QTP 4Y0X2-1
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DENTAL LABORATORY SPECIALTY

Volume 1. General Skills

381st Training Squadron

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Introduction_____i

Volume 1, *General Skills*, Qualification Training Package (QTP) contains modules on constructing casts and custom impression trays, mounting casts, repairing prostheses, and operating and maintaining equipment. This QTP is designed to enhance 5- and 7-skill level OJT of dental laboratory personnel. The 4Y0X2 Career Development Course may be used to compliment the training references listed in each module. All four 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 on-the-job training (OJT) per AFI 36-2201, *Developing, Managing, and Conducting Training.*

Six months after the apprentice graduates, you should receive a survey that allows you to evaluate the in-residence apprentice course. This poll is a valuable tool, your feedback is critical to improving our 3 level course and your career field. Subsequently, 3-skill level training provides a foundation for your OJT

QTPs are 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 Skills;* 2) *Fabricating Fixed Restorations;* 3) *Fabricating Removable and Orthodontic Appliances; and* 4) *Administration and Management*. The QTP modules were written to assist you in preparing for and conducting training. You *must* use the QTP modules for training when either: 1) the STS task is a core task (minimum qualification for the specialty); or 2) you have identified the STS task as a requirement of the trainee's job. 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 that meets local requirements 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.

Accompanying each volume of QTPs is a *qualification training progress record.* This QTP record serves as a document to record the date the trainee completes each module. Every person in qualification/upgrade training *must* have this QTP progress record filed in their OJT folder. Use and annotation of this progress record is similar to current OJT documentation. When *you* are satisfied the trainee meets standards, as prescribed in the QTP performance checklist, *you* must document and initial each task completion date in column 2B of the Specialty Training Standard (STS) and the "date completed" column in the QTP progress record. 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. You should file the QTPs in an accessible location.

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.

When beginning any training process you should first, review the procedures in each module with the trainee. Second, direct the trainee to review the training references listed to prepare for task performance. Third, go through the steps in task performance with the trainee, allowing enough time to adequately train each step (some modules may take longer to teach). Fourth, evaluate the trainee's work at each critical step--using the performance checklist at this point will be helpful. Fifth, evaluate the trainee's performance and provide feedback on any areas for improvement. Finally, when the trainee has successfully completed the task you must document and initial both the STS and the QTP progress record. 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 381 TRS/DTL, Sheppard AFB 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 736-7008 or FAX DSN/Commercial 736-6928 or (817) 676-6928 or email the author at mark.cochrane@sheppard.af.mil.

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MODULE 1. CONSTRUCTING CASTS FOR COMPLETE DENTURES

STS TASK REFERENCE(S):

3b(3) Construct casts for complete dentures

TRAINING REFERENCE(S):

AFP 162-6, Vol. 2, *Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Demonstrate how to construct maxillary and mandibular master casts using the plaster and pumice boxing method. You may choose to train and evaluate alternative techniques such as the bead, box, and pour, or alginate boxing methods. Demonstrate trimming the casts, emphasizing the critical anatomical areas of the casts. Have the trainee construct master casts and suggest ways to improve performance. Throughout this process, stress the importance of a properly fabricated cast. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Air or Electric Chisel
Boxing Wax
Cast Trimmer
Distilled Water
Indelible Ink Marker
Mixing Bowl
Plaster Knife
Preweighed Die Stone
Rubber Mixing Bowl
Separator Medium
Surface Tension Reducing Agent
Utility Wax
Vibrator
Bard Parker Knife
Bunsen Burner
Disinfectant Solution
Graduated Cylinder
Large Artist Brush
Plaster
Plastic Counter Sheet
Pumice
Saturated Dihydrate Solution (SDS)
Spatula
Clay
Vacuum Mixer
Waxing Instrument

STEPS IN TASK PERFORMANCE:

1. Disinfect impression and rinse under running water
2. Inspect impression for defects
3. Make clay support to level and hold impression off counter
4. Mix equal parts of plaster and pumice in rubber mixing bowl to a thick consistency
5. Stack plaster/pumice mound on plastic counter sheet
6. Place impression into mound--tray side down
7. Form plaster/pumice patty around impression so at least 1.5 mm of flange height is visible
8. Allow plaster/pumice to bench set 45 minutes
9. Trim patty borders to within 6 mm of impression using cast trimmer
10. Trim ledge with Bard Parker knife to expose 3 mm of flange height
11. Wrap boxing wax around patty to a height of at least 15 mm above impression
12. Seal boxing wax to base of patty using heated instrument and utility wax
13. Apply separator to patty areas which will be in contact with stone
14. Spray impression with surface tension reducer
15. Measure distilled water
16. Either weigh or use preweighed stone
17. Vacuum mix die stone and vibrate stone into boxed impression
18. Allow die stone to bench set for 45 minutes
19. Soak cast in warm water before separating from impression
20. Separate cast from impression and soak cast in SDS
21. Trim base and sides of cast using cast trimmer and produce land area of proper dimensions
22. Dry cast and print patient's name on heel using indelible ink

MODULE 1. CONSTRUCTING CASTS FOR COMPLETE DENTURES

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to satisfactorily construct maxillary and mandibular master casts and perform all steps without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

CONSTRUCTING CASTS FOR COMPLETE DENTURES

DID THE TRAINEE…?	YES	NO
1. Inspect the impression for defects such as voids and tears, and if present, act accordingly to inform the dental officer or correct them		
2. Properly orient the impression in the matrix and box it to produce a cast at least 15 mm thick with a land area 6 mm wide		
3. Apply separator, measure water, use preweighed die stone, and vacuum mix stone		
4. Carefully pour the impression to prevent trapping air bubbles and create a cast surface with no voids		
5. Separate the cast from the impression without damaging the cast		
6. Trim base and sides of cast to correct dimensions and preserve critical anatomical areas		
7. Properly trim the land area of a maxillary cast and land area and tongue space of a mandibular cast		
8. Legibly print the patient's name on the heel of the cast using indelible ink		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 2. CONSTRUCTING CASTS FOR REMOVABLE PARTIAL DENTURES (RPD)

STS TASK REFERENCE(S):

3b(4) Construct casts for removable partial dentures

TRAINING REFERENCE(S):

AFP 162-6, Vol. 2*, Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Demonstrate how to construct maxillary and mandibular master casts using the "two-step" method. Demonstrate trimming the casts and emphasize preserving critical anatomical areas of the casts. Have the trainee construct master casts and suggest ways to improve performance. Throughout this process, stress the importance of a properly fabricated cast. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Air or Electric Chisel
Bard Parker Knife
Cast Trimmer
Disinfectant Solution
Distilled Water
Graduated Cylinder
Indelible Ink Marker
Mixing Bowl
Plaster Knife
Plastic Counter Sheet
Preweighed Die Stone
Saturated Dihydrate Solution (SDS)
Spatula
Tray Holder
Vacuum Mixer
Vibrator

STEPS IN TASK PERFORMANCE:

