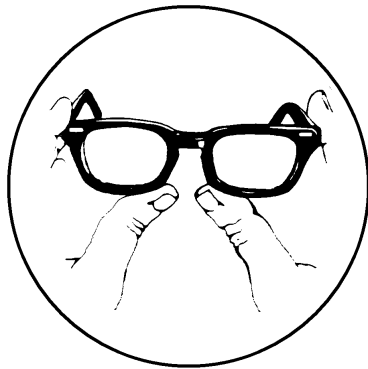


**STP 8-42E14-SM-TG**

# **SOLDIER'S MANUAL AND TRAINER'S GUIDE**



**MOS 42E  
OPTICAL  
LABORATORY  
SPECIALIST  
SKILL LEVELS 1/2/3/4**



**HEADQUARTERS, DEPARTMENT OF THE ARMY**

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**SOLDIER TRAINING PUBLICATION  
No. 8-42E14-SM-TG**

**HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, 24 September 1996**

**SOLDIER'S MANUAL  
SKILL LEVELS 1/2/3/4  
AND TRAINER'S GUIDE**

**MOS 42E  
OPTICAL LABORATORY SPECIALIST**

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**PREFACE**

This publication is for skill level 1, 2, 3, and 4 soldiers holding military occupational specialty (MOS) 42E and for trainers and first-line supervisors. It contains standardized training objectives, in the form of task summaries, to train and evaluate soldiers on critical tasks which support unit missions during wartime. Trainers and first-line supervisors should ensure soldiers holding MOS/SL 42E1/2/3/4 have access to this publication. It should be made available in the soldier's work area, unit learning center, and unit libraries.

This manual applies to both Active and Reserve Component soldiers.

The proponent of this publication is the US Army Medical Department Center and School. Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Commandant, Academy of Health Sciences, ATTN: MCCS-HRL, Fort Sam Houston, TX 78234-6100.

## CHAPTER 1

### INTRODUCTION

#### GENERAL

This manual identifies the individual MOS training requirements for soldiers in MOS 42E. Commanders, trainers, and soldiers should use it to plan, conduct, and evaluate individual training in units. This manual is the primary MOS reference to support the self-development and training of every soldier.

Use this manual with Soldier's Manuals of Common Tasks (STP 21-1-SMCT and STP 21-24-SMCT), Army Training and Evaluation Programs (ARTEPs), and FM 25-101, Battle Focused Training, to establish effective training plans and programs which integrate soldier, leader, and collective tasks.

#### SOLDIER'S RESPONSIBILITIES

Each soldier is responsible for performing individual tasks which the first-line supervisor identifies based on the unit's METL. The soldier must perform the tasks to the standards listed in the SM. If a soldier has a question about how to do a task or which tasks in this manual he or she must perform, it is the soldier's responsibility to ask the first-line supervisor for clarification. The first-line supervisor knows how to perform each task or can direct the soldier to the appropriate training materials.

#### NCO SELF-DEVELOPMENT AND THE SOLDIER'S MANUAL

Self-development is one of the key components of the leader development program. It is a planned progressive and sequential program followed by leaders to enhance and sustain their military competencies.

It consists of individual study, research, professional reading, practice, and self-assessment. Under the self-development concept, the NCO, as an Army professional, has the responsibility to remain current in all phases of the MOS. The SM is the primary source for the NCO to use in maintaining MOS proficiency.

Another important resource for NCO self-development is the Army Correspondence Course Program (ACCP). Refer to DA Pamphlet 351-20 for information on enrolling in this program and for a list of courses, or write to: Commandant, Academy of Health Sciences, ATTN: MCCS-HSN, Fort Sam Houston, TX 78234-6199.

Unit learning centers are valuable resources for planning self-development programs. They can help access enlisted career maps, training support products, and extension training materials.

## **TRAINING SUPPORT**

This manual includes the following information which provides additional training support information.

- Appendix A, DA Form 5165-R (Field Expedient Squad Book). This appendix provides an overprinted copy of DA Form 5165-R for the tasks in this MOS. The NCO trainer can use this form to set up the leader book described in FM 25-101, appendix B. The use of this form may help preclude writing the soldier tasks associated with the unit's mission essential task list, and can become a part of the leader book.
- Appendix B contains information on several skills and knowledges which are important for MOS 42E personnel.
- Glossary. The glossary, which follows the last appendix, is a single comprehensive list of acronyms, abbreviations, definitions, and letter symbols.
- References. This section contains two lists of references, required and related, which support training of all tasks in this SM. Required references are listed in the conditions statement and are required for the soldier to do the task. Related references are materials which provide more detailed information and a more thorough explanation of task performance.



## CHAPTER 2

### TRAINER'S GUIDE (TG)

#### GENERAL

The TG identifies the essential components of a unit training plan for individual training. Units have different training needs and requirements based on differences in environment, location, equipment, dispersion, and similar factors. Therefore, the TG is a guide used for conducting unit training and not as a rigid standard.

The TG provides information necessary for planning training requirements for the MOS. The TG--

- Identifies subject areas in which to train soldiers.
- Identifies the critical tasks for each subject area.
- Specifies where soldiers are trained to standard on each task.
- Recommends how often to train each task to sustain proficiency.
- Recommends a strategy for cross-training soldiers.
- Recommends a strategy for training soldiers to perform higher level tasks.

#### BATTLE FOCUSED TRAINING

As described in FM 25-100, Training the Force, and FM 25-101, Battle Focused Training, the commander must first define the mission essential task list (METL) as the basis for unit training. Unit leaders use the METL to identify the collective, leader, and soldier tasks which support accomplishment of the METL. Unit leaders then assess the status of training and lay out the training objectives and the plan for accomplishing needed training. After preparing the long- and short-range plans, leaders then execute and evaluate training. Finally, the unit's training preparedness is reassessed, and the training management cycle begins again. This process ensures that the unit has identified what is important for the wartime mission, that the training focus is applied to the necessary training, and that training meets established objectives and standards.

#### RELATIONSHIP OF SOLDIER TRAINING PUBLICATIONS (STPs) TO BATTLE- FOCUSED TRAINING

The two key components of enlisted STPs are the Trainer's Guide (TG) and Soldier's Manual (SM). The TG and SM give leaders important information to help in the battle-focused training process. The TG relates soldier and leader tasks in the MOS and SL to duty positions and equipment. It provides information on where the task is trained, how often training should occur to sustain proficiency, and who in

## **STP 8-42E14-SM-TG**

the unit should be trained. As leaders go through the assessment and planning stages, they should use the TG as an important tool in identifying what needs to be trained.

The execution and evaluation of soldier and leader training should rely on the Armywide training objectives and standards in the SM task summaries. The task summaries ensure that soldiers in any unit or location have the same definition of task performance and that trainers evaluate the soldiers to the same standard. The diagram on the following page shows the relationship between battle-focused training and the use of the TG and SM. The left-hand side of the diagram (taken from FM 25-101) shows the soldier training process while the right side of the diagram shows how the STP supports each step of this process.

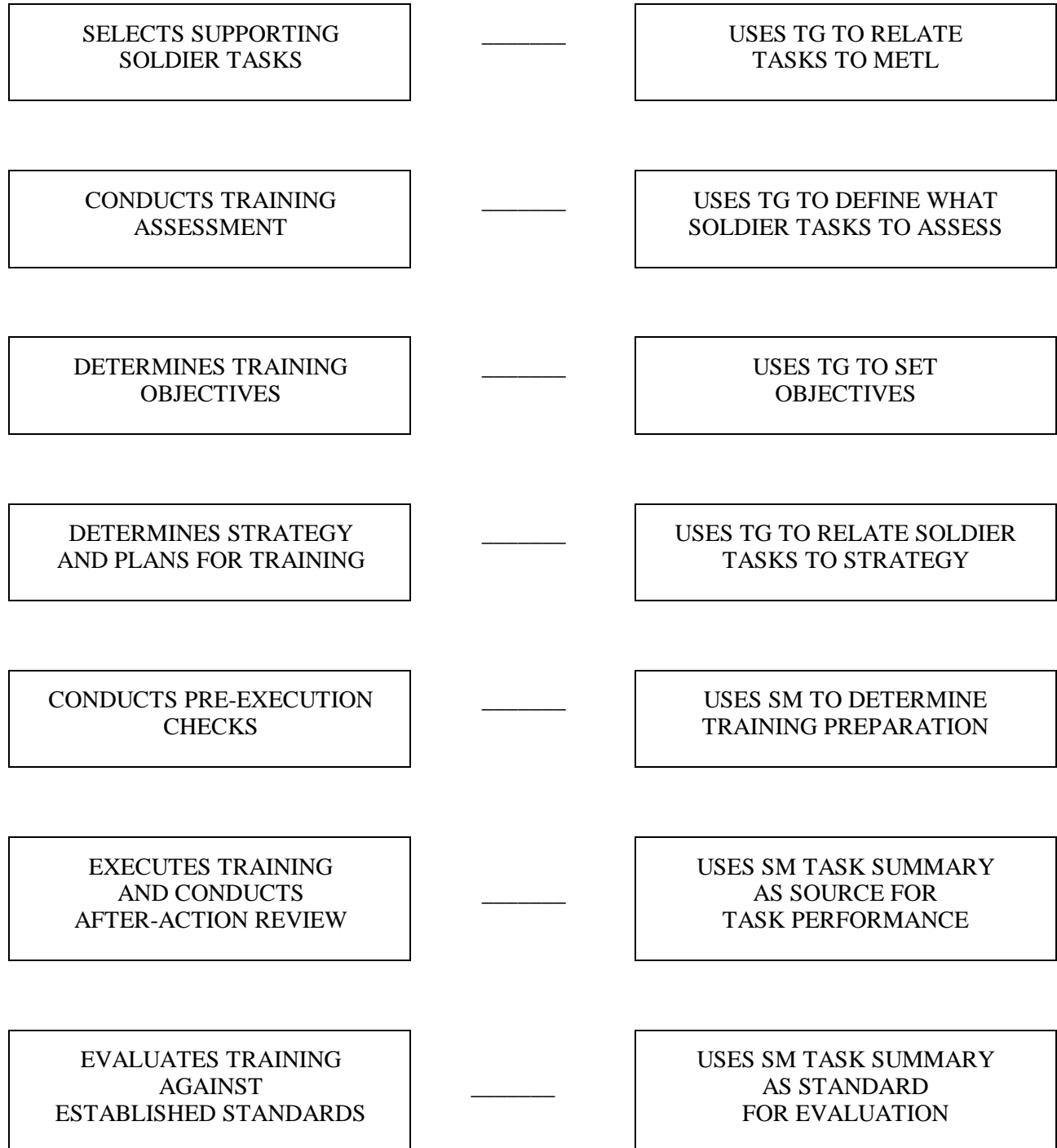
### **TRAINER'S RESPONSIBILITIES**

Training soldier and leader tasks to standard and relating this training to collective mission-essential tasks is the NCO trainer's responsibility. Trainers use the steps below to plan and evaluate training.

- Identify soldier and leader training requirements. The NCO determines which tasks soldiers need to train on using the commander's training strategy. The unit's METL and ARTEP and the MOS Training Plan (MTP) in the TG are sources for helping the trainer define the individual training needed.
- Plan the training. Training for specific tasks can usually be integrated or conducted concurrently with other training or during "slack periods." The unit's ARTEP can assist in identifying soldier and leader tasks which can be trained and evaluated concurrently with collective task training and evaluation.
- Gather the training references and materials. The SM task summary lists all references which can assist the trainer in preparing for the training of that task.
- Determine risk assessment and identify safety concerns. Analyze the risk involved in training a specific task under the current conditions at the time of scheduled training. Ensure that your training preparation takes into account those cautions, warnings, and dangers associated with each task.
- Train each soldier. Show the soldier how the task is done to standard, and explain step-by-step how to do the task. Give each soldier one chance to do the task step-by-step.
- Emphasize training in mission-oriented protective posture (MOPP) level 4 clothing. Soldiers have difficulty performing even the very simple tasks in a nuclear/chemical environment. The combat effectiveness of the soldier and the unit can degrade quickly when trying to perform in MOPP 4. Practice is the best way to improve performance. The trainer is responsible for training and evaluating soldiers in MOPP 4 so that they are able to perform critical wartime tasks to standards under nuclear/chemical environment.
- Check each soldier. Evaluate how well each soldier performs the tasks in this manual. Conduct these evaluations during individual training sessions or while evaluating soldier proficiency during the conduct of unit collective tasks. This manual provides an evaluation guide for each task to enhance the trainer's ability to conduct year-round, hands-on evaluations of tasks critical to the unit's mission. Use the

**BATTLE-FOCUS PROCESS**

**STP SUPPORT PROCESS**



## **STP 8-42E14-SM-TG**

information in the MTP as a guide to determine how often to train the soldier on each task to ensure that soldiers sustain proficiency.

- Record the results. The leader book referred to in FM 25-101, appendix B, is used to record task performance and gives the leader total flexibility on the method of recording training. The trainer may use DA Forms 5164-R (Hands-On Evaluation) and 5165-R (Field Expedient Squad Book) as part of the leader book. The forms are optional and locally reproducible. STP 21-24-SMCT contains a copy of the forms and instructions for their use.

- Retrain and evaluate. Work with each soldier until he or she can perform the task to specific SM standards.

### **EVALUATION GUIDE**

An evaluation guide exists for each task summary in the SM. Trainers use the evaluation guides year-round to determine if soldiers can perform their critical tasks to SM standards. Each evaluation guide contains one or more performance measures which identify what the trainer needs to observe to score a soldier's performance. Each step is clearly identified by a "P" (Pass) and "F" (Fail), located under the "Results" column on each evaluation guide. Some tasks involve a process which the trainer must observe as the soldier performs the task. For other tasks, the trainer must evaluate an "end product" resulting from doing the task. The following are some general points about using the evaluation guide to evaluate soldiers:

- Review the guide to become familiar with the information on which the soldier will be scored.
- Ensure that the necessary safety equipment and clothing needed for proper performance of the job are on hand at the training site.
- Prepare the test site according to the conditions section of the task summary. Some tasks contain special evaluation preparation instructions. These instructions tell the trainer what modifications must be made to the job conditions to evaluate the task. Reestablish the test site to the original requirements after evaluating each soldier to ensure that conditions are the same for each soldier.
- Advise each soldier of the information in the Brief Soldier section of the task summary before evaluating.
- Score each soldier according to the performance measures in the evaluation guide. Unless otherwise stated in the task summary, the soldier must pass all performance measures to be scored GO. If the soldier fails any steps, show what was done wrong and how to do it correctly.
- Record the date and task performance ("GO" or "NO-GO") in the leader book.

## TRAINING TIPS FOR THE TRAINER

### 1. Prepare yourself.

- Get training guidance from your chain of command on when to train, which soldiers to train, availability of resources, and a training site.

- Get the training objective (task, conditions, and standards) from the task summary in this manual.

- Ensure you can do the task. Review the task summary and the references in the reference section. Practice doing the task or, if necessary, have someone train you on the task.

- Choose a training method.

- Prepare a training outline consisting of informal notes on what you want to cover during your training session.

- Practice your training presentation.

### 2. Prepare the resources.

- Obtain the required resources identified in the conditions statement for each task.

- Gather equipment and ensure it is operational.

- Coordinate for use of training aids and devices.

- Prepare the training site according to the conditions statement and evaluation preparation section of the task summary, as appropriate.

### 3. Prepare the soldiers.

- Tell the soldier what task to do and how well it must be done. Refer to the standards statement and evaluation preparation section for each task as appropriate.

- Caution soldiers about safety, environment, and security.

- Provide any necessary training on basic skills that soldiers must have before they can be trained on the task.

- Pretest each soldier to determine who needs training in what areas by having the soldier perform the task. Use DA Form 5164-R and the evaluation guide in each task summary to make this determination.

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4. Train the soldiers who failed the pretest.

- Demonstrate how to do the task or the specific performance steps to those soldiers who could not perform to SM standards. Have soldiers study the appropriate materials.

- Have soldiers practice the task until they can perform it to SM standards.

- Evaluate each soldier using the evaluation guide.

- Provide feedback to those soldiers who fail to perform to SM standards and have them continue to practice until they can perform to SM standards.

5. Record results in the leader book.

### **MILITARY OCCUPATIONAL SPECIALTY TRAINING PLAN**

One of the key components of the TG is the MOS Training Plan (MTP). The MTP has two parts to assist the commander in preparing a unit training plan which satisfies integration, cross-train, train-up, and sustainment training requirements for soldiers in this MOS.

#### **PART ONE**

Part one of the MTP shows the relationship of an MOS SL between duty position and critical tasks. The critical tasks are grouped by task commonality into subject areas. Section I lists subject area numbers and titles used throughout the MTP. Section II defines the training requirements for each duty position within an MOS and relates duty positions to subject areas and cross-training and train-up/merger requirements.

- Duty position column--contains the MOS duty positions, by skill level, which have different training requirements.

- Subject area column--lists by subject area number, the subject areas in which the soldier must be proficient for that duty position.

- Cross-train column--lists the recommended duty position for which soldiers should be cross-trained.

- Train-up/merger column--lists the corresponding duty position for the next higher SL or MOS the soldier will merge into on promotion.

#### **PART TWO**

Part two lists by subject areas, the critical tasks to be trained in an MOS, task number, task title, location, sustainment training frequency, and training SL.

- Subject area column--lists the subject area number and title in the same order as in the MTP, Part One, Section I.

- Task number column--lists the task numbers for all tasks included in the subject area.
- Task title column--lists the task title.
- Training location column--identifies the training location where the task is first trained to STP standards. If the task is first trained to standard in the unit, the word "UNIT" will be in this column. If the task is first trained to standard in the training base, it will identify the resident course where the task was taught.

Figure 2-1 contains a list of training locations and their brevity codes.

AIT	-	Advanced Individual Training
ANC	-	Advanced Noncommissioned Officer's Course
BCT	-	Basic Combat Training
BNC	-	Basic Noncommissioned Officer's Course
OSUT	-	One Station Unit Training
PLDC	-	Primary Leadership Development Course
SMC	-	Sergeants Major Course
UNIT	-	Trained in the Unit

**Figure 2-1. Training locations**

- Sustainment training frequency column--indicates the recommended frequency at which tasks should be trained to ensure the soldier maintains task proficiency. Figure 2-2 identifies the frequency codes to use in this column.

AN	-	annually
BM	-	bimonthly (once every two months)
MO	-	monthly
QT	-	quarterly
SA	-	semiannually

**Figure 2-2. Sustainment training frequency codes**

- Sustainment training SL column--lists the SLs of the MOS for which soldiers must receive sustainment training to ensure they maintain proficiency to SM standards.
- A chart at the end of the MTP indicates the ARTEPs which the individual critical tasks support. This establishes the crosswalk between individual and collective training.

**MOS TRAINING PLAN**

**MOS 42E**

**PART I. SUBJECT AREAS AND DUTY POSITIONS**

**SECTION 1. SUBJECT AREA CODES**

- |                          |                                |
|--------------------------|--------------------------------|
| 1. Fabrication           | 4. Advanced Optical Laboratory |
| 2. Surfacing             | 5. General Administration      |
| 3. Equipment Maintenance | 6. Advanced Administration     |

**SECTION 2. DUTY POSITION TRAINING REQUIREMENTS**

	DUTY POSITION	SUBJECT AREAS	CROSS TRAIN	TRAIN-UP/MERGER
SL 1	Optical Laboratory Specialist	1-3	NA	42E2 Optical Laboratory Specialist
SL 2	Optical Laboratory Specialist	1-5	NA	42E3 Optical Laboratory NCO
SL 3	Optical Laboratory NCO	1-6	NA	NA
SL 4	Senior Optical Laboratory NCO	1-6	NA	91B5 Operations Sgt 91B5M Medical 1st Sergeant



## MOS TRAINING PLAN

## CRITICAL TASKS

Skill Level 1

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
1. Fabrication	081-875-4376	Select Finished Stock	AIT	AN	1-4
	081-875-4377	Spot Lenses For Fabrication	AIT	AN	1-4
	081-875-4398	Block Lenses For Edging	AIT	AN	1-4
	081-875-4380	Edge Lenses	AIT	AN	1-4
	081-875-4382	Safety Bevel Lenses	AIT	AN	1-4
	081-875-4401	Dye Plastic Lenses To A Specified Tint	AIT	AN	1-4
	081-875-4386	Assemble Frame Stock	AIT	AN	1-4
	081-875-4387	Insert Lenses Into Nonmetallic Frames	AIT	AN	1-4
	081-875-4428	Insert Lenses Into Metal Frames	AIT	AN	1-4
	081-875-4388	Adjust Assembled Spectacles	AIT	AN	1-4
	081-875-4397	Prepare Spectacles For Shipment	AIT	AN	1-4
2. Surfacing	081-875-4416	Operate An Automated Surface Write-Up Computer	AIT	AN	1-4
	081-875-4351	Block Lens Blanks For Surfacing	AIT	AN	1-4
	081-875-4402	Cut Lens Surfaces Using A Lens Generator	AIT	AN	1-4
	081-875-4403	True Laps Using A Lens Generator	AIT	AN	1-4
	081-875-4404	Fine Grind Lens Surfaces Using An Automatic Surfacer	AIT	AN	1-4
	081-875-4405	Polish Lens Surfaces Using An Automatic Surfacer	AIT	AN	1-4
	081-875-4364	Deblock Lenses	AIT	AN	1-4
	081-875-4399	Prepare A Surface Worksheet	AIT	AN	1-4
	081-872-0036	Select Appropriate Method Of Disposal For Medical Materiel	AIT	AN	1-4
3. Equipment Maintenance	081-875-4389	Perform Pmcs On A Lensometer	AIT	AN	1-4
	081-875-4410	Perform Pmcs On A Fabrication Marker/Blocker	AIT	AN	1-4
	081-875-4392	Perform Pmcs On An Edger	AIT	AN	1-4
	081-875-4394	Perform Pmcs On A Hand Edger	AIT	AN	1-4
	081-875-4414	Perform Pmcs On A Dye Bath Unit	AIT	AN	1-4
	081-875-4417	Perform Pmcs On A Photometer	AIT	AN	1-4
	081-875-4411	Perform Pmcs On A Surface Blocker	AIT	AN	1-4
	081-875-4412	Perform Pmcs On A Lens Generator	AIT	AN	1-4
	081-875-4413	Perform Pmcs On An Automatic Lens Surfacer	AIT	AN	1-4
081-875-4374	Perform Pmcs On A Deblocker	AIT	AN	1-4	

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**CRITICAL TASKS**

**Skill Level 2**

4. Advanced Optical Lab	081-875-4420	Perform An Optical Transaction Using The Spectacle Request Transmittal System (Srts)	UNIT	AN	2-4
	081-875-4451	Edit An Optical Prescription	UNIT	AN	2-4
	081-875-4429	Inspect Completed Spectacles	UNIT	AN	2-4
	081-875-4475	Prepare A Quarterly Optical Laboratory Report (Da Form 2717)	UNIT	AN	2-4
5. General Administration	081-872-0043	Compute Authorized Stockage Levels For Medical Supplies Using The Days Of Supply (Dos) Computation	UNIT	AN	2-4
	101-521-1151	Order Supplies And Equipment	UNIT	AN	2-4
	121-004-1228	File Records	UNIT	AN	2-4

**CRITICAL TASKS**

**Skill Level 3**

6. Advanced Administration	081-872-0052	Conduct Supply Transactions Using Theater Army Medical Management Information System (Tammis)	BNCOC	AN	3-4
	081-875-4430	Inspect An Optical Laboratory To Ensure A Safe Working Environment	BNCOC	AN	3-4

**INDIVIDUAL TASK/ARTEP CROSSWALK**

	057-30 267-30 456	437-30	487-30
081-875-4376	X	X	X
081-875-4377	X	X	X
081-875-4398	X	X	X
081-875-4380	X	X	X
081-875-4382	X	X	X
081-875-4401	X	X	X
081-875-4386	X	X	X
081-875-4387	X	X	X
081-875-4428	X	X	X
081-875-4388	X	X	X
081-875-4397	X	X	X
081-875-4416			X
081-875-4351			X
081-875-4402			X
081-875-4403			X
081-875-4404			X
081-875-4405			X
081-875-4364			X
081-875-4399			X
081-872-0036			X
081-875-4389	X	X	X
081-875-4410	X	X	X
081-875-4392	X	X	X
081-875-4394	X	X	X

**INDIVIDUAL TASK/ARTEP CROSSWALK**

	057-30 267-30 456	437-30	487-30
081-875-4414	X	X	X
081-875-4417	X	X	X
081-875-4411			X
081-875-4412			X
081-875-4413			X
081-875-4374			X
081-875-4420	X	X	X
081-875-4451	X	X	X
081-875-4429	X	X	X
081-875-4475	X	X	X
081-872-0043	X	X	X
101-521-1151	X	X	X
121-004-1228	X	X	X
081-872-0052	X	X	X
081-875-4430	X	X	X

**CHAPTER 3  
MOS SKILL LEVEL TASKS**

**SECTION I  
SKILL LEVEL 1 TASKS**

**081-875-4376**

**SELECT FINISHED STOCK**

**CONDITIONS**

You have received single vision prescriptions which have been edited. Necessary materials and equipment: job trays, single vision lens stock, marking pen, and stock accounting cards.

