



COLLISION REPAIR TECHNOLOGY CONTEST DESCRIPTION

PURPOSE

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of collision repair technology.

First, refer to General Regulations, Page 9.

CLOTHING REQUIREMENT

Safe and presentable clothing. (Official SKILL/USA uniform not required). Safety glasses with side shields or goggles. (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.)

ELGIBILITY

Open to active SkillsUSA members enrolled in programs with collision repair technology as the occupational objective.

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee. Basic equipment of an auto body and refinishing Laboratory.

Materials for metalworking phase:

1. Identical fenders to be repaired
2. Plastic filler
3. Plastic filler mixing boards and spreaders
4. Latex & Non-Latex gloves

Materials for plastic repair phase:

1. Plastic panels to be repaired
2. Plastic repair material & cleaning solvent
3. Mixing boards and spreaders

Materials for estimating phase:

1. Vehicle owner's name and address
2. Scratch pads
3. Estimate sheets

4. Estimate books (Mitchell manuals)
 5. Calculators
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2. Supplied by the contestant:
 - a. Dust respirator
 - b. Body files
 - c. Dollies
 - d. Various metal finishing hammers
 - e. 6" DA sander & backing pad
 - f. Grinder
 - g. Drill for plastic tab repair
 - h. Die grinder
 - i. Cartridge-type respirator (charcoal-filtered)
 - j. Welding goggles
 - k. Welding gloves
 - l. Appropriate grits & types of sandpaper for hand and/or DA sanding
 - m. Grinding discs
 - n. Welding jacket
 - o. Skull cap
 - p. Welding respirator
 - q. Welding helmet
 - r. Face shield
 - s. Air tool fittings (high profile 1/4 fnpt and 1/4 mnpt)
 - t. 9/16" and 5/8" wrenches
 - u. Sanding pads
 - v. Sanding blocks
 - w. Tape measure
 - x. One-page, typewritten résumé
 - y. Safety Glasses

SCOPE OF CONTEST

The contest will be consistent with the Collision Repair/Refinishing Technician task List outlined in the guidelines published by the National Institute for Automotive Service Excellence (ASE) and the National Technicians Education Foundation (NATEF), www.natef.org. Contestants will demonstrate their ability to perform jobs of skills selected from the standards mentioned above as determined by the SkillsUSA Championships technical committee.

Skill Performance

The contest includes a series of workstations, a manually written estimate and an interview process designed to assess skills in the following areas: metalwork, welding, plastic repair, structural analysis and estimating. The overall appearance of the finished product, speed and proper safety practices will be judged.

Standards and Competencies

CRT 1.0 – Repair depressed area(s) on a steel panel with plastic body filler to related tasks in National Automotive Technicians Foundation (NATEF) Collision Repair / Refinishing Non-structural Analysis and Damage Repair (B3) Technical Standards

- 1.1 Model proper safety procedures
- 1.2 Clean contaminants from damaged panel
- 1.3 Locate surface irregularities on a damaged panel
- 1.4 Remove finish from damaged area(s) as necessary
- 1.5 Apply hammer and dolly techniques to repair damage
 - 1.5.1 Differentiate between pressure in relation to the concept of force to realign a component.
 - 1.5.2 Straighten and rough out contours of damaged panels to a suitable condition for body filling using power tools, hand tools, and weld-on pull attachments
- 1.6 Mix and apply plastic body filler on a steel panel
 - 1.6.1 Determine the relative proportion of the desired versus the undesired ingredients or elements of a mixture, and determine if that proportion is within the manufacturer's specifications
 - 1.6.2 Describe chemical reactions that occur in various compounds and substances
 - 1.6.3 Identify the role an additive or catalyst plays in the mixing of plastic fillers
 - 1.6.4 Define the criticality of metals with different hardness depending upon the function and location of the metal as well as how plastic fillers adhere to metal
- 1.7 Rough sand cured body filler to contour
- 1.8 Finish Sand

CRT 3.0 – Repair depressed areas using metal finishing techniques on a steel panel to related tasks in National Automotive Technicians Foundation (NATEF) Collision Repair / Refinishing Non-structural Analysis and Damage Repair (B3) Technical Standards

- 1.1 Model proper safety procedures
- 1.2 Clean contaminants from a damaged panel
- 1.3 Locate surface irregularities on a damage panel
- 1.4 Remove finish from damaged area(s) as necessary
- 1.5 Demonstrate various uses of the metal finishing tools