1. Disinfect impression and rinse under running water
2. Inspect impression for defects and spray with surface tension reducer
3. Vacuum mix die stone
4. Vibrate stone into impression and place retention nodules on first pour, ensuring nodules are at least 15 mm tall
5. Let impression set in tray holder for 15 minutes
6. Trim retention nodules parallel to occlusal plane, but do not reduce extensions less than 15 mm
7. Vacuum mix second portion of die stone
8. Form stone patty on plastic counter sheet
9. Wet first pour and vibrate stone around retention nodules
10. Invert impression into patty and shape base of cast taking care not to cover tray
11. Remove excess die stone from tongue space of mandibular and exterior of patty with spatula
12. Allow stone to set for 30 minutes
13. Remove any die stone contacting tray and separate cast from impression
14. Trim base and sides of cast using cast trimmer and produce land area of proper dimensions
15. Trim tongue space of mandibular using air chisel, or large bur
16. Dry cast and print patient's name on heel of cast using indelible ink

MODULE 2. CONSTRUCTING CASTS FOR REMOVABLE PARTIAL DENTURES (RPD)
PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to satisfactorily construct maxillary and mandibular master casts and perform all steps without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

CONSTRUCTING CASTS FOR REMOVABLE PARTIAL DENTURES

DID THE TRAINEE…?	YES	NO
1. Inspect the impression for defects such as voids and tears, and if present, act accordingly to inform the dental officer or correct them		
2. Measure the water, use preweighed die stone, and vacuum mix the die stone		
3. Carefully pour the impression to prevent trapping air bubbles and create sufficient retention for the second pour		
4. Trim retention nodules correctly and base cast parallel to occlusal plane		
5. Separate the cast from the impression without damaging the cast		
6. Trim base and sides of cast to correct dimensions and preserve critical anatomical areas		
7. Properly trim the land area of a maxillary cast and land area and tongue space of a mandibular cast		
8. Legibly print the patient's name on the heel of the cast using indelible ink		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 3. CONSTRUCTING IMPRESSION TRAYS FOR THE ALTERED CAST TECHNIQUE

STS TASK REFERENCE(S):

3c Construct custom impression trays

TRAINING REFERENCE(S):

AFP 162-6, Vol. 2*, Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Due to the availability of cases in your laboratory, training on altered cast procedures may be limited. Select actual cases or use "training" cases for demonstration and performance. Demonstrate how to construct a quadrant impression tray on an RPD framework. Explain the need for the altered cast technique. Have the trainee construct quadrant impression trays 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 Bur
Acrylic Mixing Spatula
Alcohol Torch
Baseplate Wax
Disinfectant Solution
Relief Wax
Tray Material
Acrylic Mixing Jar
Air or Electric Chisel
Alginate Separating Medium
Bunsen Burner
Handpiece or Lathe
Steam or Ultrasonic Cleaner

STEPS IN TASK PERFORMANCE:

1. Repolish clinical corrections made to RPD framework
2. Block out undercuts of cast with baseplate wax
3. Apply 26 gauge relief wax in design area of cast
4. Smooth wax using alcohol torch
5. Apply alginate separating medium to cast
6. Seat framework on cast, ensuring rests are fully seated in preparations
7. Mix tray material and adapt it to extension area of RPD framework
8. Allow tray material to harden
9. Remove RPD with tray material from cast
10. Trim tray material using bur according to tray design
11. Clean and disinfect RPD
12. Return RPD to dentist to make corrected impression

MODULE 3. CONSTRUCTING IMPRESSION TRAYS FOR THE ALTERED CAST TECHNIQUE

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to satisfactorily construct a quadrant impression tray for the altered cast technique and perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

CONSTRUCTING QUADRANT IMPRESSION TRAYS ON RPD FRAMEWORKS

DID THE TRAINEE…?	YES	NO
1. Act accordingly to repolish clinical corrections to the framework		
2. Adequately blockout undercut areas on the cast so RPD could be removed from the cast		
3. Apply separator to the cast and accurately seat framework on the cast		
4. Closely adapt tray material to denture base areas, creating a uniform thickness--not too thick or thin		
5. Carefully remove RPD without damaging the cast, RPD, or tray sections		
6. Trim tray sections to design outline and smooth tray borders		
7. Clean and disinfect the RPD prior to returning it to the dentist		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 4. CONSTRUCTING ALTERED CASTS

STS TASK REFERENCE(S):

3b(9) Construct altered casts for removable partial dentures

TRAINING REFERENCE(S):

AFP 162-6, Vol. 2, *Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Due to the availability of cases in your laboratory, training on altered cast procedures may be limited. Select actual cases or use "training" cases for demonstration and performance. Demonstrate how to section the master cast and box the altered cast impression. Demonstrate pouring the impression and trimming the altered cast. Stress the importance of accurately relating parts and potential problem areas. Have the trainee construct altered casts and suggest ways to improve performance. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Air or Electric Chisel
Bard Parker Knife
Boxing Wax
Cutting Disk or Crown and Bridge Saw
Distilled Water
Graduated Cylinder
Indelible Ink Marker
Preweighed Die Stone
Spatula
Utility Wax
Alcohol Torch
Baseplate Wax
Bunsen Burner
Disinfectant Solution
Fissure Bur
Handpiece or Lathe
Mixing Bowl
Saturated Dihydrate Solution (SDS)
Surface Tension Reducing Agent
Vibrator

STEPS IN TASK PERFORMANCE:

1. Disinfect and rinse corrected impression
2. Trim excess material from impression where necessary
3. Section denture base areas from cast using cutting disk or saw
4. Cut retention slots into cast using saw or bur
5. Seat RPD on cast and sticky wax in place
6. Adapt utility wax to impression periphery and cast and seal wax in place
7. Adapt boxing wax to utility wax and cast and seal wax in place
8. Water test boxed impression to check for leaks
9. Soak base of cast in SDS 5 minutes before pouring impression
10. Vacuum mix die stone
11. Vibrate die stone into impression areas and retention areas of cast
12. Allow die stone to set 45 minutes
13. Remove all wax from cast
14. Remove RPD framework from cast using extreme care
15. Trim cast using cast trimmer and produce land area of proper dimensions
16. Dry cast and print patient's name on heel using indelible ink
17. Remove impression and tray material from framework by heating with a flame until material softens
18. Clean framework using steam or ultrasonic cleaner
19. Reseat framework on cast, ensuring framework seats completely

MODULE 4. CONSTRUCTING ALTERED CASTS

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to satisfactorily construct a corrected cast and perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

CONSTRUCTING ALTERED CASTS

DID THE TRAINEE…?	YES	NO
1. Inspect the impression and remove excess impression material which might prevent the framework from seating on the cast		
2. Cut away just enough of the cast which will be replaced by the corrected impression		
3. Create adequate retention in the cast to secure the new sections		
4. Correctly seat the RPD on the cast and bead and box impression areas		
5. Measure water, use preweighed die stone, and vacuum mix stone		
6. Carefully pour the impression without creating voids		
7. Separate the cast from the impression without damaging the cast or RPD		
8. Trim base, sides, and land area of cast to correct dimensions		
9. Legibly print the patient's name on the heel of the cast using indelible ink		
10. Remove tray material, clean framework, and inspect fit of framework on corrected cast		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 5. CONSTRUCTING FIXED PROSTHODONTIC CASTS

STS TASK REFERENCE(S):

3b(5) Construct casts for fixed restorations

TRAINING REFERENCE(S):

AFP 162-6, Vol. 3, *Dental Laboratory Technology*
Manufacturer's instructions

EVALUATION INSTRUCTIONS:

