

**STP 9-44B12-SM-TG**

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

## **METALWORKER**

### **SKILL LEVELS 1, 2**

#### **MOS 44B**

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# SOLDIER'S MANUAL and TRAINER'S GUIDE

## MOS 44B

### SOLDIER'S MANUAL AND TRAINER'S GUIDE, MOS 44B, METAL WORKER

#### Skill Levels 1 and 2

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Supersedes STP 9-44B12-SM-TG Dated November 1989

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## PREFACE

This soldier training publication (STP) is intended for soldiers holding MOS 44B, Skill Levels 1 and 2, their supervisors, trainers, and commanders. It contains an MOS Training Plan providing information needed to plan, conduct, and evaluate unit training, one of the most important jobs of military leaders. It includes standardized training objectives in the form of task summaries that can be used to train and evaluate soldiers on critical tasks supporting unit missions during wartime.

Soldiers holding MOS 44B should have access to this publication. Trainers and firstline supervisors should actively plan for soldiers' access, making it available in work areas, unit learning centers, and unit libraries. However, it is not intended for an individual copy to be provided to each MOS holder. The STP is obtainable on line from the Reimer Digital Library (RDL).

Tasks in this manual apply to both Active and Reserve Component soldiers.

The proponent of this publication is HQ TRADOC. Submit comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Department of the Army, Training Directorate, Ordnance Training Division, ATTN: ATCL-AO, 401 First Street, Suite 227, Fort Lee, VA 23801-1511.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

## CHAPTER 1

### Introduction

1-1. General. This soldier training publication (STP) identifies individual MOS training requirements for soldiers holding MOS 44B. Commanders, trainers, and soldiers should use it to plan, conduct, and evaluate individual training in units. The STP is the primary MOS reference for supporting self-development, evaluating MOS proficiency, and training of 44B soldiers. Commanders employ two primary methods to evaluate soldiers' proficiency:

- Commander's evaluation. Commander's evaluations are local tests or assessments of soldiers' performance of MOS-specific and common tasks critical to the unit mission. They may be conducted year-round.
- Common task test (CTT). CTTs are hands-on tests used to evaluate proficiency on common tasks. Alternate written tests are provided if equipment is not available for hands-on testing.

This publication is the soldier's primary reference to prepare for a commander's evaluation of MOS-specific tasks. It contains task summaries for all critical tasks specific to the MOS and skill level (SL). Commanders and trainers will use this soldier's manual/trainer's guide (SM/TG) to plan and conduct training and commander's evaluations.

Chapter 2, Trainer's Guide, contains information needed to plan training requirements for this MOS. The trainer's guide

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

Use this STP along with STP 21-1-SMCT (Soldier's Manual of Common Tasks, Skill Level 1), STP 21-24-SMCT (Soldier's Manual of Common Tasks, Skill Levels 2-4), Army training and evaluation programs (ARTEPs), FM 25-4 (How to Conduct Training Exercises), FM 25-5 (Training for Mobilization and War), FM 25-100 (Training the Force), and FM 25-101 (Battle-Focused Training) to establish effective training plans and programs that integrate soldier, leader, and collective tasks.

1-2. Task Summaries. Task summaries outline wartime performance requirements for each critical task in the STP. They provide both soldier and trainer with the information necessary to prepare, conduct, and evaluate critical task training. As a minimum, task summaries include information soldiers must know and skills they must perform to standard for each task. Following is the task summary format:

- Task number. The task number is a 10-digit number that identifies the task and skill level. Include the task number and title in any correspondence relating to the task.
- Task title. The task title identifies the action to be performed.
- Conditions. The task conditions statement describes the field or garrison conditions under which the task will be performed and identifies the equipment, tools, references, job aids, and supporting personnel that the soldier needs to perform the task in wartime.

- **Standards.** The task standards describe how well and to what level of proficiency the soldier must perform the task under wartime conditions. Standards are typically expressed in terms of accuracy, completeness, duration, sequence, speed, and tolerance.
- **Performance measures.** This section identifies specific actions that the soldier must accomplish to complete the task successfully. Performance measures appear in a GO/NO-GO rating format for easy evaluation. Some tasks may also include detailed training information in a Training Information Outline and an Evaluation Preparation Section. The Evaluation Preparation Section indicates necessary modifications to task performance in order to train and evaluate a task that can not be trained to the wartime standard under wartime conditions. It may also include special training and evaluation preparation instructions to accommodate these modifications and any instructions that should be given to the soldier before evaluation.
- **References.** This section identifies references that provide more detailed explanations of task performance requirements than are given in the task summary.
- **Warnings.** Warnings alert users to the possibility of immediate personal injury or equipment damage.
- **Notes.** Notes provide additional supportive explanations or tips relating to task performance.

1-3. **Soldier's Responsibilities.** Each soldier is responsible for performing individual tasks identified by the first-line supervisor based on the unit's mission-essential task list (METL). Soldiers must perform tasks to the standards included in the task summary. If soldiers have questions about tasks or which tasks in this manual they must perform, they are responsible for asking their first-line supervisor for clarification. First-line supervisors know how to perform each task or can direct soldiers to appropriate training materials, including current field manuals, technical manuals, and Army regulations. Soldiers are responsible for using these materials to maintain performance. They are also responsible for maintaining performance of all common tasks listed in the SMCTs at their current skill level and below.

Periodically, soldiers should ask their supervisor or another soldier to check their performance to ensure that they can perform the tasks.

1-4. **NCO Self-Development and the STP.** Self-development is a key component of leader development. Leaders follow planned, progressive, sequential self-development programs developed by the individual NCO and his or her first-line supervisor to enhance and sustain military competencies. Self-development consists of individual study, research, professional reading, practice, and self-assessment. The self-development concept requires NCOs, as Army professionals, to take responsibility for remaining current in all phases of their MOS. The STP is the NCO's primary source for maintaining MOS proficiency.

Another important resource for self-development is the Army Correspondence Course Program (ACCP). Refer to DA Pamphlet 351-20 (Army Correspondence Course Program Catalog) for detailed eligibility requirements and enrollment information. The catalog is available at local education centers or on line through the Army Institute for Professional Development (AIPD) web site, <http://www.atsc.army.mil/accp/aipd.htm>. The web site offers on-line enrollment.

