control lines with the same knot as original and sewing.
4. using the manufactures specified measurement, finger-trap a brake loop into the new steering line.
5. threading the new steering line through the slider and steering line guide ring, and tying on the steering toggle.
6. tensioning and readjusting line then sewing.

C. TASK: APPLICATION OF NON-DESTRUCTIVE TEST METHOD TS-108

REFERENCE: Parachute Industry Association Publications Technical Standard 108.

Objective. To determine that the applicant:

1. Exhibits knowledge of the -
 - a. purpose of the test.
 - b. tools and materials required.
 - c. test procedure.
 - d. chemical indications.
2. Demonstrates the test procedure.

D. TASK: LINE ATTACHMENT LOOP REPLACEMENT

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant:

1. Demonstrates preparation for suspension line attachment loop replacement on a ram-air canopy by selecting—
 - a. required repair materials.
 - b. appropriate sewing machine.
 - c. required tools.
2. Demonstrates replacing a suspension line loop.

E. TASK: REMOVAL AND INSTALLATION OF GROMMETS

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates removal and installation of grommets by:

1. cutting the rolled barrel of the old grommet, then separating the barrel and washer from the material.
2. stitching the perimeter of the hole to reinforce.
3. installing new grommet tight enough that it cannot be rotated in the material by hand and with no rough edges.

F. TASK: SEWING MACHINE OPERATION

REFERENCE: PPM Vol. I, and sewing machine manual.

Objective. To determine that the applicant demonstrates sewing machine operation by:

1. threading machine.
2. setting tension.
3. adjust number of stitches per inch.
4. stitching a canopy seam.

G. TASK: CASCADE LINE REPLACEMENT

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant:

1. Demonstrates preparation for replacement of a cascade line by selecting—
 - a. repair materials.
 - b. and adjustment of sewing machine.
 - c. equipment (tools).
2. Demonstrates procedure for replacing a cascade line.

H. TASK: NICOPRESS SLEEVE INSTALLATION

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates nicopress sleeve installation by:

1. selecting proper size fitting.
2. cutting cable.
3. gauging sleeve after pressing.

I. TASK: REPLACEMENT OF V-TAB (BUTTERFLY TAB)

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates replacement of V-tab (butterfly tab) by:

1. removing only those stitches required.
2. fabricating a new V-tab.
3. positioning and tacking new tab in place.
4. applying straight stitching to appropriate area.
5. applying zig-zag stitching to appropriate area.
6. repositioning suspension line in V-tab and applying final stitching.

J. TASK: REPLACEMENT OF CONTINUOUS SUSPENSION LINE

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates replacement of continuous suspension line by:

1. stitch removal.
2. pre-stretching replacement line.
3. measurement of the replacement line.
4. installing of new line into canopy.
5. positioning of lines in respective links, including knotting and sewing.

K. TASK: SUSPENSION LINE REPLACEMENT IN RAM-AIR CANOPY.

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant demonstrates suspension line replacement in a ram-air canopy by:

1. removal of damaged line.
2. measurement of the replacement line.
3. positioning of lines in respective links, including knotting and sewing.
4. positioning of the main line to the canopy.
5. installing cascade line.
6. rechecking all measurement.
7. bar tacking all open line ends.
8. inspecting work.

L. TASK: CONTAINER PATCHING

REFERENCE: PPM Vol.II.

Objective. To determine that the applicant:

1. Demonstrates preparation for patching a container tear by selecting—
 - a. repair material.
 - b. and adjusting of sewing machine.
 - c. required tools.
2. Demonstrates the procedure for repair of a tear in the container.

M. TASK: RAM-AIR CANOPY REPAIR LIMITATIONS.

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant demonstrates knowledge of ram-air canopy repair limitations for both certificated and non-certificated canopies, by listing limits for the following repairs.

1. Restitching.
2. Single outside patch.
3. Basic patch.
4. Panel patch.
5. Suspension lines.

N. TASK: RAM-AIR CANOPY PATCH REPAIR ADJACENT TO A SEAM

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant demonstrates fabrication of a patch on a ram-air canopy in an area that requires the opening of a seam to accept the patch material. The applicant:

1. indicates the personal certification requirements for this repair to both a certificated and non-certificated canopy.
2. selects materials for the repair (fabric and thread).
3. selects sewing machine.
4. selects other required tools.
5. lays out canopy and removes stitching.
6. lays out patch and pins.
7. sews patch and seam.
8. inspects work.

