International and NFPA 1901 Compliance

Navistar strategy to achieve EPA 2010 compliance
The NFPA 1901 Version 2009

The NFPA 1901 standard defines the requirements for new automotive fire apparatus designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of other hazardous situations...

Much of the 1901 standards chapters do not pertain to the chassis and power train and will not be discussed in great detail. In addition, much of the NFPA requirements are common or standard features and may not be detailed in this presentation.

Theses topics discussed will include those chapters and sections that require features or actions not normally done on typical truck chassis.
The NFPA 1901 Version 2009

Chapter 1 Administration, Chapter 2 Referenced Publications, Chapter 3 Definitions

Chapter 4 General Requirements

Chapter 5 Pumper Fire Apparatus, Chapter 6 Initial Attack Fire Apparatus
Chapter 7 Mobile Water Supply Fire Apparatus, Chapter 8 Aerial Fire Apparatus
Chapter 9 Quint Fire Apparatus, Chapter 10 Special Service Fire Apparatus
Chapter 11 Mobile Foam Fire Apparatus

Chapter 12 Chassis and Vehicle Components

Chapter 13 Low Voltage Electrical Systems and Warning Devices
Chapter 14 Driving and Crew Areas

Chapter 15 Body, Compartments, and Equipment Mounting, Chapter 16 Fire Pumps and Associated Equipment
Chapter 17 Auxiliary Pumps and Associated Equipment, Chapter 18 Industrial Supply Pumps and Associated Equipment, Chapter 19 Water Tanks, Chapter 20 Aerial Devices, Chapter 21 Foam Proportioning Systems
Chapter 22 Compressed Air Foam Systems, Chapter 23 Line Voltage Electrical Systems
Chapter 24 Command and Communications, Chapter 25 Air Systems
Chapter 26 Winches

Annex D Guidelines for First-Line and Reserve Fire Apparatus
4.11 Vehicle Data recorder
   - All apparatus shall be equipped with on-board VDR

VDR recording data;
   - Vehicle Speed, Acceleration, Deceleration, engine RPM, % of throttle, ABS event, Seat Occupied, seat belt buckled, master optical on/off, time, date

Order seat and seat belt sensor with harness Order feature code being released in October

OBD001 – pre-wire power and data link for NFPA compliant data logger/seat monitor. Harness to include J1939 power train data link, ignition, battery and ground and terminated with Deutsch DT series 6-way connector behind center dash panel.

OBD002 – Bostrom or 911 seats (whichever your TEM uses) equipped with load sensors and pogos equipped with engagement detection sensors for X seat locations in (standard, extended or crew) cab with centralized connection point for NFPA compliant data logger/seat monitor terminated with Deutsch DT series connector(s) behind center dash.
• 4.13 Vehicle Rollover Stability
  – All apparatus shall be stable to 26.5 degrees in both direction when tested on a tilt table or equipped with a stability control system having a steering wheel position sensor, yaw sensor, lateral accelerometer and individual wheel brake control
  – Order stability control system **Code 04AZS** (includes traction control)

• 4.15 Road ability
  – Minimum top speed of 55MPH within 25 seconds.
  – Maintain at least 20MPH up a 6% grade
  – Maximum top speed 68MPH or the tire maximum speed rating
  – Tankers over 50K GVW maximum top speed is 60MPH or tire speed rating which ever is lower.
  – **Verify engine selection with TOPS**
• 12.2 Engine Speed Auxiliary Control
  - Engine speed auxiliary control to allow an increase in the engine speed when parked.
  - An interlock shall prevent operation of engine speed auxiliary control unless the parking brake is applied and the transmission is in neutral or engine is disengaged from the drive wheels
  - Engine hour meter shall be provided

• 12.2 Air Intake System
  - The air inlet shall be equipped with a means of separating water and burning embers from the air intake system Code 09WBB ember screen
  - Air restriction indicator shall be mounted in the driving compartment and visible to the driver Code 16HHE In-cab filter minder
12.2 Diesel Particulate Filter
- The regeneration process shall be activated by two methods. Automatically by the engine system, but only when the transmission is in gear, and the speedometer is indicating a speed above 5MPH (8KPH) or manually when initiating the manual regeneration process.
- A switch shall be provided at the drivers area that will inhibit DPF regeneration until the switch is reset when the engine is shut down and restarted.
- Code 07WZX - Exhaust regeneration inhibit, momentary, resets when key off.