**STANDARDS**

The prescription will be trayed, the proper lenses selected, and the stock cards pulled and forwarded to supply when applicable.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |  |        |
|--|--------|
| 1. Place each prescription in a separate job tray.   | P    F |
| 2. Select lens stock to match the prescription.  | P    F |
| <ul style="list-style-type: none"> <li>a. If a job calls for two pairs but only one is available, supply one pair of spectacles and annotate the prescription to notify the clinic.</li> <li>b. If the proper lenses are not in stock, lenses may be substituted if the lens power exceeds 5 diopters. Substitution is limited to a 0.25 D change in either the sphere or cylinder power.</li> </ul> |        |

**NOTE:** If a substitution is required, only one pair of spectacles will be issued and the prescription will be annotated.

- |   |        |
|---|--------|
| 3. Ensure that the pulled lenses will cut out by determining the blank size required. | P    F |
|---|--------|

**Performance Measures**

**Results**

**NOTE:** Selecting the minimal lens blank size available will allow a lens to be fabricated at minimum thickness, making it more cosmetically appealing. It also will reduce the weight of the lens and its magnification, as well as reduce lens breakage. Smaller lenses also cost less.

- a. Minimum lens blank size (MLBS) is determined by using the following formula:

$$MLBS = ED + 2(d) + 2 \text{ mm}$$

Where: ED = effective diameter (twice the distance from the center of the lens to the farthest corner of the eyewire)

d = decentration per lens

Example:  $ED + 2(d) + 2 = MLBS$   
 $(52) + 2(3) + 2 = 60 \text{ mm}$

- b. The overall lens blank size must increase by 2 mm for every 1 mm of decentration per lens.

- 4. Forward stock accounting cards to supply.

P F

- a. The stock accounting cards will be placed between lenses at the reorder point level.

**NOTE:** The reorder point is computed IAW task 081-872-0043.

- b. As lenses are used and the card is reached, remove the card and place it in a central location.

- c. At the end of each day, forward the collected cards to supply for reordering of lens stock.

<b>REFERENCES:</b>	<b><i>Required</i></b>	<b><i>Related</i></b>
	None	FM 8-37

081-875-4377

**SPOT LENSES FOR FABRICATION**

**CONDITIONS**

You have received a job tray with lenses which must be spotted. Necessary materials and equipment: lensometer, lens marking pen, water, towel, and PD ruler.

**STANDARDS**

The lenses are spotted. Lenses with prism are identified and spotted with prism. The factory dots are removed, the lens powers are verified, and the lenses are marked for the right or left eye.

**TRAINING/EVALUATION**

*Evaluation Guide*

<b>Performance Measures</b>	<b>Results</b>
1. Adjust the eyepiece for sharp focus.	P F
a. Position the power wheel on plano or zero.	
b. Rotate the eyepiece until the target is in the clearest possible focus.	
2. Compare the powers on the package with the prescription powers.	P F
3. Remove the lenses from the package and inspect for flaws.	P F
4. Wipe off factory dots with a clean towel.	P F
5. Position a lens in the lens measuring instrument with the concave side facing away and verify the lens powers.	P F
<b>NOTE:</b> If the lens is not the correct power and is not within tolerance, return the job to the proper section for lens replacement.	
6. Spot the lens.	P F

**NOTE:** Do not spot flat top bifocals.

**NOTE:** Spot Executive style bifocals on either the distance or near portion of the lens, depending on power and local procedure.

**Performance Measures**

**Results**

a. Without prism.

- (1) Set the axis wheel on the axis reading for the lens.
- (2) Turn the lens so that the single line comes in clear and straight.
- (3) Center the single line in the reticle (or center the entire image when spotting spherical lenses) both vertically and horizontally.
- (4) If the lens is a cylinder lens, turn the power wheel to the PWIII reading and ensure that the three lines come in clear and straight.
- (5) Center the three lines in the reticle, both vertically and horizontally.

**NOTE:** You may have to go between PWI and PWIII several times to ensure both are centered.

(6) Spot the lens.

**NOTE:** When spotting lenses with little or no power in the 180th meridian, always spot the lens so that the lens will cut out after proper decentration.

b. With prism.

**NOTE:** Normally an individual wearing corrective lenses has each lens positioned with its optical center over the visual center. When prism is prescribed, small amounts of prism may be produced by decentration. When the optical center is moved off-center in relationship to the visual center, a prismatic effect occurs. Higher amounts of prism must be ground into a lens due to lens size limitations on decentering for prism.

- (1) Decenter a plus lens IN to create Base In prism.
- (2) Decenter a plus lens OUT to create Base Out prism.
- (3) Decenter a minus lens IN to create Base Out prism.
- (4) Decenter a minus lens OUT to create Base In prism.

**NOTE:** Remember that a lens is positioned in the lensometer with the concave side facing away. Thus, all decentration movements should be made from the perspective of the wearer.

7. Remove the lens from the lens measuring instrument.

P F



**Performance Measures**

**Results**

8. Indicate right or left lens with a marking pen and mark "T", indicating top, on lenses which were spotted with prism. P F

9. Return the lens to the proper tray. P F

10. Repeat steps 4 through 9 until all lenses in the tray have been completed. P F

**REFERENCES:**

*Required*

None

*Related*

FM 8-11-2

FM 8-37

081-875-4398

**BLOCK LENSES FOR EDGING**

**CONDITIONS**

You have received a job tray with lenses which have been spotted for blocking. Necessary materials and equipment: fabrication marker/blocker, various curvature lens blocks, and adhesive pads.

**STANDARDS**

The lenses are blocked for edging in compliance with the prescription requirements. The correct block size is applied in accordance with the base curve and size of the lens to be edged.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- 1. Select the appropriate block.

P F

**NOTE:** There are three sizes of blocks. The most common is the block with a 6.00 base curve. There are also 0.50 base curve blocks for high minus lenses and 10.00 base curve blocks for high plus lenses.

- 2. Apply an adhesive pad to the block.

P F

- a. Remove an adhesive pad from the roll and apply it to the block.

**NOTE:** Local SOP may allow preparing several blocks at a time by removing the paper covers from the individual adhesive pads and applying blocks to the pads while the pads are still on the paper strip.

- b. Ensure the block is centered on the pad.

<p><b>CAUTION</b></p> <p>Care should be taken to limit contact of the pad with your fingers. Unnecessary contact with the adhesive portion of the pad may result in the pad losing its adhesive properties.</p>
---

- 3. Place the padded block into the chuck adapter.

P F

- 4. Position the lens on the protractor.

P F

**Performance Measures**

**Results**

- a. Place the lens over the protractor of the machine with the convex side of the lens facing up.
  - b. Look through the window of the protractor and decenter the lens according to prescription requirements.
    - (1) Start with the vertical and horizontal alignment lines set at the origin (0,0).
    - (2) According to prescription, adjust the vertical movement knob up or down the correct number of millimeters for the desired segment setting on multifocal lenses.
    - (3) Adjust the lateral movement knob left or right the correct number of millimeters for IN or OUT decentration.
5. Block the lens. P    F
- a. Pull the block holder handle downward.
  - b. Apply enough pressure to block the lens.
6. Remove the blocked lens and place it in the tray. P    F
7. Repeat the procedure until all lenses in the tray have been completed. P    F

**REFERENCES:**

*Required*

None

*Related*

Operator's Manual for  
the Fabrication  
Marker/Blocker

081-875-4380

## EDGE LENSES

### CONDITIONS

You have received a job tray with lenses which have been blocked for edging. Necessary materials and equipment: lens edger, deblocking tool, cut resistant gloves, towel, box-o-graph, and patterns.

### STANDARDS

The lenses are edged to the size and shape specified on the prescription. The lenses will be edged on axis and not have rejectable faults.

### TRAINING/EVALUATION

#### *Training Information Outline*

1. Ensure correct installation of the edger.

a. Attach the vacuum system.

(1) Insert the end of the 2 1/2" flex vacuum hose into the coupler on the bottom of the edger from below the bench.

**NOTE:** This connects the hose to the chip chute, the device in the edger that captures the plastic debris.

(2) Maintaining a gentle curve between the chip chute and vacuum, connect the other end of the 2 1/2" hose to the vacuum inlet.

**NOTE:** The vacuum inlet is the lower hole in the vacuum canister.

b. Attach the compressed air line.

(1) Install the regulator/filter assembly by inserting it into the quick-connect bulkhead fitting and snapping it in place.

(2) Attach the quick disconnect onto the end of the air line to be used.

(3) Push the air line on the male fitting of the regulator/filter assembly.

(4) Verify that the pressure is set at 80 psi.

**NOTE:** If adjustment is necessary, adjust the knob on the top of the regulator/filter assembly until it is set at 80 psi. This is the required operating pressure.

(5) Ensure the pattern tracking pressure gauge on the front panel of the edger reads 50 psi when the inlet pressure gauge reads 80 psi.

**NOTE:** If the gauge does not read 50 psi, adjust it using the adjustment knob on the control panel directly below the gauge.

- c. Run the edger through several test cycles to check for proper operation.
2. Select the pattern to match the prescription requirements.
  3. Mount the frame pattern.

**NOTE:** With the clear plexiglas shield raised, mount the frame pattern on the spring clip on the left side of the lens drive motor shaft.

4. Chuck the lens.
  - a. Place the blocked lens into the chuck adapter.
  - b. Hold the lens in position and press the CHUCK button.
5. Set the size dial.

**NOTE:** The edger uses the U.S. convention of 36.5 mm as the size-on-size setting. It will be necessary to determine your pattern size prior to setting the size dial for the prescribed frame.

- a. Measure the pattern horizontally using a box-o-graph or PD ruler.
- b. Calculate the difference between the pattern size and 36.5 mm. This difference is the SET of the pattern.
- c. If the pattern measures less than 36.5 mm, add the SET to the eye size of the frame you will be using (see example 1). If the pattern measures greater than 36.5 mm, subtract the SET from the eye size of the frame you will be using (see example 2).

Example 1: Pattern measures 31.5 mm. Eye size of frame is 48 mm.

36.5 mm	48.0 mm
- <u>31.5 mm</u>	SO <u>+ 5.0 mm</u>
SET = 5.0 mm	53.0 mm (this will be the machine setting)

Example 2: Pattern measures 51.5 mm. Eye size of frame is 50 mm.

51.5 mm	50.0 mm
- <u>36.5 mm</u>	SO <u>- 15.0 mm</u>
SET = 15.0 mm	35.0 mm (this will be the machine setting)

## STP 8-42E14-SM-TG

6. Edge the lens.
  - a. Close the plexiglass shield.
  - b. Set the bevel placement.

**NOTE:** The edger has two methods of bevel control. The front curve tracking bevel placement system uses a teflon wheel which traces the front curve of the lens. The multi-cam tracking system utilizes a stair-step cam mounted on the lens drive motor carriage and a cam follower assembly that replaces the bevel guide wheel assembly. The multi-cam system is most effective with small lenses such as gas mask inserts and half-eyes, irregular fronts, and lower base lenses, when a high-based bevel curve is needed for frame insertion (such as inserting a 2-base lens into a 6-base frame).

- (1) Set the bevel placement by turning the knob on the right side of the edger.
- (2) Position the bevel guide to ensure a 1/3, 2/3 bevel.

**NOTE:** Ideally, the bevel should have a 1/3, 2/3 bevel, with 1/3 of the lens thickness towards the front of the lens and 2/3 of the thickness towards the back of the lens.

- c. Engage the start button.
7. Engage the appropriate cycle button for edging adjustments if necessary.
    - a. STOP/RESET. This is a "Panic Button". Pressing this button at any time will abort the cycle and return the lens drive/cutter motor carriages to the start position.
    - b. PAUSE. The pause control can be used in two modes:
      - (1) When engaged during the first half of the cutting cycle (roughing), it will prevent the edger from advancing to the finishing position until it is released.
      - (2) When engaged during the second half of the cutting cycle (finishing), it will freeze the cycle.

**NOTE:** The pause feature is particularly helpful for making mid-cycle bevel adjustments.

8. Remove the lens.
9. Inspect the lens for rejectable defects in size, shape, axis, chips, chatter marks, and flakes.
  - a. Flakes and chips that are too large to be removed by the safety beveller will be cause for rejection of the lens.
  - b. Check the lens sizing by using a box-o-graph, micrometer, or by sizing it to the prescribed frame.

c. Axis adjustments should be accomplished using the guidelines in the manufacturer's literature.

10. Make necessary adjustments to correct rejectable defects before edging more lenses.

a. Correct for bumps on the lens edge.

(1) The teflon wheel may be set too high and contacting the LEAP pad or block. Verify that the wheel assembly is locked in its proper position for beveling, with the locating pin fully seated in the mounting block.

(2) If the teflon wheel is contacting the block, check the effective diameter of the lens. The minimum diameter that can be edged with the standard front curve tracking system is 34 mm. Smaller diameters will require the multi-cam system.

(3) A bump on the lens edge may also be caused by improper pattern tracking pressure. Ensure that the pattern tracking pressure is set in accordance with adjustment procedures.

b. Correct for lines running across the periphery of the lens.

(1) The cutter inserts may be too dull. Install new inserts.

(2) The cutter may be unbalanced. Ensure that both inserts are fully seated in the cutter.

c. Correct for pit marks appearing around the entire periphery of the lens. The nose bearings of the cutter motor may be bad, requiring replacement.

d. Correct for pit marks appearing only on the corners of the lens.

(1) Thrust plate wear may require adjustment.

(2) The lens drive assembly may require replacement.

e. Correct for marks on the front of the lens.

(1) Extremely dull cutters can cause this problem and may require replacement.

(2) Static electricity may cause mild aberrations. The lens can often be heated and wiped with a soft lint-free cloth to remove any plastic dust adhering to the surface of the lens.

11. Remove the block from the lens.

**CAUTION**

Use the proper deblocking tool and wear cut resistant gloves when deblocking. Lenses can cause severe lacerations.

12. Return the lens to the proper tray if no defects are found.

*Evaluation Guide*

**Performance Measures**

**Results**

1. Ensure correct installation of the edger.	P	F
2. Select the pattern to match the prescription requirements.	P	F
3. Mount the frame pattern.	P	F
4. Chuck the lens.	P	F
5. Set the size dial.	P	F
6. Edge the lens.	P	F
7. Engage the appropriate cycle button for edging adjustments if necessary.	P	F
8. Remove the lens.	P	F
9. Inspect the lens for rejectable defects in size, shape, axis, chips, and flakes.	P	F
10. Make necessary adjustments to correct rejectable defects before edging more lenses.	P	F
11. Remove the block from the lens.	P	F
12. Return the lens to the proper tray if no defects are found.	P	F
13. Repeat the procedure until all lenses in the tray have been completed.	P	F

**REFERENCES:**

*Required*

*Related*

None

Operator's Manual for the  
Lens Edger



081-875-4382

**SAFETY BEVEL LENSES**

**CONDITIONS**

You have received a job tray with lenses which have been edged and deblocked. Necessary materials and equipment: hand edger, water, sponges, towel, and metal frame.

**STANDARDS**

The lenses are safety beveled, flakes and chips are removed (within cosmetic tolerances), and lenses which are to be inserted into metal frames have been sized.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |        |
|---|--------|
| 1. Turn on the machine.   | P    F |
| 2. Adjust the water source, ensuring a steady supply of water is maintained to keep the beveling wheel wet. | P    F |

**NOTE:** Some safety bevelers are designed with a drip spout attached above the wheel. For this type, adjust the drip to allow only enough water to keep the wheel wet. Other safety bevelers are designed with a water well on the underside of the beveling wheel. To maintain an even flow of water it may be necessary to place a wet sponge inside the well and against the wheel.

- |   |        |
|---|--------|
| 3. Bevel the concave edge of plastic lenses.  | P    F |
| a. Move the lens side to side so as not to put ruts in the face of the wheel.       |        |
| b. Remove only what is necessary to eliminate sharp edges, chips, flakes, or humps. |        |

**CAUTION**

Ensure that the convex surface of the lens does not come in contact with the wheel, thereby causing a stone bruise.

- |                     |        |
|---------------------|--------|
| 4. Size the lenses. | P    F |
|---------------------|--------|

**STP 8-42E14-SM-TG**

**Performance Measures**

**Results**

**NOTE:** Lenses for metal frames may require sizing for proper fit into the frame. If the bevel is too sharp, the lenses could be chipped or flaked during insertion.

5. Wipe and inspect each lens with a soft dry towel to ensure that all defects have been removed. P F

**NOTE:** If this check reveals any defects that cannot be removed, return the lens and job tray to the appropriate section for replacement.

6. Return each lens to the proper tray, convex side up. P F

**REFERENCES:**

*Required*

*Related*

None

FM 8-11-2

FM 8-37

081-875-4401

**DYE PLASTIC LENSES TO A SPECIFIED TINT**

**CONDITIONS**

You have received a job tray with plastic lenses which require tinting. Necessary materials and equipment: dye bath, lens dye, a thermometer, a UV/Visible photometer, neutralizer, lens prep solution, clean towels, and lens holder.

**STANDARDS**

The lenses are tinted according to prescription requirements. The correct amount of light is transmitted through the lens and the colors of the lenses match.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |  |        |
|--|--------|
| 1. Turn on and ensure the dye bath is heated to the dye manufacturer's recommendation. | P    F |
|--|--------|

**NOTE:** Consider the effect of altitude on the boiling point when selecting a dye. Verify the accuracy of the dye bath thermostat with a thermometer.

- |   |        |
|---|--------|
| 2. Ensure the lenses are clean.               | P    F |
| 3. Place the lenses in the lens holder.       | P    F |
| 4. Place the lenses into the dye bath.        | P    F |
| 5. Ensure the lenses reach the correct shade. | P    F |

**NOTE:** Lenses are to be tinted to the specifications as stated on DD Form 771. The time required to tint lenses will vary greatly depending on the dye, the manufacturer of the lens, the age of the lens, and various other factors. Check the lens tint with an approved UV/Visible photometer.

- |  |        |
|--|--------|
| 6. Adjust for correct tint.                      | P    F |
| a. If lenses are too blue, dip them in brown.    |        |
| b. If lenses are too purple, dip them in yellow. |        |
| c. If lenses are too green, dip them in pink.    |        |

**Performance Measures**

**Results**

- d. If lenses are too brown, dip them in blue.
- e. If lenses are too yellow, dip them in blue, followed by red.
- 7. Determine the causes of deficient tints. P    F
  - a. Poor color may mean the dye is contaminated or too old and should be replaced. Incorrect temperature could also cause poor color.
  - b. Dark stray marks may mean the lenses were improperly cleaned or that there are defects in the manufacturer's lens coating.
  - c. Light areas are caused by poor dye/lens contact such as the lens coming in contact with another lens, the lens holder, or an air bubble if a lens is dyed concave side down.
  - d. Lenses that take too long to tint may indicate the dye bath is set at too low a temperature or that there is a coating on the lens, such as a scratch resistant coating.

**REFERENCES:**

*Required*

*Related*

None

FM 8-11-2

081-875-4386

**ASSEMBLE FRAME STOCK**

**CONDITIONS**

You have received a job tray with the prescription and lenses which have been edged and safety beveled. Necessary materials and equipment: frame stock, screwdriver, screws, and peening pliers.

**STANDARDS**

The prescription frame components are assembled and placed in the appropriate job tray.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |  |   |   |   |   |   |   |
|---|--|---|---|---|---|---|---|
| <ol style="list-style-type: none"> <li>1. Select the frame.             <ol style="list-style-type: none"> <li>a. Select a quick pull frame (front with temples attached) according to the prescription.</li> <li>b. If a quick pull frame is not available, pull the front and temple length required.</li> <li>c. Select the correct gas mask insert or aviator frame, according to the prescription.</li> </ol> </li> <li>2. Assemble the frame, if required, by attaching the temples to the fronts.</li> <li>3. Peen the screws.</li> <li>4. Forward the job tray to the appropriate section.</li> </ol> | <table border="0"> <tr> <td>P</td> <td>F</td> </tr> <tr> <td>P</td> <td>F</td> </tr> <tr> <td>P</td> <td>F</td> </tr> </table> | P | F | P | F | P | F |
| P   | F  |   |   |   |   |   |   |
| P   | F  |   |   |   |   |   |   |
| P   | F  |   |   |   |   |   |   |

**REFERENCES:**

*Required*

*Related*

None

AR 40-63  
FM 8-11-2  
FM 8-37

081-875-4387

## INSERT LENSES INTO NONMETALLIC FRAMES

### CONDITIONS

You have received a job tray with the prescription and lenses. The proper frames have been pulled. Necessary materials and equipment: frame warmer with beads, axis pliers, and a pan of cool water.

