

DENTAL LABORATORY SPECIALTY

Volume 3. Treatment and Orthodontic Appliances, and Removable Dental Prostheses



**381st Training Squadron
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Fort Sam Houston, TX 78234**

INTRODUCTION

Volume 3, *Treatment and Orthodontic Appliances, and Removable Dental Prostheses*, Qualification Training Package (QTP) contains modules on fabricating the simple interim RDP, hard nightguard, and the Hawley retainer. This QTP is designed to enhance 5- and 7-skill level on-the-job training (OJT) of dental laboratory personnel. Training references listed in each module may be used to compliment training. All QTPs are intended to be used by trainees, trainers, supervisors, and task certifiers. Before initiating any training you should review your responsibilities as a supervisor/trainer for conducting OJT per AFI 36-2201, Chapter 6, *Air Force Training Program On-The-Job Training Administration*.

QTPs are instructional packages designed to help you conduct and evaluate your field training. Once you begin upgrade training you are required to use the QTPs. QTPs provide continuity to the trainee's upgrade training and are divided into the following volumes: 1) *General Dental Laboratory Experience*; 2) *Fixed Prosthodontics*; 3) *Treatment and Orthodontic Appliances, and Removable Dental Prostheses*; 4) *Dental Laboratory Administration*; 5) *Medical Material*; and 6) *Supervision and Training*. The QTP modules were designed to assist you in preparing for and conducting training. Each module segments the major tasks into teachable elements. Your goal is to provide enough training and guidance so trainees can do all task related steps, without assistance and produce an appliance or prosthesis that meets local requirements and fabrication standards for speed and accuracy. QTPs also aid OJT task certifiers in evaluating the trainee's demonstrated performance. If you have local training requirements not covered by a QTP module you *should* develop "steps in performance" and "performance checklists" that support and standardize those tasks.

When *you* are satisfied the trainee meets standards, as prescribed in the QTP performance checklist, *you* must document each task completion in the QTP tab. If a person is being recertified on a task that is supported by a QTP you must use that module to complete the recertification process.

Typically, you will manage each module by first, training the tasks and then, evaluating performance. Your local steps in performance may vary from the method listed in the QTP module. If this is the case, you are authorized to make changes to the first half of each module, (i.e. steps in task performance); however, the "performance checklist" is considered a *standard* and cannot be altered. You may train each QTP volume/module in any sequence; however, when conducting training use an organized and methodical approach. This will reduce your training time and enhance your efforts.

For effective use of this QTP, conduct training in the following manner:

1. Review the procedures in each module with the trainee.
2. Direct the trainee to review the training references listed to prepare for task performance.
3. Review the steps in task performance with the trainee, allowing enough time to adequately train each step (some modules may take longer to teach).
4. Evaluate the trainee's work at each critical step using the performance checklist at this point will be helpful.
5. Evaluate the trainee's performance and provide feedback on any area for improvement.
6. Finally, when the trainee has successfully completed the task you must document the STS. If the trainee does not accomplish the module, conduct follow-up instruction until the trainee successfully completes the task.

The QTP project goal of the 381st Training Squadron, Fort Sam Houston TX, is to publish a useable document for trainers and trainees. You are encouraged to write-in changes or revisions to the QTPs. A corrections/improvements letter is located on the last page of each QTP volume. You may choose to call in your recommendations to DSN 420-1950 or FAX DSN/Commercial 420-1950 or (210) 808-1950 or email the author at daniel.stellabotte.mil@mail.mil.

The inclusion of names of any specific commercial product, commodity, or service in this publication is for informational purposes only and does not imply endorsement by the Air Force.

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MODULE 1: FABRICATE SIMPLE INTERIM REMOVABLE DENTAL PROSTHESIS (RDP)

STS TASK REFERENCE(S):

5.1.1. Fabricate Simple Interim Removable Dental Prosthesis (RDP)

TRAINING REFERENCE(S):

AFPAM 47-103V1, *Dental Laboratory Technology-Basic Sciences, Removable Prosthodontics and Orthodontics*
CDC 4Y052, Vol. 4, *Removable Prosthodontics*

EVALUATION INSTRUCTIONS:

Demonstrate how to accurately construct a simple interim removable dental prosthesis. Stress the importance of eliminating unwanted interference's between the artificial tooth and opposing occlusal forces. Ensure the trainee understands how to properly operate the curing unit/pressure pot. Explain the purpose for remounting, reestablishing the vertical dimension of occlusion, and eliminating occlusal interference's after curing. Have the trainee fabricate simple interim RDP and suggest ways to improve performance. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Articulator (if needed)	Artificial Teeth
Baseplate wax	Bunsen Burner
Denture Bag	Denture Bur
Disinfectant Solution	Duplicating Flask
Identification (ID) Material (optional)	Impression Material
Pressure Pot	Polishing Compound
Pumice	Acrylic Resin
Waxing Instruments	Wire-Bending Pliers (Bird-Beak, 3-Prong)
Wire Cutters	Wrought Wire

STEPS IN TASK PERFORMANCE:

1. Relieve edentulous space on cast if required
2. Survey the cast at a neutral (0 degree) tilt
 - a. Mark the height of contour on natural teeth
 - b. Mark the height of contour on facial and lingual soft tissue
3. Design master cast per dentist's instructions
4. Perform 0-degree blockout of lingual and proximal teeth
5. Perform 0-degree blockout of all soft tissue undercuts
6. Flash wax into the gingival crevices
7. Duplicate the cast (NOTE: if local policy dictates, the blocked-out master cast may be used instead of a duplicate cast for simple interim RDPs)
 - a. Soak master cast on heels in SDS for 30 minutes
 - b. Place the cast in duplicating flask

MODULE 1: FABRICATE SIMPLE INTERIM REMOVABLE DENTAL PROSTHESIS (RDP)

STEPS IN TASK PERFORMANCE (CONTINUED):

- c. Use hydrocolloid as the duplicating material; however, if using alginate, mix 2 to 3 times more water than the recommended water-to-powder ratio to obtain a runny mix
- d. Pour the duplicate cast in vacuum spatulated dental stone
- 8. Select proper artificial tooth, shade, and mold
- 9. Adapt artificial tooth to the ridge of the duplicate cast
- 10. Bend wrought wire clasps, as requested
- 11. Hand articulate or mount casts on simple articulator
- 12. Adjust and arrange artificial tooth for esthetics and function
- 13. Secure the artificial tooth in the desired position
- 14. Create a matrix to record the placement of the artificial tooth (remember separator)
- 15. Remove the tooth and matrix
- 16. Paint the duplicate cast with tinfoil substitute
- 17. Sticky wax the tooth to the matrix
- 18. Use the matrix to reposition the artificial tooth
- 19. Position the wrought wire clasps (be sure they do not interfere with the teeth or matrix)
- 20. Apply sticky wax to the clasps on the facial surfaces of the abutments
- 21. Sprinkle on autopolymerizing resin 2 to 3 mm thick to form the denture base
- 22. Cure the assembly in a pressure pot IAW acrylic manufacturer's instructions
(Alternatively, the base may be processed using heat cured or light cured resin)
- 23. Remove cast from pressure pot
- 24. Re-articulate
- 25. Eliminate undesirable contacts
- 26. Lift RDP off the duplicate cast with a controlled jet of air
- 27. Finish and polish
- 28. Verify fit on master cast
- 29. Disinfect and store in a humid environment

MODULE 1: FABRICATE SIMPLE INTERIM REMOVABLE DENTAL PROSTHESIS (RDP)

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to fabricate a simple interim removable dental prosthesis and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

FABRICATE SIMPLE INTERIM REMOVABLE DENTAL PROSTHESIS (RDP)		
DID THE TRAINEE...?	YES	NO
1. Survey and blockout the master cast		
2. Bend wrought wire clasps as prescribed		
3. Arrange artificial teeth for ideal function and esthetics		
4. Sprinkle the appliance for proper design and thickness		
5. Properly cure autopolymerizing resin, achieving a dense porous-free appliance		
6. Recover, finish, and polish appliance, producing a smooth hygienic surface		
7. Disinfect finished appliance		

FEEDBACK:

Use this checklist as a source of information; discuss the trainee's performance indicating strengths and weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, both the trainer and the trainee should certify performance by appropriately documenting the Air Force Training Record (AFTR).

MODULE 2: FABRICATE HARD NIGHTGUARD

STS TASK REFERENCE(S):

5.4. Fabricate hard nightguard

TRAINING REFERENCE(S):

AFPM 47-103, Vol.2, *Dental Laboratory Technology -Fixed and Special Prosthodontics*

CDC 4Y052, Vol. 3, *General Laboratory Procedures and Orthodontic Appliances*

EVALUATION INSTRUCTIONS:

Demonstrate how to accurately construct a maxillary or mandibular hard nightguard using the duplicate and pour or more commonly known as the magic box technique. Ensure the proper amount of pin opening is established prior to fabricating the hard nightguard. Some laboratories may use the sprinkle technique to fabricate the hard nightguard; you may choose to demonstrate this technique instead of the magic box technique. Have the trainee fabricate a hard nightguard and suggest ways to improve performance. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Articulating Paper	Bard Parker
Baseplate Wax	Buffalo Knife
Burs	Bunsen Burner or Alcohol Torch
Clear Acrylic Resin/Monomer	Denture Bag
Disinfectant Solution	Handpiece or Lathe
Pumice	Bard Parker
Shim stock	Surveyor
Spatula	Duplicating Material (Hydrocolloid)
Pressure Pot	Articulator
Duplicating Flask	

STEPS IN TASK PERFORMANCE:

1. Mount cast on articulator; establish correct vertical dimension of occlusion (VDO)
2. Survey, design, and blockout cast
3. Wax hard nightguard to prescribed design, and occlusal scheme
4. Remove cast from mounting
5. Attach wax sprues to the heels and center of the nightguard
(Alternatively, a spruing tool can be used to create pouring channels after creating the mold and removing the wax up)
6. Create a mold using duplication flask (magic box),-and material (ie.hydrocolloid)
7. Remove the wax up leaving blockout material on the cast
8. Apply separator
9. Mix self-curing acrylic resin IAW manufacturer's instructions