Demonstrate how to pour maxillary and mandibular elastomeric impressions. Demonstrate pinning and basing casts using the Pindex ® method. You may choose to train and evaluate other dowel pinning techniques or dowel pin systems. Demonstrate trimming the working casts. Demonstrate sawing out and bulk trimming dies. Emphasize the strength and accuracy requirements of properly fabricated dies and working casts. Have the trainee construct fixed working casts and suggest ways to improve performance. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Artist Brush
Base Former
Cast Trimmer
Cyanoacrylate Glue
Disinfectant Solution
Graduated Cylinder
Indelible Ink Marker
Pindex Pins And Sleeves
Saturated Dihydrate Solution (SDS)
Super Sep
Vacuum Mixer
Wax Pencil (Red & Blue)
Bard Parker Knife
Carbide Burs (Large and Small)
Crown And Bridge Saw
Dental Stone
Dowel Pin Drilling Machine
Handpiece Or Lathe
Mixing Bowl
Preweighed Die Stone
Spatula
Surface Tension Reducing Agent
Vibrator

STEPS IN TASK PERFORMANCE:

1. Disinfect impression and rinse under running water
2. Inspect impression for defects
3. Trim periphery of impression material if needed to remove undercut
4. Vacuum mix die stone
5. Vibrate die stone into impression without creating voids
6. Continue to fill impression until there is 10-15 mm of die stone above the margins of the preparations
7. Prevent excess die stone from extending laterally and in palatal/tongue area of impression
8. Allow die stone to set 45 minutes
9. Remove first pour from impression without damaging the cast
10. Flatten base of first pour parallel to occlusal plane and trim sides using cast trimmer
11. Allow first pour to dry overnight
12. Trim palatal/tongue areas of arch at 90º or slightly more than 90º to the base using a large carbide bur to produce a horseshoe shaped arch (this reduces facial-lingual thickness and keys lingual of arch in cast base)
13. Dampen base of arch and drill two pin holes in bottom of each preparation
14. Drill two pin holes in bottom of each tooth adjacent to preparations which will be removable
15. Drill appropriate number of single pin holes in remaining cast area for indexing arch segments
16. Glue one long pin and one short pin for each preparation and abutment tooth
17. Glue long pins in remaining holes for indexing
18. Place white sleeves on long pins
19. Place gray sleeves on short pins
20. Mark pin locations on arch base with wax pencil
21. Apply Super Sep to entire base of horseshoe
22. Vacuum mix dental stone (use dental stone to distinguish between the pours)
23. Vibrate stone around sleeves and pins without creating voids between pours
24. Place remaining stone in base former
25. Invert arch in base former and vibrate gently
26. Allow stone to set 45 minutes
27. Remove cast from base former and trim sides of base with cast trimmer
28. Dry cast and print patient's name on heel using indelible ink
29. Saw out dies, making saw cuts 90º to the cast base
30. Remove excess stone adjacent to gingival margin of preparation using pear shaped bur
31. Ensure exposure does not exceed 4.0 mm of stone below margin; Do not create a deep recess
32. Recontour dies to resemble root contours of natural tooth
33. Return die to dentist for final trim

MODULE 5. CONSTRUCTING FIXED PROSTHODONTIC CASTS

PERFORMANCE CHECKLIST

INSTRUCTIONS:

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

CONSTRUCTING FIXED PROSTHODONTIC CASTS

DID THE TRAINEE…?	YES	NO
1. Inspect the impression and remove excess material from the periphery of the impression		
2. Measure water, use preweighed die stone, and vacuum mix stone		
3. Carefully pour the impression without creating voids and build an adequate base for the first pour		
4. Separate the cast from the impression without damaging the cast		
5. Flatten the base of the first pour parallel to the occlusal plane, leaving 10-15 mm of stone for a die base		
6. Trim the outside and lingual surfaces of the first pour and create a proper horseshoe arch preserving critical anatomical areas and precluding excessive die trimming procedures		
7. Drill correct number of pin holes in the arch and in the proper locations		
8. Cement pins fully in the arch and place sleeves properly		
9. Base cast without creating voids between pours and adequately trim sides of cast base without damaging the teeth		
10. Legibly print the patient's name on the heel of the cast using indelible ink		
11. Saw out dies without damaging preparations, adjacent teeth, or dowel pins, ensuring the dies can be removed appropriately		
12. Sufficiently bulk trim dies without creating deep recess or weakening dies		
13. Recontour dies to resemble natural tooth contours		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 6. CONSTRUCTING ORTHODONTIC STUDY MODELS

STS TASK REFERENCE(S):

3b(7) Construct orthodontic study models

TRAINING REFERENCE(S):

AFP 162-6, Vol. 3, *Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

If you do not have orthodontic cast trimming capability, do not train this module. Due to the availability of cases in your laboratory, training on orthodontic study model procedures may be limited. Select actual cases or use "training" cases for demonstration and performance. Demonstrate how to pour and base maxillary and mandibular alginate impressions using the "one-step" method. Demonstrate how to trim study models using an orthodontic cast trimmer. Demonstrate polishing models. Stress concern for not damaging teeth during any step and the importance of presentation quality in the final product. Have the trainee construct study models and suggest ways to improve performance. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Air or Electric Chisel
Bard Parker Knife
Disinfectant Solution
Fine Grit Wet-Dry Sandpaper
Indelible Ink Marker
Mixing Bowl
Orthodontic Cast Trimmer
Orthodontic Soap
Saturated Dihydrate Solution (SDS)
Tissue Paper
Vibrator
Alginate
Cotton Balls
Distilled Water
Graduated Cylinder
Millimeter Ruler
Orthodontic Base Formers
Orthodontic Plaster
Plaster Knife
Spatula
Vacuum Mixer

STEPS IN TASK PERFORMANCE:

1. Disinfect impression and rinse under running water
2. Inspect impressions for defects
3. Blockout tongue space of mandibular impression with damp tissue paper
4. Apply a thick layer of alginate over the tissue paper and to a height even with periphery
5. Allow alginate to set
6. Vacuum mix orthodontic plaster and pour impressions
7. Place remaining plaster in base formers and invert impressions into plaster
8. Allow plaster to set 45 minutes
9. Remove base formers and carefully separate models from impressions
10. Trim bases of maxillary and mandibular models using coarse wheel of orthodontic trimmer as follows:
    a. Occlude maxillary teeth against right angle guide plate and trim base of model parallel to occlusal plane, reducing model height to 1½ inches (3.8 cm)
    b. With base of model on trimming table, trim back of model perpendicular to palatal midline, stopping 6 mm short of pterygomaxillary notch area
    c. Trim sides of maxillary model at a 65° angle to back cut, stopping at the deepest part of the vestibular sulcus
    d. Make anterior cuts on maxillary models at a 22° angle to back cut, stopping when angle formed by anterior and side cuts lies over cuspid eminence area and making both anterior cuts center along the palatal midline
    e. Remove excess from heels of mandibular model with plaster knife and occlude mandibular model with maxillary model using interocclusal record
    f. With maxillary model base against right angle guide plate, trim base of mandibular model, stopping when combined maxillary-mandibular height is 2¾ inches (6.9 cm)
    g. With base of mandibular model on trimming table and maxillary model in occlusion, trim back of mandibular model even with back of maxillary model
    h. After removing maxillary model, place back of mandibular model against angulator guide and trim sides of model at a 55° angle to back cut, stopping at the deepest part of the vestibular sulcus
    i. Trim anterior of mandibular model parallel to back stopping at the depth of labial vestibule and round corners from cuspid to cuspid
    j. Again occlude maxillary model and trim heels of both models at 120° to back cut, stopping 6 mm from distobuccal cusp of terminal molar and making both heel cuts equal in length
11. Retrim all surfaces of both models using fine grit wheel
12. Trim land area of models using Bard Parker knife
13. Fill all holes in models with plaster mix and allow plaster to set
14. Smooth all model surfaces under running water using finest grit wet-dry sandpaper
15. Place models in liquid soap for 30 minutes
16. Remove models from liquid soap, rinse under running water, and let dry
17. Polish models to high luster using damp cotton balls
18. Occlude maxillary and mandibular models and verify models remain in occlusion when they are placed on their back sides and heels