### STANDARDS

The lenses are inserted into the frames. The frame shows no signs of overheating. The lenses are on shape.

### TRAINING/EVALUATION

#### *Evaluation Guide*

#### Performance Measures

#### Results

- |  |   |   |
|--|---|---|
| 1. Prepare the frame warmer.   | P | F |
| a. Heat the glass beads.   |   |   |
| b. Use a file or similar tool to stir the glass beads to remove any "hot spots". |   |   |
| 2. Place the frame front into the glass beads.                                   | P | F |

**NOTE:** The frame should be moved in a circular motion through the glass beads.

#### CAUTION

Care should be taken not to touch the sides of the frame warmer. This could cause the frame to burn or scratch.

- |   |   |   |
|---|---|---|
| 3. Remove the frame from the frame warmer when the eyewire is soft and pliable. | P | F |
| 4. Insert the lenses into the appropriate eyewire.                              | P | F |

**NOTE:** Lenses must be inserted from the front because the back inside diameter of the eyewire is slightly smaller than the front inside diameter. This is a safety feature which helps prevent the lens from being forced against the face in case of a blow to the lens while being worn.

- a. Insert the OD lens by beginning at the temporal edge and working around the eyewire to the bridge.

**Performance Measures**

**Results**

- b. Insert the OS lens in the same manner.

**NOTE:** Proper technique should allow both lenses to be inserted with only one frame warming. Repeated heating of a frame may cause frame burns, rolls, stretches, or pinched eyewires.

- 5. Ensure proper fit of the lenses.

P F

- a. If the eyewire is not snug, dip the frame with lenses into a pan of cool water to shrink the eyewire.

- b. Align the lens shape with axis pliers.

**REFERENCES:**

*Required*

*Related*

None

FM 8-11-2  
 FM 8-37  
 ANSI Z80 Standards

081-875-4428

### INSERT LENSES INTO METAL FRAMES

#### CONDITIONS

You have received a job tray with the prescription and lenses. The proper frames have been pulled. Necessary materials and equipment: opticians screw driver, axis pliers, lens washer, mm ruler, and towel.

#### STANDARDS

The lenses are inserted into the frames on shape and without chipping the lenses. The lenses fit snugly into the frames and no gaps are present.

#### TRAINING/EVALUATION

##### *Evaluation Guide*

##### **Performance Measures**

##### **Results**

- |                                      |   |   |
|--------------------------------------|---|---|
| 1. Loosen the right eyewire screw.   | P | F |
| 2. Insert the right lens.            | P | F |
| 3. Tighten the eyewire screw.        | P | F |
| 4. Inspect the lens for proper size. | P | F |

**NOTE:** Lenses which have been cut too large may chip, flake, or warp the lens when tightening the eyewire screw. Lenses which have been cut too small may require lens washer to fill in the gaps. The lens should be rejected if lens washer is needed to fill more than one half of the circumference.

- |  |   |   |
|--|---|---|
| 5. Repeat steps 1 through 4 for the left lens. | P | F |
| 6. Return the spectacles to the proper tray.   | P | F |

##### **REFERENCES:**

*Required*

*Related*

None

FM 8-11-2  
FM 8-37



081-875-4388

**ADJUST ASSEMBLED SPECTACLES****CONDITIONS**

You have received a job tray with lenses inserted into the frames. Necessary materials and equipment: frame warmer with beads, opticians screw driver, axis pliers, mm ruler, towel, a flat surface, a bead bath, and cold water.

**STANDARDS**

The frames are aligned and adjusted, without burning or rolling the frame. The lenses fit snugly into the frame and there are no gaps.

**TRAINING/EVALUATION***Evaluation Guide***Performance Measures****Results**

- |   |        |
|---|--------|
| 1. Verify 4-point alignment. (See Figure 3-1, A.)   | P    F |
| a. Lay the frame upside down on a flat surface with the temples in the open position.             |        |
| b. Ensure each temple touches the flat surface equally, and the frame front lies flat throughout. |        |
| 2. Verify temple alignment. (See Figure 3-1, B.)  | P    F |
| a. The temples must lie flat across each other.   |        |
| b. Some temples may lie slightly angled due to pantoscopic tilt.                                  |        |
| 3. Verify lens shape. (See Figure 3-1, C.)  | P    F |
| a. Lenses will be off shape if inserted off axis.   |        |
| b. Use axis pliers to twist the lenses on axis or within tolerance of ANSI standards.             |        |
| 4. Verify that the lenses are in the same plane by use of a mm ruler. (See Figure 3-1, D.)        | P    F |

Performance Measures

Results

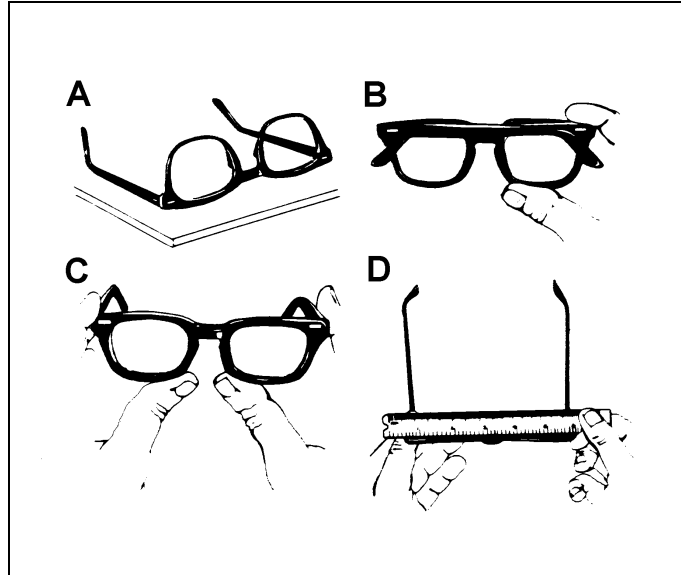


Figure 3-1

- |   |   |   |
|---|---|---|
| 5. Inspect the spectacles for burns, rolls, snugness, and gaps. | P | F |
|---|---|---|

**NOTE:** If the lenses are loose or there is a small gap in the eyewire, the frame can be shrunk. Heat the frame and lenses, and then dip them in cold water. This will shrink the eyewire around the lenses.

- |  |   |   |
|--|---|---|
| 6. Clean the spectacles.                                 | P | F |
| 7. Forward the job tray to the final inspection section. | P | F |

**REFERENCES:**

*Required*

None

*Related*

FM 8-11-2  
 FM 8-37  
 ANSI Z80 Standards

081-875-4397

**PREPARE SPECTACLES FOR SHIPMENT**

**CONDITIONS**

You have received job trays with spectacles which have passed final inspection. Necessary materials and equipment: spectacle cases, rubber bands, mailing boxes, mailing labels, packing materials, tape, and appropriate postal mailing classification.

**STANDARDS**

The spectacles will be packed and mailed to appropriate clinics on a daily basis. Spectacles with plastic lenses will be furnished with a lined case.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |        |
|---|--------|
| 1. Place the spectacles in a lens case.                               | P    F |
| a. Provide a lined case for plastic lenses.                           |        |
| b. If two pair are furnished, place the second pair outside the case. |        |

**NOTE:** Only one case is furnished per prescription.

- |  |        |
|--|--------|
| 2. Wrap the spectacles.  | P    F |
| a. Place a copy of the prescription around the spectacles.         |        |
| b. Ensure the address of the ordering clinic is visible.           |        |
| c. Bind the prescription around the spectacles with a rubber band. |        |
| 3. Sort the wrapped spectacles by clinics.                         | P    F |
| 4. Pack the spectacles.  | P    F |
| a. Lay the spectacles in a box in an orderly fashion.              |        |
| b. Do not overpack the box.  |        |

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**Performance Measures**

**Results**

- c. Add sufficient packing material to add cushioning or fill empty space in the box.
- d. Tape each box to satisfy postal requirements.
- 5. Place the appropriate mailing label on the box. P    F
- 6. Take the boxes to a postal delivery point. P    F

**REFERENCES:**

*Required*

*Related*

None

AR 40-63

081-875-4416

**OPERATE AN AUTOMATED SURFACE WRITE-UP COMPUTER****CONDITIONS**

You have received a prescription for lenses that must be surfaced. Necessary materials and equipment: surface work trays, a computer with surface write-up software, and a printer with automated surface worksheet blank forms.

**STANDARDS**

Produce an automated surface worksheet for the submitted prescription, matching the on hand stock of lenses.

**TRAINING/EVALUATION***Evaluation Guide***Performance Measures****Results**

- |   |   |   |
|---|---|---|
| 1. Enter the tray number of the tray holding the prescription.                      | P | F |
| 2. Enter the lens material and style.   | P | F |
| 3. Enter the frame data from computer files or manually input the frame parameters. | P | F |
| a. Eye size ("A" measurement).  |   |   |
| b. Bridge size.   |   |   |
| c. "B" measurement of the frame.  |   |   |
| d. Effective diameter (ED) of the frame.  |   |   |
| 4. Enter the prescription data for the right eye.                                   | P | F |
| a. Sphere power.  |   |   |
| b. Cylinder power.  |   |   |
| c. Axis.  |   |   |
| d. Prism amount and direction (in or out).  |   |   |
| e. Prism amount and direction (up or down).   |   |   |

**STP 8-42E14-SM-TG**

**Performance Measures**

**Results**

- f. Distant pupillary distance (PD).

**NOTE:** The near PD will be figured by the software.

- g. Segment height.

**NOTE:** The software recommends a minimum lens blank size at this point. If the software is set to use the lens files and pick the lens from inventory, the software will recommend a lens blank and automatically compute the job.

- 5. Accept the recommendation or enter the manufacturer's lens data for the right eye. P    F
  - a. Manufacturer's name.
  - b. Lens diameter.
  - c. Actual sag value.

**NOTE:** Sag the picked lens if the manufacturer's data for actual sag value is not loaded in the computer.

- d. Add power for the lens.

**NOTE:** The inset and drop of the multifocal segment will be automatically figured by the software.

- e. Thickness of the lens blank.

**NOTE:** The software will enter this automatically if the manufacturer's data for the picked lens is in the computer.

- 6. Repeat steps 4 and 5 for the left eye. P    F
- 7. Print the surface worksheet and forward it with the tray and lenses to the blocking section. P    F

**REFERENCES:** None

081-875-4351

**BLOCK LENS BLANKS FOR SURFACING**

**CONDITIONS**

You have received trayed surface work which requires blocking. Necessary materials and equipment: surface blocker and blocks. The blocker is connected to a layout computer, 115 volt 60 Hz 10 amp grounded electrical service, and 90 psi clean dry compressed air.

**STANDARDS**

The lenses are securely blocked without induced prism.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |        |
|---|--------|
| 1. Enter the job number with a bar code reader or keypad. | P    F |
|---|--------|

**NOTE:** A job may be manually entered using the blocker keypad and menu interface if your blocker is not hooked to a layout computer.

- |                             |        |
|-----------------------------|--------|
| 2. Edit the job parameters. | P    F |
|-----------------------------|--------|

- a. Ensure that the proper lens has been selected.
- b. Select the block specified in the job status window.

- |                                    |        |
|------------------------------------|--------|
| 3. Align and block the right lens. | P    F |
|------------------------------------|--------|

- a. Place the selected block in the blocking ring.
- b. Align the lens blank.
  - (1) Place and hold the lens blank on the alignment ring.

(2) Match the lens blank with the target in the alignment template. The reflected image should align with the target.

- c. Block the right lens.

**Performance Measures**

**Results**

(1) Hold the lens in place and press the MOVE key. The transport arm will move to the alignment ring. The vacuum chuck will be lowered to the lens and vacuum will be applied. When the blocker beeps, you may release the lens blank.

(2) Press the MOVE key again. The transport arm lifts the lens and moves it to the blocking station.

**NOTE:** If the lens does not seat properly, press the ESCAPE key. The transport arm will move the lens back to the alignment ring.

(3) Press the FILL key and hold it until blocking material fills the gap between the lens and the blocking ring.

**NOTE:** Wait for the blocker to chill and release the lens.

(4) Place the blocked lens in the job tray.

4. Repeat step 3 for the left lens.

P F

5. Allow the lenses to set up for 15 minutes before surfacing. Allow longer set up time for warmer rooms.

P F

<p><b>CAUTION</b></p> <p>Do not try to accelerate the setup time.</p>
---

**NOTE:** Lenses and blocking material should be kept between 60° F and 90° F for generating. For temperatures above 90°F, the lens must be gently chilled to within the optimal range before processing.

**REFERENCES:**

*Required*  
None

*Related*

Operator's Manual for the  
Surface Blocker



081-875-4402

**CUT LENS SURFACES USING A LENS GENERATOR**

**CONDITIONS**

You have received blocked surface work which must be generated. Necessary materials and equipment: lens generator connected to a 115 volt 60 Hz grounded electrical source and 80 psi dry clean air. The generator is connected to computer running surface write-up software. The generator warmup and diagnostics are complete.

**STANDARDS**

Generate the specified curves on the lens blank from the job worksheet.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |   |   |
|---|---|---|
| 1. Enter the job number with a bar code reader or keypad. | P | F |
|---|---|---|

**NOTE:** If your generator is not receiving data from a write-up computer, you must manually enter the prescription data, lens blank data, and block data.

- |   |   |   |
|---|---|---|
| 2. Chuck the lens blank and block in the generator. | P | F |
|---|---|---|

**NOTE:** Verify that the data showing on the generator screen matches the data shown on the prescription and surface worksheet.

- |  |   |   |
|--|---|---|
| 3. Cycle the job by pressing the START button. | P | F |
|--|---|---|

**NOTE:** The generator should not operate with the cover raised.

- |   |   |   |
|---|---|---|
| 4. Remove the lens and forward the job to the fining section. | P | F |
|---|---|---|

**CAUTION**

An unstable electrical supply can cause numerous problems with lens quality. Uninterruptible, stabilized power supply equipment should always be used for these generators.

**STP 8-42E14-SM-TG**

**REFERENCES:**

*Required*

None

*Related*

Operator's Manual for the  
Lens Generator

081-875-4403

**TRUE LAPS USING A LENS GENERATOR**

**CONDITIONS**

You have received lap tools which must be accurately trued to a specific curvature. Necessary materials and equipment: lap sag gauge, thickness gauge, and three axis lens generator.

**STANDARDS**

True lap tools to a specific curvature accurate to .01 diopter.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |        |
|---|--------|
| 1. Select lap material (plastic or foam). | P    F |
| 2. Specify lap information.               | P    F |
| a. Desired base curve.                    |        |
| b. Desired cross curve.                   |        |
| c. Center removal (usually 1 mm).         |        |

**NOTE:** Do not exceed 6 mm.

- d. Pad thickness (if pad compensation is desired).
- e. Lap blank base curve.
- f. Lap blank cross curve.
- g. Center thickness of the lap blank.

**NOTE:** Use a thickness gauge to ensure the center thickness measurement is accurate.

- |   |        |
|---|--------|
| 3. Press the READY key.   | P    F |
| 4. Place the lap in the lap holder and tighten the allen screw. | P    F |

**STP 8-42E14-SM-TG**

**Performance Measures**

- 5. Place the lap and lap holder in the generator collet.
- 6. Close the cover and press the START button.
- 7. Remove the lap from the generator when surfacing is complete.
- 8. Verify the accuracy of the lap with a sag gauge.

**Results**

P	F
P	F
P	F
P	F

**REFERENCES:**

*Required*

None

*Related*

Operator's Manual for the  
Lens Generator

081-875-4404

**FINE GRIND LENS SURFACES USING AN AUTOMATIC SURFACER**

**CONDITIONS**

You have received lenses that have been generated and require fining. The lenses are in their respective job trays with the appropriate surface worksheets. Necessary materials and equipment: automatic surfacers (finers), fining pads, clean dry towels, water, and polish pads.

**STANDARDS**

Fine surface work without defects.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Select the proper tool for fining.             <ol style="list-style-type: none"> <li>a. Select a tool matching the curves annotated on the surface worksheet.</li> <li>b. Place the right tool in the tray above the right lens.</li> <li>c. Place the left tool in the tray above the left lens.</li> <li>d. Place a fining pad on each tool.</li> </ol> </li> <li>2. Charge the fining bowl with water.</li> <li>3. Load the tools with fining pads onto the automatic surfacer.             <ol style="list-style-type: none"> <li>a. Place the tools onto the surfacer tool tables (tool adapter).</li> <li>b. Ensure the tools are clamped securely in place.</li> </ol> </li> <li>4. Clamp the lenses on the tools using axis pins of the finer.</li> </ol> | <p>P F</p> <p>P F</p> <p>P F</p> <p>P F</p> |
| <p><b>NOTE:</b> Ensure the clamp pressure is between 14 and 22 psi.</p>  |   |
| <ol style="list-style-type: none"> <li>5. Start the water pump and direct water toward the tools.</li> </ol>   | <p>P F</p>                                  |

**Performance Measures**

**Results**

6. Fine the lenses.

P F

a. Set the timer to 1 1/2 minutes.

**NOTE:** Local SOP may require different fining times and pressures depending on multiple variable factors.

b. Start the fining cycle.

7. Inspect the lens after fining.

P F

a. Remove the lens from the tool.

b. Rinse the lens in warm water.

c. Dry the lens with a clean dry towel or dry it in a compressed air stream.

**CAUTION**

Compressed air can peel skin from your hand. Ensure the air pressure at the nozzle does not exceed safety standards.

d. Visually inspect the lens for pits, scratches, and generator marks by examining it under a white frosted light.

**NOTE:** Some minor flaws may require re-finishing a lens for a few seconds if enough thickness remains. A blocked lens thickness gauge will determine if this option is feasible.

e. Place the lens back in the tray.

8. Clean, dry, and pad the tool.

P F

a. Remove the tool from the tray and rinse it in warm water.

b. Dry the tool with a towel or in a compressed air stream.

c. Place a polishing pad on each tool.

d. Return the tools to the tray and forward the tray to the polishing section.

**REFERENCES:**

*Required*

*Related*

None

FM 8-37

081-875-4405

## POLISH LENS SURFACES USING AN AUTOMATIC SURFACER

### CONDITIONS

You have received a job tray with a completed surface worksheet, fined lens blanks, and tools padded with polish pads. Necessary materials and equipment: automatic surfacer (polisher), plastic lens polish, water, clean soft cloths, and an inspection lamp.

### STANDARDS

Polish the lens blanks to a clear finish and inspect them for flaws.

### TRAINING/EVALUATION

#### *Evaluation Guide*

#### Performance Measures

#### Results

- |   |   |   |
|---|---|---|
| 1. Charge the polisher bowl with plastic lens polish.                 | P | F |
| 2. Load the tools with polishing pads onto the automatic surfacer.    | P | F |
| a. Place the tools onto the surfacer tool tables (tool adapter).      |   |   |
| b. Ensure the tools are clamped securely in place.                    |   |   |
| c. Wet the polish pad with polish.                                    |   |   |
| 3. Clamp the lenses on the tools using the axis pins of the polisher. | P | F |

**NOTE:** Ensure the clamp pressure is between 20 and 28 psi.

- |  |   |   |
|--|---|---|
| 4. Start the polish pump and direct polish toward the tools. | P | F |
| 5. Polish the lenses.  | P | F |
| a. Set the timer to 6 minutes.                               |   |   |

**NOTE:** Local SOP may require different polishing times and pressures depending on multiple variable factors.

- |                               |  |  |
|-------------------------------|--|--|
| b. Start the polishing cycle. |  |  |
|-------------------------------|--|--|



**Performance Measures**

**Results**

- |   |        |
|---|--------|
| <ul style="list-style-type: none"> <li>6. Inspect the lens after polishing.                             <ul style="list-style-type: none"> <li>a. Remove the lens from the tool and rinse it in warm water.</li> <li>b. Dry the lens with a clean soft cloth or dry it in a compressed air stream.</li> </ul> </li> </ul> | P    F |
|---|--------|

**CAUTION**

Compressed air can peel skin from your hand. Ensure the air pressure at the nozzle does not exceed safety standards.

c. Visually inspect the lens for grey, pits, scratches, and waves by examining it under an unfrosted blue light.

**NOTE:** Some minor flaws may require re-finishing a lens for a few seconds if enough thickness remains. A blocked lens thickness gauge will determine if this option is feasible.

- |   |        |
|---|--------|
| <ul style="list-style-type: none"> <li>d. Forward the lenses to the deblocking section.</li> </ul>  |        |
| <ul style="list-style-type: none"> <li>7. Clean the tool and return it to the tool selection section.                             <ul style="list-style-type: none"> <li>a. Remove the tool from the finer.</li> <li>b. Remove the polishing pad and rinse the tool in warm water.</li> <li>c. Return tools to the tool section.</li> </ul> </li> </ul> | P    F |

<b>REFERENCES:</b>	<i>Required</i>	<i>Related</i>
	None	FM 8-37

081-875-4364

**DEBLOCK LENSES**

**CONDITIONS**

You have received a job tray with finished surface work which needs to be deblocked. Necessary materials and equipment: a deblocker attached to an air supply of 80 psi, clean water, and washing solution.

**STANDARDS**

The lenses are deblocked, cleaned, inspected for flaws, and forwarded to the fabrication section. The blocks are cleaned, dried, and returned to the blocking section. The blocking material is clean, dry, and kept free from contamination for reuse.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |   |   |
|---|---|---|
| 1. Remove all polish from the blocked lenses.         | P | F |
| 2. Place a lens in the deblocker with the block down. | P | F |

**NOTE:** Impact deblocking is an alternative, field expedient method. This requires a deblocking ring and a flat surface to impact the blocking ring against. Place the lens in the deblocking ring with the block down and the lens resting on the protective rubber ring. Sharply impact the bottom of the deblocking ring on a flat surface. The block will release and fall through the ring while the lens remains on the protective rubber ring.

- |  |   |   |
|--|---|---|
| 3. Push the valve button and hold it until the lens is deblocked.                            | P | F |
| 4. Wash the lenses in the lens washer with washing solution to remove all blocking material. | P | F |

<p><b>CAUTION</b></p> <p>Do not reclaim blocking material that has been exposed to washing solution.</p>
--

- |  |   |   |
|--|---|---|
| 5. Inspect surfaced lenses.            | P | F |
| a. Hold the lens up to a light source. |   |   |

**Performance Measures**

**Results**

- b. Inspect the lens for cracks, chips, waves, grey, pits, scratches, defects, and dirt.
  - c. Return each lens to the proper tray.
  - d. Forward good lenses to fabrication.
6. Return the blocks, clean and dry, to the blocking section. P    F
7. Place blocking material in a dust free container until reuse. P    F

**REFERENCES:**

*Required*

None

*Related*

Operator's Manual for the  
Deblocker

081-875-4399

## PREPARE A SURFACE WORKSHEET

### CONDITIONS

You have received edited prescriptions which require surfacing. There is no automated surface write-up system available. Necessary materials and equipment: job trays and surface worksheets.

