

**2017  
TENNESSEE PUBLIC  
TRANSPORTATION ASSOCIATION**

**MAINTENANCE ROADEO  
HANDBOOK**



Published by the Urban Transit Maintenance Alliance

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## A. General Information.

1. The TPTA Maintenance Roadeo will be held during the 2017 Tennessee Public Transportation Association Annual Conference in Nashville on Wednesday, October 18, 2017.
2. The maintenance roadeo is a competition designed for individual mechanics to compete against other mechanics from both urban and rural transit systems across the State. This event promotes friendly competition and provides an opportunity for mechanics to meet their peers in sister transit systems and exchange information.
3. There will be two competition categories. Mechanics may only compete in one of the two categories; not both.
  - a. Van – designed primarily for the rural systems who maintain light-duty cutaway van vehicles.
  - b. Bus – designed for urban systems who maintain heavy-duty transit buses.
4. Van competition events will be based upon a 2013 Glaval E-450 chassis cutaway with a Ford V-10 gasoline engine.
5. Bus competition events will primarily be based upon a 2011 model 40' Gillig Low Floor with a Cummins ISL CM2250 and an Allison B400R-5.
6. The competition will consist of four van and five bus individual events. 1) Written test, 2) PM Inspection, 3) Engine malfunction, 4) air conditioning malfunction, and 5) air brakes.
7. Transit systems must register their mechanics individually for the maintenance roadeo via the TPTA conference registration page at [www.tntransit.org](http://www.tntransit.org).
8. Contestants must arrive on time and participate in the mechanic orientation meeting which will be held on Tuesday, October 17<sup>th</sup>. Time and location of the orientation meeting will be published in the conference schedule.
9. Mechanics late for the scheduled maintenance roadeo will be disqualified.
10. The written test event will be held on the same day and location as the performance (hands-on) events. Location will be published within the conference schedule.
11. Each contestant must bring and wear safety glasses and appropriate foot wear (e.g., no tennis or running style shoes) during the competition on Thursday.
12. Hearing protection will be provided at the engine events. Failure to wear hearing protection during the engine events will be considered to be a safety violation. Contestants may provide their own hearing protection which will be subject to an examination prior to the engine events to insure they meet safety requirements.
13. During events, each contestant will be supplied a clipboard, forms/paper, pencil, flashlight, rags, required vehicle keys (van ignition key, bus T-key), necessary tools and test equipment.
14. Contestants will incur penalties whenever using tools/test equipment improperly and/or violate safety rules.
15. Abbreviations used in the transit maintenance industry are allowed to be entered on forms/paper as long as they are understandable to the judges.
16. A location must be given when identifying equipment defects, i.e., window RR, RRO wheel.
17. When listing defects, write legibly. Sheets mechanics fill out during the competition will be the primary means by which judges will score each competitor.
18. On competition day, contestants may not watch or be in the immediate vicinity of the performance events either before or after competing. All contestants will, instead, remain in designated holding areas both before and after they compete.
19. Wednesday's performance events will be judged by vendors attending and supporting the conference. No transit system employee will serve in a scoring judge capacity.
20. The performance events will be organized "round-robin" style where mechanics will compete in an event and then rotate to the next performance event.

21. A maintenance roadeo site time-keeper will sound a horn when event timing begins and ends. All performance (hands-on) events are ten (10) minutes.

22. During performance events, contestants may record all identified defects. Only planted defects, however, will count for scoring.

24. The equipment/vehicles utilized during the event must be returned to its original condition except the defect that prevented the engine from starting or running. A penalty of two (2) points will be assessed for each instance where the equipment/bus/van is not returned to its original condition.

25. In the event two mechanics in the same category reach a tie for first, second or third placement, the mechanic who successfully starts the engine during the engine malfunction event in the least amount of time will place the highest. If neither mechanic started the engine, then they will compete in a separate engine starting elimination round.

25. Scoring placements for trophy awards include first place, second place, and third place in both the bus and van categories. Additionally, a separate recognition award for both van and bus will be presented to mechanics who successfully start the engine in the shortest time during the engine malfunction event.