1-5. **Commander's Responsibilities.** Commanders must ensure that their unit training plans prepare the unit for war by enabling soldiers to develop and sustain proficiency in their MOS and skill level tasks. Commanders should design unit training programs to provide individual training for all soldiers assigned to the unit and to evaluate soldier proficiency routinely as part of the commander's evaluation program. The unit training program should also integrate individual training with crew drills and other collective training. The MOS training plan provides information on which to base integration, cross-train, train-up, and sustainment training programs. Commanders should use the MOS training plan when developing unit training plans.



1-6. Trainer's Responsibilities. Training is the business of all unit leaders. First-line leaders are the principal trainers in the unit because they directly supervise soldiers and lead crews, squads, sections, and teams.

Trainers can use the MOS training plan to determine the critical tasks each soldier is responsible for. They should tell each soldier which tasks he or she must be able to perform. Trainers should evaluate task performance to determine which tasks each soldier can or cannot perform to standard. Soldiers who cannot perform a task to standard need further training. This STP helps the trainer do what trainers get paid to do; train. Developing effective training is explained in detail in FM 25-100 and FM 25-101.

Every task summary in this STP includes performance measures, which trainers may use year-round to determine if soldiers can perform critical tasks to the specified standards. The performance measures identify what the trainer needs to observe to score a soldier's performance. A blank space is provided for the trainer to check either the GO or NO-GO column for each performance measure. Some tasks require the trainer to watch the soldier perform them (evaluate the process). Other tasks call for the trainer to focus on the results of the soldier's performance (evaluate the product). Comments should not be written on the task summary.

Trainers can monitor the progress of their soldiers by recording task go/no-go results. Trainers may use DA Form 5164-R (Hands-On Evaluation) to record the performance measures a soldier passed or failed. The form, which may be locally reproduced, applies to all tasks in this STP. Trainers may have DA Form 5164-R overprinted with information unique to their training requirements before reproducing it. See Appendix A of this STP for a sample DA Form 5164-R with instructions.

Trainers may use DA Form 5165-R (Field Expedient Squad Book) to record hands-on go/no-go results for a group of soldiers (for example, a crew, section, or squad) having the same MOS and skill level. This form supports conduct of commander's evaluations, and can be used to record training results gathered in the field during slack time for all MOSs and skill levels. Use of this form is optional. See Appendix B for a sample DA Form 5165-R with instructions. Trainers should work with each soldier until tasks can be performed to specific task summary standards.

1-7. Training Support. References have been identified for each task to assist in planning and conducting training. A consolidated list of references identified by type, publication number, and title and a comprehensive glossary of acronyms, abbreviations, and definitions are included in this STP.



CHAPTER 2

Training Guide

44B CAREER FIELD DUTY POSITIONS			
Duty Position	Subject Area	Cross Train	Train-up/Merger
<b>Skill Level 1</b>			
Welder Metalworker Repairer Radiator Repairer Metal Body Painter Metal Drop Kit Repairer Marine Hull Repairer	1 - 12	NA	44B20/Welder 44B20/Metalworker Repairer 44B20/Marine Hull Repairer
<b>Skill Level 2</b>			
Welder Metalworker Repairer Marine Hull Repairer	1 - 12	NA	44E30/Machinist 44E30/Section Chief 44E30/Machine Operator Supervisor 44E30/Precision Machinist 44E30/Welder Supervisor 44E30/Metalworker Supervisor 44E30/Metalworker Inspector 44E30/Technical Inspector

2-1. General. The MOS Training Plan (MTP) 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 MTP should be used as a guide for conducting unit training and not a rigid standard. The MTP consists of two parts. Each part is designed to assist the commander in preparing a unit training plan which satisfies integration, cross training, training up, and sustainment training requirements for soldiers in this MOS.

Part One of the MTP shows the relationship of an MOS skill level between duty position and critical tasks. These critical tasks are grouped by task commonality into subject areas.

Section I lists subject area numbers and titles used throughout the MTP. These subject areas are used to define the training requirements for each duty position within an MOS.

Section II identifies the total training requirement for each duty position within an MOS and provides a recommendation for cross training and train-up/merger training.

- **Duty Position column.** This column lists the duty positions of the MOS, by skill level, which have different training requirements.
- **Subject Area column.** This column lists, by numerical key (see Section I), the subject areas a soldier must be proficient in to perform in that duty position.
- **Cross Train column.** This column lists the recommended duty position for which soldiers should be cross trained.
- **Train-up/Merger column.** This column lists the corresponding duty position for the next higher skill level or MOSC the soldier will merge into on promotion.

Part Two lists, by general subject areas, the critical tasks to be trained in an MOS and the type of training required (resident, integration, or sustainment).

- **Subject Area column.** This column lists the subject area number and title in the same order as Section I, Part One of the MTP.
- **Task Number column.** This column lists the task numbers for all tasks included in the subject area.
- **Title column.** This column lists the task title for each task in the subject area.
- **Training Location column.** This column identifies the training location where the task is first trained to soldier training publication 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, by brevity code (ANCOC, BNCOC, etc.), the resident course where the task was taught. Figure 2-1 contains a list of training locations and their corresponding brevity codes.

<b>AIT</b>	Advanced Individual Training
<b>UNIT</b>	Trained in the Unit

Figure 2-1. Training Locations

- **Sustainment Training Frequency column.** This column indicates the recommended frequency at which the tasks should be trained to ensure soldiers maintain task proficiency. Figure 2-2 identifies the frequency codes used in this column.

<b>BA</b>	- Biannually
<b>AN</b>	- Annually
<b>SA</b>	- Semiannually
<b>QT</b>	- Quarterly
<b>MO</b>	- Monthly
<b>BW</b>	- Bi-weekly
<b>WK</b>	- Weekly

Figure 2-2. Sustainment Training Frequency Codes

- **Sustainment Training Skill Level column.** This column lists the skill levels of the MOS for which soldiers must receive sustainment training to ensure they maintain proficiency to soldier's manual standards.

2-2. Subject Area Codes.

