

# **Type 3 Fire Engine — Model 346 Chassis Only Specification**

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## Record of Revisions

### Date

**February 2009**

**June 2010**

**January 2011**

**February 2014**

### Revision Summary

- Initial release as part of turnkey specifications
- Revision
- Revision
- Revised definition of chassis
- Added after frame (AF) dimension
- Added note to delete front engine PTO capability
- Upgraded alternator to 220 amp capacity, revised part number
- Changed battery specification from 1960 to 1950 CCA
- Revised engine requirement
- Changed air cleaner to dual element, standard with inner cone
- Added manual fan drive override
- Added bug screen, mounted behind grill
- Revised radiator/cooling system requirement
- Deleted wide ratio transmission requirement
- Revised rear axle to include driver controlled differential
- Added driver-controlled rear locking differential requirement
- Added gearing requirement
- Updated fuel tank material and specified location
- Added required features for mirrors
- Added arm rests on seats
- Added rear bench seat
- Added ember guard to air filter for HVAC
- Updated format
- Added "General Statement"
- Modified exhaust wording to match industry standard
- Added DEF tank requirements
- Added L.E.D. headlights / removed halogen headlights
- Added 2.4" diameter alternator pulley
- Added requirement for brake lights to come on when engine compression brake is activated
- Added rear axle dust shield requirement
- Changed rear axle model number
- Added accommodation package for fog lights
- Modified seatbelt standard to red or orange
- Updated mirror standard to FMVSS minimum requirement
- Amended frame rail specification
- Amended fuel tank requirements
- Added sample filled-out AREQ sheet
- This space is reserved for future revisions

**February 2016**

**Future Revisions**

## **1 — General**

### **1.1 General**

1.1.1 The intent of this specification is to provide a 37,000 GVWR four-door, crew cab chassis; Severe Service; four-wheel drive with a set-forward axle. This specification requires a clear cab-to-axle for fire apparatus body installation. This chassis specification is intended to be used with “USDA Forest Service, Apparatus Body Only Specification – Type 3 Fire Engine – Model 346”

1.1.2 The chassis shall include the following features:

### **1.2 Wheelbase**

1.2.1 193 inches

### **1.3 Cab to Axle**

1.3.1 74 inches

### **1.4 After Frame**

1.4.1 63 inches

### **1.5 Tow Hooks**

1.5.1 Front, two; inside rail; frame mounted

### **1.6 Frame Rails**

1.6.1 Heat treated alloy steel; Minimum resistance bending moment (RBM) of 1,400,000 inch-pounds; 120,000 P.S.I. yield

### **1.7 Bumper, Front**

1.7.1 Steel; swept back; powder coated Argent Gray

### **1.8 Frame Extension**

1.8.1 Integral; 14 inches in front of grille; delete front engine PTO capability

### **1.9 Axle, Front, Driving**

1.9.1 14,000 pound capacity (Meritor™ MX-14-120, or equivalent)

### **1.10 Suspension, Front**

1.10.1 Spring; taper leaf; parabolic; 14,000 pound capacity; with shock absorbers

### **1.11 Brake System, Dual Air**

Includes:

- 1.11.1 Front brakes: 16.5 inches by 5 inches; S-Cam type; with 20 square inch MGM long stroke brake chambers
- 1.11.2 Rear brakes: 16.5 inches x 7 inches; with MGM TR3030 long stroke brake chamber and heavy duty spring actuated parking brake
- 1.11.3 Dust shields; front and rear axles
- 1.11.4 Slack adjusters; front and rear; automatic
- 1.11.5 Drain valve; twist type
- 1.11.6 Drain valve (Berg™, or equivalent); manual; with chain
- 1.11.7 Gauges; located in cab instrument panel; "Air 1" and "Air 2"
- 1.11.8 Air dryer (Bendix™ AD-IP, or equivalent); with heater
- 1.11.9 Brake lines; color and size coded nylon
- 1.11.10 Parking brake valve; with yellow knob; located on cab instrument panel
- 1.11.11 Air Brake ABS: Full vehicle wheel control system (4-channel) (Bendix™ Antilock Brake System)
- 1.11.12 Air compressor (Bendix™ Tu-Flo 550, or equivalent); 13.2 CFM capacity
- 1.11.13 Spring brake modulator valve

### **1.12 Steering Column**

- 1.12.1 Tilting

### **1.13 Steering Wheel**

- 1.13.1 2-spoke; 18 inches diameter, black

### **1.14 Steering Gear**

- 1.14.1 Power (Sheppard™ M-100, or equivalent)

