



Operations, Service, and Parts Manual



695 Motor Grader

Manual No. 1012106-01

This manual applies
to serial number and
above: 101825

SAFETY

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Disclaimer

All information, illustrations and specifications in this manual are based on the latest information available at the time of publishing. The illustrations used in this manual are intended as representative reference views only. Moreover, because of our continuous product improvement policy, we may modify information, illustrations and/or specifications to explain and/or exemplify a product, service or maintenance improvement. We reserve the right to make any change at any time without notice. VT LeeBoy, Inc., VT LeeBoy, LeeBoy, and Rosco are all the same entity and are used interchangeably.

Title 40, Code of Federal Regulations (CFR) 1068

This product meets certified-emission requirements set by the EPA (Environmental Protection Agency), governed by Title 40 CFR 1068, which specifies actions that are prohibited by law and lists civil penalties for noncompliance. As part of those regulations, modification or rendering inoperative any emission-related component can subject you to government penalties (and void your warranty). Tampering with emission controls is in violation of federal law, and can result in civil penalties of up to \$3,750 each day an engine or piece of equipment is operated in violation.

Please be aware that you are responsible for maintaining the machine and the certified emission engine installation. Failure to comply to comply could result in penalties as listed above and void the warranty on this engine and this machine.

For more information, visit: <https://www.epa.gov/laws-regulations/regulations>

California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery posts, terminals and other related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and other reproductive harm. Wash hands after handling.

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NOTES

Thank you for purchasing the 695 Motor Grader. We wish you many years of safe and efficient operation of your motor grader.

READ THIS MANUAL PRIOR TO OPERATING the unit. This manual is an important part of the motor grader and should be kept with the motor grader at all times in the dedicated storage container on the motor grader. Even though you may be familiar with similar equipment, you **MUST** read and understand this manual before operating this motor grader. Reading the manual will help you and others avoid injury and help prevent any damage to the motor grader. If this manual becomes lost or damaged, contact your authorized LeeBoy dealer immediately to order a replacement (**Contact Information on page 2-4**).

This manual is intended as a guide for the safe and efficient use of the motor grader. This manual covers the procedures for proper operation and maintenance of the motor grader. This manual contains information that was available at the time of printing and are subject to change without notice.

This manual should be used with all related supplemental books, engine and transmission manuals, and parts books. Related service bulletins should be reviewed to provide information regarding some of the recent changes.

If any questions arise concerning this publication or others, contact your local LeeBoy dealer for the latest available information.

This manual provides information for use by the equipment operator under the following headings:

Safety—See **Section 1** for important safety guidelines information.

Information—See **Section 2** for important warranty, contact, and nameplate information. Section 2 also contains all major system specifications and typical torque value tables.

Component Location—See **Section 3** for general overview of controls and major components.

Operation—See **Section 4** for control functionality and normal equipment operation.

Maintenance—See **Section 5** for basic preventive maintenance, repair, and troubleshooting procedures.

Schematics—See **Section 6** for schematic diagrams of electrical wiring.

Illustrated Parts List (IPL)—See **Section 7** for illustrations, descriptions, and part numbers of available service parts.



VT LeeBoy, Inc. is proud to be ISO 9001 certified. The International Standards Organization (ISO) establishes guidelines to ensure that products and services are safe, reliable and of good quality. ISO certifies companies who demonstrate compliance with all aspects of product safety, customer satisfaction, efficiency, environmental stewardship and social responsibility. Our teams work hard to deliver quality industrial machines that exceed customer expectations and we strive for continuous improvement in everything we do. The VT LeeBoy family of companies is committed to total quality management with a strong focus on meeting customer needs.



VT LeeBoy, Inc., is also proud to be an accredited ANAB manufacturer, which is a certification process comprised of quality standards established by the American National Standards Institute (ANSI) and the American Society for Quality (ASQ). The ANSI-ASQ National Accreditation Board plays an important role in ensuring the safety and quality of goods and services, along with protecting the environment.

NOTES



Section 1

SAFETY

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NOTES

This manual provides important information to familiarize you with safe operating and maintenance procedures. Even though you may be familiar with similar equipment, you **MUST** read and understand this manual before operating the LeeBoy Model 695 Motor Grader and follow its instructions when operating the motor grader.

Safety is everyone's business and our top concern. Knowing the guidelines covered in this section will help ensure your safety, the safety of those around you, as well as proper motor grader operation.

Keep safety labels in good condition. If safety labels become missing or damaged, replace them with new matching labels. Replacement safety labels are available from your LeeBoy dealer (see **Contact Information on page 2-4** and **"Figure 1-1. Safety Labels and Safety Label Locations" on page 1-8**).

LOOK FOR THESE SYMBOLS WHICH POINT OUT ITEMS OF EXTREME IMPORTANCE TO THE SAFETY OF YOU AND YOUR COWORKERS. READ AND UNDERSTAND THOROUGHLY. HEED THE WARNINGS AND FOLLOW THE INSTRUCTIONS.

DANGER

Indicates a hazardous situation which, if not avoided, **will** result in death or serious injury.

WARNING

Indicates a hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, **could** result in minor or moderate injury.

NOTICE

Indicates a situation which can cause damage to the equipment, personal property and/or the environment, or cause the machine to operate improperly.

NOTE: Indicates a procedure, practice, or condition that should be followed in order for the paver or component to function in the manner intended.

SAFETY PRECAUTIONS

CAUTION

The safety messages that follow have CAUTION level hazards.

Pre-Operation Hazard



Read and understand this Operation Manual before operating or servicing the engine to ensure that safe operating practices and maintenance procedures are followed.

- Never permit anyone to service or operate the LeeBoy machine without proper training.
- Safety signs and labels are additional reminders for safe operating and maintenance techniques.
- Contact LeeBoy or an authorized LeeBoy dealer for additional training.
- Make sure you are aware of all laws and regulations that are in effect for the location in which the motor grader is operated.
- Make sure you have all necessary licenses to operate the motor grader.

DANGER

The safety messages that follow have DANGER level hazards.

Electrocution Hazard



If your machine comes in contact with electric power lines, observe the following:

- Stay in the operators seat.
- Warn other workers to stay away and do not touch any control or any part of the machine.
- If contact can be broken, drive the machine away from the danger zone.
- If contact cannot be broken, stay in the operators seat until told that power is off.
- Failure to observe these directions could result in electrocution or death.

Suffocation Hazard



Carbon monoxide poisoning is a serious condition that occurs as a result of improper ventilation.

- Never operate the internal combustion engine on this machine in an enclosed area with poor ventilation. Ensure proper ventilation to reduce risk of carbon monoxide poisoning or death.

Exhaust Hazard



All internal combustion engines create carbon monoxide gas during operation and special precautions are required to avoid carbon monoxide poisoning:

- Never block windows, vents or other means of ventilation.
- Always ensure that all connections are tightened to specifications after repair is made to the exhaust system.

WARNING

The safety messages that follow have WARNING level hazards.

Crush Hazard

Keep bystanders away from work area before and during operation.

Modification Hazard

Never modify the LeeBoy machine without the written consent of LeeBoy. Any modification can affect the safe operation of the motor grader and may cause personal injury or death.

Exposure Hazard



Operators of the motor grader must be aware of their work environment and the equipment needed to work safely.

- Always wear personal protective equipment, including appropriate clothing, gloves, work shoes, and protection for eyes and ears, as required by the task at hand.

Explosion Hazard



While the engine is running or the battery is charging, hydrogen gas is being produced and can be easily ignited. Keep the area around the battery well-ventilated and keep sparks, open flame, and any other form of ignition out of the area.

- Always disconnect the negative (-) battery cable before servicing the motor grader.
- Do not start the engine by shorting the starter circuit or any other starting method not stated in this manual. Only use the starting procedure as described in this manual to start the engine.
- Never charge a frozen battery. Always slowly warm the battery to room temperature before charging.

Fire and Explosion Hazard

- Diesel fuel is flammable and explosive under certain conditions.
- Never use a shop rag to catch fuel.
- Wipe up all spills immediately.
- Never refuel with the engine running.
- Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.

Fire Hazard



When operating machinery there is a risk for fire. Always have appropriate safety equipment available.

- Keep a charged fire extinguisher within reach when working in an environment where a fire may occur.
- Have all fire extinguishers checked periodically for proper operation and/or readiness.
- Always read and follow safety-related precautions found on containers of hazardous substances like parts cleaners, primers, sealants, and sealant removers.
- Undersized wiring systems can cause electrical fires.

WARNING

The safety messages that follow have WARNING level hazards.

Entanglement/Sever Hazard



Verify there are no people, obstacles or other equipment near the machine before starting the engine. Sound the horn as a warning before starting the engine.



If the engine must be serviced while it is operating, Remove all jewelry and tie back long hair before operating or servicing the machine.

- Keep hands, other body parts, and clothing away from moving/rotating parts.
- Always stop the engine before beginning service. Before maintenance, remove negative battery cable from battery post to ensure vehicle is not operated during maintenance.
- Verify that all guards and covers are properly attached before starting the engine. Do not start the engine if any guards or covers are not properly installed on the motor grader.
- If you must run the engine during maintenance procedures, make sure you have a helper to keep bystanders clear of the motor grader and make observations of moving parts as requested by the operator.
- Always turn the start switch to the OFF position after operation is complete and remove the key from the switch. Keep the key in your possession when the motor grader is not operating.
- Attach a "Do Not Operate" tag near the key switch while performing maintenance on the equipment.
- Never operate the engine while wearing a headset to listen to a radio or music because it will be difficult to hear the warning signals.
- Always start the engine and operate the controls while seated in the operators seat.

Alcohol and Drug Hazard



Never operate the machine while under the influence of alcohol, drugs, or when ill.

Piercing Hazard



High-pressure hydraulic fluid or fuel can penetrate your skin and result in serious injury. Avoid skin contact with high-pressure hydraulic fluid or diesel fuel spray caused by a hydraulic or fuel system leak such as a broken hydraulic hose or fuel injection line.

- If you are exposed to high-pressure hydraulic fluid or fuel spray, obtain prompt medical treatment.
- Never check for a hydraulic fluid or fuel leak with your hands. Always use a piece of wood or cardboard. Have your authorized LeeBoy dealer or distributor repair the damaged parts.

Flying Object Hazard



Always wear eye protection when cleaning the LeeBoy Model 695 Motor Grader with compressed air or high-pressure water.

Dust, flying debris, compressed air, pressurized water or steam may cause eye injury.

Coolant Hazard



Coolant must be handled properly to ensure operator safety.

- Wear eye protection and rubber gloves when handling engine coolant.
- If contact with the eyes occurs, flush eyes with clean water for 15 minutes.
- If contact with skin occurs, wash immediately with soap and clean water.

Burn Hazard



Some of the machine's surfaces become very hot during operation and shortly after shutdown.

- Keep hands and other body parts away from hot machine surfaces.
- Handle hot components with heat-resistant gloves.

CAUTION

The safety messages that follow have CAUTION level hazards.

Poor Lighting Hazard

The work area must be well lit to ensure safe and proper operation.

- Ensure that the work area is adequately illuminated.
- Always install wire cages on portable safety lights.

Tool Hazard

Always use tools appropriate for the task at hand and use the correct size tool for loosening or tightening LeeBoy machine parts.

NOTICE

The safety messages that follow have NOTICE level hazards.

Any part which is found defective as a result of inspection or any part whose measured value does not satisfy the standard or limit must be replaced.

Always tighten components to the specified torque. Loose parts can cause damage to the LeeBoy machine or cause it to operate improperly.

Only use replacement parts approved by LeeBoy. Other replacement parts may affect warranty coverage.



Follow the guidelines of the EPA or other governmental agencies for the proper disposal of hazardous materials such as engine oil, diesel fuel, and engine coolant. Consult the local authorities or reclamation facility.

Dispose of hazardous materials in accordance with all applicable laws and regulations. Never dispose of hazardous materials by dumping them into a sewer, on the ground, or into groundwater or waterways.

Clean all accumulated dirt and debris away from the body of the motor grader and its components before you inspect the motor grader or perform preventive maintenance procedures or repairs. Operating a motor grader with accumulated dirt and debris will cause premature wear of motor grader components. Accumulated dirt and debris also hinders effective motor grader inspection.

Retrieve any tools or parts that may have dropped inside of the motor grader to avoid improper motor grader operation.

If any alert indicator illuminates during motor grader operation, stop the engine immediately. Determine the cause and repair the problem before continuing to operate the motor grader.

1

SAFETY LABEL LOCATIONS

If a LeeBoy grader has been repainted, it is extremely important that all decals referring to CAUTION, WARNING, and DANGER be replaced in their proper locations. The illustrations on this page will aid you in determining the proper locations. For additional help, you should refer to the parts listing on of this manual and note the description column.

A description of location is provided below each safety label. For additional instructions, contact your dealer.

NOTE: It is the responsibility of the owner and operator to make sure that all safety labels are readable and located on the motor grader as designated by LeeBoy.

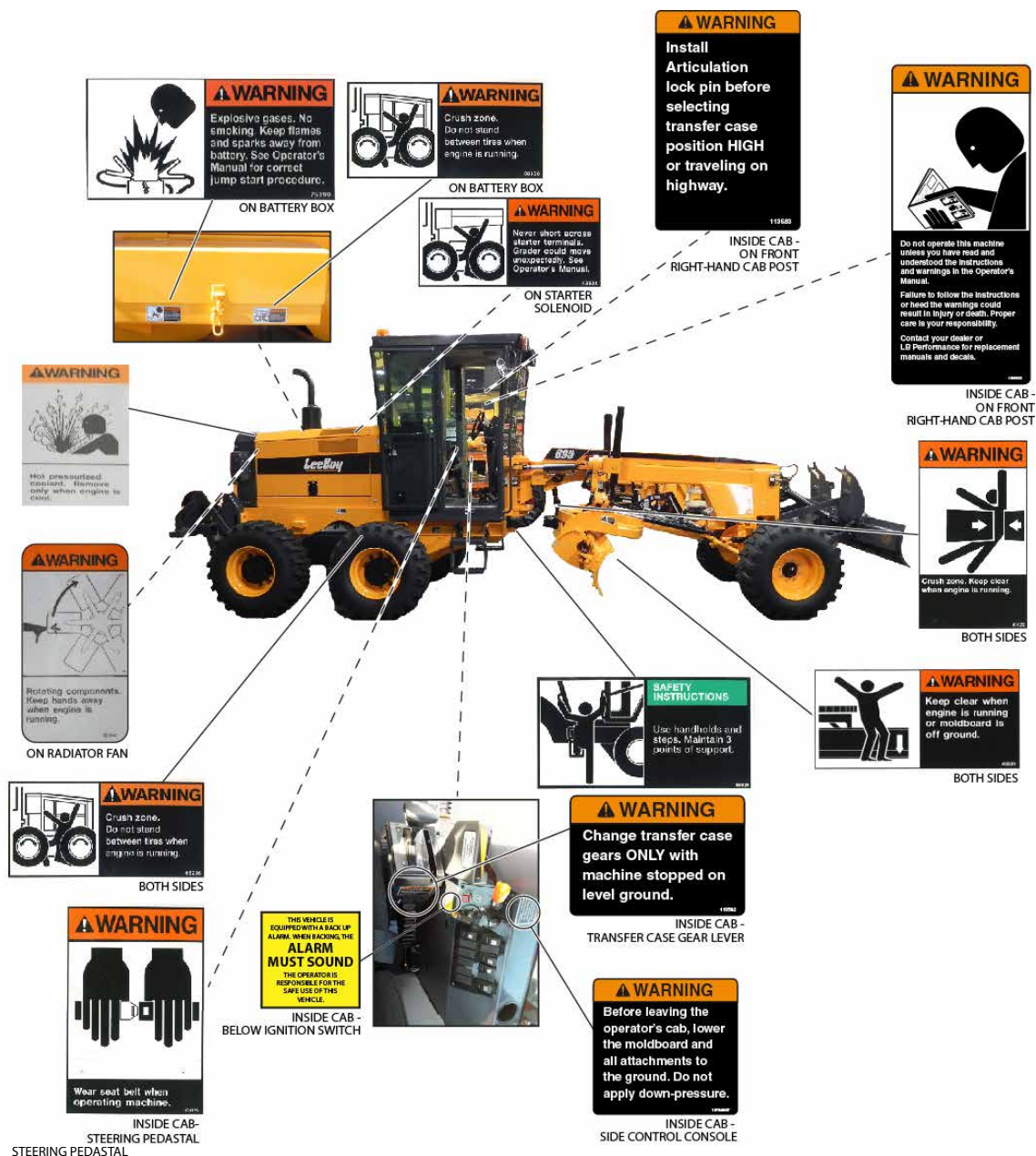


Figure 1-1. Safety Labels and Safety Label Locations

SAFETY LABELS

If the LeeBoy grader has been repainted, it is extremely important that all decals referring to CAUTION, WARNING, and DANGER be replaced in their proper locations. The illustrations on this page serve as an aid to determine the proper locations. If needed, refer to the parts listing in the parts section of this manual and note the description column.

Decal information is provided below. For additional instructions, contact your LeeBoy dealer.

NOTE: It is the responsibility of the owner and operator to make sure that all safety labels are readable and located on the motor grader as designated by LeeBoy.

Safety Decals Care

- Keep safety decals and signs clean and legible at all times.
- Become familiar with the content and the position of each safety decal. Decals include important information.
- Replace decals and signs that are missing or have become impossible to read.
- When replacing parts that display a safety decal, ensure that the new part is fitted with a decal as well.
- Obtain replacement safety decals or signs from your authorized LeeBoy dealer.

Decal Installation (sticker type)

1. Be sure that installation area is clean and dry. Use hot, soapy water to clean the surface on which the decal will be applied.
2. Thoroughly dry the surface.
3. Decide on the exact position by taking measurements and test fitting before removing decal paper backing.
4. For decals with no top protection paper, decide on location for decal and remove the smallest split backing paper.
5. Align decal over the specified area and carefully press exposed portion into place.
6. Slowly remove remaining backing and carefully smooth remaining portion of decal into place.
7. Small air pockets can be pierced with a pin and smoothed out using a piece of the decal backing.

Decal Installation (top protected)

1. If the decal has a protective top paper, use hot soapy water on the surface on which the decal will be applied. Leave wet.
2. After deciding on decal location, remove protective back paper and soak decal in clean soapy water before application. Soaking will help alleviate air bubbles in the applied decal.
3. Smooth decal into place with a squeegee and check for air bubbles.
4. Small air pockets can be pierced with a pin and smoothed out using a piece of the decal backing.
5. When decal is completely smoothed out, carefully remove top paper.

1

GRADER SPECIFIC PRECAUTIONS

Hot Material Precautions

- Wear proper protective gear for face, hands, feet, and body when operating the motor grader.
- Allow grader to cool before repairing or maintaining working components.
- When hot asphalt touches skin, flush area immediately with cold water. Do Not apply ice to the affected area. DO NOT ATTEMPT TO REMOVE ASPHALT CEMENT with products containing solvents or ammonia. Natural separation will occur in about 48 to 72 hours. Get medical attention as soon as possible.
- DO NOT remove radiator cap, drain plugs, service grease fittings, or pressure taps while engine is hot. Add coolant to the radiator and perform other services only when the engine is stopped and fully cooled.

Hydraulic Systems Precautions

- Ensure all components are in good working condition. Replace any worn, cut, abraded, flattened, or crimped hoses and metal lines.
- Do Not attempt makeshift repairs using tape, clamps, or cements. The hydraulic system operates under extremely high pressure and such repairs could cause serious injury.
- Wear proper hand and eye protection when checking for a high pressure leak. Use a piece of wood or cardboard as a back stop to isolate and identify leaks.



WARNING Hydraulic oil under pressure can cause serious personal injury. Check for oil leaks with a piece of cardboard. Do not expose hands to possible high-pressure oil. Turn off engine before attempting to tighten oil lines and fittings.

- Escaping pressurized hydraulic fluid has force sufficient to penetrate the skin which could cause serious personal injury. Ensure all pressure is relieved before disconnecting line, hoses, or valves.
- If injury from concentrated high pressure steam or hydraulic fluid occurs, seek medical attention immediately. Injuries resulting from hydraulic fluid penetrating the skin's surface can result in serious infections or toxic reactions.

Refueling Precautions

- When refueling, keep hose nozzle or funnel in contact with fuel tank metal in order to avoid possibility of an electrical spark lighting the fuel.
- Maintain control of filler nozzle.
- Do Not overfill fuel tank as overflow creates a fire hazard when spilled on hot components.
- Do Not smoke when refueling and never refuel while engine is running. Fuel is highly flammable and should be handled with care. Death or serious injury can occur due to explosion and/or fire.
- Do Not fill tank to capacity. Allow room for expansion to reduce risk of fuel expanding and spilling from tank.
- Tighten fuel cap securely. Should fuel cap be lost, replace it with an original manufacturer's approved cap. Pressureization of the tank may result from use of a non-approved cap.
- Prevent fires by keeping grader clean and free of accumulated debris, grease, and spilled fuel.
- Use ultra-low sulfur diesel fuel (ULSD) only.

Battery Precautions

- Keep all sparks and flames away from batteries, as gas given off by electrolytes is explosive.
- Acid propelled by an explosion can cause blindness if it comes in contact with eyes. Always wear safety glasses when working near batteries.
- In case of contact with battery electrolyte solution, wash affected area immediately with soap and water. Chemicals can cause burns.
- Always disconnect the battery ground cable before working on the electrical system to avoid injury caused by spark or short circuit. Electrical shock and burns can occur.
- To avoid electrolyte loss, Do Not tip batteries more than 45 degrees.
- Use jumper cables ONLY in recommended manner. Improper use can result in battery explosion or unexpected motor grader movement.

Tire Precautions

⚠ WARNING DO NOT mount or demount tires without proper training. A violent bomb-like explosion can occur.

Follow all procedures and safety instructions. Wall charts containing mounting and demounting instructions for all rims are available through the United States Department of Transportation (DOT), Washington, D.C.

NOTICE When in doubt, have a qualified tire dealer or repair service perform required tire maintenance.

• INSPECTION

Clean rims and repaint to stop detrimental effects of corrosion and to facilitate checking and tire mounting.

Be very careful to clean all dirt and rust from rims. This is important to help secure rims in the proper position.

Check rim components periodically for cracks. Replace all cracked, badly worn, severely rusted, and otherwise damaged components with new parts of the same size and type. If you are not sure about proper mating of tire and wheel parts, consult a wheel and rim expert. This may be the tire man servicing your equipment or the rim and wheel service technician in your area.

⚠ WARNING DO NOT attempt to rework, weld, heat, or braze any rim components that are cracked, broken, or damaged. REPLACE damaged components with new parts of the same size and type. Mixing parts of one type with those of another is potentially dangerous.

⚠ CAUTION DO NOT reinflate a tire that has been run flat without first inspecting the tire, tube, flap, rim, and wheel assembly. Double check for damage and make sure parts are secured before inflation.

• DEMOUNTING

Do not attempt to demount a tire unless you have the proper equipment and experience to do the job.

Remove valve core to exhaust all air from tire. ALWAYS exhaust all air from tire prior to removing rim components or wheel components such as nuts or rim clamps. Check the valve stem by running a piece of wire through the stem to make sure it is not plugged.

• MOUNTING AND INFLATION

⚠ CAUTION DO NOT inflate a tire before all components are properly in place. Place tire in a safety cage and inflate to approximately 10 psi (68,947.572 Pa). Recheck components for proper assembly. If improperly assembled, deflate and correct.

Never hammer on a tire/rim assembly that is not fully deflated. If assembly is proper at 10 psi (68,947.572 Pa), continue to inflate to fully seat the tire beads. Then completely deflate the tire to prevent localized overstretching of the tube. Reinflate to recommended operating pressure.

NEVER sit on or stand in front of a tire/rim assembly during inflation. Use a clip-on chuck and make sure inflation hose is long enough permit the person inflating the tire to stand to the side of the tire.

DO NOT hammer components with steel hammers. Use rubber, lead, plastic, or brass faced mallets to tap components together.

• SERVICING THE TIRE AND RIM ON VEHICLE

Block the tire and wheel on opposite sides of the vehicle before you place the jack in position. Always put hardwood blocks under the jack and crib up the vehicle in case the jack slips.

• OPERATION

DO NOT inflate tires beyond the maximum recommended inflation pressure. NEVER run a vehicle on a single tire of a dual assembly. The carrying capacity of the single tire and rim is dangerously exceeded and operating a vehicle in this manner can result in damage to the rim and tire.

⚠ WARNING Mismatched rim parts are dangerous and could cause SEVERE injury.

Starting and Stopping Precautions

- Check all around motor grader to make sure that there are no people working on the grader or in the path of the grader before starting. DO NOT start until area is clear. Death or serious injury can occur to bystanders from being crushed under a moving grader.
- Check brakes, steering, and other control devices in accordance with instructions before starting. Be sure parking brake is applied and the Direction Control Lever (Figure 4-7) is in neutral.
- Latch seat belt and adjust to fit snugly.
- Only start and operate the grader from the operator's seat. DO NOT bypass motor grader's neutral-start system. If the system malfunctions, it must be repaired.

 **WARNING** DO NOT operate the engine in an enclosed area without proper ventilation. Exhaust gasses are odorless and deadly.

Parking Precautions

- Park motor grader on level ground whenever possible and always apply parking brake. On grades, park motor grader with wheels securely blocked.
- Before leaving operator's station:
 1. Place Direction Control Lever in neutral
 2. Turn off all accessories
 3. Set parking brake
 4. Lower all attachments
 5. Shut off engine
- Remove ignition key when leaving motor grader parked or unattended.

Braking Precautions

- Familiarize yourself with road conditions and road surface variables in order to anticipate when a longer stopping distance is required.

Operating Precautions

- Always comply with local regulations regarding moving equipment on public roads and highways.
- Know and use the hand signals required for a particular job. Know who has the responsibility for signaling.
- Make sure that all lights and reflectors comply with state and local regulations. Make sure that they are clean, in good working order, and can be seen clearly by all traffic.
- DO NOT ride on grader attachments or moldboard.

NOTICE Some work situations require more attention to stopping distances, particularly when going downhill. The larger the grader, the more it will slide on a slippery surface. The steeper the grade, the longer the stopping distance. Familiarize yourself with these variables so that you can anticipate when a longer stopping distance is required.

- Check all gauges and warning instruments for proper operation. If malfunctions are found, shut down the grader and report the problem for resolution. If the failure causes loss of steering control, loss of brake control, or loss of engine power, stop motor grader motion as quickly as possible. Apply parking brake and keep the grader securely parked until the failure is corrected or the grader can be safely towed.
- DO NOT operate unit when warning buzzer or light are "ON."
- Drive the grader with care. Make sure speed is compatible with conditions. Use caution on rough ground, slopes, and while turning.
- Be alert for hazards and obstructions such as ditches, trees, cliffs, overhead power lines, and areas where there is danger of a slide.
- Be aware of and understand the job site traffic flow patterns.
- Obey flagmen, road signs, and signals.
- Watch for bystanders. Never allow anyone to be under the grader during operation. Never allow anyone to reach into the grader during use.

- Operator must know how to use signaling devices when roading a motor grader. Operator must also understand which circumstances require use of each signal. Use tail lights, slow moving vehicle signs, and warning beacon as needed when traveling on public roads.
- When required, provide an escort for roading.
- DO NOT tow the motor grader, except to remove from road or to load on trailer.
- When inflating tires, use a self-attaching inflation chuck with remote shut-off.
- When servicing or replacing hardened pins, use a brass drift or other suitable material between the hammer and pin.
- Keep brake and steering systems in good operating condition.
- Safety signs that are missing, illegible, or damaged must be replaced. Keep all safety signs clean.

Storage Precautions

- Store motor grader in an area away from human activity.
- Do not permit children to play on or around the stored grader. Serious injury or death can occur from improper/unauthorized use of the grader.
- Make sure the unit is stored on a surface that is firm, level, and free of debris.
- Store the grader inside a building or cover securely with a weatherproof tarpaulin.

Maintenance Precautions

- DO NOT attempt repairs unless trained to do so. Refer to manuals and experienced repair personnel for help.
- Before working on the grader, securely block the grader and any components that may fall. Block any working components to prevent unexpected movement while repairs are being made.
- Always wear safety glasses and other required safety equipment when servicing or making repairs.
- Disconnect battery before working on the electrical system.
- Avoid lubrication or mechanical adjustments while the motor grader is in motion or while engine is operating. If lubrication or mechanical adjustment is necessary:
 1. Place Forward/Reverse control in neutral
 2. Apply parking brake
 3. Shut off engine
 4. Place equipment in a safe position
 5. Securely block wheels
 6. Use extreme caution
- Never make repairs on pressurized components such as fluid lines, the gas system, or mechanical items until the pressure has been relieved.

NOTES



Section 2

INFORMATION AND SPECIFICATIONS

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LIMITED WARRANTY POLICY

Warranty

1. Subject to the limitations, exclusions, and claims procedures set forth herein, LeeBoy warrants [to the first retail purchaser] that this product will be free from [substantial] defects in materials and workmanship during the warranty period.
2. If a defect in material or workmanship is found, your authorized LeeBoy Dealer is to be notified during the warranty period. LeeBoy and its authorized Dealer will repair or replace any part or component of the unit or part that fails to conform to the warranty during the warranty period.
3. The warranty period will begin on the initial start-up, training and delivery of the unit by the Dealer to the customer, and will expire after twelve (12) months following the delivery of the grader to the first retail purchaser. (See Dealer for additional warranty.)
4. Manufacturers' Warranties: Engines are warranted by their manufacturers and may have warranty coverage that differs from that of LeeBoy does not warrant any engine.
5. Replacement parts furnished by LeeBoy are covered for the remainder of the warranty period applicable to the unit or component in which such parts are installed.
6. LeeBoy has the right to repair any component or part before replacing it with a new one.
7. All new replacement parts purchased by a LB Performance Dealer will carry a six-month warranty.
8. This Limited Warranty is governed by the laws of the State of North Carolina.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED, STATUTORY AND IMPLIED WARRANTIES APPLICABLE TO UNITS, ENGINES, OR PARTS INCLUDING WITHOUT LIMITATION, ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE OR PURPOSE OR AGAINST INFRINGEMENT.

Limitations

LeeBoy has no obligation for:

1. Any defects caused by misuse, misapplication, negligence, accident, or failure to maintain or use in accordance with the most current operating instructions.
2. Unauthorized alterations.
3. Defects or failures caused by any replacement parts or attachments not manufactured by or approved by LeeBoy.
4. Failure to conduct normal maintenance and operating service including, without limitation, providing lubricants, coolant, fuel, tune-ups, inspections, or adjustments.
5. Unreasonable delay, as established by LeeBoy, in making the applicable units or parts available upon notification of a service notice ordered by same.
6. Warranty Responsibility: The warranty responsibility on all engines rests with the manufacturer of the engine.
7. Warranty and Parts Support: LeeBoy may have support agreements with some engine manufacturers for warranty and parts support. However, LeeBoy does not warrant the engine.
8. This Limited Warranty sets forth your sole remedy in connection with the sale or use of the LeeBoy product covered by this Limited Warranty.
9. This Limited Warranty extends only to the first retail purchaser, and is not transferable.
10. In the event any portion of this Limited Warranty shall be determined to be invalid under any applicable law, such provision shall be deemed null and void and the remainder of the Limited Warranty shall continue in full force and effect.

Items Not Covered

LeeBoy is not responsible for the following:

1. All used units or used parts of any kind.
2. Repairs due to normal wear and tear or brought about by abuse or lack of maintenance of the Machine.
3. Attachments not manufactured or installed by LB Performance.
4. Liability for incidental or consequential damages of any type including, but not limited to, lost profits or expenses of acquiring replacement equipment.
5. Miscellaneous charges.

Other Limitations

IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT OR WARRANTY OR ALLEGED NEGLIGENCE OR LIABILITY WITHOUT FAULT, SHALL LeeBoy BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING, WITHOUT LIMITATION, LOSS OF PROFIT OR REVENUE, COST OF CAPITAL, COST OF SUBSTITUTED EQUIPMENT, FACILITIES OR SERVICES, DOWNTIME COSTS, LABOR COSTS OR CLAIMS OF CUSTOMERS, PURCHASERS OR LESSEES FOR SUCH DAMAGES. IN NO EVENT WILL WARRANTY COMPENSATION, OR OTHER DAMAGES AVAILABLE FROM LeeBoy, EXCEED THE PURCHASE PRICE OF THE PRODUCT.

CONTACT INFORMATION

For information regarding parts and repairs about your LeeBoy/Rosco product, first contact the dealer you purchased your product from.

If you have a persistent problem your dealer is unable to resolve, contact LeeBoy directly.

Record dealer information in the space provided. For additional information about LeeBoy, please visit: www.leeboy.com.

Sales Representative: _____

Dealership Name: _____

Dealership Address: _____

Dealership Phone: _____

RECORD OF OWNERSHIP

Please fill out the following information and use it when you need to contact LeeBoy for service, parts or literature.

Paver Model Number: _____

Paver Serial Number: _____

Date of Purchase: _____

NAMEPLATE

Nameplates (**Figure 3-1**) contain the specific model number and serial number used to identify the components for any parts or service information. To find the engine nameplate location, look in the engine manufacturer owner's manual.



Figure 2-1. Nameplate Location

GENERAL INFORMATION

The descriptions and specifications provided in this section are applicable to the LeeBoy Model 695 Motor Grader.

This section contains a description of how the major components operate. It also includes specifications for the major system components, grader dimensions, fluid specifications, torque values for tools used on this grader.

Engine

The 695 Motor Grader uses a Cummins QSB4.5 Tier 3 diesel engine to drive the hydraulic traction pump and function/steering pump. The four-cylinder engine is mounted to the rear of the operating platform and is accessible through doors in the engine cover. (Figure 2-2)

A fuel lift pump mounted on the engine draws diesel fuel from the fuel tank. The fuel tank is mounted under the engine.



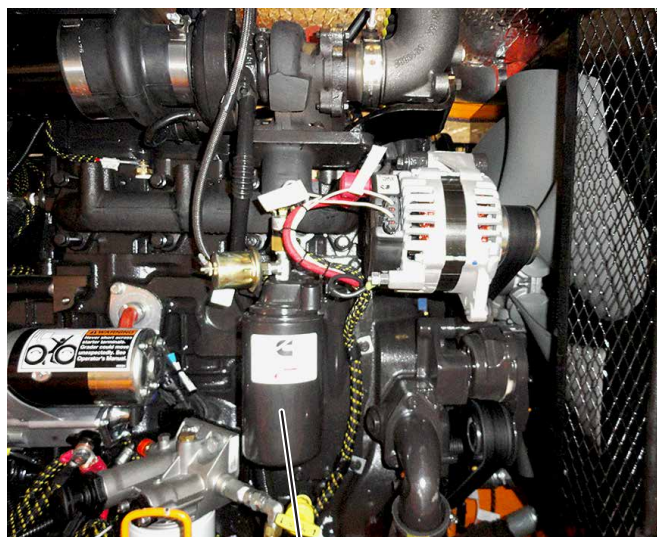
Figure 2-2. Engine

A fuel filter (Figure 2-3) removes contaminants from the diesel fuel before the fuel flows to the injection pump for injection into the engine combustion chamber.



Fuel Filter

Figure 2-3. Fuel Filter/Water Separator Location



Engine Oil Filter

Figure 2-4. Engine Oil Filter Location

The engine oil filter removes contaminants from the engine oil before it flows through the engine. Following the recommended maintenance guidelines laid out in Section 5 will help keep the engine free of contaminants and the motor grader functioning properly.

The radiator is mounted at the rear of the grader. As coolant flows through the radiator, airflow from the engine-driven fan (**Figure 2-4**) removes heat from the coolant. This process cools the engine.

Refer to the engine's Operation and Maintenance Manual for a complete description of the engine.



Radiator Fan

Figure 2-5. Radiator Fan Location

Electrical System

The electrical system is powered by a two battery system. Two 12-volt batteries are mounted in the battery compartment located on the left side of the grader. See **Figure 2-5**.

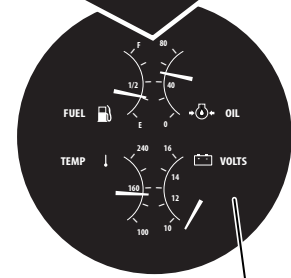


Two 12-Volt Batteries

Figure 2-6. 12-Volt System

The batteries are connected in parallel and produce 12 volts DC. They maintain 950 cold cranking amperes (CCA). An engine-mounted alternator, capable of 105 amperes charging capacity, keeps the batteries charged during normal operation.

The battery charge rate can be monitored using the voltmeter (**Figure 2-6**), which is mounted on the operator's control panel.



Voltmeter

Figure 2-7. Control Console

Hydraulic System

The hydraulic system includes multiple hydraulic pumps which are driven by the engine.

The traction pump (**Figure 2-7**) is driven directly by the engine. This pump is mounted with an adapter plate at the rear engine output shaft.

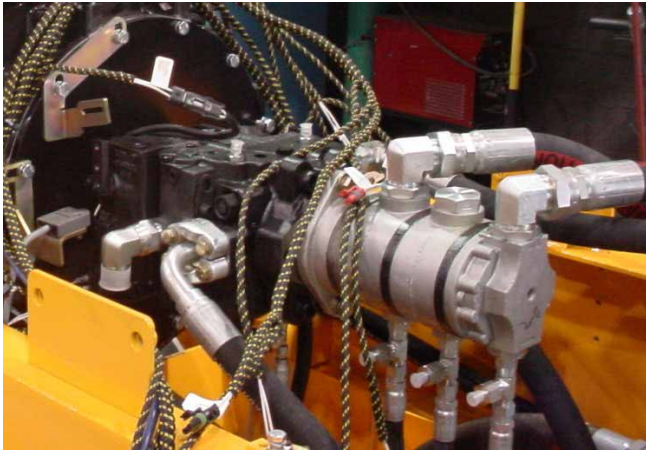


Figure 2-8. Traction Pump

The function/steering pump is a gear-type pump mounted on the rear of the traction pump. It is driven by the traction pump output shaft and provides hydraulic pressure and flow needed to operate all hydraulic cylinders. These cylinders are used to control the grader functions and to operate the steering cylinder.

The pump draws hydraulic oil from the reservoir. The pressurized oil flows to the hydraulic control valve and steering motor mounted in the steering console.

Drive System

The Model 695 Motor Grader drive system includes a hydrostatic traction pump (Figure 2-7), variable speed hydraulic motor, two-speed transfer case, rear axle carrier assembly, and gear drive assembly.

The hydrostatic traction pump is a variable piston-type pump. A swash plate controls the direction and flow of hydraulic drive pressure. A forward/neutral/reverse (FNR) lever (Figure 3-7) and linkage in the operator's compartment and pump controller mounted on the pump are used to control the direction of grader movement and output pressure by tilting the swash plate.

The variable drive motor also uses a swash plate to control grader speed. A WORK/AUTO switch (Figure 3-2,8) located on the operator's control panel in the operator's compartment is used to control swash plate tilt and piston stroke. In WORK mode, the swash plate goes to maximum displacement which generates the maximum torque. In AUTO mode, the swash plate is pressure compensated and will adjust to maximize the efficiency of the motor. The swash plate varies automatically in AUTO mode.

A two-speed transfer case mounted between the drive motor and rear axle carrier provides high and low gear selection.

A 2-speed hi/low lever (Figure 3-6,3) located on the operator's control panel in the operator's compartment allows the operator to shift gears.

NOTE: When shifting the 2-speed hi/lo switch (Figure 3-7) from low to high (or high to low) make sure the parking brake (Figure 3-8) is engaged.



DANGER 2-speed hi/low switch must be in LOW or HIGH at all times. Grader must be on level ground and at full stop when shifting.

The rear axle carrier assembly is used to convert input rotation to axle shaft output rotation. The left and right axle shafts drive the gear drive assembly.

The gear drive assembly uses axle shaft rotation to drive the gears.

Brakes

Primary grader braking is controlled by the flow of hydraulic oil in the drive system. When the Directional Control (FNR) Lever (Figure 3-7) is shifted from forward to neutral, the flow of hydraulic oil to the drive motor stops rotation of the rear axle carrier assembly, allowing the grader to slow and stop.

NOTE: The FNR Lever and the Directional Control Lever are the same assemblies; their names are used interchangeably throughout this manual.

The service brake pedal (Figure 3-6,1) is a foot pedal that when depressed, allows pressure stored in the accumulator to reach the rear axle, activating braking. The brakes are wet disc and are located inside the axle. The service brake will bring the motor grader to an immediate stop. This pedal should only be used when braking with the directional control lever is not sufficient.

The park brake is located within the cab (Figure 3-8) In order for the park brake to release, the engine must be running. The park brake is activated by spring pressure and requires constant hydraulic pressure for release. If the engine is not running or a hydraulic failure occurs, the park brake can be manually released.

Steering

The 695 Motor Grader steering controls are the steering wheel (**Figure 2-8**), the wheel lean lever (**Figure 2-8**), and the articulate lever (**Figure 2-8**). Proper steering utilizing these controls allows for greater steering control and maneuverability. .

The steering wheel controls (**Figure 2-8**) the steering motor, which controls the flow of hydraulic oil to the steering cylinder. The steering cylinder is mounted between the front axle support and the right hand spindle. The left and right spindles are connected by a tie rod, which forces the left wheel to turn with the right wheel.

The wheel lean lever (**Figure 2-8**) controls the flow of hydraulic oil to the wheel lean cylinder. The wheel lean cylinder is mounted between the front axle support and the right hand spindle support.

CAUTION The moldboard assembly can contact the drive wheels during articulation. Make sure the turning radius and moldboard position do not result in drive wheel damage due to improper steering.

The articulate lever (**Figure 2-8**) controls the flow of hydraulic oil to the articulate cylinders. The articulate cylinders are mounted between the mainframe assembly and the boom assembly. The boom assembly is mounted on the main frame using an articulator shaft and bearing assembly. The assembly allows the grader to pivot right and left when the articulate cylinders are actuated.

The steering can be controlled using one or all of the steering systems.



Figure 2-9. Steering Console

Moldboard

The moldboard assembly (**Figure 2-9**) is mounted underneath the boom assembly, supported by a drawbar and turntable assembly. The moldboard is the primary tool used to move grading materials.

The moldboard position is controlled by hydraulic cylinders, which allow the moldboard to be moved in the following ways:

- Shifted left to right - up to 3 feet (0.914 m) maximum
- Tilted for adjustment to the top and bottom
- Pivoted left to right
- Raised and lowered



Figure 2-10. Moldboard

SPECIFICATIONS CHARTS

The specifications provided in this section are applicable to the LeeBoy 695 Motor Grader. Included in this section are fastener specifications.

CAUTION Replace original equipment only with LeeBoy approved components. See the IPL, Section 7, for LeeBoy -approved part numbers associated with the 695 assemblies.

Table 2-1. Grader Dimensions

ITEM	SPECIFICATION
Overall Length	21 ft 5 in (6527 mm)
Overall Height	9 ft 8 in (2946 mm)
Overall Width (Outside Front Back)	7 ft 9 in (2362 mm)
Overall Weight	17,960 lbs (8146 kg)
Wheelbase (Front Axle to Mid-tandem)	15 ft 5 in (4699 mm)
Front Axle Midpoint Ground Clearance	24 in (610 mm)

Refer to **Figure 2-11** for diagram showing the overall dimensions of the grader.