CRT 5.0 – Demonstrate welding skills needed for collision repair of steel panels to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair / Refinishing Non-structural Analysis and Damage Repair (B3) Technical Standards, National Automotive Technicians Education Foundation (NATEF) Collision Repair / Refinishing Structural Analysis and Damage Repair (B4) Technical Standards, National Institute for Automotive Service Excellence Non-structural Analysis and Damage Repair (B3) Certification Test, National Institute for Automotive Service Excellence Structural Analysis and Damage Repair (B4) Certification Test, and I-CAR Welding Qualification Test (WQT)

5.1 Model proper safety procedures

5.2 Make plug weld using 18-gauge metal coupons in the vertical position using a GMA (MIG) welder

5.2.1 Set up and adjust the welder for proper stickout, voltage, polarity, flow rate, and wire speed required for the metal being welded

5.2.2 Determine work clamp (ground) location and attach

5.2.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in a vertical position

5.2.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required

5.2.5 Perform a visual test on the vertical weld

5.3 Make a butt joint with backing weld using 18-gauge metal coupons in the vertical position using a GMA (MIG) welder

5.3.1 Set up and adjust the welder for proper stickout, voltage, polarity, flow rate, and wire speed required for the metal being welded

5.3.2 Determine work clamp (ground) location and attach

5.3.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in a vertical position

5.3.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required

5.3.5 Perform a visual test on the vertical weld

- 5.4 Make a fillet weld on lap using 18-gauge metal coupons in the vertical position using a GMA (MIG) welder
 - 5.4.1 Set up and adjust the welder for proper stickout, voltage, polarity, flow rate, and wire speed required for the metal being welded
 - 5.4.2 Determine work clamp (ground) location and attach
 - 5.4.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in a vertical position
 - 5.4.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required
 - 5.4.5 Perform a visual test on the vertical weld

- 5.5 Make a plug weld using 18-gauge metal coupons in the overhead position using a GMA (MIG) welder
 - 5.5.1 Set up and adjust the welder for proper stickout, voltage, polarity, flow rate, and wire speed required for the metal being welded
 - 5.5.2 Determine work clamp (ground) location and attach
 - 5.5.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in an overhead position
 - 5.5.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required
 - 5.5.5 Perform a visual test on the overhead weld

- 5.6 Make a butt joint with backing weld using 18-gauge metal coupons in the overhead position using a GMA (MIG) welder
 - 5.6.1 Set up and adjust the welder for proper stickout, voltage, polarity, flow rate, and wire speed required for the metal being welded
 - 5.6.2 Determine work clamp (ground) location and attach
 - 5.6.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in an overhead position
 - 5.6.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required
 - 5.6.5 Perform a visual test on the overhead weld

5.7 Make a fillet weld on lap using 18-gauge metal coupons in the overhead position using a GMA (MIG) welder

5.7.1 Set up and adjust the welder for proper stickout, voltage, polarity, flow rate, and wire speed required for the metal being welded

5.7.2 Determine work clamp (ground) location and attach

5.7.3 Use the proper angle of the gun to the joint and the direction of gun travel for the type of weld being made in an overhead position

5.7.4 Clean and prepare the metal to be welded, assure good fit-up, apply weld through primer if necessary, and clamp as required

5.7.5 Perform a visual test on the overhead weld

CRT 6.0 – Complete a backside reinforced cosmetic surface repair on a plastic vehicle part. Mix and apply appropriate material corresponding with the related tasks in the National Automotive Technicians Education Foundation (NATEF) and the ASE Collision Repair / Refinishing Non-structural Analysis and Damage (B3) Certification Test. A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

6.1 Demonstrate proper safety procedures

6.2 Demonstrate an understanding of the importance to clean before making any repair

6.3 Damage preparation before adhesive work

6.4 Demonstrate an understanding of appropriate abrasive grade sequence for reinforcing plastic repair. (Typically 50 and 80 grit)

6.5 Apply a light coating of adhesion promoter and allow to dry adequately

6.6 Demonstrate the ability to open, load, and equalize the cartridge, attach the mixing nozzle, and discard the first pump of material

