DEPARTMENT OF THE AIR FORCE **QTP24-3-E945**
Headquarters US Air Force **20 December 2018**
Washington, D.C. 20330-1030

60K-Loader

Vehicle Management Codes: E945

QUALIFICATION TRAINING PACKAGE

CONTENTS

Section 1—OVERVIEW

1.1. Overview.

1.1.1. Send comments and suggested improvements on AF Form 847, *Recommendation for Change of Publication* through Air Force Installation and Mission Support Center (AFIMSC) functional managers via e-mail at AFIMSC.IZSL.VehicleOps@us.af.mil.

1.1.2. How to use this plan:

1.1.2.1. Instructor:

1.1.2.1.1. Provide overview of training, **Section 2** and **Section 3**.

1.1.2.1.2. Instructor's lesson plan for trainee preparation, give classroom lecture, **Section 4**.

1.1.2.1.3. Instructor's lesson plan for knowledge exam, **Section 5**.

1.1.2.1.4. Instructor's lesson plan for demonstration, **Section 6**.

1.1.2.1.5. Instructor's lesson plan for performance and evaluation, **Section 7**.

1.1.2.2. Trainee:

1.1.2.2.1. Reads this entire lesson plan prior to starting lecture.

1.1.2.2.2. Follows along with lecture using this lesson plan and its attachments.

1.1.2.2.3. Takes knowledge exam.

1.1.2.2.4. Uses **Attachment 3** and **Attachment 5** as guides for vehicle inspection.

1.1.2.2.5. Takes performance test.

Section 2—RESPONSIBILITIES

2.1. Responsibilities.

2.1.1. The trainee shall:

2.1.1.1. Ensure the trainer explains the Air Force Qualification Training Package (AFQTP) process and the responsibilities.

2.1.1.2. Review the AFQTP/Module/Unit with the trainer.

2.1.1.3. They trainee should ask questions if he/she does not understand the objectives for each unit.

2.1.1.4. Review missed questions with the trainer.

2.1.2. Instructor shall:

2.1.2.1. Review the AFQTP with the trainee.

2.1.2.2. Conduct knowledge training with the trainee using the AFQTP.

2.1.2.3. Grade the review questions using the answer key.

2.1.2.4. Review missed questions with the trainee to ensure the required task knowledge has been gained to complete the task.

2.1.2.5. Sign-off the task(s).

2.1.3. The Certifier shall:

2.1.3.1. Evaluate the Airman's task performance without assistance.

2.1.3.2. Sign-off the task(s).

Section 3—INTRODUCTION

3.1. Objectives.

3.1.1. Given lectures, demonstrations, hands-on driving session and a performance and written test, trainees will be able to perform operator's inspection and complete the performance test with zero instructor assists and achieve 80% on the written tests.

3.1.1.1. Train and qualify each trainee in safe operation and preventive maintenance of the 60K-Loader.

3.1.1.2. This training will ensure the trainee becomes a qualified 60K-Loader operator; an operator who has the knowledge and skills to operate a 60K-Loader in a safe and professional manner.

3.2. Desired Learning Outcomes.

3.2.1. Understand the purpose of the 60K-Loader and its role in the mission.

3.2.2. Locate information contained in the applicable TO and explain terminology used in the technical manual and operator' guide.

3.2.3. Identify the major components and the various operating systems contained on the loader. Identify, inspect and operate the operational subsystems on the loader.

3.2.4. Identify components of the deck assembly and explain how they function.

3.2.5. Identify and locate linkage and chassis assemblies on the loader.

3.2.6. Explain what type of engine is in the loader and how the hydrostatic drive system functions.

3.2.7. Identify and operate the controls located inside of the cab.

3.2.8. Explain the deck conveyor, pitch, roll and side shift functions. Explain how to remove the side rail assembly, install the deck extension and catwalks, and placement of the bridge plates.

3.2.9. Understand the safety precautions to be followed before-, during-, and after- operation of the 60K-Loader.

3.2.10. Know the proper operator maintenance procedures of the 60K-Loader, IAW applicable technical orders (TOs) and use of Air Force (AF) Form 1800, *Operator's Inspection Guide and Trouble Report*.

3.2.11. Safely and proficiently operate the 60K-Loader. Know how to operate the loader in the event of an emergency, and be familiar with how to start the loader during cold weather.

3.2.12. Be able to configure the loader for air shipment to include: spinning the bogies, deck and cab reconfiguration, weighting and marking the loader and aircraft loading.

3.2.13. Know how to transport the tunner by truck and disengage the hydrostatic drive hubs in the event of a maintenance problem and the loader needs to be towed.

3.2.14. Explain where to locate trouble shooting data and how to change a wheel or tire.

3.3. Lesson Duration.

3.3.1. Recommended instructional and hands on training time is 80 hours:

Figure 3.1. Recommended Training Time for Training Activities.

Training Activity	Training Time
Trainee's Preparation	10 Hours
Instructor's Lecture	15 Hours
Trainee's Written Evaluation	3 Hours
Instructor's Demonstration	10 Hours
Trainee's Personal Experience (to build confidence and proficiency) ▪ Perform Operator Maintenance ▪ Operate the Vehicle	40 Hours
Trainee's Performance Evaluation	2 Hours

Note: This is a recommended time; training time may be more or less depending how quickly a trainee learns new tasks.

3.4. Instructional References.

3.4.1. Risk Management (RM) and Safety Principles.

3.4.2. Applicable TOs or Manufacturer's Operator's Manual. See Vehicle Management for TO number for vehicle being used in training. (T.O. 36M2-3-35-11 and T.O. 36M2-3-35-11CL-1).

3.4.3. Air Force Manual (AFMAN) 24-306, *Operation of Air Force Government Motor Vehicles*.

3.4.4. AF Form 1800.

3.4.5. Special references based-off type of vehicle.

3.4.6. Hazardous Material Lesson Plan, if applicable.

3.5. Instructional Training Aids and Equipment.

3.5.1. 60K-Loader Lesson Plan.

3.5.2. 60K-Loader

3.5.3. Overhead Projector

3.5.4. Applicable TO or Manufacturer's Operator's Manual. (T.O. 36M2-3-35-11 and T.O. 36M2-3-35-11CL-1).

3.5.5. AF Form 1800.

3.5.6. 60K PowerPoint.

3.5.7. Series 900 Loader Training PowerPoint.

3.5.8. Videos (if locally produced).

3.5.9. Suitable training area.

3.5.10. Traffic cones.

Section 4—TRAINEE PREPARATION

4.1. Licensing Requirements.

4.1.1. Trainee must have in his/her possession a valid state driver's license.

4.1.2. AF Form 171, *Request for Driver's Training and Addition to U.S. Government Driver's License* IAW Air Force Instruction (AFI) 24-301, *Ground Transportation*.

4.1.3. Applicable local licensing jurisdiction requirements.

4.2. Required Reading (Testable Material).

4.2.1. Read this entire lesson plan.

4.2.2. Read AFMAN 24-306.

4.2.3. Read Manufacturer's Operator's Manual for the vehicle being trained on.

Section 5—KNOWLEDGE LECTURE AND EVALUATION

5.1. Overview of Training and Requirements.

5.1.1. Training objectives:

5.1.1.1. Given lectures, demonstrations, hands-on driving session, and a performance and written test, trainees will be able to perform operator's inspection and complete the performance test with zero instructor assists and achieve 80% on the written tests.

5.1.1.2. Train and qualify each trainee in safe operation and preventive maintenance of the 60K-Loader.

5.1.1.3. This training will ensure the trainee becomes a qualified 60K-Loader operator—an operator who has the knowledge and skills to operate a 60K-Loader in a safe and professional manner.

5.1.2. Desired learning outcomes:

5.1.2.1. Understand the safety precautions to be followed before-, during-, and after-operation of the 60K-Loader.

5.1.2.2. Understand the purpose of the 60K-Loader and its role in the mission.

5.1.2.2.1. The 60K Tunner Loader is categorized as a weapons system. The Tunner 60K is designed to load and unload cargo on all military and civilian aircraft used by the Department of Defense (DoD). The loader can also transport rolling stock, palletized cargo, airdrop platforms, and shipping containers to and from the aircraft.

5.1.2.2.1.1. The deck can lift from 39" to 222" (18-½ feet). The loader is capable of air transport on the C-5 and C-17 aircraft.

5.1.2.2.1.2. The Tunner can operate in a number of locations with ambient temperatures ranging from -40°F to +125°F degrees.

5.1.2.2.2. Role in the mission (Unit/Base/Community (during natural disasters)/Air Force).

5.1.3. 60K-Loader design. The Tunner 60K is a self-propelled flight line vehicle capable of front, back and side loading/unloading at heights previously mentioned. The deck has a number of adjustments to help compensate for misalignment between loader, aircraft and loading dock.

5.1.3.1. It has five axle lines, two of which propel the vehicle and four that steer.

5.1.3.2. The power pack is a 5.2 liter V-6 diesel engine that drives two hydrostatic drive pumps.

5.1.3.3. The loader has five axle lines and is self-propelled by four hydrostatic drive motors and torque hubs located within the left and right wheels of the # 2 and #4 axles.

5.1.3.4. The steering is articulated to allow for tighter turning radius and increased load stability.

5.1.3.5. Suspension height is adjustable.

5.1.4. Major Components.

5.1.4.1. Chassis Assembly.

Figure 5.1. Chassis Controls.

5.1.4.2. Suspension Assembly.

5.1.4.3. Power Pack.

5.1.4.4. Ladder.

5.1.4.5. Lifting Linkage.

5.1.4.6. Lift Cylinder.

5.1.4.7. Deck.

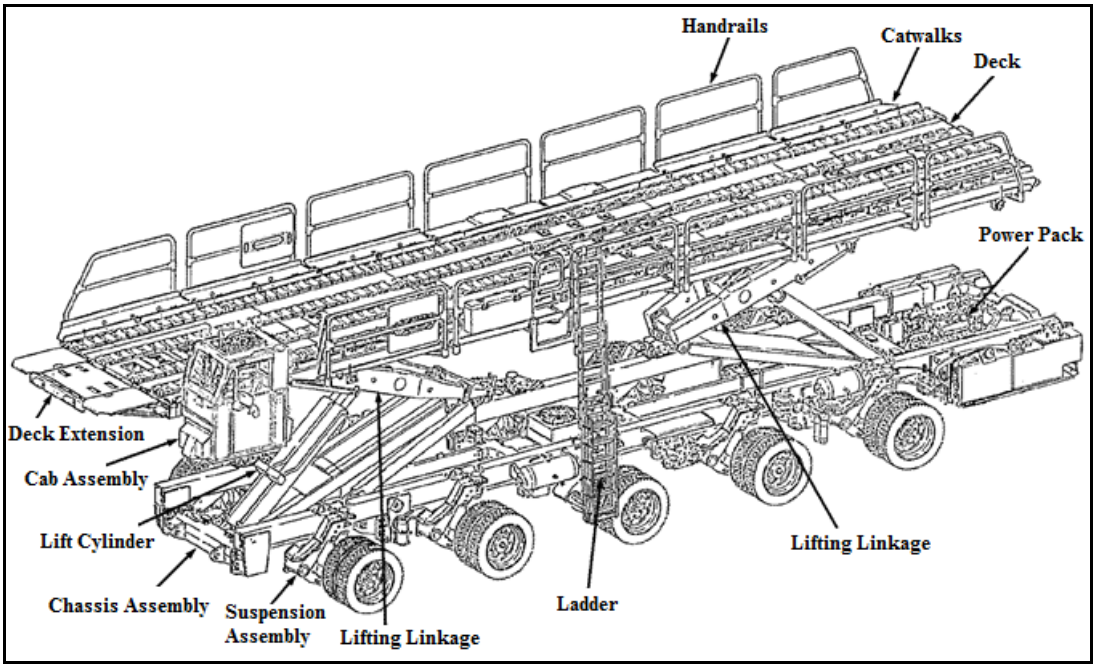
5.1.4.8. Cab Assembly.

5.1.4.9. Handrails.

5.1.4.10. Catwalks.

5.1.4.11. Deck Extension.

Figure 5.2. 60K-Loader Major Components.



5.1.5. General Specifications.

5.1.6. Engine. Two-cycle, turbo-charged, fuel injected, electronically governed, 318 cubic in., 5.2L, V-6 diesel.

5.1.6.1. 200A Alternator.

5.1.6.2. Air compressor with governor.

5.1.6.3. Starter.

5.1.6.4. Electronic governor.

5.1.6.5. Turbocharger.

5.1.6.6. Multiple output gearbox.

5.1.6.6.1. Mounted to the rear of the engine.

5.1.6.6.2. Sight gauge to check the fluid level.

5.1.6.6.3. Maintenance must add the fluid.

5.1.6.7. Two output gearbox.

5.1.6.8. The engine also has internal and external heating/warming elements and an automatic ether start system to aid in starting.

5.1.7. Fuel system. The capacity of the fuel tank is 50 gallons. **Note:** The use of JP-grade fuels cause a slight reduction in engine power due to the low lubricating ability and low octane.

Figure 5.3. Diesel Fuel Tank.

5.1.7.1. Fuel tank.

5.1.7.2. DF-1 (between -32 °F and 32 °F), DF-2 (above 32 °F), DF-A (below -32 °F), JP-4, JP-5, JP-8 and B-20.

5.1.7.3. Manual priming pump.

5.1.7.4. Fuel shutoff valve.

5.1.7.5. Fuel system warmer/heater. The warmer/heater aids in cold starting. The engine coolant is heated by winterization kit and circulated through the heater element.

5.1.8. Cooling system. **Note:** Requires special “purple” antifreeze. Refer to the T.O. Never use green antifreeze.

5.1.8.1. 72 qt cooling system.

5.1.8.2. 50/50 mixture purple ethylene glycol and distilled water.

5.1.8.3. 3 core radiator.

5.1.8.4. 2 hydraulic cooling fans.

5.1.8.5. 2 check/fill/overflow reservoirs.

5.1.8.6. Externally heated coolant and pump.

5.1.8.7. Surge tank.

5.1.8.8. Water pump/alternator drive belts. **Note:** Ensure the belts are present and adjusted properly.

5.1.9. Emergency shutdown.

5.1.9.1. Emergency shutdown switch. Switches are located in the cab on the dash, plus on the A-1 (chassis junction box) and A-6 modules (engine box).

5.1.9.2. A1 module box (three switches one inside, two right side of loader).

Figure 5.4. A1 Chassis Junction Box Emergency Shutdown.

5.1.9.3. Runaway engine shutdown. Shutdown loader using the fuel shutoff located on the leading edge of the main fuel tank.

5.1.10. Hydrostatic drive.

5.1.10.1. Two hydrostatic drive pumps. Hydrostatic pumps mount to a multiple output gearbox and bolts to the engine. The right hand pump provides power to the #2 axle and the left hand provides power to #4 axle.

5.1.10.2. Four hydrostatic drive motors.

5.1.10.3. Four drive hubs.

5.1.10.4. Multiple output gearbox.

5.1.10.5. Two hydraulic pumps.

5.1.11. Hydrostatic drive hydraulic system. The four drive (axle lines # 2 and #4) hubs provide the final drive output from the hydrostatic drive motor to the wheels.

Figure 5.5. Hydrostatic Drive Hydraulic System.

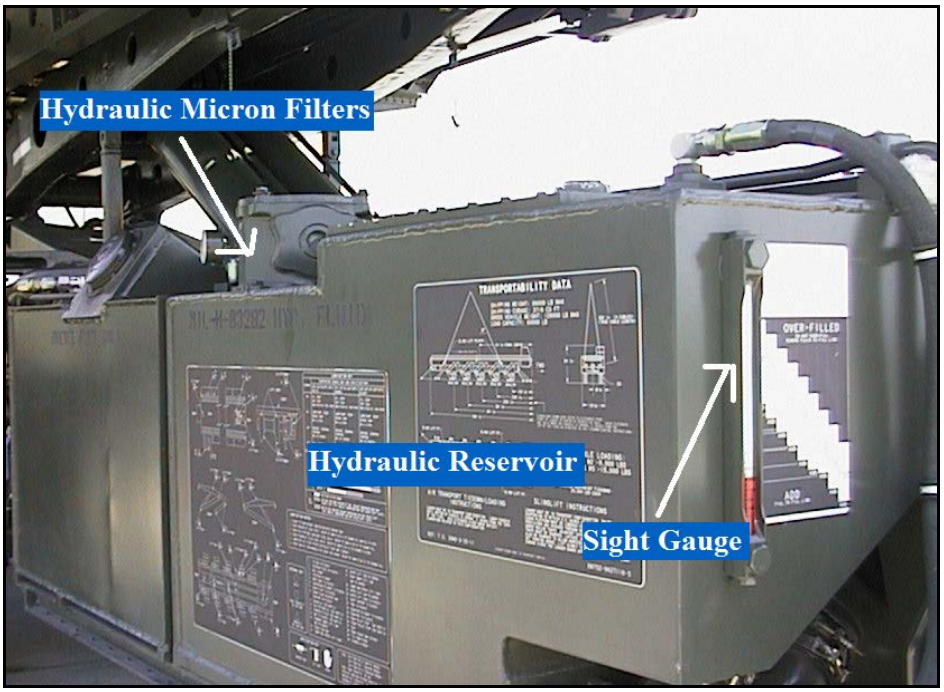
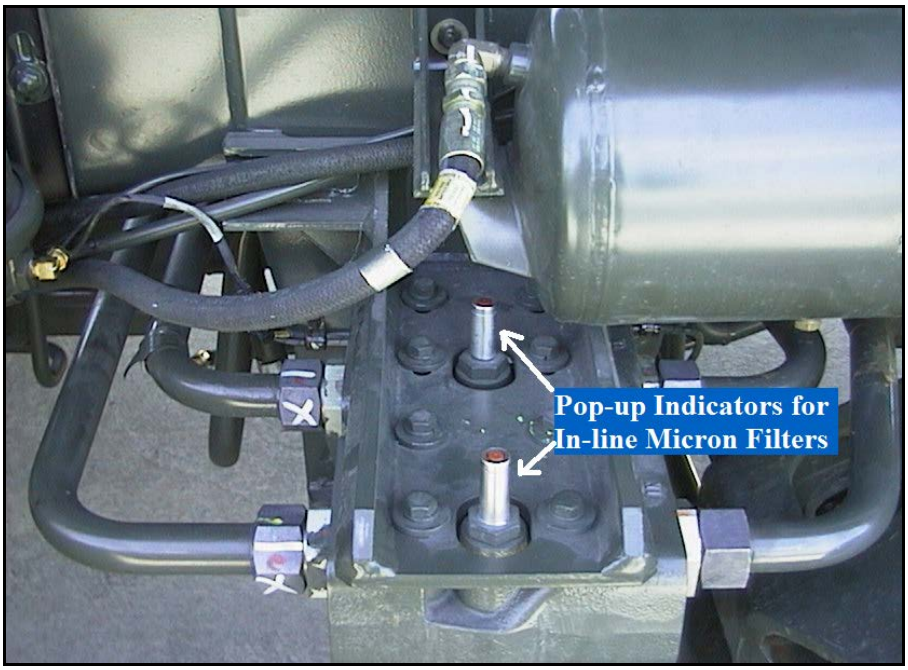


Figure 5.6. Pop-up Indicators for In-line Micron Filters.