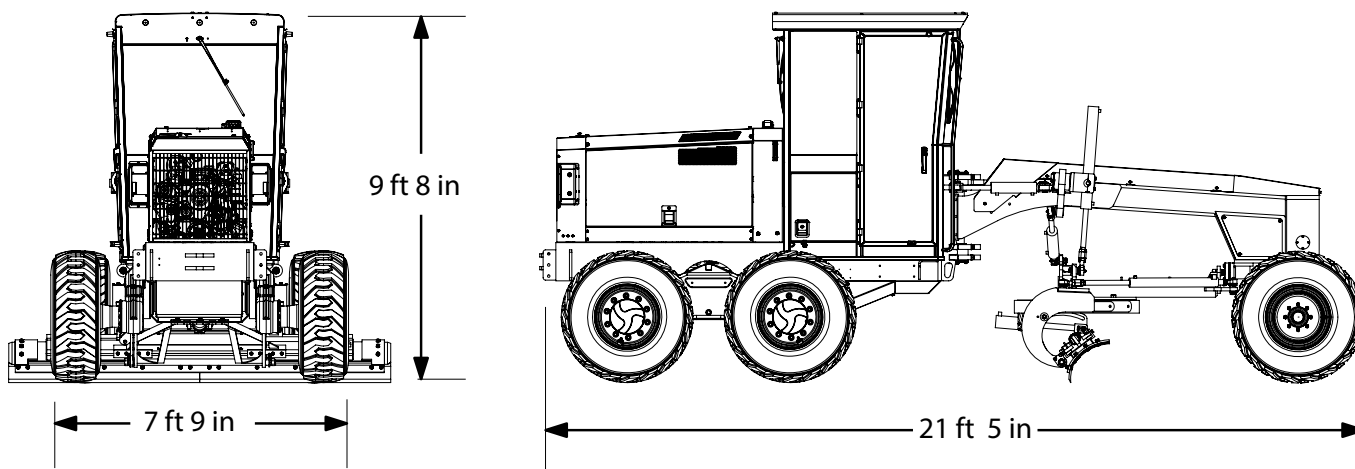


Figure 2-11. Grader Dimensions

Table 2-2. Engine Specifications

ITEM	SPECIFICATION
Model	Cummins QSB 4.5L Turbo Diesel Tier 3
Horsepower	110 HP @ 2100 RPM (82 kW)
Displacement	275 cubic inches (4.5 L)

Table 2-3. Electrical Specifications

ITEM	SPECIFICATION
Batteries	2 - 12 VDC Maintenance Free
Cold Cranking Amps (CCA)	650 CCA
System Voltage	12 VDC, 105 Amps

Table 2-4. Moldboard Specifications

ITEM	SPECIFICATION
Width	10 ft, 11 ft, 12 ft (3048 mm, 3353 mm, 3658 mm)
Height	21 in (533 mm)
Side Shift	36 in (914 mm)
Tilt	45 °
Raised Clearance	12 in (305 mm)
Penetration	17 in (432 mm)
Rotation	90 °

Table 2-5. Front Blade Specification

ITEM	SPECIFICATION
Width	7 ft or 8 ft (2134 mm or 2438 mm)
Height	15.75 in (400 mm)
Raised Clearance	24.5 in (622.3 mm)
Penetration	3 in (76.2 mm)

Table 2-6. Rear Scarifier Specification

ITEM	SPECIFICATION
Width	62.25 in (1581 mm)
Numbered Teeth	7
Raised Clearance	20.5 in (521 mm)
Penetration	8.75 in (222.25 mm)

Table 2-7. Steering Specifications

ITEM	SPECIFICATION
Steering	Hydraulic
Articulation	24°
Wheel Lean	±10°

Table 2-8. Hydraulic Specifications

ITEM	SPECIFICATION
Traction Pump	Variable Piston Type 4.58 cu in/rev (75 cu cm/rev)
Function Pump	Gear Type 2 x 10 GPM
Steering Pump	Gear Type 8 GPM
Drive Motor	Variable Volume 4.8 cu in/rev (80 cu cm/rev)
Drive Operating Pressure	0 - 6000 PSI (414 Bar)
Hydraulic Filters	Remote Suction Filter
Oil Cooler	Radiator/Oil Cooler, Engine Fan Cooling

Table 2-9. Drive System Specifications

ITEM	SPECIFICATION
Drive	Dana Bogie Axle
Transfer Case	1:3.09, 1:1.34 Ratio
Differential	1:2.285 Ratio
Final Drive	High = 1:18.377 Low = 1:42.377
Tires	15/19.5

NOTE: **Refer to the tire manufacturer's brochures for additional information on tire size and requirements.**

Table 2-10. Grader System Capacity Specifications

ITEM	SPECIFICATION
Fuel	39 gal (156 L)
Engine Lubrication Oil	13.7 qt (12.96 L) with filter
Engine Coolant	9 qt (8.52 L)
Hydraulic Oil Reservoir	21 gal (79.49 L)

Table 2-11. Fuel and Lubricant Specifications

ITEM	SPECIFICATION
Engine Oil	15W-40
Hydraulic Oil	5W20 AWAT OIL
Coolant	Ethylene/Glycol or Propylene Glycol
Fuel	Diesel
Transfer Case (2-Speed)	90 WT Motor Oil
Differential Oil	90 WT Motor Oil
Gear Box	90 WT Motor Oil
Grease	Shell Avania EP Grease or Equivalent

Table 2-12. Pressure Specifications

ITEM	SPECIFICATION
Accumulator (Pre-Charge)	600 PSI
Accumulator	2300 PSI
Flow Divider Pressure	2300 PSI +/- 50
AWD Forward Pressure	3300 - 3600 PSI
AWD Reverse Pressure	3300 - 3600 PSI
Steering	1800 PSI +/- 50
10 Section Valve	1750 - 1900 PSI
Main Drive Pump	6200 PSI +/- 50
Charge Pressure	360 PSI +/- 25
Park Brake Release	220 PSI +/- 25
Accumulator Low Pressure Switch	1300 PSI (When light is on)
Tire Pressure	30 to 35 PSI

TORQUE SPECIFICATIONS: INCH FASTENERS

⚠ WARNING The following Table lists torque values for standard hardware and are intended as a guide for average application involving typical stresses and machined surfaces. Values are based on physical limitations of clean, plated and lubricated hardware. In all cases, when an individual torque value is specified, it should be followed instead of values given in this table.

⚠ CAUTION Replace original equipment with hardware of equal grade.

Table 2-13. Torque Specifications For Standard Inch Fasteners

		CAPSCREWS: SAE GRADE 5				CAPSCREWS: SAE GRADE 8			
SIZE	THREAD	TORQUE FT. LBS.		TORQUE N•m		TORQUE FT. LBS.		TORQUE N•m	
		Dry	Lubed	Dry	Lubed	Dry	Lubed	Dry	Lubed
1/4	20 UNC	8	6	11	9	12	9	16	12
	28 UNF	10	7	13	10	14	10	19	14
5/16	18 UNC	17	13	24	18	25	18	33	25
	24 UNF	19	14	26	20	27	20	37	28
3/8	16 UNC	31	23	42	31	44	33	59	44
	24 UNF	35	26	47	36	49	37	67	50
7/16	14 UNC	49	37	67	50	70	52	95	71
	20 UNF	55	41	75	56	78	58	105	79
1/2	13 UNC	75	57	100	77	105	80	145	110
	20 UNF	85	64	115	86	120	90	165	120
9/16	12 UNC	110	82	145	110	155	115	210	155
	18 UNF	120	91	165	125	170	130	230	175
5/8	11 UNC	150	115	205	155	210	160	285	215
	18 UNF	170	130	230	175	240	180	325	245
3/4	10 UNC	265	200	360	270	375	280	510	380
	16 UNF	295	225	405	300	420	315	570	425
7/8	9 UNC	430	320	580	435	605	455	820	615
	14 UNF	475	355	640	480	670	500	905	680
1	8 UNC	645	485	875	655	910	680	1230	925
	14 UNF	720	540	980	735	1020	765	1380	1040
1-1/8	7 UNC	795	595	1080	805	1290	965	1750	1310
	12 UNF	890	670	1210	905	1440	1080	1960	1470
1-1/4	7 UNC	1120	840	1520	1140	1820	1360	2460	1850
	12 UNF	1240	930	1680	1260	2010	1500	2730	2050
1-3/8	6 UNC	1470	1100	1990	1490	2380	1780	3230	2420
	12 UNF	1670	1250	2270	1700	2710	2040	3680	2760
1-1/2	6 UNC	1950	1460	2640	1980	3160	2370	4290	3210
	12 UNF	2190	1650	2970	2230	3560	2670	4820	3620

2

TORQUE SPECIFICATIONS: METRIC FASTENERS

⚠ WARNING The following table lists torque values for standard hardware. It is intended as a guide for average application involving typical stresses and machined surfaces. Values are based on physical limitations of clean, plated, and lubricated hardware. In cases when an individual torque value is specified, follow that specification, instead of values given in this table.

⚠ CAUTION Replace original equipment with hardware of equal grade.

Table 2-14. Torque Specifications For Metric Fasteners

NOMINAL SIZE & PITCH	CLASS 8.8 [GRADE 5 EQUIVALENT]				CLASS 10.9 [GRADE 8 EQUIVALENT]			
	TORQUE FT. LBS.		TORQUE N•m		TORQUE FT. LBS.		TORQUE N•m	
	Dry	Lubed	Dry	Lubed	Dry	Lubed	Dry	Lubed
M4 x 0.7	2.27	1.70	3.07	2.30	2.27	2.31	4.17	3.13
M5 x 0.8	4.58	3.43	6.20	4.65	6.22	4.67	8.43	6.33
M6 x 1	7.75	5.83	10.5	7.90	10.60	7.97	14.3	10.8
M8 x 1.25	18.89	14.17	25.6	19.2	18.95	19.26	34.8	26.1
M10 x 1.25	39.11	29.52	53.0	40.1	53.87	40.59	73.0	55.0
M12 x 1.75	64.94	48.71	88.0	66.0	88.56	66.42	120.0	90.0
M14 x 2	103.32	77.49	140.0	105.0	140.22	107.01	190.0	145.0
M16 x 2	162.36	121.77	220.0	165.0	221.40	166.05	300.0	225.0
M20 x 2.5	317.34	236.16	430.0	320.0	428.04	321.03	580.0	435.0
M24 x 3	516.12	409.59	740.0	555.0	754.38	557.19	1010.0	755.0
M27 x 3	797.04	597.78	1080.0	810.0	1084.86	811.80	1470.0	1100.0
M30 x 3.5	1084.86	811.80	1470.0	1100.0	1476.00	1107.00	2000.0	1500.0

HYDRAULIC FITTINGS

Tightening Flare Type Tube Fittings

1. Check the flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection.
4. Hand tighten swivel nut until snug.
5. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second, tighten the swivel nut to the torque shown in **Table 1-7**.

NOTE: The torque values shown are based on lubricated connections as in assembly.

Table 2-15. Torque Specifications For Flare Type Tube Fittings

TUBE SIZE OD	NUT SIZE (ACROSS FLATS)	TORQUE VALUE		RECOMMENDED TURNS TO TIGHTEN (AFTER FINGER TIGHTENING)	
		(N•m)	(Lb-Ft)	(N•m)	(Lb-Ft)
3/16	7/16	8	6	1	1/6
1/4	9/16	12	9	1	1/6
5/16	5/8	16	12	1	1/6
3/8	11/16	24	15	1	1/6
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1 1/4	102	75	3/4	1/8
7/8	1 3/8	122	90	3/4	1/8

FULL TORQUE NUT COUPLING INSTALLATION

The only completely reliable method of creating a consistently leak free and long lasting connection is to ensure that the coupling is brought to the proper torque.

The best method of ensuring that a coupling is brought to the proper torque is to use a torque wrench with crowfoot. To ensure the proper torque is met, use the flats method of torque verification. The flats method may be used alone in situations where a torque wrench is inaccessible or unavailable.

There are seven steps involved in proper coupling installation:

1. Determine the correct torque value for your coupling.

NOTE: Only use the torque values specified from the manufacturer, do not use SAE torque recommendations.

THE minimum torque values are adequate for sealing in most applications, and the maximum torque values should never be exceeded.

2. Calculate the correct torque wrench setting.

NOTE: The most straight forward method of determining the correct torque setting is to multiply the desired torque by the length of the wrench from the center of the handle to the center of the drive (L) divided by the length of the wrench from the center of the handle to the crowfoot center (LA), see Figure 4-11.

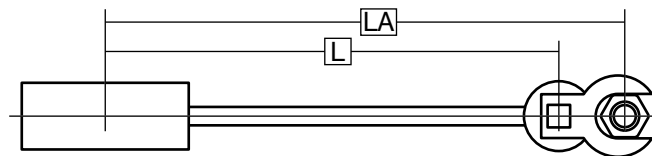


Figure 2-12. Torque Wrench - Crowfoot

NOTE: Torque Wrench Setting = Desired Torque * L / LA

3. Ensure that the seal face and threads are clean and in good condition. Do not lubricate coupling threads.

NOTE: O-Rings should be lubricated with light oil, but threads should be completely dry unless making pipe thread connections (interference seal).

4. Attach the male end of the hose onto the equipment first, since it may be necessary to rotate the entire hose assembly to tighten the male threads. Then route the hose into position while avoiding twisting the hose. Hand tighten the connection by bringing seal face in contact and rotating the nut by hand until it stops.

NOTE: By definition hand tight is 0.3 - 1 ft.-lb. or when the seal faces are touching and with the threads engaged the hex can no longer be rotated by hand.

5. Mark a line across the coupling nut and backup hex for flats method verification of coupling torque (Figure 4-12).
6. Apply a wrench to the backup hex to prevent the coupling and hose from moving while tightening the nut with a torque wrench.

NOTICE Failure to retain the backup hex during installation will also result in additional clamp load force that could cause damage to the seal face.

NOTE: The coupling nut must be in motion for an accurate torque reading. If the nut is stopped before final torque value is achieved, it must be loosened and retightened until the torque is attained while the nut is in motion.

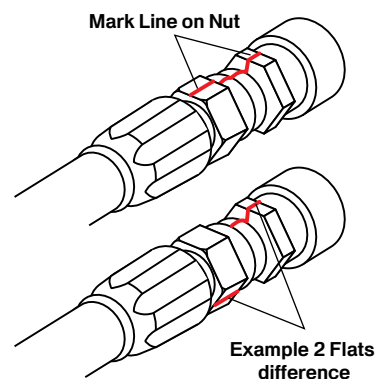


Figure 2-13. Flats Method Tightening

If a torque wrench cannot fit into the coupling area or if it is unavailable, flats method may be used to ensure that the coupling is properly tightened, as shown in Figure 4-12.

NOTE: The mark placed on the nut and backup hex after hand tightening should have rotated 1 to 1.5 flats during final tightening. At this point in time, if desired, the nut and backup hex may be marked to indicate if the coupling loosens over time.

Table 2-16. Torque Specifications For US Style Coupling Terminations

JIC, SAE 45°, ORFS, O-RING BOSS, GATES ADAPTERLESS AND MEGASEAL										
Dash Size	JIC 37°, SAE 45° & Mega-Seal (steel)		JIC 37°, SAE 45° & Mega-Seal (steel)		Flat Face O-Ring Seal (Steel)		SAE O-Ring Boss (Steel) & Gates Adapterless ≤ 4000 PSI		SAE O-Ring Boss (Steel) & Gates Adapterless > 4000 PSI	
1/16 Inch	Ft-Lb		Ft-Lb		Ft-Lb		Ft-Lb		Ft-Lb	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
-3									8	10
-4	10	11	5	6	10	12	14	16	14	16
-5	13	15	7	9					18	20
-6	17	19	12	15	18	20	24	26	24	26
-8	34	38	20	24	32	40	37	44	50	60
-10	50	56	34	40	46	56	50	60	72	80
-12	70	78	53	60	65	80	75	83	125	135
-14					65	80			160	180
-16	94	104	74	82	92	105	111	125	200	220
-20	124	138	75	83	125	140	133	152	210	280
-24	156	173	79	87	150	180	156	184	270	360
-32	219	243	158	175						

Table 2-17. Torque Specifications For DIN 24, DIN 60, and Inverted Cone Style Coupling Terminations

DIN 24, DIN 60, AND INVERTED CONE			
Size		Torque	
mm		Ft-Lb	
Light Series Tube OD	Heavy Series Tube OD	Min	Max
6		7	15
8		15	26
10	8	18	30
12	10	22	33
14	12	26	37
15	14	30	52
	16	30	52
18	20	44	74
22	25	59	89
28	30	74	111
	38	74	162
35		133	184
42		148	221

Table 2-18. Torque Specifications For 4-Bolt Flange Connections

4-BOLT FLANGES		
Dash Size	Bolt Size	Torque
1/16 Inch	Inch	Ft-Lb
-8	0.31	17
-12	0.38	26
-16	0.44	43
-20	0.50	65
-24	0.63	130
-32	0.75	220
- Align faces and finger tighten bolts before applying final torque in a pattern. The seal faces must be parallel with even bolt tension to seal properly. - Torque values apply to bolts which are plated or coated in light engine oil. - Before assembly lubricate O-Ring with light oil (SAE 10W or 20W).		

Table 2-19. Torque Specifications For SAE Male Flareless Assembly (MFA)

SAE MALE FLARELESS ASSEMBLY (MFA)
After hand tight rotate nut one full turn (8 flats)

Table 2-20. Torque Specifications For NPTF Dry Seal Pipe Threads

NPTF	
Dash Size	Max Torque
1/16 Inch	Ft-Lb
-2	20
-4	25
-6	35
-8	45
-12	55
-16	65
-20	80
-24	95
-32	120
- The torque values obtained from tightening pipe threads can vary considerably depending on thread condition. Adequate sealing can occur at values much lower than the maximum values listed above. Only enough torque to achieve adequate sealing should be used. - When using a male tapered pipe thread with a female straight or parallel pipe thread, maximum values are 50% of those listed in the table. - If thread sealant is used, maximum values shown should be decreased by 25%.	

Table 2-21. Torque Specifications For BSP 30° Inverted Cone and JIS Coupling Terminations

BSP 30° INVERTED CONE AND JIS		
Dash Size	Torque	
mm	Ft-Lb	
1/16 Inch	Min	Max
-2	7	9
-4	11	18
-6	19	28
-8	30	36
-10	37	44
-12	50	60
-16	79	95
-20	127	152
-24	167	190
-32	262	314

Table 2-22. Flats Method Values For Selected Terminations

FLATS METHOD VALUES		
Termination Type	Dash Size	Flats
	1/16 Inch	
JIC	4	1.5 - 1.75
JIC	6	1.0 - 1.5
JIC	8	1.5 - 1.75
JIC	10	1.0 - 1.5
JIC	12	1.0 - 1.5
JIC	16	.75 - 1.0
JIC	20	.75 - 1.0
JIC	24	.75 - 1.0
JIC	32	.75 - 1.0
JIS	4	.5 - 1.5
- Seal faces must be in contact and the fitting fully hand tightened before marking flats. - Flats method is most accurate for the first assembly cycle, for multiple disassembly/assembly cycles torque values are more reliable. - Tightening 2 flats or more is analogous to sever over torque and may damage seal faces.		

Determining Torque Setting

There are several methods of determining the correct setting on the torque wrench when using a crowfoot. All of the methods involve making the setting proportional to the effective change in length of the wrench multiplied by the desired final torque.

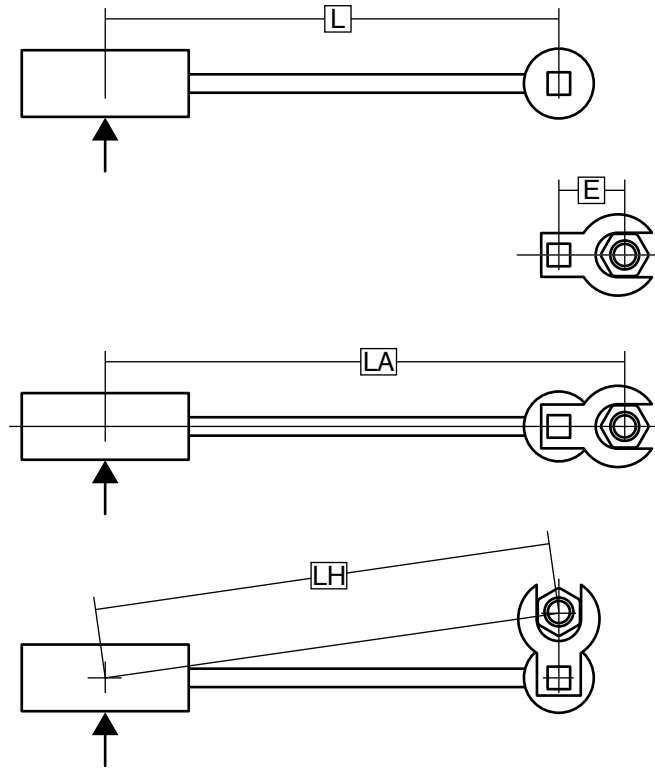


Figure 2-14. Measurements Needed

L = Distance from center of torque wrench handle to the center of socket drive

E = Distance from center of socket drive to the center of crowfoot

LA = Distance from center of torque wrench handle to the center of crowfoot

LH = Distance from center of torque wrench handle to the center of crowfoot, when mounted at 90°

TD = Desired torque at the fitting

TS = Torque setting indicated on wrench

Equations

Equation 1

Torque setting if the crowfoot is placed in line with respect to the wrench:

$$TS = TD * L / LA$$

OR

$$TS = TD * L / (L+E)$$

Equation 2

Torque setting if the crowfoot is placed at 90° with respect to the wrench

$$TS = TD * L / LH$$

OR

$$TS = TD * L / \sqrt{L^2 + E^2}$$

Equation 3

To estimate the crowfoot size (E)

$$E = \text{Drive Size} * 0.5 + \text{Distance between Drive \& Open End} + \text{Wrench Size} * 0.5774$$

NOTES



Section 3

COMPONENT LOCATION

	Page
Component Location	3-1
Side Control Panel	3-10
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Throttle Control and Service Brake Pedals	3-20
Throttle Control/ Direction Control/Transfer Case Gear Levers	3-22
Parking Brake Knob	3-24

General Information

This section contains symbols that may be used on the 695 Motor Grader. LeeBoy uses a standard set of internationally recognized symbols on all of its machines, so some symbols shown below may not appear on your specific machine.

Symbol Set 1

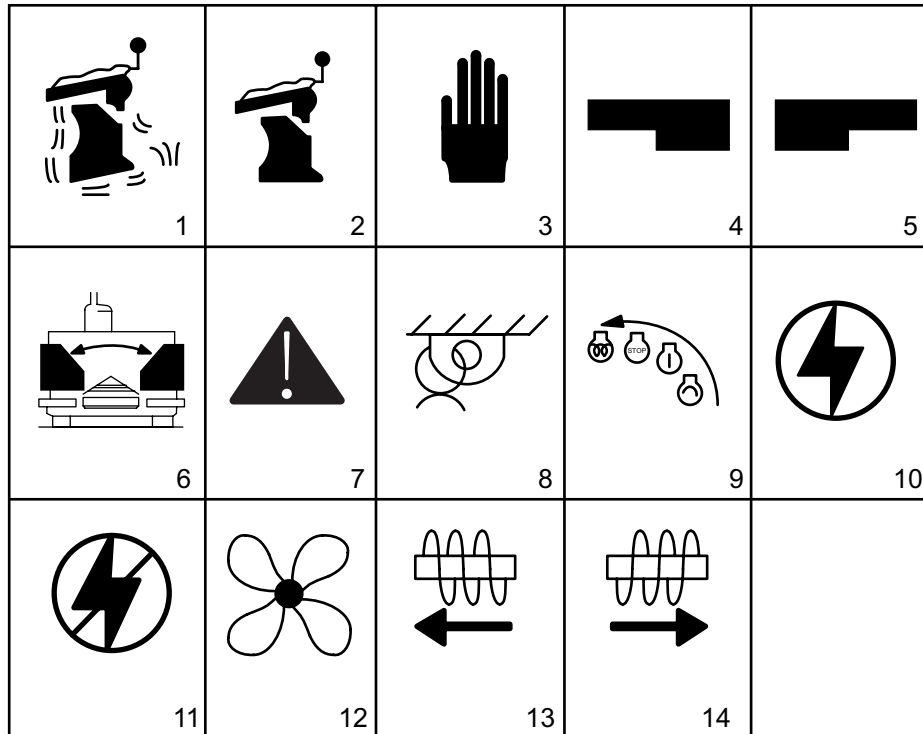


Table 3-1. Symbol Set 1 Identification

1. Screed Vibrator Motor	8. Tie-Dwon Point
2. Screed	9. Ignition Switch
3. Manual	10. Override and Enable
4. LH Extension	11. Override and Disable
5. RH Extension	12. Fan
6. Hopper Lift	13. LH Auger Out
7. Safety Alert Symbol	14. RH Auger Out

Symbol Set 2

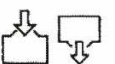
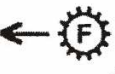
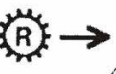
					
					
					
					
					
					
					
					
					
					
					

Table 3-2. Symbol Set 2 Identification

1. Drum Vibration	34. Fan Belt - Failure
2. Drum Vibration Control	35. Emergency Engine Stop
3. High Amplitude	36. Engine Start
4. Low Amplitude	37. Engine On Run
5. Frequency (Vibration)	38. Start Switch
6. Tiedown Point	39. Transmission
7. Ignition Switch	40. Transmission Oil Level
8. Anti-Wheel Spin	41. High Gear
9. Seat (Lap) Belt	42. Low Gear
10. Linear	43. Forward Direction
11. Rotational	44. Reverse Direction
12. Volume Empty	45. Parking Brake
13. Volume Half-Full	46. Brake On
14. Volume Half-Full	47. Brake Off 47
15. Grease	48. Primer (Start Aid)
16. Oil Lubrication Point	49. Hydraulic Oil
17. Lift Point	50. Hydraulic Oil Pressure
18. Jack or Support Point	51. Hydraulic Oil Level
19. Filling/Emptying	52. Hydraulic Oil Filter
20. Read Operator's Manual	53. Hydraulic Oil Temperature
21. Engine Oil	54. Fuel (Diesel)
22. Engine Oil Pressure	55. Fuel Level
23. Engine Oil Pressure - Failure	56. Fuel Filter
24. Engine Oil Level	57. Work Light
25. Engine Oil Filter	58. Flashing Beacon
26. Engine Oil Temperature	59. Control Lever - Dual Direction
27. Engine Coolant	60. Control Lever - Multi Direction
28. Engine Coolant Level	61. Clockwise Rotation
29. Coolant Temperature	62. Counterclockwise Rotation
30. Engine Rotations (RPM)	63. Engine Electrical Preheat
31. Gas Inject (Cold Start)	64. Fast Speed (Hare)
32. Engine Air Filter	65. Slow Speed (Tourtise)
33. Engine Air Filter - Failure	

NOTES

695 MOTOR GRADER

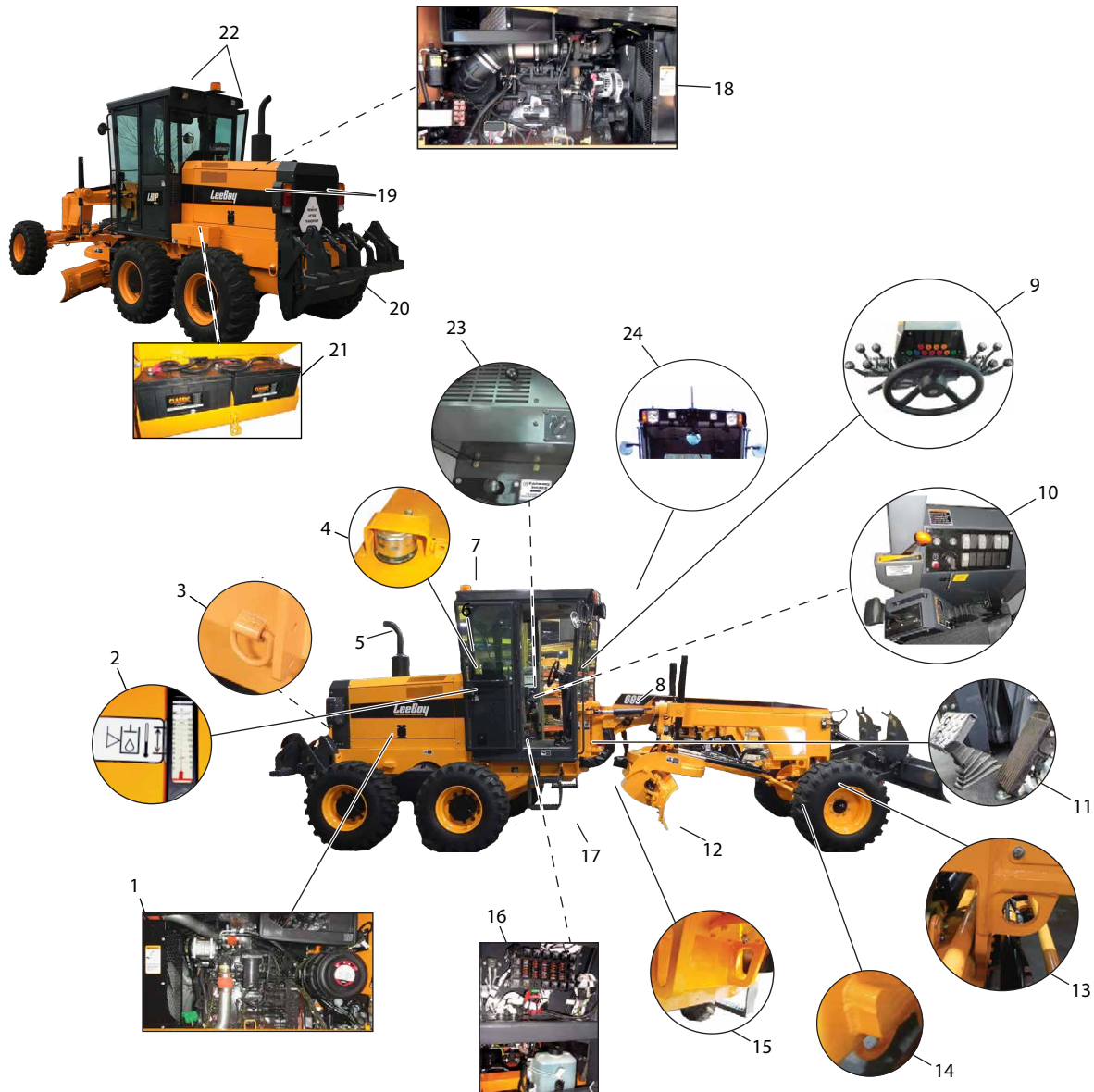


Figure 3-1. 695 Motor Grader (Shown With Optional Cab)

- | | | |
|---|--|-------------------------|
| 1 - Engine Access | 10 - Side Control Panel | 18 - Starter Access |
| 2 - Hydraulic Oil Reservoir | 11 - Foot Accelerator Pedal (right) and Service Brake (left) | 19 - Rear Tail Lights |
| 3 - Rear Tie-Down D-Rings | 12 - Moldboard | 20 - Rear Ripper |
| 4 - Hydraulic Oil Reservoir Filler Cap | 13 - Front Tie-Downs | 21 - Battery Box |
| 5 - Muffler | 14 - Front Tie-Down D-Ring | 22 - Rear Work Lights |
| 6 - Engine Pre-Cleaner | 15 - Mid Tie-Downs | 23 - Parking Brake Knob |
| 7 - Beacon Light | 16 - Washer Fluid Reservoir and Circuit Breaker Access | 24 - Front Head Lights |
| 8 - Articulation Lock Pin | 17 - Steps (RH and LH) | |
| 9 - Steering Console and Control Levers | | |

Table 3-3. 695 Motor Grader

ITEM NO.	NAME	FUNCTION
1	Engine Access	Used to access engine.
2	Hydraulic Oil Reservoir Access	Used to access hydraulic oil reservoir.
3	Tow Hitch	Used to tow attachments.
4	Hydraulic Oil Reservoir Filler Cap	Used to access hydraulic oil reservoir.
5	Muffler	Reduces amount of noise emitted by the exhaust of the engine.
6	Air Cleaner	Filter removes fine particles from air used by engine.
7	Beacon Light	Increases motor grader visibility for nearby vehicles and pedestrians.
8	Articulation Lock Pin	Installation of the articulation lock pin locks the boom to the grader frame. This keeps the boom in line with the frame and prevents the boom from swiveling. Before engaging articulation, remove articulation lock pin and place the articulation lock pin in the pin holder. The articulation lock pin holder is hole welded to front frame. ⚠ WARNING Install the articulation lock pin before selecting the transfer gear case lever HIGH position, operating on steep slopes, or traveling on the highway. Failure to do so may cause equipment damage and severe personal injury or death could occur.
9	Steering Console and Control Levers	Group includes: engine stop light (red), engine warning indicator light (amber), wait-to-start indicator light (amber), air filter restriction indicator light (amber), right-hand turn signal light (green), secondary steering system status (amber) (option), primary steering system status (red), service brake failure (red), parking (hand) brake (red), head light high beam (blue), left-hand turn signal light (green), tachometer, hour meter, voltmeter, engine coolant temperature gauge, fuel level gauge, engine oil pressure gauge, horn, hazard flasher switch, directional indicator/high beam, horn button, circle turn lever, blade slide shift lever, one-hand blade lift control (option), dozer blade/scarifier lever, blade tilt articulation lever, rear-mounted attachments, one-hand blade lift control lever, front wheel lean lever, circle turn lever.
10	Side Control Panel	Group includes: front wiper/washer switch, rear wiper/washer switch, head lights/parking lights switch, front work lights switch, rear work lights switch, beacon light switch, WORK/AUTO switch, ignition key switch, engine warning light.
11	Throttle Control Pedal and Service Brake	Group includes: throttle control pedal, service brake (see figure 3-5).
12	Moldboard	Mounted underneath the boom assembly and supported by drawbar and turntable assembly the moldboard is used to move grading materials.
13	Front Tie Downs	Attachment point for tie-down chains to fasten motor grader to transport vehicle.
14	Front Tie-Down D-rings	Attachment point for tie-down chains to fasten motor grader to transport vehicle.
15	Mid Tie-Downs	Attachment point for tie-down chains to fasten motor grader to transport vehicle.
16	Washer Fluid Reservoir and Circuit Breaker Access	Used to access washer fluid reservoir and circuit breaker.

695 MOTOR GRADER (CONT.)

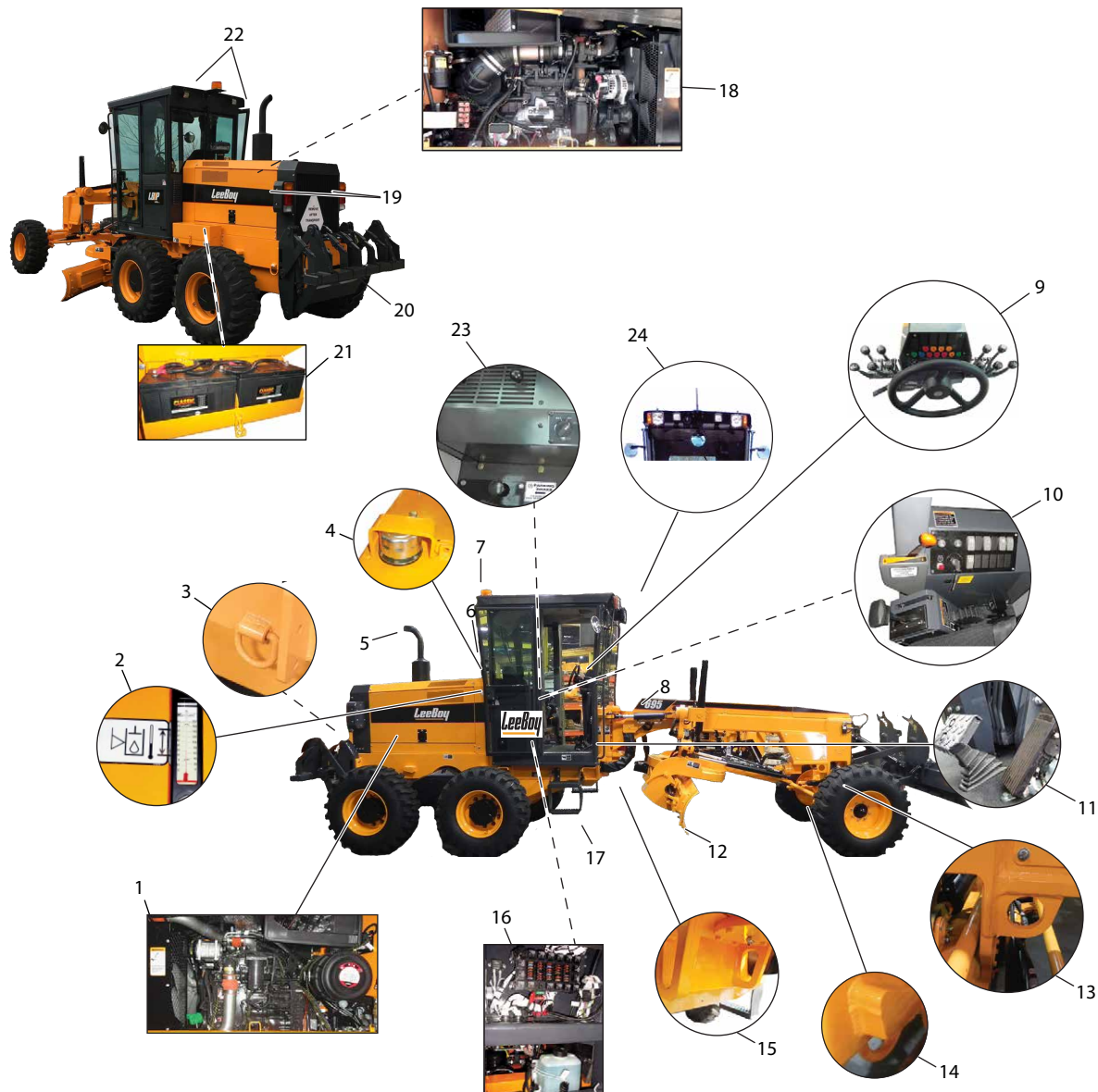


Figure 3-1. 695 Motor Grader (Shown With Optional Cab) (Cont.)

- | | | |
|---|--|------------------------|
| 1 - Engine Access | 10 - Side Control Panel | 18 - Starter Access |
| 2 - Hydraulic Oil Reservoir | 11 - Throttle Control Pedal and Service Brake | 19 - Lights |
| 3 - Rear Tie-Down D-Rings | 12 - Moldboard | 20 - Scarifier |
| 4 - Hydraulic Oil Reservoir Filler Cap | 13 - Front Tie-Downs | 21 - Battery Box |
| 5 - Muffler | 14 - Front Tie-Down D-ring | 22 - Rear Work Lights |
| 6 - Engine Pre-Cleaner | 15 - Mid Tie-Downs | 23 - Parking Brake |
| 7 - Beacon Light | 16 - Washer Fluid Reservoir and Circuit Breaker Access | 24 - Front Head Lights |
| 8 - Articulation Lock Pin | | |
| 9 - Steering Console and Control Levers | 17 - Steps (RH and LH) | |

Table 3-3. 695 Motor Grader (Cont.)

ITEM NO.	CONTROL NAME	FUNCTION
17	Steps (LH and RH)	Used to enter and exit motor grader cab.
18	Engine Access	Used to access engine.
19	Tail Lights	Used to illuminate the road or area in front of the grader during operation or transport.
20	Rear Ripper Option	Mounted underneath mainframe, scarifier is used to penetrate the grading surface -- assembly consists of five replaceable teeth and tooth supports.
21	Battery Compartment	Houses the electrical system's two 12-volt batteries.
22	Rear Head Lights	Used to illuminate the road or area in front of motor grader during operation or transport.
23	Parking Brake Knob	Applies parking brake.
24	Front Head Lights	Used to illuminate the road or area in front of motor grader during operation or transport.

SIDE CONTROL PANEL

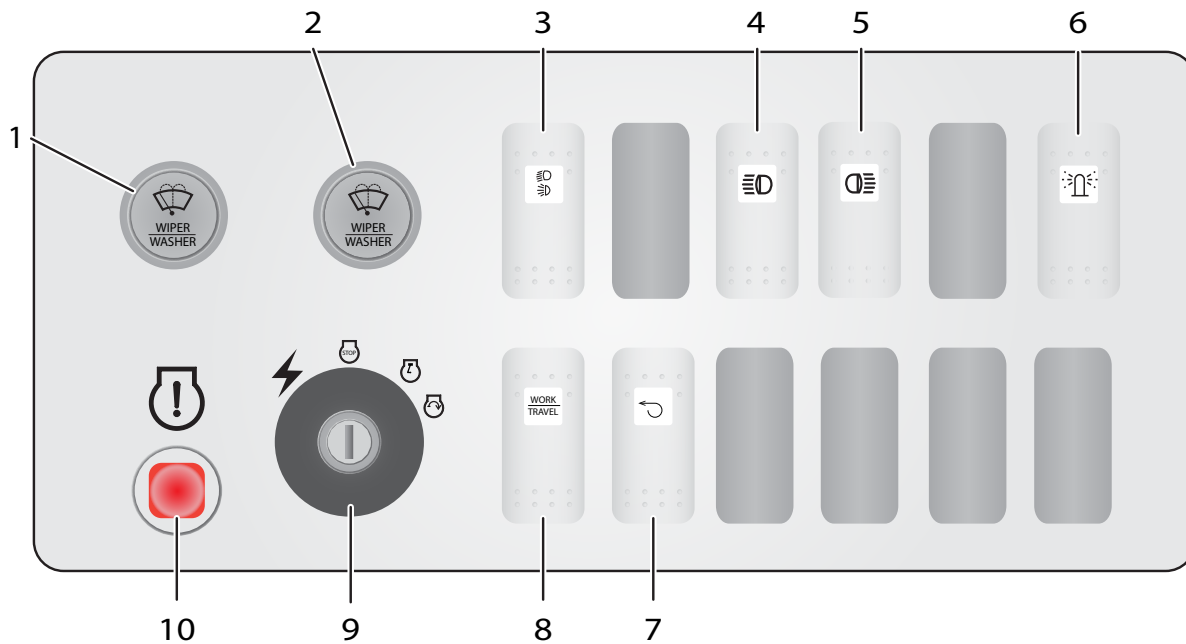


Figure 3-2. Side Control Panel

- | | |
|--------------------------------------|--------------------------------|
| 1 - Front Wiper/Washer Fluid Knob | 6 - Beacon Light Switch |
| 2 - Rear Wiper/Washer Fluid Knob | 7 - All Wheel Drive (Optional) |
| 3 - Headlights/Parking Lights Switch | 8 - WORK/AUTO Switch |
| 4 - Front Work Lights Switch | 9 - Ignition Key Switch |
| 5 - Rear Work Lights Switch | 10 - Engine Warning Light |

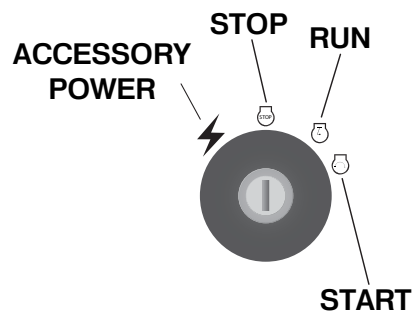


Figure 3-3. Ignition Switch Positions

Table 3-4. Side Control Panel

ITEM NO.	CONTROL NAME	FUNCTION
1	Front Wiper/Washer Fluid Knob	Used to control operation of front windshield wipers. Turn knob clockwise to first position for low wiper speed. Continue to turn knob clockwise to second position for high wiper speed. Push knob in for wiper washer fluid. Turn knob counterclockwise to turn off.
2	Rear Wiper/Washer Fluid Knob	Used to control operation of rear windshield wipers. Turn knob clockwise to first position for low wiper speed. Continue to turn knob clockwise to second position for high wiper speed. Push knob in for wiper washer fluid. Turn knob counterclockwise to turn off.
3	Headlight and Parking Lights Switch	Used to control operation of head lights. These lights illuminate the road or area in front of motor grader during operation or transport. Push switch to middle position for parking lights. Push switch all the way up for headlights. Push bottom of switch all the way down to turn lights off.
4	Front Work Lights Switch	Used to control operation of front work lights mounted on canopy or optional cab. These lights illuminate work area when working at night. Push top of switch to turn on work lights. Push bottom of switch to turn work lights off.
5	Rear Work Lights Switch	Controls operation of rear work lights mounted on rear of vehicle. These lights illuminate work area when working at night. Push top of switch to turn on work lights. Push bottom of switch to turn off work lights.
6	Beacon Light Switch	Controls operation of flashing safety light on top of canopy or optional cab. This light warns traffic of slow moving equipment. Push top of switch to turn on beacon(s). Push bottom of switch to turn off beacon(s).
7	All Wheel Drive	Activates all wheel drive feature. Push the top of switch to activate all wheel drive. Push bottom of switch to deactivate all wheel drive. ALL WHEEL DRIVE MODELS ONLY.
8	WORK/AUTO Switch	Controls displacement..... Push switch up for WORK mode. Push switch down for AUTO mode.
9	Ignition Key Switch	Controls start, run, and shut down modes of grader. ON POSITION --- To start grader, insert key and turn key clockwise to START () position. Cold Weather Start-up: Turn key clockwise to the RUN position. Wait-to-start indicator light will light up. When wait-to-start indicator light (Figure 3-3,3) turns off, turn key clockwise to START () position: To shut down grader, turn key counterclockwise to the STOP () position and remove key.
10	Engine Warning Light	Indicates engine fault when illuminated. NOTICE Do not operate motor grader if engine warning light is illuminated. Refer to an authorized LeeBoy Dealer and engine operator's manual.

