

## Module 1: Cab Components

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### Terms and Definitions

#### READY FOR REVIEW

- The cab is the driver-/passenger-carrying compartment.
- The cab-over-engine (COE) is the type of cab design in which the engine is directly under the cab.
- The clearance (marker) lights are small amber and red lights attached to the cab and trailer to indicate overall clearance at night.
- The fairing is the member or structure whose primary function is to produce a smooth outline and to reduce drag.
- The fascia is the flexible material commonly used as a bumper cover.
- The glider kit is the new cab and chassis components that are used to replace damaged components.
- Reflectors are glass or plastic prism lenses that reflect light.
- A sleeper cab is the type of cab that contains an optional bed unit for sleeping.
- Tilting is the process of raising the cab on a COE design to a partially or fully open position.

### Basic Cab Designs

#### READY FOR REVIEW

- Conventional.
  - The cab sits behind the engine.
  - This offers the driver a smoother ride and more protection, because the frame and engine are out front.
  - This also provides the driver better access to and more room for the sleeper.
  - The hood is tilted forward (or can be removed) for easy access to the engine, and the latching mechanism is located at the rear of the hood, next to the cab.
- Cab-over-engine (COE), or cabover.
  - The cab is located directly over the engine.
  - The driver is seated as far forward as possible, which provides greater visibility.
  - The shorter wheelbase allows for easier handling in traffic.
  - A COE allows easier access to the transmission.
  - The entire cab must be tilted up and forward before a technician can work on the engine.

### Optional Features on Cabs

#### READY FOR REVIEW

- Sleepers consist of a bed or bunk beds for drivers' and/or passengers' convenience and comfort when sleeping and are available on either cab design.
- Appliances may include refrigerators, microwaves, and radios for the driver's convenience and comfort when traveling, and must be secured so they will not move during a sudden stop.
- Special aerodynamic design features are used to improve fuel efficiency by reducing wind resistance, including wind deflectors, roof shields, and special side fairing around the fuel tanks.
- Heated mirrors are used to prevent fogging and icing on outside mirrors.
- Cruise control is used to regulate "cruising" speed.

## Vehicle Identification Numbers (VIN)

### READY FOR REVIEW

- Vehicle identification numbers (VIN) are numbers required by law and are assigned to vehicles by manufacturers, primarily for registration and identification purposes.
- The format of the VIN consists of 17 characters made up of a combination of numbers and letters.
  - As an example: 1XK 9D2X96 L S345678
- As a form of identification, the VIN identifies the model year, the manufacturing plant, and the vehicle serial number.
  - Model year: L = 1990, M = 1991, N = 1992, P = 1993, R = 1994, S = 1995, T = 1996, V = 1997, W = 1998, X = 1999.
- The VIN is placed on vehicles in various places near the driver's door. On conventional cabs, it is usually located on the latching edge of the cab door or on the cab door frame above the hinge; on COE vehicles, it is usually located on the bulkhead panel to the left of the driver.

## Cab Instruments and Controls: Engine Gauges

### READY FOR REVIEW

- The tachometer measures the engine speed in revolutions per minute (RPM) and is used for matching driving speed and gear selection.
- The oil pressure gauge indicates the operating pressure of the engine oil.
- The oil temperature gauge indicates the temperature of the engine oil.
- The water temperature gauge indicates the temperature of the engine coolant.
- The voltmeter shows the voltage output of the vehicle's electrical system (normally 12-14 volts).
- The ammeter indicates the balance of the vehicle's electrical system (normally 0).

## Cab Instruments and Controls: Operational Gauges

### READY FOR REVIEW

- The speedometer indicates the vehicle's speed in miles per hour and kilometers per hour.
- The odometer records the miles traveled.
- Note:** Some vehicles also have a trip odometer that can be reset to record separate mileages.
- The air reservoir pressure gauge indicates the amount of air pressure in the brake system in pounds per square inch (psi) and usually has a green pointer to show the front reservoir air pressure and a red pointer to indicate pressure in the rear reservoir.
- The air application pressure gauge shows how much air pressure is being applied from the foot brake valve or trailer brake hand valve.
- The fuel tank level gauge shows the approximate amount of fuel in the fuel tanks.

## Cab Instruments and Controls: Secondary Instrument Gauges

### READY FOR REVIEW

- Secondary instrument gauges will vary according to the vehicle manufacturer and may include:
  - The pyrometer, which indicates engine exhaust gas temperature and is used to determine engine output.
  - The manifold pressure gauge, which indicates engine output by showing the amount of turbo boost.
  - The axle temperature gauge, which indicates the temperature of the lubricant in the vehicle's axle(s).
  - The transmission temperature gauge, which shows the temperature of the oil in the transmission.