5.1.11.1. Engine speed-related control system (ESRCS). Inching valves on the hydrostatic drive pump generate pilot pressure proportional to engine speed. Very low inching speeds are needed when approaching aircraft.

5.1.11.2. Hydrostatic drive pumps.

5.1.12. Drive hubs. Produces the final drive output power from the hydrostatic motor to the wheels. **Note:** The drive hub must be disabled for emergency movement (towing) of the loader.

5.1.12.1. Four drive hubs.

5.1.12.2. Hydrostatic drive motor.

5.1.13. Operational subsystems. Operational subsystems are made up of hydraulic, pneumatic and electrical systems.

5.1.13.1. Hydraulic system. The hydraulic system in conjunction with the engine is the primary source of power and propulsion for the loader. Hydraulic flow is regulated by the engine revolutions per minute (rpm). Each of two hydraulic pump networks consists of a hydrostatic drive pump, hydraulic pump and a boost pump. The system also has an emergency system and seven subsystems.

5.1.13.1.1. Left pump network.

5.1.13.1.1.1. Steering.

5.1.13.1.1.2. Side shift/roll.

5.1.13.1.1.3. Power conveyor.

5.1.13.1.1.4. Axle #4 drives.

5.1.13.1.2. Right pump network.

5.1.13.1.2.1. Suspension.

5.1.13.1.2.2. Lift linkage.

5.1.13.1.2.3. Axle #2 drives.

5.1.13.1.3. Emergency hydraulic system. The emergency system provides normal steering, lift, and suspension hydraulic functions in limited capacity. It reduces the rate of performance. The pump is powered by an electrical motor.

5.1.13.1.3.1. Electric motor/hydraulic pump.

5.1.13.1.3.2. 24 volts direct current (Vdc).

5.1.13.1.3.3. Pressure ranges from 1,000 to 3,000 pounds per square inch (psi).

5.1.13.1.3.4. Provides normal steering/lift/suspension.

5.1.13.1.3.5. Minimum continuous operating time: 30 min.

5.1.13.1.4. Steering. Steering is controlled by the steering wheel and steering column connected to a hydraulic valve in the cab.

5.1.13.1.5. Side shift and roll. Side shift and roll functions are designed to assist in loading and unloading cargo. Momentary switches in the cab/deck-mounted hydraulics control them. Each switch electrically powers a control valve and allows hydraulic fluid to operate the cylinders.

5.1.13.1.6. Power conveyor. Power conveyors are hydraulically controlled and move the pallets across the deck surface. The pallets move with the aid of nine individual conveyor selector switches. The selectors allow the pallet to move either forward/aft. Powered conveyors move light pallets on LOW (under 3,000) or heavy pallets on HIGH (above 3, 000). Directional controllers power pallets either fwd/aft or in/out.

5.1.13.1.7. Lift linkage. The lift linkage is the main system that moves the deck up and down. The lift controller switch electrically powers controller switch electrically powers control valves and allows hydraulic fluid to operate the lift cylinders to raise and lower the deck. Cylinder movement is directly related to placement of switch and rpm. Cylinder movement is controlled by an interim lower lift position provides slow cylinder movement and extreme lower/lift causes fast movement.

5.1.13.1.8. Hydrostatic drive. Provides a means for propulsion using a high pressure hydraulic system.

5.1.13.1.9. Suspension. Suspension on the loader provides for chassis height adjusting and load stability. To adjust the suspension, move the selector switch to SUSPN and push the switch up or down depending on the direction the suspension needs to move. Suspension switches are held until the chassis position indicator light is lit. (For C130 loading, depress the override control while holding both suspension switches in the LOAD position.).

5.1.13.1.10. Cooling. Cooling of the hydraulic system is provided by a cooling fan driven with a hydraulic motor at the heat exchanger. Sensors monitor the hydraulic oil temperature and control the fans operation.

5.1.13.2. Pneumatic system. The loaders pneumatic system is both wet and dry based on standard automotive brake systems. As the system produces air pressure, the air is dried through and air dryer. Quick disconnects on air tanks provide air pressure for external use such as inflating tires. Glad hands are mounted on the front of the loader and allow external air pressure to be connected for towing. The four systems are charging, primary braking, secondary braking system and emergency breaking system.

5.1.13.2.1. Charging system. This system produces air pressure for the entire pneumatic system. The system contains a belt driven, governed air compressor, condenser, electric dryer, wet tank, and two holding tanks (primary and secondary).

5.1.13.2.2. Primary brake system. This system provides normal braking for the non-driven axles no, 1, 3, and 5. The upper chamber of treadle (brake) valve controls the primary brake system. The air pressure is monitored by 1 “AIR PRESS” gauge. Left floor-mounted pedal in the cab.

5.1.13.2.3. Secondary brake system. This system provide braking for the drive axles #2 and #4. The lower chamber of treadle (brake) valve controls the secondary brake system. Air pressure monitored by 2 “AIR PRESS” gauge.

5.1.13.2.4. Emergency brake system. This system provides the parking brake and an emergency brake for system failures. In the event of a failure, air is released from the emergency system and the brake chamber spring applies the parking brakes (30-50 psi).

5.1.13.3. Electrical system. This system is a 12/24 Vdc power system. Power is generated by a 200A alternator and stored in four batteries. Major components of the electrical system not previously listed are A14 battery box, A12 module (winterization), A6 module (engine). A1 module (chassis) and A16 module (emergency power unit circuit breaker box) A-19 module -12/24Vdc circuit box , A-20 -24 Vdc starter circuit breaker box, A-22 engine shutdown control.

5.1.13.3.1. A pan liner is used to preheat the batteries for cold-weather starting. The batteries are capable of delivering 1600 cold cranking amps (CCA) at 24 Vdc for engine starting and 25 A for 200 minutes at 24 Vdc for the emergency standby system.

5.1.13.3.2. A14 battery box. The loader has four, 12 Vdc batteries connected to series/parallel to provide both slave cable, which allow use of an external power to assist in starting the loader.

Figure 5.7. A14 Battery Box.

5.1.13.3.3. A12 module. The A12 module provides distribution/control of the loader winterization system. The A12 module step-down transformer 220, 240V, 50-60 Hz input power. With either power input power configuration, the winterization light, located on the main instrument panel, indicates that the winterization power is connected is connected/applied.

5.1.13.3.4. A6 Module. The A-6 module is mounted near the engine, contains the electronic governor, start interlock circuit card, two circuit breakers, and an emergency shutdown switch, similar to the switch used on the cab's main instrument panel.

5.1.13.3.4.1. The start interlock circuit card inhibits the emergency pump from running when the engine is running and controls the emergency pump when the engine is not running. The start inner lock circuit card also allows starter motor to engage only once until the engine stops spinning.

5.1.13.3.4.2. The start interlock card also allows start motor to engage only once until the engine stops spinning and prevents the injector from being operated when the engine temperature is above 55 degrees Fahrenheit.

5.1.13.3.4.3. Cold weather starting aids are powered by 110V, 50-60 Hz input power.

5.1.13.3.4.4. Input power is distributed to the battery heaters, engine fuel heaters, engine coolant heater and pump, and ether bottle heater. **Note:** Ensure the power cord is disconnected from the loader prior to driving away. There is a switch located on the module for emergency shutdown.

5.1.13.3.5. A1 module. The module is the brain center for the hydraulic system. It contains an emergency shutdown switch, emergency pump switch, six circuit breakers, and all necessary relays for hydraulic system operation.

5.1.13.3.5.1. The emergency shutdown switch, similar to the switch used on the cab's main instrument panel, allows emergency engine shutdown while personnel are on the ground near the engine. It applies 24 Vdc batter power to the emergency pump.

5.1.13.3.5.2. System interlocks prevent emergency pump operation when the engine is running.

5.1.13.3.6. A16 module. The A16 module is located under the A14 battery box and contains a circuit breaker that protects the standby emergency power unit from overheating. It can be tripped to disable a runaway emergency power unit.

5.1.13.3.7. A-19 Module – A-19 Module located next to the A14 battery box and contains two circuit breakers that protect 12 Vdc and 24Vdc power for the entire loader, excluding the engine starter's circuit. The circuit breakers should be turned off in an electrical emergency, if the loader will not be used for an extended period, or for maintenance.

5.1.13.3.8. A-20 module. The A-20 Module is located next to the A-6 engine box and contains a circuit breaker that protects the 24Vdc engine starter circuit. The circuit breaker should be turned off in an electrical emergency or for engine maintenance.

5.1.13.3.9. A-22 module. The A-22 Module is mounted behind the A-6 engine box, contains electronics circuitry that monitors engine temperatures, oil pressure, and coolant levels. This system will automatically shut down the engine when engine temperature exceeds 210°F oil pressure is below 4 psi, or engine coolant level is 10 quarts below full. When any of these conditions exists an audible alarm will sound and the yellow winterization/engine shutdown light on the instrument\ panel flashes. A 30 second time period is initiated that will shut down the engine to avoid catastrophic engine failure.

5.1.14. Main instrument panel. The main instrument panel is located in the cab base assembly just in front of the steering wheel. It is divided into seven smaller panels grouped by functionality:

Figure 5.8. Main Instrument Panel.

5.1.14.1. Cab heater panel.

5.1.14.2. Ignition and mode control panel.

5.1.14.3. Meter gauge panel.

5.1.14.4. Suspension mode control panel.

5.1.14.5. Deck indicator panel.

5.1.14.6. Auxiliary control panel.

5.1.14.7. Parking brake panel.

5.1.14.8. Miscellaneous.

5.1.14.8.1. Emergency shutdown.

5.1.14.8.2. Reset alarm.

5.1.14.8.3. Lamp test.

5.1.14.8.4. Panel lights.

5.1.14.9. Cab heater panel. The cab heater panel is located on the upper, left side of the main instrument panel. It contains the control and indicator for operating the cab heater.

5.1.14.9.1. Using settings 0-4 > 2 will risk breaking the windshield.

5.1.14.9.2. The blower will continue to run 3 minutes after the heater and loader are shutoff.

5.1.14.9.3. Do not run heater during aircraft or heater fueling operations.

5.1.14.10. Ignition and mode control panel. This panel is located on the lower, right side of the main instrument panel. It contains controls for selecting the hydraulic control for either suspension, driving or deck functions and an ignition switch for starting the power pack.

5.1.14.10.1. Ignition. There is a three position switch. Engage the starter for 30 seconds and allow it to cool for 30 seconds.

5.1.14.10.2. Drive selector. Selects direction for hydrostatic drive. Neutral when using hydraulic functions.

5.1.14.10.3. Mode selector.

5.1.14.10.3.1. Three position switch.

5.1.14.10.3.2. Suspension. Parking Brake: ON and Drive Selector: N.

5.1.14.10.3.3. Deck. Parking Brake: ON, Drive Selector: N and Suspension: Load.

5.1.14.10.3.4. Drive (starting). Parking brake: ON, drive selector: N and other factors depending on the operation.

5.1.14.10.4. Indicator panel.

5.1.14.10.4.1. Winterization.

5.1.14.10.4.2. High beam.

5.1.14.10.4.3. Parking brake. Do not release foot brake until this light illuminates.

5.1.14.10.4.4. Low air. Indicates air pressure is below 60 psi. Do not drive loader with low air.

5.1.14.10.5. Meter gauge panel. The meter gauge panel is located in the center of the main instrument panel. It contains a tachometer, speedometer, oil pressure gauge, fuel tank gauge, power pack coolant (water) temperature gauge, 12 Vdc battery gauge, 24 Vdc battery gauge, hydraulic oil temperature gauge, and two air pressure gauges. On Series 900 Mercedes-Benz power pack, the tachometer is replaced with an electronic display that monitors all engine parameters.

5.1.14.10.5.1. Speedometer/odometer. Operation range 0-24 mph.

5.1.14.10.5.2. Reminder: Flight Line- 10 mph and Circle of Safety- 5 mph.

5.1.14.10.5.3. Tachometer/hourmeter. Operational range: 1,000-2,950 rpm. Governed @ 2,100 during suspension adjustment and conveyor operations.

5.1.14.10.5.4. Rule of thumb. Do not exceed 2,100 rpm when performing deck/suspension functions.

5.1.14.10.5.5. Oil pressure gauge. Operational range 5 to 80 psi. Immediately shutdown the engine if pressure drops below 5 psi.

5.1.14.10.5.6. Fuel gauge. Indicates level of 50 gallon fuel tank.

5.1.14.10.5.7. Water temperature gauge. Normal range varies, but it should not exceed 210°F. The loader will shut down if the water temperature exceeds 210°F.

5.1.14.10.5.8. Battery gauges. 12 Vdc (Normal 12 Vdc). 24 Vdc (Normal 26 Vdc). Different factors affect voltage levels.

5.1.14.10.5.9. Hydraulic oil temperature. The operational range should not exceed 155°F. The operational range may exceed 155°F with extreme use. It should return to normal within 3 minutes.

5.1.14.10.5.10. Air pressure gauges. The operational range is between 70 and 120 psi. If the air pressure falls below 60 psi, the tone will sound and the indicator will illuminate.

5.1.14.10.6. Suspension mode control panel. The suspension mode control panel is located on the center, upper-right side of the main instrument panel. It contains controls and indicators for adjusting front and rear suspension to selected travel or load heights. An override switch is used to lower the suspension below the default load height. All suspension adjustments are done from this panel.

5.1.14.10.6.1. Two main settings:

5.1.14.10.6.1.1. TRAVEL – When driving the loader from A to B.

5.1.14.10.6.1.2. LOAD – When performing any loading/deck functions. In special circumstances the loader may be left in travel during loading operations.

5.1.14.10.6.2. Two momentary switches.

5.1.14.10.6.3. Four indicator lights.

5.1.14.10.6.4. Override button. Used to lower suspension below the load to align the loader deck with a C-130 aircraft.

5.1.14.10.6.5. Suspension indicator lights do not illuminate in between LOAD and TRAVEL or above TRAVEL.

5.1.14.10.6.6. Operator must observe lights when adjusting suspension. Do not rely on the loader movement.

5.1.14.10.6.7. Structural damage will occur if loader suspension is not raised above travel properly.

5.1.14.10.7. Indicator light panel. The indicator light panel, located on the top, center of the main instrument panel, contains indicator lights for winterization/ engine shutdown, high beam, parking brake, and low brake air pressure.

5.1.14.10.8. Deck indicator panel. The deck indicator panel is located on the upper, right side of the main instrument panel. It contains deck position indicators for deck front pitch, deck roll left or right, front and rear deck side shift, and deck rear pitch. These indicator lights identify positioning of the deck and are used to level and center the deck for parking/storage.

5.1.14.10.8.1. The high side illuminates for pitch and roll. Shifted side illuminates for side shift.

5.1.14.10.8.2. The indicators must be out prior to returning deck to hard-stops.

5.1.14.10.8.3. Other indicators: Flashing pitch lights indicate a malfunction in the deck pitch controller. Operating the rear deck pitch switch could cause cab to contact the ground.

5.1.14.10.9. Auxiliary control panel. The auxiliary control panel, located on the upper, left side of the main instrument panel, contains controls for emergency pump operation, hydraulic pump crossover, windshield wipers, loader headlights, rear floodlights, and engine service lights.

5.1.14.10.9.1. Emergency pump indicator. The emergency pump indicator indicates when the DC standby pump is in operation. If the indicator illuminates when the engine is running, immediately shut the engine down. This indicator also indicates that the A16 circuit breaker has been tripped.

5.1.14.10.9.2. Crossover switch. This switch is used in the event of a pump failure. It allows crossover manifold to supply lift and suspension or deck and steering circuits. It is not associated with the emergency pump indicator.

5.1.14.10.9.3. Assorted switches: Headlights/interior light dimmer, rear spot lights, engine service lights (door open/ignition on) and wiper/washer.

5.1.14.10.9.4. Air transport switch. The air transport switch has two separate and very specific override functions that are utilized during shipment preparation.

5.1.14.10.9.4.1. Suspension load override. This allows the deck to raise or lower no matter what the position of the suspension is. It is used when additional suspension clearance is required during loading operations. This fools the loader circuitry to think the suspension is in load mode.