STEERING CONSOLE

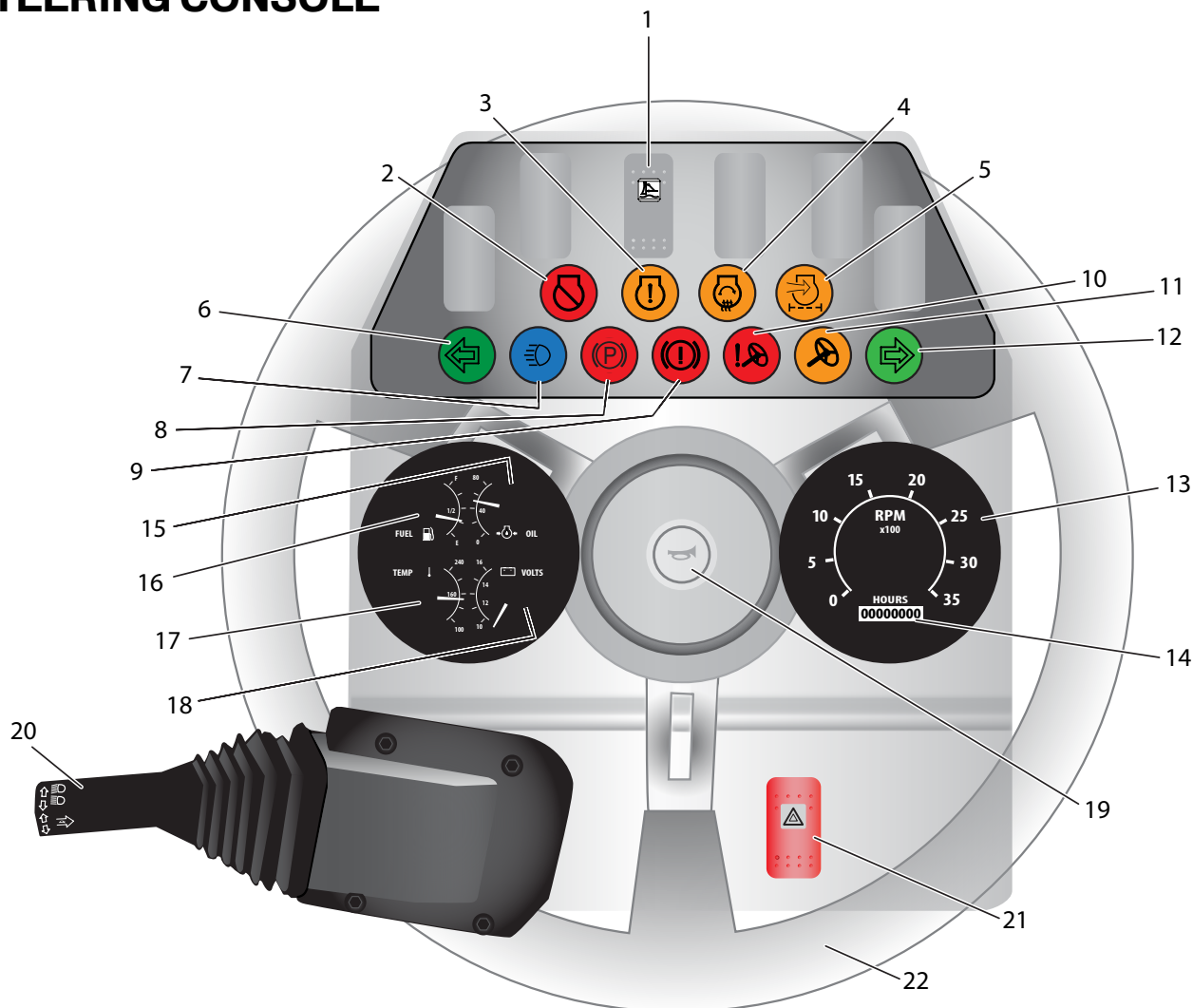


Figure 3-4. Steering Console

- | | |
|--|--|
| 1 - Dozer Float Switch | 12 - Right Turn Signal Light (Green) |
| 2 - Engine Stop Light (Red) | 13 - Tachometer |
| 3 - Engine Warning Indicator Light (Amber) | 14 - Hour Meter Gauge |
| 4 - Wait-To-Start Indicator Light (Amber) | 15 - Engine Oil Pressure Gauge |
| 5 - Air Filter Restriction Indicator Light (Amber) | 16 - Fuel Level Gauge |
| 6 - Left Turn Signal Light (Green) | 17 - Engine Coolant Temperature Gauge |
| 7 - Headlight High Beam Light | 18 - Voltmeter |
| 8 - Park Brake Light | 19 - Horn |
| 9 - Service Brake Failure (Red) | 20 - Directional Indicator/High Beam/Horn Button |
| 10 - Primary Steering System Status Light | 21 - Hazard Flasher Switch |
| 11 - Secondary Steering System Light (Option) | 22 - Steering Wheel |

Table 3-5. Steering Console

ITEM NO.	CONTROL NAME	FUNCTION
1	Dozer Float Switch (with front blade option)	On motor graders equipped with optional front attachment lift float capabilities, float control switch is located on front of pedestal head. To activate float action, depress top of switch (ON). To deactivate float action, depress bottom of switch (OFF).
2	Engine Stop Light	Displays fault code. NOTICE Do not operate motor grader if engine stop light is flashing. Refer to an authorized LeeBoy Dealer and engine operator's manual.
3	Engine Warning Indicator Light	Displays fault code. Flashing indicates timely operator attention is required. NOTICE Do not operate motor grader if engine warning indicator light is flashing. Refer to an authorized LeeBoy Dealer and engine operator's manual.
4	Wait-To-Start Indicator Light (Amber)	During cold weather start-up, illuminates to indicate motor grader is warming up. Wait for light to turn off, indicating motor grader warm-up is complete, before starting motor.
5	Air Filter Restriction Indicator Light (Amber)	Indicates air cleaner needs to be cleaned or primary air filter needs to be replaced when illuminated.
6	Left Turn Signal Light (Green)	Flashes to indicate that left turn signal is on. Light also flashes, together with right turn signal indicator, when hazard flasher switch is activated.
7	Head Light High Beam (Blue)	Indicates headlight high beams are on when illuminated.
8	Parking (Hand) Brake Light (Red)	When ignition is turned to ON, light and alarm activate to indicate hand brake is engaged. Light and alarm will remain on during engine start-up until brake is released. DO not operate grader if light and alarm do not turn on. The brake system is faulty and must be repaired by a qualified service technician.
9	Service Brake Failure Light (Red)	When ignition is turned to on, the light will briefly illuminate and then turn off to indicate that the service brake is operating correctly. In the event of a malfunction, the light will remain illuminated. NOTICE Do not operate grader if light does not turn on or if the light stays illuminated for an extended period. The brake warning system is faulty and must be repaired by a qualified service technician.
10	Primary Steering System Status Light	INDICATES low steering hydraulic pressure. Light will activate when secondary steering system activates. SECONDARY STEERING OPTION ONLY.
11	Secondary Steering System Status Light (Amber) (Option)	Indicates secondary steering system activated. Turns on simultaneously with the primary steering system light. Secondary steering option is an auxiliary hydraulic system that in the event of loss of hydraulic flow to the steering unit, makes steering corrections easier. Ignition key must be in ON (⌚) position for this system to function. The system will also turn on when test switch is activated. ⚠ WARNING Operate the secondary steering system only long enough to make a steering correction – maximum 2 minutes.

STEERING CONSOLE (CONT.)

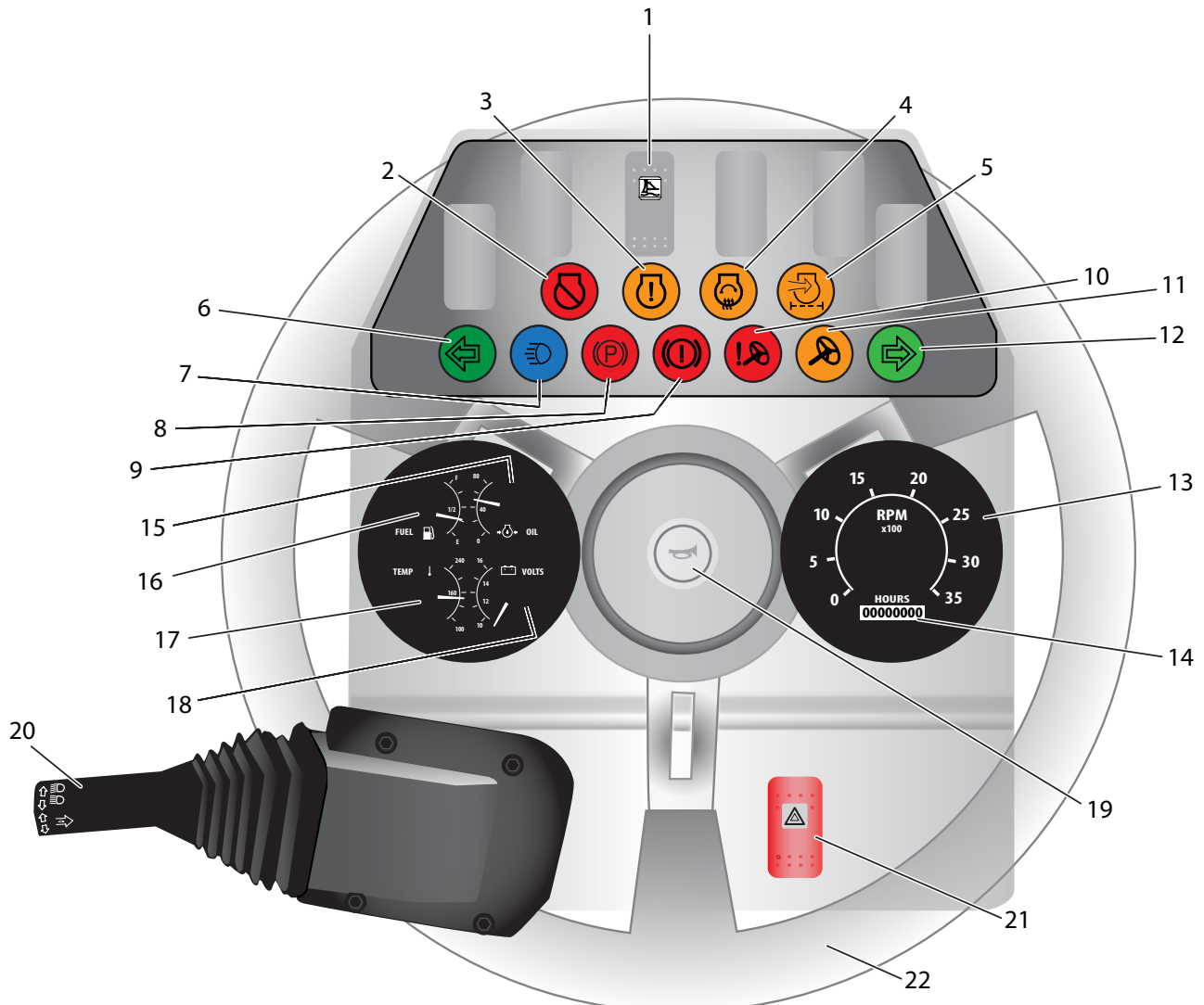


Figure 3-4. Steering Console (Cont.)

- | | |
|--|--|
| 1 - Dozer Float Switch | 12 - Right Turn Signal Light (Green) |
| 2 - Engine Stop Light (Red) | 13 - Tachometer |
| 3 - Engine Warning Indicator Light (Amber) | 14 - Hour Meter Gauge |
| 4 - Wait-To-Start Indicator Light (Amber) | 15 - Engine Oil Pressure Gauge |
| 5 - Air Filter Restriction Indicator Light (Amber) | 16 - Fuel Level Gauge |
| 6 - Left Turn Signal Light (Green) | 17 - Engine Coolant Temperature Gauge |
| 7 - Headlight High Beam Light | 18 - Voltmeter |
| 8 - Park Brake Light | 19 - Horn |
| 9 - Service Brake Failure (Red) | 20 - Directional Indicator/High Beam/Horn Button |
| 10 - Primary Steering System Status Light | 21 - Hazard Flasher Switch |
| 11 - Secondary Steering System Light (Option) | 22 - Steering Wheel |

	CONTROL NAME	FUNCTION
12	Right Turn Signal Light (Green)	Flashes to indicate that right turn signal is on. Light also flashes, together with left turn signal indicator, when hazard flasher switch is activated.
13	Tachometer	Displays engine speed in revolutions-per-minute. (RPM)
14	Hour Meter Gauge	Displays the engine alternator's number of hours of operation. Also used to determine service needs of motor grader.
15	Engine Oil Pressure Gauge	Displays engine oil pressure. Immediately after starting engine, gauge should rise to a high reading, then stabilize at a pressure above 10 PSI (69 kPa) with engine idling (1000 RPM). NOTICE If the pressure is below 10PSI, shut off engine. DO NOT RUN.
16	Fuel Level Gauge	Displays level of fuel in fuel tank.
17	Engine Coolant Temperature Gauge	Displays engine coolant temperature. After engine has reached normal operating temperature, gauge should read between 160°F (71°C) and 212°F (100°C). NOTICE If the engine coolant reading remains above 212°F (100°C) or below 212°F (100°C), it may indicate a cooling system problem. Report the problem and have it repaired by a qualified service technician.
18	Voltmeter Gauge	Displays the condition of battery charging system. Immediately after starting engine, gauge should read 14 Volts. Gauge should maintain a reading of 14 Volts during operation. NOTICE Do not operate grader if voltmeter gauge does not read 14 Volts. This could indicate an electrical problem. Report the problem and have it repaired by a qualified service technician.
19	Horn	Horn sounds when pressed.
20	Directional Indicator/High Beam/Horn Lever	Directional Indicator Pull turn signal switch lever UP to activate right-hand turn signal. Push turn signal switch lever DOWN to activate left-hand turn signal. High Beam Pull lever back to change headlights from low beam to high beam and back. A blue light illuminates in display panel to indicate high beam. Horn Push in end of lever to sound horn.
21	Hazard Flasher Switch	Push top of switch to turn on 4-way flashers. Push bottom of switch to turn off 4-way flashers. NOTE: When the 4-way flashers are activated, the turn signal lights on the steering console and the red indicator light on switch will flash.
22	Steering Wheel	Controls right and left steering function of the front wheels.

CONTROL LEVERS

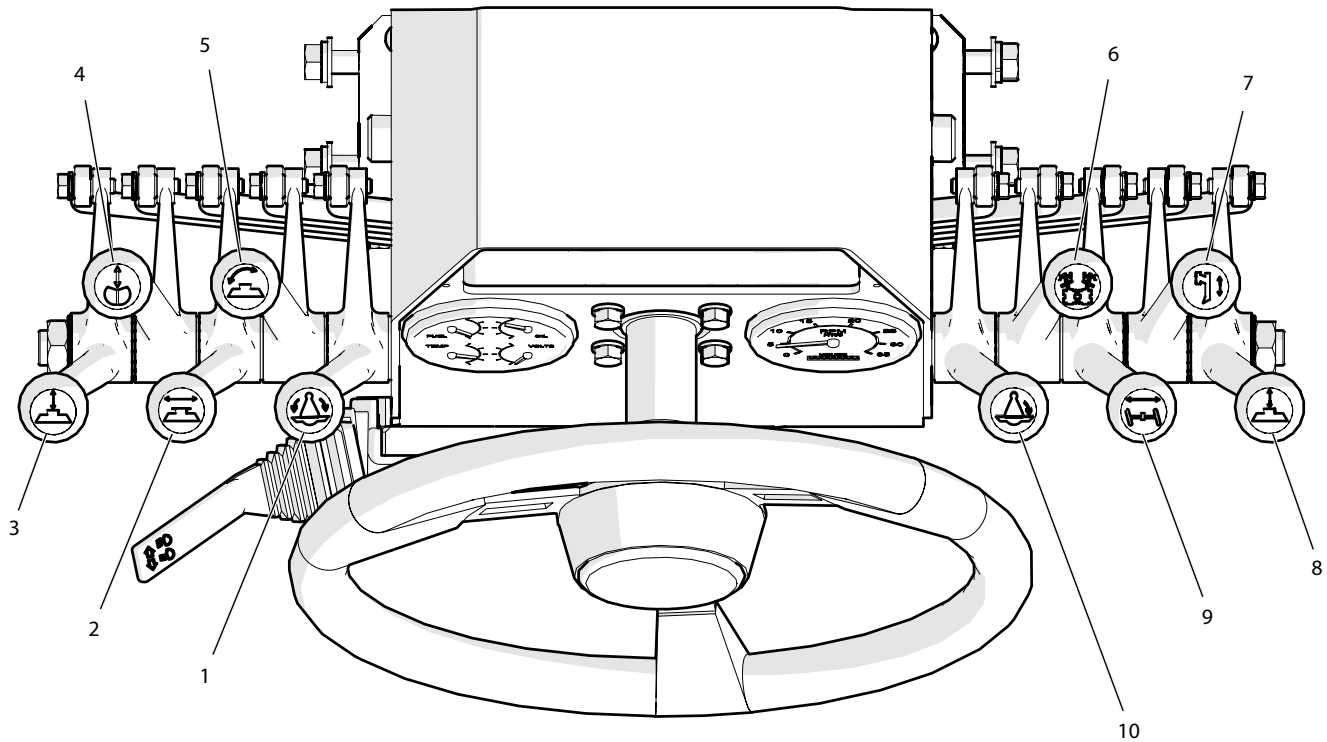


Figure 3-5. Control Levers Standard Setup

1 - Circle Turn

2 - Moldboard Slide Shift

3 - Left-Hand Moldboard Lift Control

4 - Dozer Blade/Scarifier

5 - Moldboard Tilt

6 - Articulation

7 - Rear Mounted Attachments

8 - Right-Hand Moldboard Lift Control

9 - Front Wheel Lean

10 - Circle Shift

Table 3-6. Control Levers

ITEM NO.	SYMBOL	CONTROL NAME	FUNCTION
1		Circle Turn	Controls clockwise and counterclockwise rotation of circle and moldboard assembly. Push lever forward to rotate circle and moldboard assembly counterclockwise. Pull lever back to rotate circle and moldboard assembly clockwise.
2		Moldboard Slide Shift	Controls left-to-right slide action of moldboard. Push lever forward to slide moldboard left. Pull lever back to slide moldboard right.
3		Left-Hand Blade Lift Control	Use to raise and lower left side of moldboard. Push lever forward to lower left side of moldboard. Pull lever back to raise left side of moldboard.
4		Dozer Blade/Scarifier	Use to raise and lower scarifier. Push lever forward to lower scarifier. Pull back lever to raise scarifier. On motor graders equipped with optional front attachment lift float capabilities, float control switch is located on front of pedestal head. To activate float action, depress top of switch (ON). To deactivate float action, depress bottom of switch (OFF).
5		Moldboard Tilt	Use to tilt moldboard to ensure grading material rolls freely off the blade. Push lever forward to tilt moldboard top forward. Pull lever back to tilt moldboard top rearward.
6		Articulation	Controls grader boom movement left or right for greater moldboard positioning and reduced turning radius. Push lever forward to rotate grader boom left. Pull lever back to rotate grader boom right. ⚠ WARNING Remove articulation lock pin before engaging articulation feature. Place articulation lock pin in articulation lock pin holder. The articulation lock pin holder is the front hole in the articulation lock tongue welded to the front frame. ⚠ WARNING Install articulation lock pin before moving transfer case gear lever into HIGH position as well as before highway travel. If pin is not in place, equipment damage and severe personal injury or death could occur.
7		Rear Mounted Attachments	Use to raise or lower rear mounted attachments. Push lever forward to lower rear mounted attachment. Pull lever back to raise rear mounted attachment.

CONTROL LEVERS (CONT.)

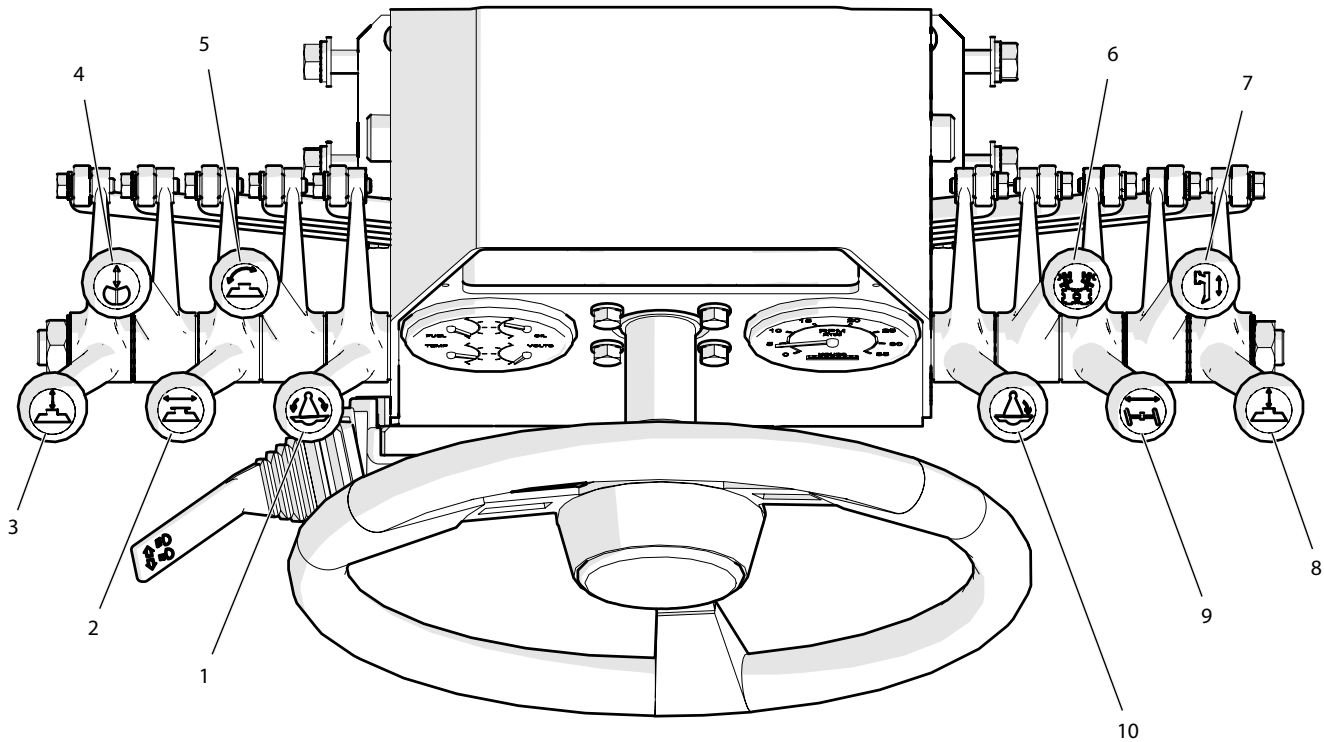


Figure 3-5. Control Levers Standard Setup (Cont.)

1 - Circle Turn

2 - Moldboard Slide Shift

3 - Left-Hand Moldboard Lift Control

4 - Dozer Blade/Scarifier

5 - Moldboard Tilt

6 - Articulation

7 - Rear Mounted Attachments

8 - Right-Hand Moldboard Lift Control

9 - Front Wheel Lean

10 - Circle Shift

Table 3-6. Control Levers (Cont.)

ITEM NO.	SYMBOL	CONTROL NAME	FUNCTION
8		Right-Hand Blade Lift Control	Use to raise and lower right side of moldboard. Push forward to lower right side. Pull back to raise right side.
9		Front Wheel Lean	Controls lean of front wheels to left or right for a reduced turning radius and improved grader stability while grading. Push lever forward to lean front wheels to left. Pull lever back to lean front wheels to right.
10		Circle Shift	Moves circle and moldboard assembly left or right. Push lever forward to move circle and moldboard assembly to the left. Pull lever back to move circle and moldboard assembly to the right.

THROTTLE CONTROL AND SERVICE BRAKE PEDALS

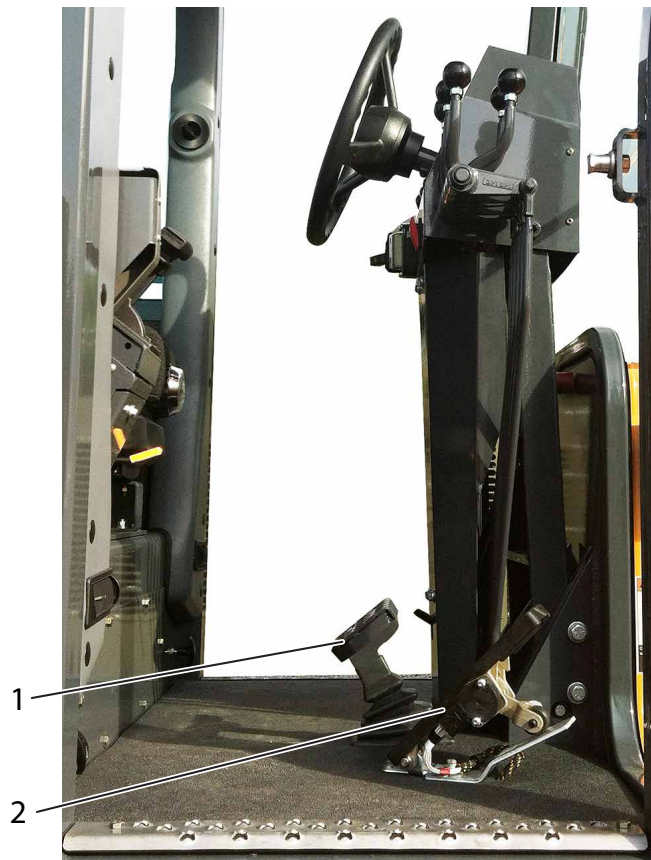


Figure 3-6. Throttle Control Pedal and Service Brake Pedal

1 - Service Brake Pedal

2 - Throttle Control Pedal (Option)

Table 3-7. Throttle Control Pedal and Service Pedal

ITEM NO.	CONTROL NAME	FUNCTION
1	Service Brake Pedal	Depressing the service brake pedal causes the hydrostatic drive pump to “declutch.” This pedal is an “all or nothing” brake and should only be used in an emergency. Activation of the brake will bring the grader to a sudden and complete stop. ⚠ WARNING Use foot pedal operated service brakes only for emergency stops or if there is insufficient dynamic breaking power from the hydrostatic drive.
2	Throttle Control Pedal	Use to alter engine speed (RPM). Engine RPM (revolutions per minute) are shown on the tachometer. Press throttle control pedal forward to increase engine RPM. When released, the pedal returns to the position determined by the throttle control lever setting.

THROTTLE CONTROL/ DIRECTION CONTROL/TRANSFER CASE GEAR LEVERS

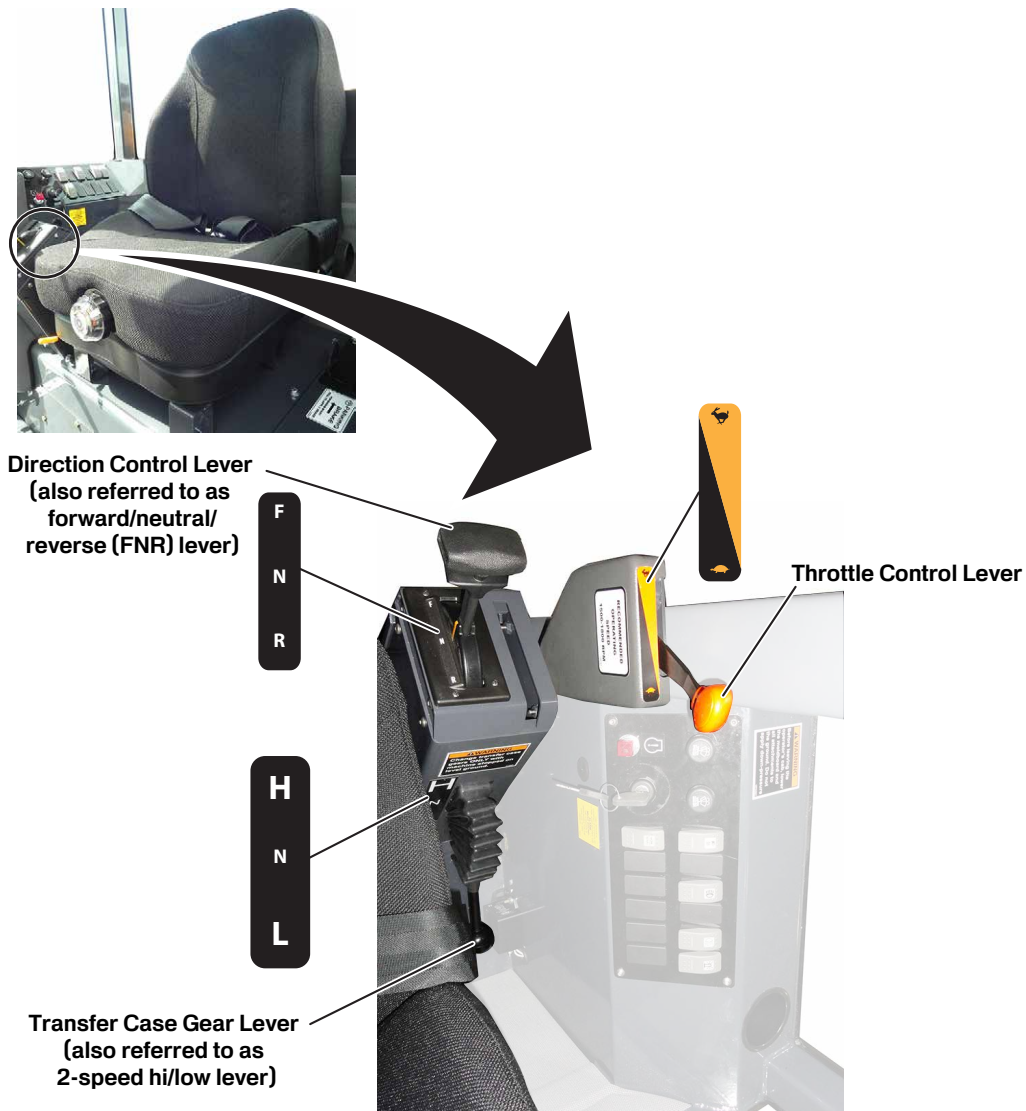


Figure 3-7. Throttle Control/Transfer Case Gear/Direction Control Levers

Table 3-8. Throttle Control, Direction Control and Transfer Case Gear Levers

ITEM NO.	CONTROL NAME	FUNCTION
1	Throttle Control Lever	Used to regulate and set engine speed (RPM). Push forward to increase RPM's. Pull backwards to reduce RPM's.
2	Direction Control Lever	Used for forward and reverse movement of motor grader. Move lever forward from NEUTRAL (N) position to move motor grader forward. Move lever backward from NEUTRAL (N) position to move motor grader backwards. Move lever further away from NEUTRAL (N) position to increase ground speed. Move lever closer to NEUTRAL (N) position to decrease ground speed. NOTE: Engage lever in NEUTRAL (N) position before starting and when stopping motor grader. Be sure lever is engaged in NEUTRAL (N) position before leaving motor grader. Do not leave motor grader while the engine is running. ⚠ WARNING Quickly moving the lever from forward to reverse causes the motor grader to move immediately in the opposite direction. Always be sure that the work area is safe in all directions before moving the lever.
3	Transfer Case Gear Lever	Used when changing gears in the two-speed transfer case for HIGH (H) or LOW (L) range gearing. The central position is NEUTRAL (N). Push lever forward for HIGH gear. Pull lever back for LOW gear. Lever must be in either HIGH or LOW at all times. ⚠ WARNING Change transfer case gears only with the motor grader stopped on level ground. ⚠ WARNING Install the articulation lock pin before selecting the transfer gear case lever HIGH position for traveling on the highway.

PARKING BRAKE KNOB

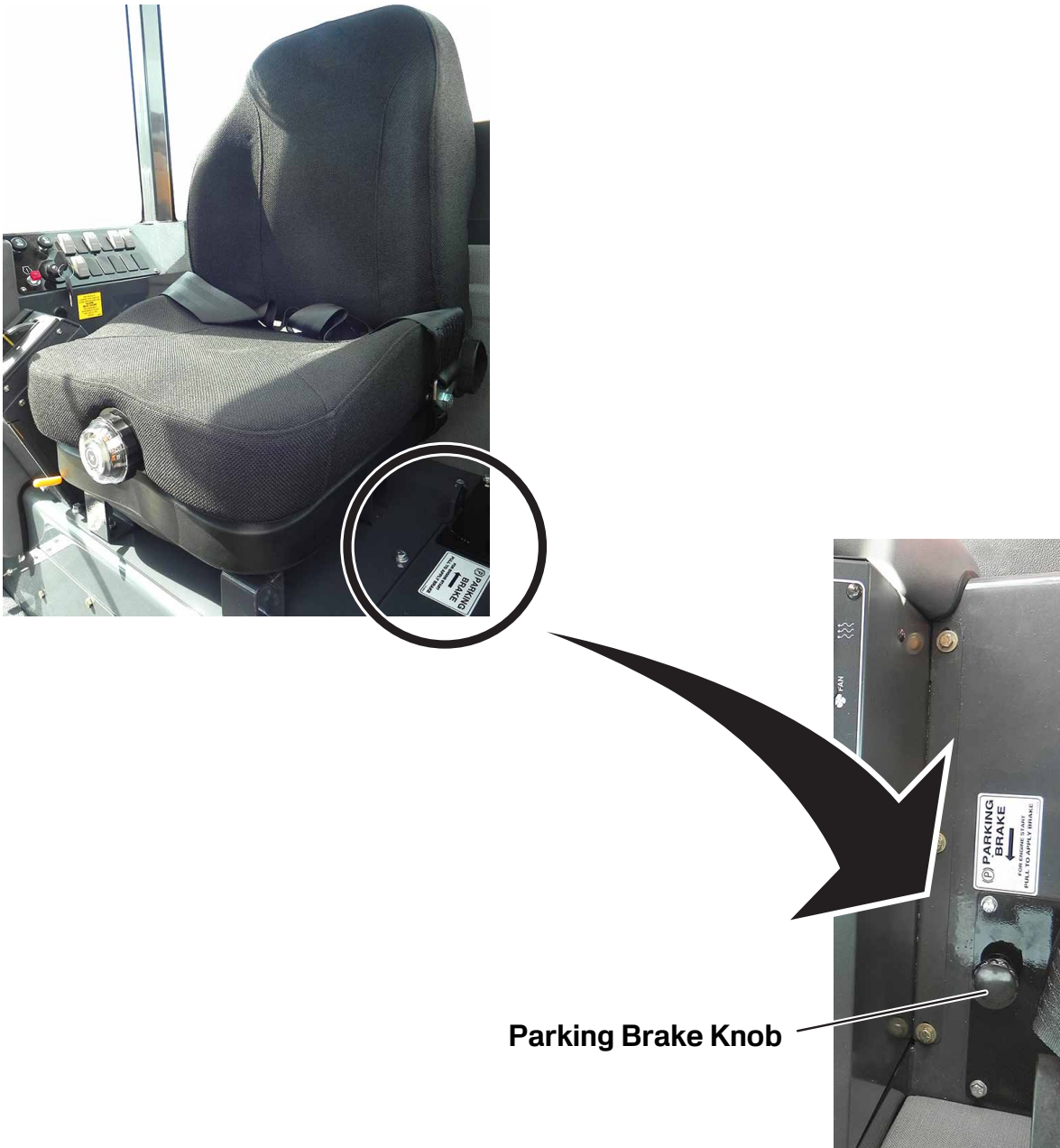


Figure 3-8. Parking Brake

Table 3-9. Parking Brake Knob

ITEM NO.	CONTROL NAME	FUNCTION
1	Parking Brake Knob	The Parking Brake is used to prevent grader movement during startup and after shut down. Pull parking brake knob up to engage parking bark. Push parking brake knob down to release parking brake. NOTE: The parking brake must be engaged to start engine. ⚠ WARNING If engine is running and direction control lever is not in NEUTRAL position when parking brake is released, motor grader WILL move. Always ensure direction control lever is in NEUTRAL before releasing parking brake to avoid serious personal injury or death.

NOTES



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OPERATION

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NOTES

GENERAL INFORMATION

This section provides the Operating instructions for the LeeBoy Model 695 Motor Grader. It **is important to read, understand, and follow all precautions, operating instructions, and warnings written in this manual before starting or operating the grader.**

⚠ DANGER Failure to observe the operating precautions, warnings, and instructions provided in this manual can result in serious injury or death. Only authorized personnel, who are fully trained to operate the grader should operate the LeeBoy Model 695 Motor Grader.

⚠ DANGER This grader should be kept in good mechanical condition at all times.

⚠ WARNING Do not operate a grader that is in need of repair. Put an information tag on the instrument panel that says “DO NOT OPERATE”. Remove the key from the ignition switch. Repair all damage at once. Minor damage can result in major system failures.

⚠ WARNING Do not start or operate the LeeBoy Model 695 Motor Grader without reading, understanding, and following all information given in this manual and displayed on the grader. The operator must understand the function of all controls, indicators and gauges before starting the engine. Serious injury or death can result if these procedures are not followed.

Refer to Section 3 for a list of controls and a description of their functions.

SAFETY

Operating Safety

- ALWAYS wear OSHA required safety equipment when running the motor grader.
 - ALWAYS sit in the operator's seat with the seat belt on when operating the equipment.
 - ALWAYS make sure no people or objects are in line of grader movement BEFORE starting.
 - WORK slowly in tight areas.
 - DO NOT run engine in areas where ventilation is not adequate.
 - AVOID steep hills and sharp turns if possible.
 - REDUCE speed before turning or swinging loads.
 - ALWAYS look BEFORE changing direction of grader movement.
 - DO NOT run engine without operator seated in operator's seat.
 - DO NOT start engine by shorting across starter terminals. Grader will start in gear if normal circuitry is bypassed.
 - NEVER start engine while standing on the ground. Start engine only from operator's seat, with directional control lever (**Figure 3-7**) in NEUTRAL.
 - NEVER shift the transfer case gear lever while on an incline.
 - CHECK the parking brake to make sure it is operating properly.
- ⚠ DANGER** Shift lever must be in LOW or HIGH at all times. Grader must be on level ground and at full stop when shifting.

Parking Safety

- ALWAYS park the motor grader on solid, level ground. If this is not possible, park the motor grader at a right angle to the slope.
- ALWAYS lower moldboard, scarifier, and front blade (if equipped) when leaving the grader unattended.
- ALWAYS engage parking brake when parking or leaving the grader unattended. (Pull the parking brake knob (**Figure 3-8**) to apply parking brake).
- USE proper flags, barriers, and warning devices especially when parking in areas of traffic.

BREAK-IN PROCEDURES

NOTE: Make every effort to become familiar with the feel and sound of the grader.

1. Observe engine operation carefully.
 2. Check the engine oil and coolant frequently.
 3. Operate engine at normal loads.
 4. Check indicators and gauges frequently during operation.
 5. Avoid excessive engine idling.
 6. Perform 10 hour or daily service.
 7. Watch for fluid leaks and repair immediately.
 8. Lubricate pivots every 10 hours for first 100 hours.
 9. Check and tighten wheel lug nuts. Tighten to 350 ft-lbf (474.536 N-m).
 10. Perform service intervals as shown in section 5, **Maintenance**.
 11. Change the engine oil and filter after 100 hours of engine operation (refer to section 5, **Maintenance**).
 12. Check engine manufacturer's operation and maintenance manual for additional information regarding engine break-in.
 13. Check the parking brake to make sure it is operating properly.
- CHECK that there is fuel in the fuel tank and refill as needed. FILL the fuel tank with the engine off. NEVER fill fuel tank near an open flame or when smoking.
 - CHECK for frayed or worn electrical wires and loose or corroded connections.
 - CHECK tires for wear, cuts, and damage. CHECK air pressure. INSPECT wheels for loose, damaged, or missing hardware.
 - CHECK pedals and levers for freedom of movement. MAKE SURE operator's compartment is free of debris.
 - CHECK steps and supports for damage.
 - CHECK protective devices, cab, ROPS (roll over protection system), canopy, shields and seat belt for wear or damage.
 - MAKE SURE all protective devices operate correctly.
 - CHECK that the articulation lock pin has been removed from the articulation hinge and stored in the articulation lock pin holder.
 - CHECK that operator's seat is adjusted for comfortable and safe operation of all controls.
 - ALWAYS sit in the operator's seat with the seat belt on before starting the motor grader. REMAIN seated during operation.

PRE-START INSPECTION

Note: Refer to section 5, Maintenance, for maintenance procedures.

- INSPECT grader. Have any malfunctioning, broken, or missing parts repaired or replaced before using the motor grader.
- CHECK hydraulic hoses daily for wear and leaks. Replace if damaged.
- CHECK that all instruction and safety labels are in place and readable. These are as important as any other equipment on the grader.
- CHECK parking brake to ensure it's working properly.
- READ and FOLLOW all instruction decal information.
- WEAR OSHA required safety equipment when running the motor grader.
- CHECK engine oil, transmission fluid, and hydraulic oil levels. Fill to the correct level as necessary.

Maintenance Safety

- NEVER work on the motor grader with the engine running.
- NEVER fill the fuel tank with the engine running.
- DO NOT smoke while filling the fuel tank or servicing the grader.
- DO NOT change the engine governor settings.
- ALWAYS replace damaged or lost decals.
- DISCONNECT battery cables when working on the electrical system or when welding on the unit.
- IF battery needs charging, battery charger must be off when making connections.
- BE SURE correct battery polarity is observed, negative (-) to negative (-) and positive (+) to positive (+), when connecting a battery charger or jumper cable.
- DO NOT use hands to find hydraulic leaks. High pressure fluid can penetrate the skin causing severe injury.
- DO NOT service or repair the motor grader blades, scarifier, or moldboard in a raised position unless they are properly supported by approved jacks and jack stands.

RECEIVING THE MOTOR GRADER

The motor grader was inspected thoroughly at the factory. However, road hazards or vandalism may occur during transport, resulting in damage.

Inspect the grader as outlined below and perform necessary repairs before placing the grader in service.

1. Check engine oil level as shown in the Cummins engine Operation and Maintenance Manual.
2. Check fuel tank, cooling system, chain boxes, engine oil, and hydraulic reservoir for proper levels and contaminants. If contaminants are suspected, flush and fill the system.
3. Check all axle fluid locations for proper amount of oil.
4. Read this manual and understand the contents.
5. Check all hydraulic functions and repair or adjust as necessary. Have any repairs or adjustments performed by a qualified mechanic or consult the local LeeBoy dealer.
6. Check for missing parts. If parts are missing, or motor grader is damaged, consult the local LB Performance dealer.
7. Check the parking brake to make sure it is operating properly.
8. Check to make sure seat belt is operating properly.

PRELIMINARY PROCEDURES

Adjusting Pedestal/Steering Console

WARNING Do not attempt to adjust the pedestal/steering console while the motor grader is moving.

To adjust the pedestal/steering console position:

1. Grasp the steering wheel and push down on the pedal located at the bottom of the pedestal/steering console (**Figure 4-1**).
2. Move pedestal/steering console forward or backward into comfortable position.
3. Release pedal to lock pedestal/steering console into new position.



Pedestal/Steering Console

Figure 4-1. Pedestal/Steering Console

Adjusting Operator's Seat

WARNING Always use the seat belt during motor grader operation. The seat belt is designed to provide safe operator retention if the grader is involved in an accident or rollover incident.

WARNING Do not attempt to adjust the seat while the motor grader is moving.

The seat can be adjusted for individual comfort. The seat position lever (**Figure 4-2**) allows the operator to move the seat forward and back for easy access to the steering wheel and hydraulic controls.

The comfort control knob (**Figure 4-2**) can be adjusted from soft ride to firm ride as needed for varying operational situations. The seat suspension provides operator comfort by absorbing some of the grader movements during operation.

The seat belt (**Figure 4-2**) provides safe operator retention if motor grader is involved in an accident or rollover incident. Adjust seat belt for comfortable grader operation.



Figure 4-2. Operator's Seat

DOOR OPERATION - CAB OPTION ONLY

Cab Door Handles

To open door from outside the cab:

Clasp door handle, push door handle button and pull door out.



Figure 4-3. Outer Cab Handle

To open door from inside the cab:

Push down lever located on door and push door open.



Figure 4-4 Inner Cab Handle

Cab Door Release

The door is designed with a latch that keeps the door from swinging when open.

To engage latch, open door 180° and push door towards cab until latch clicks into place.



Figure 4-5. Outer Door Latch

To release door from cab latch, grasp release latch located under seat and pull. Swing door away from cab.



Door Release Lever

Figure 4-6. Door Release Lever Location



Figure 4-7. Door Release Lever

CLIMATE CONTROL SYSTEM

The heater and A/C evaporator unit are installed in the console located on left side of the cab (Figure 4-8).

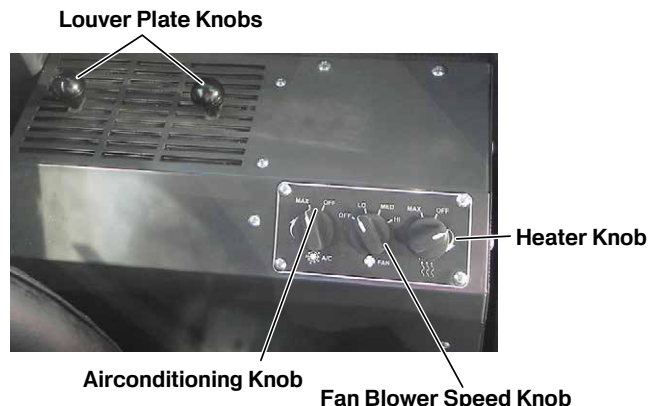


Figure 4-8. Cab Heater/Air Conditioning (A/C)

Air vents (6 total) for heat and A/C are located on the posts on left and right sides of the cab and above doors (Figure 4-9).



Figure 4-9. Heat and A/C Vent Locations

Recirculated Air Control

To control the amount of recirculated air, open or close the louver plate located on the console on the left side of the cab.

To unlock louver plate:

- Turn both louver plate knobs (**Figure 4-8**) counterclockwise about a half turn.

To open the louver plate:

- Pull the two louver plate knobs towards the operator's seat.

To close the louver plate:

- Push both louver plate knobs away from operator's seat.

To lock louver plate:

- Turn the louver plate knobs clockwise until tight to lock louver plate.

Defroster

To turn on defrost:

Turn heater knob (**Figure 4-8**) clockwise to HEAT position and air conditioning knob clockwise to A/C position. Then turn fan blower speed knob clockwise to desired fan speed setting of LO (low), MED (medium), or HIGH.

Heater

To turn on heater:

1. Turn heater knob (**Figure 4-8**) clockwise to HEAT position. Continue turning clockwise to increase heater temperature (MAX position is warmest heater temperature setting).
2. Adjust cab vents for desired air flow.

To turn off heater:

- Turn heater knob counterclockwise to OFF position.

Air Conditioning (A/C)

To turn on air conditioning (A/C):

- Turn air conditioning knob (**Figure 4-8**) clockwise to A/C position. Continue turning clockwise for colder temperature (MAX position is coldest air conditioning temperature setting).

Adjust cab vents for desired air flow.

To turn off air conditioning (A/C):

- Turn air conditioning knob counterclockwise to OFF position.

Fan

To turn on fan:

- Turn fan blower speed knob (**Figure 4-8**) clockwise to LO position for low speed fan setting. Continue turning clockwise to MED position for medium fan speed setting and HI position for high speed fan setting.

To turn off fan:

- Turn fan blower speed knob counterclockwise to OFF position.