VII. AREA OF OPERATION: PARACHUTE ALTERATIONS

NOTE: The following **TASKS** are for **MASTER rigger applicants only**. (Examiner must select at least 2 **TASK**)

A. **TASK: ALTERATION DATA APPROVAL**

REFERENCE: AC105-2.

Objective. To determine that the applicant demonstrates alteration procedures by:

1. listing those sources where previously approved data can be found.
2. explaining the procedure for obtaining data approval in cases where no previously approved data exist.
3. making a sample recordation of a completed alteration.

B. **TASK: INSTALL AN AUTOMATIC ACTIVATION DEVICE** (container not factory ready).

REFERENCE: Manufacturer's data.

Objective. To determine that the applicant can demonstrate altering a parachute container to accept an automatic activation device by

1. obtaining the required approved data for the installation.
2. assembling necessary materials and equipment.
3. performing layout of material.
4. cutting material to size and shape.
5. performing sewing operations.
6. installing grommets.
7. installing automatic activation device (AAD).
8. function test AAD if required making appropriate record entries.

C. **TASK: FABRICATION BINDING CORNERS**

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates fabrication of 90 degree binding corners by:

1. cutting binding tape for the corner, folding and sewing a simple bound corner.
2. constructing an example of a binding finishing corner on a panel.

D. TASK: ALTERING RISER CONNECTORS

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant demonstrates altering a riser "L" links to rapide links by:

1. selecting replacement link.
2. inspecting new links.
3. removing stitches that parallel the "L" link across the top of the riser.
4. folding in the corners of the riser.
5. orientating the rapide link to the proper operating position.
6. hand tacking riser web.
7. torquing the rapide link.

E. TASK: BRIDLE CORD ALTERATION

REFERENCE: PPM.

Objective. To determine that the applicant exhibits knowledge of bridle cord alteration by describing:

1. function of bridle cord.
2. possible effects of change in length.
3. data required to alter.
4. attachment methods (including tacking).
5. strength requirements.

F. TASK: THREADING FRICTION ADAPTER

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates threading friction adapters by:

1. selecting compatible webbing.
2. threading adapter.
3. prepare the terminal either by split, wrap and sew method or by folding over and sewing.

G. TASK: D or V RING INSTALLATION

REFERENCE: PPM Vol. I.

Objective. To determine that the applicant demonstrates D or V rings installation by:

1. selecting compatible snap and ring.
2. selecting appropriate webbing.
3. determining proper stitches per inch.
4. determining stitch pattern.
5. sewing an example installation.

H. TASK: CONVERSION OF RIPCORD DEPLOYMENT TO HAND DEPLOYED PILOT CHUTE.

REFERENCE: PPM Vol. II.

Objective. To determine that the applicant exhibits knowledge of conversion of ripcord deployment to hand deployed pilot chute by describing:

1. removal of ripcord pocket and housing.
2. removal of pilot chute.
3. selection of replacement bridle cord.
4. installation of velcro.
5. installation of curved locking pin to bridle.
6. installation of pilot chute pouch and pilot chute.
7. recordation.

I. TASK: FABERCATE A CANOPY DEPLOYMENT BAG.

REFERENCE: Manufacturer's Manual.

Objective. To determine that the applicant can fabricate a canopy deployment bag by:

1. selecting proper data (for the subject container).
2. assembling the necessary materials and equipment.
3. laying out the materials.
4. cutting to size and shape.
5. installing grommet(s).
6. performing sewing operations.

J. TASK: CONVERT THROW-OUT PILOT CHUTE FROM REAR OF LEG POSITION TO BOTTOM OF CONTAINER POSITION.

REFERENCE: Manufacturer's Data.

Objective: to determine that the applicant demonstrates performing all operations as required by the manufacturer's data to relocate a throw-out pilot chute pouch. Moving it from a leg mounted position to a bottom of container position by

1. removal of leg mounted pouch and harness bridle velcro.
2. layout of material for new pilot chute pouch.
3. sewing operations for construction of new pouch.
4. sewing operations for attachment of new pouch to container.
5. fabrication and attachment of new pilot chute bridle including velcro attachments as required.
6. recordation.