### STANDARDS

The surface worksheet must be completed on each prescription with all information filled in correctly.

### TRAINING/EVALUATION

#### *Evaluation Guide*

#### Performance Measures

#### Results

- |   |   |   |
|---|---|---|
| 1. Record the tray number.                          | P | F |
| 2. Enter the number of pairs requested.             | P | F |
| 3. Record the R <sub>x</sub> from the prescription. | P | F |

**NOTE:** Ensure the R<sub>x</sub> is recorded in minus cylinder form.

- |                                   |   |   |
|-----------------------------------|---|---|
| 4. Select the correct lens blank. | P | F |
|-----------------------------------|---|---|

**NOTE:** Select the appropriate base curve by using the nominal base curve selection formula (NBC = spherical equivalent + 6.00 D) and rounding off to the nearest nominal base curve available.

- |                                  |   |   |
|----------------------------------|---|---|
| 5. Ensure the lens will cut out. | P | F |
|----------------------------------|---|---|

**NOTE:** To ensure a lens will cut out, use the minimum lens blank formula:  
ED + (2 x decentration per lens) + 2 mm. (ED = effective diameter of the prescribed frame.)  
Single vision lenses use the distance PD, while single vision reading lenses and bifocals use the near PD for computing decentration.

- |   |   |   |
|---|---|---|
| 6. Check the ADD power from the manufacturer's package to ensure it is correct in accordance with the prescription if surfacing bifocals. | P | F |
|---|---|---|

- |  |   |   |
|--|---|---|
| 7. Inspect the convex surface for defects such as grey, scratches, pits, air bubbles, or unusual size or shape of the segment. | P | F |
|--|---|---|

<b>Performance Measures</b>	<b>Results</b>
8. Check the true base curve accuracy with a sagoneter.	P F
<b>NOTE:</b> The true base curve will be recorded in the margin next to the nominal base curve.	
9. Record the lens type.	P F
10. Compute the compensated power for the lens material used. (See Appendix B for computation details.)	P F
11. Record the amount and base direction of prism. (See Appendix B for computation details.)	P F
12. Record the finished center thickness. (See Appendix B for computation details.)	P F
13. Record the back curve (D <sub>2</sub> ) and back cross curve (D <sub>3</sub> ). Round up for minus lenses and down for plus lenses to the nearest tool curve. (See Appendix B for computation details.)	P F
14. Forward the surface worksheet with the tray and lenses to the blocking section.	P F

<b>REFERENCES:</b>	<i>Required</i>	<i>Related</i>
	None	FM 8-37

081-872-0036

**SELECT APPROPRIATE METHOD OF DISPOSAL FOR MEDICAL MATERIEL**

**CONDITIONS**

Medical materiel is on hand which has been determined to be unsuitable for issue/use. All pertinent information is available for this materiel to include: the quantity of items to be disposed of, generic nomenclatures, lot numbers, name of manufacturers, and stock numbers if applicable. Necessary references: TG 126.

**STANDARDS**

The method of disposal must be within guidelines established by TG 126 and the unit's capabilities.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

**NOTE:** Refer to TG 126 for all steps.

- |   |   |   |
|---|---|---|
| 1. Determine the method of disposal code for standard medical materiel.   | P | F |
| 2. Compile necessary information for transmission to U.S. Army Environmental Hygiene Agency (USAEHA), if the item is nonstandard or not listed. | P | F |
| 3. Contact USAEHA for the method of disposal code for nonstandard medical materiel.   | P | F |
| a. Refer to TG 126 for address and telephone number for USAEHA.   |   |   |
| b. Transmit the information compiled in step 2.   |   |   |
| 4. Locate the applicable disposal code definition.  | P | F |
| 5. Select a method of disposal from the alternatives listed under the applicable method of disposal code.                                       | P | F |

**Performance Measures**

**Results**

**NOTE:** Although several methods of disposal may be described, all of which may be equally suitable in certain situations, consideration must be given to:

- a. Quantity of materiel to be destroyed.
- b. Unique environmental factors.
- c. Resources available to accomplish the disposal.
- d. Any precautions cited.

**REFERENCES:**

*Required*

*Related*

TG 126

AR 40-61

081-875-4389

## PERFORM PMCS ON A LENSOMETER

### CONDITIONS

Necessary materials and equipment: lensometer instruction manual, clean soft rags, water, ink, hand tools, oil, a known power lens, light bulbs (G.E. No. 25s11/5c or equivalent), test lens set # 21-65-77, a plus five diopter lens, and ink roller pad replacement kit.

### STANDARDS

The lens measuring instrument must be clean, properly calibrated, and operational.

### TRAINING/EVALUATION

#### *Training Information Outline*

1. Perform procedures at the beginning of each day.
  - a. Wipe the telescope objective and eyelens with a clean soft cloth.

**NOTE:** Internal lenses may be cleaned as needed.

- b. Inspect the inking attachment.
  - (1) Ensure the ink roller pad is serviceable. If the ink roller pad is worn, replace it (see step 3a).
  - (2) Ensure the inkwell is not clogged with dried ink. If the inkwell is clogged, detach the inkwell assembly and thoroughly wash it with water before refilling it with ink.
- c. Ensure the light bulb is operational. If not, replace it (see step 3b).
- d. Ensure that the eyepiece is focused for a clear target reading when the power wheel is set at 0 diopters.
- e. Ensure that the target is centered (no more than 1/4 diopter prism).
  - (1) Remove the cover to expose three adjustment screws.
  - (2) Loosen two screws and tighten the opposite screw to center the target.
  - (3) Verify that the target is centered and replace the cover.

**NOTE:** If the target rotates around center, the manufacturer's instructions are required to properly adjust it. It is very difficult to recalibrate the lensometer if the target is adjusted on the power assembly.



f. Using a known power lens, check the power wheel and axis wheel readings. If the readings are off more than .125 diopters, adjust the power and axis drums by loosening the knob set screw on the power or axis wheel and resetting as required.

**NOTE:** Axis may also be adjusted by loosening the four eyepiece screws and rotating the eyepiece.

g. Verify the power at zero (no lens) and at plus and minus 12.00 diopters with the test lens set. Calibrate, if necessary, by adjusting the lens stop in or out.

h. Ensure smooth operation of the marking device. If the marking device does not operate smoothly, wipe and lightly oil the marking device axle and guide plunger. If the pins stick, remove the pin spring cover and remove excess ink with hot water.

**CAUTION**

Do not flood the exposed moving parts with oil. Use the minimum amount of oil needed.

- i. Verify spotter calibration.
  - (1) Spot a five diopter lens.
  - (2) Rotate the lens 180 degrees and respot.
  - (3) Make necessary adjustments so that the center dots overlap.
2. Perform procedures at the end of each day.
  - a. Turn off the power.
  - b. Clean the exterior of the instrument.
  - c. Cover the instrument with the dust cover.
3. Perform operator repairs as needed.
  - a. Replace the ink roller pad.
    - (1) Open the inkwell and remove the roller.
    - (2) Remove the two spring clips holding the old ink pad and discard both the clips and the pad.
    - (3) Wipe the ink roller clean.

## STP 8-42E14-SM-TG

(4) Remove the paper backing from the new ink roller pad by flexing it a few times and peeling off the smooth paper backing from the adhesive surface.

(5) Lay the new pad on a flat surface with the adhesive side up.

(6) Carefully align the roller with one end of the pad and pressing firmly, roll the roller across the pad, wrapping the pad around twice.

(7) Slightly spread the new spring clips and slip them over each end of the roller. Position the clips about 3/8 inch in from each end of the pad.

(8) Replace the roller in the inkwell. Make sure the spring clips do not obstruct the marking pen holes.

b. Replace the light bulb.

### CAUTION

Ensure the power cord is disconnected before working with electrical components.

(1) Set the power drum to approximately minus 17.

(2) Lift off the access cover on the right side of the instrument.

(3) Use the assembly lever to swing the bulb and socket assembly out.

(4) Replace the bulb and swing the assembly back into place.

(5) Replace the access cover.

(6) Reconnect the power and check operation.

**NOTE:** Replacement bulbs can be locally purchased as G.E. No. 25s11/5c.

c. Tighten excessive looseness of the power wheel, axis wheel, or lens table.

(1) Remove the cover to expose the pressure adjustment pivots.

(2) Clean and lubricate before adjusting.

(3) Tighten the adjustment only by small amounts and frequently check the movement of the component.

**CAUTION**

Do not overtighten.

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |   |   |
|---|---|---|
| 1. Perform procedures at the beginning of each day. | P | F |
| 2. Perform procedures at the end of each day.       | P | F |
| 3. Perform operator repairs as needed.              | P | F |

**REFERENCES:**

*Required*

*Related*

Operator's Manual for the  
Lensometer

FM 8-37

081-875-4410

**PERFORM PMCS ON A FABRICATION MARKER/BLOCKER**

**CONDITIONS**

Necessary materials: marker/blocker operation and maintenance instructions, teflon or silicon lubricant, screw drivers, allen wrenches, light bulb, pencil, soft cloth, glass cleaner, wrenches, and replacement block adapters.

**STANDARDS**

You must clean, lubricate, calibrate, and repair the fabrication marker/blocker ensuring accuracy and operability.

**TRAINING/EVALUATION**

*Training Information Outline*

1. Lubricate the sliding shaft, as needed, with a teflon or silicone lubricant.

**CAUTION**

Do not use petroleum based lubricants.

2. Replace the layout scale.
  - a. Center the layout scale at 0,0.
  - b. Loosen the set screws and remove the lens support plate.
  - c. Remove the layout scale with a small screwdriver.
  - d. Replace the layout scale, ensuring the zeros are lined up with the 180 and 90 degree alignment lines.
  - e. Replace the lens support plate and slowly tighten the set screws.

**NOTE:** Some manufacturer's marker/blockers can be left/right and up/down calibrated by loosening the covered adjustment screws on the face of the lens support plate assembly.

3. Replace the light bulb.

**CAUTION**

Ensure that the power switch is turned off and the bulb is cool.

- a. Holding the U bracket out of the way, turn the bulb 1/4 turn counter-clockwise and remove it.
  - b. Push the new light bulb in and turn it 1/4 turn clockwise.
4. Clean the mirrors.
- a. Use a pencil to trace an outline to mark the mounting position of the lens layout and support assembly.
  - b. Loosen the screws holding the assembly and lift out the assembly.

**NOTE:** Some manufacturer's lower mirrors can be accessed by removing the view port instead of removing the lens layout and support assembly.

- c. Clean the upper mirror and lower mirrors with a soft cloth and glass cleaner.
  - d. Replace and secure the lens layout and support assembly.
5. Adjust the sliding block down stop.

**NOTE:** This adjustment may be necessary to limit the downward travel of the sliding block assembly and avoid damage to the lens and/or the lens support pin cap.

- a. Use a wrench to loosen the nut holding the sliding block down stop adjustment screw.
  - b. Slowly bring down the sliding block assembly and adjust the adjustment screw while the sliding block is down.
  - c. Tighten the nut with a wrench.
6. Replace the block adapter.
- a. Remove the two screws holding the block adapter.
  - b. Replace it with a new or repaired block adapter by placing it back in the U bracket, using the guide pin.

**NOTE:** A blocking adapter is repaired by replacing the squeeze levers or filing the edges of the old squeeze levers to allow the levers to grip the block.

## STP 8-42E14-SM-TG

c. Replace and tighten the screws, ensuring that the rear edge of the blocking adapter is in contact with the axis adjustment screw.

7. Adjust the axis.

**NOTE:** Some manufacturer's marker/blockers do not have an axis adjustment.

a. Check the blocking adapter alignment with axis 180 on a blocked lens.

**NOTE:** An axis alignment grid or pattern blank may also be used.

b. If the three dots are offset by an equal amount in the same direction, there is no need for an axis adjustment, but the up and down adjustment screw needs adjustment. If one side is not aligned or if the axis of the block is not parallel with the three dots on the lens, then axis adjustment is needed.

c. Loosen (do not remove) the two screws holding the blocking adapter.

d. If the left dot is below the axis line, turn the axis adjustment screw to allow the blocking adapter to turn clockwise.

e. If the left dot is above the axis line, turn the axis adjustment screw to allow the blocking adapter to turn counterclockwise.

f. Tighten the screws holding the blocking adapter.

**NOTE:** The blocking adapter should rest against the axis adjustment screw.

8. Replace worn rubber lens support pins or pin caps.

### *Evaluation Guide*

<b>Performance Measures</b>	<b>Results</b>	
1. Lubricate the sliding shaft.	P	F
2. Replace the layout scale.	P	F
3. Replace the light bulb.	P	F
4. Clean the mirrors.	P	F
5. Adjust the sliding block down stop.	P	F
6. Replace the block adapter.	P	F

**Performance Measures**

**Results**

- |   |   |   |
|---|---|---|
| 7. Adjust the axis.                                   | P | F |
| 8. Replace worn rubber lens support pins or pin caps. | P | F |

**REFERENCES:**

*Required*

None

*Related*

Operator's Manual for  
the Fabrication  
Marker/Blocker

081-875-4392

## PERFORM PMCS ON AN EDGER

### CONDITIONS

Necessary materials: acetone, alcohol, lens clamp O-ring, motor brushes, small container, small brush, adhesive, scrap lens, replacement vacuum bags and filter, cutter blade inserts, edger instruction manual, and the manufacturer's supplied accessory kit.

### STANDARDS

The edger must be clean. The edger must be operational and connected to a dry air supply. Guides and O-rings must be smooth and properly set. The vacuum bags and filter must be replaced. The cutter blades must be replaced.

### TRAINING/EVALUATION

#### *Training Information Outline*

1. Perform daily PMCS.
  - a. Clean the interior of the edger.
    - (1) Switch the power of the edger to the OFF position.
    - (2) Remove the 2.5 inch hose from the vacuum canister. Attach the 1.5 inch hose fitted with the crevice tool.

**NOTE:** Ensure the vacuum hoses do not have leaks.

- (3) Move the toggle switch on the back right corner of the edger to the down position. This will turn on the vacuum independent of the edger's operation.
    - (4) Vacuum debris from the interior of the edger with the crevice tool and a small brush, being careful not to disturb the control wiring.
    - (5) Reverse steps 1a(3) and 1a(2) to return the edger to normal operation.
  - b. Drain any accumulated moisture from the air filter/regulator assembly by pressing up on the valve stem located at the bottom of the bowl.
  - c. Check the air pressure. The pressure gauge located on the right side of the edger should read 80 psi. If the pressure drops too low, lens slippage could occur. For normal operations, the tracking gauge should read 40 psi.



**CAUTION**

This equipment has pneumatic cycle controls and will have numerous problems if the pressure drops too low.

- d. Check the teflon ring for wear and contamination. Replace nicked, gouged, or rough teflon guide rings.
- e. Check the height of the bevel guide wheel. The distance between the cutting edge of the cutter and the flat underside of the bevel guide wheel should be 1 to 1.5 mm.

**NOTE:** Use the cam guide wheel for smaller eye sizes to prevent off-shape lenses or humps.

- f. Check the O-ring in the lens clamp. If the O-ring is torn or compressed excessively, replace it.
  - (1) Remove the mounting screw running through the right side of the clamp arm. Remove the clamp assembly. Do not remove the brass swivel from the clamp body.
  - (2) Place the clamp assembly in a small container, O-ring down.
  - (3) Add only enough acetone to just cover the O-ring. Do not use so much as to contact the stainless steel clamp body. The O-ring will swell and the adhesive will release after 15 to 20 minutes.
  - (4) Remove the O-ring, clean the clamp assembly, and allow it to dry.
  - (5) Spread about two drops of cyanoacrylate super adhesive (NSN 8040-00-142-9193 or equivalent) throughout the groove of the brass swivel.
  - (6) Place a new O-ring in the groove. Place the clamp assembly on the clamp arm and clamp on a scrap lens. Allow it to set for 2 minutes.

- g. Clean the exterior of the edger.
    - (1) Vacuum around the edge and underneath the edger.
    - (2) Wipe down the machine housing with a clean cloth. Use a mild detergent if necessary.
2. Clean the cutter motor biweekly. Use the safety air gun supplied in the accessory kit to thoroughly blow out the vents in the cutter motor.
3. Perform monthly PMCS.
- a. Inspect the cutter motor brushes for wear.

## STP 8-42E14-SM-TG

**NOTE:** Newer edgers have brushless motors. These edgers have quieter operation and less maintenance.

- (1) Turn the edger power switch and cutter motor toggle switch to the OFF position.
  - (2) Unscrew the brush caps at the rear of the motor and remove the brushes.
  - (3) Measure the brushes. Replace brushes that are worn to a length of 3/8 inch or less. New brushes are 3/4 inch long.
- b. Inspect the lens and pattern clamp assemblies for wear. Apply hand pressure to the clamps and rotate them. The clamps should turn smoothly. If any rough areas are detected, the clamps should be replaced.

#### 4. Perform as needed PMCS.

- a. Change the vacuum bags every 300 to 500 cycles or when filled to 2/3 capacity.
  - (1) Disconnect power from the vacuum unit.
  - (2) Release the three restraining clamps on the vacuum unit and remove the vacuum head.
  - (3) Replace the collection bag if filled to 2/3 capacity.
  - (4) Remove the spring clamp holding the filter bag on the inlet cage.
  - (5) Remove the filter bag and inspect the foam filter on the inlet cage for tears or holes. Clean or replace as necessary.
  - (6) Slip a new filter bag over the inlet cage and foam filter. Secure the filter bag with the spring clamp.
  - (7) Clamp the head of the vacuum unit on the vacuum canister.
- b. Replace the cutter inserts every 500 cycles.

### CAUTION

Even worn cutter blade inserts are extremely sharp and may cause lacerations if handled carelessly.

- (1) Turn off power to the cutter motor.
- (2) Loosen the collet nut and remove the cutter assembly.
- (3) Remove the old inserts and discard or send them out for sharpening IAW local SOP.

(4) Thoroughly clean the cutter body with compressed air and a small brush. Alcohol or acetone may be required.

**CAUTION**

Compressed air can peel skin from your hand. Ensure the air pressure at the nozzle does not exceed safety standards.

- (5) Remove and thoroughly clean the collet and collet nut. Reinstall the collet and collet nut.
  - (6) Insert a fresh set of cutter blades into the cutter body.
  - (7) Slide the cutter assembly into the motor until it contacts the collet nut. Hand tighten the collet.
  - (8) Ensuring that the cutter assembly maintains contact with the face of the collet, tighten the collet nut with the wrenches provided in the accessory kit.
  - (9) Verify the size of a cut lens. Adjust as necessary.
- c. Inspect the lens and pattern clamp assemblies every 2500 cycles IAW the monthly PMCS procedure.
  - d. Check the axis of the edger by cutting a pattern blank. Off axis can be caused by gear lash or a worn lens drive assembly. The axis can be adjusted at the pattern clamp.
  - e. Check carriage and cutter assembly movement.
    - (1) Disconnect the air supply.
    - (2) Move the carriage and cutter assemblies on roundways, checking for resistance to movement.
    - (3) Clean and lubricate the bearings with penetrating oil.

**NOTE:** It may be necessary to turn the unit over to access the bearings from underneath.

- (4) Remove all excess oil with a clean dry cloth.
  - (5) Reconnect the air supply.
- f. Check the locking screws on the bevel control and size control. Tighten them while turning the controls to avoid overtightening.

*Evaluation Guide*

**Performance Measures**

**Results**

1. Perform daily PMCS.	P	F
2. Clean the cutter motor biweekly.	P	F
3. Perform monthly PMCS.	P	F
4. Perform as needed PMCS.	P	F

**REFERENCES:**

*Required*

None

*Related*

FM 8-37  
Operator's Manual for the  
Lens Edger

081-875-4394

## PERFORM PMCS ON A HAND EDGER

### CONDITIONS

Necessary materials and equipment: water, coolant, wrenches, clean cloth, coolant soaked gray honing stick, and grease or petroleum jelly.

### STANDARDS

The hand edger must be clean and operational. The diamond wheel should not have built up lens residue. Coolant should be changed weekly. There should be no wobble or bounce in the diamond wheel.

### TRAINING/EVALUATION

#### *Training Information Outline*

1. Perform daily PMCS.
  - a. Check water flow from pump. The wheel should remain moist during operation.
  - b. Check for build up of lens material in the diamond wheel. Excessive build up of lens material will slow the grinding ability of the wheel.
    - (1) If the wheel is a diamond plated wheel, clean the excess lens material out of the working surface of the wheel with a stiff bristle brush.

**NOTE:** Do not hone a diamond plated wheel as you would a diamond bonded wheel.

(2) Hone a diamond bonded wheel by lightly rubbing a coolant soaked gray honing stick across the complete working surface of the moist rotating wheel. When the wheel begins to aggressively wear down the honing stick, the wheel is properly honed. The wheel will have a uniformly dull matte finish without any shiny spots.

**NOTE:** The fewer times a bonded wheel is honed, the longer it will last.

- c. Wipe down the outside of the hand edger each day.
2. Change coolant weekly.
  - a. Disconnect the power cord and coolant lines. Remove the pump from the coolant. Wash the pump and coolant lines.
  - b. Remove and dispose of lens material and coolant from the coolant tank.

## STP 8-42E14-SM-TG

c. Line the coolant tank with a plastic bag and fill it close to the top with water. Pour in the proper amount of coolant IAW the coolant manufacturer's instructions.

d. Replace the pump into the coolant tank and connect the hoses and power cords.

e. Turn on the pump and adjust the coolant flow to keep the wheel moist during operation.

3. Perform as needed PMCS.

a. Replace the wheel when necessary.

(1) Disconnect the hand edger from the electrical power supply.

(2) Remove the shields to gain access to the diamond wheel retaining screw.

(3) Remove the diamond wheel retaining screw, wheel washer, and wheel.

**NOTE:** The screw is reverse threaded on some manufacturer's equipment.

(4) Place a new wheel on the shaft. Ensure the arrow on the new wheel is pointed in the direction of rotation.

(5) Clean and replace the wheel plate and screw.

**NOTE:** A thin coat of petroleum jelly or grease will prevent rust on the hub, sides of the wheel, and the wheel plate and make future wheel replacements easier.

(6) Reconnect and turn on the power to get the wheel spinning. Turn the power switch off and closely check for wheel bounce or wobble. If any abnormality is present, disconnect the power, loosen the wheel retaining screw, and rotate the wheel 30 degrees. Repeat this step until the smoothest operation is observed.