5.1.14.10.9.5. Parking brake override. This is used to safely raise and lower the suspension above travel. It is used primarily during preparation for shipment. It fools the loader circuitry to think the parking brake is engaged.

5.1.14.10.10. Deck/Conveyor control panel. The deck/conveyor control panel is located in the front, right side of the cab assembly. It contains controls of deck main lift and hydraulic controls. This control panel has two smaller panels consisting of a deck control panel and a conveyor control panel.

5.1.14.10.10.1. Deck control panel. This contains all controls to operate all deck functions. These controls can be used in conjunction with the indicator lights on the main instrument panel that identify the deck position.

5.1.14.10.10.1.1. Deck lift controller. This controller lifts/lowers the front and rear of the deck simultaneously. Do not use it for minute adjustments during pallet transfer. Do not place a radio on the deck control panel.

5.1.14.10.10.1.2. Roll switch. This controls the deck roll 4° left or right to accommodate uneven surfaces.

5.1.14.10.10.1.3. Front/rear sideshift. Controls deck yaw 3" from center to accommodate misalignment. Front/rear can be adjusted independently or simultaneously in either direction.

5.1.14.10.10.1.4. Front/rear deck pitch. Controls the deck pitch 6° up/down front/rear. Use front pitch to make minute adjustments during pallet transfer. Keep deck as level as possible during loading operations.

5.1.14.10.10.2. Conveyor control panel. This panel controls to operate the loaders 9 power conveyors to control the operation of the deck hydraulics.

5.1.14.10.10.2.1. Conveyor mode switch. This switch engauges either the main or side conveyors. The conveyor modules are forced above the deck surface. The switch should be off when not in use. Engage to stop a runaway pallet.

5.1.14.10.10.2.2. Directional controller. This joystick controls the direction of the conveyor (FWD/REV/IN/OUT). The side loading conveyors exist only on loaders 97E248-99E62 and 64. Panel markings are standard on all loaders.

5.1.14.10.10.2.3. Conveyor load switch. This switch selects the amount of pressure applied against pallets by conveyors. Normally the low setting is used. (Low < 3,000 lbs. / High >3,000 lbs.).

5.1.14.10.10.2.4. Pallet position switch. This rocker type switch switches control power to the assigned conveyor. OFF disables the directional control. The conveyor stays in the raised position.

5.1.15. Parking brake panel.

5.1.15.1. The parking brake knob is located on the upper left side of the main instrument panel. It controls the parking brakes and pulling the knob outward applies the parking brakes.

5.1.16. Miscellaneous cab components.

5.1.16.1. Floorboard.

5.1.16.1.1. Throttle pedal. Electrically controls engine speed.

5.1.16.1.2. Brake pedal. Pneumatically controls wheel brakes.

5.1.16.1.3. High beam switch. On the floor between the two pedals.

5.1.16.2. Directional/hazards.

5.1.16.2.1. Mounted to the steering column.

5.1.16.2.2. Run hazards.

5.1.16.3. Horn.

5.1.16.3.1. Pull cord style.

5.1.16.3.2. Loud.

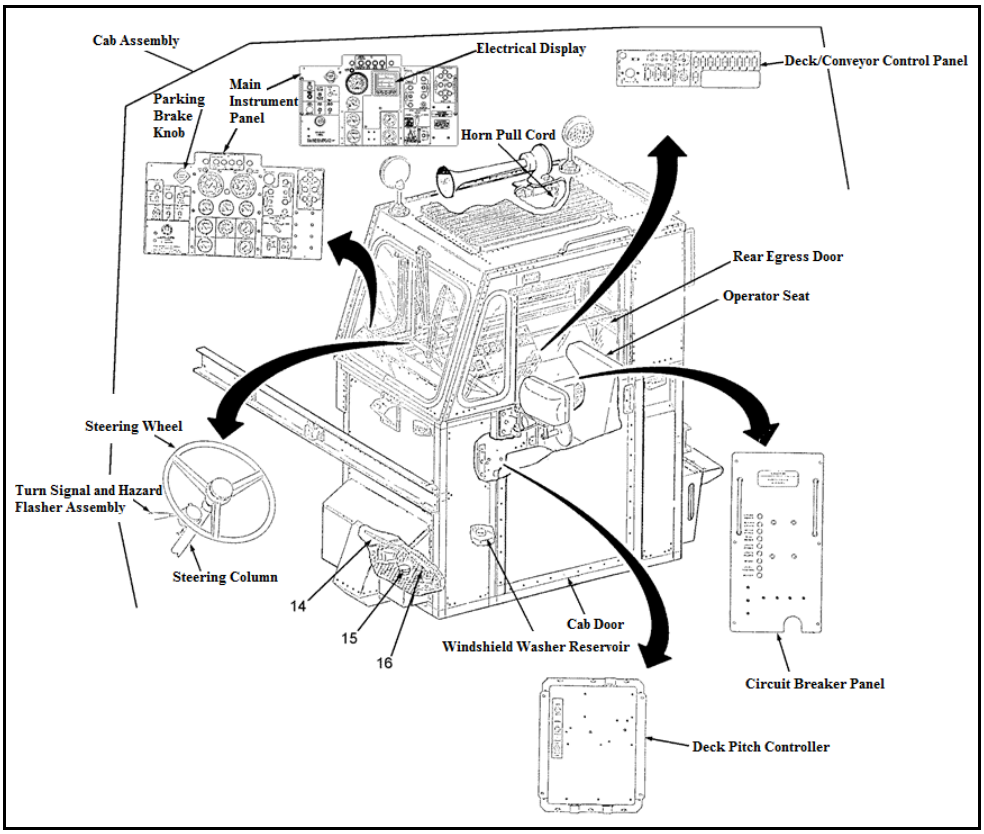
5.1.16.3.3. Do not use at A/C or when personnel are directly in front of the cab.

5.1.16.4. Operator seat controls: Height (some are bolted in place), firmness, forward/rear.

5.1.16.5. Heater defroster knob. Directs airflow between floor and dash.

5.1.16.6. A7 circuit breaker. Protects the electrical components of the loader.

Figure 5.9. Cab Assembly and Major Components.



5.2. Vehicle Inspection.

5.2.1. Pre-trip vehicle inspection test/operational checks. During each shift, the operator must perform all operational checks. Before operation, during operation, and after operation. Any equipment or loader faults should be reported immediately to vehicle maintenance personnel.

5.2.2. Use the TO checklist in conjunction with AF Form 1800 and **Attachment 3** as a walk around guide.

5.2.3. A Seven-Step Inspection Method will help ensure the inspection is the same each time it is conducted, and that nothing is left out. See **Attachment 5** for the Seven-Step Inspection Method. **Note:** If gauges are not functioning properly, report the loader to maintenance.

5.2.4. Types of Vehicle Inspection. If discrepancies are found they must be reported to Vehicle Control Officer/Vehicle Non Commissioned Control Officer (VCO/VCNCO), the supervisor, and/or vehicle maintenance:

5.2.4.1. Pre-trip inspection – find items/problems that could cause accident or breakdown.

5.2.4.1.1. Vehicle maintenance to authorize continued use for all other maintenance discrepancies.

5.2.4.1.2. Cleanliness/damage/missing items.

5.2.4.1.3. Leaks (fuel/oil/coolant/hydraulic/air).

5.2.4.1.4. Lubrication. Lubrication intervals are for normal climate conditions. Times and lubricants must be adjusted when operating in extreme heat, cold, dust, or humidity.

5.2.4.1.5. Engine area.

5.2.4.1.5.1. Check Linde pump for leaks.

5.2.4.1.5.2. Check air filter indicator. Red indicates dirty filter. Notify Vehicle Management.

5.2.4.1.5.3. Check air intake for obstruction or damage.

5.2.4.1.5.4. Check radiator fans and fins for obstruction or damage.

5.2.4.1.5.5. Check belts, hoses and overall appearance of the engine.

5.2.4.1.6. Fluid Levels; ensure level is within limits:

5.2.4.1.6.1. Fuel tank. Fuel level can be read from inside the cab with the fuel level gauge. The capacity of the fuel tank is 50 gallons.

5.2.4.1.6.2. Engine oil. Wait 15 minutes after shutting the engine-off before checking the oil.

5.2.4.1.6.3. Splitter box oil level. Position deck on maintenance stands. Check splitter box sight gauge with the engine shutdown.

5.2.4.1.6.4. Coolant. Check the engine coolant level at the reservoirs.

Figure 5.10. Coolant.

5.2.4.1.6.5. Power steering fluid.

5.2.4.1.6.6. Transmission fluid.

5.2.4.1.6.7. Antifreeze.

5.2.4.1.6.8. Hydraulic fluid level. Check hydraulic fluid level at the slight glass on the hydraulic reservoir.

5.2.4.1.6.9. Windshield washer fluid level. Check the reservoir fluid level inside the cab next to the brake pedal.

5.2.4.1.7. Battery; security, fluid, damage and corrosion.

5.2.4.1.8. All wheel rims (cracks, splits, etc.); check for loose or missing lug nuts.

5.2.4.1.9. All tires.

5.2.4.1.9.1. Proper inflation. **Note:** Notify VCO/VCNCO, the supervisor, and/or vehicle maintenance if split rim is completely flat.

5.2.4.1.9.2. Sidewalls, tread to include depth, bulges.

5.2.4.1.9.3. Cuts and abrasions.

5.2.4.1.9.4. Lug nuts.

5.2.4.1.10. Right side.

5.2.4.1.10.1. Check under the deck for hydraulic leaks at conveyors.

5.2.4.1.10.2. Inspect deck catwalks and retaining pins.

5.2.4.1.10.3. Inspect five right side bogies.

5.2.4.1.10.4. On Series 53 Detroit Diesel engine, pull out emergency shutdown switch on A6 module.

5.2.4.1.10.5. Ensure A20 module switch is up (ON).

5.2.4.1.10.6. Set A19 module switch up to ON.

5.2.4.1.10.7. Check A12 module. Ensure switch is in the OFF position, winterization power cable is disconnected and terminals are not corroded.

5.2.4.1.10.8. Pull out emergency shutdown switch on A1 module. Ensure emergency pump switch is in the OFF position.

5.2.4.1.10.9. Ensure fire extinguisher is secure and serviceable.

5.2.4.1.10.10. Check suspension manifold/equalization valve and glad-hands.

5.2.4.1.10.11. Check catwalk extensions and deck extension.

5.2.4.1.11. Cab interior.

5.2.4.1.11.1. Check windows and mirrors for cracks.

5.2.4.1.11.2. Check circuit breaker panel A7 for tripped circuits.

5.2.4.1.11.3. Turn IGNITION switch to ON position (DO NOT start engine).

5.2.4.1.11.4. Push LAMP TEST button and check that all panel indicators light and alarm sounds.

5.2.4.1.11.5. Check fuel gauge.

5.2.4.1.11.6. Check windshield wiper and washer operation.

5.2.4.1.11.7. Push in EMERGENCY SHUTDOWN switch. Attempt to start (loader should not start).

5.2.4.1.11.8. Pull out EMERGENCY SHUTDOWN switch and start engine. Engine shutdown indicator will flash and alarm sounds for 5 seconds. Low air pressure alarm will continue to sound.

5.2.4.1.11.9. Monitor gauges for proper readings. Refer to the TO for the vehicle or the Manufacturer's Operator's Manual for specific proper readings.

5.2.4.1.11.10. Turn headlights, rear flood, engine service, and spotlights to ON position. Verify all interior lights are lit. Verify exterior lamps are lit. Engine service lights turn-off when cab door is closed.

5.2.4.1.11.11. Headlights on, high and low beams.

5.2.4.1.11.12. Verify running (parking) lights and headlights are lit.

5.2.4.1.11.13. Emergency flashers on.

5.2.4.1.11.14. Verify front and rear operation.

5.2.4.1.11.15. Left and right directional signals on.

5.2.4.1.11.16. Verify front and rear operation.

5.2.4.1.11.17. Depresses brake pedal.

5.2.4.1.11.18. Verify brake lights operate.

5.2.4.1.11.19. Set parking brake, place loader in DRIVE, REV (reverse).

5.2.4.1.11.20. Verify backup alarm sounds and both lights flash.

5.2.4.1.12. Transmission.

5.2.4.1.13. Drive belts; tension and fraying.

5.2.4.1.14. All hoses and wiring.

5.2.4.1.15. Differential, shocks and brakes for leaks.

5.2.4.1.16. Suspension, springs and shocks.

5.2.4.1.17. Bogies. Check all bogies. On # 2 and # 4 bogies, check hydrostatic drive for leaks, ensure hoses do not drag on the ground, and drive pin in hub is engaged.

5.2.4.1.18. Catwalk pins.

5.2.4.1.19. Check that the isolation valve is open and pinned.

5.2.4.1.20. Check suspension cylinder for cleanliness and leaks.

5.2.4.1.21. Check tie rod, steering plate, six steering arm bolts and pins.

5.2.4.1.22. Check brake canister assembly for damage.

5.2.4.1.23. Conveyor motors, drive motors #2 and #4 and the hydrostatic drive pumps (under the deck).

5.2.4.1.24. Fuel door and fuel cap; intact, not broken or damaged.

5.2.4.1.25. Horn operation.

5.2.4.1.26. Control panel.

5.2.4.1.27. Heater/defroster.

5.2.4.1.28. Wiring/lights/reflectors (interior and exterior).

5.2.4.1.29. Mirrors.

5.2.4.1.30. Windshield and windshield wipers/washers.

5.2.4.1.31. Doors.

5.2.4.1.32. Windows.

5.2.4.1.33. Hood latches.

5.2.4.1.34. Check ladder and step.

5.2.4.1.35. Seatbelts.

5.2.4.1.36. Fire extinguisher.

5.2.4.2. Maintenance stand/positioning/stowage. Maintenance stands are used to support the deck without a hydraulic lift system. A loader operator and spotter are required to set the deck on maintenance stands. Used only with cleared deck (no cargo on deck).

5.2.4.3. Hydraulic system bleed down. This system is used to release pressure on the hydraulic system.

5.2.4.4. Loader operation. **Note:** Filter indicators may pop-up in cold conditions when loader is first started. Push down when loader is first started. Push down indicator to reset. Indicator should remain down during loader use.

5.2.4.4.1. Check both hydraulic pressure filter indicators. Red indicates dirty filter. Notify Vehicle Management.

5.2.4.4.2. Raise deck to at least 12 inches off maintenance stands.

5.2.4.4.3. Stow maintenance stands.

5.2.4.4.4. Raise deck to minimum height of 8 feet.

5.2.4.4.5. Check deck yaw, roll, side shift, and pitch functions. Operate side shift full left and full right. Operate conveyors.

5.2.4.4.6. Verify deck and conveyors operation and look for hydraulic leaks.

5.2.4.4.7. Return deck to center position (deck lights off) and lower onto chassis.

5.2.4.4.8. Raise suspension to travel height.

5.2.4.4.9. Release parking brake, apply foot brake, place loader in drive; hold for 5 seconds. Loader should not move. Air pressure gauges will drop and return to normal.

5.2.4.4.10. Set parking brake, place loader in DRIVE for 5 seconds. Pressure should drop and then return to normal. Place DRIVE switch in NEUTRAL.

5.2.4.4.11. Sound horn function.

5.2.4.4.12. Set all switches to OFF position.

5.2.4.4.13. SHUT DOWN engine.

5.2.4.5. Deck.

5.2.4.5.1. Visually check rollers and power conveyor treads.

5.2.4.5.2. Visually check pallet locks and tie-down rings.

5.2.4.5.3. Check front and rear pallet stops for operation.

5.2.4.5.4. Check tie-down storage box. Maximum load in storage box is 165 lbs. not to exceed a maximum of 10 chains, 10 devices, 10 CGU-1/B straps, and four bridge plate bars.

5.2.4.5.5. Check tine trough covers.

5.2.4.5.6. Check bridge plates.

5.2.4.5.7. Check handrails, handrail holders, and pallet guides.

5.2.4.5.8. Complete AF Form 1800 document deficiencies and report all safety items immediately to Vehicle Management.

5.2.4.6. During-operation.

5.2.4.6.1. Perform the following checks while operating the loader:

5.2.4.6.2. Monitor all gauges and warning lights for proper operations.

5.2.4.6.2.1. Warning lights.

5.2.4.6.2.2. Gauges (air pressure, oil pressure, fuel gauge, water temperature, battery voltage, hydraulic oil temperature). If air pressure does not build-up, turn the loader into maintenance. See TO 36M2-3-35-11 for specific proper gauge readings.

5.2.4.6.2.3. Indicators. Se TO 36M2-3-35-11 for a detailed description of 60K operator controls, instruments and indicators.

Figure 5.11. 60K Indicators.

Indicator Warning Description	Response
LOW AIR	If the LOW AIR indicator lights and alarm sound, allow the loader to roll to a safe stop without using brakes if possible. Set parking brake. Observe both air pressure gauges and wait until normal operating air pressure is restored before using brakes. If this occurs without excessive brake usage, shut down loader and notify Vehicle Management.
OIL PRESS	If the OIL PRESS gauge indicates lower than normal range (alarm will sound and engine shutdown light will flash), engine will automatically shut down in 30 seconds. Notify Vehicle Management.
WATER TEMP	If the WATER TEMP gauge indicates higher than normal range (alarm will sound and engine shutdown light will flash), allow engine to idle without performing loader functions. If temperature does not fall within 30 seconds, engine will automatically shut down. Notify Vehicle Management.
Engine Coolant Level	If the engine coolant level is dangerously low (alarm will sound and engine shutdown light will flash), engine will automatically shut down in 30 seconds. Notify Vehicle Management.
HYDR OIL/OIL PRESS	If HYDR OIL temperature gauge rises rapidly out of normal range or if engine OIL PRESS gauge falls rapidly out of a normal range (alarm will sound), immediately shut down loader and notify Vehicle Management.
Battery Gauge	If 12 VDC battery gauge is outside green area (lower than 11.5 or higher than 16) engine will shut down. Notify Vehicle Management.