**Skill Level 1**

- 1 COMMON TASKS
- 2 BASIC TASKS
- 3 OXY-FUEL WELDING TASKS
- 4 SMAW EQUIPMENT TASKS
- 5 GMAW EQUIPMENT TASKS
- 6 GTAW EQUIPMENT TASKS
- 7 ARC WELDING TASKS
- 8 WINDOWS TASKS
- 9 FUEL TANKS/CELLS TASKS
- 10 RADIATORS TASKS
- 11 BODY WORK TASKS
- 12 WELDING TASKS

2-3. Duty Position Training Requirements.

See Chapter 2 Training Guide

2-4. Critical Tasks List.

**MOS TRAINING PLAN  
44B12**

## CRITICAL TASKS

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
<b>Skill Level 1</b>					
1. COMMON TASKS	091-44B-2001	Prepare DA Forms	AIT	AN	1/2
	091-44B-2002	Maintain Assigned Equipment	AIT	AN	1/2
	091-44B-2007	Identify Metals	AIT	AN	1/2
2. BASIC TASKS	091-44B-2015	Sharpen Twist Drills	AIT	AN	1/2
	091-44B-2030	Operate Trailer Mounted Welding Shop	AIT	AN	1/2
	091-44B-2093	Perform Drilling Operations	AIT	AN	1/2
	091-44B-2211	Interpret Shop Drawings & Sketches	AIT	AN	1/2
	091-44B-2266	Perform Shop Mathematics	AIT	AN	1/2
	091-44B-2267	Operate a Bench Grinder	AIT	AN	1/2
3. OXY-FUEL WELDING TASKS	091-44B-2017	Perform All Position Oxy-fuel Welding, Ferrous Metal	AIT	AN	1/2
	091-44B-2019	Perform Oxy-fuel Cutting Operations	AIT	AN	1/2
4. SMAW EQUIPMENT TASKS	091-44B-2026	Perform All Position SMAW Welding, Ferrous Metal	AIT	AN	1/2
	091-44B-2027	Weld Pipe with SMAW Welding Equipment	UNIT	AN	1/2
	091-44B-2028	Perform SMAW Welding on Armor Plate	AIT	AN	1/2
5. GMAW EQUIPMENT TASKS	091-44B-2034	Perform All Position GMAW Ferrous & Nonferrous Metal	AIT	AN	1/2
6. GTAW EQUIPMENT TASKS	091-44B-2040	Perform All Position GTAW, Ferrous Metal & Nonferrous Metal	AIT	AN	1/2
7. ARC WELDING TASKS	091-44B-2044	Perform Air Arc Cutting/Gouging	AIT	AN	1/2
	091-44B-2046	Perform Plasma Arc Cutting	AIT	AN	1/2
8. WINDOWS TASKS	091-44B-2048	Replace Vehicle Windows / Windshields		AN	1/2
	091-44B-2049	Cut Grind Laminated Safety Glass	AIT	AN	1/2



## CRITICAL TASKS

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
9. FUEL TANKS/CELLS TASKS	091-44B-2053	Prepare Fuel Tanks/Containers for Repair	UNIT	AN	1/2
	091-44B-2054	Repair Fuel Tanks/Containers	UNIT	AN	1/2
10. RADIATORS TASKS	091-44B-2058	Inspect Radiators	AIT	AN	1/2
	091-44B-2059	Repair Radiators	AIT	AN	1/2
11. BODY WORK TASKS	091-44B-2062	Perform Hydraulic Body Jack Operations	AIT	AN	1/2
	091-44B-2063	Perform Sanding Operations	UNIT	AN	1/2
	091-44B-2064	Repair Composite Materials	AIT	AN	1/2
	091-44B-2065	Analyze Repair Sequence	AIT	AN	1/2
	091-44B-2066	Perform Fiberglass Component Repair	AIT	AN	1/2
	091-44B-2071	Control Expansion/Contraction of Metals	AIT	AN	1/2
	091-44B-2075	Mix/Select Paint	UNIT	AN	1/2
	091-44B-2076	Prepare Surfaces for Painting	UNIT	AN	1/2
	091-44B-2077	Set Up Spray Painting Equipment	UNIT	AN	1/2
	091-44B-2078	Fabricate Structural Components	AIT	AN	1/2
	091-44B-2079	Replace Structural Components	AIT	AN	1/2
	091-44B-2080	Perform Riveting Operations	AIT	AN	1/2
12. WELDING TASKS	091-44B-2085	Interpret Welding Symbols	AIT	AN	1/2
	091-44B-2086	Visually Inspect Welds	AIT	AN	1/2



**CHAPTER 3**  
**MOS/Skill Level Tasks**

Skill Level 1

Subject Area 1: COMMON TASKS

**Identify Metals**  
**091-44B-2007**

**Conditions:** In a field or garrison environment, given carbon steel, cast iron, lead brass, copper, aluminum, stainless steel coupons, oxyacetylene welding set, welder's tool kit, welding apron, sander, grinder, file, safety equipment, applicable technical publications, and supervisor/assistance.

**Standards:** Identify each type of metal using visual, spark, file methods and the SAE numbering system methods IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Determine the category of metal (ferrous or nonferrous).	—	—
5. Identify metal by appearance test.	—	—
6. Identify metal by fracture test.	—	—
7. Identify metal by spark test.	—	—
8. Identify metal by torch test.	—	—
9. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-237

**Related**

**Maintain Assigned Equipment  
091-44B-2002**

**Conditions:** In a field or garrison environment, given required tools, measuring devices, safety equipment, additional tools, equipment specified in TMs, repair parts, supplies, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Maintain assigned equipment IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and TMDE.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Perform preventive maintenance checks and services (PMCS).	—	—
5. Annotate actions taken on DA Form 5988-E.	—	—
6. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TM 9-243

**Related**

**Prepare DA Forms  
091-44B-2001**

**Conditions:** In a field or garrison environment, given DA Forms required for documentation of maintenance and repairs, applicable technical publications, and supervision/assistance.