(7) Reinstall any shields previously removed.

b. Replace the fuse.

(1) Disconnect the power and remove the fuse holder.

(2) Replace the fuse and reconnect the power.

*Evaluation Guide*

**Performance Measures**

1. Perform daily PMCS.
2. Change the coolant weekly.
3. Perform as needed PMCS.

**Results**

P	F
P	F
P	F

**REFERENCES:** None

081-875-4414

**PERFORM PMCS ON A DYE BATH UNIT**

**CONDITIONS**

Necessary materials: clean cloth, water, dye, dye tanks, 220 F thermometer, and heat transfer fluid.

**STANDARDS**

The dye bath and surrounding area are free of chemical spills and dirt. The dye tanks are heating dye to the dye manufacturer's specified temperature. The dye is not too old or contaminated to prevent good color absorption.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

1. Verify that the dye bath thermostat keeps dye at the proper operating temperature IAW the dye manufacturer's specifications.

P F

**NOTE:** Do not allow the thermometer to touch the side of the dye bath.

2. Wipe down the outside of the dye tanks and the surrounding area with a damp cloth.

P F

3. Replace old or contaminated dye.

P F

**NOTE:** Dye can be contaminated from dirt or other chemicals such as heat transfer fluid, different dyes, or neutralizer.

4. Replace contaminated heat transfer fluid.

P F

**CAUTION**

Dye contamination of the heat transfer fluid can cause corrosion of the heating elements, dangerous overheating, and premature failure of the unit.



**WARNING**

Heat transfer fluid is a hazardous substance. Overheating can be dangerous. Spills should be avoided.

**REFERENCES:**

*Required*

*Related*

None

FM 8-37

081-875-4417

**PERFORM PMCS ON A PHOTOMETER**

**CONDITIONS**

Necessary materials: phillips screwdriver, bulbs, and starter.

**STANDARDS**

The photometer is operational and calibrated. The UV bulb is less than one year old.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |  |   |   |
|--|---|---|
| 1. Calibrate the photometer daily before use.  | P | F |
| a. Turn the unit power switch on and wait for UV bulb to light.  |   |   |
| b. Ensure there are no lenses in the optical path of the UV source.  |   |   |
| c. Push the calibrate button momentarily. The reading on the display should be 100 for both the visible and the UV.  |   |   |
| (1) If the reading is E1, the light is too bright.   |   |   |
| (2) If the reading is E2, the light is too dim or off.   |   |   |
| <b>NOTE:</b> If calibration is attempted before the UV bulb is lit, the reading will indicate too dim (E2).          |   |   |
| 2. Replace burned bulbs or starter.  | P | F |
| a. Remove the two front feet of the unit and the two middle screws on the back panel with a phillips screwdriver.    |   |   |
| b. Slide the front panel forward and flip it over onto a soft surface without breaking any connections to the panel. |   |   |
| c. Replace the burned bulb or starter and reassemble the unit.   |   |   |
| 3. Replace the UV bulb at least once each year.  | P | F |

**NOTE:** The spectral energy distribution curve may shift out of the UVA band after one year of use.

<b>REFERENCES:</b>	<i>Required</i>	<i>Related</i>
	None	FM 8-37

081-875-4411

**PERFORM PMCS ON A SURFACE BLOCKER**

**CONDITIONS**

Necessary materials and equipment: blocker maintenance manual, a small container, glass cleaner, a clean dry cloth, and a small screwdriver.

**STANDARDS**

The blocker must be clean and free of water in the air filter, foreign material, blocking material buildup and contaminants in the blocking material.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |   |   |
|---|---|---|
| 1. Perform daily preventive maintenance and cleaning.   | P | F |
| a. Drain any water that may have collected in the air filter by depressing the valve located at the bottom of the glass bulb. Collect the water in a small container and dispose of it. |   |   |
| b. Ensure the input compressed air regulator is set to a minimum of 80 psi.   |   |   |
| c. Wipe down the glass viewer with an appropriate glass cleaner.  |   |   |
| d. Clean any foreign material from the vacuum transport.  |   |   |
| 2. Perform weekly preventive maintenance and cleaning.  | P | F |
| a. Vacuum any foreign material from the keyboard.   |   |   |
| b. Remove any foreign material from the chill ring.   |   |   |
| c. Remove the four small screws on the top of the elevator plate and lift out the elevator plate.   |   |   |
| (1) Remove the spring and washer and clean both.  |   |   |
| (2) Carefully remove any built-up blocking material.  |   |   |
| (3) Operate the elevator for diagnostic purposes.   |   |   |

**Performance Measures**

**Results**

(4) Assemble the spring and washer and then the elevator plate. Ensure that the finger springs on the elevator plate are not inducing any prism.

3. Perform monthly preventive maintenance and cleaning.

P F

a. Remove the cover and wipe the vacuum transport's roundway with a clean dry cloth.

**NOTE:** If the transport binds on the roundway, it may become necessary to lubricate the bearings on the roundway. Remove all excess oil from the roundway.

b. Change or clean the blocking material as needed.

c. Check the reservoir for foreign objects.

d. Clean foreign material from pulleys.

**NOTE:** Refer to the blocker maintenance manual for troubleshooting and adjustment procedures in the event of malfunction.

**REFERENCES:**

*Required*

*Related*

Operator's Manual for the  
Surface Blocker

FM 8-37

081-875-4412

**PERFORM PMCS ON A LENS GENERATOR**

**CONDITIONS**

Necessary materials: lens generator operation and maintenance manual, a clean cloth, spray lubricant, grease, and tools.

**STANDARDS**

The lens generator will be operational and clean. The dust collector will be empty. There will be no water in the air filter.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

1. Perform daily maintenance.

P F

a. Vacuum the generator interior, paying particular attention to the cutting chamber around the chuck, tool guard, chip chute, and the sliding seal.

**NOTE:** Foreign material in the chuck can cause unwanted prism.

b. Wipe off the inner and outer plastic covers with a clean dry cloth.

c. Empty the dust collector. Ensure that the dust collector is not clogged and is operating correctly.

**NOTE:** Vacuums tend to lose suction as the dust collection bags are filled past half full.

d. Drain accumulated water from the air filter on the rear of the generator by depressing the valve button.

**NOTE:** Drain accumulated water more often, if necessary, to prevent water from collecting in the chuck and causing rust.

e. Change the cutting tool IAW the generator operation and maintenance manual whenever the cutter is worn.

**NOTE:** Bugged down motor performance or the need to increase fining time are indicators of a worn cutter.

**Performance Measures**

**Results**

f. Clean the chuck with a mild detergent, and then lubricate the chuck face and pins with a spray lubricant.

2. Perform monthly maintenance.

P F

a. Flush and lubricate bearings with spray lubricant.

b. Wipe the roundways with a dry, clean cloth.

c. Clean or replace internal or exhaust air filters.

d. Inspect the door opening gears and lubricate if dry with a small amount of grease on the gear teeth.

e. Wipe off any foreign material accumulated on the generator's moving parts.

3. Perform quarterly maintenance.

P F

a. Check the chuck air pressure with the chuck activated. Adjust to 50 to 60 psi with the regulator.

b. Check and, if necessary, adjust the backlash between the gears and pinions on the servomotor.

c. Check and, if necessary, adjust the spindle guide bearings IAW equipment operator and maintenance manual.

d. If your generator has a brush type motor, inspect the cutter motor brushes IAW the manufacturer's specifications.

4. Remove, clean, and regrease the seals on the cutter spindle yearly.

P F

**CAUTION**

Failure to provide uninterruptible voltage and frequency stabilized electrical power will result in serious and expensive damage to computer controlled equipment.

**REFERENCES:**

*Required*

*Related*

Operator's Manual for the  
Lens Generator

FM 8-37

081-875-4413

**PERFORM PMCS ON AN AUTOMATIC LENS SURFACER**

**CONDITIONS**

Necessary materials: surfacer maintenance manual, hand tools, rags, water, slurry, axis block set, lubricants, thin plastic wrap, and pins.

**STANDARDS**

The surfacer must be clean and lubricated. The axis is aligned, and the baffles are in good repair.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |  |   |   |
|--|---|---|
| 1. Check the baffles for tears or punctures. Replace them if they are damaged. | P | F |
|--|---|---|

**NOTE:** Check the inside of the unit for leaks, which indicate primary baffle damage.

- |  |   |   |
|--|---|---|
| 2. Lubricate the unit IAW the surfacer maintenance manual. | P | F |
|--|---|---|

<p><b>CAUTION</b></p> <p>Failure to keep automatic oilers filled within maintenance specifications can cause pneumatic clamp problems.</p>
--

**NOTE:** Ensure that you use the manufacturer's recommended lubricants and schedule, which differ with brand of surfacer.

- |  |   |   |
|--|---|---|
| 3. Flush slurry from the pump system at the end of each day. | P | F |
|--|---|---|

**NOTE:** Slurry may be stored and reused if production is low. Replace slurry daily in high production facilities.

- |   |   |   |
|---|---|---|
| 4. Wipe spilled slurry from machine surfaces with rags and water. | P | F |
|---|---|---|



**Performance Measures**

**Results**

**CAUTION**

Keep moisture away from timers. They are very fragile and expensive. Covering the control panel with thin plastic wrap will also keep the controls clean.

- |  |   |   |
|--|---|---|
| 5. Check the pins and pin holders for wear.  | P | F |
| 6. Align the axis whenever pins or pin holders are replaced.   | P | F |
| a. Clamp the lower keyed half of the axis block set on the tool table, as if it were a lap tool.                 |   |   |
| b. Align the slot on the top half of the axis block set with the pins on the clamp and actuate the clamp switch. |   |   |

**CAUTION**

Do not get your fingers caught between the axis block set halves when the clamp switch is actuated.

- |  |   |   |
|--|---|---|
| <p style="padding-left: 20px;">c. Rotate the spindle by moving the lower belt on the right spindle until the front edges of the axis blocks come into line. If adjustment is necessary for the front edges to line up flush, loosen the screw holding the tool pin holder to the upper arm and align the halves of the axis block before tightening the screw.</p> |   |   |
| 7. Check adjustment of the gimbles by firmly grasping the tool table and attempting to move it up and down or left and right. If movement is detected, refer to the surfacer maintenance manual for adjustment procedures.   | P | F |

**CAUTION**

Overtightening can damage the thrust bearings.

<b>REFERENCES:</b>	<i>Required</i>	<i>Related</i>
	Operator's Manual for the Automatic Lens Surfacers	FM 8-37

081-875-4374

**PERFORM PMCS ON A DEBLOCKER**

**CONDITIONS**

Necessary materials and equipment: deblocker maintenance manual and a small container.

**STANDARDS**

The deblocker is clean and free of water in the air filter.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |  |   |   |
|--|---|---|
| 1. Perform daily preventive maintenance and cleaning.  | P | F |
| a. Drain any water that may have collected in the air filter by depressing the valve located on the rear of the deblocker. Collect water in a small container and dispose of it. |   |   |
| b. Clean any blocking material buildup away from the moving jaw and the fixed jaw.   |   |   |
| 2. Ensure the incoming air pressure is 80 psi minimum.   | P | F |
| 3. Ensure the air pressure regulator is adjusted to 50 psi.  | P | F |

**NOTE:** Refer to the deblocker maintenance manual for troubleshooting and adjustment procedures in the event of malfunction.

**REFERENCES:**

*Required*

*Related*

Operator's Manual for the  
Deblocker

FM 8-37

**SECTION II  
SKILL LEVEL 2 TASKS**

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**081-875-4420**

**PERFORM AN OPTICAL TRANSACTION USING THE  
SPECTACLE REQUEST TRANSMITTAL SYSTEM (SRTS)**

**CONDITIONS**

You must receive prescriptions from supported clinics using the Spectacle Request Transmittal System (SRTS). The system and the attached modem are on line. The system is in the receive mode. Supported clinics have sent requests through the modem. The printer is on line with DD Forms 771 loaded.

**STANDARDS**

The prescriptions will be printed on DD Form 771 and forwarded to the editing section.

**TRAINING/EVALUATION**

*Evaluation Guide*

<b>Performance Measures</b>	<b>Results</b>	
1. "Quit" the communications menu to enter the main menu.	P	F
2. Choose LOAD PACKAGES from the main menu.	P	F
3. Choose VIEW to see received packages.	P	F
4. Select the clinic and PRINT to print the requested package or choose PRINT ALL to print all pending requests.	P	F
5. Choose QUIT to return to the communication menu.	P	F
6. Forward printed prescriptions for editing.	P	F

<b>REFERENCES:</b>	<i>Required</i>	<i>Related</i>
	None	FM 8-37 SRTS End User Guide AR 40-63

081-875-4451

## EDIT AN OPTICAL PRESCRIPTION

### CONDITIONS

You have received prescriptions from supported clinics. Necessary materials and equipment: date stamp, marking pen, AR 40-63, and a lens stock range chart.

### STANDARDS

Incoming prescriptions are verified, dated, and sorted by eligibility category, type of glasses, and laboratory capability. Special information is marked.

### TRAINING/EVALUATION

#### *Evaluation Guide*

#### Performance Measures

#### Results

1. Process all incoming prescriptions on a daily basis.

P F

**NOTE:** If an excessive amount of time has elapsed between the date the prescription was written and the date it was received, the requesting facility should be notified and cautioned against the practice of stockpiling prescriptions or holding them until a number have accumulated. Prescriptions should be forwarded on a daily basis.

- a. Ensure that each prescription has two copies stapled together.
- b. Ensure that each prescription is authorized IAW AR 40-63.
- c. Ensure that each prescription is marked with the date received.

2. Scan each prescription for completeness, legibility, and for conformance with AR 40-63.

P F

**NOTE:** If a prescription requesting a replacement of only one lens is received and the requesting facility failed to record the prescription of the lens in the frame, analyze the lens and record its power on the DD Form 771 for record.

3. Mark the prescription with a marking pen (preferably red) to identify all items which require special attention for fabricating and categorizing.

P F

- a. Branch of service, if other than Army.
- b. Type of spectacle if other than standard issue.

**Performance Measures**

**Results**

**NOTE:** Each type of prescription, such as single vision, bifocal, tint, or protective mask insert, requires a separate DD Form 771.

- c. Female shape spectacles.
  - d. Different sphere power signs.
  - e. Out decentration.
  - f. Prism requirement.
  - g. Number of pairs, if other than one.
  - h. Tinted lenses.
  - i. Type of bifocals.
  - j. Any other special attention items.
4. Sort the prescriptions by branch of service, retired, dependents, and others. P F
  5. Count the number of pairs of single vision, multi-vision, inserts, plastics, and other types for each category and record. P F
  6. Sort the prescriptions for laboratory capability (single vision finished, single vision surface, multi-vision, and special lens requests). P F
  7. Forward the work to the appropriate selection. P F
  8. Refer any work which is beyond the laboratory's capability to the authorized supporting laboratory. P F

**REFERENCES:**

*Required*

*Related*

AR 40-63

AR 40-61

081-875-4429

## INSPECT COMPLETED SPECTACLES

### CONDITIONS

You have received a job tray containing completed spectacles which require final inspection. Necessary materials and equipment: lens measuring instrument, necessary hand tools, mm ruler, towel, marking pen, and inspection stamp.

### STANDARDS

The spectacles are inspected for compliance with prescription requirements. The frame and lens tolerances conform to the ANSI Z80 standards.

### TRAINING/EVALUATION

#### *Evaluation Guide*

#### **Performance Measures**

#### **Results**

- |   |   |   |
|---|---|---|
| 1. Inspect the frame measurement to ensure that the eye size, bridge size, and temple length are as requested on the prescription.  | P | F |
| 2. Inspect the frame alignment.   | P | F |
| a. Ensure the lenses are on the same plane.   |   |   |
| b. Ensure there is four point alignment.  |   |   |
| c. Ensure the temples are aligned.  |   |   |
| d. Ensure the lenses are on shape.  |   |   |
| e. Inspect the pantoscopic tilt. This angle of the temples to the frame front, when in the open position, should be approximately 5 to 7 degrees less than perpendicular. |   |   |
| 3. Inspect the frame for burns, rolls, tool marks, cracks, scratches, unpeened screws, or loose hinges.   | P | F |
| 4. Inspect the lenses for appearance.   | P | F |
| a. Ensure there are no pits, scratches, gray, bubbles, cracks, striae, or watermarks.   |   |   |
| b. Ensure tinted lenses transmit the proper amount of light and are color matched.  |   |   |

<b>Performance Measures</b>	<b>Results</b>	
<ul style="list-style-type: none"> <li>c. Ensure the lenses fit snugly and are on shape.</li> </ul>		
<ul style="list-style-type: none"> <li>5. Inspect the lenses in a lens measuring instrument for accuracy and tolerance within ANSI Z80 standards.</li> </ul>	P	F
<p><b>NOTE:</b> Prior to inspecting lenses in a lens measuring instrument, you must always adjust the eyepiece for accuracy.</p>		
<ul style="list-style-type: none"> <li>a. Inspect the strongest lens first.</li> <li>b. Ensure the cylinder axis is within the following maximum tolerances:                             <ul style="list-style-type: none"> <li>(1) Seven degrees for cylinder powers 0.12 to 0.37 D.</li> <li>(2) Five degrees for cylinder powers 0.50 to 0.75 D.</li> <li>(3) Three degrees for cylinder powers 0.87 to 1.50 D.</li> <li>(4) Two degrees for cylinder powers above 1.50 D.</li> </ul> </li> <li>c. Ensure the vertical measurements of the bifocal segments are within 1.0 mm of specification.</li> <li>d. Ensure the horizontal positions of the bifocal segments are within 1.0 mm of specification and are balanced and symmetrical.</li> <li>e. Ensure the optical centers of the lenses have no greater than 1/3 diopter of vertical imbalance or are within 1.0 mm of the specified location, and no greater than 2/3 diopter horizontal imbalance or 2.5 mm of the specified pupillary distance.</li> </ul>		
<ul style="list-style-type: none"> <li>6. Ensure the DD 771 has been annotated correctly if any substitutions were necessary.</li> </ul>	P	F
<ul style="list-style-type: none"> <li>7. Return the completed job tray to the appropriate section if any of the above-listed inspections reveal any defects or tolerance violations.</li> </ul>	P	F
<ul style="list-style-type: none"> <li>8. Stamp both copies of the prescription with the inspector identification number once the spectacles have passed final inspection.</li> </ul>	P	F
<ul style="list-style-type: none"> <li>9. Retain one copy of each prescription which has passed inspection for the file.</li> </ul>	P	F
<ul style="list-style-type: none"> <li>10. Forward the remaining copy of the prescription along with the spectacles and the job tray to the mail room for shipment.</li> </ul>	P	F

**STP 8-42E14-SM-TG**

**REFERENCES:**

*Required*

None

*Related*

FM 8-37  
ANSI Z80 Standards



081-875-4475

**PREPARE A QUARTERLY OPTICAL LABORATORY REPORT (DA FORM 2717)**

**CONDITIONS**

You must fill out DA Form 2717 IAW AR 40-61, AR 37-100, and AR 37-1. Necessary materials: blank DA Form 2717, production data for the reporting period, and a copy of DA Form 2717 from the previous production period.

**STANDARDS**

The DA Form 2717 must be filled out accurately reflecting workload accomplished in the past production period and the backlog of uncompleted work, divided by categories IAW AR 40-61 and AR 40-63.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

- |   |               |
|---|---------------|
| <p>1. Fill out section A, Summary of Workload.</p> <p style="padding-left: 20px;">a. Lines 1 through 5. Record data in Columns "c" through "h" with a total of all reportable elements in Column "b".</p> <p style="padding-left: 40px;">(1) Record active military personnel in Columns "c", "d", and "e", as appropriate. (Marines are recorded in column "e").</p> <p style="padding-left: 40px;">(2) Record retired personnel of all military services and their dependents in Column "f".</p> <p style="padding-left: 40px;">(3) Record dependents of active military personnel in Column "g".</p> <p style="padding-left: 40px;">(4) Record all other personnel authorized spectacles in Column "h".</p> <p style="padding-left: 20px;">b. Line 1. Record the number of spectacles which remained to be fabricated at the end of the previous production period.</p> <p style="padding-left: 20px;">c. Line 2. Record the number of spectacles prescribed by eye clinics on DD Form 771 during the reporting period.</p> <p style="padding-left: 20px;">d. Line 3. Total lines 1 and 2.</p> <p style="padding-left: 20px;">e. Line 4. Record the total number of spectacles and allied devices fabricated by the laboratory or unit during the reporting period, including pairs that were fabricated by commercial facilities.</p> | <p>P    F</p> |
|---|---------------|

**STP 8-42E14-SM-TG**

**Performance Measures**

**Results**

**NOTE:** Individual lens replacement, that does not involve replacement of the frame, will not be included on line 4.

- f. Line 5. Record the number of spectacles remaining to be processed at the end of the reporting period.
  
- 2. Fill out section B, Breakdown of Pairs of Spectacles Fabricated. P F
  - a. Enter all standard frames fitted with standard lenses on lines 6 through 10.
  - b. Enter any pairs of spectacles fitted with at least one nonstandard component (frame or lens) on lines 12 and 13.
  - c. Total lines 11 and 14. This total should equal line 4, Section A.
  
- 3. Fill out section C, Lens Surfacing. P F
  - a. Enter the total number of single lenses which required sphere surfacing on line 15.
  - b. Enter the total number of single lenses which required cylinder surfacing on line 16.
  
- 4. Fill out section D, Prescription Referrals. P F
  - a. Write the short title of the optical laboratory to which spectacle prescriptions are referred when fabrication is beyond the capacity of the reporting laboratory, on line 17.
  - b. Write the total number of pairs of spectacles referred to the supporting optical laboratory on line 18.
  
- 5. Fill out section E, Reimbursement Spectacles. P F
  - a. Enter the total number of pairs of spectacles reported on line 4 for which reimbursement was required by AR 40-63, on line 19.
  - b. Enter the dollar amount received as reimbursement for the pairs entered on line 19 on line 20.
  
- 6. Fill out section F, Special Procedures. P F
  - a. Enter the number of spectacles fabricated with tinted lenses on line 21. Line 22 will document the number of tinted aviation spectacles and line 23 will document all other frames issued with tinted lenses.

**Performance Measures**

**Results**

b. Enter the number of spectacles fabricated with coated lenses on line 24. Line 25 will document the number of coated spectacles and line 26 will document the number of spectacles issued with special coated lenses.

c. Enter the number of pairs manufactured with industrial safety thickness lenses (3 mm minimum thickness) on line 27.

d. Enter the number of pairs fabricated by contract on line 28.

e. Enter the number of individual lens replacements made without any frame replacement on line 29.

7. Fill out section G, Personnel Strength.

P F

a. Enter the TO&E or TDA authorized strength for the laboratory at the end of the reporting period on line 30.

b. Report actual strength on line 31.