5.2.4.6.3. Observe for jerky movement during operation of hydraulic functions.

5.2.4.6.4. Listen for exhaust and air leaks. Listen for any unusual sounds.

5.2.4.6.5. Stay alert for any unusual smells or odors.

5.2.4.6.6. Stay alert for any abnormal vibrations or handling problems.

5.2.4.7. After-trip inspection and report.

5.2.4.7.1. Set parking brake.

5.2.4.7.2. Lower suspension to load.

5.2.4.7.3. Position loader deck on maintenance stands.

5.2.4.7.4. Shut down engine.

5.2.4.7.5. Chock wheels.

5.2.4.7.6. Walk around loader and check for fluid leaks or unusual conditions.

5.2.4.7.7. Drain all three air tanks to expel moisture. Close valve.

5.2.4.7.8. Ensure vehicle and components are cleaned.

5.2.4.7.9. Equipment is properly stowed.

5.2.4.7.10. Refueled.

5.2.4.7.11. Parked.

5.2.4.7.12. Apply brakes.

5.2.4.7.13. Place transmission in neutral (park for an automatic).

5.3. Vehicle Safety and Equipment.

5.3.1. Hazards and Human Factors:

5.3.1.1. Tail swing.

5.3.1.2. Overall size.

5.3.1.3. Ground clearance.

5.3.1.4. Pallet stops. Two pallet stops, located in the center of the front and rear of the deck, are used to prevent palletized cargo from rolling off of the ends of the deck. Front and rear pallet stop control handles are located on the catwalks mounted on the left hand side of the deck. Operators are responsible for the position of both pallet stops. Pallet stops will be in the locked-up position at all times. Pallet stops must be up even when there is no cargo onboard.

Exception: Pallet stops may be placed in the locked-down position when needed for cargo transfer, but must be returned to the locked-up position immediately following transfer. If unsure of the position of pallet stops, stop the operation and ask the crew leader to confirm pallet stops are in the locked-up position.

5.3.1.5. Tie-downs and tools. Properly store in the toolbox when not in use. When tie-down is used, all excess must be stowed.

5.3.1.6. Cab floors must be clear of all loose items.

5.3.1.7. Transferring pallets. When transferring pallets, it is very important to keep the loader deck level in relation to the aircraft ramp or loading dock.

5.3.1.8. Driving a reconfigured loader. Raise the suspension to the full-up position. Lower 1". Damage will occur if the chassis is too low.

5.3.1.9. Backing. Always use a spotter. See AFMAN 24-306 for additional guidance on standard spotter hand signals and additional safety guidance. The operator must keep visual contact with the spotter at all times. If visual contact is lost, the operator should immediately stop the vehicle.

5.3.2. Safety Clothing and Equipment:

5.3.2.1. Safety steel-toed boots must be worn.

5.3.2.2. Gloves will be worn during cargo loading and unloading (take off rings/jewelry first.

5.3.2.3. Hearing protection.

5.3.2.4. Eye protection.

5.3.2.5. Fall protection. Ensure fall protection is available if required IAW OSHA 1910.62, 1926.500, AFI 91-203 and the manufacturer's operator's manual.

5.3.2.6. First aid kit.

5.3.2.7. Raingear, cold weather gear, etc.

5.3.2.8. Reflective belt during hours of reduced visibility and on flightline.

5.3.2.9. Fire extinguisher.

5.3.2.10. AF Form 1800.

5.4. Driving Safety and Precautions.

5.4.1. Operators are required to become familiar with the safety precautions and location and use of controls, accessories, indicators and handling characteristics of the loader prior to attempting any operation or service procedures. **Note:** In addition to the guidance below, refer to the manufacturer's operator's manual in order to familiarize the trainee with all warnings/cautions for the vehicle being operated and continue to emphasize throughout training.

5.4.2. Adequate space. The overall length and width of the loader requires that the loader has adequate space for maneuvering. Operate the loader at a safe distance behind other vehicles. Be aware of the location of all personnel in the general vicinity while operating the loader and/or deck controls.

5.4.3. Tail swing. Tail swing is the number one cause of the avoidable structural damage to the Tunner. The unique turning style of the Tunner is cause for caution while operating the vehicle. Synchronized and articulated creates the 60K's comparatively small 50-foot turning radius. This causes the loader to produce a tail swing of up to 6 feet. Operators should not attempt to turn right for U-turns when the Tunner is loaded with cargo. There is a 10 ft. tail swing.

5.4.4. Off-road driving. Drive carefully on uneven, wet or slippery surfaces. For more information on off-road driving and safe vehicle operation guidance, refer to AFMAN 24-306.

5.4.5. High winds. High wind conditions may cause the deck to sway.

Note: CAUTION – Personnel must exercise caution when standing on the elevated deck if winds are above 40 knots.

5.4.6. Do not attempt to drive the loader with the low air buzzer and indicator on.

5.4.7. Come to a complete stop before repositioning the drive switch.

Warning: CAUTION – If oil pressure drops below 5 psi, stop engine immediately to prevent damage caused by lack of lubrication.

5.4.8. Ensure seat back is full upright position to avoid damage to the seat or rear egress window. Do not idle for extended periods of time.

5.4.9. Cargo loading and tie-down procedures. For more information on safely loading, transporting and unloading cargo, refer to the Cargo Tie-down lesson plan and the Manufacturer's Operator's Manual for the specific vehicle type.

5.4.10. Hazardous cargo. For more information on transporting hazardous cargo, refer to the Hazardous Cargo Lesson Plan.

5.4.11. Do not allow any riders on the exterior of the loader.

5.4.12. Observe all flightline traffic rules.

5.4.13. Foreign Object Damage (FOD). Vehicle operators will remove FOD from tires during daily the vehicle inspection. Before entering the airfield, a physical check for loose/unsecured objects and an inspection of the tire treads for FOD will be accomplished, with the exception of emergency vehicles responding to actual situations.

5.4.13.1. Any vehicle which has been driven on an unpaved surface will have a tire FOD inspection accomplished prior to re-entering the airfield area. Vehicles that frequent the flight line will be equipped with a FOD picker and a covered FOD container.

5.4.13.2. FOD picker will be etched with the vehicle number painted on red or orange (or have a red streamer attached).

5.4.13.3. FOD picker will be annotated on vehicle inspection form.

5.4.13.4. FOD containers will be identified with the letters "FOD" and will be emptied daily.

5.4.13.5. FOD checks are performed so that aircraft damage can be kept at a minimum.

5.4.14. Spotter safety. Many injuries and deaths have occurred from improper use of spotters. A spotter will be used when the vehicle is within 15 feet of any stationary vehicle or obstacle or when the driver's view is obstructed, regardless of the level of experience of the operator. See AFMAN 24-306 for additional spotter safety guidance and spotter hand signals.

5.4.14.1. While under the direction of the spotter, the operator must maintain positive visual contact with the spotter at all times.

5.4.14.2. If at any time the operator loses sight of the spotter or cannot understand the spotter's directions, the operator shall immediately stop the loader until positive visual contact is made.

5.4.14.3. The spotter will stand to the rear of the loader, but not directly behind loader, in a position easily seen by operator.

5.5. Vehicle Operation.

5.5.1. Engine starting. To start the loader engine under normal operating condition (+55°F to 125°F), no starting aids are necessary.

5.5.2. Engine fails to start. If the loader fails to start, ensure that:

5.5.2.1. Park brake is set.

5.5.2.2. Mode selector is in drive.

5.5.2.3. Drive switch in neutral.

5.5.2.4. If systems are not in range, shut the loader down, and turn it into maintenance.

5.5.3. Mobile operation. The tunner is designed to operate on improved taxiways and hardstands at a speed of 20 mph. The loader has a curb-to-curb turning diameter of 100" with the front two bogies steering and the rear two bogies turning in the opposite direction. The loader is powered by a diesel engine running hydrostatic drive unit and hydraulic pumps to perform all moving and lifting functions.

5.5.4. Deck operation. To perform all functions of the loader deck, including lifting, cargo transfer, conveyor operation, and platform conversion.

5.5.5. Maintenance stands positioning/stowage. Maintenance stands are used to support the deck without a hydraulic lift system. An operator and spotter are required to set the deck on the maintenance (MX) stands.

5.5.6. Pitch, roll and side shift operation. The deck can be adjusted in the front /rear pitch, roll, and side shift positions.

5.5.6.1. Pitch: 6°.

5.5.6.2. The pitch is used to make minor deck adjustments.

5.5.6.3. Roll: 4°.

5.5.6.4. Side shift: 3 in. from the center line.

5.5.6.5. Lift link operation. Use to raise and lower the deck.

5.5.7. Deck conveyor operation. The deck conveyors consist of 10 conveyers with nine on the main deck and one for the side.

5.5.7.1. HIGH setting for moving pallets: Above 3,000 lbs.

5.5.7.2. LOW setting for moving pallets: Below 3,000 lbs.

5.5.7.3. Max operating engine rpms for max conveyor speed is 1700.

5.5.8. Tine trough removal. The deck contains four tine troughs for forklift loading from the front or rear. Install cover in reverse order.

5.5.9. Pallet stops operation. Two emergency pallet stops are located in the center of the deck. Two pallet stops are also located in the side loading area. Pallet stops are designed so entering cargo will slide over forward and rear stops, forcing the spring-loaded stop down. When cargo has passed, the stop will return to the upright position.

5.5.10. Pallet restraints operation. Pallet restraints are used to secure pallets on the deck.

5.5.10.1. Number of pallets per position: 2/4 per position and 26 on the entire deck.

5.5.11. Deck extension and catwalks. The deck extension is stowed beneath the front of the loader. The catwalks are stowed under the deck at the right of the loader. **Note:** When positioning deck extension, keep hands away from the sides of the deck extension supports.

5.5.11.1. Deck extension maximum capacity: 10,000 lbs.

5.5.11.2. Ensure deck extension support joints are past forward supports so deck extension clears deck bumpers.

5.5.11.3. When raising deck extension, do not allow forklift tines to extend under the deck. Tines will damage wiring and assemblies mounted under the deck.

5.5.11.4. Check the deck extension is level with the surface.

5.5.12. Bridge plate placement. Bridge plates are used to support rolling stock and are stowed on the forward, left and right catwalk handrails. **Note:** Bridge plates are rated at 10,000 lbs each and loads heavier than 20,000 lbs could cause damage to the loader and the aircraft.

5.5.13. Deck conversion. The deck can be converted to continuous, flat surface to accommodate rolling stock. To convert the deck to a flat surface, invert each roller tray; place back into grove, and secure with pin.

Note: Loader can be moved with the deck in a raised position for final alignment. The speed of the loader should not exceed 1 mph and the cargo must be secured.

5.5.14. Cargo transfer. To transfer cargo on- and off- the loader:

5.5.14.1. Use side shift, roll and pitch as necessary to interface the loader with the aircraft.

5.5.14.2. LOW capacity: 3,000 lbs. or less.

5.5.14.3. HIGH capacity: 3,000 lbs. or more.

5.5.14.4. Deck pitch control will automatically maintain the deck level altitude during lowering.

5.5.14.5. Be on the lookout for unfamiliar noises or actions when operating the loader.

5.5.15. Suspension system bogie isolation. The suspension system supports the loader.

5.5.15.1. Max operating engine rpm while in suspension mode is 2100.

5.5.15.2. Isolation of the bogies is extremely dangerous and can cause severe injury if procedures are not followed. Isolation vales are always to the front of the bogie.

5.5.15.3. Do not open the isolation valve if the wheel is in the air.

5.5.16. Linkage assembly. The front and rear lift linkages are hydraulically actuated folding mechanisms that provide support and vertical operation of the deck.

5.5.16.1. Front lift linkage.

5.5.16.2. Rear lift linkage.

5.5.16.3. Lift cylinder.

5.5.16.4. Upper lift link.

5.5.16.5. Lower lift link.

5.5.16.6. Maintenance stand.

5.5.16.7. Stabilizer.

5.5.16.8. An encoder mounted to each lift linkage assembly, sends signals to the deck pitch controller to maintain per-selected deck pitch throughout up and down travel. Allows preselected deck pitch to be maintained.

Note: When cleaning loader with a pressure washer, do not spray the encoder directly could cause a malfunction.

5.5.17. Chassis assembly. The chassis assembly is the main foundation and structural center of the loader. The chassis is the support base for lift linkages and the power pack. The chassis also mounts components of the fuel, electrical, hydraulic, and pneumatic systems on the loader.

5.5.17.1. Chassis assembly.

5.5.17.2. Lift linkage.

5.5.17.3. Power pack.

5.5.17.4. Suspension assembly. There are 10 adjustable suspension assemblies or bogies.

5.5.17.5. Steering plate. There are 4 steering plates which allow for articulated steering.

5.5.17.6. Dual wheel assembly.

5.5.17.7. Suspension cylinder. The suspension cylinder allows the axles to conform to ground height changes and it also provides suspension adjustment.

5.5.17.8. Upper suspension arm.

5.5.17.9. Lower suspension arm.

5.5.17.10. Longitudinal strut assembly.

5.5.17.11. Tie rod.

5.5.18. Suspension system. Each suspension assembly can be rotated inboard to reduce the overall size of the loader (air/ground transport).

5.5.18.1. The suspension system has five axle lines.

5.5.18.1.1. 4 out of the 5 axle lines are mechanically linked with steering plates to provide synchronized and articulated steering.

5.5.18.1.2. The middle axle (# 3) is stationary.

5.5.18.1.3. #1 and #2 axle lines steer in the direction that the operator turns the steering wheel. The 4th and 5th axle lines automatically counter steer in the opposite direction of axle lines #1 and #2.

5.5.18.2. Dual wheel assembly.

5.5.18.3. Suspension cylinder.

5.5.18.4. Upper suspension arm.

5.5.18.5. Lower suspension arm.

5.5.19. Steering System.

5.5.19.1. The steering system is a hydraulic/mechanical linkage arrangement. Two hydraulic cylinders are linked to the steering plates and control left or right steering operation in response to steering wheel movement.

5.5.19.2. Axle lines 1, 2, 4, 5, are mechanically linked in order to provide synchronized and articulated turning. Axle line 3 is stationary.

5.5.19.3. Steering plates. There are 4 steering plates. They are interconnected to the longitudinal struts via the tie rods.

5.5.19.4. Longitudinal struts.

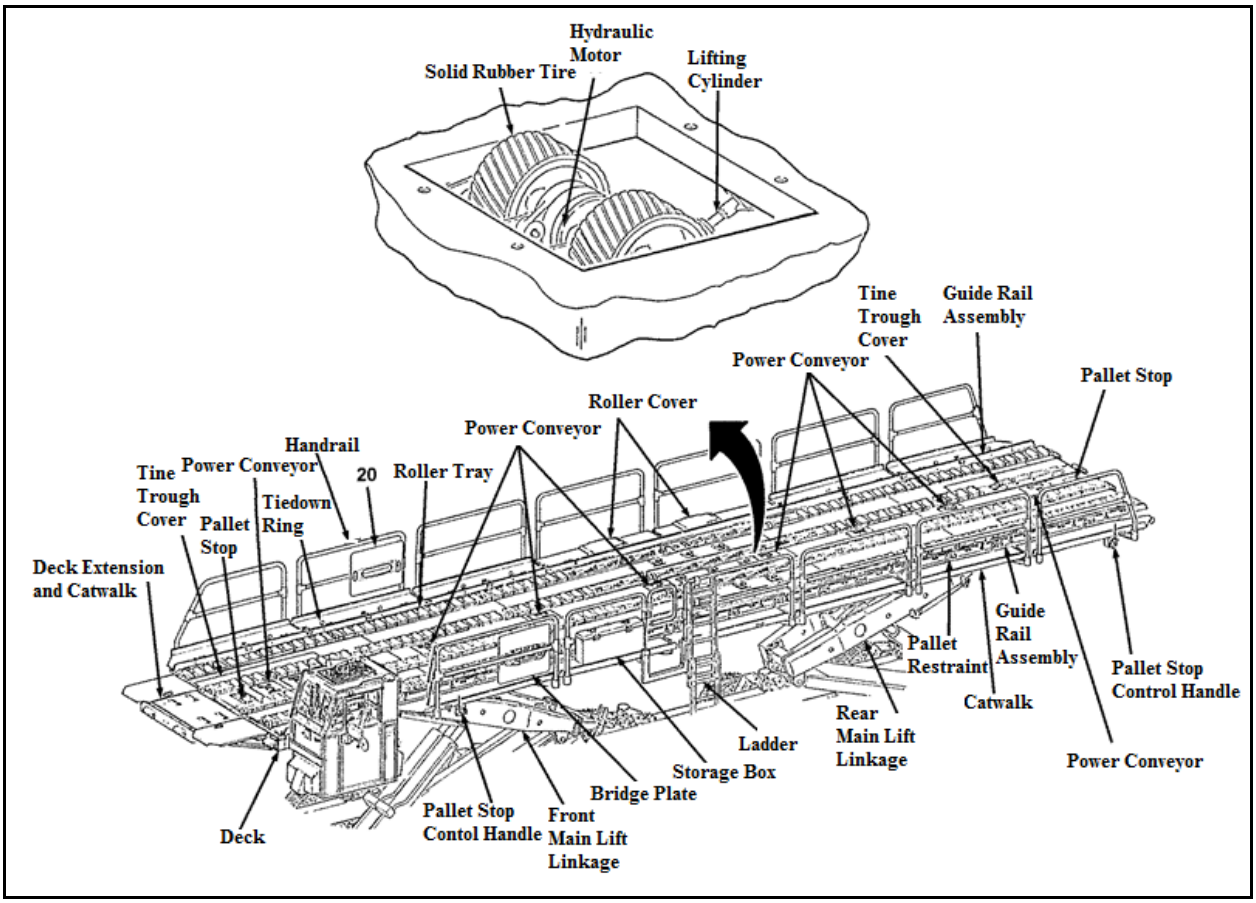
5.5.19.5. Tie rods. The tie rods connect to the steering arms mounted above the suspension assembly.