MODULE 6. CONSTRUCTING ORTHODONTIC STUDY MODELS

PERFORMANCE CHECKLIST

INSTRUCTIONS:

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

CONSTRUCTING ORTHODONTIC STUDY MODELS

DID THE TRAINEE…?	YES	NO
1. Inspect the impression for defects, and if needed, blockout tongue space of mandibular impression		
2. Measure water, use preweighed orthodontic plaster, and vacuum mix plaster		
3. Carefully pour the impressions producing void-free model surfaces and provide an adequate base for trimming models		
4. Separate models from their impressions without damaging teeth		
5. Trim base of maxillary model parallel to occlusal plane and back of model perpendicular to palatal midline		
6. Make maxillary side and anterior cuts at correct angles without overtrimming bases		
7. Trim base of mandibular model parallel to base of maxillary model and achieve an overall maxillary-mandibular height of 2¾ inches		
8. Trim back of mandibular model even with back of maxillary model		
9. Make mandibular side and anterior cuts at correct angles without overtrimming bases		
10. Make heel cuts at correct angles without overtrimming bases		
11. Fill voids, remove unwanted irregularities from anatomical areas, and smooth and polish the models producing a quality product		
12. Verify trimming of the models in occlusion had been done correctly by placing models in occlusion on their back sides and heels		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 7. CONSTRUCTING CUSTOM IMPRESSION TRAYS

STS TASK REFERENCE(S):

3c Construct custom impression trays

TRAINING REFERENCE(S):

AFP 162-6, Vols. 2 & 3, *Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Demonstrate how to construct maxillary and mandibular custom impression trays for complete denture and fixed prosthodontic casts. Stress the importance of strength, accuracy, and appearance of the final products. Have the trainee construct impression trays 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 Bur
Alginate Separating Medium
Bard Parker Knife
Bunsen Burner
Handpiece or Lathe
Rubber Gloves
Tray Material
Wax Pencil (Red and Blue)
Acrylic Mixing Spatula
Artist Brush
Baseplate Wax
Disinfectant Solution
Mixing Cup
Steam or Ultrasonic Cleaner
Vaseline or Petrolatum
Wax Spatula

STEPS IN TASK PERFORMANCE:

1. Identify and mark borders of tray on cast
2. If tray will be made without a spacer, blockout undercuts on cast
3. Heat baseplate wax sheet until softened
4. Form softened wax over cast to create spacer
5. Trim excess wax to specified tray design and apply petrolatum
6. Cut out tissue stops in wax spacer IAW dentist's directions
7. Apply separating medium to cast
8. Mix tray material to dough-like consistency
9. Do not handle resin with ungloved hands
10. Form tray material to 3.0 mm thickness on cast
11. Put excess tray material in bowl of cold water
12. Form handle/finger rests from excess tray material
13. Dampen attachment site with monomer and promptly attach handle/finger rests to tray
14. When impression tray reaches initial set and still warm, remove tray from cast
15. Remove wax from tray and cast, as prescribed
16. Finish tray with bur
17. Clean and disinfect tray

MODULE 7. CONSTRUCTING CUSTOM IMPRESSION TRAYS

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to construct maxillary and mandibular custom impression trays for complete denture and fixed prosthodontic casts and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

CONSTRUCTING CUSTOM IMPRESSION TRAYS

DID THE TRAINEE…?	YES	NO
1. Adequately blockout undercuts on casts for custom trays made without spacers		
2. Identify border and location of tissue stops. Create wax spacer of the right thickness and properly cut out tissue stops		
3. Properly mix and handle tray material		
4. Adapt tray material to cast so custom tray is not too thick or too thin		
5. Position and shape tray handle/finger rests to the dentist's preference		
6. Remove custom tray from cast without damaging tray or cast		
7. Finish tray borders to the desired outline		
8. Clean and disinfect custom tray		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 8. MOUNTING CASTS USING THE ARBITRARY METHOD

STS TASK REFERENCE(S):

3d(2) Mount casts using arbitrary method

TRAINING REFERENCE(S):

AFP 162-6, Vol. 2*, Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Demonstrate how to key and occlude maxillary and mandibular casts for mounting. Demonstrate how to mount casts in a semi-adjustable articulator using the arbitrary method. Stress proper setting and maintenance of articulators and accuracy of cast mountings. Have the trainee mount casts and suggest ways to improve performance. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Buffalo Knife
Dental Stone
Hanger Wire or Old Burs
Mixing Bowl
Paper Towel
Sandpaper
Spatula
Clay
Bunsen Burner
Glue Gun or Impression Compound
Large Wheel or Bur
Mounting Rings
Rubber Band
Semi-adjustable Articulator, Hanau H2
Super Sep

STEPS IN TASK PERFORMANCE:

1. If casts have final record bases and occlusion rims, ensure cast bases are not too thick by checking height of casts and their occlusion rims in denture flask
2. Cut keys in maxillary and mandibular casts using large wheel
3. Remove stone nodules and heel areas which interfere with occlusion
4. Hand articulate casts in centric occlusion or occlude casts using intraoral records
5. Lute casts together using glue gun or compound wax and hanger wires or old burs
6. Apply separating medium to keys of casts
7. Ensure articulator incisal guide pin is flush with upper member
8. Lock articulator left and right horizontal guidance at 30°
9. Lock articulator lateral guidance at 15°
10. Set incisal guide table and wings at 0º
11. Place mounting rings on articulator and position rubber band plane
12. Tripod pieces of clay on lower member of articulator
13. Ensure adequate clearance between cast and upper member for mounting stone
14. Center casts on articulator with occlusal plane parallel with bench surface and even with rubber band plane
15. Place moist paper towel on base of maxillary cast
16. Mix dental stone to thickened consistency
17. Remove paper towel from cast base
18. Apply mounting stone mix to base of cast
19. Lower upper articulator member into stone
20. Shape mounting stone and remove the excess; do not create an under contoured junction
21. Smooth mounting stone with spatula, leaving stone/cast junction visible
22. Allow stone to set 45 minutes
23. Invert articulator and raise lower member of articulator
24. Prepare second stone mix and repeat mounting procedure for mandibular cast
25. Remove luting materials from casts
26. Unscrew mountings from articulator and smooth them with sandpaper
27. Replace mountings on articulator
28. Ensure original occlusal relationship is unchanged and incisal guide pin contacts incisal guide table
29. Identify mountings with patient's ID number and articulator serial number