6.7 Demonstrate proper spreading techniques: Apply a thin, tight coat of material, then build a thin layer of adhesive followed by reinforcing mesh and an additional layer of adhesive

CRT 7.0 - Complete a front-side cosmetic surface repair on a plastic vehicle part. Mix and apply appropriate material corresponding with the related tasks in the National Automotive Technicians Education Foundation (NATEF) and the ASE Collision Repair / Refinishing Non-structural Analysis and Damage (B3) Certification Test. A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

- 7.1 Demonstrate proper safety procedures
- 7.2 Demonstrate an understanding of the importance to clean before making any repair
- 7.3 Damage preparation before adhesive work
- 7.4 Demonstrate an understanding of appropriate abrasive grade sequence for plastic Repair (Typically 50, 80, adhesive application, 80, 180, 320)
- 7.5 Demonstrate an understanding of the need to keep very coarse grade scratches (80 grit) inside valley of repair and not on surrounding plastic, to avoid creating “fuzzies” that will be difficult to conceal in the finished paint work
- 7.6 Demonstrate the understanding of the difference between “Veeing Out” a repair (incorrect) and “Dishing Out” a repair (correct), and how that relates to the finished product (no ghost lines)
- 7.7 Apply a light coating of adhesion promoter and allow to dry adequately
- 7.8 Demonstrate the ability to open, load, and equalize the cartridge, attach the mixing nozzle, and discard the first pump of material
- 7.9 Demonstrate proper spreading techniques: Apply a thin, tight coat of material, build in thin layers, and avoid air entrapment as they build slightly higher than the surrounding areas
- 7.10 Demonstrate tests to determine readiness to sand (check with fingernail, see if it leaves a white mark in the adhesive)

CRT 8.0 – Complete a tab repair on a plastic vehicle part. Mix and apply appropriate material corresponding with the related tasks in the National Automotive Technicians Education Foundation (NATEF) and the ASE Collision Repair / Refinishing Non-structural Analysis and Damage (B3) Certification Test. A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

- 8.1 Demonstrate proper safety procedures
- 8.2 Demonstrate an understanding of the importance to clean before making any repair
- 8.3 Demonstrate an understanding of appropriate abrasive grade sequence for tab repair. (Typically 50 and 80 grit)
- 8.4 Apply a light coating of adhesion promoter and allow to dry adequately
- 8.5 Demonstrate the ability to open, load, and equalize the cartridge, attach the mixing nozzle, and discard the first pump of material
- 8.6 Demonstrate proper “molding” techniques, using contour sheeting, and form a new tab
- 8.7 Demonstrate tests to determine readiness to sand (check with fingernail, see if it leaves a white mark in the adhesive)

CRT 9.0 – Complete surface preparation and related tasks in The National Automotive Technicians Education Foundation (NATEF) and the ASE Collision Repair / Refinishing Non-structural Analysis and Damage (B3) Certification Test. A 20-point scale is used for each segment. Participants will be expected to successfully complete each segment. Participants should have some basic knowledge in chemistry

- 9.1 Demonstrate proper use of safety
- 9.2 Demonstrate the ability to use 50 grit abrasive on a high speed grinder to rough shape the formed tab, followed by 180 grit on a DA to finely shape the tab, and lastly, a 320 grit abrasive to prepare the featheredge for the painting process
- 9.3 Demonstrate the ability to use an 80 grit abrasive to “knock down” the bulk of the excess cosmetic repair material without abrading the surrounding plastic, which would leave “fuzzies”
- 9.4 Demonstrate the ability to use 180-grit abrasive to successfully level the repair material and feather into the surrounding area
- 9.5 Finish sand the repair and surrounding area with 320-grit abrasive to prepare for painting process
- 9.6 Demonstrate the best practice of reapplying adhesion promoter after the final sanding step, to assure paint adhesion

CRT 11.0 – Describe basic steering and suspension components of the vehicle to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair / Refinishing Mechanical and Electrical Components (B5) Technical Standards

- 11.1 Identify the illustrated steering and suspension components

CRT 12.0 - Describe steering and suspension geometry to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair / Refinishing Mechanical and Electrical Components (B5) Technical Standards

- 12.1 Apply the number of angle to definition that describes it
- 12.2 Identify the problem or problems that result when the vehicle’s tie rods and lower control arms pivot points do not remain parallel to each other as the vehicle’s body moves down (jounce) and up (rebound) as it travels along the road
 - 12.2.1 Analyze and identify misaligned or damaged steering, suspension, and powertrain components that can cause vibration, steering, and wheel alignment problems