**Standards:** Prepare DA Forms IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select applicable form(s).	—	—
2. Select applicable technical publications.	—	—
3. Perform maintenance or repair procedure.	—	—
4. Annotate actions taken on applicable DA Form.	—	—
5. Ensure form(s) are checked by supervisor.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
DA PAM 738-750

**Related**

Subject Area 2: BASIC TASKS

**Interpret Shop Drawings & Sketches**

**091-44B-2211**

**Conditions:** In a field or garrison environment, given shop drawings and sketches, ruler, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Interpret shop drawings and sketches IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable shop drawings and sketches.	—	—
3. Interpret the shop drawing.	—	—
4. Interpret the shop sketch.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
FM 5-553

**Related**

**Perform Drilling Operations  
091-44B-2093**

**Conditions:** In a field or garrison environment, given item to be drilled, file, center punch, 1/8 inch twist drill bit, 1/4 inch twist drill bit, 3/8 inch twist drill bit, 1/2 inch twist drill bit, hammer, upright drilling machine, face shield, goggles, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform drilling operations IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Set up the drill press.	—	—
5. Select drill bit.	—	—
6. Install drill bit.	—	—
7. Operate the drill press.	—	—
8. Visually inspect results.	—	—
9. Annotate actions taken on the DA Form 5988-E.	—	—
10. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
 TC 9-524

**Related**

**Perform Shop Mathematics**  
**091-44B-2266**

**Conditions:** In a field or garrison environment, given shop mathematical problems, ruler, plain paper, pencil, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform shop mathematics IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable materials.	—	—
3. Solve shop mathematical problems.	—	—
4. Ensure work is checked by supervisor.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-515

**Related**



**Sharpen Twist Drills  
091-44B-2015**

**Conditions:** In a field or garrison environment, given a utility grinder, twist drill, water quench, safety equipment, additional tools, equipment specified in the TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Sharpen twist drills IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Set up utility grinding machine.	—	—
5. Grind lips to point angle.	—	—
6. Grind lips to equal length.	—	—
7. Grind relief angle.	—	—
8. Grind chisel edge angle.	—	—
9. Thin web, if required.	—	—
10. Measure the angles and length of both lips.	—	—
11. Annotate actions taken on the DA Form 5988-E.	—	—
12. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-524

**Related**

**Operate a Bench Grinder  
091-44B-2267**

**Conditions:** In a field or garrison environment, given a grinding requirement, bench utility grinder, grinding wheels, welder's tool kit, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Operate a bench grinder IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Set up bench utility grinder.	—	—
5. Select grinding wheel.	—	—
6. Install grinding wheel.	—	—
7. Perform bench grinder operations.	—	—
8. Visually inspect results.	—	—
9. Annotate actions taken on the DA Form 5988-E.	—	—
10. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
 TC 9-524

**Related**

**Operate Trailer Mounted Welding Shop  
091-44B-2030**

**Conditions:** In a field or garrison environment, given a welding shop (trailer mounted) with accessories, general mechanic's tool kit, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Operate trailer mounted welding shop IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Perform SMAW operations.	—	—
a. Set up the trailer mounted welding shop for SMAW operations.		
b. Perform SMAW operations.		
5. Perform GTAW operations.	—	—
a. Set up the trailer mounted welding shop for GTAW operations.		
b. Perform GTAW operations.		
6. Perform GMAW operations.	—	—
a. Set up the trailer mounted welding shop for GMAW operations.		
b. Perform GMAW operations.		
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

<b>Required</b>	<b>Related</b>
TC 9-237	
TM 9-3431-265-14&P	
TM 9-3431-266-14&P-1	
TM 9-3431-266-14&P-2	
TM 9-3431-272-13&P	

Subject Area 3: OXY-FUEL WELDING TASKS

**Perform Oxy-fuel Cutting Operations  
091-44B-2019**

**Conditions:** In a field or garrison environment, given a welder's tool kit, oxy-fuel welding equipment, low carbon steel coupons, 1/8 inch mild steel welding rod, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform oxy-fuel cutting operations IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Prepare materials for oxy-fuel cutting operations.	—	—
a. Determine the size and type of material.		
b. Lay out materials, if appropriate.		
5. Set up oxyacetylene welding set with cutting attachment.	—	—
a. Select appropriate cutting tip.		
b. Adjust oxygen and acetylene working pressure.		
6. Perform oxy-fuel cutting.	—	—
7. Visually inspect the finished cut.	—	—
8. Annotate actions taken on the DA Form 5988-E.	—	—
9. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-237

**Related**

**Perform All Position Oxy-fuel Welding, Ferrous Metal  
091-44B-2017**

**Conditions:** In a field or garrison environment, given a welder's tool kit, oxy-fuel welding equipment, low carbon steel coupons, 1/8 inch mild steel welding rod, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform all position oxy-fuel welding, ferrous metal IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Prepare materials for oxy-fuel welding.	—	—
a. Determine and select the size and type of material.		
b. Select filler metal.		
c. Lay out materials, if appropriate.		
d. Clean metal to be welded.		
5. Set up oxy-fuel welding equipment.	—	—
a. Select appropriate welding tip.		
b. Adjust oxygen and acetylene working pressure.		
c. Select type of joint (tee, butt, corner, lap, edge).		
6. Perform oxy-fuel welding.	—	—
a. Align materials.		
b. Tack weld joint.		
c. Weld joint in correct position.		
d. Visually inspect the finished weld.		
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-237

**Related**

Subject Area 4: SMAW EQUIPMENT TASKS

**Perform SMAW Welding on Armor Plate  
091-44B-2028**

**Conditions:** In a field or garrison environment, given SMAW equipment, welder's tool kit, armor plate coupons, 308 series electrodes, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Prepare materials for SMAW welding on armor plate. <ul style="list-style-type: none"> <li>a. Determine size and type of material.</li> <li>b. Lay out materials, if appropriate.</li> <li>c. Prepare armor plate for welding.</li> </ul>	—	—
5. Set up SMAW welding equipment and weld armor plate. <ul style="list-style-type: none"> <li>a. Select type of joint (tee, butt, corner, lap, edge).</li> <li>b. Weld in correct position.</li> <li>c. Visually inspect the finished weld.</li> </ul>	—	—
6. Annotate actions taken on the DA Form 5988-E.	—	—
7. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-237

**Related**

**Weld Pipe with SMAW Welding Equipment  
091-44B-2027**

**Conditions:** In a field or garrison environment, given SMAW equipment, welder's tool kit, low carbon steel pipe, 1/8 inch E 6010 electrodes, trailer mounted welding shop, protective clothing and equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Weld pipe with SMAW welding equipment IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Prepare SMAW equipment and metal.	—	—
5. Weld the pipe in the fixed position.	—	—
6. Visually inspect the finished weld.	—	—
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
 TC 9-237