MODULE 8. MOUNTING CASTS USING THE ARBITRARY METHOD

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to mount maxillary and mandibular casts in a Hanau H2 articulator using the arbitrary method and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

MOUNTING CASTS USING THE ARBITRARY METHOD

DID THE TRAINEE…?	YES	NO
1. Key casts and apply separator correctly		
2. Remove occlusal interferences, occlude casts accurately, and lute the casts together securely		
3. Ensure the articulator was in proper working order and correctly set		
4. Center the maxillary cast under the mounting ring and position the occlusal plane at the correct height and orientation		
5. Attach maxillary cast firmly to upper member and contour stone to expose cast junction and smooth the mounting		
6. Attach mandibular cast firmly to lower member and contour stone to expose cast junction and smooth the mounting		
7. Remove luting materials and clean up mountings		
8. Ensure original occlusal relationship is unchanged and incisal guide pin contacts table		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 9. ADJUSTING CONDYLAR GUIDANCE OF A HANAU ARTICULATOR USING INTRAORAL RECORDS

STS TASK REFERENCE(S):

3d(4) Adjust articulator settings using checkbites

TRAINING REFERENCE(S):

AFP 162-6, Vol. 2*, Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Demonstrate how to accurately seat the protrusive record on the mandibular cast. Demonstrate how to correctly loosen the right and left horizontal condylar guidance lockscrews and centric locks. Demonstrate rotating the horizontal guidance back and forth until the maxillary cast seats solidly in all record indentations. Stress proper use and maintenance of articulators to ensure accuracy of the instrument. Have the trainee set the articulator and ensure proper intraoral relationship is achieved before locking the articulator settings. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Casts
Hanau H2 Articulator
Patient's Protrusive Record

STEPS IN TASK PERFORMANCE:

1. Seat protrusive record on mandibular cast
2. Loosen left and right horizontal condylar guidance lockscrews
3. Loosen centric locks until condylar elements move freely
4. Rotate horizontal guidances back and forth until maxillary cast seats solidly in all record indentations
5. Tighten all lockscrews
6. Remove protrusive record
7. Annotate settings on base of casts

MODULE 9. ADJUSTING CONDYLAR GUIDANCE OF A HANAU ARTICULATOR USING INTRAORAL RECORDS

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to accurately set the Hanau articulator using protrusive intraoral records and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

ADJUSTING CONDYLAR GUIDANCE OF A HANAU ARTICULATOR USING INTRAORAL RECORDS

DID THE TRAINEE…?	YES	NO
1. Ensure the articulator was in proper working order		
2. Ensure the protrusive record seats accurately on the mandibular cast		
3. Adjust the condylar guidance, ensuring the maxillary cast seats solidly in the record indentations		
4. Tighten all lockscrews		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 10. MOUNTING CASTS USING THE FACEBOW TRANSFER TECHNIQUE

STS TASK REFERENCE(S):

3d(3) Mount casts using facebow transfer technique

TRAINING REFERENCE(S):

AFP 162-6, Vols. 2 & 3, *Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Demonstrate how to key and occlude maxillary and mandibular casts for mounting. Demonstrate how to mount casts in a Whip Mix articulator using the facebow transfer technique. Stress proper setting and maintenance of articulators and accuracy of cast mountings. Have the trainee mount casts and suggest ways to improve performance. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Buffalo Knife
Facebow Assembly
Hanger Wire or Old Burs
Masking Tape
Mounting Rings
Rubber Band
Spatula
Clay or Cast Support
Dental Stone
Glue Gun or Impression Compound
Large Wheel or Bur
Mixing Bowl
Paper Towel
Semi-adjustable Articulator, Whip Mix
Super Sep

STEPS IN TASK PERFORMANCE:

1. Receive facebow assembly from dentist
2. Cut keys in maxillary and mandibular casts using bur or large wheel
3. Apply separating medium to keys of cast
4. If maxillary cast has removable dies, place masking tape over dowel pin holes in cast base and add clay mounds for dowel pin access
5. Adjust condylar element width of articulator to correspond to intercondylar distance recorded by facebow transfer
6. Lock articulator left and right horizontal guidance at 30º
7. Set incisal guide table and wings at 0º
8. Lift off upper member of articulator and remove incisal guide pin
9. Remove plastic nasal relator and bracket from facebow crossbar
10. Loosen thumbscrews on facebow
11. Secure facebow assembly to upper member and tighten thumbscrews
12. Replace upper member on articulator with bitefork resting on incisal guide table
13. Ensure upper member rests on facebow crossbar and there is adequate clearance between cast and upper member for mounting stone
14. Seat maxillary cast in bite registration
15. Support weight of maxillary cast with clay or cast support
16. Place moist paper towel on base of cast
17. Mix dental stone to thickened consistency
18. Remove paper towel from cast base
19. Apply mounting stone mix to base of cast
20. Lower upper articulator member into stone until upper member touches facebow crossbar
21. Shape mounting stone and remove the excess
22. Smooth mounting stone with spatula, leaving stone/cast junction visible
23. Allow stone to set 45 minutes
24. Loosen thumbscrews and remove facebow and upper member of articulator
25. Remove stone nodules or reduce base areas from maxillary and mandibular casts which interfere with occlusion
26. Hand articulate casts in centric occlusion or occlude casts using intraoral records
27. Lute casts together using glue gun or compound wax and hanger wires or old burs
28. Replace incisal guide pin in upper member and ensure pin is flush with upper member
29. Position upper member on articulator and adjust lateral condylar guides to extreme negative position to lock condyles in retruded position
30. Invert articulator and carefully raise lower member
31. Prepare second stone mix and repeat mounting procedure for mandibular cast
32. Remove luting materials from casts
33. Unscrew mounting rings/casts from articulator and smooth mountings
34. Replace mountings on articulator
35. Lock articulator lateral guidance at 15°
36. Ensure original occlusal relationship is unchanged and incisal guide pin contacts incisal guide table
37. Identify mountings with patient's ID number and articulator serial number

MODULE 10. MOUNTING CASTS USING THE FACEBOW TRANSFER TECHNIQUE

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to mount maxillary and mandibular casts in a Whip Mix articulator using the facebow transfer technique and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

MOUNTING CASTS USING THE FACEBOW TRANSFER TECHNIQUE

DID THE TRAINEE…?	YES	NO
1. Key casts and apply separator correctly		
2. Ensure the articulator was in proper working order and correctly set		
3. Properly attach facebow to upper member of the articulator		
4. Position maxillary cast in bite registration and support the cast		
5. Attach maxillary cast firmly to upper member and contour stone to expose cast junction and smooth the mounting		
6. Remove occlusal interferences from casts, occlude mandibular cast accurately, and lute the casts together securely		
7. Attach mandibular cast firmly to lower member and contour stone to expose cast junction and smooth mounting		
8. Remove luting materials and clean up mountings		
9. Ensure original occlusal relationship is unchanged and incisal guide pin contacts table		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 11. ADJUSTING CONDYLAR GUIDANCE OF A WHIP-MIX ARTICULATOR USING INTRAORAL RECORDS

STS TASK REFERENCE(S):

3d(4) Adjust articulator settings using checkbites

TRAINING REFERENCE(S):