SIDE CONTROL PANEL

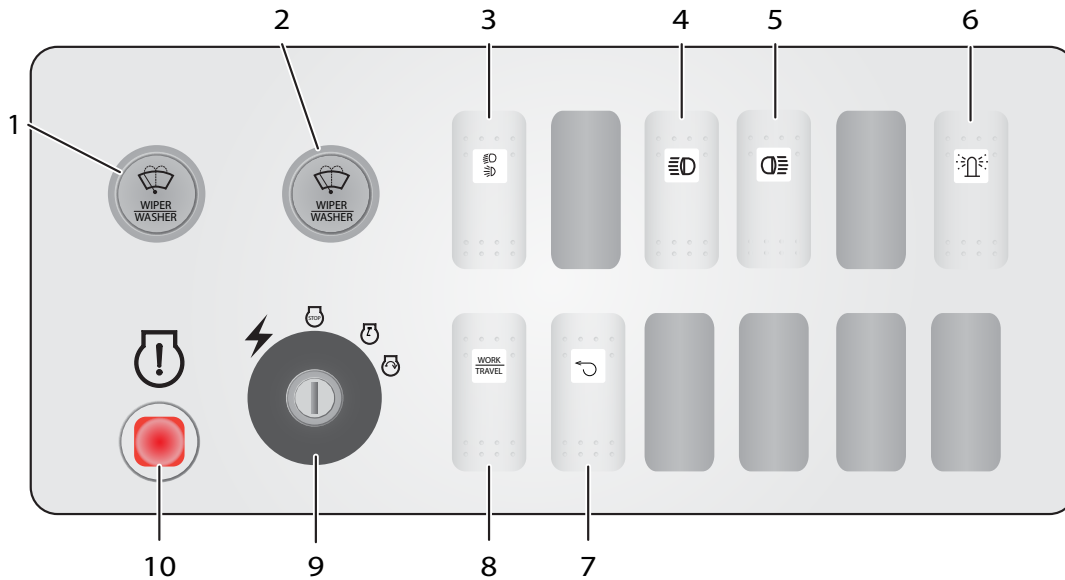


Figure 4-10. Side Control Panel

- | | |
|--------------------------------------|--------------------------------|
| 1 - Front Wiper/Washer Fluid Knob | 6 - Beacon Light Switch |
| 2 - Rear Wiper/Washer Fluid Knob | 7 - All Wheel Drive (Optional) |
| 3 - Headlights/Parking Lights Switch | 8 - WORK/AUTO Switch |
| 4 - Front Work Lights Switch | 9 - Ignition Key Switch |
| 5 - Rear Work Lights Switch | 10 - Engine Warning Light |

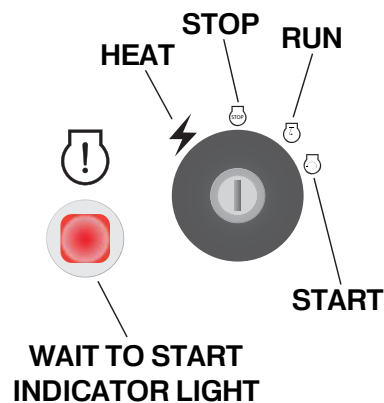


Figure 4-11. Ignition Switch Positions

WINDSHIELD WIPERS

Front Wiper

To turn on front wiper:

- Turn front wiper/washer fluid knob **(Figure 4-10,1)** clockwise to first position for low wiper speed.
- Continue turning clockwise to second position for high speed.

To turn off front wiper:

- Turn front wiper/washer fluid knob counterclockwise to off position.

Front Wiper Washer Fluid

For washer fluid:

- Push in front wiper/washer fluid knob **(Figure 4-10,1)**.

Rear Wiper

To turn on rear wiper:

- Turn rear wiper/washer fluid knob **(Figure 4-10,2)** clockwise to first position for low wiper speed.
- Continue turning clockwise to second position for high speed.

To turn off rear wiper:

- Turn rear wiper/washer fluid knob counterclockwise to off position.

Rear Wiper Washer Fluid

For washer fluid:

- Push in rear wiper /washer fluid knob **(Figure 4-10,2)**.

LIGHTS

Headlights

The headlights/parking lights switch **(Figure 4-10,3)** is used to control operation of the headlights and parking lights.

To turn on the parking lights:

- Push top end of headlights/parking lights switch to middle position.

To turn on the headlights:

- Push top end of headlights/parking lights switch all the way up to top position.

Beacon Light

The beacon light switch **(Figure 4-10,6)** operates the flashing safety light on top of the canopy or optional cab. This light warns traffic of slow moving equipment.

To turn on beacon light:

- Push top end of beacon light switch.

To turn off beacon light:

- Push bottom end of beacon light switch.

Front Work Lights

The front work lights switch **(Figure 4-10,4)** operates the work lights mounted on the front of the motor grader. These lights are used to illuminate the work area when working at night.

To turn on front work lights:

- Push top end of front work light switch

To turn off front work lights:

- Push bottom end of front work light switch.

Rear Work Lights

The rear work light switch **(Figure 4-10,5)** operates the rear work lights mounted on the canopy or optional cab. These lights are used to illuminate the work area when working at night.

To turn on rear work lights:

- Push top end of rear work light switch.

To turn off rear work lights:

- Push bottom end of rear work light switch.

ENGINE OPERATION

Preliminary

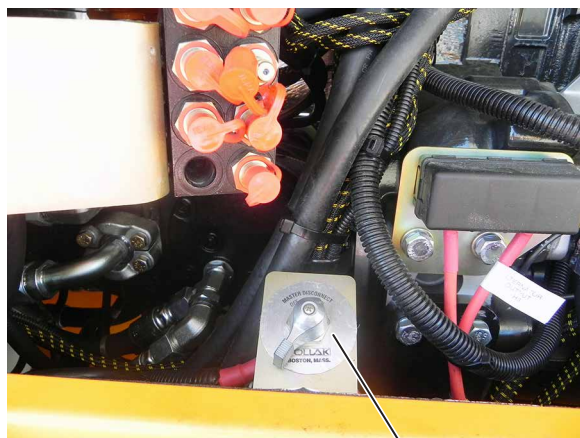
NOTE: Refer to engine manufacturer's operation and maintenance manual for instructions before starting engine for the first time. Follow engine manufacturer's recommendations for fuel and oil.

Before starting the engine:

1. Check fuel level.
2. Check fuel lines and tank for leaks.
3. Check engine oil level.

CAUTION Failure to maintain correct engine oil levels is the greatest single cause of engine failure.

4. Check the hydraulic oil level.
5. Adjust the operator's seat as needed for safe and comfortable operation of all controls.
6. Adjust the pedestal/steering wheel as needed for safe and comfortable operation of all controls.
7. Adjust rear view mirrors as needed for safe operation and ability to see surroundings.
8. Fasten seat belt (Figure 4-2).
9. Ensure that battery disconnect switch (Figure 4-12) is set to ON.



Battery Disconnect Switch

Figure 4-12. Battery Disconnect Switch

10. Place direction control lever (Figure 3-7) in NEUTRAL (center) position.
11. Make sure parking brake (Figure 3-8) is engaged (up position).

Engine Start-up

CAUTION Direction Control Lever (Figure 3-3) must be in NEUTRAL (center) position and Parking Brake (Figure 3-8) must be applied before starting engine.

1. Insert key into the ignition switch (Figure 3-3). Turn clockwise to START (🔑) position.
2. Release key as soon as engine starts.

CAUTION Do not operate starter longer than 20 seconds. If engine does not start, allow starter to cool for 2 to 3 minutes before attempting to start engine.

3. Run engine for 30 seconds.
4. Check indicator and gauge operation, pressures, and warning light.

Engine Warm-up

NOTICE Allow engine and hydraulic oil to warm up before activating components.

1. Start engine and run for several minutes. Do not accelerate rapidly during warm-up.
2. Operate engine at less-than-normal loads and speeds until engine reaches normal operating temperature.

Cold Weather Engine Start-up (40°F or below)

CAUTION The improper use of starting aids (starting fluid) can cause severe engine damage and personal injury. Read and understand the engine manufacturer's operation and maintenance manual before attempting to start the engine using cold weather starting aids. Engines equipped with glow plugs and some turbocharged engines will be damaged by using starting fluid for starting purposes.

Note: Refer to engine manufacturer's operation and maintenance manual for information about cold weather starting, aids, and other engine operation information.

Cold Weather Engine Start-up (40°F or below):

1. To start grader, insert key into ignition switch (Figure 3-3) and turn clockwise to the RUN position. The wait-to-start indicator light (Figure 4-3) will illuminate.
2. When wait-to-start indicator light (Figure 4-15) turns off, turn key clockwise to START (🔑) position (Figure 4-3).
3. Release key as soon as engine starts.

CAUTION Do not operate starter longer than 20 seconds. If engine does not start, allow starter to cool for 2 to 3 minutes before attempting to start engine.

4. Run engine for 30 seconds.
5. Check indicator and gauge operation.
6. Operate each of the motor grader's hydraulic functions before moving grader.

NOTE: In cold weather, keep the fuel tank filled to reduce the chances for condensation and corrosion. Do not fill the fuel tank to capacity. Leave room for fuel expansion.

NOTICE In cold weather, it is extremely important to allow engine and hydraulic oil to warm up before activating components.

Using Booster Batteries - 12 Volt System

NOTICE Be sure to keep the battery fully charged during cold weather to keep it from freezing. Freezing temperatures have little effect on a fully charged battery.

If a booster battery is necessary for cold weather starting:

1. Make sure the direction control lever (Figure 3-7) is in NEUTRAL before using booster batteries to start the engine.
2. Pull parking brake lever (Figure 3-8) up to apply parking brake.

CAUTION Charging batteries produces explosive gases. Keep flames and sparks away from battery area. Charge batteries in a well ventilated area.

CAUTION The electrical system is 12 Volts with negative (-) ground. Use only 12-Volt booster batteries.

CAUTION Improperly connected jumper cables can produce sparks and explosion. Always properly connect a booster battery with the polarities positive (+) to positive (+) and negative (-) to negative (-). Never connect a negative terminal to a positive terminal. Do not allow vehicles to touch.

3. Connect the positive (+) end of the first jumper cable to the positive (+) terminal of the dead battery and the other positive end to the positive (+) terminal of the booster battery.
4. Connect the negative (-) end of the second jumper cable to the negative (-) terminal of the booster battery and the other negative (-) end to the frame of the grader with the dead battery.
5. Start motor grader engine.
6. After starting, remain in the operator's seat and have a helper remove the jumper cables from the grader by removing the negative (-) wire first.

Stopping the Engine

1. Move grader to a level surface.
2. Place direction control lever (Figure 3-7) in NEUTRAL (center position).
3. Lower all equipment to ground level.
4. Pull parking brake lever (Figure 3-8) up to apply parking brake.

NOTICE Turbocharged engines may be damaged if engine is not shut down properly.

5. Run engine at 1/2 speed without load for 3 to 5 minutes.
6. Slide throttle control lever (Figure 3-6) backward to LOW (🐢) position.
7. Turn ignition switch key (Figure 3-3) counterclockwise to the OFF position and remove ignition switch key.

Adjusting Engine for High Elevation

NOTICE Do not change engine settings to compensate for elevation. An authorized service dealer must service the injection pump.

NOTE: Refer to the engine manufacturer's operation and maintenance manual for information on engine specifications and settings. See the local authorized dealer for engine settings and modifications.

DRIVING THE GRADER

Before driving on public roads, check state and local laws that may apply to tractors, self-propelled machines, and towed equipment. Additional lights, mirrors, SMV (slow moving vehicle) emblems, or reflectors may be required.

Grader Speeds

Slide throttle control lever (**Figure 3-6**) forward to HIGH () position and push bottom of WORK/AUTO switch (**Figure 3-2,8**) to AUTO to increase grader speeds.

Slide throttle control lever back to LO and push top of WORK/AUTO switch to WORK to reduce grader speeds.

Throttle Control

NOTE: The 695 Motor Grader hydraulic drive system is designed to operate between 0 to 6000 PSI (0 to 414 Bar). When the hydraulic operating pressure exceeds 6000 PSI (414 Bar), the relief valve remains open causing excessive heat which results in damage and wear.

The throttle control lever (optional) (**Figure 3-4,12**) is located beside the operator's control panel. The lever is used to control the speed (RPM) of the engine.

A tachometer (**Figure 3-4,12**) located on the operator's control panel provides an indication of engine speed.

Push the throttle control lever (**Figure 3-7**) forward to increase engine speed (RPM) and pull back to decrease engine speed (RPM).

BRAKING

To brake, move the direction control lever (**Figure 3-7**) to NEUTRAL (center) position.

Moving the direction control lever towards Neutral (N position) reduces the ground speed of the grader.

The dynamic braking action brings the grader to a stop when the control lever is moved to Neutral (N position). This is the preferred method to slow down and stop the motor grader.

NOTE: Check the parking brake daily to make sure it is functioning properly.

NOTE: After using the parking brake for emergency stopping, check the parking brake to make sure it is functioning properly.

Emergency Stopping

 **WARNING** Use service brake pedal only for emergency stops or if there is insufficient dynamic braking power from the hydrostatic drive.

1. To stop in an emergency, move direction control lever (**Figure 3-7**) to NEUTRAL.
2. Reduce engine speed to slow idle.
3. If vehicle is still moving, depress service brake pedal (**Figure 3-6**) to apply service brake.

NOTE: After using the service brake pedal (**Figure 3-6**) for emergency stopping, check parking brake operation (see Checking Parking Brake on page 5-10).

4. As a last resort, if steps listed above fail and the engine is running, lower components to the ground to stop motor grader.

Parking Brake

A fail-safe hydraulic parking brake, mounted to the right of the operator's seat, uses a knob to engage the parking brake.

Pull the parking brake knob (**Figure 3-8**) up to engage the parking brake.

Push the knob down to release the parking brake.

NOTE: Check the parking brake daily to make sure it is functioning properly.

NOTE: After using the parking brake for emergency stopping, check the parking brake to make sure it is functioning properly.

PARKING THE GRADER

Before leaving the operator's seat, perform the following procedures:

1. Move grader to a level surface.
2. Move direction control lever (**Figure 3-7**) to NEUTRAL.
3. Lower all equipment to ground level.
4. Pull the parking brake knob (**Figure 3-8**) up to apply parking brake.

NOTICE Turbocharged engines may be damaged if engine is not shut down properly.

5. Idle engine for 3 - 5 minutes at 1/2 speed (RPM).
6. Slide throttle control lever (**Figure 3-7**) backward to LO (☞) position.
7. Turn ignition switch key (**Figure 3-3**) counterclockwise to OFF position.
8. Remove key.

DETAILED OPERATION

NOTE: Refer to Section 3 for location and illustration of controls and uses.

This manual does not attempt to teach actual grading techniques. Only a qualified motor grader operator, trained in all types of grading applications, should operate this grader.

The operator must thoroughly understand the mechanical characteristics of the motor grader as well as varying elements and terrain to ensure safe operation.

Hydraulic Control Valve Levers

Circle Turn Control

The angle of the moldboard can be changed using the moldboard tilt lever (**Figure 3-5,5**). Push lever forward to rotate circle and moldboard assembly counterclockwise. Pull lever back to rotate circle and moldboard assembly clockwise. Material is discharged from whichever side of the moldboard that is closest to the rear of the grader.

Moldboard Slide-Shift Control

The moldboard slide shift lever allows the operator to shift the moldboard up to three feet left or right. Pull the lever back to shift the moldboard to the left. Push the lever forward to shift the moldboard to the right.

The end of the moldboard closest to the grader front is the toe of the blade. Pushing a load with the moldboard set at an angle causes the front of the grader to swing towards the toe of the blade.

Counteract side thrust of the grader by leaning the top of the wheels (**see Front Wheel Lean Control page 4-16**) toward the heel (discharge side) of the blade. Pivot grader boom slightly toward blade toe to help control side thrust.

Moldboard Lift Control

The moldboard can be raised and lowered using the two blade lift control levers. The levers control movement of raising and lowering the left and right sides of the moldboard.

Push the left blade lift lever forward to lower the left side of the moldboard. Pull the left blade lift lever back to raise the left side of the moldboard.

Push the right blade lift lever forward to lower the right side of the moldboard. Pull the right blade lift lever back to raise the right side of the moldboard.

Push both blade lift levers forward to lower the whole moldboard. Pull both blade lift levers back to raise the whole moldboard.

Push both blade lift levers all the way forward to place the moldboard in the float position. The float position allows the moldboard to "float" over hard surfaces. Push the levers forward to release the float position.

The moldboard float position can be used to remove snow, remove loose material from a hard packed surface, and gaps in hard packed surfaces with loose material.

Scarifier Control

The scarifier is used to break up packed surfaces. The support teeth should penetrate the surface. Do not allow the teeth to drag the surface, which creates excessive wear on the teeth.

The scarifier can be raised and lowered using the scarifier lever.

Push the scarifier lever to lower the scarifier. Pull the scarifier lever to raise the scarifier.

Moldboard Tilt Control

The moldboard tilt lever (**Figure 3-5,5**) allows the operator to tilt the moldboard. Moldboard tilt angles the blade to provide varying degrees of cutting.

Push the lever forward to tilt the moldboard forward and pull the lever to tilt the moldboard towards the rear.

For normal grading, use the moldboard in the upright position. The blade should be positioned with the top parallel to, or slightly ahead of, the bottom edge.

When greater cutting action is needed, use backward pitch on the moldboard, which draws the top of the moldboard backwards. Too much tilt can cause dirt to build up and contact the circle, due to a lack of rolling action. Adjust moldboard as necessary.

When spreading material, or maintaining roads, moldboard should be tipped forward which allows for better mixing and rolling action. This tends to compact material and fill low spots. Only tilt forward to the minimum angle needed for compacting or filling.

Directional Control

The Model 695 Motor Grader is equipped with a variable speed hydrostatic transmission and variable hydraulic motor. The transmission and hydraulic motor are controlled separately.

A direction control lever (**Figure 3-7**) controls the hydraulic flow and direction of flow through the hydrostatic transmission. The direction control lever (**Figure 3-7**) is used to control forward/reverse movement, acceleration, and braking.

To move forward:

9. Push parking brake lever (**Figure 3-8**) down to release parking brake.
10. Advance throttle to working speed (RPM) by sliding throttle control lever (**Figure 3-7**) forward toward HIGH () position.

11. Push the direction control lever (**Figure 3-7**) forward to move the grader forward. Push the direction control lever (**Figure 3-7**) backwards, beyond the neutral point, to move the grader in reverse.

Articulation and Steering Control

Motor grader steering is done using a combination of controls.

The steering wheel (**Figure 3-3,22**) is used for general steering.

The articulation lever (**Figure 3-5,6**) is used to articulate the front section of the grader for tighter turns.

The steering wheel and articulation can be used with the wheel lean lever (**Figure 3-5,9**) for tight turns.

Articulation is also used to maintain a straight path when working with a windrow.

Push the articulation lever (**Figure 3-5,6**) to move the front end to the left. Pull the lever to move the front end to the right.

Front Wheel Lean Control

The front wheel lean lever is used to set the front wheels at an angle.

Wheel lean is used for material movement control and to obtain a shorter turning radius.

Pull the lever to lean the wheels to the right. Push the lever to lean the wheels to the left.

Lean the wheels toward the windrow when making a heavy cut.

Circle Shift Control

The circle shift lever allows the operator to shift the circle and moldboard assembly left and right.

Push the lever forward to move the circle and moldboard assembly to the left. Pull the lever back to move the circle and moldboard assembly to the right.

Optional Front Traction Assist Control

Optional front traction drive motors can be engaged using the front traction switch mounted on the right-hand moldboard lift lever. The front traction motors are designed to assist with traction when working with heavy materials. The green front traction assist light will illuminate when front traction assist is engaged.

High/Low Transfer Case

The 2-speed hi/lo switch allows the driver to operate in two speed ranges.

Push the 2-speed switch up for high gear and pull the 2-speed switch down for low gear.

⚠ DANGER When shifting the 2-speed hi/lo switch from low to high or high to low the grader must be stopped, the brake must be engaged, and the moldboard must be on the ground. Lever must be in low or high at all times.

NEVER shift the 2-speed hi/lo switch while grader is on an incline.

Drive System

The WORK/AUTO switch allows the operator to control grader speed. In work mode, the motor stays at a constant speed with maximum displacement. In auto mode, the motor shifts as needed to allow for faster grading.

Push the top of the work/auto switch to WORK position for low speed (maximum displacement). Push the bottom of the WORK/AUTO switch to AUTO position for high speed (minimum displacement).

Note: Grader can move in reverse in both WORK and AUTO modes. This allows the grader to be backed up at the necessary speed, without using the WORK/AUTO switch.

Note: In AUTO mode, if maximum pressure is reached during moldboard loading, the motor speed will drop to maintain the maximum pressure allowed for its speed.

Front Moldboard Control (Option)

The optional front moldboard is used for moving materials and backfilling. The front moldboard lever is mounted on the hydraulic control valve.

- Push the lever to lower the moldboard.
- Pull the lever to raise the moldboard.

TRANSPORTING

NOTE: When transporting the grader on a flat bed vehicle, the vehicle must be capable of carrying the grader safely in all driving situations.

1. Thoroughly clean the grader using a pressure washer. Remove all loose gravel, mud, and debris from moldboard, tires, and frame.
2. Make sure the combined height of the truck, trailer, and loaded motor grader meet height restrictions for the local area (area to be transported in) including bridges, overpasses, and overhead obstructions.
3. Park transport vehicle on a level surface.
4. Engage transport vehicle parking brake.
5. Install chocks or blocks against transport vehicle and trailer wheels.
6. Drive grader onto trailer.
7. Center grader on trailer based on weight, gravity, and other factors needed to ensure safe transport.
8. Set grader parking brake.
9. Place forward/neutral/reverse (FNR) lever (**Figure 3-7**) in NEUTRAL (center position).
10. Idle grader at 1/2 speed for 3-5 minutes.
11. Lower moldboard, scarifier, and front blade (if equipped) to flat bed surface. Turn blade to fit on trailer taking care to keep mold board clear of tires.
12. Lower moldboard onto a board to stabilize.
13. Block motor grader wheels in both directions to prevent rolling.
14. Shift grader FNR lever to neutral.
15. Turn key to OFF position and remove keys from the ignition.
16. Properly chain the grader to the trailer to ensure safe transport. Secure grader with chains strong enough to prevent grader movement without failure. (**Figure 4-14**).

⚠ CAUTION Fasten chains or cables to grader frame. Do not place chains or cables over or against hydraulic line, hoses or electrical harness. Use chains, cables, and binders of sufficient capacity to secure the motor grader without breaking, shifting, or slipping.

- Obey all local laws concerning loading, unloading, and transport of equipment.

NOTE: Keep the trailer bed clean.

- Use a ramp or loading dock. Make sure the ramp weight capacity will support the motor grader and has a low angle of rise to the trailer bed.
- Center the grader with the trailer and load the grader on the trailer bed by driving straight on. The motor grader centerline must be over the centerline of the trailer.
- Lower the moldboard length onto wooden blocks to protect trailer bed. Do not apply downward pressure.
- Cover the exhaust opening with heavy gauge plastic to prevent dust and moisture entering the engine.

⚠ DANGER Remove the plastic cover from the exhaust before operating the motor grader.

Preparing for Motor Grader Towing

⚠ WARNING Improper towing methods and equipment can result in severe personal injury or death. Read and understand towing instructions and precautions.

It is recommended that all towing operations be performed by a professional towing service.

⚠ CAUTION The operator must be in the operator's seat to control steering and brakes. Steering, brakes, and transmission may be operational depending on type of failure and options available.

⚠ WARNING Wheels must be blocked from moving while preparing grader for towing.

NOTE: Towing or pushing cannot be used to start the engine.

NOTE: Do not tow motor grader long distances. Transport the grader instead.

1. Block wheels of grader to prevent grader from moving.
2. Locate the brake release screw (**Figure 4-13**) (screw has square head) on the bottom of the rear axle.
3. Using a caliper, measure the exact extension of the screw and record measurement.
4. Turn the screw all the way in to release the brakes for towing the machine.

5. Lift and secure the scarifier, moldboard, and front blade (if equipped).
6. Shift FNR lever to Neutral.



Brake Release Screw

Figure 4-13. Brake Release Screw

After Towing

To return the grader to normal operation after towing, proceed as follows:

1. Block wheels of grader to prevent grader from moving.
2. Ensure that FNR lever is in Neutral.
3. Adjust brake release screw (**Figure 4-13**) (screw has square head) to the exact position measured in Step 3 of MOTOR GRADER TOWING.

NOTE: Steering, brakes, and transmission may not be operational depending on the failure type.

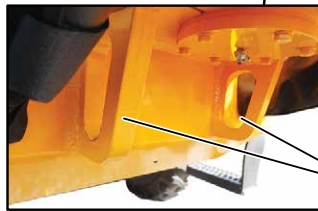
⚠ CAUTION Operator must be in operator's seat to control steering and brakes.

NOTE: Engine cannot be started by towing. Damage to transmission will result.

Rear Tie Downs



Front Tie Downs



Mid Tie Downs



Front D-Ring Tie Down

4

Figure 4-14. Tie Down Locations

NOTES



Section 5

MAINTENANCE

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GENERAL INFORMATION

This section gives the procedures necessary for routine and general maintenance on the LeeBoy Model 695 Motor Grader.

Follow all the Maintenance Schedules and Maintenance Procedures to maintain the grader and ensure top operating condition.

ROUTINE MAINTENANCE

General Information

Maintenance must be a planned program that includes periodic grader inspection and lubrication procedures.

The first and most important requirement for satisfactory motor grader performance is a clean grader. Many failures in the field are due to equipment that has become so covered with excess gravel and dirt that even ordinary adjustments and lubrication are neglected.

The operator of the motor grader should inspect the grader daily. The operator is responsible for seeing that worn or damaged parts are replaced or repaired to prevent damage to other areas of the grader. Daily inspections should check for issues which could cause a potential service or safety problem, including: observation for loose bolts, fluid leaks, worn or damaged hoses, and accumulation of debris or dirt.

The maintenance program must be scheduled based on the grader "Operating Hours" which are recorded on the hour meter or based on the "Periodic Schedule" which is typically done at the following time intervals:

- Daily
- Weekly
- Monthly
- Quarterly
- Semi-annually
- Yearly

LUBRICATION POINTS

Grader Lubrication

Proper lubrication is necessary to maintain the grader at top efficiency. Refer to the lubrication information in **Table 5-1** for all lubrication points; refer to the corresponding figure number (s) and item no. in **Table 5-1** for specific location (s) of the grease point (s) in **Section 7 - 695 IPL**.

Table 5-1. Lubrication Chart

TYPE LUBE	DESCRIPTION AND LOCATION	INTERVAL	Section 7 - Figure No. / Item No.
A	Wheel Lean Cylinder	WEEKLY	Fig. 7-6 / 53
A	Front Wheel Hub Bearings	250 HOURS	Fig. 7-6 / 3 & 8
A	Front Axle Stabilizer Bar	WEEKLY	Fig. 7-6 / 53
A	Drawbar Pivot Ball	DAILY	Fig. 7-7 / 54
A	Blade / Moldboard Slide	WEEKLY	Fig. 7-9 / 2
A	Circle Shift Cylinders/Links	WEEKLY	Fig. 7-7 / 59
A	Articulation Joints	WEEKLY	Fig. Fig. 7-2 / 7
A	Tilt Cylinder	WEEKLY	Fig. 7-9 / 2
A	Articulation Cylinders	WEEKLY	Fig. 7-3 / 5
A	Blade Lift Cylinders	DAILY	Fig. 7-7 / 59
A	Circle Turn Cylinders	WEEKLY	Fig. 7-8 / 40
A	Steering Cylinder	WEEKLY	Fig. 7-6 / 53
B	Door Handles, Cab	Monthly	Fig. 7-12 / 12 to 15
A	Rear Axle	WEEKLY	Fig. 7-4 / 15
A	Front Axle (Non-AWD) with Bolt in Flange	WEEKLY	Fig. 7-5 / 16
A	Front Axle (Non-AWD) Hydraulics	WEEKLY	Fig. 7-6 / 41
A	Top of Steering Arms (Fr. Axle)	WEEKLY	Fig. 7-6 / 54
A	King Pin on Front Axle	WEEKLY	Fig. 7-6 / 52
A	Steering Cylinder (SWD)	WEEKLY	Fig. 7-71 / 23
A	Rear Ripper	WEEKLY	Fig. 7-78 / 26
A	Front Blade	WEEKLY	Fig. 7-76 / 9
A	Blade Turn	WEEKLY	Fig. 7-7 / 59
A	Circle / Arms Assembly	WEEKLY	Fig. 7-8 / 22
A	King Pin Bearing	250 HOURS	Fig. 7-6 / 45
A	Lift Cylinder Bearings	250 HOURS	Fig. 7-7 / 9
A	Lift Cylinder Trunnion Bearings	250 HOURS	Fig. 7-8 / 9 & 10
A	Trunnion Bearings	250 HOURS	Fig. 7-1 / 18
A	AWD Axle Hydraulics	WEEKLY	Fig. 7-71 / 13 & 40
A	Front Blade and Scarrifier	WEEKLY	Fig. 7-77 / 8

LEGEND

- A Grease with Shell Avania EP Grease or Equivalent
- B Spray with oil or chain lubricant

MAINTENANCE SCHEDULE

General Information

The Maintenance Schedule lists the recommended intervals between grader maintenance inspections and lubrication procedures. Refer to **Figure 5-1** for inspection and lubrication information for the Model 695 Motor Grader.

The maintenance schedule begins with ten hour (daily) maintenance intervals and continues through the 2,000 hours, or annual, maintenance schedule intervals.

NOTE: A motor grader in operation for less than 10 hours a day, can have maintenance performed when 10 hours of operation is reached.

Performing regular preventive maintenance on the 695 Motor Grader will provide years of trouble-free operation. Adjustments can be performed in the field with ordinary hand tools.

Only preventative engine maintenance pertaining to the oil filter, air filter and fuel filter changes are covered in this section. Refer to engine operator's manual for further engine service information.

NOTICE Oil changes and grader cleaning should only be done in a designated area that can contain the oil and chemicals involved in maintenance requirements. These by-products should be discarded in accordance with environmental regulations.

CAUTION Do not substitute fasteners of any kind unless the fasteners are equal in size and grade as original equipment.

NOTE: Hourly maintenance should include all necessary routine maintenance. For instance, when performing maintenance at 250 hours, be sure to also perform the steps for 100, 50, and 10 hour maintenance.

Preparing Grader for Maintenance

Prior to grader maintenance, perform the following steps before leaving the operator's seat:

1. Park the grader on a flat, even surface.
2. Lower all attachments to ground level.
3. Place forward/neutral/reverse (FNR) lever (**Figure 3-7**) in NEUTRAL position.
1. Pull the parking brake knob up (**Figure 3-8**) to engage brake.
2. Run engine without load at 1/2 speed (RPM) for 3 to 5 minutes.
3. Reduce engine speed (RPM) to slow idle.
4. Turn ignition switch key (**Figure 3-3**) counterclockwise to OFF position. If maintenance must be performed with engine running, do not leave grader unattended.

10 Hour or Daily Routine Maintenance

1. Perform preventative engine maintenance as described in your engine operator's manual. Any preventative engine maintenance should always begin with an engine oil check.
2. Check fuel level. Keeping fuel tank full prevents condensation from forming. Fill tank at end of day.
3. Check the hydraulic oil level (see **Checking Hydraulic Oil Level** on page 5-26) and fill as required.
4. Check the radiator coolant level and fill as required (see **Checking Radiator and Coolant Level** on page 5-22).
5. Lubricate the following parts (see **Table 5-1**).
 - a. Drawbar Pivot Ball
 - b. Blade Lift Cylinders
6. Check for damaged, loose, or missing decals. Replace decals as required.
7. Check lights for burned out bulbs. Replace bulbs as required. (see **695 IPL - Section 7**)
8. Check battery cables and connections.
9. Check for loose, damaged, missing, or corroded parts. Repair or replace as required.

10. Check tires and wheels for low air pressure, cuts, bubbles, damaged rims, and missing lug bolts or nuts.
11. Check the parking brake daily to make sure it is operating properly (see **Check Parking Brake** on page 5-10).
12. Perform 10-hour or daily preventative engine maintenance as described in the engine operator's manual.

50 Hour or Weekly Routine Maintenance

1. Lubricate the following parts (see **Table 5-1**).
 - a. Front Scarifier Pivot Pins And Hyd. Cylinders (Optional Assembly)
 - b. Front Axle Pivot Pins And Hyd. Cylinder
 - c. Front Wheel Lean Cylinder
 - d. Front Axle Stabilizer Bar
 - e. Blade Lift Trunnions
 - f. Moldboard Slide
 - g. Circle Shift Cylinders/Links
 - h. Articulation Joints
 - i. Tilt Cylinder
 - j. Articulation Cylinders
 - k. Circle Wear Plate
 - l. Circle Turn Cylinders
 - m. Steering Cylinder
 - n. Front Axle King Pins
 - o. 7/8 Ft. Front Blade/4 Shank Scarifier Pivot Pins And Hyd. Cylinders (Optional Assembly)
2. Check all battery connections and remove any corrosion that is present (see **Cleaning and Tightening Battery Terminal Connections/Terminals** on page 5-14).
3. Perform 50-hour or weekly preventative engine maintenance as described in the engine operator's manual.

100 Hour or Monthly Routine Maintenance

4. Check air filters. Clean or replace as required (see **Replacing Engine Air Filter Elements** on page 5-21).
5. Check transfer case oil level and fill as required (see **Checking Transfer Case Oil Level** on page 5-22).
6. Lubricate the following parts (see **Table 5-1**).
 - a. Door Handles, Cab
7. Perform 100-hour or monthly preventative engine maintenance as described in the engine operator's manual.

250 Hour or Quarterly Routine Maintenance

 **WARNING** Do not smoke when observing battery electrolyte level. The fumes can explode. Electrolyte is an acid that can burn if it contacts skin or eyes. If contact is made, flush area immediately with water.

1. Check battery electrolyte level. Check battery terminals for corrosion. Perform battery maintenance as required (see **Cleaning and Tightening Battery Terminal Connections/Terminals** on page 5-14).
2. Change engine oil and replace oil filter (see **Changing the Engine Oil and Replacing Filter** on page 5-19). To assure complete removal of contaminants in the oil, perform the oil change while engine is warm.
3. Replace engine air filters (see **Replacing Engine Air Filter Elements** on page 5-21).
4. Lubricate the following parts (see **Table 5-1**).
 - a. Front Wheel Hub Bearings
 - b. Transfer Case Shift Linkage Pivot
5. Check rear drive housing oil level and fill as required (see **Checking Rear Axle Oil Level** on page 5-30).
6. Perform 250-hour preventative engine maintenance as described in the engine operator's manual.

500 Hour or Semi-Annual Routine Maintenance

1. Change fuel filters.
2. Change hydraulic oil filter (see **“Changing Hydraulic Oil Filter”** on page 5-27).
3. Check fuses and circuit breakers. Replace if required (see **“Fuses And Relays”** on page 5-31).
4. Check neutral start system. Repair as required (see **“Checking Neutral Start System”** on page 5-13).
5. Adjust blade side-shift guides.
6. Check and adjust toe-in as required (see **“Checking and Adjusting Toe-In”** on page 5-11).



WARNING Hydraulic oil under pressure can cause serious personal injury. Check for oil leaks with a piece of cardboard. Do not expose hands to possible high-pressure oil. Turn off engine before attempting to tighten oil lines and fittings.

7. Check oil lines and fittings for leakage or damage (see **“Checking Oil Lines and Fittings”** on page 5-10). Replace parts as required.
8. Perform 500-hour preventative engine maintenance as described in the engine operator's manual.

1000 Hour or Annual Routine Maintenance

1. Clean, pack, and adjust front wheel bearings (see **“Cleaning, Packing, and Adjusting the Front Wheel Bearings”** on page 5-17).
2. Check air intake hoses for damage (see **“Checking Air Intake Hoses”** on page 5-10). Replace damaged parts.
3. Clean and check fuel filler cap (see **“Checking and Cleaning Fuel Filler Cap”** on page 5-25).
4. Clean and check hydraulic reservoir filler cap (see **“Checking the Hydraulic Reservoir Filler Cap”** on page 5-28).
5. Drain, flush, and fill transfer case with oil (see **“Checking Transfer Case Oil Level”** on page 5-22).
6. Perform 1000-hour preventative engine maintenance as described in the engine operator's manual.

2000 Hour Routine Maintenance

7. Drain, flush, and fill rear drive housing with oil (see **“Checking Rear Axle Oil Level”** on page 5-30).
8. Drain, flush, and fill hydraulic reservoir with oil (see **“Draining, Flushing, and Filling Hydraulic Oil Reservoir”** on page 5-29).
9. Drain, flush, and fill engine coolant system with coolant.
10. Perform 2500-hour preventative engine maintenance as described in the engine operator's manual.



Alternator

Fan

Master Disconnect

Fuel /Water Seperator

Engine Oil Filter

Engine Oil Dipstick



Hydraulic Oil Gauge

Fan

Hydraulic Oil Filler Cap

Fuel Filter

Engine Air Filter

5

CHECKS AND ADJUSTMENTS

Checking Parking Brake

To check the parking brake:

1. Park the grader on an incline.
2. Pull the parking brake knob (**Figure 3-8**) to engage the brake.
3. If brake is functioning correctly, motor grader will not move.

Checking Oil Lines and Fittings

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Check grader for indications of oil leakage around oil lines, hoses, and fittings.
3. Tighten fittings as necessary. Replace hoses and fittings as needed.

Checking Air Intake Hoses

NOTICE If hoses are damaged or not properly connected, debris can enter the engine causing premature engine wear.

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Check air intake hoses from the engine to the air cleaner assembly.
3. Check air intake hoses from the air cleaner assembly to the precleaner.
4. Check for cracked, dry rotted, loose, worn, or damaged hoses, tubes, and clamps.
5. Tighten, repair, or replace parts as needed.

Checking Window Washer Fluid Reservoir Level

To check the washer fluid reservoir level:

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Open the washer fluid reservoir access panel door (**Figure 3-1,16**).
3. Remove the cap from the reservoir.
4. Add new washer fluid to fill line.
5. Replace the cap.
6. Close the access panel door.

NOTE: During the cold season, make sure there is freeze-protected washer fluid in the reservoir.

Cab Access Panel Door

The cab access panel door has a spring that keeps the door propped open. To release the door, gently pull back on the spring and then pull the door shut.



Door Spring

Figure 5-1. Door Spring

Checking the Drive Belt

NOTE: Belt drive systems equipped with automatic (spring) belt tensioners cannot be adjusted or repaired. The automatic belt tensioner is designed to maintain proper belt tension over the life of the belt. If tensioner spring tension does not meet specifications, replace tensioner assembly.

NOTE: Refer to the engine manufacturer's operation and maintenance manual for information on checking tensioner spring and for additional information on checking and adjusting drive belts.

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Inspect the belt for cracks, fraying, punctures, or other damage. Damaged belts must be replaced. (Figure 5-2)

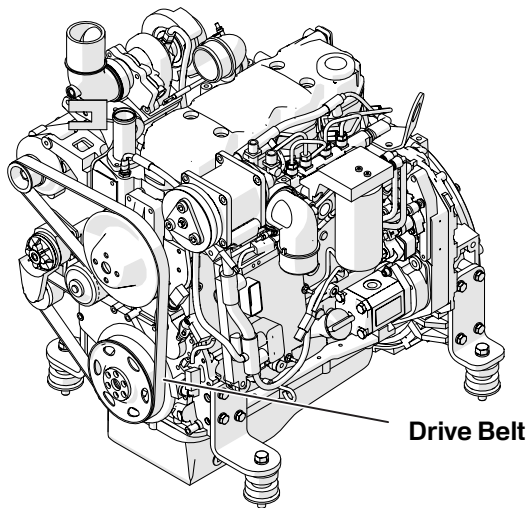


Figure 5-2. Cummins Engine

3. Check belt tension. See the engine manufacturer's operation and maintenance manual for tension specifications.
4. If belt does not meet specifications, replace the belt. See the engine manufacturer's operation and maintenance manual for instructions.

Checking Drawbar Ball and Socket

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Lower moldboard (Figure 3-5,5) to ground.
3. Check the drawbar and socket assembly for wear and damage (Figure 5-5).
4. Move moldboard lift cylinders (Figure 5-5) without load. Ball should move freely.
5. Use floor jack to support drawbar.
6. Check for excessive movement in ball and socket.
7. If drawbar ball and socket do not operate properly, replace before operating grader.

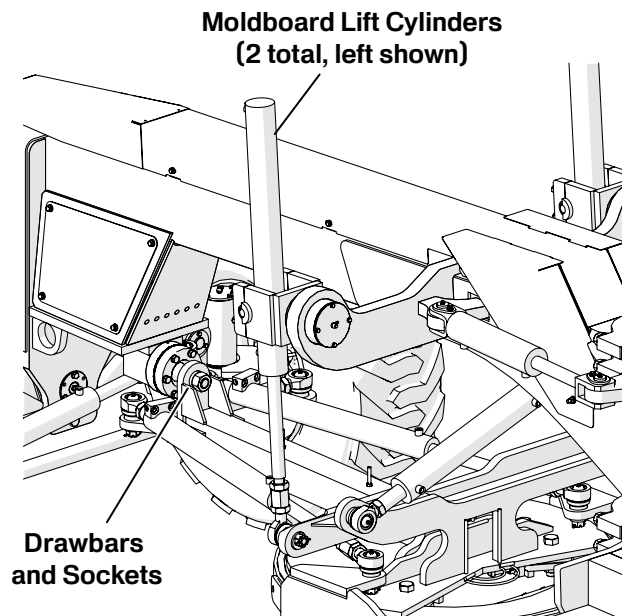
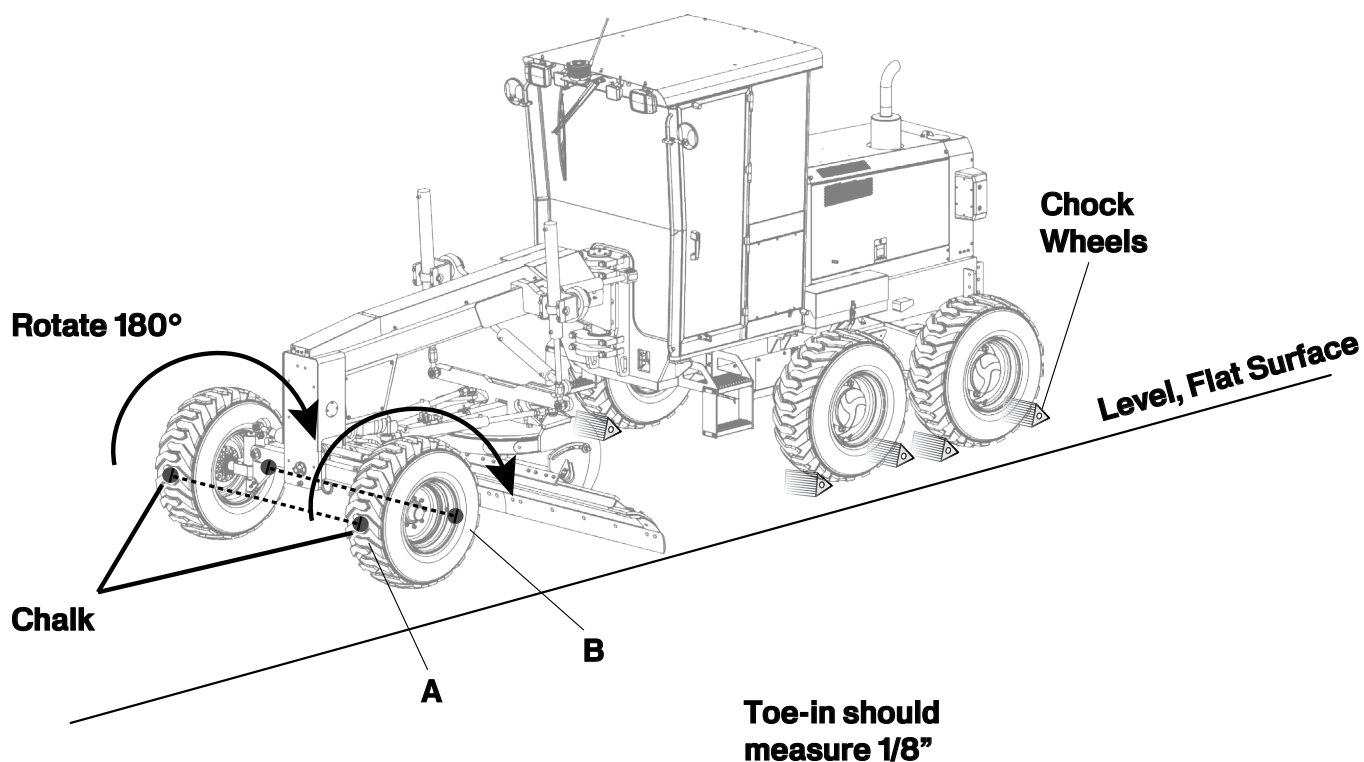
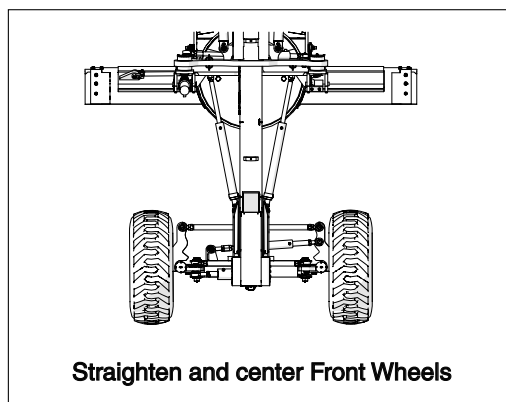


Figure 5-3. Moldboard Lift Cylinders

Checking and Adjusting Toe-In

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Park grader on a flat, even surface.
3. Pull the parking brake knob up (Figure 3-8) to engage the brake. (The knob is in the cab, next to the seat on the left-hand side.)
4. Straighten and center front wheels to vertical position.



5. Turn ignition switch key (**Figure 3-3**) counterclockwise to the OFF position.
6. Block rear wheels.
7. Use chalk to mark the center of the front tire tread of the front left and right tires.
8. Measure distance (A) between marks on the front of tires.
9. Use a jack to raise front wheels slightly.
10. Rotate wheels 180° so that the markings are now visible towards the rear of the grader.
11. Lower grader so that wheels rest on ground.
12. Measure the distance (B) between marks on rear of tires.
13. The difference between the measurements should be 1/8 inch (3.2 mm):
14. If the difference is more or less than 1/8 inch (3.2 mm):

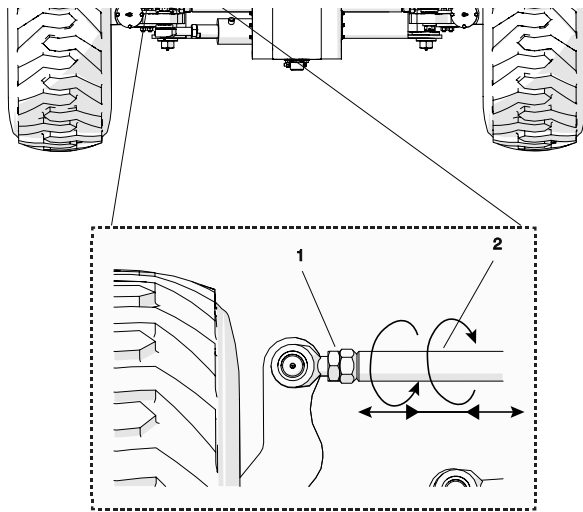


Figure 5-4. Loosen Tie Rod Jam Nuts

- Use a jack to raise front wheels slightly.
 - Loosen the tie rod jam nuts (1).
 - Turn the tie rod (2) center tube to adjust toe-in to 1/8 inch (3.2 mm).
 - Tighten jam nuts.
 - Lower grader so that wheels rest on ground.
15. Turn wheels completely left and right and check for binding or obstruction. Repair or adjust as necessary.

