QTP4Y0X2-3
15 August 2019

DENTAL LABORATORY SPECIALTY

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

381st Training Squadron

2931 Harney Road

JBSA-Fort Sam Houston, TX 78234

Qualification Training Package Author:	MSgt Emily Jones
Training Manager:	Mr. Jonathan Lacquement
Office of Primary Responsibility:	AFMOA/SGD Certified by: CMSgt Randy Lightsey

Supersedes QTP 4Y0X2-3, February 2016

Introduction_____i

Volume 3, *Treatment and Orthodontic Appliances, and Removable Dental Prostheses,* Qualification Training Package (QTP) contains modules on fabricating an interim RDP, hard nightguard, and the Hawley retainer. This QTP is designed to enhance 5-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 36-2651, Chapter 6, *Air Force 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;* and 4) *Dental Laboratory Administration.* 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.

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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
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, Joint Base San Antonio-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 form is located on the last page of each QTP volume.** You may choose to call in your recommendations to DSN/Commercial 420-1950 or (210) 808-1950 or email the author at emily.e.jones.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 TREATMENT APPLIANCE - INTERIM RDP

STS TASK REFERENCE(S):

4.1 Interim RDP

TRAINING REFERENCE(S):

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

EVALUATION INSTRUCTIONS:

Demonstrate how to construct a simple interim removable dental prosthesis. Explain the following:

a. the importance of eliminating unwanted interference's between the artificial tooth and opposing occlusal forces.
b. how to properly operate the curing unit/pressure pot.
c. 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:

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

STEPS IN TASK PERFORMANCE (CONTINUED):

   c. Use hydrocolloid as the duplicating material; however, if using alginate, it is recommended to increase water ratio into powder mixture 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 separator
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 TREATMENT APPLIANCE - INTERIM 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 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 training record.

MODULE 2: FABRICATE TREATMENT APPLIANCE - HARD NIGHTGUARD

STS TASK REFERENCE(S):

4.4 Hard nightguard

TRAINING REFERENCE(S):

AFPM 47-103V2, *Dental Laboratory Technology -Fixed and Special Prosthodontics*
CDC Z4Y052, Vol. 3, *General Laboratory Procedures and Orthodontic Appliances*

EVALUATION INSTRUCTIONS:

Demonstrate how to 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. **NOTE:** There is more than one way to fabricate a hard nightguard. Some laboratory technicians and providers may prefer the sprinkle 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:

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

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 a 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 TREATMENT APPLIANCE - 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 TREATMENT APPLIANCE - 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 desired 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 training record.

MODULE 3: FABRICATE HAWLEY RETAINER

STS TASK REFERENCE(S):

6.3 Fabricate Hawley retainer

TRAINING REFERENCE(S):

AFPAM 47-103V1, *Dental Laboratory Technology-Basic Sciences, Removable Prosthodontics and Orthodontics*
CDC Z4Y052, 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
Burs
Bunsen Burner
Dental Instruments
Disinfectant Solution
Orthodontic Pliers
Orthodontic Resin
Orthodontic Wires
Pressure Pot
Polishing Compound
Pumice
Rag Wheels
Separating Medium
Spatula
Sticky Wax
Wax Pencil (Red & Blue)
Wire Cutters

STEPS IN TASK PERFORMANCE:

1. Transfer design from DD From 2322 to working cast surface
2. Block out undesirable undercuts with baseplate wax
3. Cut orthodontics 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 training record.

Quality Training Package (QTP) Corrections/Improvements Form

Volume #	Module(s) #

The QTP project goal of the 381st Training Squadron, Joint Base San Antonio-Fort Sam Houston TX, is to publish a useable document for trainers and trainees. Utilize this form to suggest changes or revisions to this QTP volume. If necessary, submit additional forms for each module. Email the form to emily.e.jones.mil@mail.mil.

Your Contact Information:

Name (Last, First, MI):	Rank:	Base:
Email Address:		Phone #:

Item Suggestion(s):

Item	Reference within Document (e.g., page #, paragraph, sentence, etc.)	Recommended Changes
STS Task		
Training References		
Evaluation Instructions		
Performance Resources		
Steps in Task Performance		
Performance Checklist		
Feedback		

Additional Suggestions (e.g., overall formatting, images, title page design, introduction, table of contents, feedback form, etc.):

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