AFP 162-6, Vol. 3, *Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Demonstrate how to accurately seat lateral records on the maxillary cast. Demonstrate how to correctly loosen condylar guidance lockscrews and centric locks. Demonstrate adjusting horizontal and lateral condylar guidance using lateral intraoral records. Stress proper use and maintenance of articulators to ensure accuracy of the instrument. Have the trainee adjust the articulator and ensure proper intraoral relationship is achieved before locking the articulator settings. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Casts
Whip-Mix Articulator
Patient's Lateral Records

STEPS IN TASK PERFORMANCE:

1. Set Whip-Mix articulator condylar guides at zero
2. Set Whip-Mix articulator side-shift controls at most open position
3. Loosen incisal guide pin screw
4. Raise incisal guide pin
5. Retighten incisal guide pin screw
6. Invert articulator
7. Seat right lateral excursion record on upper cast
8. Place right working condylar ball flush to rear wall in right condylar guide
9. Seat lower cast into right lateral record
10. Loosen left condylar guide screw
11. Rotate the condylar guide until upper wall touches condyle element
12. Tighten left condylar guide screw
13. Loosen left side shift screw until side shift element touches condyle element
14. Tighten left side shift screw
15. Repeat adjustment procedures for opposite side
16. Re-invert articulator
17. Lower incisal guide pin to incisal guide table

MODULE 11. ADJUSTING CONDYLAR GUIDANCE OF A WHIP-MIX ARTICULATOR USING INTRAORAL RECORDS

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to accurately set the Whip-Mix articulator using lateral intraoral records and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

ADJUSTING CONDYLAR GUIDANCE OF A WHIP-MIX ARTICULATOR USING INTRAORAL RECORDS

DID THE TRAINEE…?	YES	NO
1. Ensure the articulator was in proper working order		
2. Ensure the lateral records seat accurately on the maxillary cast		
3. Ensure the mandibular cast seats solidly in the record indentations and adjust the condylar guidances		
4. Tighten all lockscrews		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 12. ADJUSTING CONDYLAR GUIDANCE OF A HANAU ARTICULATOR USING OCCLUSAL CONTACTS

STS TASK REFERENCE(S):

3d(5) Adjust articulator settings using occlusal contacts

TRAINING REFERENCE(S):

AFP 162-6, Vol. 1, *Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Demonstrate adjusting horizontal and lateral condylar guidance using occlusal contacts. Stress proper use and maintenance of articulators to ensure accuracy of the instrument. Stress the importance of reproducing the patient's sideshift in an articulator. Have the trainee adjust the articulator and ensure proper intraoral relationship is achieved before locking the articulator settings. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Casts
Semi-adjustable Articulator

STEPS IN TASK PERFORMANCE:

1. Set articulator lateral condylar guides arbitrarily to 15 degrees
2. Loosen the right centric lock
3. Loosen the thumbnut of the right horizontal condylar controls to allow adjustment
4. Tighten the left centric lock
5. Move the upper member laterally into a right eccentric position
6. Impart maximum Bennett movement
7. Observe the eccentric occlusal contacts during the movement
8. Repeat the lateral excursion several times while adjusting the right horizontal guidance
9. Use wear facets and other eccentric occlusal contacts to determine horizontal guidance
10. Achieve maximum interdigitation with minimum cuspid rise
11. Lock the right horizontal guide into position
12. Tighten the right centric lock
13. Repeat adjustment procedures for opposite side

MODULE 12. ADJUSTING CONDYLAR GUIDANCE OF A HANAU ARTICULATOR USING OCCLUSAL CONTACTS

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to accurately adjust the Hanau articulator using occlusal contacts and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

ADJUSTING CONDYLAR GUIDANCE OF A HANUA ARTICULATOR USING OCCLUSAL CONTACTS

DID THE TRAINEE…?	YES	NO
1. Ensure the articulator was in proper working order		
2. Impart Bennett movement (sideshift) during lateral excursions		
3. Use wear facets and other eccentric occlusal contacts to determine horizontal guidance		
4. Tighten all thumbnuts and centric locks		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 13. REPAIRING FRACTURED DENTURE BASES USING ACRYLIC RESIN

STS TASK REFERENCE(S):

3f Repair removable prostheses using acrylic resin

TRAINING REFERENCE(S):

AFP 162-6, Vol. 2*, Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Due to the availability of cases in your laboratory, training on acrylic repair procedures may be limited. Select actual cases or use "training" cases for demonstration and performance. Demonstrate how to assemble broken denture pieces and construct casts or stone matrices. Demonstrate repairing fractured complete or removable partial denture bases. Discuss probable causes for denture breakage and solutions to prevent the problem from recurring. Stress returning the repaired appliance to the dentist as quickly as possible. Have the trainee perform acrylic repair procedures and suggest ways to improve performance. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using performance checklists.

PERFORMANCE RESOURCES:

Acrylic Bur
Alginate Separating Medium
Block Out Wax, Clay, or Impression Putty
Cast Trimmer
Dental Stone
Distilled Water
Hanger Wire or Old Burs
Mixing Bowl
Pressure Pot
Rag Wheel
Rubber Mixing Bowl
Spatula
Vacuum Mixer
Waxing Instrument
Acrylic Mixing Spatula
Bard Parker Knife
Bunsen Burner
Dappen Dishes (2)
Disinfectant Solution
Handpiece or Lathe
Identification (ID) Material
Polishing Compound
Pumice
Repair Monomer/Polymer
Small Artist Brush
Sticky Wax
Vibrator

STEPS IN TASK PERFORMANCE:

1. Align fragments or pieces of denture base
2. Sticky wax broken denture pieces together
3. Stabilize large repair areas using hanger wire or old burs and sticky wax
4. Blockout undercuts of denture base areas not in the repair site
5. Vacuum mix dental stone
6. Vibrate stone into denture base to construct matrix/cast
7. Separate matrix/cast from denture base
8. Trim cast using cast trimmer
9. Soak cast in saturated calcium sulfate dihydrate solution (SDS) for 10 minutes
10. Dry surface of cast and apply separating medium
11. Cut rabbet joints in denture base fragments to be joined using bur
12. Align fragments onto cast and sticky wax fragments in place
13. Moisten repair site with monomer
14. Make alternate applications of monomer/polymer described below or use sprinkle method
15. Place repair monomer in dappen dish
16. Place repair polymer in separate dappen dish
17. Dip artist brush in liquid, then powder to pick up ball of repair acrylic
18. Apply repair monomer/polymer to repair sites
19. Cure denture repair in pressure pot filled with 115 ºF water at 20 psi for 30 minutes
20. Remove denture from pressure pot
21. Carefully separate denture from cast
22. Apply repair monomer/polymer to any voids, if present
23. Repeat curing process if repair resin is added
24. Place patient identification
25. Finish and polish repair area
26. Clean and disinfect denture

MODULE 13. REPAIRING FRACTURED DENTURE BASES USING ACRYLIC RESIN

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to repair the fractured denture base of a complete or removable partial denture and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

REPAIRING FRACTURED DENTURE BASES USING ACRYLIC RESIN

DID THE TRAINEE…?	YES	NO
1. Accurately align and secure broken denture base pieces together so repaired denture base fits properly		
2. Construct matrix/cast for the repair areas without damaging the denture base or matrix/cast		
3. Adequately prepare joints in the denture base to improve the strength of the repair		
4. Accurately reassemble broken denture base pieces with matrix/cast		
5. Correctly apply and process repair resin, producing a void free surface which is dense and strong		
6. Finish and polish repaired areas so new acrylic blends with original acrylic		
7. Clean and disinfect denture		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 14. REPLACING DENTURE TEETH ON COMPLETE OR REMOVABLE PARTIAL DENTURE BASES