5.5.19.6. E-pump. In the event of engine failure, steering can be restored by utilizing emergency hydraulic standby pump. The e-pump will automatically engage.

5.5.19.7. Fully charged batteries will provide normal steering function for at least 30 minutes during e-pump operations.

5.5.20. Deck assembly. The primary function of the deck is to load, support, maneuver and unload cargo. The deck of the tunner is 592” long and 171” wide including the catwalk. The deck is mounted to front and rear main lift linkages by means of the roll and side shift mechanism.

Figure 5.12. Deck Assembly and Major Components.



5.5.20.1. Rolling, pitching, and side-shifting are used to align the deck with an aircraft or a loading dock during loading/unloading operations.

5.5.20.2. Components:

5.5.20.2.1. Deck.

5.5.20.2.2. Front main lift linkage.

5.5.20.2.2.1. Two lift cylinders.

5.5.20.2.2.2. Two maintenance stands.

5.5.20.2.2.3. Encoder.

5.5.20.2.2.4. A stabilizer arm.

5.5.20.2.2.5. Booster cylinder.

5.5.20.2.3. Rear main lift linkage.

5.5.20.2.4. Roller tray. There are 14 bi-direction roller trays (fwd/aft), 5 omni directional (fwd/aft/in/out), and 8 combinations of directional and omni directional roller trays.

Note: Omni-directional rollers are being phased out in favor of bi-directional roller trays.

5.5.20.2.5. Power conveyor.

5.5.20.2.6. 4 Tine troughs and trough covers.

5.5.20.2.7. Catwalk.

5.5.20.2.8. Handrail.

5.5.20.2.9. Guide rail assembly.

5.5.20.2.10. 26 Pallet restraints.

5.5.20.2.11. 20 Tie-down ring. Rated at 5,000 lbs. each.

5.5.20.2.12. Lifting cylinder.

5.5.20.2.13. Hydraulic motor.

5.5.20.2.14. Solid rubber tire.

5.5.20.2.15. Deck extension and catwalks.

5.5.20.2.16. Pallet stop.

5.5.20.2.17. Pallet stop control handle.

5.5.20.2.18. Ladder.

5.5.20.2.19. Storage box. The storage box is located on the handrail behind the cab. Special tools and loader support equipment are stored in this storage box. The storage box is designed to handle 10 chains, 10 devices, and 10 straps and 4 bridge plate bars. Any additional equipment may damage the box or the railing. The box is designed to hold 165 lbs. maximum.

5.5.20.2.20. Bridge plates. Tunner bridge plates are installed on the deck to bridge the gap between the deck and dock/aircraft when transferring rolling stock.

5.5.20.2.21. Roller covers.

5.5.20.3. Upper surface.

5.5.20.3.1. Recessed roller trays. There are 4 rows of roller trays, each row consisting of six trays placed end to end and running the entire length of the deck.

5.5.20.3.2. Capable of being turned over to support rolling stock and other forms of non-palletized loads.

5.5.20.3.3. Power conveyors. 9 power conveyors are mounted in the center under the deck surface. Each power conveyor consists of a lifting cylinder, hydraulic motor and 2 solid rubber tires. They are used to provide forward and reverse motion, and control pallets and platforms during loading/unloading operations.

5.5.20.3.4. Tine troughs are provided at the fwd/aft ends of the loader.

5.5.20.3.5. Tine trough covers.

5.5.20.3.6. Hinged/removable catwalks.

5.5.20.3.7. Removable handrails.

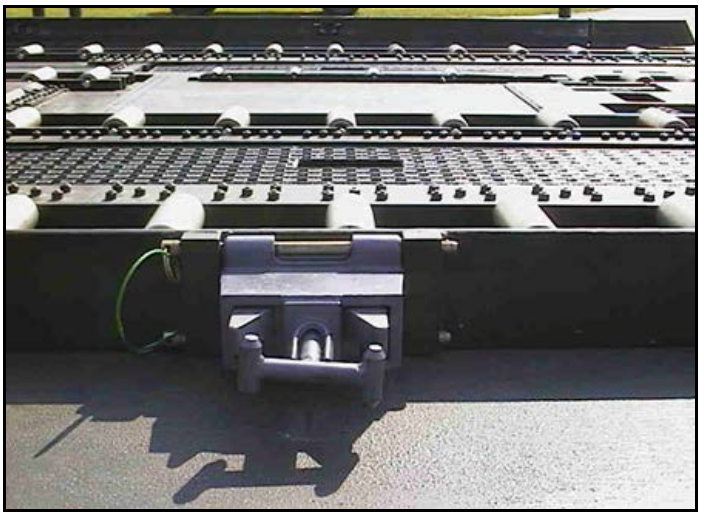
5.5.20.4. Guide rail assembly.

5.5.20.4.1. Rails run the length of the deck on both sides to aid in pallet alignment. Guide rail assemblies provide directional control and alignment of 108’’-wide pallets.

5.5.20.5. Pallet restraints.

5.5.20.5.1. 40 Tie-down rings (20 rings, 10 per side).

Figure 5.13. Pallet Restraint.



5.5.20.5.2. Pallet restraints are lever operated, positively locking, retractable devices.

5.5.20.5.3. Two restraints per side and four per pallet position.

5.5.20.5.4. Pallet restraints are hinge mounted and can turn inboard for air transport.

5.5.20.6. Tie-down rings. Provide secure points for restraint of rolling stock and all other cargo as necessary.

5.5.20.6.1. 40 tie-down rings on the surface of the deck and guide rails.

5.5.20.6.2. Tie-down rings are rated at 5K each.

5.5.20.7. Power conveyor. 9 retractable power conveyors transfer pallets fwd/aft across the decks surface. All side loading capabilities have been removed from loaders.

5.5.20.8. Deck extension and catwalks. A deck extension is installed to allow aircraft-to-loader deck interface. Deck installation will be covered during "hands-on training." Use only for interface with the lower lobe of the commercial aircraft (bellies).

5.5.20.8.1. Deck extension is stowed beneath the front of the loader.

5.5.20.8.2. Deck extension Catwalks are provided for a walking surface.

5.5.20.8.3. Maximum load capacity is 10K for the Deck extension.

5.5.20.8.4. Deck extension catwalks are rated at 200 lbs each.

5.5.20.8.5. Main deck catwalks are 300 pounds per square foot or 1,500 lbs total per section.

5.5.21. Emergency pallet stops.

5.5.21.1. Used to prevent palletized cargo from rolling-off the ends of the deck.

5.5.21.2. Two pallet stops are located on top of the deck, one at each end of the deck.

5.5.21.2.1. Front pallet stop locks in the down position.

5.5.21.2.2. Rear pallet stop does not lock in the down position. The rear pallet stop must be manually held in the down position by personnel as needed.

5.5.21.3. Pallet stops are spring loaded and fold into the deck surface operations.

5.5.22. Ladder.

5.5.22.1. The telescoping ladder extends and retracts as the deck is raised and lowered.

5.5.22.2. Do not climb fully extended ladder when alternate route is available.

5.5.22.3. Maximum weight capacity is 300 lbs.

5.5.23. Handrails and catwalks.

5.5.23.1. There are 13 removable hinged/catwalks and handrails. There are 6 on the left side and 7 on the right side.

5.5.23.2. Catwalks located on the right side of the loader allow operators to walk the length of the loader. Catwalks are rated at 300 per square foot (psf) or 1500 total per section.

5.5.24. Storage box.

5.5.24.1. Storage box is mounted on the handrail on the left side of the loader.

5.5.24.2. Stores special tools and loader support equipment.

5.5.25. Bridge plates.

5.5.25.1. Two bridge plates are stored on the handrails on either side of the loader. They are each rated at 10,000 lbs. capacity.

5.5.25.2. Used to bridge the gap between the aircraft deck and the loader or loading ramp surface while transferring rolling stock.

5.5.26. Roll and side shift M\mechanism.

5.5.26.1. Mounted to the deck, each mechanism consists of four roll cylinders.

5.5.26.2. The mechanisms assist in rolling and side shifting the deck.

5.5.26.3. Electrical limit switches are activated by cams and control indicator lights on the main instrument panel.

5.5.26.4. The deck rolls 4° and can side shift from the center 3 in. The loader can also yaw 3 in. ate either end.

5.5.27. Emergency operation (towing). The following area covers emergency operation of the loader hydraulic functions, loader towing, and evacuation from the cab through the rear egress door.

5.5.28. Cab heater operation. The cab heater is a self-contained, diesel fired, heating system. Cab heater controls are located on the main instrument panel. Vent damper knobs are located to the right of the operator.

5.5.28.1. Max output: 12,000 BTU/hr.

5.5.28.2. Batteries on the standby power unit can operate for up to 30 minutes.

5.5.29. Engine shutdown. The engine shutdown is similar to any other vehicle.

5.5.30. Emergency engine shutdown.

5.5.30.1. When an emergency situation occurs that requires shutting down loader operations, push the EMERGENCY SHUTDOWN switch located on the upper, right side of the main instrument panel.

5.5.30.2. Two additional EMERGENCY SHUTDOWN switches are located on the right side of the loader chassis. One switch is on the chassis junction box next to bogie #3 the other switch is on the engine control box next to the radiator.

5.5.30.3. As a last resort, there is also a fuel shutoff valve located next to the fuel tank.

5.5.30.4. Local policy will determine when loaders are placed on maintenance stands. The circuit breaker box A19 contains two circuit breaker switches that will shutdown all power to the loader.

5.5.31. Operating Under Cold Weather Conditions. This covers weather conditions of +55 °F to + 10°F. Ether injection and no weatherization power.

5.5.31.1. The operator can crank the engine for 30 seconds if the temperature is above +10°F, and for 2 minutes if the temperature is +10°F or below.

5.5.32. Extreme cold engine starting. This covers weather conditions of +10°F to -40°F. Ether injection and winterization power connected for at least 5 hours.

5.5.32.1. During cold weather month’s keep fuel tank full to minimize moisture in the fuel.

5.5.33. Extreme cold engine shutdown: Perform normal operational shutdown. If the temperature is expected to be below 32°F, connect the winterization plug to external power source.

5.5.34. Parking.

5.5.34.1. The required parking spot dimension is 30’ x 60’.

5.5.34.2. When exiting the parking spot, the front of the loader must pass the line 50 ft. outside of the parking spot before turning to ensure the rear of the loader will not strike adjacent parked vehicles.

5.5.34.3. ‘Taxi Lines’ will be placed under the center of the cab while traveling in/out of parking spot.

5.5.34.4. When parking, the front of the loader must be straight with the parking spot 15’ prior to entering.

5.5.34.5. If the operator deviates from the approved parking plan, a waiver must be approved by AMC (Air Mobility Command) or 2 spotters will be used while parking/moving the loader.

5.6. 60K Loader with Series 900 Mercedes Benz Engine.

5.6.1. Overview. The Series 900 Mercedes Benz equipped loader has many unique characteristics. Be vigilant when operating this loader and know the difference between the Detroit 53 requirements and that of the Series 900.

5.6.2. Engine characteristics.

5.6.2.1. The Series 900 Mercedes Benz engine is a 440 cubic inch inline 6 cylinder 4 stroke diesel. The rpm range is 1,000 to 2,200 rpm. Engine is governed at 2,200 rpm.

5.6.2.2. The loader can perform missions in ambient temperatures from -40°F to +125°F.

5.6.2.3. Winterization system. Heats 4 items:

5.6.2.3.1. Grid heater.

5.6.2.3.2. Coolant heater.

5.6.2.3.3. Circulation pump.

5.6.2.3.4. Battery warmer.

Note: Do not use ether on this loader.

5.6.2.4. The A6 box has been removed and replaced by a charge pump heat exchanger used to cool hydraulic fluid.

5.6.2.5. Oil level dipstick is now located above the hydraulic fluid reservoir and is colored red. 15W40 oil only to be added by maintenance.

5.6.2.6. If engine oil pressure drops below 7 psi, the engine will stop to prevent damage. Normal oil pressure will be between 60 and 65 psi.

5.6.2.7. Do not operate the starter for more than 20 seconds or it will overheat. Allow 1 minute for starter to cool before attempting to start again.

5.6.2.8. Emergency stop from the A6 box has been relocated to the left side of the loader behind the hydraulic fluid reservoir.

5.6.2.9. Coolant level is checked at the sight gauge on the surge tank. The coolant overflow reservoir is now located behind the radiator and is now only for overflow. This is no longer a fill point or level check.

5.6.2.10. There is a new digital display module located where tachometer used to be displays critical engine information. Do not change the settings.

5.6.3. Cold weather starting.

5.6.3.1. Do not use ether to start a Series 900-equipped loader. A grid heater is used to heat the air intake and could ignite ether before entering the engine.

5.6.3.2. “Wait to start preheat” – This message will show on the electronic display for up to 40 seconds.

5.6.3.3. If the wait to start message does not go off after 40 seconds, the grid heater is malfunctioning and Vehicle Management needs to be notified.

5.6.4. Hydraulic operation.

5.6.4.1. New hydraulic manifold on the left side of the loader.

5.6.4.2. New lines in front of the hydraulic coolant fan.

5.6.4.3. Single hydraulic system pump controls all deck suspension functions.

5.6.4.4. When in DECK mode, the loader will automatically rev to 1,800 rpm. The throttle pedal now controls the hydraulic flow only.

5.6.4.5. When MODE selector switch is set to suspension, engine speed is set to 1,000 rpm. Throttle will control hydraulic flow but not engine speed.

5.6.4.6. There is no crossover switch or splitter box on the Mercedes equipped loader due to the fact that all hydraulics are now controlled by a single hydraulic drive pump assembly. The absence of the splitter box has resulted in a greater quantity of fluid in the tank.

5.6.4.7. The hydraulic fluid sight gauge is not calibrated for the new system.

5.6.5. Hydrostatic Drive.

5.6.5.1. Single hydrostatic drive pump controls both the number 2 and the number 4 drive axle lines.

5.6.5.2. The new loader accelerates more quickly than the Detroit 53-equipped loader.

5.7. Tunner (60K) Loader Transport.

5.7.1. Transport by Air. The loader is designed for drive on/off capability for air transportation.

5.7.1.1. On the C-5 and C-17, the loader deck and bogies can be reconfigured to reduce loader width.

5.7.1.1.1. This includes spinning the bogies 180°, taking the handrails off and storing them on the loader, folding the catwalk over, removing the ladder and sliding the cab in order to be flush with the deck.

5.7.1.1.2. It takes 3 people approximately 2 hours to complete the reconfiguration. C-5 and C-17 aircraft are wide enough so the loader can be driven directly on/off the aircraft.

5.7.1.1.3. Bogie reconfiguration. Bogie reconfiguration is only necessary for ground transport.

5.7.1.2. Deck and cab reconfiguration. Deck and Cab reconfiguration is only necessary for ground transport.

5.7.1.3. Weighing the loader. The loader must be weighed before air transport. Ten 10,000 pound capacity platform scales with ramps are used to determine the weight of each dual wheel assembly. Note the differences in the following procedures for weighing the loader in the air transport configuration or in the curb (normal use C-5 and C-17) configuration. To weigh the loader, proceed as follows:

Note: Weigh the loader at the same suspension height that will be used when the loader is on the aircraft.

5.7.1.3.1. Aircraft loading. Refer to T.O. 36M2-3-35-11 for more information.

5.7.1.3.1.1. In transport mode, use minor steering adjustments to prevent wheel contact with chassis rail or loader components.

5.7.1.3.1.2. Driver should be aware of air pressure for brakes at all times.

5.7.1.3.1.3. Loader suspension should be adjusted as necessary to ensure clearance and contact of all tires on surface of ramp at all times.

5.7.1.3.1.4. Release parking brake and use park brake override switch to adjust suspension height inside aircraft.

5.7.1.3.1.5. With suspension isolation valves closed, hydraulic fluid pressure will increase or decrease relative to ambient temperature. This pressure variation may cause tie-downs to tighten (hot) or loosen (cold) during travel.

5.7.1.3.1.6. Closely observe hoses on bogies #2 and #4 to avoid dragging on ground or interference with tires.

5.7.1.3.1.7. Loader suspension may move when isolation valve is opened. Ensure all personnel are clear of the loader to avoid injury.

5.7.1.3.1.8. Watch the clearance between the tire and chassis and between the loader frame and aircraft ramp. Watch the deck height at the rear of the loader to ensure the loader does not contact the aircraft.

5.7.1.3.1.9. Removal of ladder will cause section to extend or retract and could cause injury. Ensure ladder is held firmly prior to removing pins.

5.7.1.3.1.10. For clarification, the curbside of the loader is opposite the operator and street side is the operator side.

5.7.1.3.1.11. Tire pressure must be between 95 psi and 100 psi. Maximum air transport weight is 68,000 lbs.

5.7.1.3.2. Aircraft unloading. Driving a reconfigured loader.

5.7.1.3.2.1. In air transport mode, loader must be backed on and driven off aircraft. In curb configured (normal operating) mode, loader must be driven on forward, and backed off aircraft. Loader may also be driven forward off aft ramp of C-5 aircraft.

5.7.1.3.2.2. Loader upper and lower suspension arms must point towards aircraft ramp. The loader suspension system does not supply enough downward force when suspension arms point away from aircraft ramp and cause drive wheel to slip on the ramp.