(1) For military, enter personnel strength on hand as indicated on the morning report at the end of the reporting period.

(2) For civilians, enter personnel strength (including foreign nationals) as of the end of the reporting period.

8. Fill out section H, Cost Data.

P F

**NOTE:** This section will be completed only by optical laboratories and units operating in CONUS facilities and overseas depots.

a. In block 33, enter the cost of component parts for spectacles and allied ocular devices.

b. In block 34, record the cost for military personnel IAW the Compensation Rate Tables in AR 37-1.

c. In block 35, record the civilian personnel costs, consisting of elements of expense 1100, 1200, 1600, 1700, and 2800 as defined in AR 37-100.

d. In block 36, report the cost for any contracted spectacles indicated on line 28.

e. In block 37, report the cost for contract services such as lens coating.

f. In block 32, total blocks 33 through 37.

**STP 8-42E14-SM-TG**

**Performance Measures**

**Results**

9. Fill out the Remarks section to include at least the following:

P F

- a. Cost of other operating supplies not included in block 33 (repair parts, supplies, and materials).
- b. Pairs of spectacles fabricated with specialty frames, if not previously reported.
- c. Pairs of spectacles fabricated with specialty lenses, if not previously reported.
- d. Breakout of workload and reimbursement reported on lines 19 and 20. Identify separately the category of customer (for example, National Guard, Army Reserve, dependents, and other) and type of eyewear provided (for example, aviation, spectacles, mask inserts, and other). Indicate the dollar amount of reimbursement for each breakout entry.
- e. Data which explains line entries, developments, or trends in fabrication workload, supply deficiencies, and other pertinent remarks related to fabrication problems.

**REFERENCES:**

***Required***

***Related***

AR 40-61  
AR 37-100  
AR 37-1

FM 8-37  
AR 40-63

081-872-0043

**COMPUTE AUTHORIZED STOCKAGE LEVELS FOR MEDICAL SUPPLIES  
USING THE DAYS OF SUPPLY (DOS) COMPUTATION**

**CONDITIONS**

You are assigned to an installation medical supply activity (IMSA). The reorder point has been penetrated for stocked medical supplies. Necessary materials and references: stock accounting record file, DA Pam 710-2-2, and DA Form 1300-2.

**STANDARDS**

Compute the reorder point and requisitioning objective. Make all required entries on DA Form 1300-2 without error.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

**NOTE:** Refer to DA Pam 710-2-2 and applicable appendix for steps 1, 5, and 7.

- |   |   |   |
|---|---|---|
| 1. Complete the heading of the Computation Card if necessary.             | P | F |
| 2. Enter the current month and year on line 1 of the first blank column.  | P | F |
| 3. Enter the quantity demanded during the control period(QDCP) on line 2. | P | F |
| 4. Enter the order shipping time in days (OST) on line 3.                 | P | F |

**NOTE:** Formula abbreviations in the appendix of DA Pam 710-2-2 in some cases are slightly different than the abbreviations in Chapter 4, DA Pam 710-2-2 and DA Form 1300-2. The abbreviations in the appendix have added "D" for days and "Q" for quantity. The abbreviations mean the same thing. (See Figure 3-2.)

**Performance Measures**

**Results**

$$\frac{\text{OLD} + \text{SLD} + \text{OSTD}}{360} \times \text{QDCP} = \text{ROQ}$$
  

$$\frac{\text{SLD} + \text{OSTD}}{\text{OLD} + \text{SLD} + \text{OSTD}} \times \text{ROP} = \text{ROPQ}$$

OLD = Operating Level Days  
 OSTD (OST) = Order Shipping Time Days  
 QDCP = Quantity Demanded in the Control Period  
 ROPQ (ROP) = Reorder Point Quantity  
 ROQ (RO) = Requisitioning Objective Quantity  
 SLD = Safety Level Days

5. Compute the requisitioning objective quantity (RO). (See Figure 3-3.) P F

**NOTE:** Round to the next highest number.

6. Enter the requisitioning objective quantity (RO). P F

7. Compute the reorder point quantity (ROP). (See Figure 3-4.) P F

**NOTE:** Round to the next highest number.

8. Enter the reorder point quantity (ROP). P F

9. File the Computation Card with DA Form 1296. P F

**REFERENCES:**

***Required***

DA Pam 710-2-2

***Related***

AR 40-61  
 AR 702-18  
 AMDF

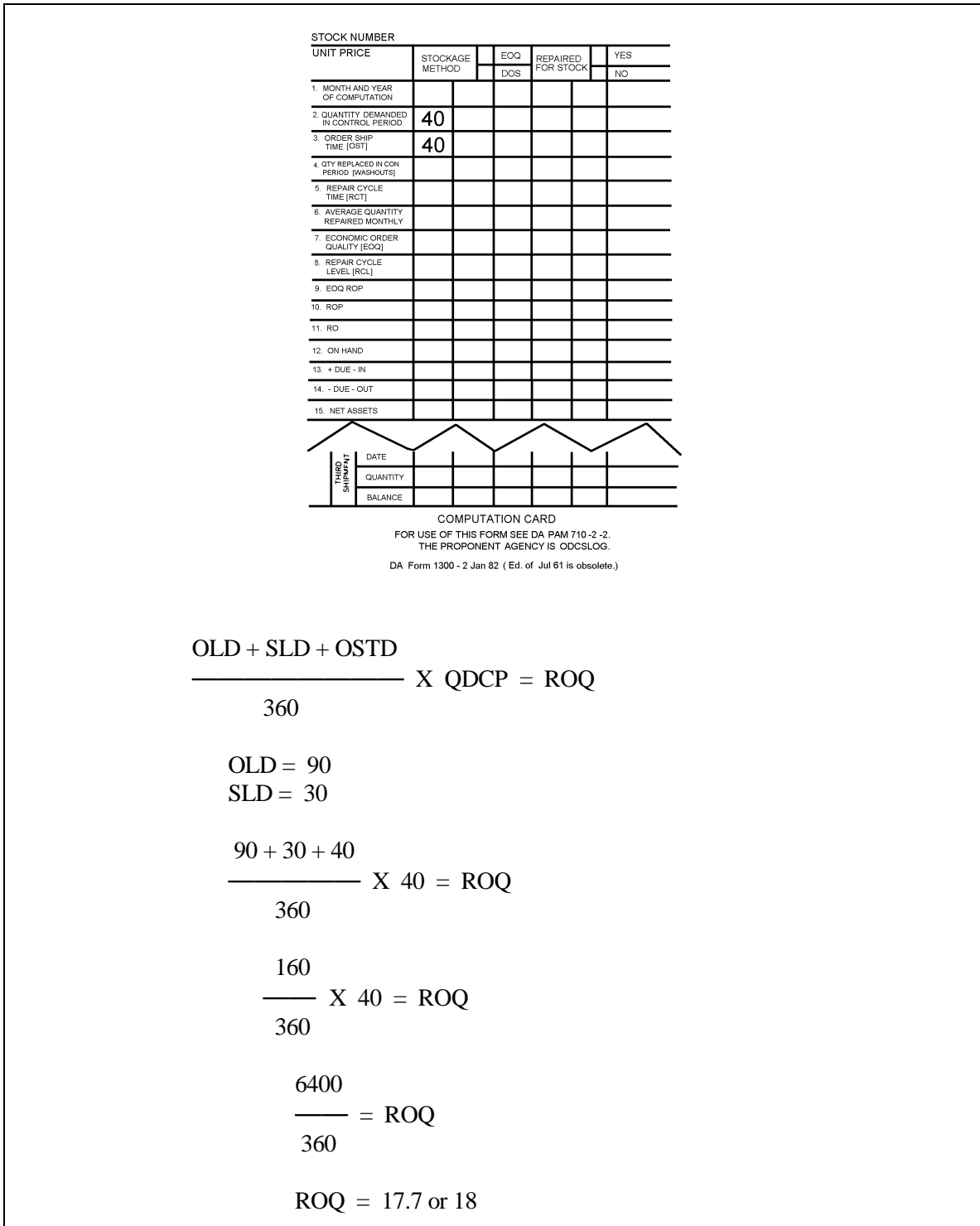


Figure 3-3

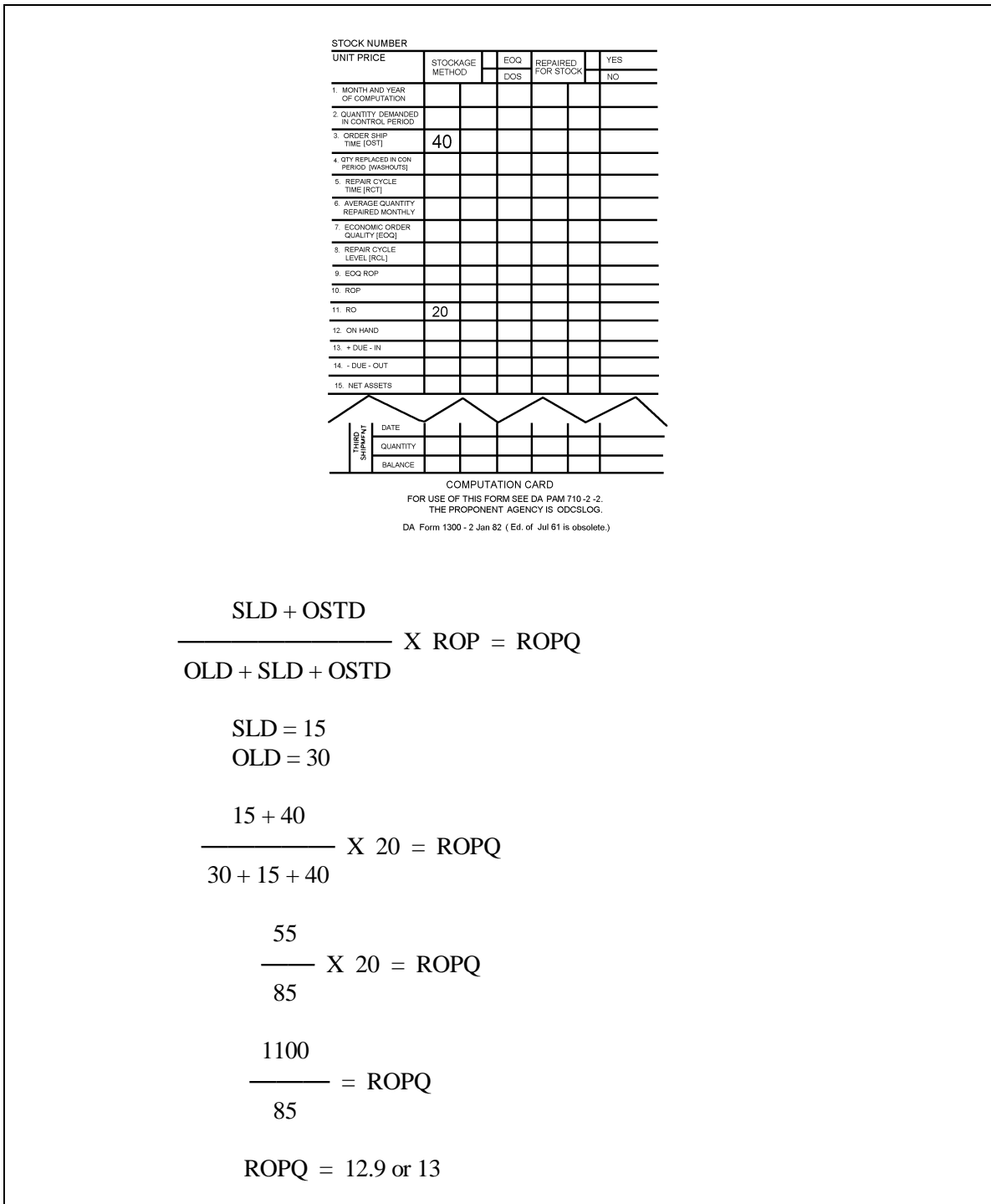


Figure 3-4



## 101-521-1151

## ORDER SUPPLIES AND EQUIPMENT

## CONDITIONS

You have been directed to prepare a request for supplies. Necessary materials and documents: authorization documents, blank request forms, and document register.

## STANDARDS

Prepare a supply request without rejection from the supply support activity (SSA).

## TRAINING/EVALUATION

*Evaluation Guide*

## Performance Measures

## Results

1. Screen items requested for proper authorization.	P	F
a. The Army Authorized Document System (TAADS) is an Army-wide system designed to centralize the control of personnel and equipment required by the authorized Army units or organizations.		
b. Examples of authorized documents are:		
(1) Modification Table of Organization and Equipment (MTOE).		
(2) Table of Distribution and Allowances (TDA).		
(3) Common Table of Allowances (CTA).		
c. Each unit or organization has an authorization document that is used to identify personnel and equipment authorizations.		
2. Compile identification data on items to be requested.	P	F
3. Select appropriate request forms.	P	F
4. Prepare a request for a single or multiple line item request.	P	F
5. Enter the request on a document register.	P	F
6. Enter the document number on the request document.	P	F

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**Performance Measures**

7. Forward the request form to the SSA.

**Results**

P F

**REFERENCES:**

*Required*

None

*Related*

AMDF  
DA Pam 25-30  
DA Pam 710-2-1  
AR 710-2  
SB 700-20

121-004-1228

FILE DOCUMENTS/CORRESPONDENCE

CONDITIONS

You are given documents which require filing and access to AR 25-50, AR 25-55, AR 25-400-2, AR 380-5, an approved list of file numbers, existing files, and standard office equipment.

STANDARDS

File the documents according to AR 25-400-2.

TRAINING/EVALUATION

*Evaluation Guide*

Performance Measures

Results

**NOTE:** In this task summary, the term "document" refers to such items as correspondence, messages, military orders, completed forms, and records.

- |  |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <ol style="list-style-type: none"> <li>1. Review and use the approved list of file numbers to determine the content of the files when filing or retrieving documents from the files.</li> <li>2. Check each document to determine that it was a completed action.</li> <li>3. Obtain any missing portions of the document from the office that prepared the last action.</li> <li>4. Remove any unnecessary material from the document, such as:             <ol style="list-style-type: none"> <li>a. Extra copies.</li> <li>b. Notes or comments.</li> <li>c. Routing or transmittal slips.</li> <li>d. Classified, FOUO, or "Personal in Nature" document cover sheets.</li> <li>e. Paper clips.</li> </ol> </li> <li>5. Assemble and correctly fasten the document in the proper order for filing according to AR 25-400-2.</li> </ol> | <table border="0"> <tr> <td>P</td> <td>F</td> </tr> <tr> <td>P</td> <td>F</td> </tr> <tr> <td>P</td> <td>F</td> </tr> <tr> <td>P</td> <td>F</td> </tr> <tr> <td>P</td> <td>F</td> </tr> <tr> <td>P</td> <td>F</td> </tr> </table> | P | F | P | F | P | F | P | F | P | F | P | F |
| P  | F   |   |   |   |   |   |   |   |   |   |   |   |   |
| P  | F   |   |   |   |   |   |   |   |   |   |   |   |   |
| P  | F   |   |   |   |   |   |   |   |   |   |   |   |   |
| P  | F   |   |   |   |   |   |   |   |   |   |   |   |   |
| P  | F   |   |   |   |   |   |   |   |   |   |   |   |   |
| P  | F   |   |   |   |   |   |   |   |   |   |   |   |   |

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<b>Performance Measures</b>	<b>Results</b>	
6. Determine the correct file number of the document being filed by-- a. Subject. b. Action or content.	P	F
7. Enter the file number in the correct position on the document being filed, if necessary.	P	F
8. Place the document in the correct file folder according to the filing category or sequence being used. a. Chronological by date (latest date in front). b. Numerical (social security number, serial number, and so on)(ascending--front to back). c. Alphabetical by subject or by name (person, place, or organization).	P	F
9. File classified documents separately from unclassified documents in security containers.	P	F
10. Properly retrieve a document from the files and substitute it with a correctly prepared chargeout record.	P	F

<b>REFERENCES:</b>	<b><i>Required</i></b>	<b><i>Related</i></b>
	AR 25-400-2 AR 25-50 AR 25-55 AR 380-5	None

**SECTION III  
SKILL LEVEL 3 TASKS**

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**081-872-0052**

**CONDUCT SUPPLY TRANSACTIONS USING THEATER ARMY MEDICAL  
MANAGEMENT INFORMATION SYSTEM (TAMMIS)**

**CONDITIONS**

The Army Tactical Command Control System (ATCCS) unit has been assembled and the TAMMIS software has been initiated. Necessary references: TAMMIS User's Manual.

**STANDARDS**

Complete and save supply transactions without error.

**TRAINING/EVALUATION**

*Evaluation Guide*

**Performance Measures**

**Results**

**NOTE:** Refer to the TAMMIS User's Manual for steps 3 through 6.

- |   |   |   |
|---|---|---|
| 1. Log on to the MEDLOG application and press the return key. | P | F |
| 2. Enter your password and press enter.                       | P | F |

**NOTE:** Do not give your password to other personnel.

- |   |   |   |
|---|---|---|
| 3. Observe for the MEDLOG Supply Master Menu to appear. | P | F |
| a. Customer processing.                                 |   |   |
| b. Requisitioning, Receiving, and Dues-In.              |   |   |
| c. Maintain Local Stocks, QC, and Reporting.            |   |   |
| d. Query NSNs, DUE In/Out, or Trans Hist.               |   |   |
| e. System Setup/Maintenance Procedures.                 |   |   |
| f. Review Exceptions Referred to Manager.               |   |   |

**Performance Measures**

**Results**

- g. USER Designated Reports.
- 4. Select from the Master Menu the area of concentration in which data will be entered or processed. P F
  - a. Use the carriage return, arrow keys, or enter selection number to select the option from the Master Menu.
  - b. Press the execute function key (F1) to execute the option.

**FUNCTION KEYS**

F1	F2	F3	F4;F5;F6	F7	F8
EXECUTE	LAST MENU	MENU NAME	BLANK	HELP	EXIT

**NOTE:** Within each of the applications listed on the Master Menu there are submenus. Refer to the TAMMIS User's Manual for complete submenu listing.

- 5. Enter required data into the appropriate fields in order. P F

**NOTE:** Required fields of data entry are highlighted. The system will not allow completion or advancement to another screen until the data for the required fields has been entered.

- 6. Select the appropriate function key for completion. P F

<b>REFERENCES:</b>	<i>Required</i>	<i>Related</i>
	TAMMIS User's Manual	None

081-875-4430

**INSPECT AN OPTICAL LABORATORY  
TO ENSURE A SAFE WORKING ENVIRONMENT****CONDITIONS**

The optical laboratory is in operation. There is a written hazard communication program and a risk management program is ongoing.

**STANDARDS**

The optical laboratory is a safe work environment. Laboratory areas, work practices, equipment, and chemicals have been inspected for hazards. The hazard communication program meets the standards of 29 CFR 1910.1200. An effective risk management program has eliminated or reduced the hazards to acceptable risk levels.

**TRAINING/EVALUATION***Training Information Outline*

1. Inspect work areas.

**NOTE:** Do not hesitate to request assistance from the local Safety Officer and Environmental Officer.

- a. Ensure emergency shower and eyewash stations are operational and monthly inspections of each are documented.
  - b. Ensure walking and working surfaces are not slippery or cluttered.
  - c. Ensure exits and passage ways are not blocked.
2. Inspect work practices.
    - a. Ensure horse play is not allowed.
    - b. Ensure workers use caution when working with or around electricity.
    - c. Ensure personal protective equipment such as safety boots, eye protection, hearing protection, gloves, barrier creams, smocks, aprons, and respiratory protection are worn in appropriate areas.
    - d. Ensure that sharp edges are guarded, such as the safety beveling of all knife edge lenses.
    - e. Ensure that workers do not wear loose clothing or jewelry near machinery.

## STP 8-42E14-SM-TG

- f. Ensure that the proper tool is used for the job.
  - g. Ensure workers remain alert while working.
  - h. Ensure proper lifting techniques are used.
  - i. Ensure that lockout and tagout procedures are followed when working with electrical or kinetic energy.
  - j. Ensure that no food or drink are allowed in the laboratory.
3. Inspect equipment.
- a. Ensure engineering controls such as guards or interlock devices are in place, preventing access to moving equipment parts, sharp edges, or electrically "hot" components.
  - b. Ensure equipment is electrically grounded.
  - c. Ensure fire extinguishers are serviceable and monthly inspections are documented on tags or in the files.
4. Inspect tasks.
- a. Review each step of every task.
  - b. List all hazards associated with each step.
  - c. Keep a detailed hazard list for the risk management program. (See step 7.)
5. Inspect chemicals.
- a. Inventory all chemicals used in the laboratory.
  - b. Ensure each chemical container is properly labeled. (See step 6.)
  - c. Verify that a Material Safety Data Sheet (MSDS) is on hand for each chemical.
- NOTE:** Manufacturers and importers are now required by Federal law (29 CFR 1910.1200) to provide MSDSs with their products. Copies of MSDSs must be where they can be used by employees during the work shift. This regulation also requires employers to develop a written hazard communication program and provide workers with training and information. (29 CFR 1910.1200 should be available from the local Safety Officer.)
- d. Compile a list of physical, chemical, and medical hazards for each chemical.
  - e. Keep a detailed hazard list for the risk management program. (See step 7.)



**NOTE:** Laboratories using metallic alloy blocking systems must conform to hazardous waste disposal regulations (see task 081-872-0036), in addition to preventing lead and cadmium poisoning of employees working with metallic blocking alloy.

- f. Develop a spill prevention, containment, and countermeasures plan for the chemicals in your work area.

**NOTE:** Do not hesitate to request assistance from the local Environmental Officer and Safety Officer.

6. Inspect the Hazard Communication Program.

- a. Verify that an accurate chemical inventory is posted.
- b. Verify that each chemical container is labeled (in English as a minimum), with the identity of the hazardous chemical, the name and address of the manufacturer, importer, or other responsible party, and the appropriate hazard warning.
- c. Verify that the MSDS for each chemical meets the following minimal standards in English:
  - (1) Product identity from the label, including chemical and common names of hazardous ingredients.
  - (2) Physical and chemical characteristics of ingredients (e.g., vapor pressure and flash point).
  - (3) Physical hazards of ingredients (potential for fire, explosion, and reactivity).
  - (4) Health hazards associated with ingredients (including signs and symptoms of exposure and any medical conditions generally recognized as being aggravated by exposure to the product).
  - (5) Primary routes of entry to the body.
  - (6) The permissible exposure limit (PEL), the threshold limit value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the MSDS.
  - (7) An indication as to whether the product and/or ingredients are listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or are designated as a potential carcinogen by the Occupational Safety and Health Administration (OSHA) or in the International Agency for Research on Cancer (IARC) (latest editions).
  - (8) Any generally applicable precautions for safe handling and use known to persons preparing the MSDS (e.g., appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for cleanup of spills and leaks).
  - (9) Any known, generally applicable control measures (e.g., appropriate engineering controls, work practices, or personal protective equipment).
  - (10) Emergency and first aid procedures.