07BDN – Under cab right side horizontal vertical – Clean CA

07BDL – Under cab right side Standard on WorkStar
Chapter 12 Chassis & Vehicle Components

- **12.3 Parking Brakes**
  - All apparatus with a GVWR of 36,000 lbs or greater shall be equipped with an auxiliary braking system.
  - Any time a secondary braking devise such as transmission retarders or exhaust brakes are used, the shall have a switch to turn them off during adverse road conditions. (ABS does this on International)

- **12.3 Suspension and Wheels**
  - Axles housing and any components other than wheel and tires shall clear the road surface by at least 8 inches.
  - Angle of approach and angle of departure of at least 8 degrees shall be maintained at the front and rear of the vehicle when it is loaded to the estimated in service weight.
13.3 Minimum Continuous Electrical Load

- The condition of the low voltage electrical system shall be monitored by a warning system that provides an audible and visual signal to persons on, in, or near the apparatus of an impending system failure caused by excessive discharge of battery set. (Need DLB3 solution)

- If electrical system is monitored, the alarm shall sound if system voltage at the battery or at the master load disconnect drops below 11.8 volts for more than 120 seconds (need DLB3 solution)

- A voltmeter shall be mounted on the drivers instrument panel to allow direct observation of the system voltage.
13.3 Load Management
Electrical Load

- If the total continuous load exceeds the minimum continuous electrical output rating of the installed alternator(s) operating under conditions specified (13.3.2), an automatic electrical load management system shall be required. (Need DLB3 solution)
- A master load disconnect switch shall be provided between the starter and the remainder of the electrical loads on the apparatus.
- A green “battery on” light pilot light that is visible from the drivers position shall be provided.
- A sequential switching devise shall be permitted to energize to optical warning devices required in 13.3.3 and other high current devices, provided the switching device shall first energize the electrical devices required within 5 seconds.
14.1 General

- Seat belt webbing may shall be bright red or bright orange and the bucket portion of the seat belt shall be mounted on a rigid or semi-rigid stalk such that the bucket remains position in an accessible location.
- Seat belt warning devise must be provided.
- The warning devise shall consist of an audible warning that can be heard at all seating position designed to be occupied when the vehicle is in motion, and visible.
- The warning shall be activated anytime the parking brake is release or the automatic transmission is not in park.
- Light display:
  - Green = seat occupied belt buckled
  - Red = seat not occupied, belt buckled
  - Red = seat occupied, belt unbuckled
  - Dark= seat not occupied, unbuckled
- All primary mirrors rear view mirrors used by the driver shall be adjustable from the drivers seat.
# International® DuraStar Emergency Lineup

<table>
<thead>
<tr>
<th>Class 5</th>
<th>Class 6</th>
<th>Class 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>17,999 to 19,500 lbs</td>
<td>19,501 to 26,000 lbs</td>
<td>26,001 to 33,000 lbs</td>
</tr>
<tr>
<td>MaxxForce 7 up to 230hp</td>
<td>MaxxForce 7 up to 230hp</td>
<td>MaxxForce DT up to 300hp</td>
</tr>
<tr>
<td></td>
<td>MaxxForce DT up to 300hp</td>
<td>MaxxForce 9 up to 330hp</td>
</tr>
<tr>
<td>DuraStar 4100</td>
<td>DuraStar 4300 4X2</td>
<td>DuraStar 4400 4x2</td>
</tr>
<tr>
<td></td>
<td>DuraStar 4300 4X4</td>
<td>DuraStar 4300 4x2</td>
</tr>
</tbody>
</table>

![Ambulance](image1.png)
![Fire Truck](image2.png)
## Severe Duty Fire Lineup

<table>
<thead>
<tr>
<th>Class 8, Severe Duty</th>
<th>Class 7, Severe Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>33,001lbs and over</td>
<td>26,001 to 33,001lbs</td>
</tr>
<tr>
<td>WorkStar™ 7400</td>
<td>WorkStar™ 7300</td>
</tr>
<tr>
<td>WorkStar™ 7500</td>
<td>WorkStar™ 7400</td>
</tr>
<tr>
<td>WorkStar™ 7600 and 7700</td>
<td>WorkStar™ 7500</td>
</tr>
</tbody>
</table>
DuraStar Braking and Ride Features

- **Rugged single 80,000lbs frame**
- **Wider track axles**
  - Greater roll stability
  - Smaller turning circle
  - Improved ride
- **New 4 piston hydraulic disc brakes**
  - Low brake pedal force required
  - Electronic brake force distribution
  - Four channel ABS
  - Traction control and power parking brake
- **Ride-optimized air suspension designed, built and supported by International**
  - Lowering capability for easy loading
  - Factory installed
The Stability system that responds to a wide range of low- to high-friction surface stability scenarios that can compensate for some undesirable vehicle under-steer & over-steer situations.

The system senses the driver’s intended path & compares it to the actual situation to identify an over-steer situation.