5.7.1.3.2.3. Use minor steering adjustments to prevent wheel contact with the chassis rail or loader components.

5.7.1.3.2.4. Driver should be aware of air pressure for brakes at all times.

5.7.1.3.2.5. All suspension measurements will be taken from the amount of exposed cylinder shaft. Loader suspension should be adjusted as necessary to ensure clearance and contact of all tires on surface of ramp at all times.

5.7.1.3.2.6. All front suspension measurement will be taken from axle #1.

5.7.1.3.2.7. All rear suspension measurement will be taken from axle #5.

5.7.1.3.2.8. Release parking brake and use park brake override switch to adjust suspension height inside the aircraft.

5.7.1.3.2.9. With suspension isolation valves closed, hydraulic fluid pressure will increase or decrease relative to ambient temperature. This pressure variation may cause tie-downs to tighten (hot) or loosen (cold) during travel.

5.7.1.3.2.10. Closely observe hoses on bogies #2 and #4 to avoid dragging on the ground or interference with tires.

5.7.1.3.2.11. Watch deck height at rear of loader. Ensure loader does not contact aircraft.

5.7.1.3.2.12. During loader movement, watch for clearance between tire and chassis and between loader frame and aircraft ramp.

5.7.1.3.3. Driving a loader off of a C-5 or C-17.

5.7.1.4. Preparation for operation. (Engine Shutdown) Perform normal operational shutdown. If the temperature is expected to be below 32°F, connect the winterization plug to external power source.

5.7.1.4.1. Deck and cab reconfiguration. Deck and cab reconfiguration is only necessary for ground transport.

5.7.1.4.2. Bogie reconfiguration. Bogie reconfiguration is only necessary for the smaller aircraft and ground transport.

5.7.1.4.2.1. Closely observe hoses on bogies #2 and #4 to avoid dragging on the ground or interference with tires.

5.7.1.4.2.2. Driver should be aware of air pressure for brakes at all times.

5.7.1.4.2.3. Isolation valves are located in front of each bogie.

5.7.2. Transport by truck and hydrostatic drive deactivation/disengagement. The Tunner can be transported by surface via low-boy semi-trailer. This procedure is written for the double drop stretch, removable gooseneck trailer with a 53 foot loading space. Three axles are required for both the tractor and trailer to support the weight of the loader. Refer to T.O. 36M2-3-35-11 for guidance specific to the following means of transport by truck and hydrostatic drive:

5.7.2.1. Driving on to a semi-trailer.

5.7.2.2. Driving off of a semi-truck.

5.7.3. Deactivation of the hydrostatic drive.

Section 6—EXPLANATION AND DEMONSTRATION.

6.1. Instructor's Preparation.

6.1.1. Establish a training location.

6.1.2. Obtain appropriate vehicle operator's manual.

6.1.3. Schedule/reserve a vehicle.

6.1.4. Ensure trainee completes AF Form 171.

6.2. Safety Procedures and Equipment.

6.2.1. The following safety items should be followed by both the instructor and trainee.

6.2.1.1. Chock wheel (if required) when oversized cargo truck is parked.

6.2.1.2. Remove all jewelry and identification tags.

6.2.1.3. Personal protective equipment and equipment items.

6.2.1.3.1. Safety steel-toed boots must be worn.

6.2.1.3.2. Gloves will be worn during cargo loading and unloading.

6.2.1.3.3. First aid kit.

6.2.1.3.4. Raingear, cold weather gear, etc.

6.2.1.3.5. Hearing protection.

6.2.1.3.6. Reflective vest/belt during hours of reduced visibility or on the flightline.

6.2.1.4. The trainer and trainee should walk around vehicle to become familiar with all warning labels and signs.

6.2.1.5. Ensure trainee wears seat belts.

6.2.1.6. Properly adjust driver's seat and all mirrors, if available.

6.2.1.7. Throughout demonstration, practice 60K-Loader safety.

6.2.2. Practice basic AF RM process during demonstration:

6.2.2.1. Identify hazards.

6.2.2.2. Assess hazards.

6.2.2.3. Develop controls and make decisions.

6.2.2.4. Implement controls.

6.2.2.5. Supervise and evaluate.

6.3. Operator Maintenance Demonstration.

6.3.1. With trainee, accomplish vehicle inspection using AF Form 1800. The vehicle inspection will follow the seven-step method as described in **Attachment 5**. An inspection guide (**Attachment 3**) can be used to ensure all areas of the tractor and trailer are covered in addition to the "Operation Demonstration" guidelines provided below.

6.4. Operation Demonstration.

6.4.1. Throughout demonstration:

6.4.1.1. Allow for questions.

6.4.1.2. Repeat demonstrations as needed.

6.4.2. For the 60K-Loader, within the training area, demonstrate and explain the following. **Note:** Use information contained on the data plate and/or the operator's manual:

6.4.2.1. Specific 60K-Loader capacities: Explain parking brake as they apply to 60K-Loader being used.

6.4.2.2. Amount of time the vehicle should be shutdown before performing inspection.

6.4.2.3. 60K-Loader levers and controls.

6.4.2.4. Point out the items to be inspected during operations.

6.4.2.4.1. Instruments.

6.4.2.4.2. Air pressure gauge (if the vehicle has air brakes).

6.4.2.4.3. Temperature gauges.

6.4.2.4.4. Pressure gauges.

6.4.2.4.5. Ammeter/voltmeter.

6.4.2.4.6. Mirrors.

6.4.2.4.7. Tires.

6.4.2.4.8. FOD.

6.4.2.4.9. Cargo, cargo covers.

6.4.2.4.10. Emergency equipment (fire extinguisher and emergency kill switches).

6.4.3. Describe and demonstrate the following 60K-Loader operations (use spotter when backing).

6.4.3.1. Demonstrate the proper use of pallet guides, locks, stops, and chains.

6.4.3.2. Describe the amount of time the starter should be operated.

6.4.3.3. Describe the proper use of the bogie.

6.4.3.4. Describe the different types of loads and how to handle each.

6.4.3.4.1. Palletized

6.4.3.4.2. Rolling stock.

6.4.3.5. Describe the minimum levels for oil and air pressure.

6.4.3.6. Describe the proper shutdown techniques.

6.4.3.7. Describe the massive rear end swing the 60K exhibits during operation.

6.4.3.8. Operate all deck control levers.

6.4.3.9. Obey speed limits.

6.4.3.10. Use a highline to load and unload cargo.

6.4.3.11. Demonstrate the use of an emergency shutdown switch.

6.4.3.12. Demonstrate compensating for the rear end swing during travel.

6.4.3.13. Demonstrate proper parking procedures.

6.4.3.14. Demonstrate proper use of the bogie.

6.4.4. Show trainee the after operation inspection and report.

6.4.4.1. Ensure vehicle is cleaned.

6.4.4.2. Cargo straps and chains are properly stowed.

6.4.4.3. Refuel vehicle.

6.4.4.4. Following manufacturer’s shut-down procedures.

6.4.4.5. Park.

6.4.4.5.1. Apply brakes.

6.4.4.5.2. Place transmission in neutral (park or an automatic).

6.4.4.6. Perform a walk-around inspection.

6.4.4.7. Annotate any discrepancies found on AF Form 1800.

6.4.5. Conclude by allowing time for questions and any requested re-demonstrations.

Section 7—TRAINEE PERFORMANCE AND EVALUATION

7.1. Trainee Performance.

7.1.1. Instructor will:

7.1.1.1. Ensure safety at all times. **Note:** Stop training when safety items are violated. Proceed only when the trainee fully understands how to avoid repeating the safety infraction(s).

7.1.1.1.1. Chock wheel (if required) when 60K is parked.

7.1.1.1.2. Remove all jewelry and identification tags.

Note: If available, mark vehicle with magnetic sign indicating “Driver-in-Training” or “Trainee Operator.”

7.1.1.2. Personal protective equipment and other items:

7.1.1.2.1. Safety steel-toed boots must be worn.

7.1.1.2.2. Gloves will be worn during cargo loading and unloading.

7.1.1.2.3. First aid kit.

7.1.1.2.4. Reflective vest/belt during hours of reduced visibility or on the flightline.

7.1.1.2.5. Raingear, cold weather gear, etc.

7.1.1.3. Pay particular attention to the cautions and warnings listed in the operator's manual.

7.1.1.4. Ensure trainee wears seat belts.

7.1.1.5. Properly adjust driver’s seat and all mirrors.

7.1.1.6. 60K safety items/procedures.

7.1.1.7. Ensure the driver is aware of driving situations he/she is to perform.

7.1.1.8. Conduct during/after-action reviews with the trainee (demonstration may need to be re-accomplished).

7.1.2. Trainee Performance.

7.1.2.1. Conduct operator maintenance (have trainee explain items being inspected). **Note:** Allow trainee to use **Attachment 3** as a guide while performing inspection.

7.1.2.1.1. Pre-inspection.

7.1.2.1.2. During-inspection.

7.1.2.2. Ensure AF From 1800 is properly documented.

7.1.2.2.1. Establish a course that will have the following: (if the course does not have one of the following, then the trainee should be able to explain the correct driving techniques).

7.1.2.2.1.1. Operate all deck control levers.

7.1.2.2.1.2. Obey speed limits.

7.1.2.2.1.3. Use a highline to load and unload cargo.

7.1.2.2.1.4. Demonstrate the use of an emergency shutdown switch.

7.1.2.2.1.5. Demonstrate compensating for the rear end swing during travel.

7.1.2.2.1.6. Demonstrate proper parking procedures.

7.1.2.2.1.7. Demonstrate proper use of the bogie.

7.1.2.2.2. Continue until trainee can show proficiency in operating.

7.1.2.3. Have trainee practice the 60K operations listed below (use spotter when backing) until they can safely and efficiently perform.

7.1.2.4. Perform after-operation inspection.

7.1.2.4.1. Ensure vehicle cleaned.

7.1.2.4.2. Cargo straps and chains are properly stowed.

7.1.2.4.3. Refueled.

7.1.2.4.4. Following manufacturer’s shut-down procedures.

7.1.2.4.5. Park.

7.1.2.4.6. Apply brakes.

7.1.2.4.7. Place transmission in neutral (park for an automatic).

7.1.2.5. Report any discrepancies found on AF Form 1800.

7.2. Performance Evaluation.

7.2.1. Trainee will perform performance evaluation found in **Attachment 4**.

7.2.1.1. Instructor and trainee will review **Attachment 4**.

7.2.1.2. Instructor will answer trainee's questions.

Note: If available, mark vehicle with magnetic sign indicating "Driver-in-Training" or "Trainee Operator".

7.2.2. Instructor will:

7.2.2.1. Ensure safety at all times.

7.2.2.1.1. Place wheel chocks (if required) when 60K is parked,

7.2.2.1.2. Remove all jewelry and identification tags.

7.2.2.2. Personal protective equipment and other items.

7.2.2.2.1. Safety steel-toed boots must be worn.

7.2.2.2.2. Gloves will be worn during cargo loading and unloading.

7.2.2.2.3. First aid kit.

7.2.2.2.4. Reflective vest/belt during hours of reduced visibility or on the flightline.

7.2.2.3. Pay particular attention to the cautions and warnings listed in the operator's manual.

7.2.2.4. Ensure trainee wears seat belts.

7.2.2.5. Properly adjust driver's seat and all mirrors (if available).

7.2.2.6. 60K-Loader safety items/procedures.

7.2.3. Explain driving techniques.

7.2.4. Establish a course that will have the following: (if the course does not have one of the following, then the trainee should be able to explain the correct driving techniques).

7.2.4.1. Demonstrate the proper use of pallet guides, locks, stops, and chains.

7.2.4.2. Describe the amount of time the starter should be operated.

7.2.4.3. Describe the roper use of the bogie.

7.2.4.4. Describe the different types of loads and how to handle each.

7.2.4.4.1. Palletized

7.2.4.4.2. Rolling stock.

7.2.4.5. Describe the minimum levels for oil and air pressure.

7.2.4.6. Describe the proper shutdown techniques.

7.2.4.7. Describe the massive rear end swing the 60Kexhibits during operation.

7.2.4.8. Operate all deck control levers.

7.2.4.9. Obey speed limits.

7.2.4.10. Use a highline to load and unload cargo.

7.2.4.11. Demonstrate the use of an emergency shutdown switch.

7.2.4.12. Demonstrate compensating for the rear end swing during travel.

7.2.4.13. Demonstrate proper parking procedures.

7.2.4.14. Demonstrate proper use of the bogie.

7.2.5. Ensure the driver is aware of driving situations.

7.2.6. Conduct after-action reviews with the trainee.

7.2.7. Trainee is not allowed any instructor assists to pass performance evaluation.

7.2.8. Evaluation checklist provided in **Attachment 4**.

7.2.9. Perform after-operation inspection. Annotate any discrepancies found on AF Form 1800.

7.2.10. Retraining; retrain No-Go’s.

7.2.10.1. Re-demonstrate “No-Go” items.

7.2.10.2. Have trainee re-perform until they show proficiency in operating, critique weaknesses as observed.

7.2.10.3. Re-evaluate.

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References
AFI 24-301, *Ground Transportation, 1 November 2018*
AFMAN 24-306, *Operation of Air Force Government Motor Vehicles*, 9 December 2016

Adopted Forms
AF Form 171, *Request for Driver's Training and Addition to U.S. Government Drivers*, 1 November 2018
AF Form 847, *Recommendation for Change of Publication*, 22 September 2009
AF Form 1800, *Operator's Inspection Guide and Trouble Report*, 1 April 2010

Abbreviations and Acronyms
AF—Air Force
AFI—Air Force Instruction
AFIMSC—Air Force Installation Mission Support Center
AFQTP—Air Force Qualification Training Package
AFMAN—Air Force Manual
AMC—Air Mobility Command
BTU—British Thermal Unit
CCA—Cold Cranking Amps
DoD—Department of Defense
ESRCS—Engine Speed-Related Control System
FOD—Foreign Object Damage
HZ—Hertz
IAW—In Accordance With
JP—Jet Propellant
LBS—Pounds
MPH—Miles per Hour
PSI—Pounds per Square Inch
PSF—Pounds per Square Foot
RM—Risk Management
RPM—Revolutions per Minute
TO—Technical Order
VCNCO—Vehicle Control Non Commissioned Officer
VCO—Vehicle Control Officer
VDC—Volts Direct Current

SUBJECT KNOWLEDGE

A2.1. 60K-Loader Specifications. The following table gives specifications for the 60K-Loader. For additional information, refer to this vehicle's Manufacturer's Operator's Manual.

Table A2.1. 60K-Loader Vehicle Specifications.

Specifications 60K-Loader	
Part	**Specification**
General	
Gross Weight (unloaded)	68,000 lbs (max)
Combined Gross Weight	128,000 lbs (max)
Overall Length	592 in.
Overall Width (including cab)	171 in.
Overall Width (at catwalks)	150 in.
Maximum Speed	20 mph
Turning Radius	90° Turn: 50 ft. (15 m)
	180° Turn: 100 ft. (30 m)
463L Pallets	6 (max) at 10,000 lbs each
Rolling Stock	60,000 lbs (max)
	Single Axle: 13,000 lbs
	Dual Axle: 30,000 lbs
Air Drop Platforms	Up to 32 ft.
Length	592"
Width	Operational Mode w/Cab: 171"
	Transport Configuration: 113"
Height	222" (15.5 ft.)
	Normal Load: 43"
	C-130 Load: 39"
	Travel Height: 46"
Pitch	6°
Roll	4°
Yaw	3 in. from the center line
Load Capacities	
463L Pallets (6 max.)	10,000 lbs.
Rolling Stock	60,000 lbs
Military Air Drop Platforms	60,000 lbs.
Maximum Unbalanced Load between Front and Rear Deck Halves	20,000 lbs.

Fluid Capacities	
Fuel Tank Power Pack	50 gallons
Fuel Tank Cab Heater	1.5 gallons
Engine Oil	16 qts
Cooling System	72 qts
Hydraulic Tank	62 gallons (operating level)
	78 gallons (capacity)
	150 gallons (max capacity)
Windshield Washer	2 qts
Note: Requires special antifreeze, always refer to maintenance if needed. Damage to engine will occur if the incorrect antifreeze is used.	
Cab Heater	
Fuel Types	Diesel, JP-5, JP-8
Output	12,000 btu/hr (maximum)
Note: Cannot use B-20 fuel in heater.	
Chassis	
Suspension	Below Load (using override switch): 2.5”
	Suspension Normal Load: 6.5” (yellow lights)
	Suspension Travel: 9.5” (green lights)
Power Pack	
Make	Detroit Diesel
Rated Power	350 hp @ 2,800 rpm
Operating Range	1,000 to 2,950 rpm
Fuels	DF-A (arctic), DF-1 (winter), DF-2 (regular), JP-4, JP-5, JP-8 and B-20 Biodiesel
Pneumatic Brake System	
Type	Air
Normal Operating Pressure	60 to 105 psi (120 psi max)
Description	3 Air tanks are on the loader. The primary is located on the front right in front of axle 1. The secondary is located on the left side between axle 2 and axle 3. The wet tank is located just in front of axle 5 on the left side.
Air Tank (wet and dry) Pressure Capacity	Minimum: 66 psi
	Normal: 105 psi
	Maximum: 125 psi
Note: An alarm will sound if the pressure drops under 60 psi. Stop the loader to build the pressure back to the proper level.	