**Related**

**Perform All Position SMAW Welding, Ferrous Metal  
091-44B-2026**

**Conditions:** In a field or garrison environment, given SMAW equipment, welder's tool kit, protective clothing and equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform all position SMAW welding, ferrous metal IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Prepare materials for all position SMAW welding. <ul style="list-style-type: none"> <li>a. Determine and select the size and type of material.</li> <li>b. Select filler material.</li> <li>c. Lay out materials, if appropriate.</li> <li>d. Clean metal to be welded.</li> </ul>	—	—
5. Set up all position SMAW welding equipment. <ul style="list-style-type: none"> <li>a. Select appropriate welding tip.</li> <li>b. Select type of joint (tee, butt, corner, lap, edge).</li> </ul>	—	—
6. Perform all position SMAW welding, ferrous metal. <ul style="list-style-type: none"> <li>a. Align materials.</li> <li>b. Tack weld joint.</li> <li>c. Weld joint in correct position.</li> <li>d. Visually inspect the finished weld.</li> </ul>	—	—
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
 TC 9-237

**Related**



Subject Area 5: GMAW EQUIPMENT TASKS

**Perform All Position GMAW Ferrous & Nonferrous Metal  
091-44B-2034**

**Conditions:** In a field or garrison environment, given GMAW equipment or a trailer mounted welding shop, welder's tool kit, aluminum plate, stainless steel coupons, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform all position GMAW ferrous and nonferrous metal IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Prepare materials for all position GMAW ferrous and nonferrous metal. <ul style="list-style-type: none"> <li>a. Determine and select the size and type of material.</li> <li>b. Select filler material.</li> <li>c. Lay out materials, if appropriate.</li> </ul>	—	—
5. Set up all position GMAW equipment. <ul style="list-style-type: none"> <li>a. Select appropriate welding tip.</li> <li>b. Select type of joint (open corner, tee).</li> </ul>	—	—
6. Perform all position GMAW ferrous and nonferrous metal operations. <ul style="list-style-type: none"> <li>a. Align materials.</li> <li>b. Weld joint in correct position.</li> <li>c. Visually inspect the finished weld.</li> </ul>	—	—
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
 TC 9-237

**Related**

Subject Area 6: GTAW EQUIPMENT TASKS

**Perform All Position GTAW, Ferrous Metal & Nonferrous Metal  
091-44B-2040**

**Conditions:** In a field or garrison environment, given GTAW equipment, welder's tool kit, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform all position GTAW welding ferrous and nonferrous metal IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Perform GTAW welding, ferrous and nonferrous metal operations.	—	—
a. Weld ferrous metal using GTAW welding equipment.		
(1) Set up GTAW welding equipment for ferrous metal welding operations.		
(2) Perform GTAW welding, ferrous metal operations.		
(3) Visually inspect the finished weld.		
b. Weld nonferrous metal using GTAW welding equipment.		
(1) Set up GTAW welding equipment for ferrous metal welding operations.		
(2) Perform GTAW welding, nonferrous metal operations.		
(3) Visually inspect the finished weld.		
5. Annotate actions taken on DA Form 5988-E.	—	—
6. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-237

**Related**

Subject Area 7: ARC WELDING TASKS

**Perform Plasma Arc Cutting**  
**091-44B-2046**

**Conditions:** In a field or garrison environment, given a welding shop trailer mounted, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform plasma arc cutting IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Lay out materials, if appropriate.	—	—
5. Set up plasma arc cutting equipment.	—	—
6. Perform plasma arc cutting.	—	—
7. Visually inspect finished cut.	—	—
8. Annotate actions taken on DA Form 5988-E.	—	—
9. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-237

**Related**

**Perform Air Arc Cutting/Gouging  
091-44B-2044**

**Conditions:** In a field or garrison environment, given a trailer mounted welding shop, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform air arc cutting/gouging IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Lay out materials, if appropriate.	—	—
5. Set up air arc cutting/gouging equipment. <ul style="list-style-type: none"> <li>a. Select electrode.</li> <li>b. Adjust amperage and current.</li> <li>c. Adjust air supply.</li> <li>d. Establish arc and air stream.</li> </ul>	—	—
6. Perform air arc cutting and gouging operations. <ul style="list-style-type: none"> <li>a. Perform air arc cutting.</li> <li>b. Measure workpiece for accuracy.</li> <li>c. Perform air arc gouging.</li> <li>d. Measure workpiece for accuracy.</li> </ul>	—	—
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

<b>Required</b>	<b>Related</b>
TC 9-237	
TM 9-3431-265-14&P	
TM 9-3431-266-14&P-1	
TM 9-3431-266-14&P-2	
TM 9-3431-272-13&P	

Subject Area 8: WINDOWS TASKS

**Cut Grind Laminated Safety Glass**  
**091-44B-2049**

**Conditions:** In a field or garrison environment, given light machine oil, laminated safety glass, methanol alcohol, combat vehicle windshield frame, rubber weather stripping, liquid soap, belt edger, cutting board, abrasive belts, glass cutting tool kit, water, safety equipment, additional tools, equipment specified in TMs, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Cut/grind laminated safety glass IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Cut laminated glass. <ul style="list-style-type: none"> <li>a. Lay out pattern of glass to be cut.</li> <li>b. Cut both sides of glass.</li> <li>c. Cut plastic between sheets.</li> </ul>	—	—
5. Grind laminated glass. <ul style="list-style-type: none"> <li>a. Select/install abrasive belt.</li> <li>b. Turn on water supply.</li> <li>c. Turn on belt edger.</li> <li>d. Adjust water flow.</li> <li>e. Grind edge of glass.</li> <li>f. Bevel edge of glass.</li> <li>g. Check dimension of glass.</li> </ul>	—	—
6. Annotate actions taken on the DA Form 5988-E.	—	—
7. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-510

**Related**

**Replace Vehicle Windows / Windshields**  
**091-44B-2048**

**Conditions:** In a field or garrison environment, given laminated safety glass, combat vehicle windshield/window frame, rubber weather stripping, glass cutting tools, rubber apron, belt edger, additional tools,, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Replace vehicle windows/windshields IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Determine the size and type of glass required for windshield/window.	—	—
5. Select glass.	—	—
6. Prepare glass for installation.	—	—
7. Install glass.	—	—
8. Check for proper fit and leaks.	—	—
9. Annotate corrective actions taken on the DA Form 5988-E.	—	—
10. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-510

**Related**

Subject Area 9: FUEL TANKS/CELLS TASKS

**Repair Fuel Tanks/Containers**

**091-44B-2054**

**Conditions:** In a field or garrison environment, given a fuel tank/container, oxy-fuel welding set, explosive meter, welder's tool kit, air compressor, rubber plug set, non-electric soldering copper, 18-gauge galvanized steel, tin snips, soft solder, soldering flux, fire extinguisher, solvent, clean rags, flexible exhaust hose, water hose, steam cleaner, radiator test tank, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Repair fuel tanks/containers IAW applicable technical publications. When task is completed, fuel tanks/containers must be fully mission capable.