CRT 13.0 – Perform structural damage analysis and related information to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Structural Analysis and Damage Repair (B4) Technical Standards

13.1 Describe the structural damage analysis questions or complete the statement using choices given

CRT 14.0 - Perform structural realignment to related information to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Structural Analysis and Damage Repair (B4) Technical Standards*

14.1 Illustrate the different types of structural realignments along with choices for supporting (blocking), securing (holding) and pulling the structure to realign it

14.2 Select the setup that is the most efficient for a high quality repair

14.2.1 Determine the extent of damage and the direction of the impact; document the methods and sequence of repair

CRT 15.0 – Determine the location of the vehicle’s major control points to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Structural Analysis and Damage Repair (B4) Technical Standards

15.1 Locate the major control points of the vehicle’s lower structure

15.1.1 Determine locations of all steering, suspension and powertrain component attaching points

CRT 16.0 – Gauge and measure the vehicle’s lower structure damage simulator to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Structural Analysis and Damage Repair (B4) Technical Standards*

16.1 Demonstrate proper safety procedures

16.2 Set the correct height (datum) dimensions on the gauges by using data chart

16.3 Install gauges at the major control points

CRT 17.0 – Read the gauges and measure using the damage simulator to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Structural Analysis and Damage Repair (B4) Technical Standards*

17.1 Measure critical diagonal, length and width measurements of the structure

17.2 Sight the gauges and determine if there is a centerline (sideways) or height misalignment of the structure

CRT 18.0 – Diagram (document) the vehicle’s structural misalignments using the damage simulator to related tasks in National Automotive Technicians Education Foundation (NATEF) Collision Repair and Refinishing Structural Analysis and Damage Repair (B4) Technical Standards*

18.1 Determine the types of structural misalignment present and record on the damage analysis diagram

CRT 21.0 – Complete an estimate to related tasks in ASE Catalog of Collision Repair / Refinishing Tests B6 (Damage Analysis and Estimating)

21.1 Report heading/legibility.

21.1.1 List entrant number on estimating test.

21.1.2 Locate provided “Vehicle Description and Labor Rate Page” and complete vehicle owner information segment on estimate (e.g., owner name, address, phone numbers, license plate, vehicle year, series, mileage, vehicle identification number).

21.1.3 Identify and record customer / vehicle information

21.1.4 Identify and record vehicle identification (VIN) information

21.1.5 Write legibly.

21.2 Identify parts replacement

21.2.1 Locate and select vehicle to be estimated in the provided collision estimating guide.

21.2.2 Locate and list the correct part prices and replacement labor times and refinish labor times for the pre-determined parts being replaced.

21.2.3 Estimate labor adjustments for vehicle options when appropriate.

21.2.4 Recognize and apply body labor overlap and refinish labor overlap where appropriate.

21.2.5 Consider and apply “included” and “not included” operations where appropriate.”

21.2.6 Consider and apply labor footnotes (# signs) when necessary.

21.3 Prepare calculations

21.3.1 Calculate and list the correct paint and materials allowance.

21.3.2 Calculate and list parts, body labor, refinish labor, paint and material column totals.

21.3.3 Calculate and list total labor hours (body labor plus refinish labor).

21.3.4 Multiply total labor hours by provided labor rate and list labor dollar amount.

21.3.5 Calculate and list TOTAL estimate amount.

CRT 22.0 – Oral Assessment / Interview

22.1 Exhibit personal skills such as attendance, time management and individual responsibility.

22.1.1 Demonstrate promptness when required to meet interviewer at specific time and location.

CRT 23.0 – Maintain professional conduct

23.1 Demonstrate courteous behavior while waiting for the interviewer.

CRT 24.0 – Maintain professional appearance

24.1 Demonstrate appropriate attire (SkillsUSA uniform – light blue shirt, dark blue pants not required).

CRT 25.0 – Complete job application and résumé.*

** Each contestant will be provided a blank job application during the contest orientation meeting, the night before the contest. The application is to be filled out prior to the start of the contest.*

22.1 Properly and legibly complete a job application and résumé.

CRT 26.0 – Demonstrate interview skills