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(11) Date of MSDS preparation or last amendment.

(12) Name, address, and telephone number of a responsible party who can provide additional information on the hazardous chemical and on appropriate emergency procedures.

d. Ensure completeness of training documentation.

(1) Details of employees training upon initial employment and upon introduction of any new hazards.

(2) Location of chemical inventory and MSDS file.

**NOTE:** MSDSs for each chemical in the work place must be available to every employee during their workshift.

(3) Physical and health hazards in the work area.

(4) Measures you can use to protect yourself from the hazards, including work practices and personal protective equipment.

(5) Details of the Hazard Communication Program, including complete information on labels and MSDSs.

(6) Methods used to inform employees of hazards of nonroutine tasks.

(7) Methods used to inform visitors of work area hazards.

7. Inspect the Risk Management Program.

a. Identify hazards to the force. Consider all aspects of current and future situations, environment, and known historical problem areas.

b. Assess hazards to determine risks. Assess the impact of each hazard in terms of potential loss and cost, based on probability and severity.

c. Develop control measures that eliminate the hazard or reduce its risk. As control measures are developed, risks are reevaluated until all risks are reduced to a level where benefits outweigh potential cost.

d. Put controls in place that eliminate the hazards or reduce their risks.

e. Enforce standards and controls. Evaluate the effectiveness of controls and adjust or update them as necessary.

f. All hazards must be communicated to workers via the Hazard Communication Program. (See step 6.)

*Evaluation Guide*

<b>Performance Measures</b>	<b>Results</b>
1. Inspect work areas.	P F
2. Inspect work practices.	P F
3. Inspect equipment.	P F
4. Inspect tasks.	P F
5. Inspect chemicals.	P F
6. Inspect the Hazard Communication Program.	P F
7. Inspect the Risk Management Program	P F

**REFERENCES:**

*Required*

None

*Related*

AR 385-10  
29 CFR 1910.1200





FIELD EXPEDIENT SQUAD BOOK		SHEET		OF	
USER APPLICATION		SOLDIER'S NAME			
TASK NUMBER AND SHORT TITLE		GO	NO-GO	GO	NO-GO
081-875-4411, Perform PMCS on Surface Blocker					
081-875-4412, Perform PMCS on Lens Generator					
081-875-4413, Perform PMCS on Auto Lens Surfacers					
081-875-4374, Perform PMCS on Deblocker					
081-875-4420, Perform Optical Transaction Using SRTS					
081-875-4451, Edit an Optical Prescription					
081-875-4429, Inspect Completed Spectacles					
081-875-4475, Prepare Quarterly Optical Lab Report					
081-875-0043, Compute Authorized Stockage Levels					
101-521-1151, Order Supplies and Equipment					
121-004-1228, File Documents/Correspondence					
081-872-0052, Conduct Supply Transactions - TAMMIS					
081-875-4430, Inspect an Optical Laboratory - Safety					

EDITION OF DEC 82 TO BE USED

DA FORM 5165-R, SEP 85

## APPENDIX B

### Surface Section Computations

1. Compute compensated power.

**NOTE:** Lap tool curvatures are standardized for a 1.530 index of refraction. Consequently, when surfacing lens materials with a different index of refraction, it is necessary to compensate for this difference to achieve accurate ophthalmic power.

Compensated Power - the true power of the lens when referenced to a 1.530 index of refraction.

$$\frac{R_x \text{ power (diopters)}}{\text{CP for a CR-39 lens}} = \frac{\text{standard tool index of refraction} - 1}{\text{CR-39 index of refraction} - 1}$$

$$D \times \frac{(1.530 - 1)}{(1.498 - 1)} = \text{CP}$$

$$D \times \frac{(.530)}{(.498)} = \text{CP}$$

$$\text{CP} = D \times 1.064257028$$

Where:            D = dioptic power of lens  
                       1.530 = standard index of refraction  
                       1.498 = index of refraction of CR-39 plastic

Example 1:    OD: -1.00 SPH PD: 64/61 ADD: +2.00 ST-28

$$\text{CP} = -1.00 \times 1.064257028 = -1.06$$

Example 2:    OS: +1.50 SPH PD: 65/62 ADD: +2.50 ST-28

$$\text{CP} = +1.50 \times 1.064257028 = +1.59$$

Example 3:    OD: -1.50 -1.00 X 135 PD: 68/64 ADD: +2.25 FT-35

$$\text{CP} = -1.50 \times 1.064257028 = -1.59 \text{ at axis } 135$$

$$\text{CP} = -2.50 \times 1.064257028 = -2.66 \text{ at axis } 45$$

Example 4:    OS: +2.50 -2.00 X 60 1.00 BI PD: 65/62  
 ADD: +2.00 ST-35

$$\text{CP} = +2.50 \times 1.064257028 = +2.66 \text{ at axis } 60$$

$$\text{CP} = +0.50 \times 1.064257028 = +0.53 \text{ at axis } 150$$

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Example 5: OD: -1.50 -1.75 X 35 2.00 BO & 1.50 BU PD: 64/60  
ADD: +2.50 ST-28

$$\begin{aligned} \text{CP} &= -1.50 \times 1.064257028 = -1.59 \text{ at axis } 35 \\ \text{CP} &= -3.25 \times 1.064257028 = -3.45 \text{ at axis } 125 \end{aligned}$$

Example 6: OS: +3.25 -1.25 X 115 1.00 BO & 2.00 BD PD: 70/67  
ADD: +2.50 ST-28

$$\begin{aligned} \text{CP} &= +3.25 \times 1.064257028 = +3.45 \text{ at axis } 115 \\ \text{CP} &= +2.00 \times 1.064257028 = +2.12 \text{ at axis } 25 \end{aligned}$$

Example 7: OD: -1.00 -1.00 X 145 PD: 65/62  
ADD: +2.25 TRIFOCAL ST-28

$$\begin{aligned} \text{CP} &= -1.00 \times 1.064257028 = -1.06 \text{ at axis } 145 \\ \text{CP} &= -2.00 \times 1.064257028 = -2.12 \text{ at axis } 55 \end{aligned}$$

2. Select a lens blank.

a. Select the best nominal base curve (NBC) lens in stock using the base curve selection formula. Select a lens blank that will allow the back curve to be as close as possible to a -6.00 diopter curve.

$$\text{NBC} = \text{Lens Spherical Equivalent} + 6.$$

b. Select the closest stocked lens blank.

3. Determine the actual base curve (ABC) of a lens with the sagometer.

Example 1: ABC = +6.23

Example 2: ABC = +8.11

Example 3: ABC = +4.10

Example 4: ABC = +8.11

Example 5: ABC = +4.10

Example 6: ABC = +8.11

Example 7: ABC = +4.10



4. Calculate on-center blocking prism.

**NOTE:** Knowledge of the following definitions and formulas is necessary.

On-Center Blocking - the practice of placing the surfacing block at the geometric center of the lens blank and moving the reference point of the lens to the desired location by grinding prism for decentration.

Segment Inset - the horizontal distance between the lens blank geometric center to the center of the multifocal segment.

Patient Inset Per Eye - one half the difference between distant pupillary distance (DPD) and near pupillary distance (NPD).

Segment Drop - the vertical distance between the lens geometric center and the top of the segment.

Major Reference Point - the point on a lens where the prism equals that called for by the prescription.

Optical Center - the point on an ophthalmic lens where there is no prismatic effect.

Compensated Power - the true power of the lens when referenced to a 1.530 index of refraction.

- a. Verify that the prescription is in minus cylinder form.
- b. Determine the segment inset and drop of the lens blank from manufacturer's literature or by measuring from the geometric center of the lens to the midpoint of the top of the segment.

c. Calculate the patient's inset per eye.

$$\frac{DPD - NPD}{2} = \text{Inset}$$

d. Determine the standard drop for multifocal style IAW local SOP.

(1) Bifocal - 5 mm

(2) Trifocal - 3 mm

e. Calculate the amount of horizontal decentration.

Seg inset - inset per eye = horizontal decentration

f. Calculate the amount of vertical decentration.

Seg drop - standard drop = vertical decentration

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**NOTE:** The following rules apply if the segment drop is greater than the standard drop:

- \* If the power on the 90 is (+) the prism direction will be base down. OD & OS = 270
- \* If the power on the 90 is (-) the prism direction will be base up. OD & OS = 90

**NOTE:** The following rules apply if the segment drop is less than the standard drop:

- \* If the power on the 90 is (+) the prism direction will be base up. OD & OS = 90
- \* If the power on the 90 is (-) the prism direction will be base down. OD & OS = 270
- g. Calculate the power in the 180th meridian IAW FM 8-37.
- h. Calculate the power in the 90th meridian IAW FM 8-37.
- i. Calculate the horizontal prism required.
- j. Calculate the vertical prism required.

**NOTE:** The following rules apply if prism is prescribed by the doctor:

- \* If the prescribed prism is the same direction as the on-center blocking (O.C.B) prism, add the two together and the base direction will remain the same.
- \* If the prescribed prism is the opposite direction from the O.C.B. prism, find the difference and retain the prism direction of the larger.
- \* If resultant prism is prescribed, combine the prescribed horizontal prism with the on-center blocking horizontal prism and the prescribed vertical prism with the on-center blocking vertical prism.
- k. Compute resultant prism IAW FM 8-37 and the resultant prism chart, Figure B-1, page B-20.
  - (1) Calculate the resultant prism amount.

**NOTE:** An alternative method for computing resultant prism amount is:

Horizontal prism squared plus Vertical prism squared = Resultant prism squared

$$H^2 + V^2 = R^2$$

(2) Calculate the resultant prism base direction.

**NOTE:** The following rules apply for determining prism direction for on-center blocking:

\* If the power on the 180 is (+) the prism direction will be base in. OD=000 OS=180

\* If the power on the 180 is (-) the prism direction will be base out. OD=180 OS=000

Example 1: OD: -1.00 SPH PD: 64/61  
 ADD: +2.00 ST-28 Blank seg inset: 6 mm Blank seg drop: 6 mm  
 Patient inset: 1.5 mm Standard drop: 5 mm

6 - 1.5 = 4.5 mm in      6 - 5 = 1 mm down

Power on 180 = -1.00      Power on 90 = -1.00

Prism (^) = Lens power (D) x decentration in cm

**NOTE:** For minus lenses, the prism base direction will be the opposite of the decentration direction.

Horizontal ^ = 0.45 BO      Vertical ^ = 0.10 BU

0.46 ^ Base 167

Example 2: OS: +1.50 SPH PD: 65/62  
 ADD: +2.50 ST-28 Blank seg inset: 6 mm Blank seg drop: 6 mm  
 Patient inset: 1.5 mm Standard drop: 5 mm

6 - 1.5 = 4.5 mm in      6 - 5 = 1 mm down

Power on 180 = +1.50      Power on 90 = +1.50

**NOTE:** For plus lenses, the prism base direction will be the same as the decentration direction.

Horizontal ^ = 0.67 BI      Vertical ^ = 0.15 BD

0.68 ^ Base 202

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Example 3: OD: -1.50 -1.00 X 135 PD: 68/64  
ADD: +2.25 FT-35 Blank seg inset: 7 mm Blank seg drop: 6 mm  
Patient inset: 2 mm Standard drop: 5 mm

$$7 - 2 = 5 \text{ mm in} \quad 6 - 5 = 1 \text{ mm down}$$

$$\text{Power on } 180 = -2.00 \quad \text{Power on } 90 = -2.00$$

$$\text{Horizontal } \wedge = 1.00 \text{ BO} \quad \text{Vertical } \wedge = 0.20 \text{ BU}$$

$$1.01 \wedge \text{ Base } 168$$

Example 4: OS: +2.50 -2.00 X 60 1.00 BI PD: 65/62  
ADD: +2.00 ST-35 Blank seg inset: 6 mm Blank seg drop: 6 mm  
Patient inset: 1.5 mm Standard drop: 5 mm

$$6 - 1.5 = 4.5 \text{ mm in} \quad 6 - 5 = 1 \text{ mm down}$$

$$\text{Power on } 180 = +1.00 \quad \text{Power on } 90 = +2.00$$

$$\text{O.C.B. } \wedge = 0.45 \text{ BI} \quad \text{Vertical } \wedge = 0.20 \text{ BD}$$

**NOTE:** Combine the prescribed prism with the on-center blocking prism. Horizontal prism will only be combined with horizontal prism and vertical prism will only be combined with vertical prism.

$$\begin{aligned} \text{Prescribed } \wedge &: 1.00 \text{ BI (horizontal)} \\ \text{O.C.B. } \wedge &: +0.45 \text{ BI (horizontal)} \\ \text{Horizontal } \wedge &= 1.45 \text{ BI} \quad \text{Vertical } \wedge = 0.20 \text{ BD} \end{aligned}$$

$$1.46 \wedge \text{ Base } 187$$

Example 5: OD: -1.50 -1.75 X 35 2.00 BO & 1.50 BU PD: 64/60  
ADD: +2.50 ST-28 Blank seg inset: 6 mm Blank seg drop: 6 mm  
Patient inset: 2 mm Standard drop: 5 mm

$$6 - 2 = 4 \text{ mm in} \quad 6 - 5 = 1 \text{ mm down}$$

$$\text{Power on } 180 = -2.07 \quad \text{Power on } 90 = -2.67$$

$$\text{Horizontal } \wedge = 0.82 \text{ BO} \quad \text{Vertical } \wedge = 0.26 \text{ BU}$$

Prescribed prism is 2.00 BO and 1.50 BU.

$$3.32 \wedge \text{ Base } 148$$

Example 6: OS: +3.25 -1.25 X 115 1.00 BO & 2.00 BD PD: 70/67  
 ADD: +2.50 ST-28 Blank seg inset: 7 mm Blank seg drop: 6 mm  
 Patient inset: 1.5 mm Standard drop: 5 mm

7 - 1.5 = 5.5 mm in      6 - 5 = 1 mm down

Power on 180 = +2.23      Power on 90 = +3.03

Horizontal ^ = 1.22 BI      Vertical ^ = 0.30 BD

Prescribed prism is 1.00 BO and 2.00 BD.

2.31 ^ Base 264

Example 7: OD: -1.00 -1.00 X 145 PD: 65/62  
 ADD: +2.25 TRI ST-28 Blank seg inset: 5 mm Blank seg drop: 2 mm  
 Patient inset: 1.5 mm Standard drop: 3 mm

5 - 1.5 = 3.5 mm in      2 - 3 = 1 mm

Power on 180 = -1.33      Power on 90 = -1.67

Horizontal ^ = 0.46 BO      Vertical ^ = 0.16 BD

0.48 ^ Base 199

4. Calculate lens center thickness.

**NOTE:** The following formulas and information are necessary for calculating lens thickness.

Chord Diameter - the minimum lens blank size required to ensure a lens will completely cut out according to prescription.

$$CD = ED + (A + DBL - PD)$$

Where ED = effective diameter  
 A = frame eye size  
 DBL = distance between lenses (frame bridge size)  
 PD = pupillary distance

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Strap Thickness - the difference, in millimeters, between the center and edge of the lens, rounded off to the nearest tenth.

$$\frac{r^2 \times CP}{1000} = S$$

Where S = Strap Thickness  
r = radius of the lens (half the chord diameter)  
CP = the dioptric Compensated Power of the lens  
1000 = constant in the formula

### Base to Apex Thickness Difference

$$BATD = \frac{CD \times Prism}{100(n-1)}$$

Where CD = chord diameter  
Prism = amount of prism to be computed  
n = index of refraction of lens (CR-39)

**NOTE:** The edge thickness at the most plus meridian (always the sphere meridian) will have an edge thickness of 1.7 mm. Compute the center thickness using the strap formula at the most plus meridian and then adding the result to 1.7 mm edge thickness.

**NOTE:** The ideal finished center thickness of a minus or plano lens is 2.0 mm.

**NOTE:** Each diopter of minus power in the prism meridian neutralizes the need for one prism diopter's additional thickness.

- a. Compute the compensated power (CP).
- b. Compute the chord diameter (CD).
- c. Compute the strap thickness.
- d. Combine the strap thickness with the center thickness of plus lenses.
- e. Compute the base to apex thickness difference.
- f. Combine the center thickness of the lens with one half the base to apex prism thickness.

Example 1: OD: -1.00 SPH PD: 64/61

$$CP = -1.00 \times 1.064257028 = -1.06$$

**NOTE:** Minus lenses have a 2.0 mm center thickness.

**NOTE:** Minus power at the prism base meridian exceeds prism power, so there will be no prism thickness added.

2.0 mm (center thickness)

Example 2: OS: +1.50 SPH PD: 65/62

$$CP = +1.50 \times 1.064257028 = +1.59$$

ED = 54 mm A = 52 mm

DBL = 20 mm PD = 65 mm

$$CD = 54 + (52 + 20 - 65) = 61$$

$$\frac{30.5^2 \times 1.59}{1000} = 1.5 \text{ mm}$$

1.7 mm (finished edge at 010°) (sphere axis)

+ 1.5 mm (strap for sph meridian)

3.2 mm (center thickness w/o prism)

$$BATD = \frac{61 \times 0.68^2}{100 (1.498 - 1)} = 0.8329 \text{ mm}$$

3.2 mm (center thickness w/o prism)

+ 0.4 mm (1/2 BATD)

3.6 mm (center thickness with prism)

Example 3: OD: -1.50 -1.00 X 135 PD: 68/64

$$CP = -1.50 \times 1.064257028 = -1.59 \text{ at axis } 135$$

$$CP = -2.50 \times 1.064257028 = -2.66 \text{ at axis } 45$$

**NOTE:** Minus lenses have a 2.0 mm center thickness.

**NOTE:** Minus power at the prism base meridian exceeds prism power, so there will be no prism thickness added.

2.0 mm (center thickness)

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Example 4: OS: +2.50 -2.00 X 60 1.00 BI PD: 65/62

$$\begin{aligned} \text{CP} &= +2.50 \times 1.064257028 = +2.66 \text{ at axis } 60 \\ \text{CP} &= +0.50 \times 1.064257028 = +0.53 \text{ at axis } 150 \end{aligned}$$

$$\begin{aligned} \text{ED} &= 54 \text{ mm} \quad \text{A} = 52 \text{ mm} \\ \text{DBL} &= 20 \text{ mm} \quad \text{PD} = 65 \text{ mm} \end{aligned}$$

$$\text{CD} = 54 + (52 + 20 - 65) = 61$$

$$\frac{30.5^2 \times 2.66}{1000} = 2.5 \text{ mm}$$

$$\begin{aligned} &1.7 \text{ mm (finished edge at } 060^\circ \text{) (sphere axis)} \\ &+ \underline{2.5 \text{ mm}} \text{ (strap for sph meridian)} \\ &4.2 \text{ mm (center thickness w/o prism)} \end{aligned}$$

$$\text{BATD} = \frac{61 \times 1.46^{\wedge}}{100 (1.498 - 1)} = 1.7883 \text{ mm}$$

$$\begin{aligned} &4.2 \text{ mm (center thickness w/o prism)} \\ &+ \underline{0.9 \text{ mm}} \text{ (1/2 BATD)} \\ &5.1 \text{ mm (center thickness with prism)} \end{aligned}$$

Example 5: OD: -1.50 -1.75 X 35 2.00 BO & 1.50 BU PD: 64/60

$$\begin{aligned} \text{CP} &= -1.50 \times 1.064257028 = -1.59 \text{ at axis } 35 \\ \text{CP} &= -3.25 \times 1.064257028 = -3.45 \text{ at axis } 125 \end{aligned}$$

**NOTE:** Minus lenses have a 2.0 mm center thickness.

**NOTE:** Minus power in the prism base direction is one half diopter less than prism power, so thickness is figured for one half diopter of prism.

$$\text{BATD} = \frac{62 \times 0.50^{\wedge}}{100 (1.498 - 1)} = 0.6224 \text{ mm}$$

$$\begin{aligned} &2.0 \text{ mm (center thickness w/o prism)} \\ &+ \underline{0.3 \text{ mm}} \text{ (1/2 BATD)} \\ &2.3 \text{ mm (center thickness with prism)} \end{aligned}$$



Example 6: OS: +3.25 -1.25 X 115 1.00 BO & 2.00 BD PD: 70/67

$$CP = +3.25 \times 1.064257028 = +3.45 \text{ at axis } 115$$

$$CP = +2.00 \times 1.064257028 = +2.12 \text{ at axis } 25$$

$$ED = 54 \text{ mm} \quad A = 52 \text{ mm}$$

$$DBL = 20 \text{ mm} \quad PD = 70 \text{ mm}$$

$$CD = 54 + (52 + 20 - 70) = 56$$

$$\frac{28^2}{1000} \times 3.45 = 2.7 \text{ mm}$$

1.7 mm (finished edge at 115°) (sphere axis)

+ 2.7 mm (strap for sph meridian)

4.4 mm (center thickness w/o prism)

$$BATD = \frac{56 \times 2.31^2}{100(1.498 - 1)} = 2.5975 \text{ mm}$$

4.4 mm (center thickness w/o prism)

+ 1.3 mm (1/2 BATD)

5.7 mm (center thickness with prism)

Example 7: OD: -1.00 -1.00 X 145 PD: 65/62

$$CP = -1.00 \times 1.064257028 = -1.06 \text{ at axis } 145$$

$$CP = -2.00 \times 1.064257028 = -2.12 \text{ at axis } 55$$

**NOTE:** Minus lenses have a 2.0 mm center thickness.

**NOTE:** Minus power at the prism base meridian exceeds prism power, so there will be no prism thickness added.

2.0 mm (center thickness)

5. Compute back curves.

$$\text{Back Curve} = CP - \frac{\text{Actual Base Curve (ABC)}}{1 - (\text{ABC (Center Thickness in Meters/1.53)})}$$

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Example 1: ABC = +6.23

$$\text{Back Curve} = -1.06 - \frac{6.23}{1 - (6.23 (.002/1.53))}$$

$$\text{Back Curve} = -1.06 - \frac{6.23}{1 - (6.23 (.001307189))}$$

$$\text{Back Curve} = -1.06 - \frac{6.23}{1 - 0.008143787}$$

$$\text{Back Curve} = -1.06 - \frac{6.23}{0.991856213}$$

$$\text{Back Curve} = -1.06 - 6.281152366 = -7.34$$

$$\text{Tool} = 7.37$$

**NOTE:** If curve is in the middle between standard curves, round curves on minus power lenses up, round curves on plus power lenses down.