Checking Neutral Start System

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Pull parking brake knob up (**Figure 3-8**) to engage brake.
3. Place forward/neutral/reverse (FNR) lever (**Figure 3-7**) in FORWARD position.
4. Turn ignition switch key (**Figure 3-3**) clockwise to the START position. Starter must not crank engine. If starter cranks engine, release key and DO NOT operate grader.
5. Repeat test with forward/neutral/reverse (FNR) lever (**Figure 3-7**) in REVERSE position.

CAUTION Do not operate grader if starter cranks engine with forward/neutral/reverse (FNR) lever in any gear except neutral. See local dealer for neutral start system troubleshooting and repair.

6. Place forward/neutral/reverse (FNR) lever (**Figure 3-7**) in NEUTRAL.
7. Turn ignition switch key (**Figure 3-3**) clockwise to START position. Starter should crank engine.

BATTERY MAINTENANCE

WARNING Batteries contain sulfuric acid and produce explosive gases that can cause serious injury. Therefore, do not allow flames or sparks to come near the battery.

WARNING Always wear proper protective equipment when charging or working near a battery. In case of acid contact with skin or eyes, flush immediately with water for a minimum of 15 minutes and get prompt medical attention.

WARNING If acid is swallowed, get medical attention immediately.

WARNING When servicing batteries, always disconnect the negative (-) (ground) cable first and reconnect it last. Generally, if the negative cable is grounded during removal, sparks will not occur. If the positive cable is grounded during removal, sparks will occur and could ignite explosive gases.

NOTE: The electrical system is a negative ground system. Connect the positive (+) cables to the positive (+) posts of both batteries. Connect the ground (-) cables to the negative (-) posts of both batteries.

NOTE: When replacing the batteries, dispose of the old batteries properly in accordance with laws and regulations.

Master Disconnect Switch

NOTICE When servicing the electrical system or welding on the grader, always turn the master disconnect switch (**Figure 5-7**) to the OFF position, disconnecting the ground from the batteries, to prevent damage to the grader's electrical system.

1. Open engine access panel (**Figure 3-1,1**) located on left side of grader to locate master disconnect switch (**Figure 5-5**).

2. Turn master disconnect switch (**Figure 5-5**) counterclockwise to OFF position.
3. When maintenance is completed remember to return the master disconnect switch to ON position before operating the grader.



Figure 5-5. Master Disconnect

ALTERNATOR

The alternator supplies electrical current to charge the battery and power the electronic controls. The built-in regulator controls the voltage output.

If for any reason the wires must be disconnected from the alternator, mark them before removal so that they can be properly reconnected later.



Alternator

Figure 5-6. Alternator

NOTICE Follow the following precautions to prevent damage to the alternator and/or regulator:

- An alternator is never to be polarized. Never ground any alternator terminals or circuits.
- Always disconnect the battery before disconnecting or connecting the alternator.
- Never disconnect the alternator while it is operating.
- Be certain electrical wiring is properly connected before connecting the battery.

Cleaning and Tightening Battery Terminal Connections/Terminals

NOTICE Be certain that terminals and battery posts are thoroughly cleaned and that battery cable terminals are tight. Dirty or loose connections can create high electrical resistance and permit arcing, which will quickly burn and pit terminals and posts.

Keep the battery clean by cleaning excessive buildup.

To remove corrosion:

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Unhook battery box locks on the battery compartment and remove cover (**Figure 5-7**).

3. Disconnect battery clamps (**Figure 5-7**) starting with the grounded (black) clamp first.
4. Make certain vent caps are tightly closed to prevent solution from entering cells.
5. Remove terminal connections and wash with a stiff wire brush (or battery service tool) and either an ammonia solution or a solution consisting of 1/4 lb. (0.11 kg) baking soda added to one quart of warm water.
6. Clean terminals with solution and a stiff wire brush or battery service tool.
7. After cleaning, pour clean water over battery, connectors, and surrounding area to remove solution.
8. Install and tighten battery clamps (**Figure 5-7**), starting with positive (red) clamp first and grounded (black) clamp last.
9. Attach battery box cover (**Figure 5-7**) and hook battery box locks (**Figure 5-7**).

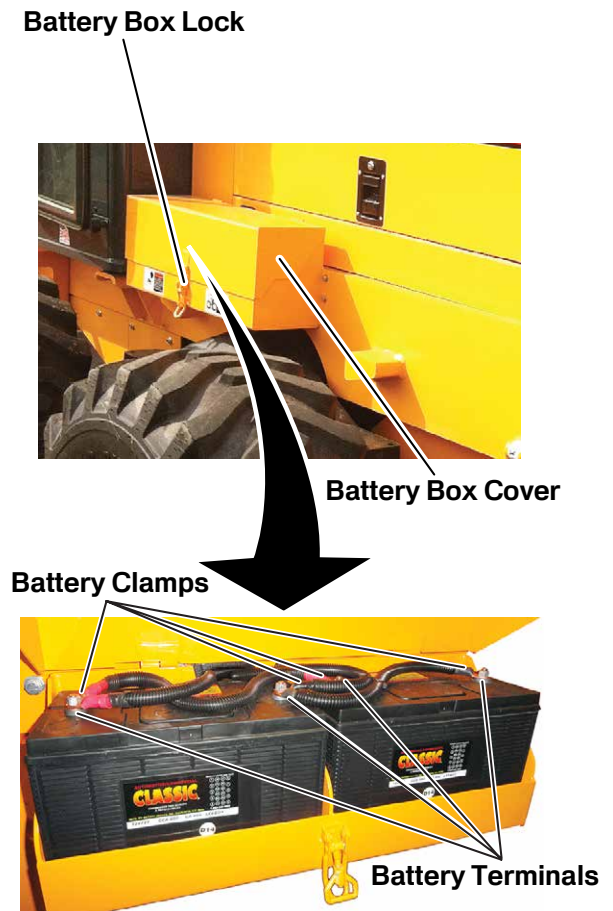


Figure 5-7. 12-Volt System

Checking Battery Electrolyte Level

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Unhook battery box locks and remove cover (Figure 5-7).

NOTE: If water is added to batteries during freezing weather the battery must be charged immediately to prevent freezing. Charge battery using a battery charger or by running the engine.

3. If using serviceable batteries, fill each cell to the specified range with distilled water. Do not overfill.
4. Check battery charge and charging rate.
5. Shut down grader by turning ignition switch key (Figure 3-3) counterclockwise to the OFF position.
6. Using a multimeter, check the battery charge by placing the positive (red) multimeter lead on the positive (+) battery terminal and the negative (black) multimeter lead on the grounded (-) battery terminal. With the multimeter set at the 12 VDC setting, the battery must show a charge of **AT LEAST 12 VOLTS**. If necessary, charge the battery or perform a load test.
7. With operator in the operator's seat, start the engine and check the battery charge level. The multimeter should read **at least 13.5 volts**. If multimeter does not indicate the minimum charge, check the grader charging system.

TIRE MAINTENANCE

⚠ DANGER Explosive separation of tire and rim parts can cause serious injury or death.

⚠ DANGER Never cut or weld on inflated tire/rim assembly. Heat from welding can cause an increase in pressure and may result in tire explosion.

NOTE: Use proper tire mounting equipment and experienced personnel for tire repair service. If equipment and qualified personnel are not available, contact a qualified repair service company.

NOTE: Carefully inspect tires and rim assemblies that have been run flat or severely under-inflated before inflating tire. The tire and rim may be damaged. Contact the local distributor or qualified repair service company to inspect the tire and rim.

NOTE: Use an accurate gauge to check tire pressure. Use a gauge with 1-PSI (0.07 bar, 6.9 kPa) graduations.

Filling Tire with Air

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Shut off air supply to air hose.
3. Attach air hose lock on air chuck to tire valve stem (Figure 5-8).



Wheel Lug Nuts (10)

Valve Stem

Figure 5-8. Rear Wheel



Figure 5-9. Front Wheel

4. Turn on air supply.

CAUTION Stand to one side of tire during inflation.

5. After proper inflation to 30-35 PSI, release air hose chuck.

CAUTION Inflate tire to proper pressure level. DO NOT over inflate.

6. Inspect tire for bulges, bubbles, cracks, and other damage. If damaged, deflate tire immediately.

DANGER A tire with bulges, bubbles, cracks, or other damage must be replaced immediately. Running a grader on damaged tires can lead to grader damage, severe injury, or even death.

Changing Tires

DANGER Explosive separation of a tire and rim parts can cause serious injury or death.

DANGER NEVER cut or weld on an inflated tire/rim assembly. Heat from welding can cause an increase in pressure and may result in tire explosion.

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Block grader wheels.

3. Loosen, but do not remove, the wheel lug nuts (**Figure 5-9**).
4. Raise grader.
5. Remove lug nuts (**Figure 5-9**) and tire.
6. Install replacement tire on the grader.
7. Tighten lug nuts (**Figure 5-9**) alternately in a star pattern 360 ft lbs. (488 N•m).
8. Lower grader.
9. Check tire pressure. Tires should be filled to a pressure of 30-35 PSI following the steps in the section **Filling A Tire With Air** (page 5-16).

BRAKE AND FRONT END MAINTENANCE

Cleaning, Packing, and Adjusting the Front Wheel Bearings

NOTE: Refer to the Illustrated Parts List (IPL) [7-18 or 7-158 for all wheel drive models] for a full illustration of front axle assembly.

1. Refer to **Preparing Grader for Maintenance** on page 5-8 and park grader.
2. Block grader wheels.
3. Loosen, but do not remove, the wheel lug nuts (**Figure 5-9**).
4. Raise grader.
5. Remove the grease dust cap from the center of the wheel hub.
6. Remove cotter pin from slotted wheel nut.
7. Remove wheel nuts.
8. Remove flat washers and outer cone bearing.
9. Pull the wheel hub with inner bearing and seal off the axle spindle assembly.
10. Remove the seal from the hub.
11. Remove the inner bearing from the hub.
12. Using solvent, thoroughly clean the wheel hub, bearings, cap, and mounting hardware.

OIL PRESSURE SPECIFICATIONS	
Low Idle (minimum allowed)	10 psi (69 kPa)
At Rated (minimum allowed)	30 psi (207 kPa)
Oil Regulating Valve-Opening Pressure Range	65 psi (448 kPa) to 75 psi (517 kPa)
Oil Filter Differential Pressure To Open Bypass	50 psi (345 kPa)
Lubricating Oil Filter Capacity	1 qt (0.95 liters)

Oil Capacity of Standard Engine (four-cylinder) 4.5 liters (275 C.I.D.) Engines (Suspended Oil Pan)	
Oil Type	15W-40
Pan Only	11.6 qt (11 liters)
Oil Filter Capacity	1.0 qt (0.9 liters) Filter Capacity
Total System	13.7 qt (13 liters)
High To Low (on dipstick)	2.0 qt (1.9 liters)

⚠ WARNING Wear eye protection and chemical resistant gloves when using solvent for cleaning purposes. Some solvents can cause skin irritation and eye damage.

13. Dry using compressed air.

⚠ WARNING Wear eye protection when using compressed air for drying or cleaning components.

⚠ WARNING Never point an air nozzle at another individual.

⚠ WARNING Use a safety reduction valve to reduce air pressure to a safe level. Compressed air can cause serious personal injury if misused.

14. Inspect the wheel bearings and cups for pitting, scoring, wear, and damage. Inspect bearing cage to ensure it is not loose or damaged. Replace as necessary.
15. Using clean wheel bearing grease, pack the bearings.
16. Apply wheel bearing grease to the inner hub and cup areas.
17. Place inner bearing in hub.
18. Place seal in hub.
19. Install wheel hub with inner bearing and seal on the axle spindle assembly.
20. Place the outer bearing in the outer cup.

21. Install outer cup on wheel hub.
22. Secure bearing with flat washer and slotted mounting nut.
23. Tighten mounting nut while rotating wheel assembly. When wheel becomes hard to turn, back nut off 1/6 of a turn.
24. Install cotter pin in mounting nut. Replace with new matching cotter pin if necessary.
25. Tighten the wheel lug nuts alternately in a star pattern 360 ft. lbs. (488 N•m).
26. Inflate tire to 40 PSI.
27. Install bearing cap.
28. Lower grader
29. Remove blocking.

ENGINE MAINTENANCE

General Information

The following engine maintenance information will cover the general engine maintenance procedures most often required.

For additional detailed engine maintenance information, see the current Cummins diesel engine Operation and Maintenance Manual.

Checking the Engine Lubrication Oil Level

NOTE: When reading the dipstick, engine lubrication oil level must be above the “ADD” mark, but not above the “FULL” mark.

⚠ WARNING Stop engine and allow time for engine to cool before checking engine lubrication oil level. Leaving engine running can cause hot oil to splash, causing serious injury.

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Grader must be parked on a level surface to accurately check engine oil level.
3. Open the engine panel. (Figure ##)
4. Clean the area around the engine lubrication oil dipstick (**Figure 5-10**) before removing dipstick from the engine.



Engine Lubrication Oil Dipstick

Figure 5-10. Engine Lubrication Oil Dipstick

5. Wait five minutes after engine shutdown.

6. Remove engine lubrication oil dipstick.
7. Wipe dipstick with a clean rag and reinstall.
8. Remove dipstick and ensure that oil level falls between the ADD and FULL markings.
9. If needed, remove the engine oil filler cap (**Figure 5-11**) and add oil.



Diesel Fuel Filler Cap

Engine Oil Filler Cap

Figure 5-11. Engine Fill Caps Location

10. Ensure that dipstick and oil filler cap are in place before running grader.

Changing Engine Oil and Replacing Filter

Engine lubrication oil must be changed according to the interval given in the Cummins diesel engine Operation and Maintenance Manual for this grader's engine.

NOTE: Engine lubrication oil color cannot be used as an indicator for the need of an engine lubrication oil change. The use of “analysis service” is the only time not following the required engine lubrication oil change schedule is allowed.

NOTICE Do not change engine lubrication oil with engine running. Serious engine damage or failure will occur.

NOTICE Clean the area around engine lubrication oil dipstick and oil filler cap before removing the dipstick or oil filler cap.

Refer to the engine manufacturer's operation and maintenance manual for additional information on engine service. Use manufacturer's recommendations for engine oil and filter replacement.

NOTE: Fuel sulfur content should not exceed 0.5 percent. Refer to Cummins' Operation and Maintenance Manual if sulfur content exceeds 0.5 percent.

1. BEFORE leaving operator's seat, refer to **Preparing Grader for Maintenance** on page 5-8 and park the grader.
2. Ensure the engine runs during preparation long enough to warm oil to 140° F (60° C).
3. Place a container with a capacity of at least 15 quarts (20 liters), sufficient to hold the drained oil, directly under the engine lubrication oil drain plug.
4. Remove the engine oil pan drain plug (**Figure 5-12**) located underneath the grader.
5. Clean engine oil pan drain plug threading and threading on the grader where plug attaches.
6. Drain oil into a suitable container.
7. Dispose of oil properly in accordance with laws and regulations.



Figure 5-12. Oil Pan Drain Plug

8. Reinstall engine oil pan drain plug.
9. Clean the area surrounding filter and filter head.
10. Using an oil filter wrench, turn filter (**Figure 5-13**) counterclockwise to remove.



Engine Oil Filter

Figure 5-13. Engine Oil Filter

11. Clean mounting surface.
12. Coat gasket surface of filter with clean oil. (15W-40)
13. Fill replacement filter with clean engine oil.
14. Apply thin layer of lubricating oil to gasket sealing surface.
15. Install new filter. Turn filter clockwise until gasket contacts mounting surface.
16. Tighten filter clockwise 3/4 to 1 additional turn.
17. Remove engine oil filler cap.
18. Fill engine with oil, 13.7 qt (12.96 L) with filter
19. Re-install filler cap.

NOTE: Before starting engine after a filter change, disconnect fuel shut-off solenoid wire and crank engine for 10 seconds to fill filter element and pre-lube turbocharger if equipped.

20. Turn ignition switch key (**Figure 3-3**) clockwise to the ON position. If maintenance must be performed with engine running, do not leave grader unattended.



WARNING Monitor engine oil pressure gauge.

If oil pressure does not register within 15 seconds, turn off motor grader to avoid damage. Check for proper oil level in the pan.

21. Run engine at slow idle.
22. Check filter for leaks. Tighten or replace to stop leaks.

23. Shut down grader by turning ignition switch key **(Figure 3-2,9)** counterclockwise to the OFF position.
24. Wait about 5 minutes to allow the oil to settle.
25. Use engine oil dipstick to check oil level.
26. Add oil until oil level reaches the high mark on the dipstick but do not fill over the high mark. .

Checking Engine Air Cleaner Assembly

NOTE: Do not open the air cleaner assembly unless the air filter restriction indicator light (inside cab) comes on as shown in Figure 3-3 (#4); or engine operation indicates possible air filter restriction.

Typically, the air filter element requires changing when the air filter restriction indicator light (inside cab) turns red as shown in **Figure 3-4 (#4)**.

Replace the air filter element, if necessary.

Replacing Engine Air Filter Elements

NOTE: Do not open air cleaner assembly unless air filter restriction indicator light comes on or, engine operation indicates possible air filter restriction.

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Allow engine to cool.
3. Thoroughly clean air cleaner assembly **(Figure 5-15)**.
4. Access the right side of the engine cover.
5. Loosen the air filter access clamp on the air cleaner cover **(Figure 5-14)** and turn the cover to the left to unlock.

Air Filter Access Clamp



Air Cleaner Cover

Figure 5-14. Air Cleaner Assembly

6. Remove the filter element by sliding it out of the canister. **(Figure 5-15)**.

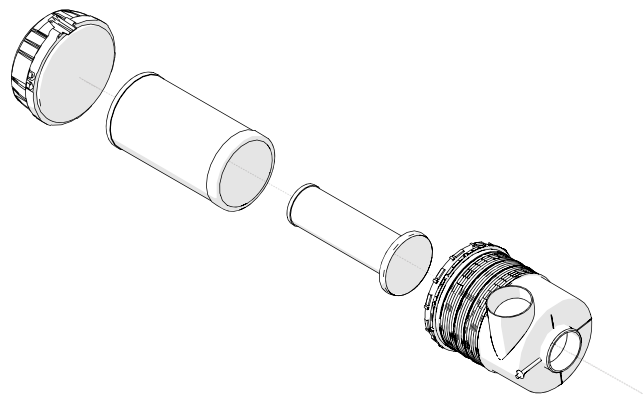


Figure 5-15. Air Filter Element

1 - Air Filter Element

7. Clean the inside of the air filter element canister using a dry lint-free cloth.
8. Inspect hose clamps and tighten as necessary.
9. Install new air filter element with the same part number as the old filter. (For part number, see the IPL of this manual.)
10. Install air cleaner cover.
11. Lock and secure cover with air filter access clamp **(Figure 5-14)**.

TRANSMISSION AND TRANSFER CASE OIL

Checking Transfer Case Oil Level

Remove the transfer case fill plug (**Figure 5-15,1**). The transfer case is full when oil runs from the fill plug opening. Add oil as necessary.

Draining, Flushing, and Filling Transfer Case

1. Refer to **Preparing Grader for Maintenance on page 5-24** and park the grader.
2. Allow the transfer case to cool.
3. Remove the transfer case oil drain plug (**Figure 5-16**).
4. Drain oil into a suitable container and dispose of oil properly.

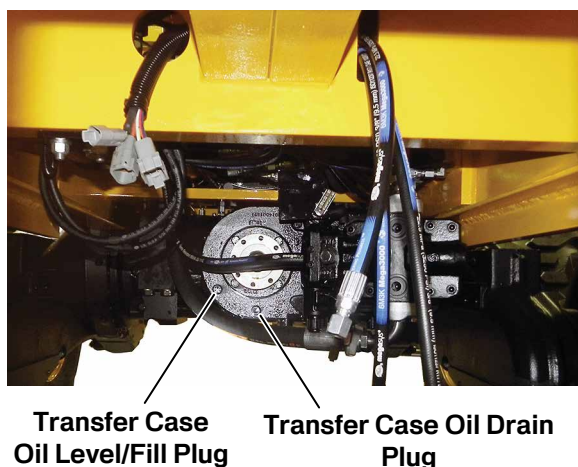


Figure 5-16. Transfer Case

WARNING Wear eye protection and chemical resistant gloves when using solvents for cleaning purposes. Some solvents can cause skin irritation and eye damage.

5. Flush the transfer case with solvent and drain completely.
6. Install drain plug and fill with oil until oil flows from the oil level/fill plug opening (**Figure 5-16**).
7. Install oil level plug.
8. Start engine and check operation.

Drive Axle Information

See service manual for information on inspection, adjustments, lubrication, towing, and torque specifications. Use drive axle manufacturer's recommendations for any service related to the drive axle.

RADIATOR AND COOLANT SYSTEM

Checking Radiator and Coolant Level

The motor grader is filled with a 50/50 mixture of antifreeze and water at the factory with protection to -25°F (-32°C). Some geographical areas may require special antifreeze or coolant system procedures. Contact the local authorized dealer for additional information.

CAUTION Check the coolant freeze protection level before the start of cold weather. Check with the local authorized dealer for information regarding freeze protection.

WARNING Hot engine coolant can cause serious personal injury. Shut off engine before servicing. Remove radiator filler cap only when cool enough to touch with bare hands. Slowly loosen filler cap to relieve pressure before removing cap completely.

To check the radiator coolant level:

1. Refer to **Preparing Grader for Maintenance on page 5-24** and park the grader.
2. Ensure that grader has been shut down long enough for the coolant temperature fall below 120° F (50° C).
3. Slowly loosen radiator cap to relieve pressure.
4. Remove cap.
5. Visually check coolant level in radiator.

DANGER Coolant is extremely poisonous and deadly if ingested. Handle with care and wash hands after contact.



Figure 5-17. Radiator Cap

6. Add coolant to the radiator, as needed to ensure that coolant level remains between low and high indicator lines.
7. Replace radiator cap.

Draining, Flushing, and Filling Engine Coolant System

NOTE: See the engine manufacturer's operation and maintenance manual for information on coolant specifications, coolant levels, as well as draining and replacing engine coolant. Use engine manufacturer's recommendations for coolant service.

The motor grader is filled with a 50/50 mixture of antifreeze and water at the factory with protection to -25°F (-32°C). Some geographical areas may require special antifreeze or coolant system procedures. Contact the local authorized dealer for additional information.

Replacing Radiator/Oil Cooler Assembly

NOTE: Allow engine to cool completely.

NOTE: Refer to Figure 7-52 for illustrated parts list.

Removal

1. Remove engine and starter access panels, hood, and grill (**Figure 5-18**).



Figure 5-18. Radiator Grill and Hood

1 - Radiator Grill

2 - Hood

2. Drain the engine coolant system. Dispose of coolant properly.

NOTE: Dispose of engine coolant in an environmentally safe manner. Contact local recycling centers or environmental officials for coolant disposal instructions.

3. Tag and disconnect charge air hoses and hydraulic hoses from radiator. Immediately plug hoses to prevent contamination of the hydraulic system.
4. Thoroughly clean the radiator and oil cooler assembly especially the area surrounding hydraulic hoses and fittings.
5. Remove the upper and lower radiator hoses (**Figure 7-52**).
6. Disconnect the radiator overflow hose (**Figure 7-52**).
7. While supporting the radiator, remove the radiator mounting bolts and washers (**Figure 7-58**).
8. Remove the radiator/oil cooler.

Installation

1. Position the replacement radiator/oil cooler and secure with mounting bolts and washers.
2. Install overflow hose and secure with clamp.
3. Install upper and lower radiator hoses and secure with hose clamps.
4. Using tags created during removal, connect charge air hoses and hydraulic hoses to radiator.
5. Fill radiator with coolant mixture consisting of at least 50/50 mix of anti-freeze and water.
6. Inspect and test radiator cap (**Figure 5-19**). Replace if necessary.

Radiator Cap



Figure 5-19. Radiator Cap

1 - Radiator Cap

7. Install grill, hood, and engine access panels.
8. Start engine and check operation. Repair leaks as necessary.

FUEL SYSTEM

Draining Fuel Tank

WARNING Diesel fuel is highly flammable. Keep all sparks and flames away when draining fuel. Do not smoke while filling fuel tank or working on fuel system.

To drain the fuel tank:

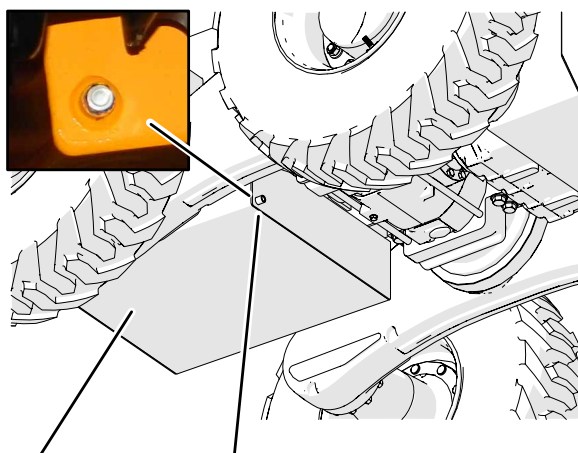
1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Remove fuel tank filler cap (**Figure 5-20**).



Diesel Fuel Tank Filler Cap

Figure 5-20. Diesel Fuel Tank Filler Cap

3. Remove fuel tank drain plug (**Figure 5-21**).



Fuel Tank Fuel Tank Drain Plug

Figure 5-21. Fuel Tank Drain Plug Location

4. Allow water and sediment to drain from fuel tank into a suitable container. Dispose of waste properly according to local laws and regulations.
5. Reinstall drain plug (**Figure 5-21**).

Changing Engine Fuel Filter

Refer to the engine manufacturer's operation and maintenance manual for additional information on engine service. Use manufacturer's recommendations for engine fuel filter replacement and bleeding the fuel system.

To change the engine fuel filter:

1. Refer to “**Preparing Grader for Maintenance**” on **page 5-6** and park the grader.
2. Allow the engine to cool completely.

⚠ WARNING Diesel fuel is highly explosive. Do not expose fuel to sparks or flames. Do not smoke while performing maintenance on the engine fuel system.

3. Open the engine access panel door (**Figure 3-1,1**) located on the right hand side of grader.
4. Thoroughly clean and dry the area surrounding the fuel filter.



Priming Plunger

Fuel Filter

Figure 5-22. Fuel Filter Location

5. Using a fuel filter wrench, turn the fuel filter (**Figure 5-22**) counterclockwise to remove.
6. Clean the mounting surface and remove any loose filter seals in the filter head-mounting surface.

7. Lightly lubricate the fuel filter seal with clean lubricating oil.
8. Turn the filter clockwise until seal contacts filter head. Tighten filter 1/2 to 3/4 additional turn.

⚠ CAUTION Do not overtighten filter. Overtightening can cause damage to filter.

9. Press the priming plunger (**Figure 5-22**) until plunger becomes difficult to press to prime the system.
10. Start the engine and check for any fuel leaks.

⚠ WARNING Stop the engine immediately if any fuel leakage is noted. Do not start the engine until the leakage problem is corrected.

Checking and Cleaning Fuel Filler Cap

⚠ WARNING Wear eye protection and chemical resistant gloves when using solvent for cleaning purposes. Some solvents can cause skin irritation and eye damage.

⚠ WARNING Wear eye protection when using compressed air for drying or cleaning components. Never point the nozzle at another individual. Use a safety reduction valve to reduce air pressure to a safe level. Compressed air can cause serious personal injury if misused.



Diesel Fuel Tank Filler Cap

Figure 5-23. Diesel Fuel Tank Filler Cap

To check and clean the fuel filler cap:

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Open engine access panel door (**Figure 3-1,1**) located on right side of grader.
3. Remove diesel fuel tank filler cap (**Figure 5-23**) and inspect for damage.
4. Check cap for dirt and clogging.
5. Using solvent, clean diesel fuel tank filler cap thoroughly and dry with compressed air.
6. Check diesel fuel filler cap for free air flow. Replace as necessary.
7. Install diesel fuel tank filler cap.
8. Close the engine access panel door.

HYDRAULIC SYSTEM

Checking Hydraulic Oil Level

NOTE: With all attachments at ground level, roll the moldboard back. Front wheels must be straight up and grader-aligned front to rear.

1. Refer to **Preparing Grader for Maintenance** on page 5-6 and park grader.
2. Make sure all cylinders are retracted, so that oil flows to tank, ensuring an accurate reading.
3. Wait ten minutes after engine has been shut down before draining hydraulic oil.

4. Oil level is determined by sight gauge (**Figure 4-26**) Hydraulic oil level should be added if the oil level falls below the fill line. Never fill above the black fill line (**Figure 5-26**).

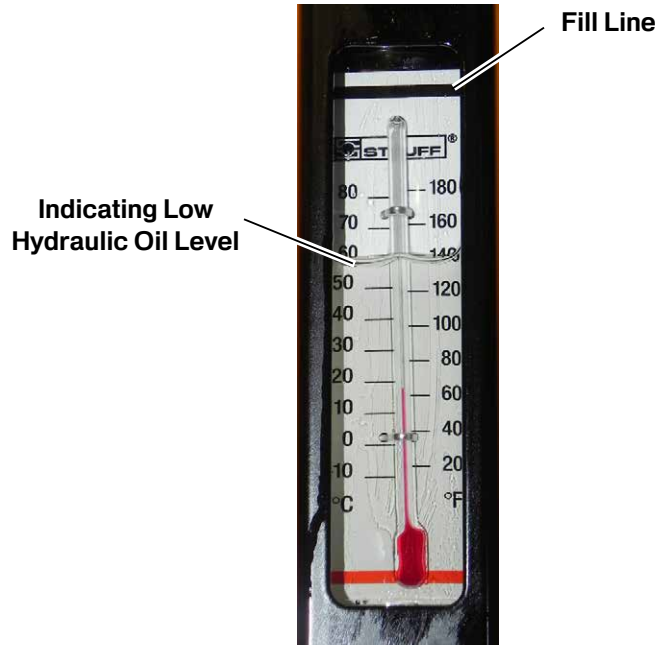


Figure 5-24. Hydraulic Oil Level Sight Gauge

5. If level is low, remove hydraulic oil filler cap (**Figure 5-23**) to add hydraulic oil to the tank. (see **Fuel and Lubricant Specifications** on page 5-27) for hydraulic oil requirements.)



Hydraulic Oil Filler Cap

Figure 5-25. Hydraulic Oil Filler Cap

6. Fill tank to black fill line on sight gauge (**Figure 5-25,1**).
7. **DO NOT OVERFILL THE TANK.** Leave approximately 1 in. (25 mm) of space for hot oil to expand.

8. Screw the hydraulic oil filler cap back on the hydraulic tank.
9. Remove any spilled oil with a clean cloth.

Changing Hydraulic Oil Filter

⚠ WARNING Burn Injury Hazard! Hot hydraulic oil can burn upon contact with the skin. Change hydraulic charge filters while system is warm, not hot. Avoid contact with hot hydraulic oil. Failure to obey this warning could result in serious injury.

1. Refer to **Preparing Grader for Maintenance on page 5-26** and park grader.
2. Allow the engine to cool completely.
3. Open the engine access panel (right and left) and locate the supply lines /supply line gate valves (**Figure 5-28**).



Supply Line

Figure 5-26. Supply Line (right only)

NOTICE Thoroughly clean grader before replacing or refilling any hydraulic components. Always keep in mind the need for cleanliness when working on hydraulic equipment.

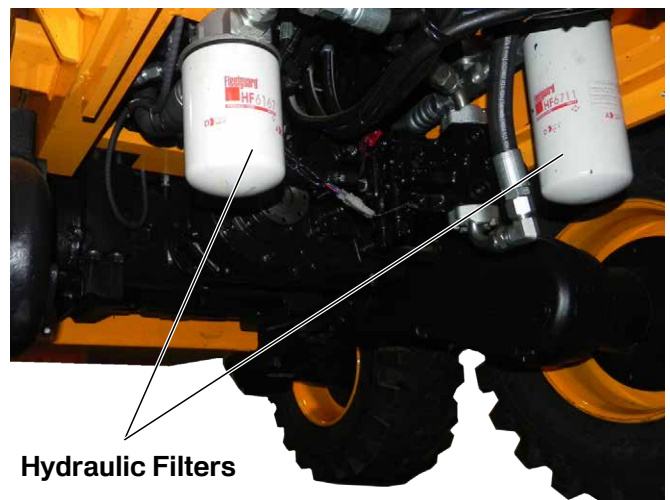
4. Close the hydraulic oil reservoir supply line gate valve by turning valve handles (**Figure 5-29**) counterclockwise.



Supply Line Gate Valve Handle

Figure 5-27. Supply Line Gate Valve (right only)

5. The two hydraulic filters are located underneath the front-side of the Rear Axle.



Hydraulic Filters

Figure 5-28. Hydraulic Filters

6. Thoroughly clean the hydraulic filters and filter heads.

NOTE: The “suction” filter (P/N 115570) is the larger of the two hydraulic filters; the fluid comes from the differential housing to this filter. The “return” filter (P/N 116158) is part of the main return for the hydraulic system; after passing this filter, the fluid returns back to the reservoir.

7. Turn the filter(s) counterclockwise to remove.
8. Clean the mounting surface. If the seal comes loose, remove it from the filter head mounting surface before installing the new filter.
9. Install new filter(s) by turning it clockwise until the seal contacts the mounting surface.
10. Tighten the filter 1/2 to 3/4 additional turn.
11. Open hydraulic reservoir supply line gate valves (**Figure 5-29,1**) by turning valve handles clockwise.

NOTICE

EQUIPMENT DAMAGE HAZARD!

OPEN hydraulic reservoir supply line gate valves BEFORE starting engine to prevent pump and drive motor damage or failure.

12. Start engine and check for leaks. Tighten or replace filter as necessary.

Checking the Hydraulic Reservoir Filler Cap

WARNING Eye protection and chemical resistant gloves are needed when using solvents for cleaning purposes. Some solvents can cause skin irritation and damage to eyes.

WARNING Wear eye protection when using compressed air to dry or clean components. Never point the nozzle at another individual. Use a safety reduction valve to reduce air pressure. Compressed air can cause serious personal injury if misused.

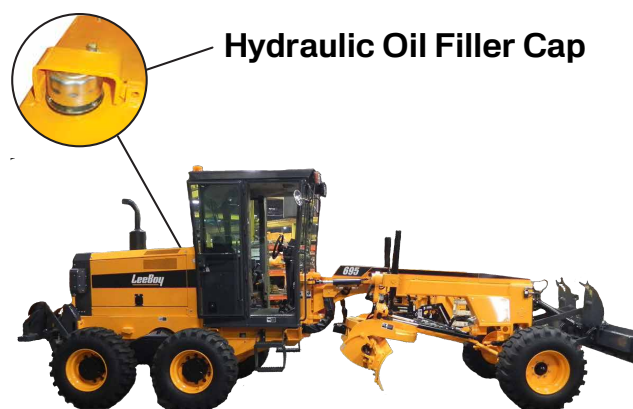


Figure 5-29. Hydraulic Oil Reservoir Filler Cap



Figure 5-30. Inspect Cap

NOTE: If needed, use a solvent to clean hydraulic oil reservoir filler cap and dry with compressed air.

13. **Inspect cap for damage, dirt, and clogging.**
14. Remove hydraulic oil reservoir filler cap (**Figure 5-29,1**) by turning counterclockwise.

15. The 695 has a vented hydraulic oil reservoir filler cap. Check to ensure free air flow. Replace as necessary.

NOTE: Clogged vents on the hydraulic filler cap can lead to system damage.

16. Refasten hydraulic oil reservoir filler cap (Figure 5-29,1) by turning clockwise.

Draining, Flushing, and Filling Hydraulic Oil Reservoir

1. Refer to **Preparing Grader for Maintenance on page 5-27** and park grader.

NOTICE Thoroughly clean the grader before replacing or refilling any hydraulic components. Always keep in mind the need for cleanliness when working on hydraulic equipment.

2. Close the hydraulic tank supply line gate valves by turning valve handles (Figure 5-30,1) counterclockwise.
3. Disconnect the suction line hose at the tee fitting.
4. Cap the tee fitting to prevent contamination (Figure 5-31).

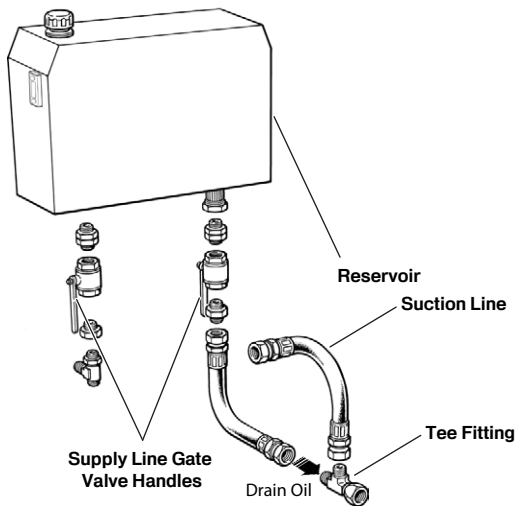


Figure 5-31. Reservoir and Fittings

5. Place a suitable 35 gallon (132 L) container beneath the open end of the suction hose.
6. Turn the suction line cut-off valves to the OPEN position (handle vertical) and drain oil into container.

NOTICE

EQUIPMENT DAMAGE HAZARD!

OPEN hydraulic reservoir supply line gate valves BEFORE starting engine to prevent pump and drive motor damage or failure.

7. After all oil has drained, remove suction hose, cut-off valve, and suction strainer assembly from hydraulic oil tank.
8. Clean suction strainer and inspect for serviceability.
9. Install suction hose, cut-off valve, and suction strainer assembly onto the hydraulic oil tank.
10. Ensure that cut-off valve is in the open position.
11. Connect the suction line hose to the tee fitting.
12. Fill the hydraulic oil tank with 5W20 AWAT OIL.
13. Hydraulic oil capacity is 21 gal (79.49 L).

NOTICE

EQUIPMENT DAMAGE HAZARD!

OPEN hydraulic reservoir supply line gate valves BEFORE starting engine to prevent pump and drive motor damage or failure.

14. Reinstall hydraulic reservoir fill cap.
15. Start the engine when safe to do so.
16. Operate hydraulic cylinders through their stroke travel a couple of times.
17. Shut down the engine.
18. Top off with fresh oil if required.
19. Check for leaks and fix any leaks found.
20. Dispose of oil properly.
21. Start engine and operate hydraulic control levers several times.

REAR DRIVE HOUSING

Checking Rear Axle Oil Level

1. Refer to **Preparing Grader for Maintenance** on page <?> and park grader.
2. Remove differential fill plug (**Figure 5-32,1**). Oil level is correct if oil runs from oil level plug (**Figure 5-32,2**). Add oil as needed.



Differential Oil
Fill Plug

Differential Oil
Level Plug

Figure 5-32. Rear Drive Housing

ELECTRICAL SYSTEM

WARNING When servicing the electrical system, always remove the ground cable from the battery first, followed by the positive cable. Generally, if the negative cable is grounded during removal, sparks will not occur. If the positive is grounded during removal, sparks will occur and could ignite explosive gases.

When batteries are connected, follow these rules:

- Disconnect negative (-) battery cable when working on or near the alternator.
- Do not attempt to polarize alternator.
- Make sure alternator wires are correctly connected before connecting battery terminals.
- Do not ground alternator output terminal.
- Do not disconnect or connect alternator wires while batteries are connected or while alternator is operating.
- Connect batteries or booster battery in the correct polarity: positive (+) to positive (+), negative (-) to negative (-).

- Do not disconnect batteries when engine is running and alternator is charging.
- Disconnect battery cables before connecting battery charger to batteries. Charge batteries separately.

Replacing Batteries

Removal

WARNING Batteries create explosive gases when charging. Do not expose these gases to sparks or open flame during maintenance. Always perform battery service in a well-ventilated area or outside. Serious injury can occur from exploding batteries.

Battery Box Lock



Battery Box Cover

Positive (+) Cables

Negative (-) Cables



Negative (-)
Terminals

Positive (+) Terminals

Figure 5-33. 12-Volt System

1. Refer to **Preparing Grader for Maintenance** on page 5-27 and park grader.

2. Turn master disconnect to OFF position.
3. Unhook battery box lock (**Figure 5-34**) on the battery compartment and remove cover (**Figure 5-34**).

⚠ WARNING When servicing batteries, always remove the ground (black) cable first followed by the positive (red) cable. Generally, if the negative cable is grounded during removal, sparks will not occur. If the positive cable is grounded during removal, sparks will occur and could ignite explosive gases.

4. Remove the ground (-) (black) cable (**Figure 5-34**) from the negative (-) battery terminal.
5. Remove the positive (+) (red) cable from the positive (+) battery terminal.
6. Inspect the batteries for cracks, wear, and damage that could result in leaks.
7. Carefully remove the batteries from the battery plate. Note battery position during removal.
8. Make sure the battery cells are sealed.
9. Clean the batteries, battery tray, cables, and brackets with baking soda and warm water.

⚠ WARNING Do not dry batteries using compressed air. Allow the batteries and surrounding areas to air dry. Battery acid can cause severe injury if blown on the face or other areas of the body. If injury occurs, seek medical attention immediately. Flush eyes and skin for 30 minutes with clean fresh water.

10. Allow to air dry.

Installation

1. Position the batteries properly in the battery tray.

⚠ WARNING When installing batteries, always install the positive cable first followed by the negative cable. Reversed polarity can damage the electrical system.

2. Install positive (+) (red) battery cables (**Figure 5-34,4**) to positive (+) battery terminals.
3. Install negative (-) (black) battery cables to negative (-) battery terminals.
4. Attach battery box cover.
5. Fasten battery box locks.
6. Turn master disconnect switch to ON position.

Fuses And Relays

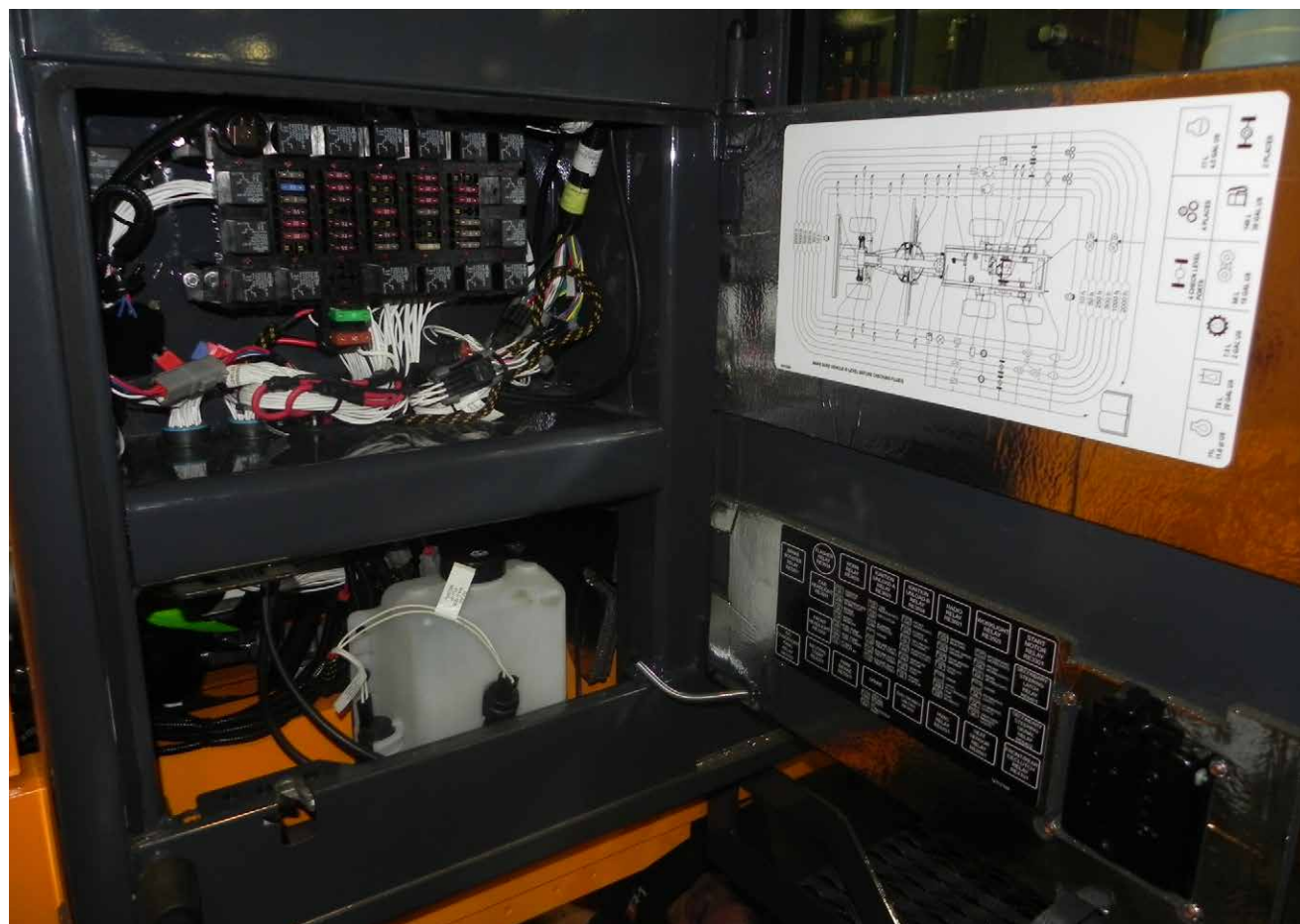
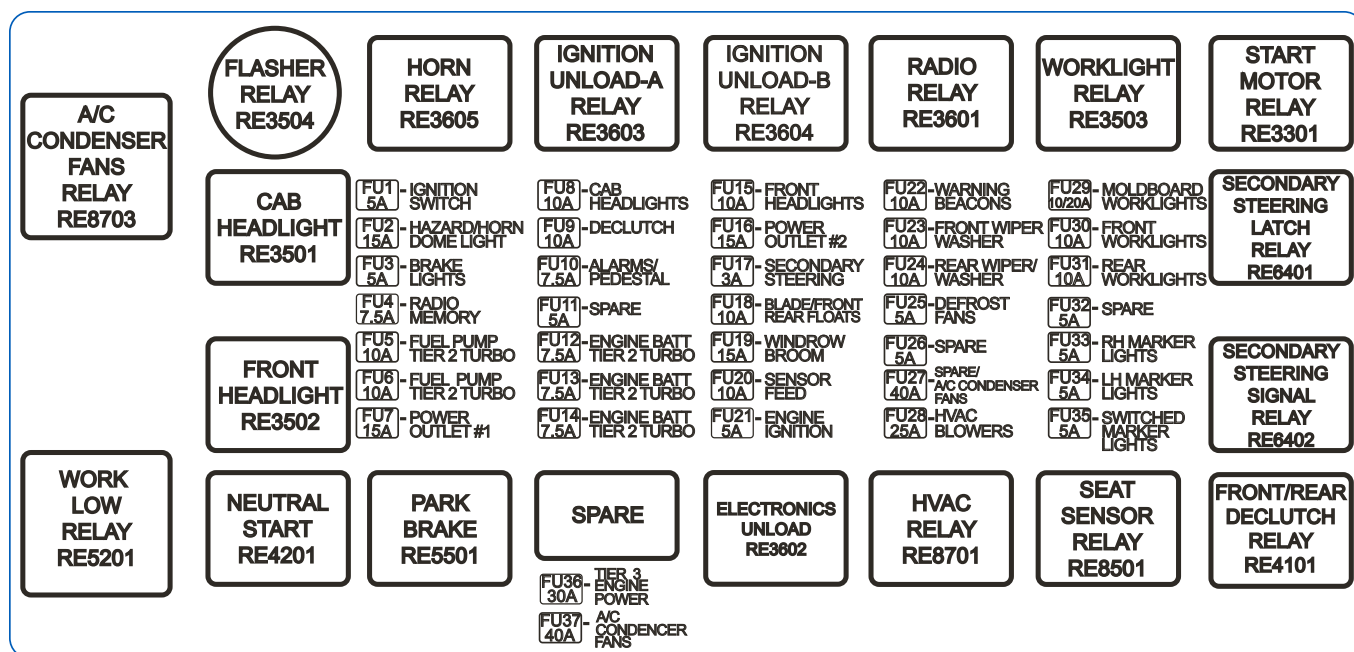
The fuse block on the right side of the machine. Fuses are blade-type and can be identified using the color codes listed in (**Table 5-2**). Fuse and relay locations can be identified by using Table 5 - ##.

