

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration U.S. DOT
In accordance with 49 CFR, Part 665

Altoona Bus Testing and Research Center Test Bus Procedure

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS

Pass/Fail
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**LTI BUS RESEARCH
AND TESTING CENTER**

ABBREVIATIONS

ABTC	Altoona Bus Test Center
A/C	Air Conditioner
ADB	Advance design bus
CBD	Central business district
CI	Compression ignition
CNG	Compressed natural gas
CW	Curb weight (bus weight including maximum fuel, oil, and coolant; but without passengers or driver)
dB(A)	Decibels with reference to 0.0002 microbar as measured on the “A” scale
DIR	Test director
DR	Bus driver
EPA	Environmental Protection Agency
FFS	Free floor space (floor area available to standees, excluding ingress/egress areas, area under seats, area occupied by feet of seated passengers, and the vestibule area)
FTA	Federal Transit Administration
GAWR	Gross axle weight rating
GL	Gross load (150 lb. for every designed passenger seating position, for the driver, and for each 1.5 sq. ft. of free floor space)
GVW	Gross vehicle weight (curb weight plus gross vehicle load)
GVWR	Gross vehicle weight rating
hr.	Hour
LNG	Liquefied natural gas
LTI	Larson Transportation Institute
mpg	Miles per gallon
mph	Miles per hour
NBM	New bus models
PSTT	Penn State Test Track
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
SCF	Standard cubic feet
SCFM	Standard cubic feet per minute
SCH	Test scheduler
SA	Staff Assistant
SI	Spark ignition
SLW	Seated load weight (curb weight plus 150 lb. for every designated passenger seating position and for the driver)
TD	Test driver
TM	Track manager
TP	Test personnel

1.3-I. TEST OBJECTIVE

The objective of this test is to identify the time required to replace and/or repair selected parts or subsystems.

1.3-II. TEST DESCRIPTION

The test will address components that may be expected to fail or require replacement during the service life of the bus. In addition, any component that fails during the test is included in the data. Components included under the scope of this test are:

1. Transmission/Engine
2. Alternator
3. Starter
4. Batteries
5. Windshield wiper motor

1.3-III. TEST ARTICLE

The test article is a transit bus with a minimum service life of 4, 5,7,10 or 12 years.

1.3-IV. TEST EQUIPMENT/FACILITIES/PERSONNEL

All tests are conducted at the ABTC. Tests are performed by:

1. Test personnel (TP)
2. Driver (DR)
3. Tools as needed
4. Camera

1.3-V. TEST DATA

The Maintainability Evaluation Form is filled out for the items listed in the Reliability Test Procedure Section and shall be forwarded to the ABTC manager. When the bus is returned for scheduled or unscheduled maintenance or repair, the form must be updated for additional repairs and shall be forwarded to the ABTC manager. All forms must be filled out using a pen.

1.3-VI. TEST PREPARATION AND PROCEDURES

The detailed test procedures are listed in Procedure 1.3-1. This section also includes Maintainability Evaluation Form – 1.3.

DETAILED TEST PROCEDURES		TITLE: 1. Maintainability
Procedure 1.3-1	NOMENCLATURE: 1.3 Replacement and/or Repair of Selected Subsystems	
OPER STEP	ACTION BY	TEST PREPARATION AND PROCEDURE
1	TP	Use pen on all forms.
2	TP	Record the bus number, date, and test personnel on the Maintainability Evaluation Form. NOTE: Record date, mileage, diagnostic time, repair time, and special tools required, on the Data Form for each subsystem. NOTE: Some of the following procedures may need to be performed during the course of testing. If they have been previously evaluated, they do not need to be repeated here as long as all the appropriate information has been recorded on Data Forms and the Maintainability Evaluation Form.
3	TP	Remove and replace the engine/transmission. Record the time required and any unusual difficulty.
4	TP	Remove and replace the alternator. Record the time required and any unusual difficulty.
5	TP	Remove and replace the starter. Record the time required and any unusual difficulty.
6	TP	Remove and replace the batteries. Record the time required and any unusual difficulty.
7	TP	Remove and replace the windshield wiper motor. Record the time required and any unusual difficulty.
8	TP	Fill out the Maintainability Evaluation Data Forms.
9	TP	Any time the bus is returned for service or repair, add the components involved to the Maintainability Evaluation Form. Upon completion of this test, data shall be forwarded to the ABTC manager.