**Performance Measures**

	<u>GO</u>	<u>NO GO</u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Inspect fuel tank/container for damage.	—	—
5. Repair fuel tank/container.	—	—
6. Inspect fuel tank/container repairs.	—	—
7. Annotate actions taken on DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
 TC 9-237  
 TC 9-510

**Related**

**Prepare Fuel Tanks/Containers for Repair  
091-44B-2053**

**Conditions:** In a field or garrison environment, given a fuel tank/container, steam cleaner, explosive meter, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Prepare fuel tanks/containers for repair IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Drain fuel tank.	—	—
5. Clean fuel tank.	—	—
6. Repair fuel tank as required.	—	—
7. Test for combustible gases.	—	—
8. Annotate actions taken on the DA Form 5988-E.	—	—
9. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-237  
TC 9-510

**Related**



Subject Area 10: RADIATORS TASKS

**Repair Radiators**

**091-44B-2059**

**Conditions:** In a field or garrison environment, given a radiator, radiator plug set, probing tool, rubber apron, oxy-fuel welding set, solder/soldering flux, welder's tool kit, 1/16 inch copper coupons, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Repair radiators IAW applicable technical publications. When task is completed, radiator must be fully mission capable.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Inspect radiator and determine serviceability.	—	—
5. Determine fault(s).	—	—
6. Clean area to be soldered.	—	—
7. Cut patch as required.	—	—
8. Repair tin area as required.	—	—
9. Solder damaged area.	—	—
10. Test radiator for leaks using compressed air.	—	—
11. Annotate corrective actions taken on the DA Form 5988-E.	—	—
12. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
 TC 9-237  
 TM 750-254

**Related**

**Inspect Radiators  
091-44B-2058**

**Conditions:** In a field or garrison environment, given a radiator, test stand, air compressor, metal body repair kit, plug set, flushing gun, air compressor, goggles or face shield, leathers and gloves, additional tools, equipment specified in TMs, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Inspect radiators IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Inspect radiator and determine serviceability.	—	—
5. Determine fault(s).	—	—
6. Annotate actions needed on DA Form 5988-E.	—	—
7. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TM 750-254

**Related**

Subject Area 11: BODY WORK TASKS

**Control Expansion/Contraction of Metals**  
**091-44B-2071**

**Conditions:** In a field or garrison environment, given a body and fender repair kit, metal body repair tools (electric, pneumatic, and hydraulic tools), damaged vehicle, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Control expansion/contraction of metals IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Perform metal expansion procedures.	—	—
5. Perform hammering operations.	—	—
6. Perform hot shrinking of metal.	—	—
7. Perform cold shrinking of metal.	—	—
8. Ensure supervisor inspects results.	—	—
9. Annotate actions taken on the DA Form 5988-E.	—	—
10. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-510

**Related**

**Perform Fiberglass Component Repair  
091-44B-2066**

**Conditions:** In a field or garrison environment, given a vehicle component, fiberglass repair kit, electric disk sander, mixing tray, sanding disks, sandpaper, respirator, protective clothing and equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform fiberglass component repair IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Prepare fiberglass resin.	—	—
5. Apply polyester resin to area requiring repair.	—	—
6. Repair damaged area.	—	—
7. Visually inspect finished repairs.	—	—
8. Annotate actions taken on the DA Form 5988-E.	—	—
9. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-510

**Related**

**Analyze Repair Sequence**  
**091-44B-2065**

**Conditions:** In a field or garrison environment, given a damaged vehicle, necessary and additional tools, equipment specified in TMs, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Analyze repair sequence IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Ensure task is within shop capability/authorization.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Inspect the damage.	—	—
5. Determine sequence of damage.	—	—
6. List repair sequence.	—	—
7. Annotate actions taken on DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-510

**Related**

**Repair Composite Materials  
091-44B-2064**

**Conditions:** In a field or garrison environment, given epoxy repair kit, electric disk sander and disks, sanding block (hand), sandpaper, pneumatic oscillating sander, welder's tool kit, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Repair composite materials IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Prepare area for repair.	—	—
5. Repair fiberglass equipment/components/material.	—	—
6. Repair Kevlar equipment/components/material.	—	—
7. Ensure supervisor inspects the repair.	—	—
8. Annotate actions taken on the DA Form 5988-E.	—	—
9. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-510

**Related**

**Perform Sanding Operations  
091-44B-2063**

**Conditions:** In a field or garrison environment, given an oxy-fuel welding outfit, welding equipment, body and fender repair kit, disk sander, body fillers, plastic spreader, vixen file, putty knife, sanding block, respiratory protection, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform sanding operations IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Select and install sanding disk on disk sander.	—	—
5. Sand the required area.	—	—
6. Visually inspect sanded area.	—	—
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
 TC 9-510

**Related**

**Mix/Select Paint  
091-44B-2075**

**Conditions:** In a field or garrison environment, given vehicle body components, undercoating material, drum pump, airless spray gun, undercoating material, drum pump, airless spray gun, paint booth, eye protection, respirator, gloves, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Mix/select paint IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Select paint.	—	—
5. Mix paint.	—	—
6. Annotate actions taken on the DA Form 5988-E.	—	—
7. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TM 43-0139