⚠ CAUTION New replacement fuse amperage must match old fuse amperage. Amperage must be correct to prevent damage from system overload.

Table 5-7. Blade Type Fuse Color Codes

AMPERAGE RATING	COLOR
1	Black
3	Violet
4	Pink
5	Tan
7 1/2	Brown
10	Red
15	Light blue
20	Yellow
25	Natural (White)
30	Light Green

Figure 5-24. Fuse Block Schematic



COMPONENT REPLACEMENT PROCEDURES

General Information

This section provides instructions for replacing motor grader components during maintenance. The following instructions can be used with the illustrations in the (IPL) illustrated Part List .

NOTE: Make sure the motor grader is parked correctly before performing the replacement procedures. Refer to instructions in “Preparing Grader for Maintenance” on page 5-6.

Replacing Scarifier Tooth Shank

Removal

WARNING Wear eye protection when using a hammer on metal structures to prevent damage from flying metallic objects. Flying metallic objects can cause serious eye injuries.

1. Refer to **Preparing Grader for Maintenance** on page 5-27 and park grader.
2. Raise and support the rear scarifier frame (**Figure 5-35**).



Rear Scarifier Support

Figure 5-34. Rear Scarifier

3. Use a hammer and drift to force the pin forward and out of the shank. (**Figure 5-36**)

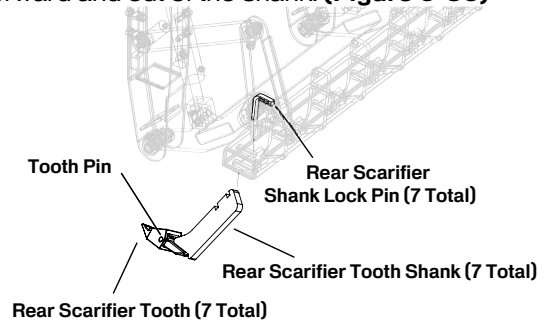


Figure 5-35. Rear Scarifier Tooth

4. Remove the tooth shank from the support.

Installation

1. Refer to **Preparing Grader for Maintenance** on page 5-27 and park grader.
2. Ensure that pin is oriented so that “BACK” engraving is on the opposite side of the slot from the cutting edge of the tooth.
3. While supporting the tooth shank (**Figure 5-36**), use a hammer to drive the pin into the new tooth and shank.
1. Position the new tooth shank in the rear scarifier support.
2. Secure with shank lock pin.

Replacing Scarifier Tooth

Removal

1. Raise and support the scarifier frame (**Figure 5-35**).

WARNING Wear eye protection when using a hammer on metal structures to prevent damage from flying metallic objects. Flying metallic objects can cause serious eye injuries.

2. Refer to **Replacing Scarifier Tooth Shank** and remove the scarifier tooth shank from the scarifier support (**Figure 5-36**).
3. While supporting the scarifier tooth shank, drive the scarifier tooth from the scarifier tooth shank (**Figure 5-36**).

Installation

1. While supporting the scarifier tooth shank, drive the new scarifier tooth on the scarifier tooth shank (**Figure 5-36**).
2. Refer to **Replacing Scarifier Tooth Shank** and install the scarifier tooth shank in the scarifier support (**Figure 5-36**).

Replacing Articulate Cylinders

Removal

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Thoroughly clean the articulate cylinder (**Figure 5-37**), especially areas surrounding the hydraulic hoses and fittings.
3. Tag hydraulic hoses and disconnect them from the articulate cylinder.
4. Immediately plug the hoses and cylinder to prevent contamination of the hydraulic system.
5. While supporting the articulate cylinder, remove the bolts and washers from both ends of the cylinder (**Figure 5-37**).
6. Remove/slide out the articulate cylinder.
7. Inspect the hydraulic fittings. Replace if necessary. Remove fittings for reuse on replacement articulate cylinder.

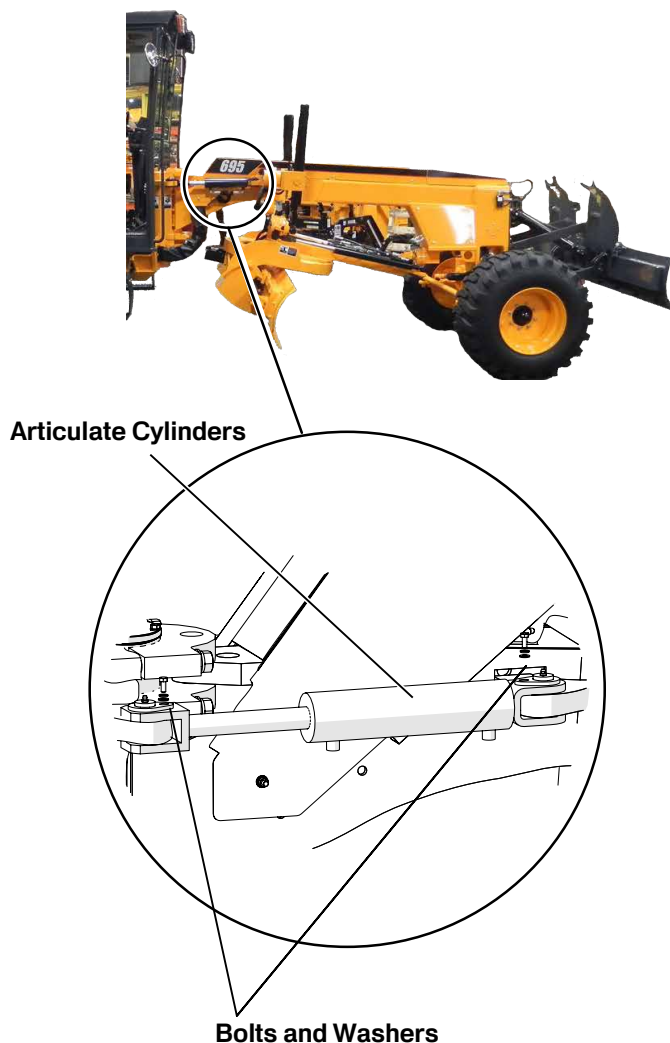


Figure 5-36. Articulate Cylinders (2 total; Right Shown)

Installation

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Install hydraulic fittings on replacement articulate cylinder (**Figure 5-37**).
3. Position the articulate cylinder (**Figure 5-37**) on the frame mounts and install bolt and washers through the end yokes. Secure bolt.
4. Using tags created during removal, remove plugs and connect the hydraulic hoses to the articulate cylinder fittings.
5. Using a grease gun, lubricate articulate cylinder (**Figure 5-37**) swivel joints.

6. Start the motor grader and check operation. Repair leaks as necessary.

Replacing Wheel Steering Cylinder

Removal

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Thoroughly clean the wheel steering cylinder (**Figure 5-38**), especially areas surrounding the hydraulic hoses and fittings.



Wheel Steering Cylinder (2 Total; RH Shown)

Figure 5-37. Wheel Steering Cylinder

3. Tag and disconnect the hydraulic hoses.
4. Immediately plug the hoses and cylinder ports to prevent contamination of the hydraulic system.
5. While supporting the wheel steering cylinder (**Figure 5-39**), remove the slotted hex nuts and cotter pins from the end connector.
6. Remove the wheel steering cylinder.

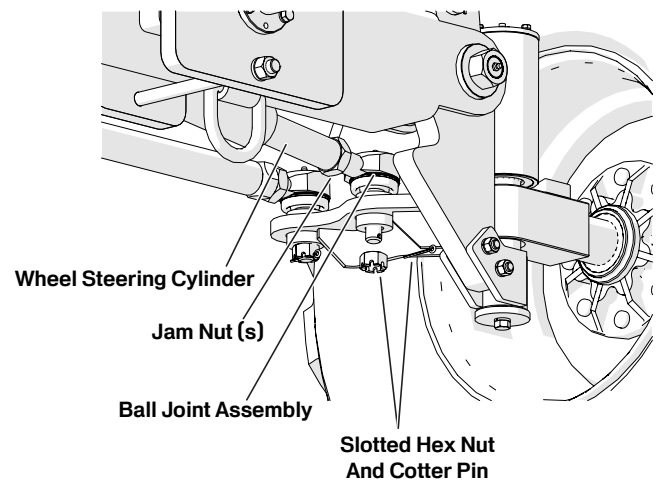
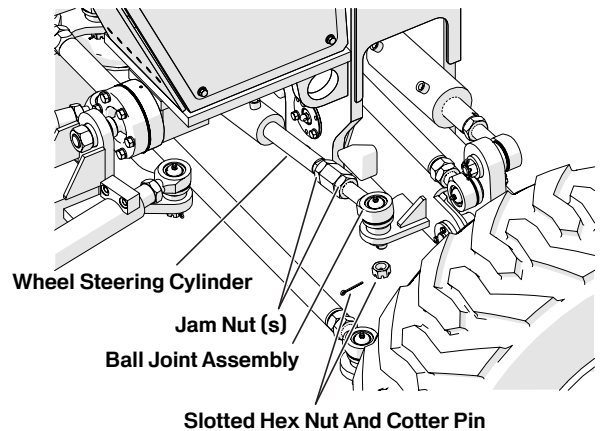


Figure 5-38. Wheel Steering Cylinder

7. While supporting the wheel steering cylinder, use a ball joint removal tool to remove the ball joints.
8. Ensure the ball joint is clean before installing/re-greasing.
9. Inspect the end connectors for excessive wear, loose ball joints, and damage.

NOTE: When removing the end connectors, count the number of turns needed for removal. The end connector or replacement can be threaded into the new steering cylinder the same number of turns, providing a close match for mounting the cylinder.

10. Loosen the jam nuts and remove the end connectors from the rod and cylinder ends. Count the number of turns needed to remove the end connector.
11. Inspect the hydraulic fittings. Remove fittings for reuse on replacement cylinder or replace if necessary.

Installation

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Install end connectors on the new steering cylinder using the same number of turns noted during removal.
3. Install hydraulic fittings on replacement fittings.
4. Position the steering cylinder for installation on the frame mounts.
5. Adjust the end connectors to mate with the frame and position the cylinder for hose installation.
6. Secure the end connectors by tightening the end connector jam nuts.
7. Install the end connector's slotted hex nuts, pulling the ball joints through the mount, and securing cylinder installation.
8. Install new cotter pins to secure.
9. Using tags created during removal, remove plugs, and connect steering cylinder hydraulic hoses.
10. Using a grease gun, lubricate cylinder swivel joints.
11. Start motor grader and check operation.
12. Repair leaks as necessary.

Replacing Wheel Lean Cylinder

Removal

NOTE: Before shutting down engine, make sure wheel lean cylinder is retracted.

1. Refer to **Preparing Grader for Maintenance on page 5-27** and park grader.
2. Thoroughly clean wheel lean cylinder (**Figure 5-40**), especially areas surrounding hydraulic hoses and fittings.

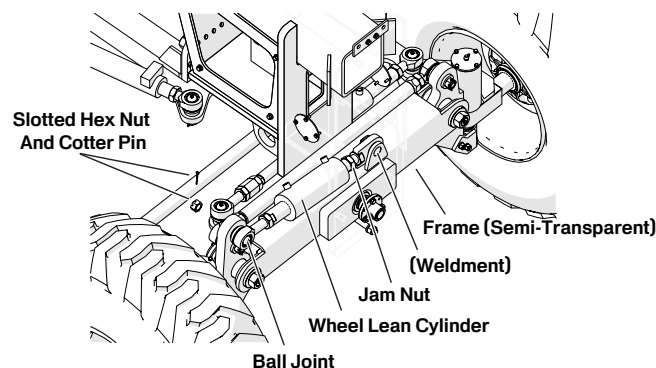


Figure 5-39. Wheel Lean Assembly

3. Tag and disconnect the hydraulic hoses. Immediately plug the hoses and cylinder ports to prevent contamination of the hydraulic system.
 4. Raise front of grader enough to allow axle to be tilted and inside pin removed (as one side of the cylinder is welded).
 5. Support front of grader with approved jack stands.
 6. Using a ball joint removal tool, remove the ball joint while supporting the cylinder.
 7. While supporting the wheel lean cylinder (**Figure 5-40**), remove the jam nut from the rod-side of the cylinder.
 8. Remove the cotter pin and slotted hex nut from the ball-side of the wheel lean cylinder(s).
 9. Remove the wheel lean cylinder.
- NOTE: Ensure ball joint is clean prior to installation/re-greasing.**
10. Inspect hydraulic fittings.
 11. Remove fittings for reuse on replacement cylinder or replace if necessary.

Installation

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Install hydraulic fittings on replacement wheel lean cylinder.
3. Place new or rebuilt wheel lean cylinder in position between front axle spindle and front axle support.
4. Secure with slotted hex nuts.
5. Install new cotter pins in mounting pins.
6. Use tags created during removal to properly install hydraulic hoses on wheel lean cylinder fittings.
7. Use a grease gun to lubricate wheel lean cylinder swivel joints.
8. Remove supports and lower grader.
9. Start motor grader and check operation. Repair leaks as necessary.

Replacing Front Blade Lift Cylinder

NOTE: Refer to Figure 7-76 in the IPL (Section 7) for illustrated parts list.

Removal

1. Thoroughly clean the front blade lift cylinder (**Figure 5-41**), especially in the area surrounding the hydraulic hoses and fittings.

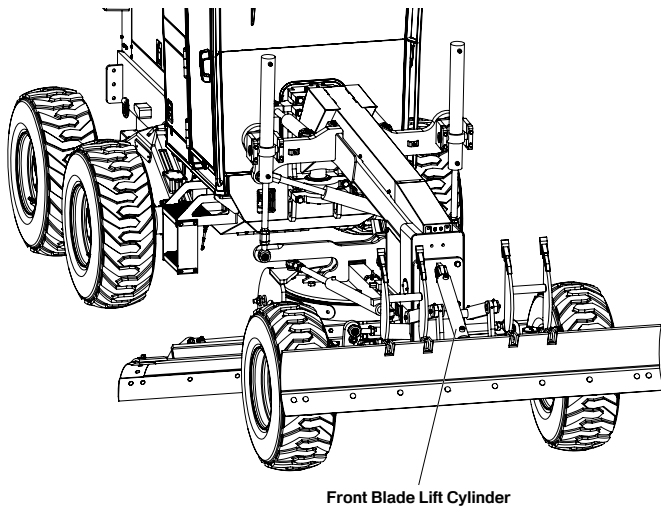


Figure 5-40. Front Blade

2. Support the bottom portion of the blade to prevent the blade from falling.
3. Tag and disconnect the hydraulic hoses. Immediately plug the hoses and cylinder ports to prevent contamination of the hydraulic system.
4. While supporting the front blade lift cylinder, remove the bolts and nuts.
5. Remove the front blade lift cylinder (**Figure 5-41**).
6. Inspect the hydraulic fittings. Replace as necessary. Remove the fittings for reuse in the replacement cylinder.

Installation

1. Install the fittings on the replacement cylinder.
2. Position the new front blade lift cylinder between the upper frame mounting and lower front blade mount. Secure the cylinder with mounting pins.
3. Install new cotter pins.
4. Using tags created during removal, connect the hydraulic hoses to the fittings.

5. Using a grease gun, lubricate cylinder swivel joints.
6. Start the motor grader and check operation. Repair leaks as necessary.

Replacing Scarifier Lift Cylinder

NOTE: Refer to Figure 7-76 in the IPL (Section 7) for illustrated parts list. .

Removal

1. Thoroughly clean the scarifier lift cylinder (**Figure 5-40,1**), especially in the area surrounding the hydraulic hoses and fittings.
2. Tag and disconnect the hydraulic hoses. Immediately plug the hoses and cylinder ports to prevent contamination of the hydraulic system.
3. Either support or lower the scarifier.
4. While supporting the scarifier lift cylinder, remove the bolts and nuts (refer to **Figure 7-76**).
5. Remove the scarifier lift cylinders (**Figure 5-41**).
6. Inspect the hydraulic fittings. Replace as necessary. Remove the fittings for reuse in the replacement cylinder.

Installation

1. Install the fittings on the replacement cylinder.
2. Position the scarifier lift cylinder between the upper frame mounting and scarifier support frame mount. Secure the cylinder with bolts and nuts.
3. Using tags created during removal, connect the hydraulic hoses to the fittings.
4. Using a grease gun, lubricate scarifier lift cylinder swivel joints.
5. Start the motor grader and check operation. Repair leaks as necessary.

Replacing Moldboard Slide Cylinder

NOTE: Refer to Figure 7-9 in the IPL (Section 7) for illustrated parts list.

Removal

1. Extend moldboard slide cylinder (Figure 5-42).

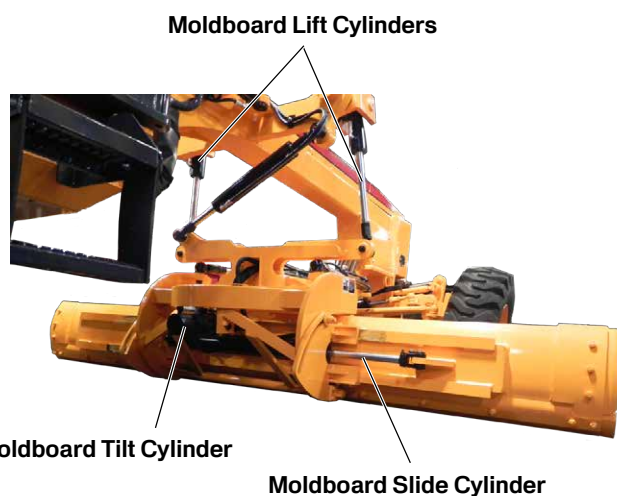
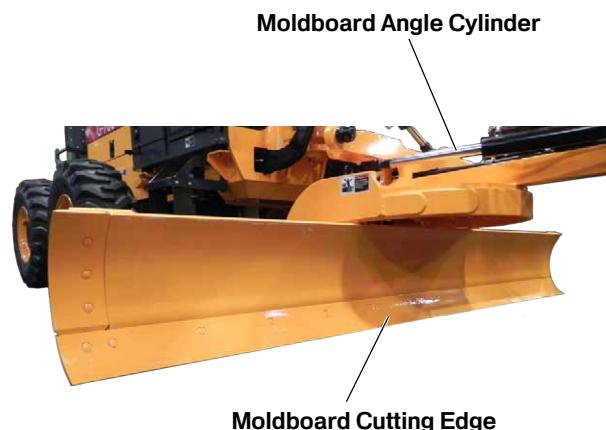


Figure 5-41. Moldboard

2. Remove outer moldboard slide cylinder pin.
3. Retract moldboard slide cylinder before shutting down engine.
4. Thoroughly clean the moldboard slide cylinder, especially in the area surrounding the hydraulic hoses and fittings.
5. Tag and disconnect the hydraulic hoses. Immediately plug the hoses and cylinder ports to prevent contamination of the hydraulic system.

6. While supporting the moldboard slide cylinder, remove the bolts and nuts.
7. Remove the moldboard slide cylinder (Figure 5-42).
8. Inspect the hydraulic fittings. Replace as necessary. Remove the fittings for reuse in the replacement cylinder.

Installation

1. Install the fittings on the replacement cylinder.
2. Position the moldboard slide cylinder between the moldboard support frame mount and moldboard mount. Secure the cylinder with inside mounting pin.
3. Install flat washers and new cotter pins.
4. Using tags created during removal, connect the hydraulic hoses to the fittings.

Replacing Moldboard Tilt Cylinder

NOTE: With moldboard on the ground, extend tilt cylinder before shutting down engine.

Removal

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Lower moldboard to lightly rest on ground. Do not apply downward pressure.
3. Thoroughly clean moldboard tilt cylinder (Figure 5-43), especially areas surrounding hydraulic hoses and fittings.
4. Tag and disconnect hydraulic hoses.
5. Immediately plug hoses and cylinder ports to prevent contamination of the hydraulic system.
6. While supporting cylinder, remove bolts, washers, and trunnion side plates (on the circle/arms weldment) (Figure 5-43).

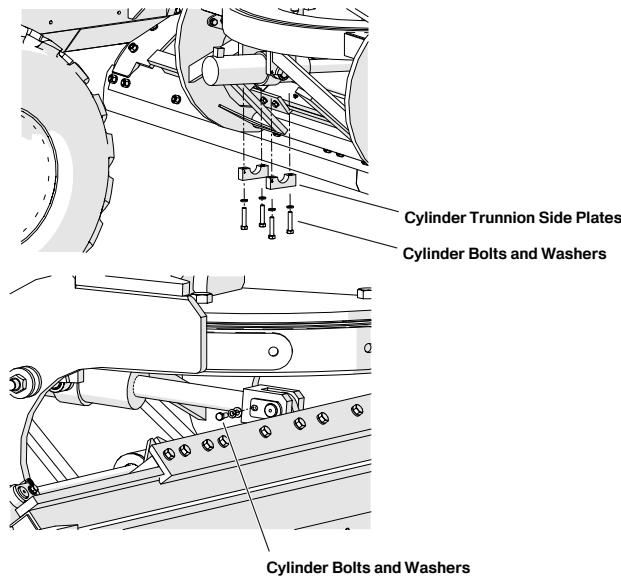


Figure 5-42. Moldboard Tilt Removal

7. Remove moldboard tilt cylinder by tilting moldboard forward, removing bolt, and then removing pin.
8. Inspect hydraulic fittings.
9. Remove fittings for reuse in replacement cylinder or replace if necessary.

Installation

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Install fittings on replacement cylinder.
3. Position moldboard tilt cylinder between the moldboard support frame mount and turntable support frame mount.
4. Secure cylinder with mounting pins and bolt.
5. Install bolts, washers, and trunnion side plates.
6. Use tags created during removal to properly reconnect hydraulic hoses to the fittings.
7. Use a grease gun to lubricate cylinder swivel joints.
8. Start motor grader and check operation.
9. Repair leaks as necessary.

Replacing Moldboard Angle Cylinders

NOTE: With moldboard on the ground, center angle cylinders before turning engine off.

Removal

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Thoroughly clean moldboard angle cylinder (**Figure 5-42**), especially in the areas surrounding hydraulic hoses and fittings.
3. Tag and disconnect hydraulic hoses.
4. Immediately plug hoses and cylinder ports to prevent contamination of the hydraulic system.
5. With the moldboard in a fixed and supported position, support the moldboard angle cylinder and remove bolts and washers that hold the cylinder on the front frame.
6. Remove moldboard angle cylinder.
7. Inspect hydraulic fittings.
8. Remove fittings for reuse in the replacement cylinder or replace as necessary.

Installation

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Install fittings on the replacement moldboard angle cylinder.
3. Position angle cylinder between drawbar mount and turntable mount.
4. Secure moldboard angle cylinder with existing hardware.
5. Use tags created during removal to connect hydraulic hoses to fittings.
6. Use a grease gun to lubricate moldboard angle cylinder swivel joints.
7. Start motor grader and check operation.
8. Repair leaks as necessary.

Replacing Moldboard Lift Cylinders

Removal

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. Thoroughly clean moldboard lift cylinders (**Figure 5-44**), especially areas surrounding hydraulic hoses and fittings.
3. Lower blade to float position.
4. Remove cotter pins from ball joints.
5. Use a ball joint tool to unhook lower ball joints.
6. Remove side plate (half) from moldboard lift cylinder at rod end only.
7. Raise cylinders to close them.
8. Tag hydraulic hoses for identification during installation.
9. Disconnect hydraulic hoses.
10. Immediately plug hoses and cylinder ports to prevent contamination of hydraulic system.

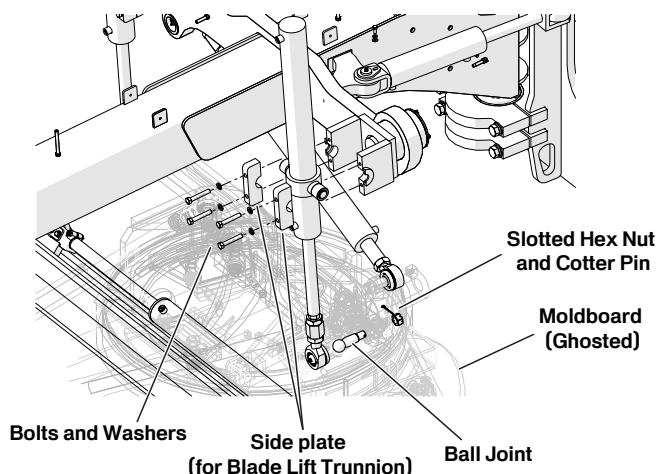


Figure 5-43. Lift Cylinder

11. While supporting moldboard lift cylinder, remove bolts from trunion shaft assembly.
12. Remove moldboard lift cylinder (Figure 5-44).
13. Check bushings and bearings assembly for damage and ensure they still fit snugly on the cylinder.
14. Ensure ball joint is clean prior to installation/re-greasing.
15. Inspect hydraulic fittings for damage and debris.

16. Remove fittings for reuse in the replacement cylinder or replace as necessary.
17. Inspect rod end for excessive wear, play, and damage.

Installation

NOTE: Rod end fittings have small holes to slow down drop speed.

18. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
19. Install fittings on replacement cylinder.
20. Install rod end on new cylinder.
21. If removed, install mounting bushings.
22. Position lift cylinder in upper mount and secure trunion shaft assembly with slotted hex nuts and new bolts.
23. Attach ball joint to mount and secure with slotted hex nuts and cotter pins.
24. Use tags created during removal to properly connect hydraulic hoses to fittings.
25. Use a grease gun to lubricate cylinder swivel joints.
26. Start motor grader and check operation.
27. Repair leaks as necessary.

Replacing Moldboard Cutting Edge

NOTE: Raise moldboard (Figure 5-42) and support with jack stands before shutting down engine.

Removal

1. Refer to **Preparing Grader for Maintenance on page 5-6** and park grader.
2. While supporting blade, remove blade mounting screws, lock washers, and nuts.
3. Remove worn cutting edges.
4. Clean blade mounting surface thoroughly.

Installation

1. Position replacement cutting edge on moldboard.
2. Secure with mounting screws, lock washers, and nuts.

Replacing Control Valve Assembly

Removal

1. Refer to **Preparing Grader for Maintenance** on **page 5-6** and park grader.

NOTICE

To replace the control valve assembly, access may be needed from the top and bottom of the grader. In addition to access through the hydraulic motor guard, under the grader, access from above may be required by removing floor panels.

2. Remove pedestal front cover by removing wing nuts and washers.



Valve Bank Cover

Figure 5-44. VALVE BANK ACCESS COVER

3. Remove floormat.
4. Remove left, middle, and right floor panels by loosening hexbolts.

5. Remove insulation panels.
6. Remove cab cross brace by loosening hex bolts.
7. Thoroughly clean the control valve and surrounding areas, especially around hydraulic hoses and fittings.
8. Tag and disconnect hydraulic hoses.
9. Immediately plug the hoses and control valve ports to prevent contamination of the hydraulic system.
10. Support the control valve and remove control valve mounting bolts and washers.
11. Remove control valve assembly.
12. Inspect control valve levers and linkages for wear and damage.
13. Replace levers and linkages if necessary.
14. Remove control levers and linkages.
15. Inspect hydraulic fittings for wear and damage.
16. Remove fittings for installation in replacement valve and replace if necessary.

Installation

1. Refer to **Preparing Grader for Maintenance** on **page 5-6** and park grader.
2. Install fittings in replacement valve.
3. Insert control valve and secure with mounting bolts and washers.
4. While supporting valve, use tags created during removal to connect hydraulic hoses to fittings.
5. Start engine and check operation.
6. Repair leaks as necessary.
7. Install cab cross brace by tightening hex bolts.
8. Install insulation panels.
9. Install left, middle, and right floor panels by tightening hex bolts.
10. Install floormat.
11. Install valve bank access cover and secure with flat washers and wing nuts.

STORAGE

This section contains instructions to prepare the grader for long-term storage. It also contains the procedures necessary to inspect the graders monthly during storage.

Preparing Grader For Long-Term Storage

1. Inspect the grader thoroughly and repair worn or damaged parts.
2. Retract all hydraulic cylinders, if possible.
3. Shut down engine and remove ignition key.
4. Check air filter restriction gauge.
5. Clean air cleaner assembly and precleaner.
6. Replace air filter elements if restricted.
7. Clean the grader.
8. Paint chipped or rusty areas to prevent rusting.
9. Replace worn or damaged decals.
10. Cover seat with plastic.
11. Place a "DO NOT OPERATE" tag on the steering wheel.

NOTE: Some rust inhibitors can destroy painted surfaces. Do not spray rust inhibitor on painted surfaces.

12. Coat exposed cylinder rods with rust inhibitor.
13. Lubricate all grease points. **Refer to Table 5-1.**
14. Check engine oil level and fill as necessary.
15. Check hydraulic oil sight gauge and fill as necessary.
16. Perform specific gravity test on engine coolant.
17. Drain and replace or fill coolant reservoir as needed to prevent freeze damage.
18. If possible, raise and support grader with tires off the ground, or park grader on a hard surface, to prevent tires from freezing to ground.
19. Store grader in a dry, protected area.
20. If stored outside, cover with a waterproof material.

TROUBLESHOOTING

The troubleshooting chart below identifies the most common symptoms of failure. Use this chart to help identify the failed component.

NOTE: The following troubleshooting solutions include common problems encountered with diesel engines. For additional information and troubleshooting procedures, see the engine manufacturer's operation and maintenance manual.

Table 5-1. Troubleshooting Chart

SYMPTOM	CAUSE	REMEDY
Engine cranks but does not start, or starts hard.	Fuel tank empty.	Check fuel level and fill as required
	Water in fuel or water frozen in fuel lines. Water frozen in fuel filter.	Thaw and/or drain water from fuel tank sump. Thaw ice in fuel lines and drain. Install new fuel filter
	Fuel tank cap vent clogged.	Remove cap. Listen for air entering tank suddenly. Clean and replace cap.
	Debris or dirt in fuel.	Drain small amount of fuel from tank sump into clean container. Inspect for debris. Drain and flush fuel system and change fuel filter.
	Wrong grade fuel for low ambient temperature.	Fuel "jelled" in tank or lines. Warm machine. Drain fuel system and change fuel filter. Refill tank with correct fuel.
	Air entering charge side of fuel system.	Check for bubbles in fuel filter. Tighten connections. Inspect fuel lines for damage.
	Fuel transfer pump malfunctions.	Repair or replace fuel transfer pump.
	Air filter elements restricted with dirt, snow, or water.	Clean or replace filter elements.
	Injection pump malfunctions.	See your authorized dealer.
	Injection nozzle(s) malfunctions.	See your authorized dealer.
	Worn piston rings or low compression.	See your authorized dealer.
	Blown head gasket.	See your authorized dealer.
Engine cranks slowly.	Wrong weight oil for low ambient temperature.	Drain and refill with correct weight oil. Change oil filter.
	Loose or dirty connections at batteries.	Clean battery posts and cable ends. Reinstall cables.
	Loose or dirty connections at starter.	Clean connections at start relay and starter.
	Batteries discharged or failing to take a charge.	Disconnect batteries from machine and each other. Recharge batteries separately. Replace both batteries if either fails to charge. Check alternator output (28 volts), wiring for shorting to ground, and alternator tension. Repair or replace components as required.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Engine cranks slowly (continued).	Starter motor malfunctions.	Seized bushings, bent armature shaft, worn bushings, and armature "dragging". Check starter current draw. See your authorized dealer for starter repair.
Engine surges or stalls frequently.	Air entering charge side of fuel system.	Check fuel filter for air bubbles. Tighten fittings and connections. Inspect lines for damage.
	Fuel tank cap vent clogged.	Remove cap. Listen for air entering tank suddenly. Clean and replace cap.
	Water or debris in fuel.	Drain water from sump in fuel tank. Check drained fuel for debris. Drain and flush fuel system. Replace fuel filter.
	Fuel "jelled" due to low ambient temperature.	Drain fuel system. Refill engine with correct grade fuel. Replace fuel filter.
	Fuel filter clogged.	Check for debris in fuel system. Replace filter.
	Return line from injection pump to tank restricted.	Check line for kinks or damage. Check line for debris. Clean with compressed air.
	Air filter elements clogged.	Clean or replace air filter elements.
	Fuel transfer pump clogged.	Repair or replace pump. See your authorized dealer.
	Injection pump or nozzle(s) malfunctions.	See your authorized dealer.
	Basic engine malfunction. Leaking head gasket, sticking or burnt valves, valve clearance or valve timing incorrect, or worn or broken piston rings.	Refer to Cummins engine manual.
Engine misses, operates erratically, or operates poorly at low speed.	Air entering charge side of fuel system.	Check fuel filter for air bubbles. Tighten fittings. Inspect lines for damage.
	Water or debris in fuel.	Drain water from sump in fuel tank. Check drained fuel for debris. Drain and flush fuel system. Replace fuel filter.
	Fuel tank cap vent clogged.	Remove cap. Listen for air entering tank suddenly. Clean and replace cap.
	Return line from injection pump to tank restricted.	Check line for kinks or damage. Check line for debris. Clean with compressed air.
	Slow idle speed set too low.	Check for bent, worn, or loose speed control linkage. Repair as needed. Adjust linkage and reset slow idle speed.
	Fuel transfer pump malfunctions.	Repair or replace fuel transfer pump.
	Injection pump or nozzle(s) malfunctions.	See your authorized dealer.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Engine misses, operates erratically, or operates poorly at low speed (continued).	Incorrect valve clearance. Basic engine malfunction. Leaking head gasket, sticking or burnt valves, valve clearance or valve timing incorrect, or worn or broken piston rings.	Adjust clearance. Refer to Cummins engine manual.
Engine not developing full power.	Fuel filter clogged. Air filter elements clogged. Water in fuel or wrong grade of fuel used. Exhaust system restriction. Fast idle speed set too low. Incorrect valve clearance. Fuel line or injection pump line restricted. Park brake dragging. Service brakes dragging. Fuel transfer pump malfunctions. Injection pump or nozzle(s) malfunctions. Internal hydraulic system leakage. Turbocharger gasket leakage. Basic engine malfunction. Leaking head gasket, sticking or burnt valves, valve clearance or valve timing incorrect, or worn or broken piston rings.	Check for debris in fuel system. Replace filter. Clean or replace air filter elements. Drain water from fuel tank sump or drain and flush fuel tank and refill with correct fuel. Replace fuel filter. Check condition of muffler interior. Check for bent, worn, or loose speed control linkage. Repair as needed. Adjust linkage and reset fast idle speed. Adjust clearance. Clear restriction with compressed air. Replace line. Adjust linkage. Check park brake disc for warping or scoring. Check park brake cable for binding. Overheating of park brake disc indicates dragging. Repair or replace park brake disc and/or park brake cable as required. Check brake linkage for damage. Check brake valve for leakage. Check brake discs for warping or scoring. Dragging brakes could cause overheating of transmission/ hydraulics or engine. Repair or replace fuel transfer pump. See your authorized dealer. Repair linkage. See your authorized dealer. Repair or replace. See your authorized dealer. Refer to Cummins engine manual.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Engine emits excessive black or gray exhaust smoke.	Restricted air filter element. Incorrect grade of fuel. Engine overloaded. Turbocharger gasket leakage. Incorrect injection pump timing. Excessive fuel delivery. Injection pump or nozzle(s) malfunctions.	Check, clean or replace air filter elements. Drain and flush fuel tank and fill with correct grade of fuel. Replace fuel filter. Remove load. Run at fast idle to clear the engine. Repair or replace. See your authorized dealer. Repair or replace pump. See your authorized dealer. See your authorized dealer.
Excessive blue or white exhaust smoke.	Engine will not start. Incorrect grade of fuel used. Injection pump or nozzle(s) malfunctions. Basic engine malfunction Excessive oil consumption.	Cranking speed too slow. Drain and flush fuel tank and refill with correct grade of fuel. Replace fuel filter. See your authorized dealer. Refer to Cummins engine manual.
Detonation (excessive engine knock).	Stuck starting aid solenoid or switch. Injection pump timing or pump advance faulty. Incorrect fuel (gasoline mixed with diesel fuel).	Repair or replace solenoid or switch. See your authorized dealer. Drain and flush fuel tank and refill with correct fuel. Replace fuel filter.
Abnormal engine noise (rattle, knock, or squeal). and repair leaks.	Low engine oil level. Oil viscosity too low for high ambient temperatures. Fuel in engine oil. Loose or worn hydraulic pump drive coupling. Injection pump timing incorrect. Turbocharger bearing or turbine damaged. Excessive valve clearance. Internal engine component wear.	Fill reservoir to correct level. Drain and refill reservoir with correct weight oil. Drain and refill reservoir with correct oil. Check fuel system to find le Repair or replace damaged coupling. See your authorized dealer. Remove turbo air inlet hose and check vertical movement of shaft. Repair or replace shaft. See your authorized dealer. Adjust clearance. Refer to Cummins engine manual.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Low engine oil pressure (oil pressure indicator light ON, Red STOP light flashing, and alarm ON).	Low oil level.	Check oil level. Fill reservoir to correct level. Check for leaks. Repair leaks.
	Low viscosity (using winter oil in summer).	Drain, flush, and fill reservoir with correct weight oil.
	Oil diluted with fuel.	Drain and refill reservoir with correct oil. Check fuel system to find leakage and repair leaks.
	Oil pressure sensor faulty.	Replace oil pressure sensor.
	Oil pressure control valve faulty.	Repair or replace valve. See your authorized dealer.
	Oil pump intake screen clogged.	See your authorized dealer.
	Loose oil pump drive gear or worn pump housing.	See your authorized dealer.
	Internal engine component wear.	Refer to Cummins engine manual.
Engine overheats.	Low coolant level.	Fill radiator with coolant to correct level and check for leaks.
	Loose, worn, or broken fan belt.	Tighten or replace fan belt. Refer to Cummins engine manual.
	Worn pulley grooves, allowing belt slippage.	Replace pulleys and belt. Refer to Cummins engine manual.
	Radiator dirty or clogged.	Check airflow. Clean radiator and recheck airflow.
	Radiator shroud missing or damaged.	Replace radiator shroud. Refer to Cummins engine manual.
	Engine overloaded.	Reduce load. Operate in lower gear.
	Radiator cap not sealing.	Replace radiator cap.
	Fan on backwards or damaged.	Inspect and reinstall or replace fan. Refer to Cummins engine manual.
	Injection pump timing incorrect.	See your authorized dealer.
	Excessive brake drag.	Refer to Cummins engine manual.
	Hydraulic system overheating due to internal leakage.	Check for clogged hydraulic oil cooler. See your authorized dealer.
	Thermostats stuck or missing.	Replace thermostats. Refer to Cummins engine manual.
	Cooling system interior coated with lime deposits.	Flush the cooling system with cleaner. Refill with water/antifreeze solution.
	Water pump leaking.	Repair or replace water pump. Refer to Cummins engine manual.
	Excessive fuel delivery or injection pump malfunctions.	See your authorized dealer.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Oil in coolant or coolant in oil.	Leaking cylinder head gasket or liner packings. Cracked cylinder or block.	Refer to Cummins engine manual.
Excessive fuel consumption.	Air system restricted. Fuel system leakage. Incorrect grade of fuel.	Clean or replace air filter elements. Refer to Cummins engine manual. Drain and flush fuel tank and refill with correct grade of fuel. Replace fuel filter. Check for clogged hydraulic oil cooler. See your authorized dealer.
No hydraulic power.	Low hydraulic/transmission oil level. Hydraulic filter clogged. Hydraulic pumps or pump drive coupling damaged or excessive leakage in hydraulic system.	Add oil to the hydraulic oil reservoir to the correct level. Replace filter element. See your authorized dealer.
All hydraulic systems function slowly.	Low oil level. Air in hydraulic oil (foamy appearance). Engine RPM low. Hydraulic filter clogged. Low pump flow or excessive leakage in system.	Add oil to the hydraulic oil reservoir to the correct level. Inspect charge side hoses and fittings to pump for leakage. Tighten fittings or replace hoses and fittings as required. Inspect speed control linkage for damage. Repair or replace parts as required and adjust linkage. Replace filter element. See your authorized dealer.
Hydraulic functions make "chattering" noise.	Low oil level. Hydraulic filter restricted. Hydraulic filter relief valve stuck open or setting is too low.	Add oil to the hydraulic oil reservoir to the correct level. Replace filter element. See your authorized dealer.
Hydraulic functions drift or settle.	Cylinder or control valve leakage. Control valve linkage binding or out of adjustment.	See your authorized dealer. Repair and/or adjust linkage.
Control valve sticks or is hard to operate.	Control valve linkage binding Broken return spring in control valve. Contamination in valve bore, scored valve bore, or bent valve spool.	Repair linkage. See your authorized dealer.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Hydraulics overheat.	Excessive load. Oil cooler clogged. Low oil level. Using low viscosity oil in summer. Transmission or hydraulic internal leakage.	Reduce load. Clean oil cooler and measure air flow. Fill the hydraulic oil reservoir to the correct level. Drain, flush, and fill the hydraulic oil reservoir with the correct oil. Replace the oil filter. See your authorized dealer.
Foaming oil.	Oil level is too high or too low. Incorrect type of oil. Pump suction screen restricted. Air leakage on suction side of pump.	Adjust oil level to full mark on dipstick. Drain, flush, and fill the hydraulic oil reservoir with the correct oil. Replace the oil filter. Clean the screen. Tighten fittings and inspect hoses for damage. Replace damaged hoses.
Hydraulic pump leaking.	Cap screws holding pump housing together are loose. Worn shaft seal.	Tighten screws to torque specification. See your authorized dealer.
Excessive pump noise.	Low oil level. Transmission or hydraulic filter restricted. Aeration of oil - charge side leaking. Oil lines contacting operator's station or frame (clamps or isolators). Worn transmission pump, loose pump drive coupling, loose pump attaching hardware, leakage in hydraulic system (pump remains in stroke), or misalignment between pump and engine.	Fill the hydraulic oil reservoir to the correct level. Replace filter. Tighten fittings and inspect hoses for damage. Replace damaged hoses. Inspect lines, clamps, and isolators. Repair or replace as required. See your authorized dealer.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Starter motor will not turn.	Batteries not charged or bad.	Charge or replace batteries.
	Battery connections.	Clean and tighten battery connections at battery and starter solenoid.
	Starter motor.	Listen for starter solenoid to click when key is placed in the start position. If solenoid clicks, repair or replace starter motor.
	Starter solenoid.	Check for 12 volts at small solenoid connections when key is placed in the start position. If 12 volts is present, replace solenoid.
	Start relay.	Listen for relay to click when key is placed in the start position. If relay does not click, check wiring. Repair or replace as necessary.
	Start system circuit breaker.	Check for 12 volts at both sides of the circuit breaker. If 12 volts is not present on either side, check wiring. If 12 volts is available on one side, replace circuit breaker.
	Key switch.	Check for 12 volts at ignition switch terminal "st" when key is placed in start position. If 12 volts is available, check wiring harness.
	Neutral start switch on pump.	Check for 12 volts on both sides of switch with machine in neutral. If 12 volts is available, check wiring harness. If 12 volts is available on one side.
	Major engine malfunction.	See authorized dealer.
Starter solenoid chatters.	Bad connections at batteries or solenoid.	Clean and tighten connections.
	Batteries discharged or bad.	Charge or replace batteries.
	Bad solenoid.	Replace solenoid.
Starter motor turns but will not crank engine.	Starter pinion gear not engaging flywheel ring gear.	Pinion shift mechanism jammed. Repair or replace starter motor.
	Pinion gear teeth broken.	Repair or replace starter motor.
	Flywheel ring gear teeth broken.	Replace ring gear.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Starter motor continues to turn after engine starts.	Starter solenoid stuck. Starter pinion gear not disengaging from flywheel. Ignition switch malfunction.	Gently tap solenoid. Replace solenoid. Gently tap starter motor. Repair or replace starter motor. Check for 12 volts at "st" terminal with ignition switch in the ON position. If 12 volts available, replace ignition switch.
Excessive noise when cranking engine.	Broken teeth on flywheel ring gear or starter pinion gear. Major engine malfunction.	Replace starter motor or ring gear. See authorized dealer.
Battery uses too much water.	Battery overcharged. Cracked or broken battery case.	With batteries fully charged, check alternator charging rate. Repair or replace alternator. Replace battery.
Cracked battery case.	Battery hold down clamps too tight, loose or missing. Frozen batteries.	Replace battery and install hold down clamps properly. Keep battery fully charged during cold weather. Replace batteries.
Low battery output.	Low water level. Corroded or loose battery cable connections. Broken or loose battery posts. Loose, slipping alternator belt. Low alternator output.	Fill with distilled water and charge. Clean and tighten all connections. Replace battery. Replace alternator belt. Test and replace alternator.
Alternator warning light stays on or voltmeter shows low charge.	Alternator.	Load test alternator and replace as necessary.
Alternator charging rate to high (batteries hot or boiling).	Alternator.	Load test alternator and replace as necessary.
Noisy alternator.	Alternator bearings. Worn drive belt. Internal alternator malfunction.	Remove alternator belt and turn alternator by hand. If pulley turns rough, repair or replace alternator. Check and replace belt. Repair or replace alternator.
Horn will not sound.	Horn fuse. Horn ground connection. Horn connection. Horn is inoperable.	Check and replace fuse. Check and repair ground connection. Check and repair horn connection. Replace horn.