Electrical System	
Components	12/24 VDC, series/parallel (located on the A-14 [battery box])
	24 VDC starting system
	12 VDC run system
	Slave Connector (for jump starting capabilities)
	200 Amp Alternator
Battery System	
Quantity	4
Type	Maintenance free
Voltage	12 VDC each
Tires/Wheels	
Total	20
Make	Goodyear
Approved Brands	Goodyear, Michelin, BF Goodrich
Type	255/70R 22.5, LR-H
Tire Pressure	Minimum: 95 psi
	Maximum: 100 psi
Torque	400 to 500 lb-ft
Wheel	Center rim, aluminum

Attachment 3

60K-LOADER INSPECTION GUIDE

GENERAL

STEP 1. VEHICLE OVERVIEW

☐ Paperwork
- AF Form 1800
- Discrepancy Correction Complete (VM Annotation)

☐ Vehicle Approach
- Damage
- Vehicle Leaning
- Fresh Leakage of Fluids
- Hazards Surrounding Vehicle

INTERNAL

STEP 2. ENGINE COMPARTMENT

☐ Leaks/Hoses/Electrical Wiring Insulation
☐ Hood Latches
☐ Oil Level
☐ Coolant Level
☐ Power Steering Fluid
☐ Windshield Washer Fluid
☐ Battery Fluid Level, Connections & Tie-downs
☐ Automatic Transmission Fluid Level
☐ Engine Compartment Belts
☐ Linde Pump
☐ Air Filter/Air Intake
☐ Radiator Fans
☐ Splitter Box Oil Level
☐ Antifreeze Level
☐ Electrical System Modules (Correct switch positions/no tripped circuits)

STEP 3. ENGINE START/CAB CHECK (LEFT/FRONT/RIGHT)

☐ Safe Start
☐ Gauges
- Oil Pressure Gauge
- Air Pressure Gauge
- Temperature Gauge (Coolant/Engine Oil)
- Ammeter/Voltmeter

☐ Warning Lights & Buzzers
☐ Mirrors & Windshield
☐ Wipers/Washers
☐ Emergency & Safety Equipment
- Red Reflective Triangles
- Properly Charged & Rated Fire Extinguisher
- Optional (Chains/Tire Changing Equip, Emergency Phone List)

☐ **3B** – Lights/Reflectors/Reflector Tape Condition (Front/Sides/Rear)
(Dash Indicators for:)
- Left Turn Signal
- Right Turn Signal
- Four-Way Emergency Flashers
- High Beam Headlight
- Clearance Lights

(Reflective Clean & Functional Light & Reflector Checks Include:)
- Headlights
- Running Lights
- Backing Lights
- Turn Signals
- Four-Way Flashers
- Brake Lights
- Spotlight
- Deck Lights
- Red Reflectors & Amber Reflectors
- Reflective Tape Condition

☐ Horn
☐ Heater/Defroster
☐ Brakes
- Parking Brake Check
- Hydraulic Brake Check
- Service Brake Check
- Safety Belt

(TURN-OFF ENGINE/TURN-ON HEADLIGHTS *LOW BEAM* AND FOUR-WAY FLASHERS)

STEP 4. WALK-AROUND INSPECTION

☐ **4A** – Steering
- Steering Box/Hoses
- Steering Linkages
- Tie Rod
- Steering Plate
- Steering Arm Bolts and Pins

☐ **4B** – Suspension
- Springs/Air/Torque
- Mounts
- Shock Absorbers

☐ **4C** – Brakes
- Slack Adjustors & Pushrods
- Brake Chambers
- Brake Hoses/Lines
- Brake Linings
- Brake Canister

☐ **4D** – Wheels
- Rims
- Tires
- Hub Oil Seals/Axle Seals
- Lug Nuts
- Proper Inflation
- Side Walls

SIDE OF VEHICLE

☐ **4E** – Doors
☐ **4E** – Mirrors
☐ **4E** – Fuel Tank/Fuel Door/Fuel Cap
☐ **4E** – Conveyors/Hydrostatic Drive Pumps/Conveyor Motors
☐ **4E** – Catwalks/Catwalk Extensions/Retaining Pins
☐ **4E** – Bogies
☐ **4E** – Emergency Shutdown Switches
☐ **4E** – Suspension Manifold/Equalization Valve/Glad Hands
☐ **4E** – Ladder/Steps
☐ **4E** – Maintenance Stand

VEHICLE DECK

☐ **4F** – Rollers
☐ **4F** – Power Conveyor Treads
☐ **4F** – Pallet Stops/Locks (Front/Rear)
☐ **4F** – Tie-down Rings
☐ **4F** – Tie-down Storage Box
☐ **4F** – Tire Trough Covers
☐ **4F** – Bridge Plates
☐ **4F** – Handrails/Handrail Holders/Pallet Guides

HYDRAULIC SYSTEM

- ☐ **4G** – Loader Operation
- ☐ **4G** – Filter Indicators
- ☐ **4G** – Raise/Lower/Yaw/Roll/Side Shift/Pitch

REAR OF VEHICLE

Figure A3.1. Oversized Cargo Truck Inspection Guide Aerial View.

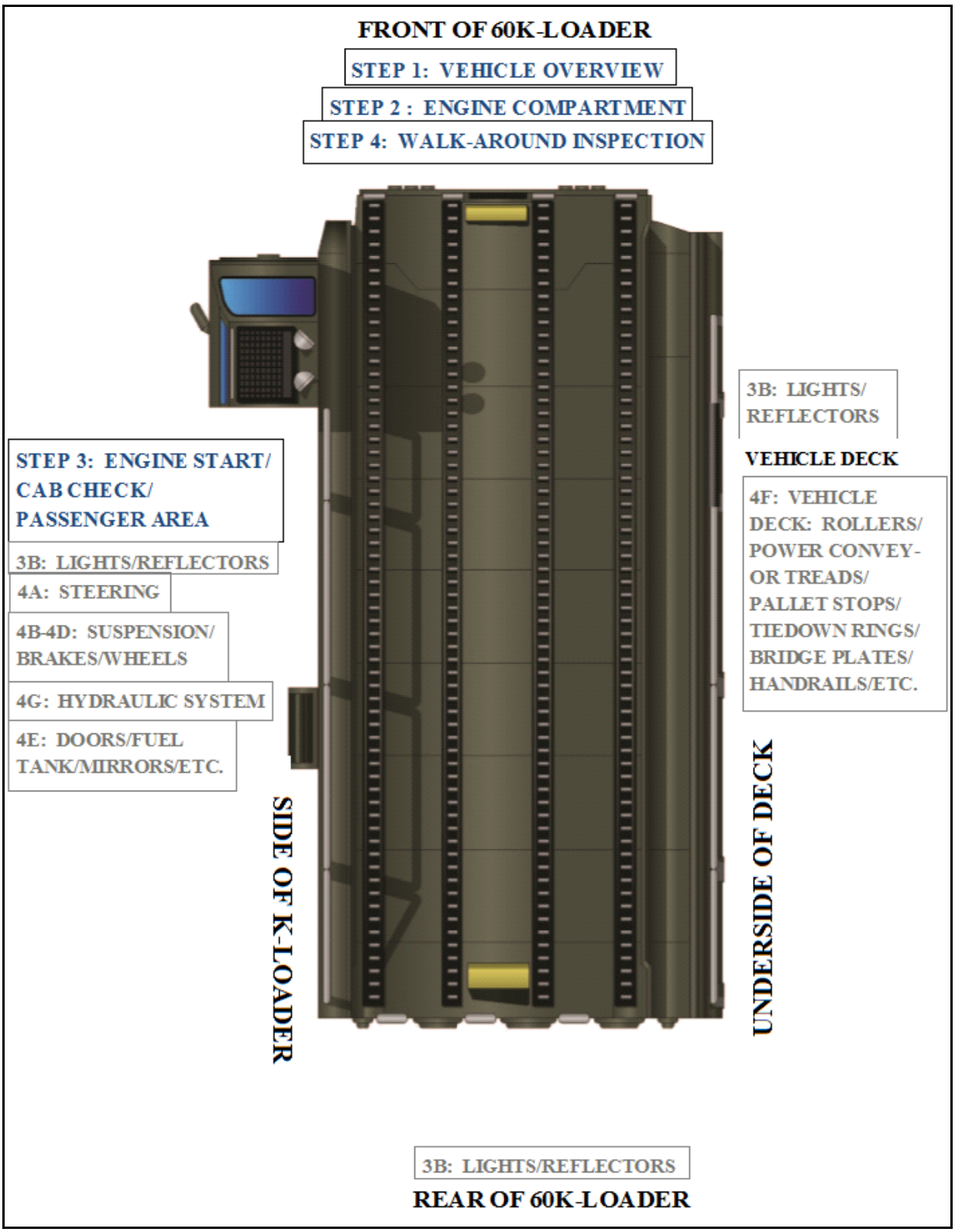
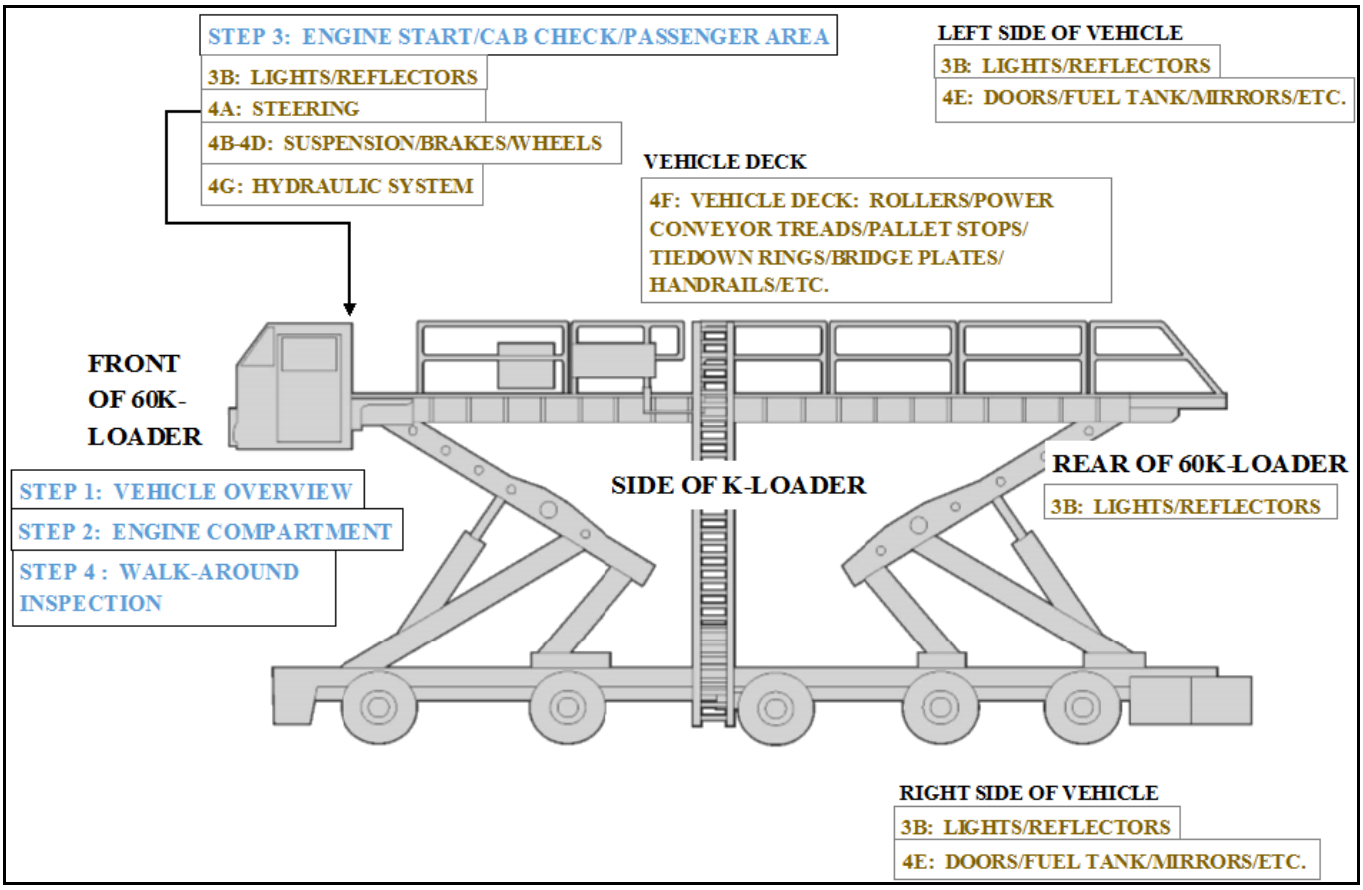


Figure A3.2. Oversized Cargo Truck Inspection Guide Side View.



Attachment 4

PERFORMANCE TEST

A4.1. Desired Learning Outcome.

A4.1.1. Understand the safety precautions to be followed before-, during-, and after-operation of the 60K-Loader.

A4.1.2. Understand the purpose of the 60K-Loader and its role in the mission.

A4.1.3. Know the proper operator maintenance procedures of the 60K-Loader, IAW applicable TOs and use of AF Form 1800.

A4.1.4. Safely and proficiently operate the oversized cargo truck.

A4.2. Instructions. Before beginning the performance test, the trainer will brief trainee on the scenario he/she will need to accomplish. They will be given additional directions and instructions as needed while proceeding through the scenario.

A4.3. Scoring.

A4.3.1. The trainer examiner will be scoring on 60K-Loader operations and also the general safe driving practices. The examiner will give directions and instructions to the trainee in sufficient time to execute a driving maneuver. He/she will not be asked to drive in an unsafe manner.

A4.3.2. The examiner will be making various marks on the performance test checklist. This does not necessarily mean the trainee has done anything wrong. It is in the best interest to concentrate on the operation of the 60K-Loader. The trainer will explain the test results at the conclusion of the performance test.

A4.3.3. Tasks being graded are listed on the following page; the trainee will be required to successfully pass all items.

A4.3.4. The instructor will stop the test at any time safe 60K-Loader operations are not being followed or as deemed necessary for safety concerns.

A4.4. Confidence Course Overview.

A4.4.1. Introduction.

A4.4.1.1. The Tunner loader confidence course was developed to allow supervisors and instructors flexibility in determining the current proficiency level and capabilities of new and current Tunner operators. The confidence course focuses on the unique turning characteristics of the Tunner loader, but also addresses backing and spotting as well. The course is used for Tunner loader students as an indoctrination tool and as a way to provide evaluation before initial licensing and three year recertification.

A4.4.1.2. The Tunner loader confidence course will allow students, novice, and experienced operators to refocus on areas they may be deficient in. Operators must be aware of the hazards associated with right and left hand turns, rear end swing, and be able to accurately judge or determine the loader's exact position while operating it.

A4.4.1.3. The Tunner loader confidence course is set up in a closed environment. Traffic cones mark hazard areas and if knocked down, will identify to the operator and evaluator possible driving deficiencies. In the final analysis, the course will reflect whether or not the operator has the tendency to over-steer or understeer the loader. This will allow evaluators to have an established mechanism that could prevent potential accidents and identify problem areas.

A4.4.1.4. It is imperative that supervisors use the Tunner loader confidence course as a means to provide positive feedback to their operators. Most Tunner accidents have resulted because of poor or improper judgment or overconfidence on behalf of the Tunner operators.

A4.4.2. Negotiating the Confidence Course.

A4.4.2.1. The red arrows denote the first part of the course. During this part of the course, the instructor will act as the spotter and spot the loader while the operator backs in between the first set of cones. After operators have shown they can follow spotting directions and the Tunner's cab is in line with the first cone, they will begin the clockwise portion of the course by following the blue arrows on the map. After operators negotiate the clockwise portion of the course, they will follow the yellow transition arrows in the reverse direction and stop at the finish line.

A4.4.3. How to Set-up the Confidence Course.

A4.4.3.1. It is imperative that the course is set up in an area that has plenty of room; minimum area required is 362' long by 114' wide and free of congestion and traffic. The area should be as flat as possible; topography has some effect on exact cone placement.

A4.4.3.2. Course requires twenty-four, 28-inch standard traffic cones. The 28-inch traffic cone will be the minimum height for cones used; the higher the cone the better visibility the operator will have, as well as a finer sense of the area he/she has to maneuver through.

A4.4.3.3. The course should be set up in an area with a 362’ straight centerline. This will enhance precise cone placement and will save time in setting up the course. If the course is set up in a haphazard way or traffic cones are set up in general areas rather than precise locations, it will increase or decrease the difficulty in negotiating the course.

A4.4.4. Testing.

A4.4.4.1. Initial operators will practice their abilities on the confidence course. This will allow them to focus on the unique turning characteristics of the Tunner loader. The instructor will ensure the schedule allows for sufficient time during the 10-day class to allow students maximum driving time. Driving to a variety of aircraft, performing interface with highline docks, and driving the confidence course are great ways for the operator to receive balanced training. The course is a good way to get critical driving experience when no aircraft are available.

A4.4.4.2. Passing score will be mandatory for operators to initially receive Tunner on their license. All operators will be allowed to practice two runs before final grading. Instructors will allow the operator a maximum of two chances to demonstrate the ability to safely complete the course during grading. A maximum of three cones can be hit during the test the fourth cone will result in a failure. Operators performing their annual training requirements must meet the same standards; if a passing score is not achieved, the operator will not be allowed to drive the Tunner without a trainer present. The Tunner QTP will be re-accomplished, followed by driving time with a trainer present until the operator can demonstrate the ability to safely maneuver the course within passing standards.

Figure A4.1. Confidence Course (1/3).