MODULE 2: FABRICATE HARD NIGHTGUARD

STEPS IN TASK PERFORMANCE (CONTINUED):

- 10. Pour into mold through one of the heel sprues, allowing it to flow out of the opposite sprue
- 11. Cure IAW acrylic manufacturer’s instructions
- 12. Recover cast and appliance and remount on articulator
- 13. Disclose centric contacts with black articulating paper
- 14. Disclose eccentric contacts with red articulating paper
- 15. Restore prescribe disclusion
- 16. Confirm uniform centric contact using shim stock
- 17. Finish and Polish
- 18. Remove hard nightguard from cast
- 19. Disinfect nightguard and store in a humid environment

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to construct a hard nightguard and satisfactorily perform all steps without assistance. Ensure proper safety precautions are followed. Evaluate the trainee’s performance using this checklist.

FABRICATE HARD NIGHTGUARD		
DID THE TRAINEE...?	YES	NO
1. Verify the accuracy of cast and mounting		
2. Wax up hard nightguard to the prescribed design, and occlusal scheme		
3. Apply separator to cast		
4. Pour up wax up/cast using duplicating material ensuring accurate duplication		
5. Use self-curing acrylic resin IAW manufacturer’s instructions		
6. Recover hard nightguard from duplicating material		
7. Remount cast on articulator and reestablish desire occlusal relationship		
8. Recover, finish, and polish appliance, producing smooth, hygienic surfaces		
9. Disinfect the appliance		

FEEDBACK:

Use this checklist as a source of information; discuss the trainee’s performance indicating strengths and weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, both the trainer and the trainee should certify performance by appropriately documenting the AFTR.

MODULE 3: FABRICATE HAWLEY RETAINER

STS TASK REFERENCE(S):

8.4. Fabricate Hawley Retainer

TRAINING REFERENCE(S):

AFPAM 47-103V1, *Dental Laboratory Technology-Basic Sciences, Removable Prosthodontics and Orthodontics*

4Y052 CDC, Vol. 3, *General Laboratory Procedures and Orthodontic Appliances*

EVALUATION INSTRUCTIONS:

Demonstrate how to fabricate a Hawley retainer. Ensure the trainee applies separator to the cast before applying the acrylic resin. Have the trainee fabricate a Hawley retainer and suggest ways to improve performance. Ensure the appliance is disinfected. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Baseplate Wax	Disinfectant Solution
Burs	Orthodontic Resin
Orthodontic Pliers	Polishing Compound
Orthodontic Wire	Pumice
Pressure Pot	Separating Medium
Rag Wheels	Sticky Wax
Spatula	Wire Cutters
Wax Pencil (Red & Blue)	Dental Instruments
Bunsen Burner	

STEPS IN TASK PERFORMANCE:

1. Transfer design from DD Form 2322 to working cast surface
2. Block out undesirable undercuts with baseplate wax
3. Cut orthodontic wires to approximate required length
4. Bend orthodontic wires to design cast specifications
5. Secure orthodontic wires to cast with sticky wax
6. Apply separating medium to cast
7. Sprinkle the acrylic resin to adequate thickness and coverage
8. Cure in a pressure pot IAW acrylic manufacturer's instructions
9. Remove cast from pressure pot
10. Remove sticky wax
11. Separate appliance from cast
12. Finish and polish appliance
13. Disinfect appliance and store in a humid environment

MODULE 3: FABRICATE HAWLEY RETAINER

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to construct maxillary and mandibular working casts for Hawley retainer and satisfactorily perform all the parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

FABRICATE HAWLEY RETAINER		
DID THE TRAINEE...?	YES	NO
1. Properly blockout the cast to (0° blockout) tissue mandibular		
2. Adapt the proper size wire to the cast following the dentist's instructions		
3. Apply separator and sprinkle the acrylic resin to adequate thickness and coverage		
4. Cure the acrylic resin IAW manufacturer's instructions		
5. Separate the appliance without warping or breaking it		
6. Finish the appliance to a uniform thickness without damaging the wires		
7. Polish the appliance creating a smooth, hygienic surface		
8. Disinfect the appliance		

FEEDBACK:

Use this checklist as a source of information; discuss the trainee's performance indicating strengths and weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, both the trainer and the trainee should certify performance by appropriately documenting the AFTR.

MEMORANDUM FOR: 381 TRS/XWAA (CDC Writer)
2931 Harney Road
Fort Sam Houston, TX 78234

FROM:

SUBJECT: Qualification Training Package Improvement

1. Identify volume and module

Volume # _____

Module # and title _____

2. Identify improvement/correction section(s)

_____ STS Task Reference

_____ Training Reference

_____ Evaluation Instructions

_____ Performance Resources

_____ Steps in Task Performance

_____ Performance Checklist

_____ Feedback

_____ Format

_____ Other

3. Recommended changes--use a continuation sheet if necessary.

4. Thank you for your time and interest.

YOUR NAME, RANK, USAF
Title/Position