### **1.15 Exhaust**

- 1.15.1 Switchback exhaust; vertical tailpipe; after-treatment device; frame mounted outside right frame rail under cab, includes vertical tailpipe and guard

## **1.16 Electrical System**

1.16.1 12-volt

1.16.2 Includes:

1.16.2.1 Headlights; two; L.E.D.

1.16.2.2 Horn; electric; single

1.16.2.3 Horn; air accommodation package; less horn

1.16.2.4 Electronic cruise control, controls integral to steering wheel

1.16.2.5 Starter switch; electric; key operated

1.16.2.6 Headlight dimmer switch integral with turn signal lever

1.16.2.7 Turn signal switch; self-canceling

1.16.2.8 Windshield wiper; 2-speed; integral with turn signal switch; with wash/intermittent feature

1.16.2.9 Circuit breakers; manual reset; replaces all fuses except for 5 amp

1.16.2.10 Wiring; chassis; color coded and continuously numbered

## **1.17 Alternator**

1.17.1 12 volts direct current; 220 amp capacity (Leece-Neville™ 14923PA, or equivalent)

1.17.2 2.4-inch diameter alternator pulley

## **1.18 Battery System**

1.18.1 Three; 1950 total cold cranking amps; maintenance-free; steel battery box

1.18.2 Jump start stud; remote mounted

## **1.19 Radio**

1.19.1 AM/FM stereo with CD player and weather band or equivalent; two coaxial speakers

## **1.20 Starter**

1.20.1 12 volts direct current (Leece-Neville™ M130D, or equivalent); with thermal over-crank protection

## **1.21 Grille**

1.21.1 Stationary; chrome

## **1.22 Front End**

1.22.1 Tilting, fiberglass; with rubber fender extensions

## **1.23 Engine**

1.23.1 Diesel; 50 State, 330 horsepower; 950 pound-foot torque minimum

1.23.2 Includes:

1.23.2.1 Air cleaner; dual element, standard with inner cone

1.23.2.2 Fuel/water separator and fuel filter in a single assembly, with water-in-fuel sensor and heater

1.23.2.3 Block heater; 120 volt/1250 watt (Phillips™, or equivalent)

1.23.2.4 Fan drive (Horton Drivemaster™, or equivalent); two speed; direct-drive, manual fan drive override

1.23.2.5 Indicator, low coolant level with audible alarm

1.23.2.6 Grille; ember screen; engine air intake system; hood-mounted

1.23.2.7 Bug screen, mounted behind grill

1.23.2.8 Engine and exhaust brake

1.23.2.8.1 Brake light turns on when engine compression brake is activated

1.23.2.9 Expanded engine temperature effects to allow higher engine temperature operating range

1.23.2.10 Disable idle shut down feature

## **1.24 Radiator**

1.24.1 The chassis cooling system shall be capable of maintaining the normal engine temperature operating range at full engine load at 0 mph.

## **1.25 Transmission, Automatic**

1.25.1 Allison™ 3000 EVS\_P; wide ratio; 5 speed; with double overdrive; with oil level sensor; with PTO provision; less retarder

## **1.26 Transmission Controls**

1.26.1 T-bar type; for Allison™ 3000 and 4000 transmissions

### **1.27 Transfer Case**

1.27 Two speed; 10,000 pound-foot capacity (Meritor™ T-4210 2, or equivalent), without PTO provision

1.27.1 Includes:

1.27.1.1 Oil cooler, remote mounted, back of cab

1.27.1.2 Electric over air control

### **1.28 Axle, Rear; Single**

1.28.1 Single; 23,000 pound capacity, Meritor™ RS-23-160, or equivalent

1.28.2 Includes:

1.28.2.1 Differential; locking, driver-controlled

1.28.2.2 Drain plug, magnetic, for single rear axle

1.28.2.3 Gearing for 75 mph maximum

1.28.2.4 When the apparatus is driven over 15 mph the driver-controlled rear locking differential shall automatically disengage and shall not automatically re-engage when driven below 15 mph

1.28.2.5 Dust shield

### **1.29 Suspension, Rear**

1.29.1 Spring; single; 31,000 pound capacity; with 4,500 pound auxiliary rubber spring; with shock absorbers

### **1.30 Fuel Tank**

1.30.1 Capacity: 70-gallon single tank; non-polished aluminum; D style; top draw; mounted left side under cab, or 100-gallons, split 50 gallons saddle tank; non-polished aluminum; D style; top draw; mounted under left and right side under cab. In both options, no part of the fuel tank or diesel exhaust fluid tank shall extend past the back of the cab; maximum ground clearance possible