**Related**



**Perform Hydraulic Body Jack Operations  
091-44B-2062**

**Conditions:** In a field or garrison environment, given a hydraulic body jack, necessary and additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform hydraulic body jack operations IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Use proper attachments on body jack.	—	—
5. Remove dents using body jack.	—	—
6. Perform direct hammering with the body jack, as required.	—	—
7. Perform indirect hammering with the body jack, as required.	—	—
8. Visually inspect the completed job.	—	—
9. Annotate corrective actions taken on the DA Form 5988-E.	—	—
10. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TC 9-510

**Related**

**Perform Riveting Operations  
091-44B-2080**

**Conditions:** In a field or garrison environment, given installation and additional tools, rivets, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Perform riveting operations IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Determine size and select rivets.	—	—
5. Install rivets.	—	—
6. Visually inspect finished work.	—	—
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-510

**Related**

**Replace Structural Components  
091-44B-2079**

**Conditions:** In a field or garrison environment, given a body and fender repair kit, metal body repair tools (electric, pneumatic, and hydraulic tools), damaged vehicle, safety equipment, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Replace structural components IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Identify structural components for replacement.	—	—
5. Replace structural components.	—	—
6. Annotate actions taken on the DA form 5988-E.	—	—
7. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**

- TB 9-2300-247-40
- TC 9-510

**Related**

**Fabricate Structural Components  
091-44B-2078**

**Conditions:** In a field or garrison environment, given a body and fender repair kit, metal body repair tools (electric, pneumatic, and hydraulic tools), damaged vehicle, safety equipment, additional tools, equipment specified in TMs, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Fabricate structural components IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Perform hammering operations.	—	—
5. Perform hydraulic jack operations.	—	—
6. Perform filling procedures.	—	—
7. Perform filing procedures.	—	—
8. Perform sanding procedures.	—	—
9. Mix body plastics.	—	—
10. Apply body plastics.	—	—
11. Annotate actions taken on the DA Form 5988-E.	—	—
12. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**

**Required**  
TB 9-2300-247-40  
TC 9-510

**Related**

**Set Up Spray Painting Equipment  
091-44B-2077**

**Conditions:** In a field or garrison environment, given vehicle body components, undercoating material, drum pump, airless spray gun, undercoating material, drum pump, airless spray gun, portable electrical drill, 1/2 inch diameter drill, paint booth, eye protection, respirator, gloves, additional tools, equipment specified in TMs, repair parts, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Set up painting equipment IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Select spray paint equipment.	—	—
5. Assemble spray paint equipment.	—	—
6. Arrange equipment for spraying.	—	—
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TM 43-0139

**Related**

**Prepare Surfaces for Painting  
091-44B-2076**

**Conditions:** In a field or garrison environment, given vehicle body components, undercoating material, drum pump, airless spray gun, undercoating material, drum pump, airless spray gun, portable electrical drill, 1/2 inch diameter drill, paint booth, eye protection, respirator, gloves, additional tools, equipment specified in TMs, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Prepare surfaces for painting IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Clean surface to be painted.	—	—
5. Sand surface if necessary.	—	—
6. Visually inspect surface.	—	—
7. Annotate actions taken on the DA Form 5988-E.	—	—
8. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TM 43-0139

**Related**

Subject Area 12: WELDING TASKS

**Visually Inspect Welds**  
**091-44B-2086**

**Conditions:** In a field or garrison environment, given completed welds, applicable maintenance forms and technical publications, and supervision/assistance.

**Standards:** Visually inspect welds IAW applicable technical publications.

<b>Performance Measures</b>	<u><b>GO</b></u>	<u><b>NO GO</b></u>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable tools and equipment.	—	—
3. Practice shop safety and maintenance discipline.	—	—
4. Inspect welds.	—	—
5. Determine serviceability.	—	—
6. Annotate findings on the DA Form 5988-E.	—	—
7. Maintain tools and equipment.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-237

**Related**

**Interpret Welding Symbols**  
**091-44B-2085**

**Conditions:** In a field or garrison environment, given shop drawings, applicable technical publications, and supervision/assistance.

**Standards:** Interpret welding symbols IAW applicable technical publications.

<b>Performance Measures</b>	<b><u>GO</u></b>	<b><u>NO GO</u></b>
1. Select and use applicable technical publications.	—	—
2. Select and use applicable shop drawings.	—	—
3. Identify welding symbols.	—	—
4. Interpret welding symbols.	—	—
5. Identify welding joint designs.	—	—

**Evaluation Guidance:** Score the soldier GO if all steps are passed . Score the soldier NO-GO if any step is failed . If the soldier fails any step, show what was done wrong and how to do it correctly.

**References**  
**Required**  
TC 9-237

**Related**



**APPENDIX A -****HANDS-ON EVALUATION (DA FORM 5164-R)  
INSTRUCTIONS  
(Excerpted from STP 21-24-SMCT, Appendix C)**

DA Form 5164-R (Hands-On Evaluation) allows the trainer to keep a record of the performance measures a soldier passes or fails on each task.

**Before evaluation:**

1. Obtain a blank copy of DA Form 5164-R, which you may locally reproduce on 8 ½" x 11" paper.
2. Enter the task title and 10-digit number from the STP task summary.
3. In Column a, enter the performance measure numbers from the task summary.
4. In Column b, enter the performance measure corresponding to the number in Column a (you may abbreviate this information if necessary).
5. Locally reproduce the partially completed form when evaluating more than one soldier on the task or when evaluating the same soldier more than once.

**During evaluation:**

1. Enter the date just before evaluating the soldier's task performance.
2. Enter the evaluator's name, the soldier's name, and the unit.
3. For each performance measure in Column b, enter a check in Column c (PASS) or Column d (FAIL), as appropriate.
4. Compare the number of performance measures the soldier passes (and, if applicable, which ones) against the task standards specified in the task summary. If the standards are met or exceeded, check the GO block under STATUS; otherwise, check the NO-GO block.

<b>HANDS-ON EVALUATION</b>		DATE	
For use of this form, see AR 350-57; the proponent agency is ODCSOPS			
TASK TITLE		TASK NUMBER	
ITEM a	PERFORMANCE STEP TITLE b	SCORE (Check One)	
		PASS c	FAIL d
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
EVALUATOR'S NAME		UNIT	
SOLDIER'S NAME		STATUS <input type="checkbox"/> GO <input type="checkbox"/> NO GO	

DA FORM 5164-R, SEP 85  
USAPPC V2.00

EDITION OF DEC 82 IS OBSOLETE

**APPENDIX B -****FIELD EXPEDIENT SQUAD BOOK (DA FORM 5165-R)  
INSTRUCTIONS  
(Excerpted from STP 21-24-SMCT, Appendix C)**

DA Form 5165-R (Field Expedient Squad Book) allows the trainer to keep a record of task proficiency for a group of soldiers.