Table 5-3. Troubleshooting Chart (Cont.)

SYMPTOM	CAUSE	REMEDY
Machine will not move forward or reverse.	Low hydraulic oil level. Park brake engaged. Forward/neutral/reverse (FNR) lever linkage broken. Traction pump malfunctions. Pump destroke valve on or stuck.	Check and fill reservoir. Release park brake. Repair or replace linkage. See authorized dealer.
Machine jumps when forward/neutral/reverse (FNR) lever engaged.	Park brake sticking. Traction pump malfunction. Transfer case malfunction. Differential (final drive) malfunction.	Repair park brake. See authorized dealer. See authorized dealer. See authorized dealer.
Machine creeps.	Forward/neutral/reverse (FNR) lever out of adjustment.	Adjust forward/neutral/reverse (FNR) pedal linkage.
Traction pump responds slowly.	Low hydraulic oil level. Traction pump boost pump malfunction. Traction pump malfunction. Cold oil.	Check and fill reservoir. See authorized dealer. See authorized dealer. Allow machine to warm completely.
Drive selector levers or pedal do not move freely.	Bent, damaged, corroded linkage.	Clean, straighten and adjust linkage.
Excessive noise in drive system.	Worn transfer case. Worn traction pump. Worn differential (final drive). Park brake dragging.	See authorized dealer. See authorized dealer. See authorized dealer. Check park brake operation.
Hydraulic drive system has no power.	Defeat coil on drive motor not receiving signal correctly.	Check all switches and wiring. Max coil should have power when: • Reverse in high gear, auto/work switch either position. • Forward in low gear with work/auto switch in WORK position. • Forward in high gear with work/auto switch in WORK position. Defeat coil should have power when: • Reverse in low gear. • Reverse in high gear.
Two-speed won't shift.	Two-speed valve not receiving signal. Park brake not set.	Check all switches and wiring. Set park brake.



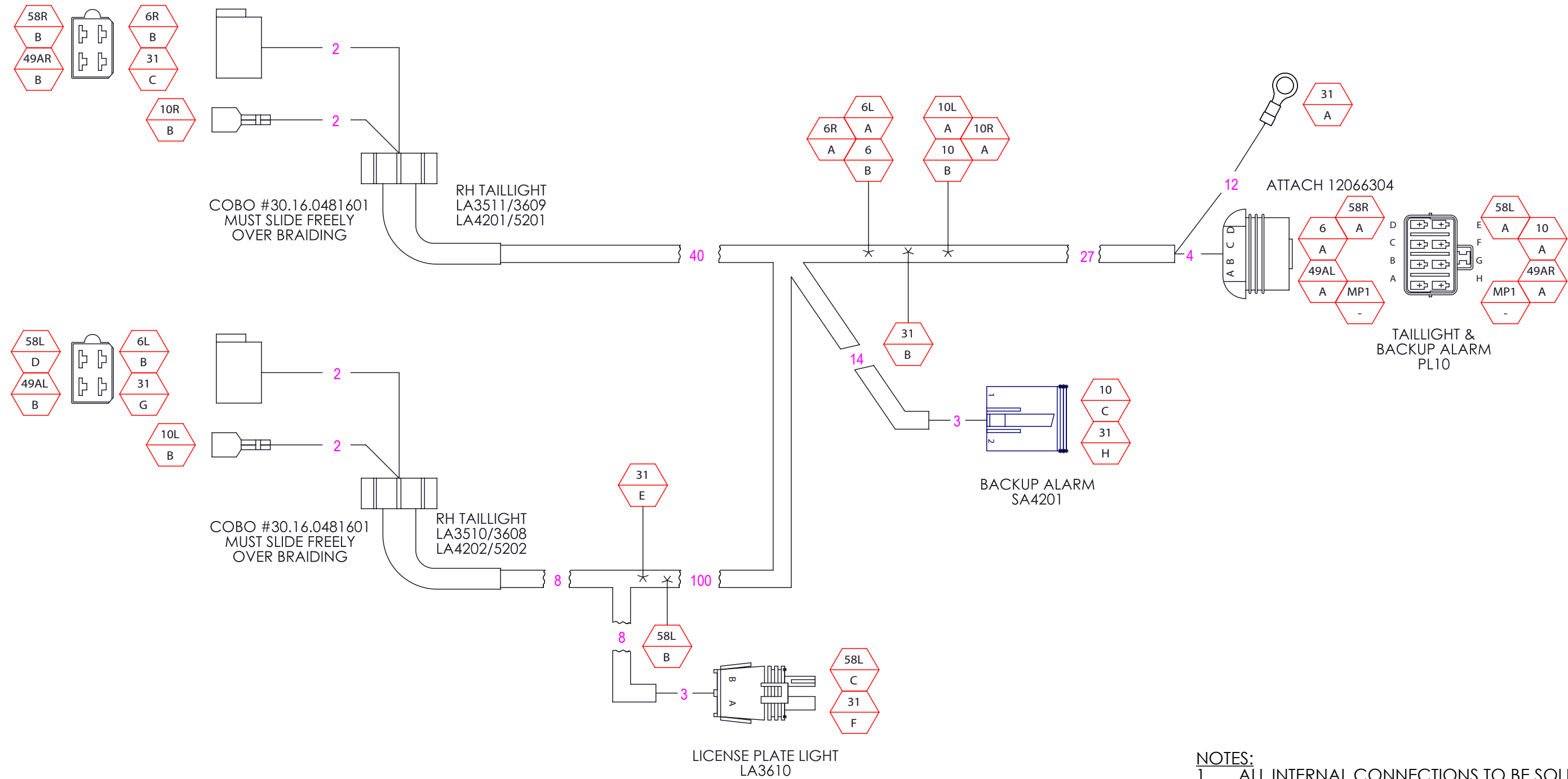
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ELECTRICAL SCHEMATICS

Wiring Harness - Tail Lights and Back-Up Alarm - 12756692 (1 of 1)



NOTES:

- NOTES:
1. ALL INTERNAL CONNECTIONS TO BE SOLDERED
 2. WIRE TYPE: TXL OR GXL
 3. CONNECTORS TO BE LABELED AS SHOWN
 4. USE CONVOLUTED SPLIT LOOM
 5. ALL DIMENSIONS ARE IN INCHES
 6. USE INSULATED SPADE TERMINALS

Figure 6-1.

NOTES

Wiring Harness - Rear Frame - 12756689 (1 of 1)

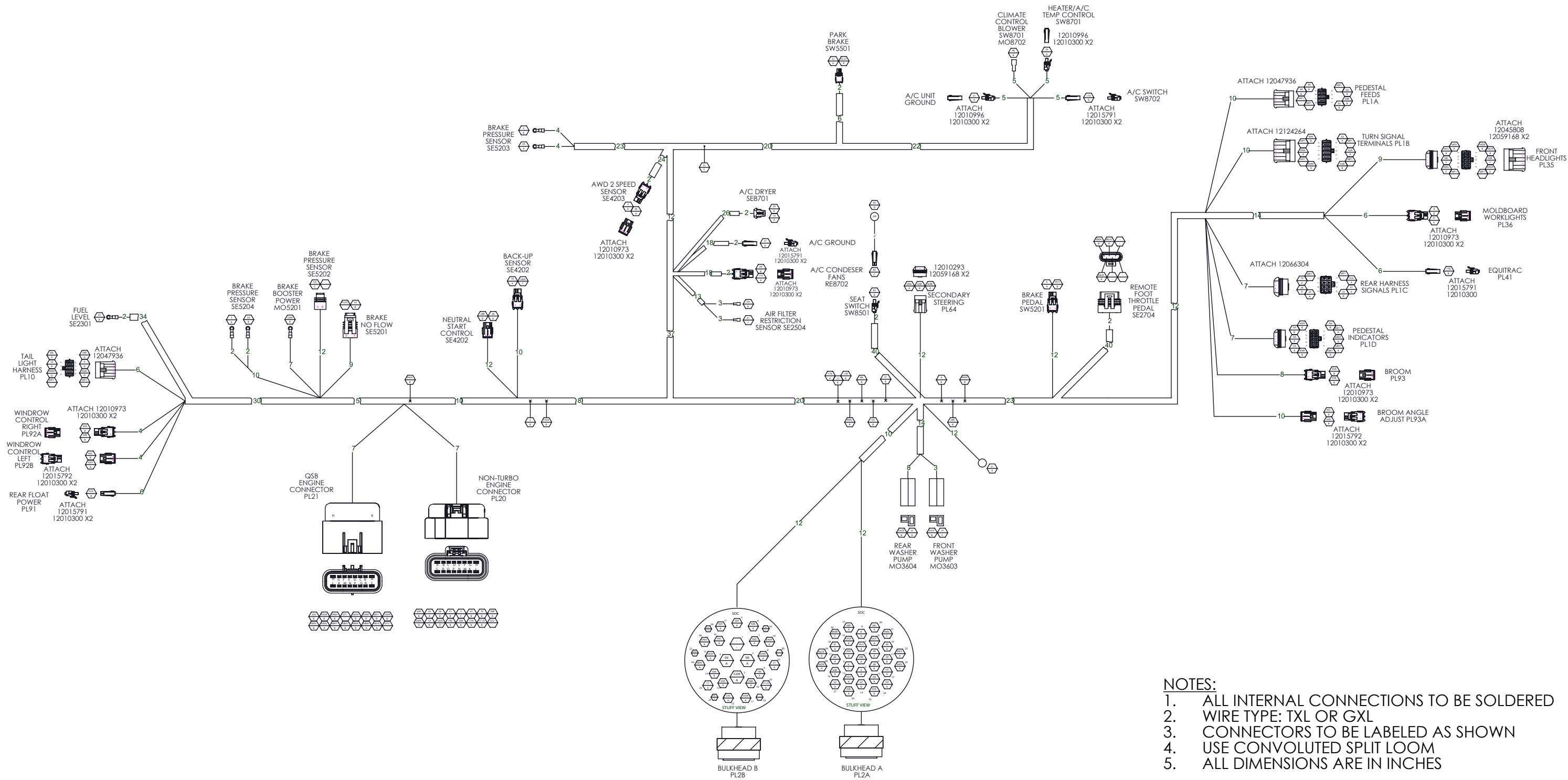


Figure 6-2.

NOTES

Wiring Harness - Fuse Block - 12756688 (1 of 1)

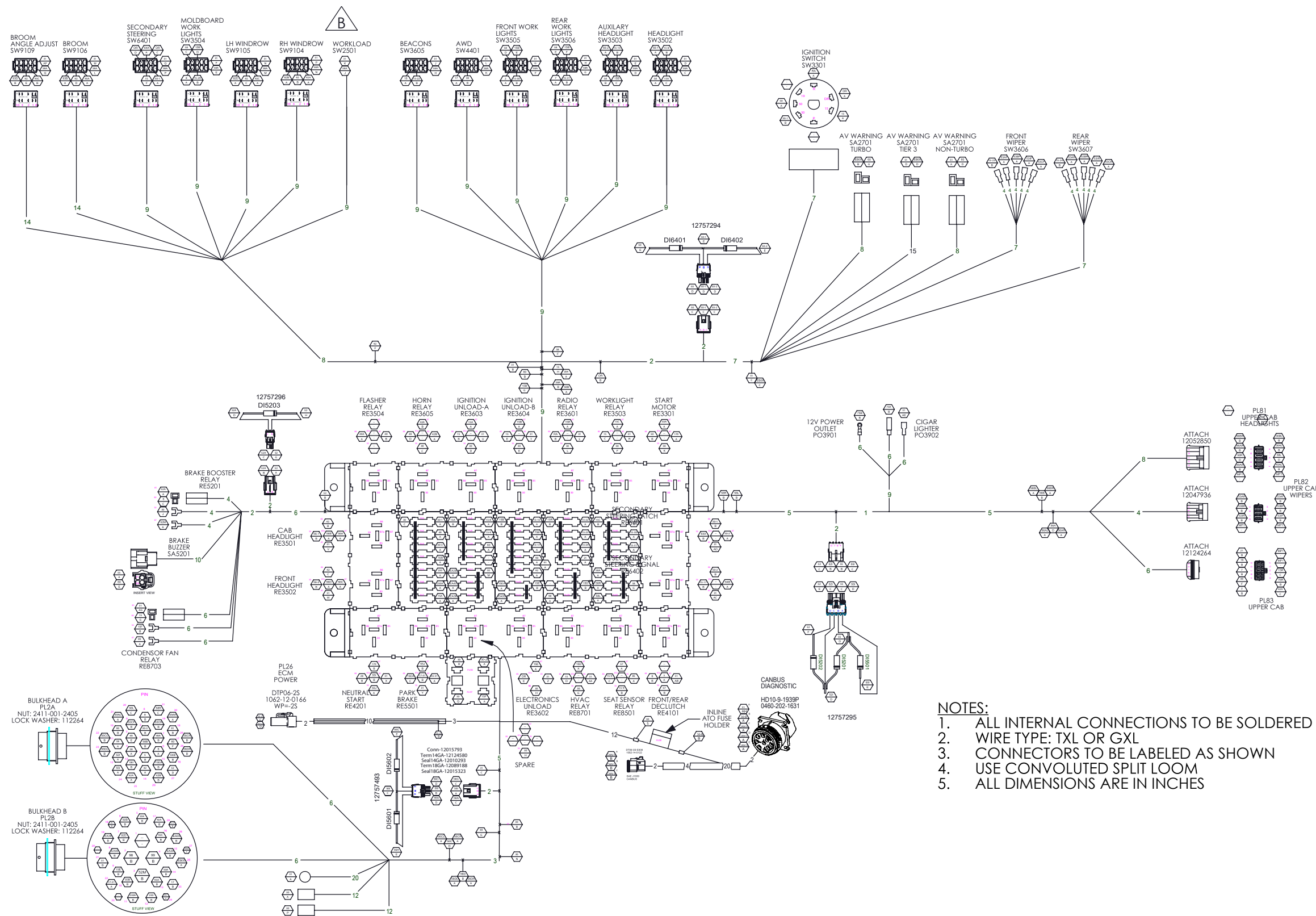
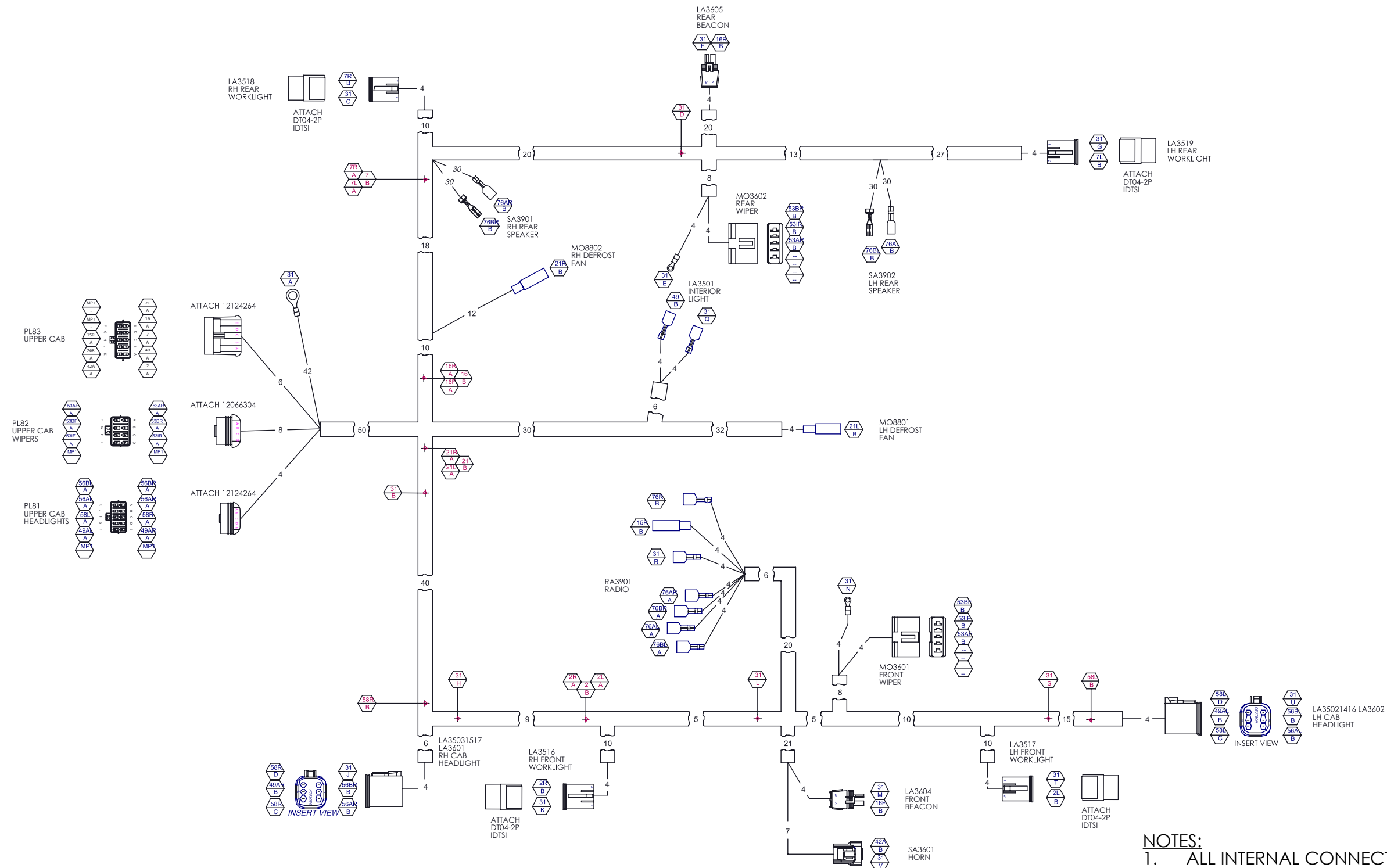


Figure 6-3.

NOTES

Wiring Harness - Cab - 12756687 (1 of 1)

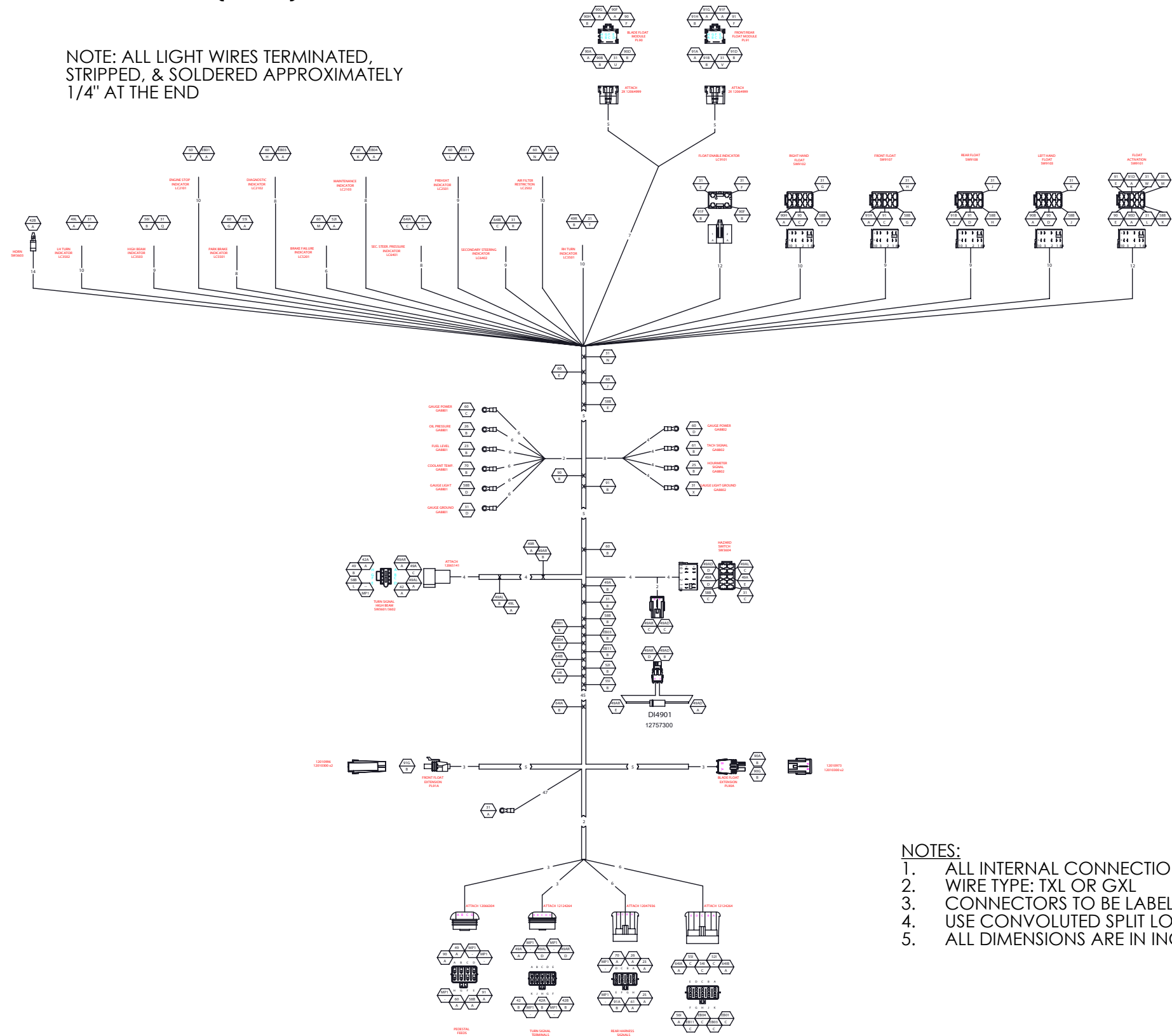


- NOTES:
1. ALL INTERNAL CONNECTIONS TO BE SOLDERED
 2. WIRE TYPE: TXL OR GXL
 3. CONNECTORS TO BE LABELED AS SHOWN
 4. USE CONVOLUTED SPLIT LOOM
 5. ALL DIMENSIONS ARE IN INCHES

Figure 6-4.

NOTES

Wiring Harness - Pedestal - 12756686 (1 of 1)



- NOTES:
1. ALL INTERNAL CONNECTIONS TO BE SOLDERED
 2. WIRE TYPE: TXL OR GXL
 3. CONNECTORS TO BE LABELED AS SHOWN
 4. USE CONVOLUTED SPLIT LOOM
 5. ALL DIMENSIONS ARE IN INCHES

Figure 6-5.

NOTES

Wiring Harness - Moldboard Worklights - 12756149 (1 of 1)

CIRCUIT	GA.	COLOR	END	SEAL	TERMINAL	CONNECTOR	END	SEAL	TERMINAL	CONNECTOR	FUNCTION
8	18	OE/RD	A	12041351	12124582	12010973	B	-----	SPLICE	-----	MOLDBOARD WORKLIGHT FEED
8	18	OE/RD	B	-----	SEE 8-B	-----	C	-----	SPLICE	-----	MOLDBOARD WORKLIGHT FEED
8R	18	OE/RD	A	-----	SEE 8-B	-----	B	-----	1062-14-0122	DT06-2S	RH MOLDBOARD WORKLIGHT
8R	18	OE/RD	C	-----	SPLICE	-----	D	-----	1062-14-0122	DT06-2S	RH MOLDBOARD WORKLIGHT
8L	18	OE/RD	A	-----	SEE 8-B	-----	B	-----	1062-14-0122	DT06-2S	LH MOLDBOARD WORKLIGHT
8L	18	OE/RD	C	-----	SPLICE	-----	D	-----	1062-14-0122	DT06-2S	LH MOLDBOARD WORKLIGHT
31	18	BK	A	12041351	12124582	12010973	B	-----	SPLICE	-----	MOLDBOARD WORKLIGHT GROUND
31	18	BK	B	-----	SEE 31-B	-----	C	-----	1062-14-0122	DT06-2S	RH MOLDBOARD WORKLIGHT GROUND
31	18	BK	B	-----	SEE 31-B	-----	D	-----	1062-14-0122	DT06-2S	LH MOLDBOARD WORKLIGHT GROUND
31	18	BK	B	-----	SEE 31-B	-----	E	-----	SPLICE	-----	MOLDBOARD WORKLIGHT GROUND
31	18	BK	E	-----	SEE 31-E	-----	F	-----	1062-14-0122	DT06-2S	LH MOLDBOARD WORKLIGHT GROUND
31	18	BK	E	-----	SEE 31-E	-----	G	-----	1062-14-0122	DT06-2S	RH MOLDBOARD WORKLIGHT GROUND

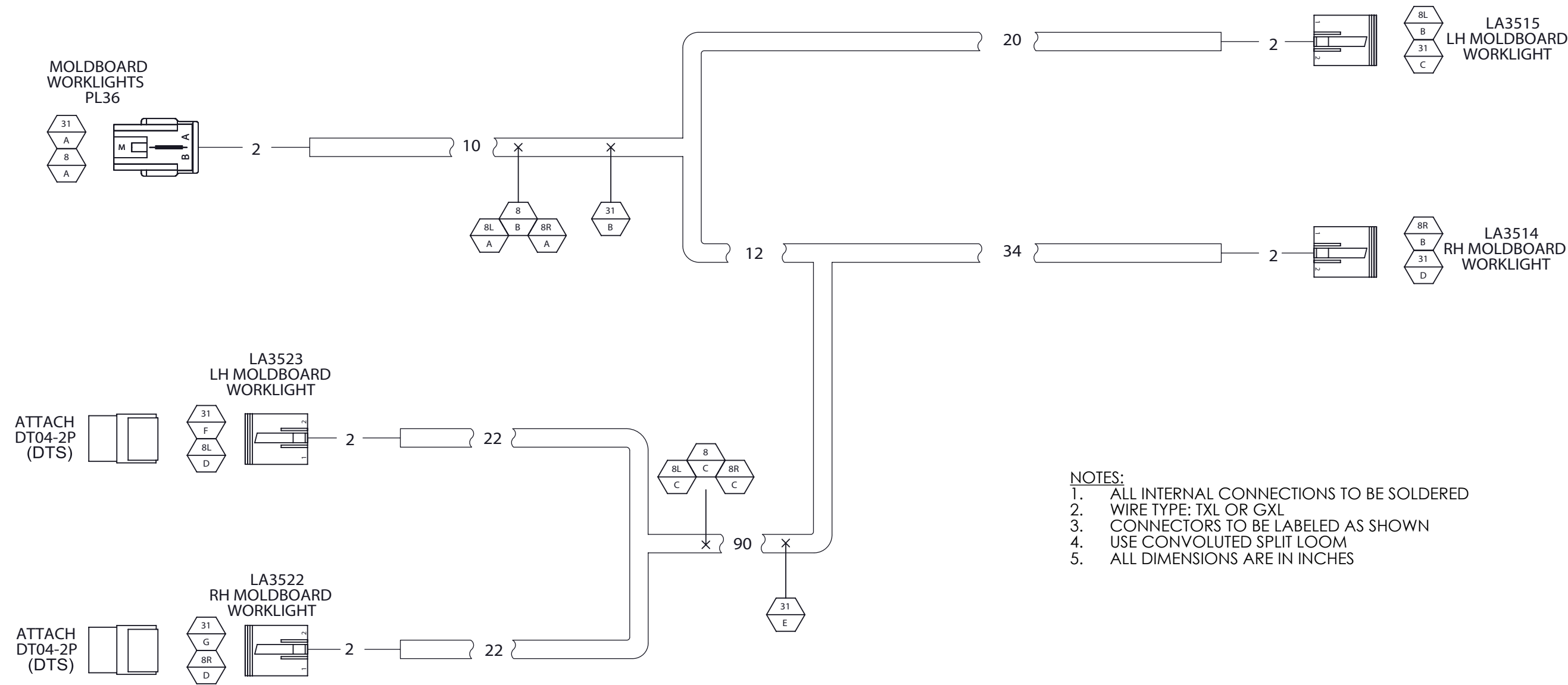
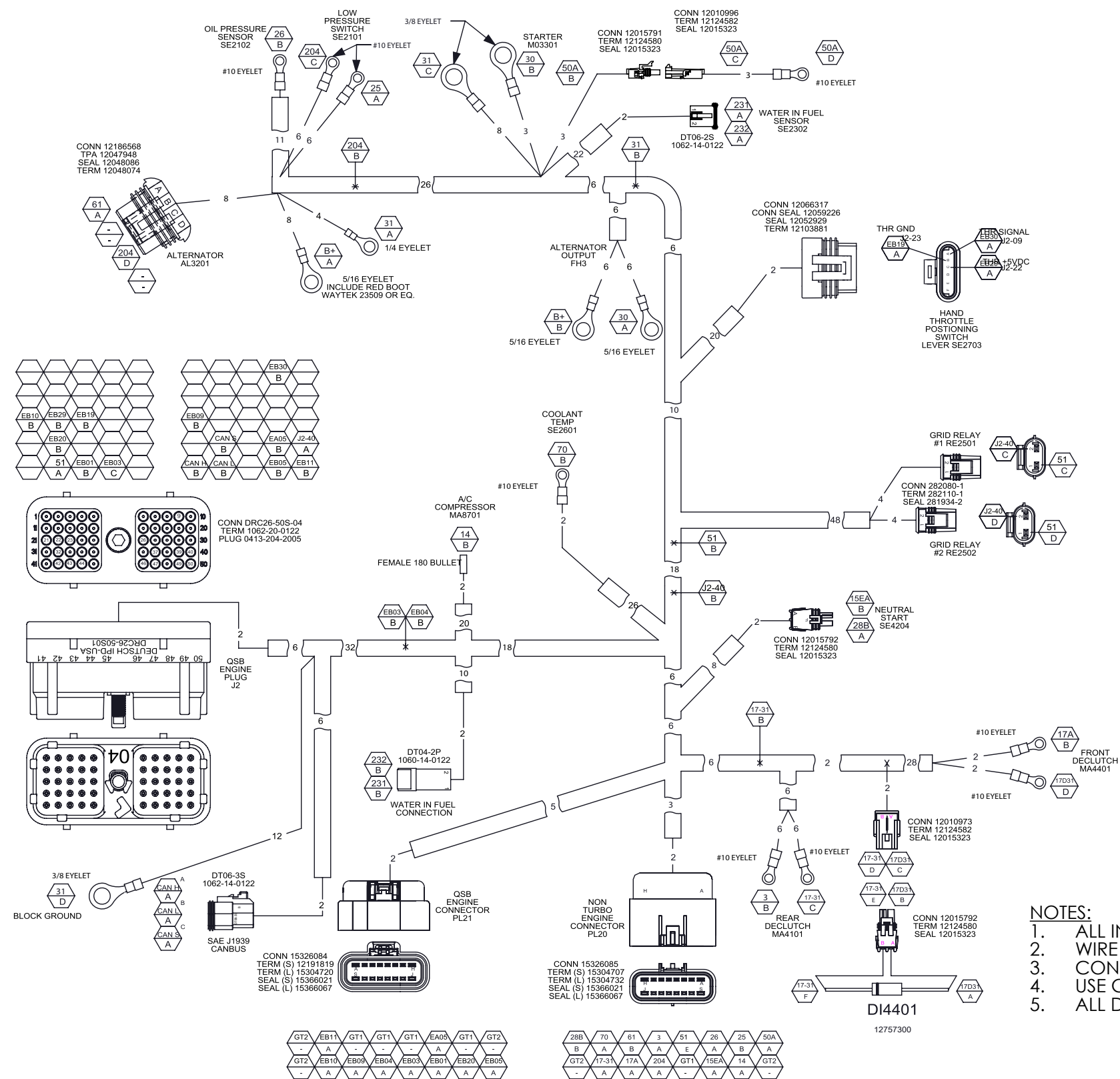


Figure 6-6.

NOTES

Wiring Harness - Engine, QSB4.5 Tier 3 - 120452 (1 of 1)

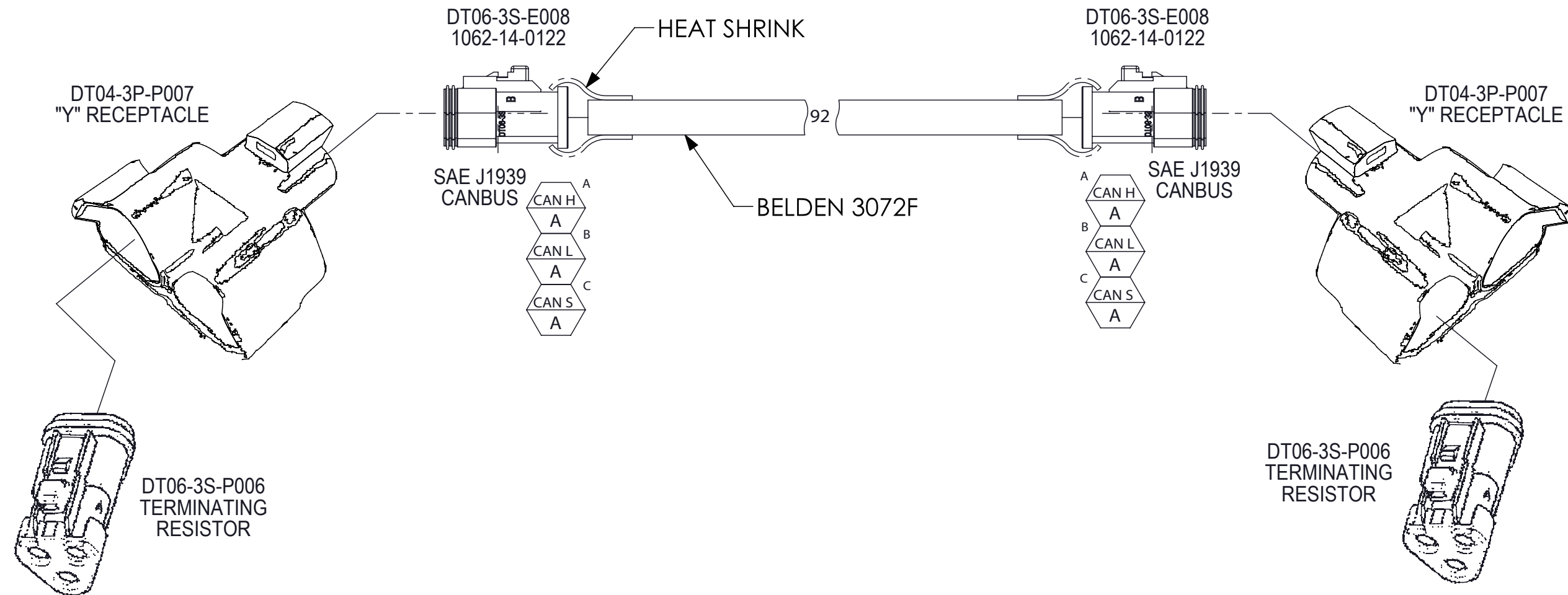


- NOTES:
1. ALL INTERNAL CONNECTIONS TO BE SOLDERED
 2. WIRE TYPE: TXL OR GXL
 3. CONNECTORS TO BE LABELED AS SHOWN
 4. USE CONVOLUTED SPLIT LOOM
 5. ALL DIMENSIONS ARE IN INCHES

Figure 6-7.

NOTES

Wiring Harness - Canbus Backbone, QSB4.5t Tier 3 - 120458 (1 of 1)



NOTES:

1. ALL INTERNAL CONNECTIONS TO BE SOLDERED
2. WIRE TYPE: TXL OR GXL
3. CONNECTORS TO BE LABELED AS SHOWN
4. USE CONVOLUTED SPLIT LOOM
5. ALL DIMENSIONS ARE IN INCHES

Figure 6-8.

NOTES

LeeBoy Model 695 Motor Grader



6-19

NOTES

Wiring Harness - Fuse Block, Dana 150 Axle - 1010651 (1 of 1)

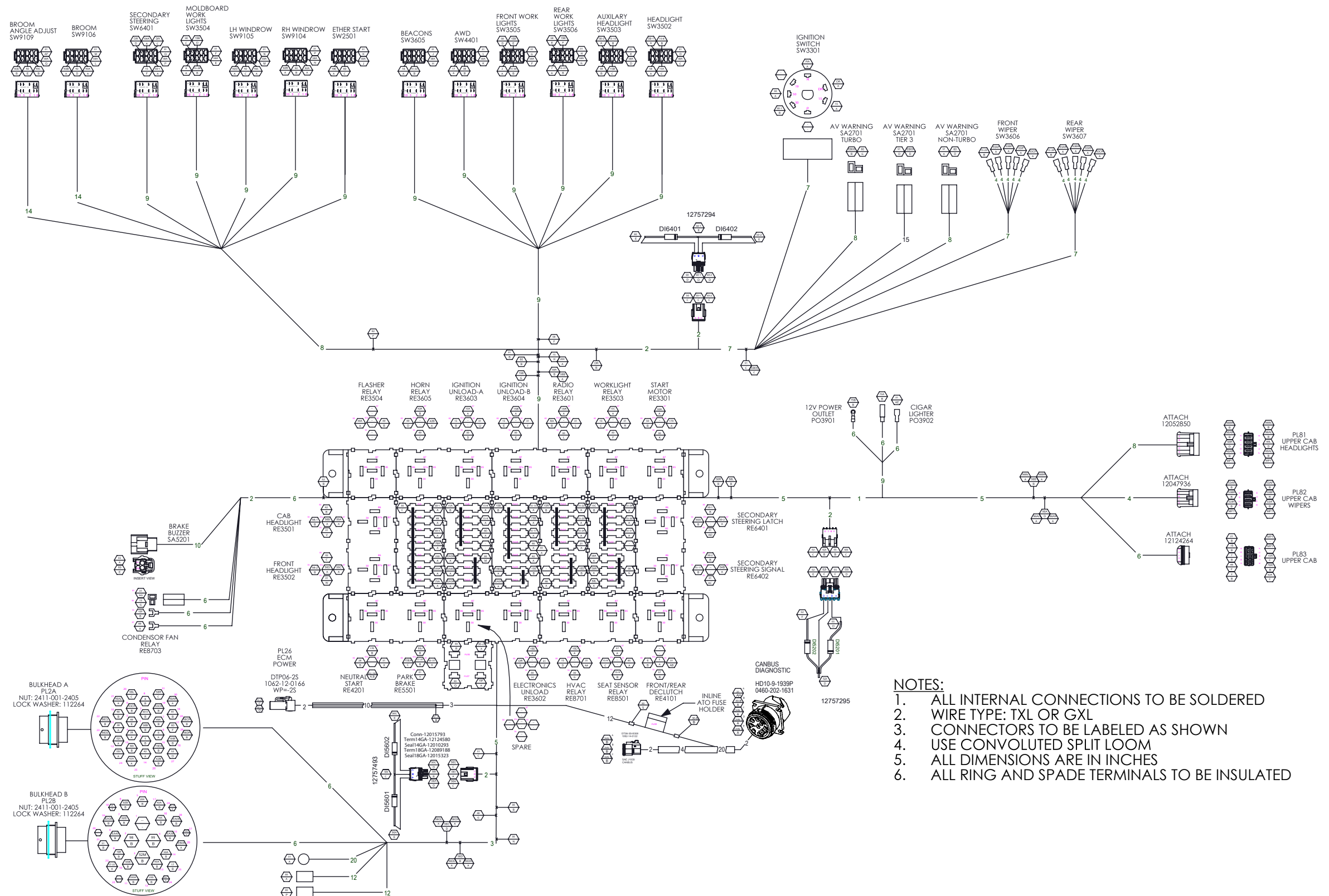


Figure 6-10.

NOTES

Work Load Harness - 1010649 (1 of 2)

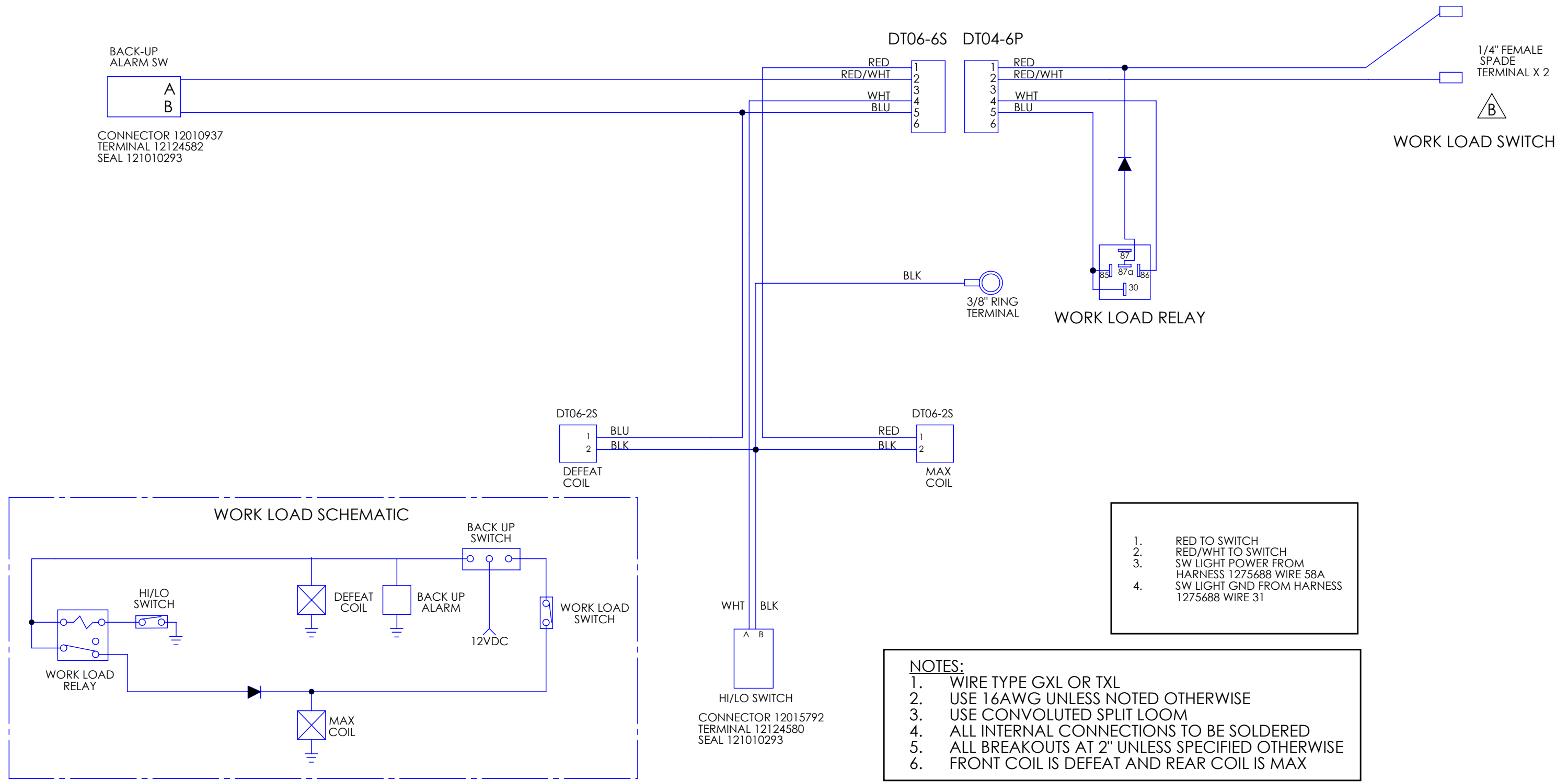


Figure 6-11.