## **B. Competition Events.**

### **1. Written test event.**

- a. Each competitor will take a written test of 50 questions. Each competition category (bus, van) has its own unique test.
- b. Time limit for the test is 30 minutes.
- c. Questions will be a multiple choice, true/false, or a combination thereof.
- d. Each test was developed from ASE study material.
- e. Each question is worth 2 points for a total of 100 possible points for the written test event.

### **2. Preventative Maintenance Inspection (Van and Bus) event.**

- a. For both bus and van categories, ten equipment related defects are planted on a vehicle (Gillig/Ford cutaway). Defects are of a type that a mechanic should find during a minor maintenance inspection.
- b. Defects will render the vehicle operationally unfit and/or operational in a degraded state.
- c. The mechanic must work alone and list all defects identified on the blank form provided by the judge within a ten minute time period.
- d. Identification of defects does not require crawling under the bus/van.
- e. No checklist will be used during this event, only the blank form provided by the judge.
- f. Eligible defects may include broken, loose, bad, missing, or incorrect:
  - Seats
  - All type of lights
  - Windows
  - Stanchions
  - Flooring
  - Fire extinguisher
  - Door motors
  - Wipers
  - Windshield
  - Mirrors
  - License plate
  - Doors
  - Dipsticks
  - Bell cord

- Security violation
- g. Ineligible defects include:
- Defects under the vehicle
  - Exterior body damage
  - Radios
  - Fareboxes
  - AVL systems
- h. Recording defects and securing compartment doors will not be allowed after competition time has elapsed.
- i. Ten (10) points are awarded for each planted defect found, for a maximum of 100 possible points.
- j. Immediately following the event, the judge will review the list of defects recorded with the contestant for clarification.
- k. A penalty of two (2) points will be assessed for each instance where the equipment/bus/van is not returned to its original condition; for example, two (2) points assessed for ***each*** compartment door not secured including the entrance door, lights left on, wipers left running, master switch on, windows open, escape hatches open, etc.
- l. A penalty of five (5) points will be assessed for each incident of unsafe practice during the vehicle inspection.

### **3. Engine malfunction event (bus and van categories).**

- a. Five (5) defects or problems related to the power package are planted, one of which will prevent the engine from starting or proper idling.
- b. For purposes of the maintenance roadeo, engine malfunction means the engine will not start or run properly.
- c. The contestant may attempt to start the vehicle at any time to check for defects.
- d. Ten (10) minutes is allotted to inspect, identify deficiencies, trouble shoot, diagnose, correct and start the engine.
- e. Twenty (20) points are awarded for each defect found. The defect that prevents the engine from starting or running correctly, must be identified ***and*** corrected to receive 20 points. A total of 100 points is possible for the event.
- f. A penalty of five (5) points will be assessed for each incident of unsafe practice and each incident of improperly using a tool during the event.
- g. An event time keeper will maintain a stop-watch and announce time warnings at two (2) minutes, one (1) minute, and 30 seconds remaining for the event.

### **4. ThermoKing Air Conditioning Unit (bus category) and ACC Air Conditioner (van category).**

- a. The event will be conducted using fully functioning ThermoKing Intelligair III (bus) and ACC (van) mock-ups. All components of each mock-up system will be functional.
- b. Five (5) defects or problems related to the A/C not working properly are planted.
- c. Ten (10) minutes is allotted to troubleshoot and identify problems keeping the air conditioning systems from operating properly.
- d. Twenty (20) points are awarded for each defect identified for a total of 100 points for the event.
- e. A penalty of five (5) points will be assessed for each incident of unsafe practice and each incident of improperly using a tool during the vehicle inspection.

### **5. Air Brake Board (bus only).**

a. Five (5) defects or problems related to air brakes.  
b. Ten (10) minutes is allotted to troubleshoot and identify problems with the air brakes board.  
d. Twenty (20) points are awarded for each defect identified for a total of 100 points for the event.

e. A penalty of five (5) points will be assessed for each incident of unsafe practice and each incident of improperly using a tool during the vehicle inspection.