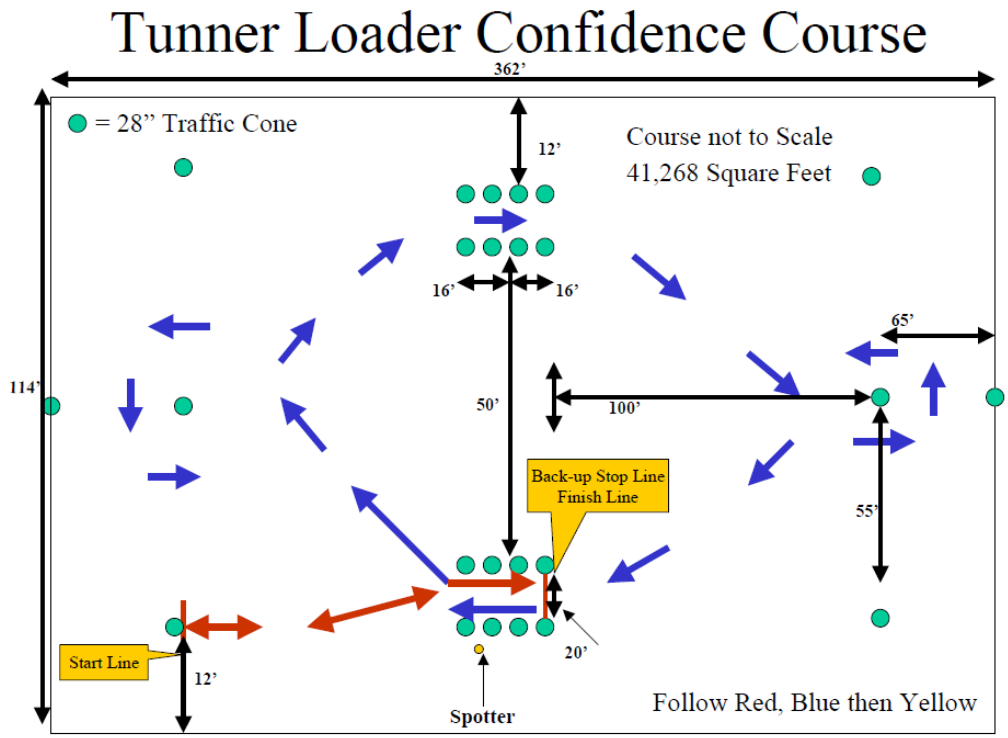


Figure A4.2. Confidence Course (2/3).

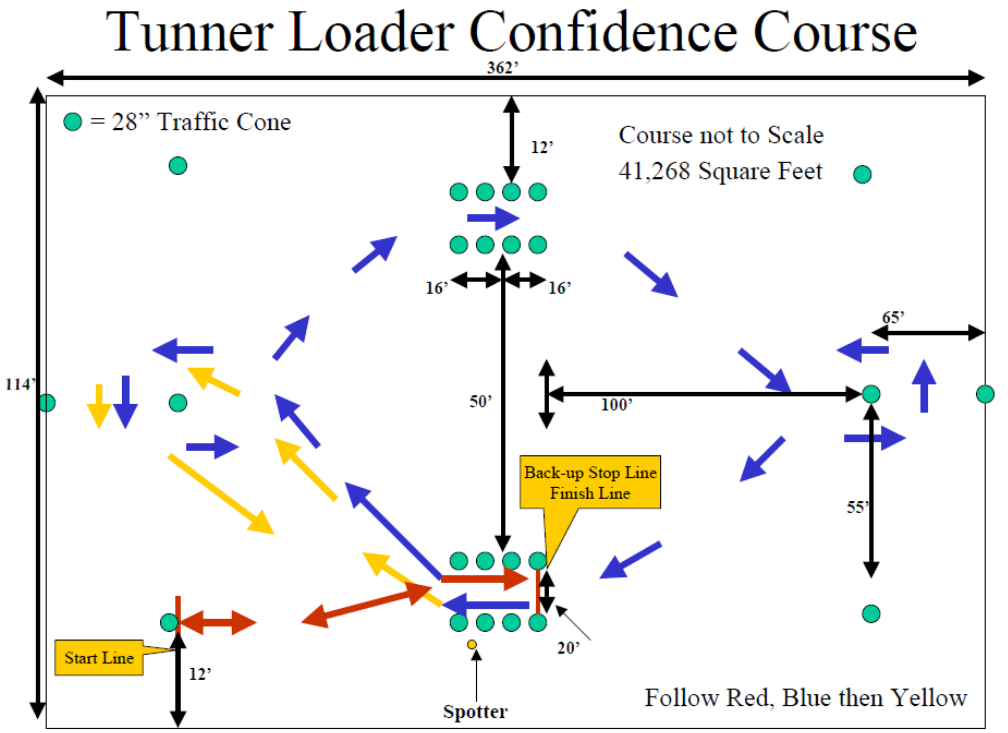


Figure A4.3. Confidence Course (3/3).

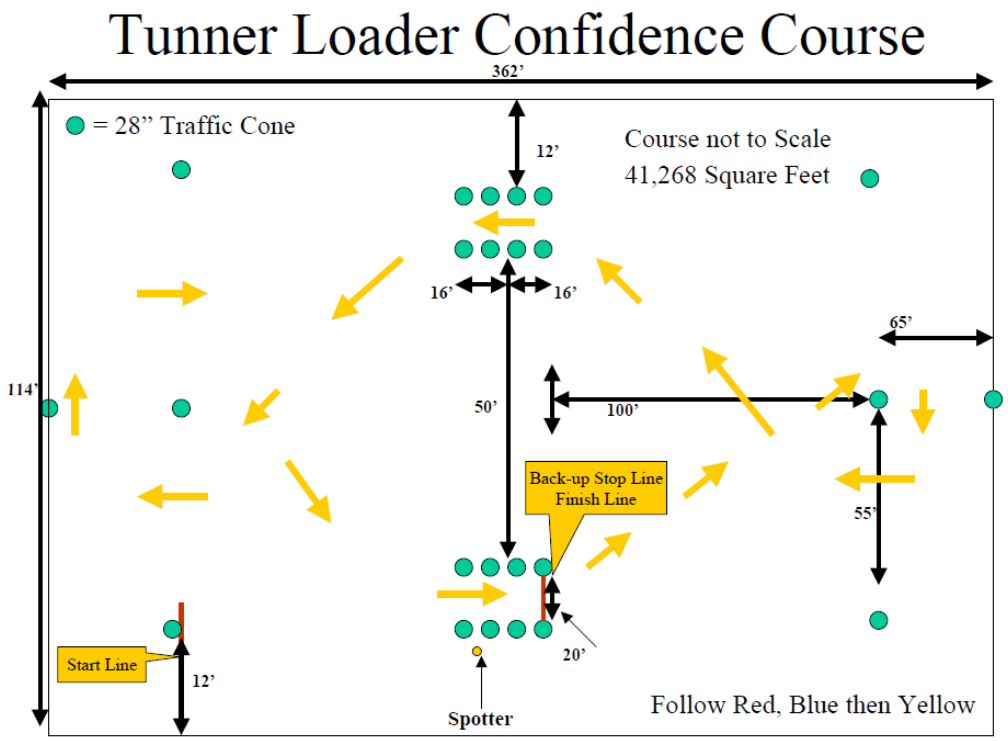


Figure A4.4. Performance Test Checklist:

PERFORMANCE TEST			
Trainees Name:		**Date:**	
Event	**Go**	**No Go**	**Notes**
1. PRE, DURING, AND POST- OPERATION INSPECTION			
1.1. Operator has required Personal Protective Equipment.			
1.2. Follows general pattern of pre-trip checklist.			
1.3. Performs brake component check			
1.4. Signs AF Form 1800 to signify accomplishment of complete inspection.			
1.5. Knows the amount of time the vehicle should be shutdown before performing inspection.			
1.6. Inspects all emergency equipment on the K-Loader.			
1.7. Inspects all levers, controls and fluid levels.			
1.8. Cleans windshield, windows, mirrors, lights and reflectors.			
1.9. Inspects tires for FOD.			
1.10. Continues during operations inspection checks.			
1.11. Performs post trip inspection and reports malfunctions to Vehicle Management.			
Event	**Go**	**No Go**	**Notes**
2. ON-ROAD DRIVING TEST			
2.1. General - safety belt is used; obeys all traffic signs, signals, and laws; completes test without an accident or moving violation. Properly uses all necessary safety equipment. Prohibits personnel from walking under the raised deck.			
2.2. Operating the starter for the correct amount of time.			
2.3. Operating all deck controls.			
2.4. Obeying speed limits.			

2.5. Compensating for rear end swing during travel.			
2.6. Using a highline dock to load and unload cargo.			
2.7. Demonstrating the proper use of the emergency shutdown switch.			
2.8. Demonstrating proper parking procedures.			
2.9. Demonstrating the proper use of the bogie.			
CERTIFIER COMMENTS:			

Attachment 5

SEVEN-STEP INSPECTION PROCESS

Figure A5.1. Seven-Step Inspection Process.

Seven-Step Inspection Process	
Step	**Procedure**
1. Vehicle Overview	• Review the AF Form 1800. o Ensure any discrepancy has been corrected. o Vehicle Management annotated the discrepancy was completed. o Approaching the vehicle. ▪ Damage or vehicle leaning to one side. ▪ Fresh leakage of fluids. ▪ Hazards around vehicle.
2. Check Engine Compartment	• **Note:** Check that the parking brakes are on and/or wheels chocked. The operator may have to raise the hood, tilt the cab (secure loose things so they don't fall and break something), or open the engine compartment door. • Check the following: o Engine oil level. o Coolant level in radiator; condition of hoses. o Power steering fluid level; hose condition (if so equipped). o Windshield washer fluid level. o Battery fluid level, connections and tie-downs (battery may be located elsewhere). o Automatic transmission fluid level (may require engine to be running). o Check belts for tightness and excessive wear (alternator, water pump, air compressor)--learn how much "give" the belts should have when adjusted right.

	o Leaks in the engine compartment (fuel, coolant, oil, power steering fluid, hydraulic fluid, battery fluid). Cracked, worn electrical wiring insulation.
3. Start Engine and Inspect Inside the Cab Get in and Start Engine	• Make sure parking brake is on. • Put gearshift in neutral (or park if automatic). Start engine; listen for unusual noises. • If equipped, check the Anti-lock Braking System (ABS) indicator lights. Light on dash should come on and then turn-off. If it stays on the ABS is not working properly. • **Note:** For trailers only, if the yellow light on the left rear of the trailer stays on, the ABS is not working properly. • Look at the gauges. o <u>Oil pressure</u>. Should come up to normal within seconds after engine is started. o <u>Air pressure</u>. Pressure should build from 50 to 90 psi within 3 minutes. Build air pressure to governor cut-out (usually around 120 – 140 psi. Know the vehicle's requirements. o <u>Ammeter and/or voltmeter</u>. Should be in normal range(s). o <u>Coolant temperature</u>. Should begin gradual rise to normal operating range. o <u>Engine oil temperature</u>. Should begin gradual rise to normal operating range. o <u>Warning lights and buzzers</u>. Oil, coolant, charging circuit warning, and antilock brake system lights should go out right away. o Check Condition of Controls. Check all of the following for looseness, sticking, damage, or improper setting: ▪ Steering wheel. ▪ Clutch. ▪ Accelerator (gas pedal).

	▪ Brake controls. ▪ Foot brake. ▪ Parking brake. ▪ Transmission controls. ▪ Horn(s). ▪ Windshield wiper/washer. ▪ Lights. ▪ Headlights. ▪ Dimmer switch. ▪ Turn signal. ▪ Four-way flashers. ▪ Parking – clearance – identification – marker switch (switches). • Check mirrors and windshield. o Inspect mirrors and windshield for cracks, dirt, illegal stickers, or other obstructions to seeing clearly. Clean and adjust as necessary. • Check emergency equipment. o Check for safety equipment: ▪ Spare electrical fuses (unless vehicle has circuit breakers). ▪ Three red reflective triangles, 6 fuses or 3 liquid burning flares. ▪ Properly charged and rated fire extinguisher. Check for optional items such as: ▪ Chains (where winter conditions require). ▪ Tire changing equipment. ▪ List of emergency phone numbers Accident reporting kit (packet). o Check safety belt. Check that the safety belt is securely mounted, adjusts; latches properly and is not ripped or frayed.
4. Turn-off Engine	• Make sure the parking brake is set, turn-off the engine, and take the key with. • Turn-on headlights (low beams) and four-way emergency flashers, and get out of the vehicle.
5. Do Walk-Around Inspection	• General. o Go to front of vehicle and check that low beams are on and both of the four-way flashers are working.

	o Push dimmer switch and check that high beams work. o Turn-off headlights and four-way emergency flashers. o Turn-on parking, clearance, side-marker, and identification lights. o Turn-on right turn signal, and start walk-around inspection. o Walk around and inspect. ▪ Clean all lights, reflectors, and glass as while doing the walk-around inspection. • Left front side. o Driver's door glass should be clean. o Door latches or locks should work properly. • Left front wheel. o Condition of wheel and rim--missing, bent, broken studs, clamps, lugs, or any signs of misalignment. o Condition of tires--properly inflated, valve stem and cap OK, no serious cuts, bulges, or tread wear. o Use wrench to test rust-streaked lug nuts, indicating looseness. o Hub oil level OK, no leaks. Left front suspension. o Condition of spring, spring hangers, shackles, o U-bolts. o Shock absorber condition. • Left front brake. o Condition of brake drum or disc. o Condition of hoses. • Front. o Condition of front axle. Condition of steering system. o No loose, worn, bent, damaged or missing parts. o Must grab steering mechanism to test for looseness. o Condition of windshield. o Check for damage and clean if dirty. o Check windshield wiper arms for proper spring tension.

	o Check wiper blades for damage, "stiff" rubber, and securement. o Lights and reflectors. o Parking, clearance, and identification lights clean, operating, and proper color (amber at front). o Reflectors clean and proper color (amber at front). o Right front turn signal light clean, operating, and proper color (amber or white on signals facing forward). • Right side o Right front: check all items as done on left front. o Primary and secondary safety cab locks engaged (if cab-over-engine design). o Right fuel tank(s). o Securely mounted, not damaged, or leaking. Fuel crossover line secure. o Tank(s) contain enough fuel. Cap(s) on and secure. o Condition of visible parts. Rear of engine--not leaking. Transmission--not leaking. o Exhaust system--secure, not leaking, not touching wires, fuel, or air-lines. o Frame and cross members--no bends or cracks. • Right rear. o Condition of wheels and rims--no missing, bent, or broken spacers, studs, clamps, or lugs. o Condition of tires--properly inflated, valve stems and caps OK, no serious cuts, bulges, tread wear, tires not rubbing each other, and nothing stuck between them. o Tires same type, e.g., not mixed radial and bias types. o Tires evenly matched (same sizes). Wheel bearing/seals not leaking. o Suspension. o Condition of spring(s), spring hangers, shackles, and U-bolts. o Axle secure.

	o Powered axle(s) not leaking lube (gear oil). Condition of torque rod arms, bushings. o Condition of shock absorber(s). o If retractable axle equipped, check condition of lift mechanism. If air powered, check for leaks. o Condition of air ride components. o Brakes. o Brake adjustment. o Condition of brake drum(s) or discs. o Condition of hoses--look for any wear due to rubbing. o Lights and reflectors. o Side-marker lights clean, operating, and proper color (red at rear, others amber). o Side-marker reflectors clean and proper color (red at rear, others amber). • Rear. o Lights and reflectors. o Rear clearance and identification lights clean, operating, and proper color (red at rear). o Reflectors clean and proper color (red at rear). o Right rear turn signal operating, and proper color (red, yellow, or amber at rear). o License plate(s) present, clean, and secured. o Splash guards present, not damaged, properly fastened, not dragging on ground, or rubbing tires. o C • Left side. o Check all items as done on right side, plus: o Battery (batteries) (if not mounted in engine compartment). o Battery box (boxes) securely mounted to vehicle. Box has secure cover.

	o Battery (batteries) secured against movement. Battery (batteries) not broken or leaking. o Fluid in battery (batteries) at proper level (except maintenance-free type). o Cell caps present and securely tightened (except maintenance-free type). o Vents in cell caps free of foreign material (except maintenance-free type).
6. Check Signal Lights	• Get in and turn-off all lights. • Turn-on stop lights (apply trailer hand brake or have a helper put on the brake pedal). • Turn-on left turn signal lights. • Get out and check lights. • Left front turn signal light clean, operating and proper color (amber or white on signals facing the front). • Left rear turn signal light and both stop lights clean operating, and proper color (red, yellow, or amber). • Get in vehicle. o Turn-off lights not needed for driving. o Check for all required papers, trip manifests, permits, etc. o Secure all loose articles in cab (they might interfere with operation of the controls or hit the operator in a crash). o Start the engine.
7. Start the Engine and Check Test for Hydraulic Leaks	• Test for hydraulic leaks. o If the vehicle has hydraulic brakes, pump the brake pedal three times. o Then apply firm pressure to the pedal and hold for 5 seconds. o The pedal should not move. If it does, there may be a leak or other problem. • Brake system. • Test parking brake. o Fasten safety belt.

	o Set parking brake (power unit only). Release trailer parking brake (if applicable). Place vehicle into a low gear. o Gently pull forward against parking brake to make sure the parking brake holds. o Repeat the same steps for the trailer with trailer parking brake set and power unit parking brakes released (if applicable). o If it doesn't hold vehicle, it is faulty; get it fixed. • Test service brake stopping action. o Go about 5 miles per hour. o Push brake pedal firmly. o "Pulling" to one side or the other can mean brake trouble. o Any unusual brake pedal "feel" or delayed stopping action can mean trouble. o If the trainee finds anything unsafe during the vehicle inspection, get it fixed. Federal and state laws forbid operating an unsafe vehicle. • Check vehicle operation regularly: o Instruments. o Air pressure gauge (if the vehicle has air brakes). Temperature gauges. o Pressure gauges. Ammeter/voltmeter. o Mirrors. o Tires. • Safety inspection. • Document any discrepancy on AF Form 1800. Sign-off AF Form 1800 to signify accomplishment of inspection.