STS TASK REFERENCE(S):

3f Repair removable prostheses using acrylic resin

TRAINING REFERENCE(S):

AFP 162-6, Vol. 2*, Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Due to the availability of cases in your laboratory, training on acrylic repair procedures may be limited. Select actual cases or use "training" cases for demonstration and performance. Demonstrate replacing denture teeth on complete or removable partial denture bases. Stress returning the repaired appliance to the dentist as quickly as possible. Have the trainee replace fractured denture teeth 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 Bur
Artificial Denture Teeth
Bunsen Burner
Dappen Dishes (2)
Disinfectant Solution
Handpiece or Lathe
Mixing Bowl
Pressure Pot
Rag Wheel
Rubber Mixing Bowl
Spatula
Vacuum Mixer
Waxing Instrument
Alginate Separating Medium
Bard Parker Knife
Cast Trimmer
Dental Stone
Distilled Water
Identification (ID) Material
Polishing Compound
Pumice
Repair Monomer/Polymer
Small Artist Brush
Sticky Wax
Vibrator

STEPS IN TASK PERFORMANCE:

1. Select replacement teeth for repair
2. Remove broken tooth fragments
3. Prepare box preparations on lingual side of repair sites using bur
4. If replacing multiple teeth, alternate removing and fitting replacement teeth to maintain original tooth forms
5. Adapt teeth to replacement sites and modify tooth form for esthetics and occlusion
6. Grind retention slots into teeth
7. Sticky wax teeth to replacement sites
8. Fabricate labial matrix using dental stone
9. Remove matrix and teeth
10. Remove sticky wax and trim matrix
11. Reposition teeth in matrix and secure to matrix using sticky wax
12. Apply separating medium to exposed stone areas of matrix, avoid contacting tooth surfaces
13. Attach matrix to denture with sticky wax
14. Moisten repair site with monomer
15. Make alternate applications of monomer/polymer described below or use sprinkle method
16. Place repair monomer (liquid) in dappen dish
17. Place repair polymer (powder) in separate dappen dish
18. Dip artist brush in liquid, then in powder (dappen dishes)
19. Apply repair monomer/polymer to tooth and box preparation site
20. Cure denture repair in pressure pot filled with 115 ºF water at 20 psi for 30 minutes
21. Remove denture from pressure pot
22. Remove matrix and sticky wax
23. Place patient identification
24. Finish and polish repair area
25. Clean and disinfect denture

MODULE 14. REPLACING DENTURE TEETH ON COMPLETE OR REMOVABLE PARTIAL DENTURE BASES

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to replace a denture tooth on a complete or removable partial denture and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

HOW TO REPLACE DENTURE TEETH ON COMPLETE OR REMOVABLE PARTIAL DENTURE BASES

DID THE TRAINEE…?	YES	NO
1. Select the correct shades and molds of teeth for replacement		
2. Remove broken teeth and properly fit replacement teeth to match original tooth forms and reestablish occlusion		
3. Adequately prepare joints in the denture base to improve the strength of the repair		
4. Construct matrix for positioning replacement teeth		
5. Accurately reassemble and secure replacement teeth in matrix		
6. Correctly apply and process repair resin, producing a void free surface which is dense and strong		
7. Finish and polish repaired areas so new acrylic blends with original acrylic and denture base has a high luster		
8. Clean and disinfect denture		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 15. REPAIRING REMOVABLE PROSTHESES USING SOLDER

STS TASK REFERENCE(S):

3g Repair removable prostheses using solder

TRAINING REFERENCE(S):

Ticonium Manual
AFP 162-6, Vol. 2*, Dental Laboratory Technology*

EVALUATION INSTRUCTIONS:

Actual cases that require soldering are probably rare in your laboratory and repair conditions will vary. For this module's demonstration and performance select a "training" case having a master cast with an extension RPD framework. Demonstrate how to bend a wrought wire clasp and solder it to an RPD framework. Stress fundamentals of basic soldering techniques and the importance of adequate preparation of the parts to be soldered. Have the trainee bend a wrought wire clasp and solder the clasp to an RPD framework. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Boil Out Equipment
Bunsen Burner
Finishing Disks, Burs, Wheels, and Points
Rubber Bowl
Soldering Investment or Plaster
Sticky Wax
Water
Waxing Instrument
Wire-Bending Pliers (Birdbeak, 3-Prong)
Bristle Brushes
Electric Soldering Machine
Polishing Compound
Soldering Flux for Base Metal Alloys
Soldering Stand
Ticonium Triple-Thick Solder
Wax Pencil
Wire Cutters
Wrought-Wire

STEPS IN TASK PERFORMANCE:

1. Cut off broken clasp where it joins the framework with a separating disk
2. Design location of replacement clasp on master cast, deciding if clasp will be soldered to the minor connector or retention grid areas
3. Prepare joint in framework area where the clasp tang will be soldered
4. Slightly roughen this area with a fine stone
5. Seat framework on master cast
6. Cut piece of wrought-wire to approximate required length
7. Mark bend locations on wrought-wire with wax pencil
8. Bend wrought-wire clasp to design and contours of abutment tooth using pliers
9. Contour tang of clasp to framework
10. Smooth clasp tip using rubber point and slightly roughen tang and framework where clasp will be soldered
11. Secure clasp to cast temporarily with sticky wax
12. Stabilize position of parts to be joined with soldering investment, leaving as much metal exposed as possible
13. Boil off sticky wax after investment sets
14. Position master cast on soldering stand
15. Apply flux to parts to be soldered
16. Cut piece of solder large enough to complete repair and place it on the joint
17. Clean the ground and carbon tip and adjust soldering machine to proper setting
18. Touch the ground electrode to the framework
19. Wet carbon tip electrode in bowl of water and touch electrode to solder
20. Press foot pedal until solder flows freely then release foot pedal
21. Carefully remove the soldered framework from the cast and finish and polish it
22. Test fit finished repair on master cast and adjust clasp if required

MODULE 15. REPAIRING REMOVABLE PROSTHESES USING SOLDER

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to fabricate wrought wire clasps and electrically solder clasps to RPD frameworks and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

REPAIRING REMOVABLE PROSTHESES USING SOLDER

DID THE TRAINEE…?	YES	NO
1. Adequately prepare the framework by creating a joint for the clasp tang and provide an ideal surface texture for soldering		
2. Closely contour the replacement clasp to the specified design and allow for sufficient length of the clasp tang to be anchored to the framework		
3. Accurately assemble, stabilize, and clean all parts to be soldered		
4. Proportion flux and solder in the right amounts and correctly set the soldering machine		
5. Heat solder until it flowed, producing a strong, dense solder joint		
6. Repolish framework to high luster		
7. Finish solder joint blending repair into framework		
8. Clean and disinfect removable partial denture		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 16. OPERATING CAST TRIMMERS

STS TASK REFERENCE(S):

3j Operate dental laboratory equipment and perform user maintenance

TRAINING REFERENCE(S):

AFP 162-6, Vol. 1, *Dental Laboratory Technology*
Manufacturer's Instructions

EVALUATION INSTRUCTIONS:

Operation and user maintenance of dental laboratory equipment varies with the type of equipment and manufacturer. Only general guidelines would apply to all equipment you must operate and maintain without consulting the manufacturer's directions for specific use and care procedures. This module was developed in two parts: general user maintenance and operating cast trimmers. The first part, general user maintenance, presents a brief overview of procedures you might use to inspect clean, and maintain equipment; only use those steps which apply to the piece of equipment being trained. The second part, operating cast trimmers, is an example of operating equipment which is typical in the dental laboratory. You may choose to demonstrate performance on other equipment items than those listed and evaluate the trainee using a locally developed checklist.