## Cab Instruments and Controls: Operational Switches

### READY FOR REVIEW

- The ignition switch is used primarily to turn on the engine and also has an accessory position to turn on accessory power without turning on the engine.
  - The air tank heat switch is used to help remove moisture and to prevent freezing in the air system.
  - The engine fan switch may be switched from manual to automatic.
  - The air suspension deflate switch (dump valve) is for exhausting the air in the suspension if the truck must be lowered to get under a trailer.
  - The interaxle differential lock switch allows differential action between the forward rear and the rear driving axles and may be locked when operating on surfaces with poor traction and unlocked for normal conditions.
  - The fifth wheel lock switch is used to adjust a sliding fifth wheel for better weight distribution.
  - Accessory controls are for accessory items not used when the vehicle is operating on the highway, such as deep reduction and trailer dump.
- Caution:** When the fan switch is on manual, the fan will turn on immediately when the engine is started. When the fan switch is on automatic, the fan will turn on when the engine coolant reaches a set temperature of about 200°F. This can happen suddenly. Watch out!

## Cab Instruments and Controls: Lighting Switches and Brake Controls

### READY FOR REVIEW

- Lighting switches include switches for headlights, panel lights, clearance lights, side and taillights, dome lights, trailer clearance lights, and fog lights.
- Brake controls (some are color-coded) include:
  - The parking brake control valve (yellow) is pulled out to set the parking brake on the tractor.
  - The trailer air supply valve (red) will automatically pop out to set the trailer parking brake when the tractor parking brakes are set.
- The tractor park-only valve (blue) is used to set the parking brake for the tractor when it is disconnected from the trailer.
- The trailer brake hand control provides air pressure to apply the trailer brakes only and operates independently of the foot brake valve.

## Emergency Safety Equipment

### READY FOR REVIEW

- The emergency safety equipment required by the Department of Transportation (DOT) includes:
  - A fire extinguisher (multipurpose type).
  - Warning devices (at least three), such as red reflectors, emergency flares, red flags, and red reflective triangles or electric lanterns.
- Other optional equipment includes:
  - Spare fuses.
  - Jumper cables.
  - First aid kit.
  - Telephone.

## Types of Driver Seats

### READY FOR REVIEW

- Air-suspended seats.
- Spring-suspended seats.

## Main Components of an Air-Suspended Seat

### READY FOR REVIEW

- Back cover (upholstery).
- Polyfiller cushion.
- Upper frame assembly.
- Seat cushion.
- Lower frame assembly.
- Air valve assembly.
- Track assembly.
- Seat support assembly.
- Shock absorber.
- Upper arm assembly.
- Air spring.
- Lower arm assembly.
- Base and upright.

## Components of Seat Belts

### READY FOR REVIEW

- Webbing is the narrow fabric woven with continuous yarns. It is very strong but can be damaged when caught in the door and will need replacement.
  - The buckle has a quick-release mechanism that receives the latch plate for fastening.
  - The latch plate (tongue) is a flat, metal piece that inserts into the buckle for fastening.
  - Adjustment hardware components are the metal or rigid plastic parts that allow for adjusting the size of a seat belt to fit the user.
  - Attachment hardware components are the metal parts designed for securing the webbing to the vehicle. They are attached in two or three points depending on the type of seat belt.
  - A two-point seat belt is a lap belt designed for pelvic restraint.
  - A three-point seat belt is a lap and shoulder belt for pelvic and upper torso restraint.
  - An emergency locking retractor is a device that stores unused webbing. The webbing rolls in and out of this device during the fastening process. The device contains a locking mechanism to prevent the webbing from continuing to roll out during an emergency.
  - A tether belt and anchor bracket attach the buckle end of the seat belt to the cab floor and seat frame. They are used on suspension seats to prevent excessive movement of the seat.
- Note:** Some seat belts also contain a locking device that will relieve shoulder restraint tension for extra comfort.

## Types of Cab Mounts

### READY FOR REVIEW

- There are two types of cab mounts:
  - Stationary.
  - Air suspension.
- Cabs may be mounted using either stationary (solid) cab mounts or with air suspension cab mounts.

## Types of Cab Lifting/Tilting Mechanisms

### READY FOR REVIEW

- Two basic types of lifting/tilting mechanisms are used with cabs:
  - Manual lift.
  - Hydraulic lift.

## Safety Rules

### READY FOR REVIEW

- Never jump out of a cab! Use the hand holds.
- When getting into and out of the cab, always maintain at least three points of contact, with your hands on the handholds (or grab handles) and your feet on the steps or ground.
- Also maintain at least three points of contact when climbing onto and off the deck plate behind the cab. Watch for slippery surfaces. Be careful not to slip and fall.
- Before tilting or lifting any hood, make sure the engine is not running and the parking brake has been set.
- Always attach the safety cable on a conventional hood to keep the hood open and to keep it from falling.
- These next rules apply when you are working on a COE cab. Before tilting, make sure there are no people or objects in the way. Check the clearance above and ahead of the cab, leaving enough room for roof antenna, roof fairing, and side fairing. Watch out for branches, power lines, electrical wires, lights, and other vehicles.
- Before tilting, make sure the shift lever is in neutral, all loose items in the cab and luggage compartments are secured or removed, and the doors are closed.
- Before getting under the cab, always make sure the safety lock bar is fully engaged. An unsecured cab could cause a serious or fatal accident.
- Before performing any work on the cab, make sure it is in the mechanically locked position or in the full tilt position.
- Be sure no one tries to bleed the hydraulic system with the cab tilted. This will defeat all safety features, and the cab can fall and crush anyone under it.
- For both types of cab design, always make sure the hood is latched securely when you finish working on the cab.