- Steering wheel position sensor
- Air brake chassis only
- 04AZS Includes traction control
- Meets NFPA new rules
International® DuraStar/ WorkStar

- NFPA 1901 Compliant Cabs and interiors
- Diamond Logic® Electrical System
- International MaxxForce™ Diesel Engines
DuraStar / WorkStar
Interior Features

- Cab built to world-class manufacturing tolerances
  - Tight fit and reduced noise
  - Extra long seat belts in all positions
    - Gray, NAFPA 14.1.3 Red or Orange color
    - Meets NFPA 14.1.3 belt length rule
- Redesigned door handles
  - Lock-out prevention
- Courtesy light mounted in door for improved step visibility. With premium interiors
- Larger storage pocket
- Crew Cab rear doors
  - Storage pockets
  - Interior grab handles
- New yellow grab handles
  - Code 16GHU for 2 door cab
  - Code 16GHV for 4 door cab
• Cab Integrity Standards / Requirements
• FMVSS – Required by Law (composite of all truck cab application)
  • 201- Occupant Protection in Interior Impact
  • 201U - Occupant Protection in Interior Impact - Upper Interior Head Impact Protection
  • 201P - Rigid Pole Side Impact Test
  • 207-Seating Systems
  • 208-Occupant Crash Protection
  • 209-Seat Belt Assemblies
  • 210-Seat Belt Assembly Anchorages
  • 214D - Side Impact Protection (Dynamic)
  • 214S - Side Impact Protection (Static)
  • 216- Roof Crush Resistance
  • 554- Standards Enforcement and Defect Investigation
  • 568- Vehicles Manufactured in Two or More Stages
  • 572F - Side Impact Dummy (SID) 50th Percentile Male
  • 589- Upper Interior Component Head Impact Protection Phase-in Reporting Requirements
International Cab Integrity

- Standards / Requirements
- Society of Automotive Engineers “SAE”
  - Voluntary compliance not required by law.
  - J2422 - Cab roof strength evaluation - quasi static loading 180 degree roll simulation with 90 degree preload (new NFPA rule)
  - J2426 - Occupant Restraint System Evaluation--Lateral Rollover System--Level Heavy Trucks
  - J336_200106 - Sound Level for Truck Cab Interior
  - J366_200104 - Exterior Sound Level for Heavy Trucks and Buses
  - J224_198003 - Collision Deformation Classification
  - J366_200104 - Exterior Sound Level for Heavy Trucks and Buses

- National Fire Protection Association
  - Voluntary compliance not required by law.
  - NFPA 1901-4 General requirements
  - NFPA 1901-12 Chassis and Vehicle components
  - NFPA 1901-14 Driving and Crew areas
The industry exclusive
International Diamond Logic® electrical system

- Enabled by an on-board computer with less wires
- Communication system with all major components working together
Frame mounted tow hooks

01570 – two front tow hooks

**Electrical Features**

08GEN / 08GDY  -270 Amp pad mount Leece-Neville 4949PAH
08GEK / 08GEY  -320 Amp pad mount Leece-Neville PAH Alternator
08THB -102dBA back up alarm
08WEA - 2.4 inch diameter pulley to drive alternator faster at idle
08WEE - Passenger side air horn switch
08WRB - "Headlights on with wipers"
08WTJ - Additional Remote Power Module, located at the end of frame
08630 - Keyless ignition
13XAA - PTO accommodation for electric over air with piping
60AAA - One Remote Power Module, located under the cab
60AAB - Two Remote Power Modules, located under the cab
60ABA - PTO accommodation for cable shift PTO
60ABB - PTO accommodation for Muncie “Lectra Shift” PTO
60ABE - PTO accommodation for electric over hydraulic
60ABK - PTO accommodation for electric over air, non-clutched PTO
60ABL - PTO accommodation for electric over air, clutched PTO
Diamond Logic® Popular
Fire / Rescue Features

Engine Features
07SAZ - Engine brake for I-6 engine (if over 36K GVW)
07WZX - Exhaust regeneration inhibit, momentary, resets when key off
09WBB - Ember screen for engine air inlet
12VZA - Remote engine speed control wiring harness - without remote start/stop
16WLM - PTO Hourmeter and light “on” logs PTO engaged with engine running
16HHE - In cab “filter minder” gauge
16WLM - PTO / Pump hour meter, indicator light and hour meter in cluster
60ABC - Remote engine start, stop and restart control package

Cab Features
16GHU - Yellow interior grab handles with 2 door cab
16GHV - Yellow interior grab handles with 4 door crew cab
16VBZ - Red seat belts in the front
16VCA - Red seat belts in rear seating
16KUW - NFPA approved, 911 high back black driver seat without SCBA gear
16LPC - NFPA approved, 911 high back black front passenger seat for SCBA gear
16PCS - 3 rear crew seats NFPA approved, 911 high back black seat for SCBA gear
Everything You Need To Take Care of Your Trucks

An Industry Leader In Support And Service

Nearly 900 International® Dealer locations, you’re never away from the service and support whenever you need it.