Example 2: ABC = +8.11

$$\text{Back Curve} = +1.59 - \frac{8.11}{1 - (8.11 (.0036/1.53))}$$

$$\text{Back Curve} = -6.67$$

$$\text{Tool} = 6.62$$

Example 3: ABC = +4.10

$$\text{Back Curve} = -1.59 - \frac{4.10}{1 - (4.10 (.002/1.53))}$$

$$\text{Back Curve} = -5.71 \text{ (Sphere Curve)}$$

$$\text{Back Curve} = -2.66 - \frac{4.10}{1 - (4.10 (.002/1.53))}$$

$$\text{Back Curve} = -6.78 \text{ (Cyl Curve)}$$

$$\text{Tool} = 5.75 / 6.75$$

Example 4: ABC = +8.11

$$\text{Back Curve} = +2.66 - \frac{8.11}{1 - (8.11 (.0051/1.53))}$$

Back Curve = -5.67 (Sphere Curve)

$$\text{Back Curve} = +0.53 - \frac{8.11}{1 - (8.11 (.0051/1.53))}$$

Back Curve = -7.80 (Cyl Curve)

$$\text{Tool} = 5.62 / 7.75$$

Example 5: ABC = +4.10

$$\text{Back Curve} = -1.59 - \frac{4.10}{1 - (4.10 (.0023/1.53))}$$

Back Curve = -5.71 (Sphere Curve)

$$\text{Back Curve} = -3.45 - \frac{4.10}{1 - (4.10 (.0023/1.53))}$$

Back Curve = -7.57 (Cyl Curve)

$$\text{Tool} = 5.75 / 7.62$$

Example 6: ABC = +8.11

$$\text{Back Curve} = +3.45 - \frac{8.11}{1 - (8.11 (.0057/1.53))}$$

Back Curve = -4.91 (Sphere Curve)

$$\text{Back Curve} = +2.12 - \frac{8.11}{1 - (8.11 (.0057/1.53))}$$

Back Curve = -6.24 (Cyl Curve)

$$\text{Tool} = 4.87 / 6.25$$

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Example 7:     ABC = +4.10

$$\text{Back Curve} = -1.06 - \frac{4.10}{1 - (4.10 (.002/1.53))}$$

Back Curve = -5.18 (Sphere Curve)

$$\text{Back Curve} = -2.12 - \frac{4.10}{1 - (4.10 (.002/1.53))}$$

Back Curve = -6.24 (Cyl Curve)

Tool = 5.25 / 6.25

**Field Expedient Surface Curve Computation**

1. Compute compensated sphere power without thickness or prism by multiplying the lens prescription by 1.064.

Example 6: OS: +3.25 -1.25 X 115

3.25	-1.25
<u>X 1.064</u>	<u>X 1.064</u>
1300	500
1950	750
000	000
<u>325</u>	<u>125</u>
3.45800	-1.33000

**NOTE:** The compensated sphere power = +3.45; the compensated cylinder = -1.33.

2. Subtract compensated sphere power from lens blank actual base curve to compute concave sphere curve without thickness change.

Example 1: Lens ABC +6.23 - (-1.06) = 7.29

Example 2: Lens ABC +8.11 - (+1.59) = 6.52

Example 3: Lens ABC +4.10 - (-1.59) = 5.69

Example 4: Lens ABC +8.11 - (+2.66) = 5.45

Example 5: Lens ABC +4.10 - (-1.59) = 5.69

Example 6: Lens ABC +8.11 - (+3.45) = 4.66

Example 7: Lens ABC +4.10 - (-1.06) = 5.16

3. Compute center thickness IAW previous section, step 4, page B-7.

Example 1: 2.0 mm

Example 2: 3.6 mm

Example 3: 2.0 mm

Example 4: 5.1 mm

Example 5: 2.3 mm

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Example 6: 5.7 mm

Example 7: 2.0 mm

4. Compute the power change for center thickness from "Change in Concave Surface Power for Center Thickness" chart, Figure B-2, page B-21.

- a. Find the base curve of the lens blank on the left side of the chart.
- b. Find the center thickness on top of the chart.
- c. Find the intersection of the lens base curve and center thickness. This is the power change for thickness.

5. Add the thickness power change to the concave sphere meridian curve without thickness, from step 2.

6. Round to the nearest .12 diopter. This gives the tool sphere curve.

**NOTE:** If the curve is in the middle between standard tool curves, round curves on minus power lenses up and round curves on plus power lenses down.

Example 1:  $7.29 + 0.05 = 7.34$  7.37

Example 2:  $6.52 + 0.17 = 6.69$  6.62

Example 3:  $5.69 + 0.02 = 5.71$  5.75

Example 4:  $5.45 + 0.23 = 5.68$  5.62

Example 5:  $5.69 + 0.02 = 5.71$  5.75

Example 6:  $4.66 + 0.26 = 4.92$  4.87

Example 7:  $5.16 + 0.02 = 5.18$  5.25

7. Compute compensated power of minus cylinder without thickness or prism.

**NOTE:** Do not use total power in cylinder meridian for this step.

8. Combine the compensated cylinder power with the unrounded concave sphere curve to find the concave cross curve. Round to the nearest .12 diopter for the tool cross curve .

**NOTE:** If the curve is in the middle between standard curves, round curves on minus power lenses up and round curves on plus power lenses down.

Example 1: No Cylinder

<u>Example 2:</u>	No Cylinder	
<u>Example 3:</u>	$1.06 + 5.71 = 6.77$	6.75
<u>Example 4:</u>	$2.12 + 5.68 = 7.80$	7.75
<u>Example 5:</u>	$1.86 + 5.71 = 7.57$	7.62
<u>Example 6:</u>	$1.33 + 4.92 = 6.25$	6.25
<u>Example 7:</u>	$1.06 + 5.18 = 6.24$	6.25

**NOTE:** Lens graphs for the seven examples:

	<u>Actual Lens Base Curve</u>	Tool curve or curves
<u>Example 1:</u>	$+ 6.23$	$- 7.37$
<u>Example 2:</u>	$+ 8.11$	$- 6.62$
<u>Example 3:</u>	$+ 4.10$	$- 5.75 - 6.75$
<u>Example 4:</u>	$+ 8.11$	$- 5.62 - 7.75$
<u>Example 5:</u>	$+ 4.10$	$- 5.75 - 7.62$
<u>Example 6:</u>	$+ 8.11$	$- 4.87 - 6.25$
<u>Example 7:</u>	$+ 4.10$	$- 5.25 - 6.25$
<u>Example 8:</u>	RX: OD: +3.00 -0.25 X 90      OS: +2.75 Sphere Pupillary Distance: 66/63, Frame: S-9, 52/20 ED: 56 mm ADD: +2.50 FT-25, Total Decentration: 4.5 mm.	

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Compute the compensated sphere power without thickness or prism by multiplying the lens sphere meridian prescription by 1.064.

$$\text{OD: Compensated Sphere Power} = +3.00 \times 1.064 = +3.19$$

$$\text{OS: Compensated Sphere Power} = +2.75 \times 1.064 = +2.92$$

Subtract the compensated sphere power from the lens blank actual base curve to compute the concave sphere curve without thickness change.

Actual Base Curve of lens blank = +8.72 for both eyes.

OD:	+ 8.72	OS:	+ 8.72
	<u>- + 3.19</u>		<u>- + 2.92</u>
	+ 5.53		+ 5.80

Compute the center thickness IAW previous section, step 4, page B-7.

Blank seg inset = 6	Blank seg drop = 7
Patient inset per eye = 1.5	Standard drop = 5

6 - 1.5 = 4.5 mm in	7 - 5 = 1 mm dn
---------------------	-----------------

OD: Power on the 180th = +3.00	Power on the 90th = +2.75
--------------------------------	---------------------------

Prism = 3.19 x .45 = 1.4 in	Prism = 2.92 x .1 = .6 dn
-----------------------------	---------------------------

**NOTE:** The resultant prism graph shows the prism to be 1.53 at base direction 203, also called 23 down, depending on local procedures.

OS: Power on the 180th = +2.75	Power on the 90th = +2.75
--------------------------------	---------------------------

Prism = 2.92 x .45 = 1.3 in	Prism = 2.92 x .1 = .6 dn
-----------------------------	---------------------------

**NOTE:** The resultant prism graph shows the prism to be 1.43 at base direction 335, also called 155 down, depending on local procedures.



$$\text{Cord Diameter} = 56 + (52 + 20 - 66) = 62$$

$$\text{BATD OD: } \frac{62 \times 1.53}{49.8} = 1.9$$

$$\text{BATD OS: } \frac{62 \times 1.43}{49.8} = 1.7$$

$$\text{Strap OD: } \frac{31^2 \times 3.19}{1000} = 3.0$$

$$\text{Strap OS: } \frac{31^2 \times 2.92}{1000} = 2.8$$

Strap thickness + edge thickness + one half BATD = center thickness

$$\text{OD: } 3.0 + 1.7 + 1.0 = 5.7 \text{ mm}$$

$$\text{OS: } 2.8 + 1.7 + 0.9 = 5.4 \text{ mm}$$

Compute the power change for center thickness from Figure B-2, page B-21.

$$\text{OD: } 0.26$$

$$\text{OS: } 0.25$$

Combine powers and round to nearest tool curve.

OD: + 5.53	OS: + 5.80
<u>+ 0.26</u>	<u>+ 0.25</u>
+ 5.79	+ 6.05

$$\text{OD sphere tool curve} = 5.75 \quad \text{OS sphere tool curve} = 6.00$$

$$\text{Compensated power of cylinder OD} = 0.26 \quad \text{OS} = 0.00$$

Tool curves for this job are:

$$\text{OD: } 5.75 / 6.00 \quad \text{OS: } 6.00 \text{ sphere}$$

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Right Eye = OUT

Right Eye = IN

Left Eye = IN

Left Eye = OUT

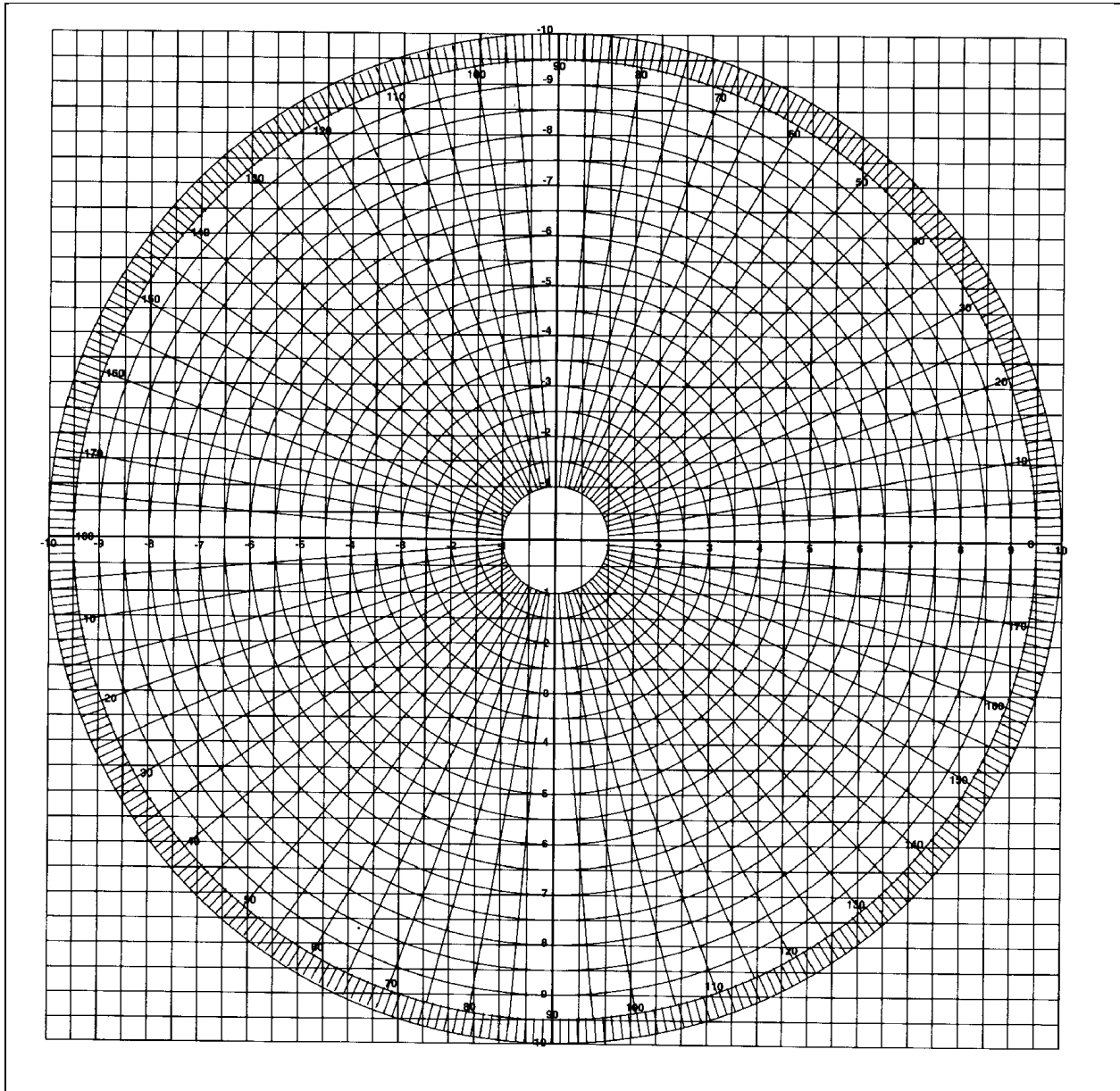


Figure B-1

Change in Concave Surface Power for Center Thickness

CENTER THICKNESS

BASE CURVE	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
4.25	.00	.00	.00	.00	.01	0.1	0.1	.01	0.1	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10
6.25	.00	.01	.01	.01	.01	.02	.02	.02	.02	.03	.05	.08	10	.03	.05	.18	.20	.23	.25
7.25	.00	.01	.01	.01	.02	.02	.03	.03	.03	.04	.07	.11	.14	.18	.21	.25	.28	.32	.35
8.25	.00	.01	.01	.02	.02	.03	.03	.04	.04	.05	.09	.14	.18	.23	.27	.32	.36	.41	.45
10.25	.01	.02	.02	.03	.04	.05	.05	.06	.07	.08	.15	.23	.30	.38	.45	.53	.60	.68	.75
12.00	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
13.00	.01	.02	.04	.05	.06	.07	.08	.10	.11	.12	.24	.36	.48	.60	.72	.84	.96	1.08	1.20
14.00	.01	.03	.04	.06	.07	.08	.10	.11	.13	.14	.28	.42	.56	.70	.84	.98	1.12	1.26	1.40
15.00	.02	.03	.05	.07	.08	.10	.12	.14	.15	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.53	1.70
16.00	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.40	.60	.80	1.00	1.20	1.40	1.60	1.80	2.00

Figure B-2

## GLOSSARY

**ACCP** Army Correspondence Course Program

**AIT** advanced individual training

**ANCOC** advanced noncommissioned officer course

**ANSI** American National Standards Institute

**Army Training and Evaluation Program (ARTEP)** The Army's collective training program that establishes unit training objectives critical to unit survival and performance in combat. They combine the training and evaluation process into one integrated function. The ARTEP is a training program and not a test. The sole purpose of external evaluation under this program is to diagnose unit requirements for future training.

**ATCCS** Army Tactical Command Control System

**battle focus** A process to guide the planning, execution, and assessment of the organization's training program to ensure they train as they are going to fight.

**BCT** basic combat training

**BM** bi-monthly (every other month)

**BNCOG** basic noncommissioned officer course

**cm** centimeter

**collective training** Training, either in institutions or units, that prepares cohesive teams and units to accomplish their combined arms and service missions on the battlefield.

**common task** A critical task that is performed by every soldier in a specific skill level regardless of MOS.

**CONUS** Continental United States

**critical task** A collective or individual task determined to be essential to wartime mission, duty accomplishment, or survivability. Critical individual tasks are trained in the training base and/or unit, and they are reinforced in the unit.

**cross training** The systematic training of a soldier on tasks related to another duty position within the same military occupational specialty or tasks related to a secondary military occupational specialty at the same skill level.

**CTA** common table of allowances

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**D** diopter

**DOS** days of supply

**drill** A disciplined, repetitious exercise to teach and perfect a skill or procedure; for example, fire, man overboard, abandon ship, lifeboat, and damage control drills on Army watercraft.

**ED** effective diameter

**F** Fahrenheit

**Hz** hertz

**IARC** International Agency for Research on Cancer

**IAW** in accordance with

**ID** identification

**IMSA** installation medical supply activity

**individual training** Training which prepares the soldier to perform specified duties or tasks related to the assigned duty position or subsequent duty positions and skill levels.

**integration training** The completion of initial entry training in skill level 1 tasks for an individual newly arrived in a unit, but limited specifically to tasks associated with the mission, organization, and equipment of the unit to which the individual is assigned. It may be conducted by the unit using training materials supplied by the school, by troop schools, or by inservice or contract mobile training teams. In all cases, this training is supported by the school proponent.

**merger training** Training that prepares noncommissioned officers to supervise one or more different military occupational specialties at lower skill levels when they advance to a higher skill level in their career management field.

**METL** mission essential task list

**mission essential task list** A compilation of collective mission essential tasks which must be successfully performed if an organization is to accomplish its wartime mission(s).

**MLBS** minimum lens blank size

**mm** millimeter

**MOPP** mission oriented protective posture

**MOS** military occupational specialty

**MOSC** military occupational specialty code

**MSDS** material safety data sheet

**MTF** medical treatment facility

**MTOE** modification table of organization and equipment

**MTP** MOS training plan

**NBC** nuclear, biological, chemical

**NCO** noncommissioned officer

**NSN** national stock number

**NTP** National Toxicology Program

**OD** oculus dexter (right lens or eye)

**OLD** operating level days

**OS** oculus sinister (left lens or eye)

**OSHA** Occupational Safety and Health Administration

**OST** order shipping time

**OSUT** one station unit training

**PCS** permanent change of station

**PD** pupillary distance

**PEL** permissible exposure limit

**PLDC** primary leadership development course

**PMCS** preventive maintenance checks and services

**psi** pounds per square inch

**QDCP** quantity demanded in the control period

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**QT** quarterly

**ROPQ** reorder point quantity

**ROQ** requisitioning objective quantity

**R<sub>x</sub>** prescription

**self-development** Self-development is a planned, progressive, and sequential program followed by leaders to enhance and sustain their military competencies. Self-development consists of individual study, research, professional reading, practice, and self-assessment.

**SL** skill level

**SLD** safety level days

**SM** soldier's manual

**SMC** sergeant major course

**SMCT** Soldier's Manual of Common Tasks

**SOP** standing operating procedure

**SRTS** spectacle request transmittal system

**SSA** supply support activity

**SSN** social security number

**STP** soldier training publications

**sustainment training** The provision of training to maintain the minimum acceptable level of proficiency required to accomplish a critical task.

**TAADS** The Army Authorized Document System

**TAMMIS** Theater Army Medical Management Information System

**TDA** table of distribution and allowances

**TG** trainer's guide

**TLV** threshold limit value

**TO&E** table of organization and equipment

**train-up** The process of increasing the skills and knowledge of an individual to a higher skill level in the appropriate MOS. It may involve certification.

**unit training** Training (individual, collective and joint or combined) conducted in a unit.

**USAEHA** U.S. Army Environmental Hygiene Agency

**UV** ultraviolet



## REFERENCES

New reference material is being published all the time. Present references, as listed below, may become obsolete. To keep up-to-date, see DA Pam 25-30 and the Extension Training Materials (ETM) catalog, DA Pam 350-100. If referenced documents are not available through your unit, borrow them from your post learning center or library.

### Required Publications

#### Army Regulations (AR)

25-50	Preparing and Managing Correspondence
25-55	The Department of the Army Freedom of Information Act Program
25-400-2	The Modern Army Recordkeeping System (MARKS)
37-1	Army Accounting and Fund Control
37-100	Account/Code Structure
40-61	Medical Logistics Policies and Procedures
40-63	Ophthalmic Services
380-5	Department of Army Information Security Program

#### Department of the Army Pamphlets (DA Pam)

710-2-2	Supply Support Activity Supply System: Manual Procedures
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#### Technical Guides (TG)

126	U.S. Army Environmental Hygiene Agency (Waste Disposal Instructions)
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#### Miscellaneous Publications

Operator's Manual for the Automatic Lens Surfacers  
 Operator's Manual for the Deblocker  
 Operator's Manual for the Lens Edger  
 Operator's Manual for the Lens Generator  
 Operator's Manual for the Lensometer  
 Operator's Manual for the Fabrication Marker/Blocker  
 Operator's Manual for the Surface Blocker  
 User's Manual for the Theater Army Medical Management Information System

## **STP 42E14-SM-TG**

### **Department of the Army Forms (DA Form)**

1300-2	Computation Card
2717	Optical Laboratory Report

### **Department of Defense Forms (DD Form)**

771	Eyewear Prescription
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### **Related Publications**

#### **Army Regulations (AR)**

385-10	Army Safety Program
702-18	Materiel Quality Control Storage Standards
710-2	Inventory Management Supply Policy Below the Wholesale Level

#### **Army Training and Evaluation Programs (ARTEP)**

8-057-30-MTP	Mission Training Plan for the Medical Company, Main Support Battalion, Heavy Division
8-267-30-MTP	Mission Training Plan for the Medical Company, Main Support Battalion, Airborne, Air Assault, and Light Division
8-437-30-MTP	Mission Training Plan for the Medical Company, Support Battalion, Heavy Separate Brigade/Separate Infantry Brigade, and Medical Troop, Support Squadron, Armored Cavalry Regiment
8-456-MTP	Mission Training Plan for the Support Company, Area Support Medical Battalion
8-487-30-MTP	Mission Training Plan for the Logistics Support Company/Detachment and Distribution Company, Medical Battalion (Forward and Rear)

#### **Department of the Army Pamphlets (DA Pam)**

25-30	Consolidated Index of Army Publications and Blank Forms
351-20	Correspondence Course Program Catalog
710-2-1	Using Unit Supply System (Manual Procedures)

#### **Field Manuals (FM)**

8-37	Optical Laboratory Specialist
25-100	Training the Force
25-101	Battle Focused Training

**Supply Bulletins (SB)**

700-20 Army Adopted/Other Items Selected for Authorization/List of Reportable Items

**Soldier Training Publications (STP)**

21-1-SMCT Soldier's Manual of Common Tasks (Skill Level 1)  
21-24-SMCT Soldier's Manual of Common Tasks (Skill Levels 2-4)

**Miscellaneous Publications**

29 CFR 1910.1200  
American National Standard Institute Z80 Standards  
Army Master Data File (AMDF)  
End User's Guide for the Spectacle Request Transmittal System


**Department of the Army Forms (DA Form)**

1296 Stock Accounting Record  
2028 Recommended Changes to Publications and Blank Forms

STP 8-42E14-SM-TG  
24 SEPTEMBER 1996

By Order of the Secretary of the Army:

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