**Before evaluation:**

1. Obtain a blank copy of DA Form 5165-R, which you may locally reproduce on 8 ½" x 11" paper.
2. Locally reproduce the partially completed form if you are evaluating more than nine soldiers.

**During evaluation:**

1. Enter the names of the soldiers you are evaluating, one name per column, at the top of the form.
2. Under STATUS, record (in pencil) the date in the GO block if the soldier demonstrated task proficiency to soldier's manual standards. Keep this information current by always recording the most recent date on which the soldier demonstrated task proficiency. Record the date in the NO-GO block if the soldier failed to demonstrate task proficiency to soldier's manual standards. Soldiers who failed to perform the task should be retrained and reevaluated until they can meet the standards. When the standards are met, enter the date in the appropriate GO block and erase the previous entry from the NO-GO block.

**After evaluation:**

1. Read down each column (GO/NO-GO) to determine the training status of an individual. This will give you a quick indication of which tasks a soldier needs training on.
2. Read across the rows for each task to determine the training status of all soldiers. You can readily see which tasks to focus training on.
3. Line through the STATUS column of any soldier who leaves the unit.



**GLOSSARY****Section I**  
**Abbreviations**

<b>AC</b>	Active Component
<b>ACCP</b>	Army Correspondence Course Program
<b>AIPD</b>	Army Institute for Professional Development
<b>AIT</b>	advanced individual training
<b>AMSS</b>	Army Materiel Status System
<b>AN</b>	annually
<b>ANCOC</b>	Advanced Noncommissioned Officers Course
<b>AR</b>	Army regulation
<b>ARTEP</b>	Army training and evaluation program
<b>BA</b>	biannually
<b>BDAR</b>	battle damage assessment and repair
<b>BNCOC</b>	Basic Noncommissioned Officers Course
<b>BW</b>	biweekly
<b>CTT</b>	common task test
<b>DA</b>	Department of the Army
<b>DA Form</b>	Department of the Army form
<b>DA Pam</b>	Department of the Army pamphlet
<b>FM</b>	field manual
<b>HQ</b>	Headquarters
<b>IAW</b>	in accordance with
<b>METL</b>	mission essential task list
<b>MO</b>	monthly
<b>MOS</b>	military occupational specialty
<b>MOSC</b>	military occupational specialty code
<b>MTP</b>	MOS training plan

<b>NA</b>	not applicable
<b>NCO</b>	noncommissioned officer
<b>PLL</b>	prescribed load list
<b>PMCS</b>	preventive maintenance checks and services
<b>QT</b>	quarterly
<b>RC</b>	Reserve Component
<b>RDL</b>	Reimer Digital Library
<b>SA</b>	semiannual
<b>SL</b>	skill level
<b>SM/TG</b>	soldier's manual/trainer's guide
<b>SMCT</b>	soldier's manual of common tasks
<b>STP</b>	soldier training publication
<b>TM</b>	technical manual
<b>TMDE</b>	test measurement and diagnostic equipment
<b>TRADOC</b>	Training and Doctrine Command
<b>USAOC&amp;S</b>	United States Army Ordnance Center and School
<b>WK</b>	weekly

## REFERENCES

### Required Publications

Required publications are sources that users must read in order to understand or to comply with this publication.

#### Department of Army Pamphlets

DA PAM 738-750                      Functional Users Manual for The Army Maintenance Management System (TAMMS) (This Item is Included on EM 0001) 1 August 1994

#### Field Manuals

FM 5-553                              General Drafting 6 January 1984

#### Technical Bulletins

TB 9-2300-247-40                      Tactical Wheel Vehicles: Repair of Frames (This Item is Included on EM 0178) 4 December 1990

#### Technical Manuals

TM 43-0139                              Painting Instructions for Army Materiel (Reprinted W/Basic Incl C1-3)(This Item is Included on EM 0178) 27 July 1988

TM 5-805-7                              Welding: Design, Procedures, and Inspections (AFM 88-44, CHAP7) 20 May 1985

TM 750-254                              Cooling Systems, Tactical Vehicles (Reprinted w/Basic Incl C1-2)(This Item is Included on EM 0178) 29 March 1972

TM 9-243                                  Use And Care of Hand Tools And Measuring Tools M6290-AJ-MAN-010; To 32-1-101; TM-10209-10/1 (Reprinted W/Basic InclC1-2) (This Item is Included on EM 0178) 12 December 1983

TM 9-3431-265-14&P                      Operator's, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts List for Welding Machines(Hobart Brothers Co., Models RCC-610, 27,H4 and GA-600)(NSN 3431-00-935-7913) 8 February 1988

TM 9-3431-266-14&P-1                      Operator's, Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools List for Welding Machine Model DCC-353-P (NSN 3431-01-079-8439)(This Item is Included on EM 0072) 5 August 1988

TM 9-3431-266-14&P-2                      Operator's, Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools List for Welding Machine Model DCC-353-P (NSN 3431-01-079-8439)(This Item is Included on EM 0072) 5 August 1988

TM 9-3431-272-13&P                      Operator's, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Welding Shop, Trailer Mounted Model 11838792 (NSN 3431-01-341-6232)(This Item is Included on EM 0072) 26 October 1994

#### Training Circulars

TC 9-237                                  Operator's Circular Welding Theory and Application (This item is included on EM 0028) 7 May 1993

TC 9-510                                  Metal Body Repair and Related Operations 30 September 1993

TC 9-515                                  Shop Mathematics 24 December 1990

TC 9-524                                  Fundamentals of Machine Tools 29 October 1996

**Army Correspondence Course Program Subcourses**

ACCP OD 1650	Welding Theory
ACCP OD 1651	Welding Operations I
ACCP OD 1654	Welding Operations II
OD 0425	Welding
OD 1650	Welding Theory
OD 1651	Welding Operations, I
OD 1654	Welding Operations, II




**STP 9-44B12-SM-TG**  
**22 March 2001**

By Order of the Secretary of the Army:

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