Demonstrate how to operate a cast trimmer. Stress proper use of the equipment and safety procedures. Have the trainee operate a cast trimmer. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Cast Trimmer

Saturated Calcium Sulfate Dihydrate Solution (SDS)

STEPS IN TASK PERFORMANCE:

GENERAL USER MAINTENANCE

1. Do a visual safety check before operating equipment
2. Operate equipment
3. Identify problem with operation of equipment
4. Verify problem is not caused by improper use of procedures, following manufacturer's instructions or troubleshooting chart
5. Perform a visual inspection of the equipment, i.e. check the electrical outlet to verify power exists and check electrical plug and cord for defects
6. Ensure there are no tripped reset switches or circuit breakers or blown fuses
7. Ensure external connections are not bad or loose
8. Check electric motors for cleanliness
9. Check parts for excessive wear; replace worn hoses, nozzles, gloves, cast trimmer wheels, drill bits, safety glass, or belts as required
10. While equipment is unplugged, check heating elements and mountings for corrosion and tightness
11. Contact dental property custodian or biomedical equipment repair to report service problems beyond simple user maintenance
12. Drain fluid from equipment such as hydrocolloid from Ticonium Autoduplicator or water from an electric boilout unit
13. Clean equipment
14. Replace fluids such as oil in a Vac-u-Vestor or fill water tanks in a Hanau curing unit
15. Replace abrasives
16. Periodically check operating temperatures like the holding temperature of hydrocolloid in the Ticonium Autoduplicator
17. Lubricate equipment's moving parts following manufacturer's instructions

OPERATING CAST TRIMMERS

1. Soak cast in SDS before trimming casts
2. Turn on cast trimmer
3. Adjust water flow to prevent clogging wheel
4. Trim cast, applying light pressure only; replace trimming wheel when it fails to cut properly
5. Rinse cast in SDS during trimming procedures to remove debris
6. Turn off cast trimmer
7. Let the water run for 1 minute after grinding is complete to flush out drain
8. Turn off water

MODULE 16. OPERATING CAST TRIMMERS

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to operate a cast trimmer and satisfactorily perform all parts of the task without assistance. Ensure proper safety precautions are followed. Evaluate the trainee's performance using this checklist.

OPERATING CAST TRIMMERS

DID THE TRAINEE…?	YES	NO
1. Turn on cast trimmer and properly adjust the water flow		
2. Correctly hold cast and apply pressure to trim the cast		
3. Turn off cast trimmer and flush out the drain		
4. Operate cast trimmer safely and with proper care for the equipment		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

MODULE 17. MAINTAINING A HANAU H2 ARTICULATOR

STS TASK REFERENCE(S):

3j Operate dental laboratory equipment and perform user maintenance

TRAINING REFERENCE(S):

AFP 162-6, Vol. 1, *Dental Laboratory Technology*
Manufacturer's Instructions

EVALUATION INSTRUCTIONS:

Demonstrate how to perform user maintenance on a Hanau H2 articulator. Stress proper use of the equipment and safety procedures. Have the trainee perform user maintenance on a Hanau H2 articulator. After ensuring the trainee has received sufficient practice, evaluate his/her abilities using the performance checklist.

PERFORMANCE RESOURCES:

Denture Brush
Large Artist Brush
Petrolatum
Wax Solvent
Hanau H2-158 Articulator
Light Weight Machine Grade Oil
Small Screw Driver

STEPS IN TASK PERFORMANCE:

1. Check the full range of operation of the articulator, ensuring all parts are functioning properly
2. Ensure condylar elements are in contact with centric stops and the incisal guide pin is centered on the incisal guide table
3. If the incisal pin is not centered on the table or the upper member can be moved side to side in the centric locked position, loosen the set screws on the condylar shaft and adjust the shaft length on both sides to properly position the incisal pin and upper member
4. If the articulator needs repair, replace the defective part or replace the articulator
5. Clean the articulator with wax solvent, paying special attention to all working and bearing components
6. Dry off the articulator
7. Lubricate all working and bearing components with a thin film of light weight machine grade oil
8. Lightly apply petrolatum to all mounting surfaces
9. Store the articulator in a clean, dry atmosphere

MODULE 17. USER MAINTENANCE OF A HANAU H2 ARTICULATOR

PERFORMANCE CHECKLIST

INSTRUCTIONS:

The trainee must be able to perform user maintenance on a Hanau H2 articulator and satisfactorily perform all parts of the task without assistance. Evaluate the trainee's performance using this checklist.

USER MAINTENANCE OF A HANAU H2 ARTICULATOR

DID THE TRAINEE…?	YES	NO
1. Check the articulator's full range of operation and ensure all parts are functioning properly		
2. Ensure the condylar elements contact the centric stops and the incisal pin is centered on the incisal guide table		
3. Determine whether the articulator was useable or in need of repair and take appropriate action if required		
4. Completely clean the articulator		
5. Properly lubricate working components and put petrolatum on mounting surfaces		
6. Properly store the articulator		

FEEDBACK:

Using 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 trainee should certify performance by appropriately documenting the OJT record.

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Dental Laboratory Qualification Training Progress Record

Rank/Name _____

(Circle One)

Qualification Upgrade Training to: **5-Skill Level** **7-Skill Level**

Volume 1. General Skills					
Core Task	***Module Number***	***Page Number***	***Module Title***	***Date Completed***	***Trainer's Initials***
	1.	1	Constructing Casts for Complete Dentures		
	2.	4	Constructing Casts for Removable Partial Dentures (RPD)		
	3.	7	Constructing Impression Trays for the Altered Cast Technique		
	4.	9	Constructing Altered Casts		
⑤	5.	12	Constructing Fixed Prosthodontic Casts		
	6.	16	Constructing Orthodontic Study Models		
	7.	20	Constructing Custom Impression Trays		
	8.	23	Mounting Casts using the Arbitrary Method		
⑤	9.	26	Adjusting Condylar Guidance of a Hanau Articulator Using Intraoral Records		
	10.	28	Mounting Casts using the Facebow Transfer Technique		
⑤	11.	31	Adjusting Condylar Guidance of a Whip-Mix Articulator using Intraoral Records		
⑤	12.	33	Adjusting Condylar Guidance of a Hanau Articulator using Occlusal Contacts		
	13.	35	Repairing Fractured Denture Bases using Acrylic Resin		
	14.	38	Replacing Denture Teeth on Complete or Removable Partial Denture Bases		
	15.	41	Repairing Removable Prostheses using Solder		
	16.	44	Operating Cast Trimmers		
	17.	47	Maintaining a Hanau H2 Articulator		

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MEMORANDUM FOR 381 TRS/XWAA (CDC Manager)
917 Missile Rd
Sheppard AFB TX 76311-2246

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