**6. Braun ADA Lift (van only).**

a. Five (5) defects or problems related to the ADA Lift.  
b. Ten (10) minutes is allotted to troubleshoot and identify problems with the Lift.  
d. Twenty (20) points are awarded for each defect identified for a total of 100 points for the event.

e. A penalty of five (5) points will be assessed for each incident of unsafe practice and each incident of improperly using a tool during the vehicle inspection.

**MECHANIC WRITTEN TEST SCORE SHEET**

Mechanic Name: \_\_\_\_\_ Transit System: \_\_\_\_\_

Instructions: Using a number 2 pencil, fill in the letter corresponding to your answer from the test booklet.

- 1) (A) (B) (C) (D)
- 2) (A) (B) (C) (D)
- 3) (A) (B) (C) (D)
- 4) (A) (B) (C) (D)
- 5) (A) (B) (C) (D)
- 6) (A) (B) (C) (D)
- 7) (A) (B) (C) (D)
- 8) (A) (B) (C) (D)
- 9) (A) (B) (C) (D)
- 10) (A) (B) (C) (D)
- 11) (A) (B) (C) (D)
- 12) (A) (B) (C) (D)
- 13) (A) (B) (C) (D)
- 14) (A) (B) (C) (D)
- 15) (A) (B) (C) (D)
- 16) (A) (B) (C) (D)
- 17) (A) (B) (C) (D)

- 18) (A) (B) (C) (D)
- 19) (A) (B) (C) (D)
- 20) (A) (B) (C) (D)
- 21) (A) (B) (C) (D)
- 22) (A) (B) (C) (D)
- 23) (A) (B) (C) (D)
- 24) (A) (B) (C) (D)
- 25) (A) (B) (C) (D)
- 26) (A) (B) (C) (D)
- 27) (A) (B) (C) (D)
- 28) (A) (B) (C) (D)
- 29) (A) (B) (C) (D)
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- 38) (A) (B) (C) (D)
- 39) (A) (B) (C) (D)
- 40) (A) (B) (C) (D)
- 41) (A) (B) (C) (D)
- 42) (A) (B) (C) (D)
- 43) (A) (B) (C) (D)
- 44) (A) (B) (C) (D)
- 45) (A) (B) (C) (D)
- 46) (A) (B) (C) (D)
- 47) (A) (B) (C) (D)
- 48) (A) (B) (C) (D)
- 49) (A) (B) (C) (D)
- 50) (A) (B) (C) (D)

Number Correct: \_\_\_\_\_ x 2 =

Judge's Signature: \_\_\_\_\_

**PERFORMANCE EVENT SCORE SHEET**

**INDIVIDUAL EVENTS**

Mechanic Name: \_\_\_\_\_ Transit System: \_\_\_\_\_

BUS CATEGORY

VAN CATEGORY

**A. Points Earned (Circle the event being judged)**

**PM Inspection Event:**

Number of planted defects identified: \_\_\_\_\_ x 10 = \_\_\_\_\_

**Engine Malfunction Event:**

Number of planted defects found/corrected: \_\_\_\_\_ x 20 = \_\_\_\_\_

**Air Brake Board Event: Bus Only**

Number of planted defects found/corrected: \_\_\_\_\_ x 20 = \_\_\_\_\_

**ThermoKing/ACC Event:**

Number of planted defects found/corrected: \_\_\_\_\_ x 20 = \_\_\_\_\_

**Total Points Earned**

**B. Penalties**

Number of items not returned to original condition: \_\_\_\_\_ x 2 = \_\_\_\_\_

Unsafe practices: \_\_\_\_\_ x 5 = \_\_\_\_\_

Improper use of tool(s): \_\_\_\_\_ x 5 = \_\_\_\_\_

**Total Penalty Points**

**TOTAL INDIVIDUAL SCORE (Points Earned Minus Penalty Points):**

**Elapsed Time To Start Engine** \_\_\_\_\_

**Judge Signature:** \_\_\_\_\_