### **1.31 Diesel Exhaust Fluid Tank**

1.31.1 Capacity: A diesel exhaust fluid (DEF) tank will be provided in a storage capacity ratio to meet the requirements for the provided fuel tank; mounted under the cab, with no part of the DEF tank extending past the back of the cab; maximum ground clearance possible



### **1.32 Cab**

#### 1.32.1 Conventional 6 person crew cab

#### 1.32.2 Includes:

- 1.32.2.1 Clearance lights; five; flush-mounted
- 1.32.2.2 Exterior grab handles; three; aft of cab doors; two driver's side of cab; one passenger's side of cab (due to exhaust pipe); with rubber insert
- 1.32.2.3 Interior grab handles; seven; passenger's side front and both rear cab doors
- 1.32.2.4 Exterior cab steps; eight; two steps per cab door
- 1.32.2.5 Mirrors; exterior; two; rectangular; Must meet FMVSS 111 specifications; with breakaway type mounting brackets; heated heads thermostatically controlled, power both sides; with L.E.D. clearance lights
- 1.32.2.6 Gauge cluster, English with electronic speedometer; tachometer; oil pressure; coolant temperature; fuel level; voltmeter; washer fluid level
- 1.32.2.7 Warning system; low fuel level, low oil pressure, high coolant temperature, low voltage
- 1.32.2.8 Gauge, transmission temperature
- 1.32.2.9 Gauge, applied air
- 1.32.2.10 Gauge; air cleaner restriction
- 1.32.2.11 Seat, driver's and passenger's; National™ 2000; high back; vinyl; air suspension; air lumbar; arm rest on inboard side
- 1.32.2.12 Seat; rear bench; full width, vinyl; with fixed back and two outboard integral headrests
- 1.32.2.13 3-point seat belts; driver's & passenger's & outboard rear cab seats (total of four); Red or orange in color
- 1.32.2.14 2-point seat belt; center rear seat (total of one); Red or orange in color
- 1.32.2.15 Air conditioner; with integral heater and defroster
- 1.32.2.16 Fresh air filter for HVAC; protected by ember guard
- 1.32.2.17 Tinted glass
- 1.32.2.18 Dome light with automatic dimming, door activated and push ON/OFF

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- 1.32.2.19 Overhead storage console with nets, CB pocket, Pearl Gray interior
- 1.32.2.20 Deluxe cab interior trim
- 1.32.2.21 Molded plastic door trim panels
- 1.32.2.22 Molded plastic storage pocket; driver's and passenger's front cab doors
- 1.32.2.23 Padded cloth headliner
- 1.32.2.24 Black rubber floor covering
- 1.32.2.25 Vinyl sun visors
- 1.32.2.26 Cab suspension; air bag type
- 1.32.2.27 Accommodation package for fog lights
- 1.32.2.28 Single color cab exterior finish paint, 5032 FOREST SERVICE GREEN

### **1.33 Tires and Wheels**

- 1.33.1 Steel disc wheels; painted white; with 10-stud pattern; 8.25" x 22.5" DC rims; hub piloted
- 1.33.2 Tires Front: 12R22.5 Unisteel™ G177 MSA or equivalent; load range H; 16 ply
- 1.33.3 Tires Rear: 12R22.5 Unisteel™ G177 or equivalent; load range H; 16 ply

### **1.34 Included**

- 1.34.1 Included with chassis order, one spare wheel and one spare tire matching the wheels and front tires, delivered affixed to the cab and chassis.

### **1.35 Additional Requirements (AREQ) To Be Noted For Ordering**

- 1.35.1 The unit will be ordered as a 37,000 lb. GVWR chassis with the set-forward axle 4x4 Severe Service model upgrade
- 1.35.2 Some items listed above will need to be ordered as Additional Requirements (AREQ) from the chassis manufacturer as described in the specifications
- 1.35.3 A sample Additional Requirements (AREQ) sheet is available for use from the National Technology and Development Center, San Dimas. To receive a copy of this sample, please email – [Fire Vehicle Specifications Project Leader](mailto:Fire_Vehicle_Specifications_Project_Leader@sdtc@fs.fed.us) at [sdtc@fs.fed.us](mailto:sdtc@fs.fed.us)