NOTES

Work Load Harness - 1010649 (2 of 2)

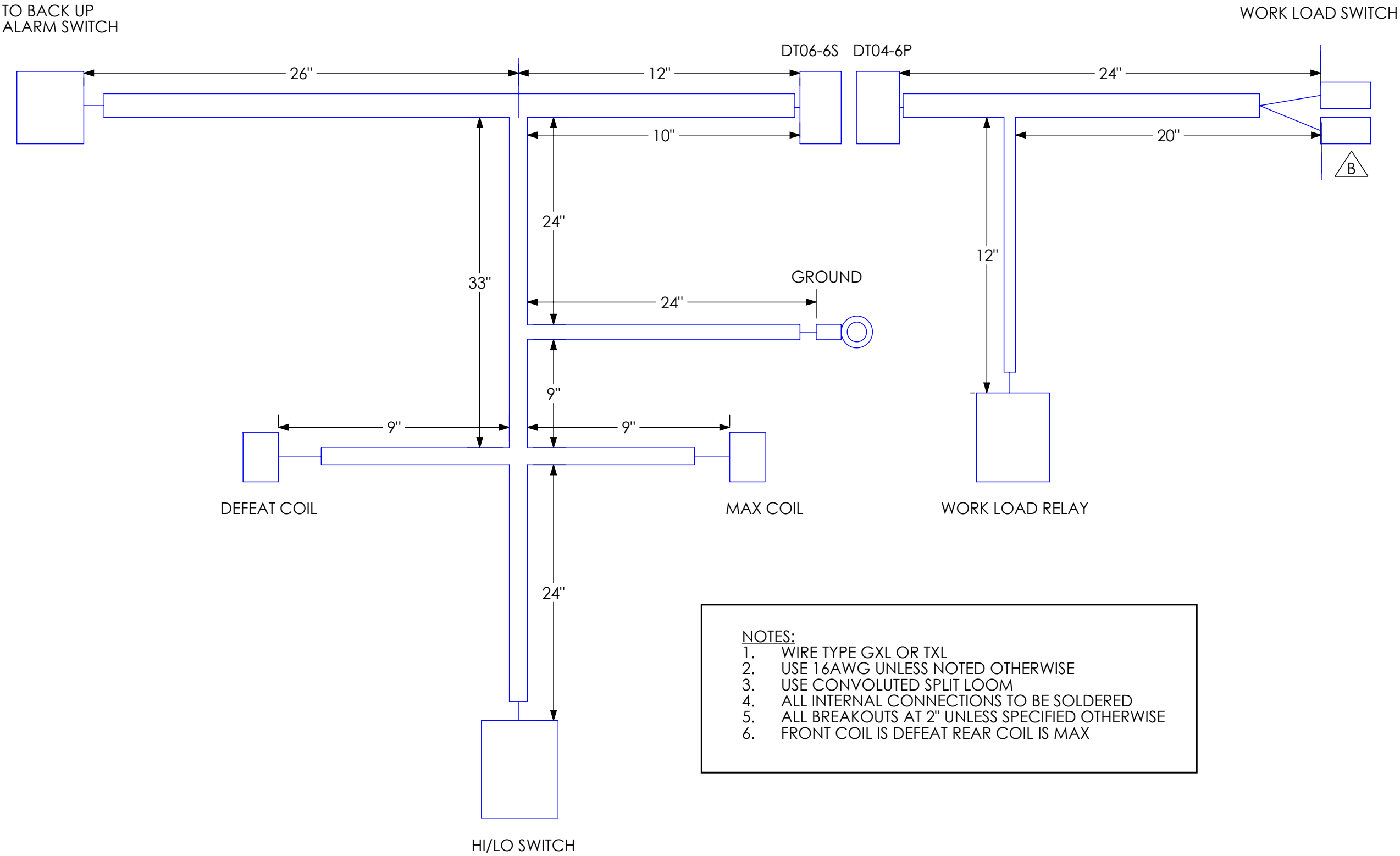


Figure 6-12.

NOTES

Electrical Schematics (1 of 9)

- CONSOLE
- BATTERY CABLE
- ENGINE
- ECM POWER
- QSB ENGINE
- REAR
- COLD START
- PEDESTAL
- UPPER CAB
- FRONT HEADLIGHTS
- EQUA-TRACK
- TAIL LIGHT
- SEC. STEER
- HEATER
- BLADE FLOAT
- REAR FLOAT
- FRONT FLOAT
- BROOM
- WINDROW
- CAN BUS

- NOTES:
- 1. ALL INTERNAL CONNECTIONS TO BE SOLDERED
 - 2. WIRE TYPE: TXL OR GXL
 - 3. CONNECTORS TO BE LABELED AS SHOWN
 - 4. USE CONVOLUTED SPLIT LOOM
 - 5. ALL DIMENSIONS ARE IN INCHES

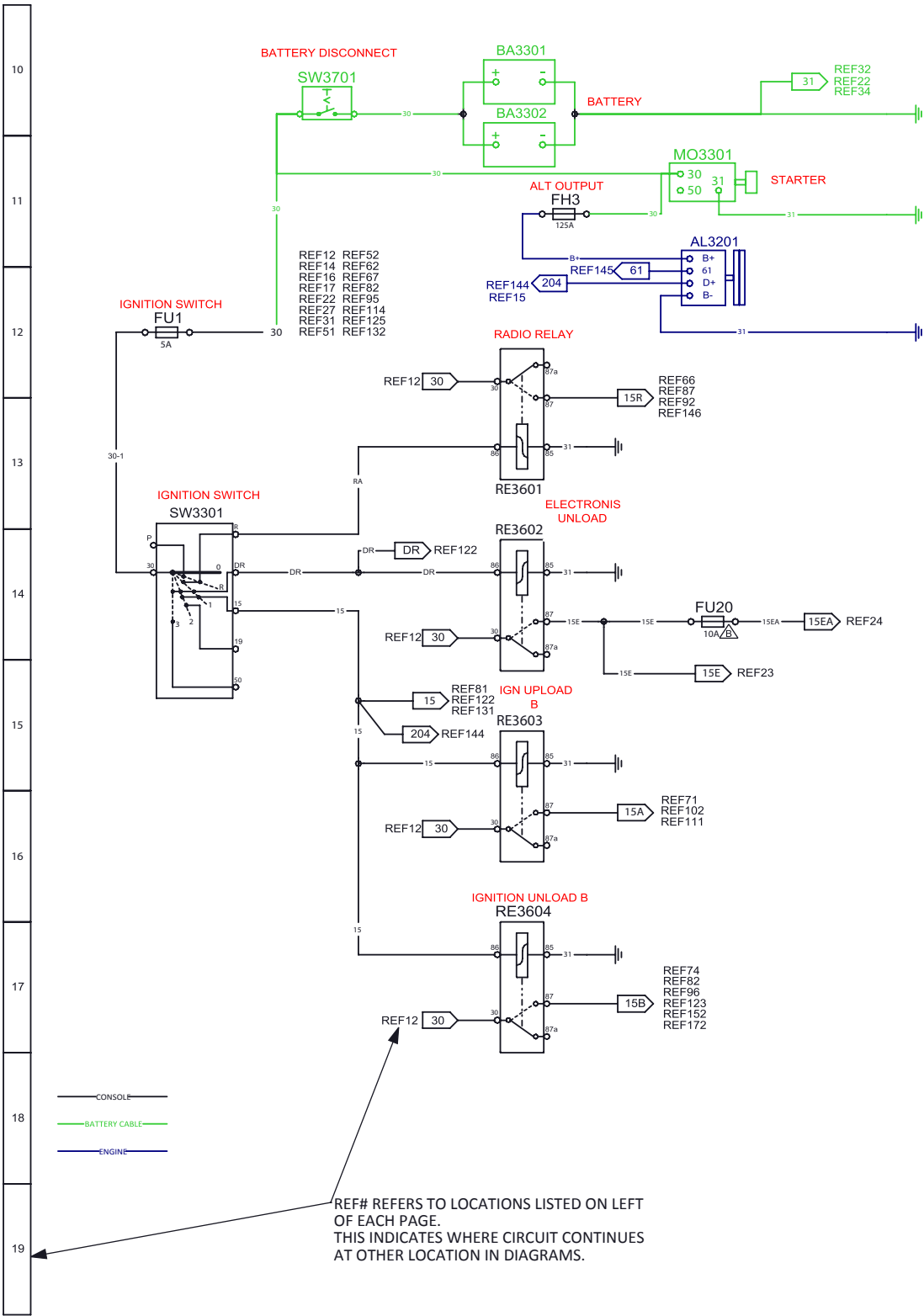
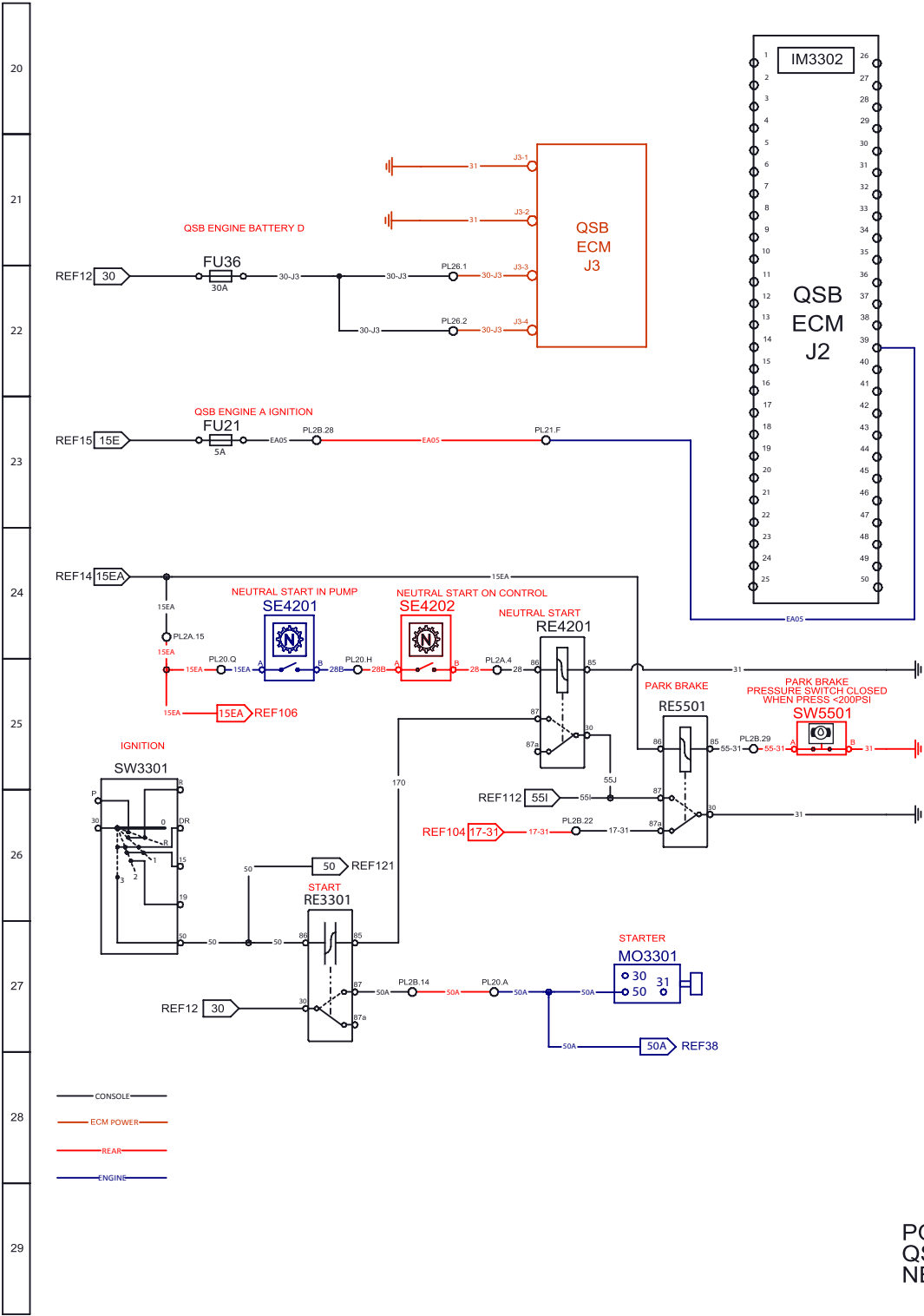


Figure 6-13.

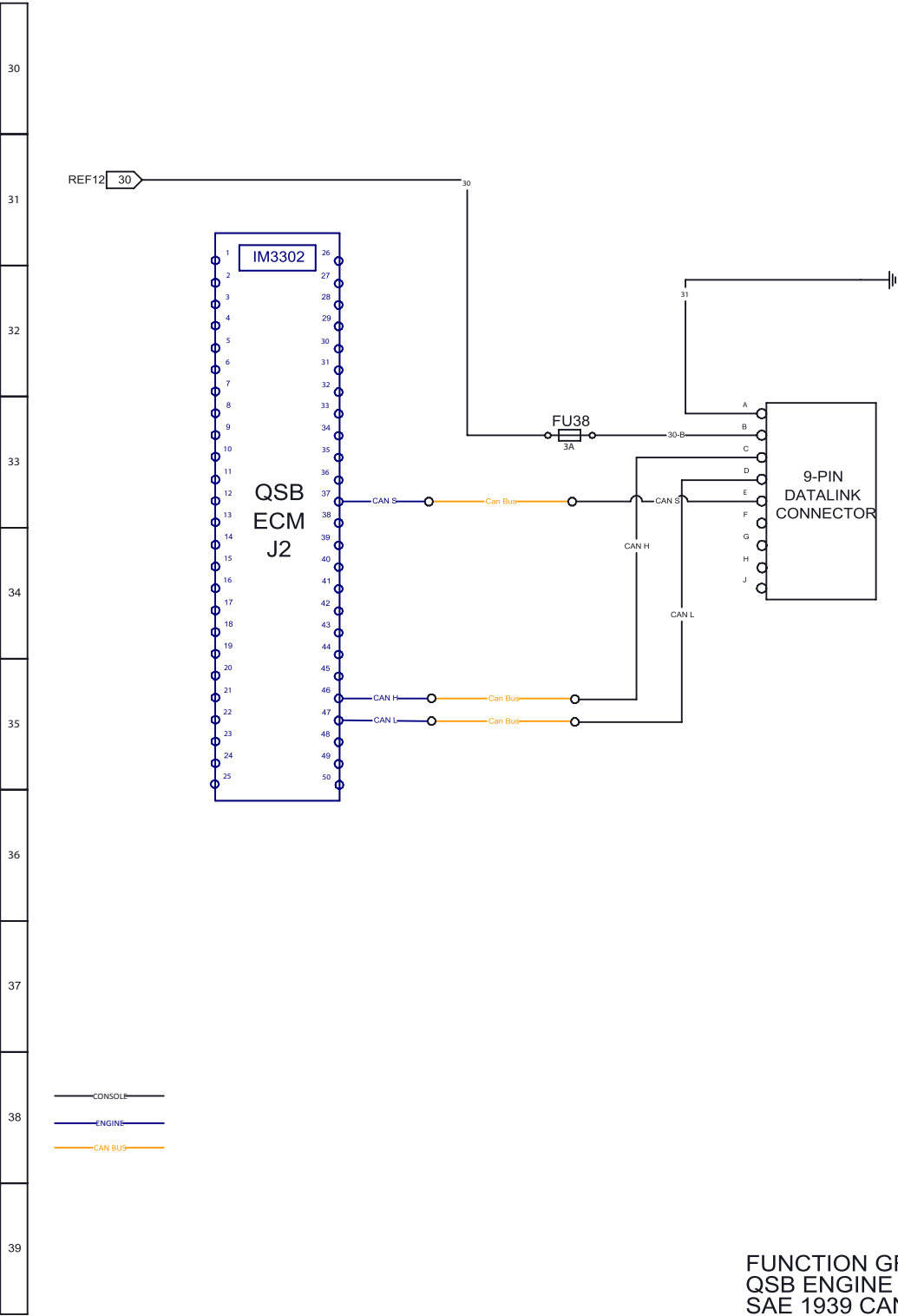
NOTES

Electrical Schematics (2 of 9)



POSITIVE FEED
QSB ENGINE
NEUTRAL START

Figure 6-14.



FUNCTION GROUP 2
QSB ENGINE
SAE 1939 CAN BUS

NOTES

Electrical Schematics (3 of 9)

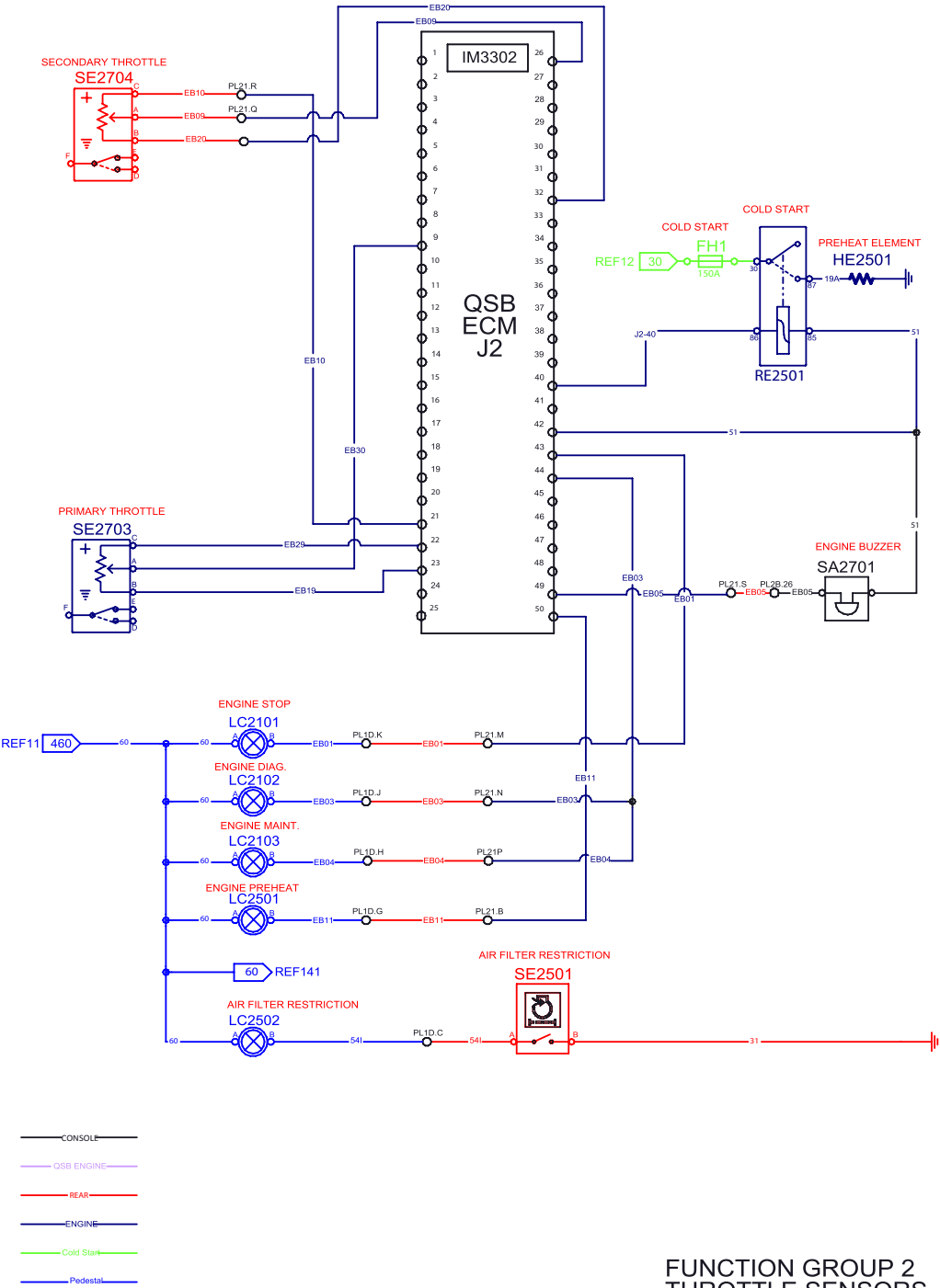
40
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CUMMINS INTERNAL HARNESS

FUNCTION GROUP 2
QSB ENGINE SENSORS

Figure 6-15.

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FUNCTION GROUP 2
THROTTLE SENSORS,
INDICATOR LIGHTS,
ETHER, AV WARNING

NOTES

Electrical Schematics (4 of 9)

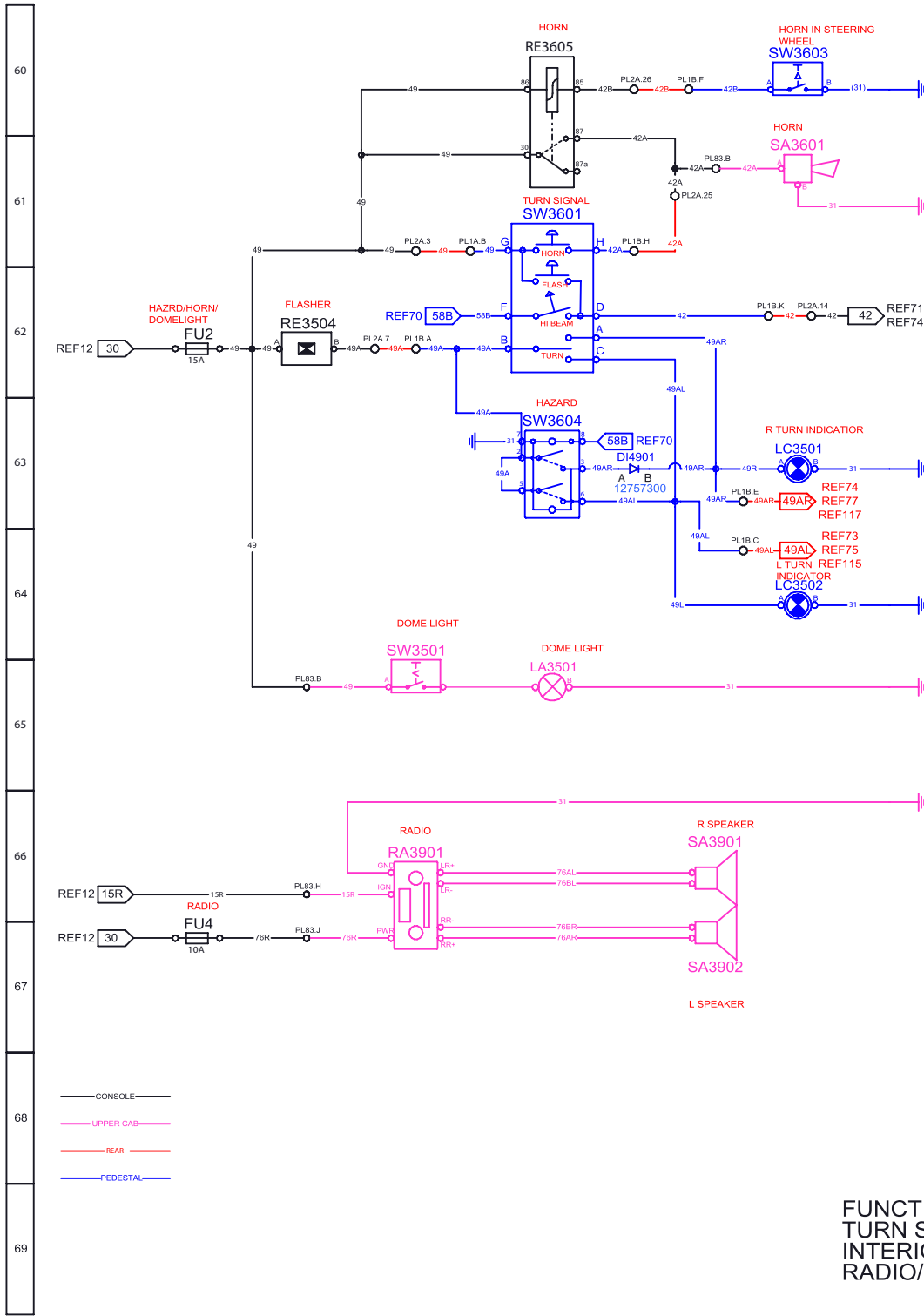
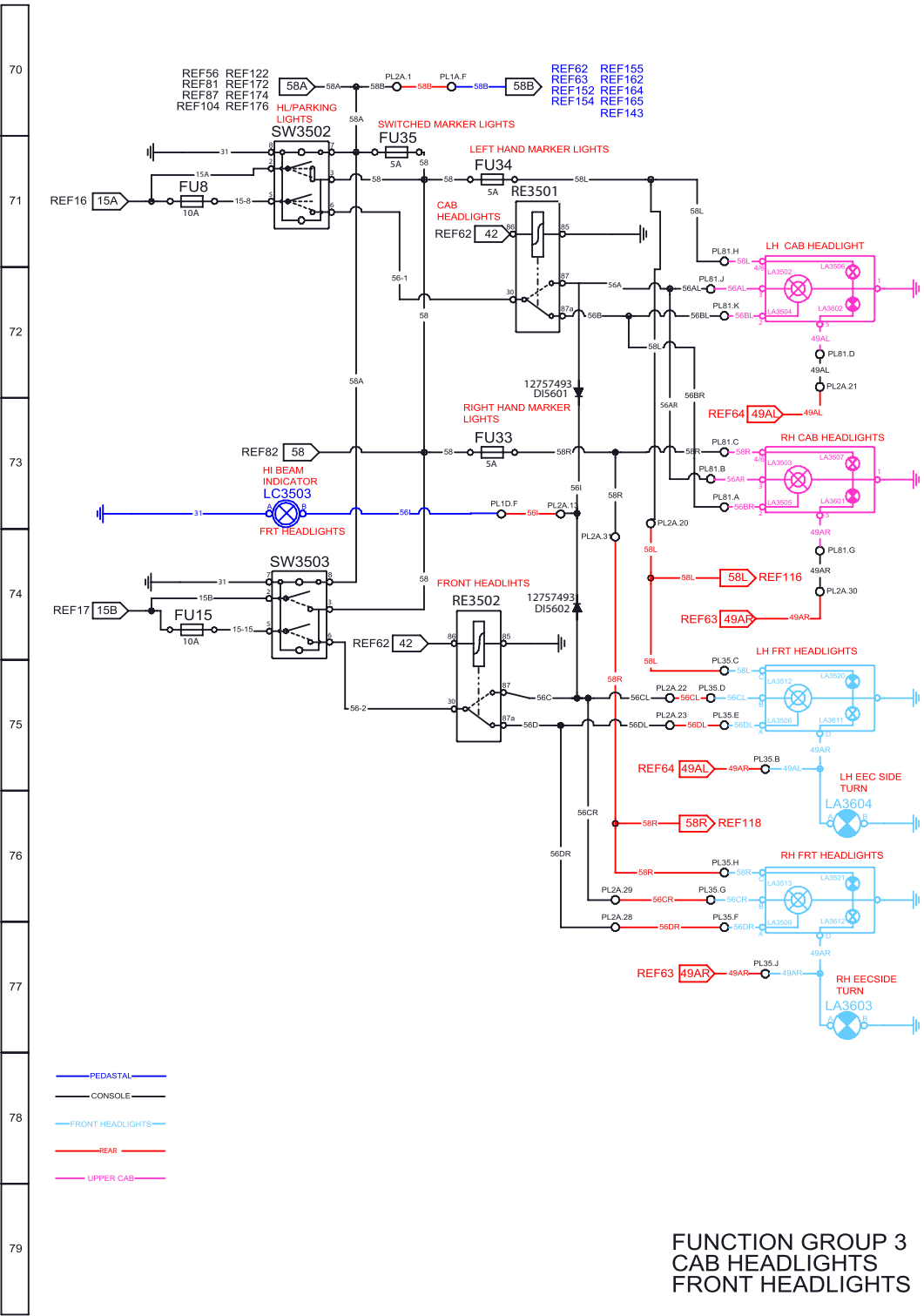


Figure 6-16.



NOTES

Electrical Schematics (5 of 9)

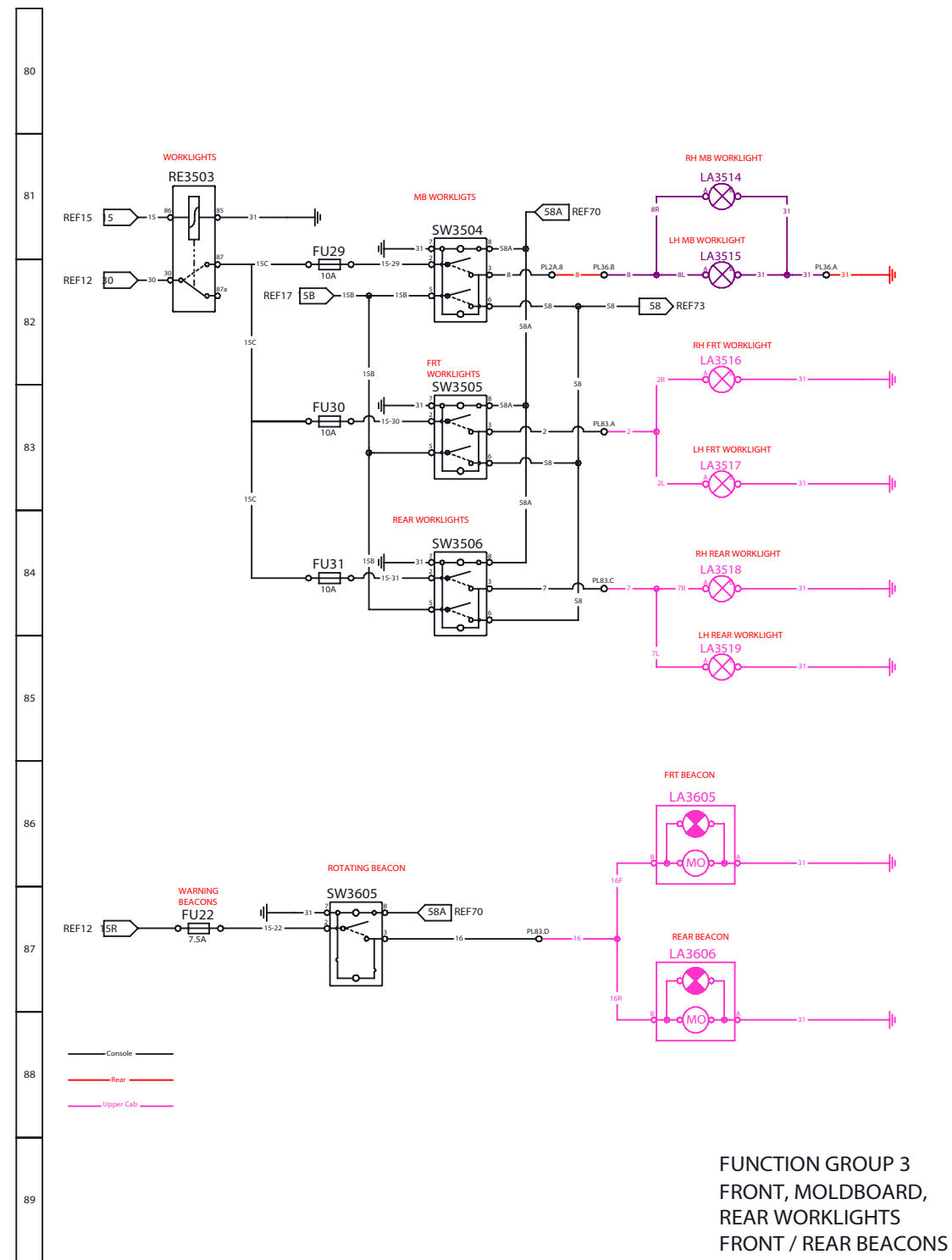
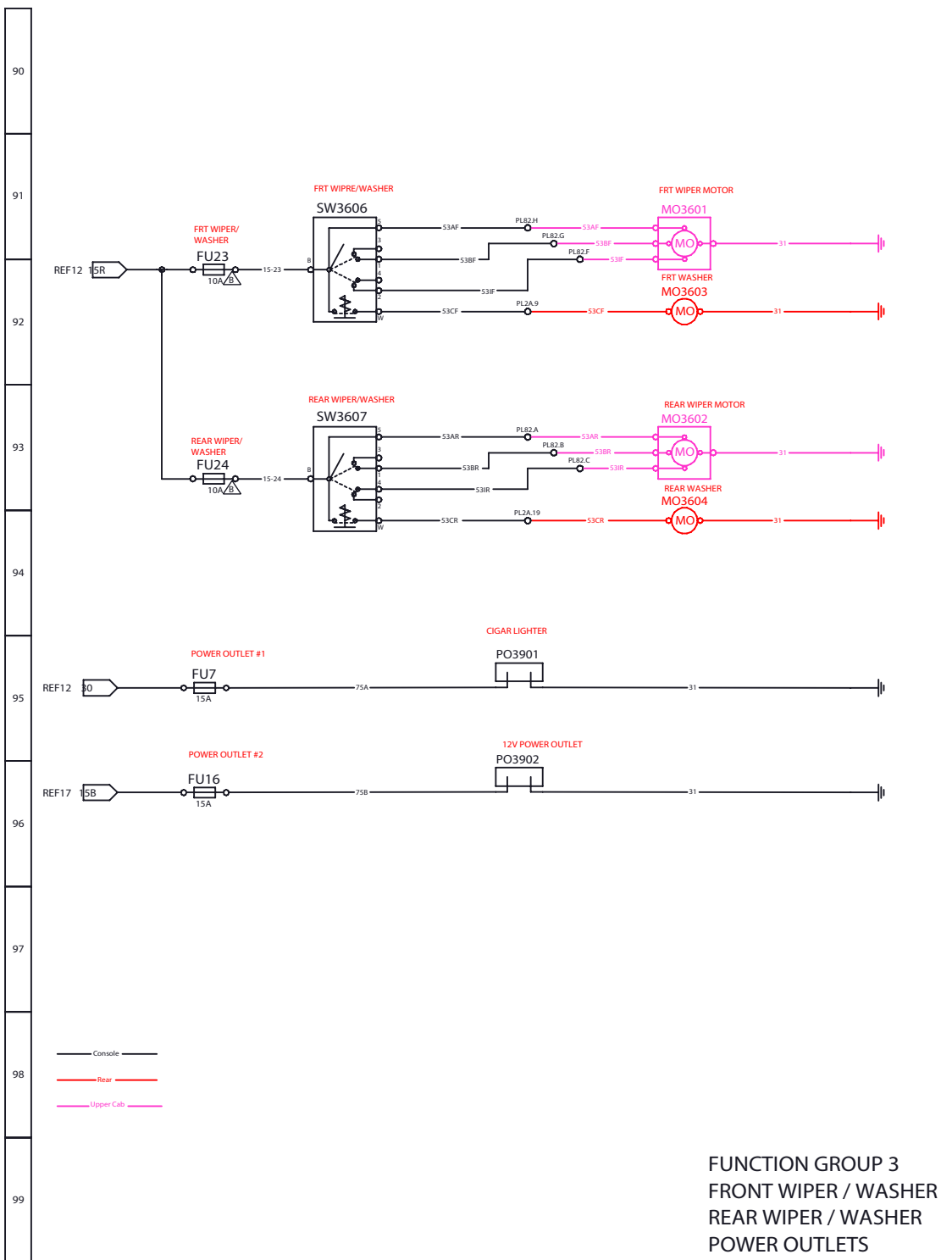


Figure 6-17.



NOTES

Electrical Schematics (6 of 9)

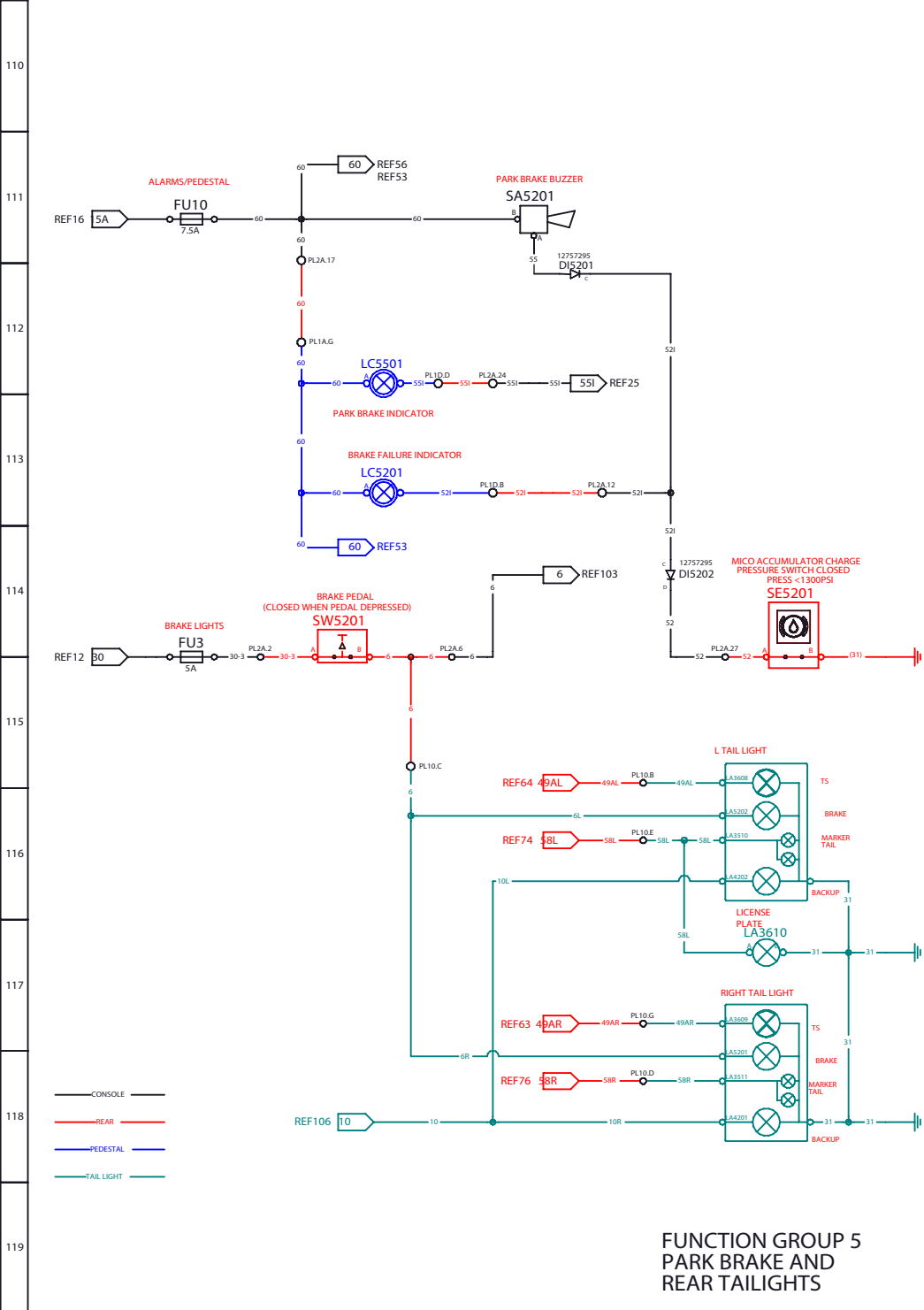
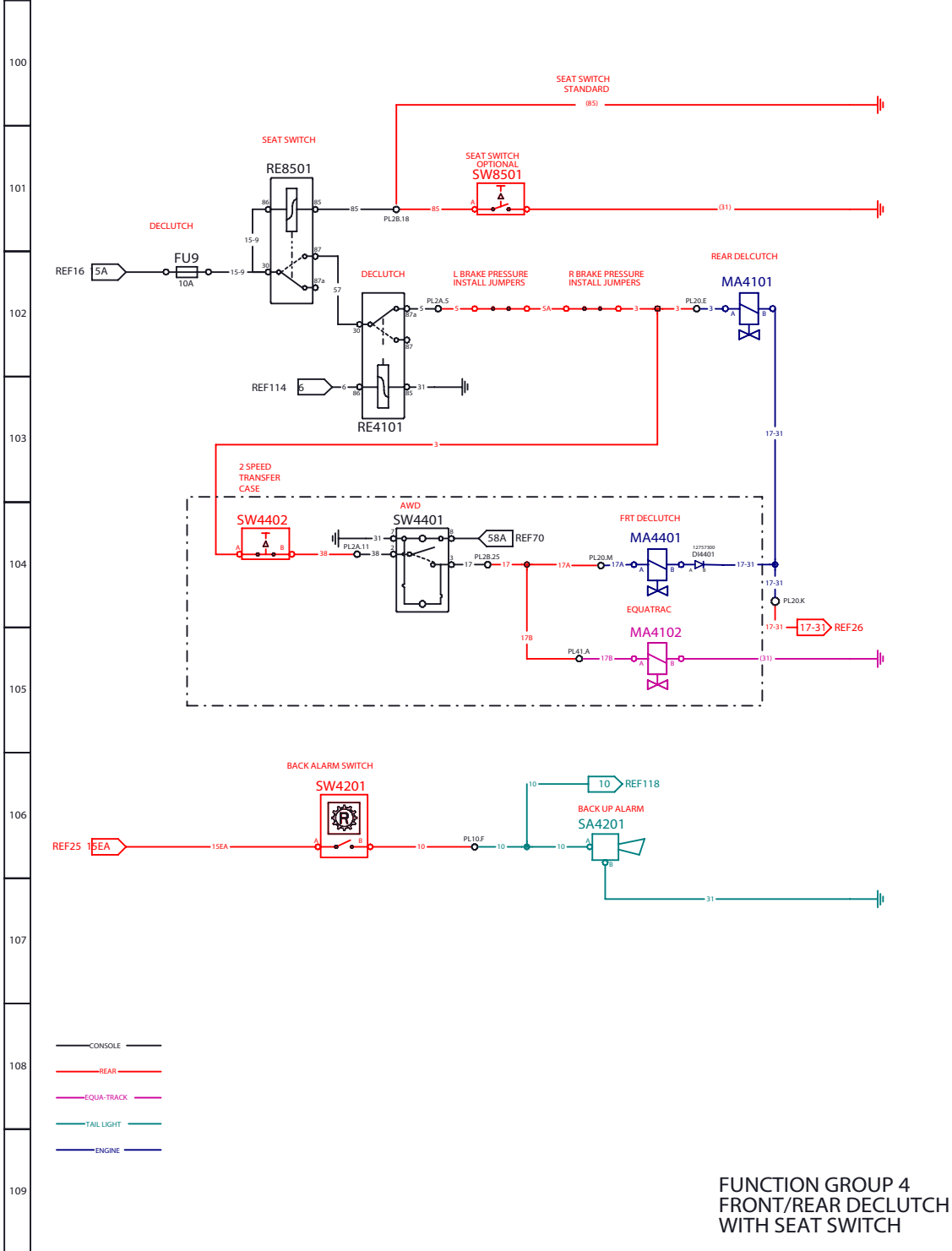


Figure 6-18.

NOTES

LeeBoy Model 695 Motor Grader



6



NOTES

Electrical Schematics (8 of 9)

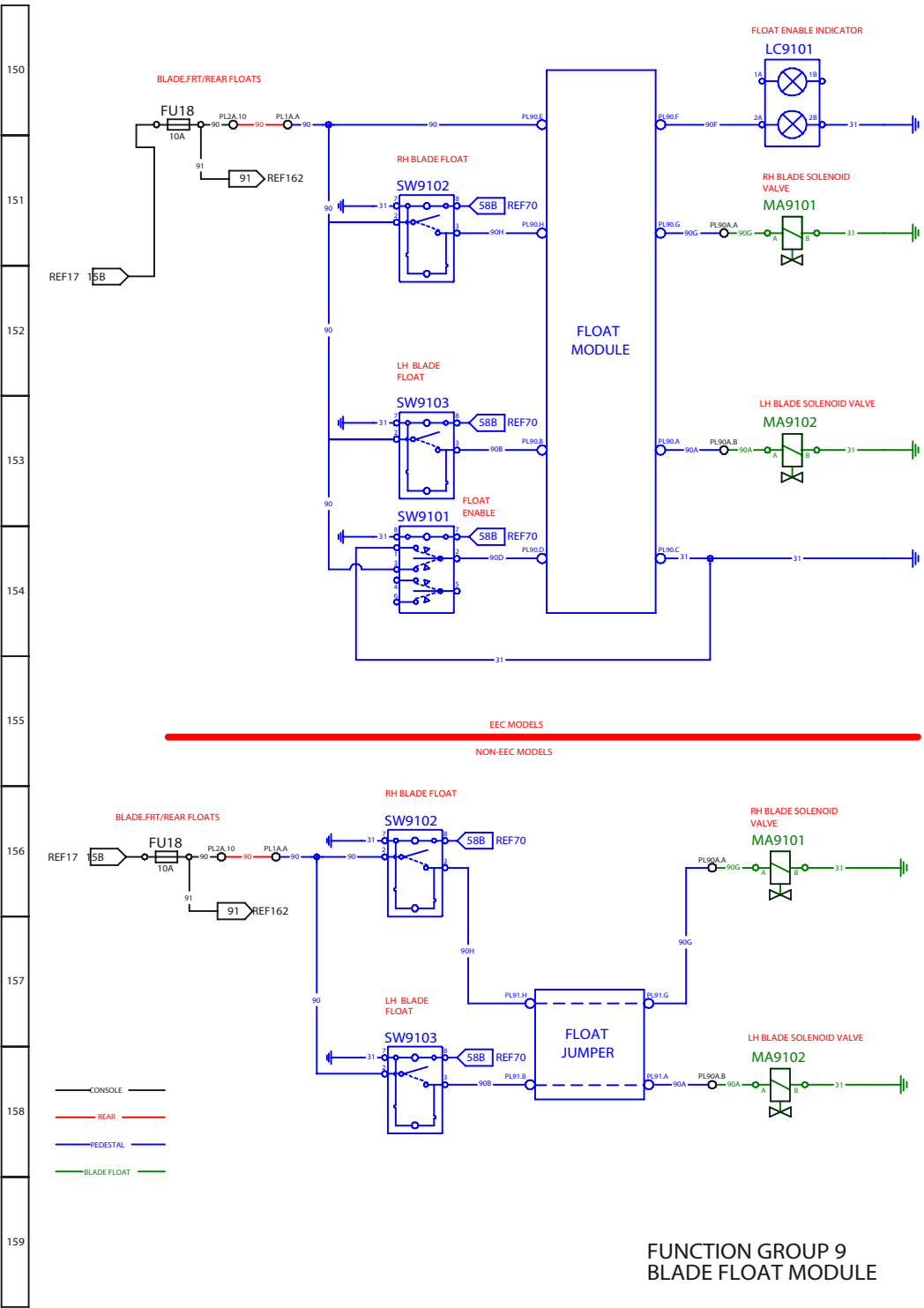
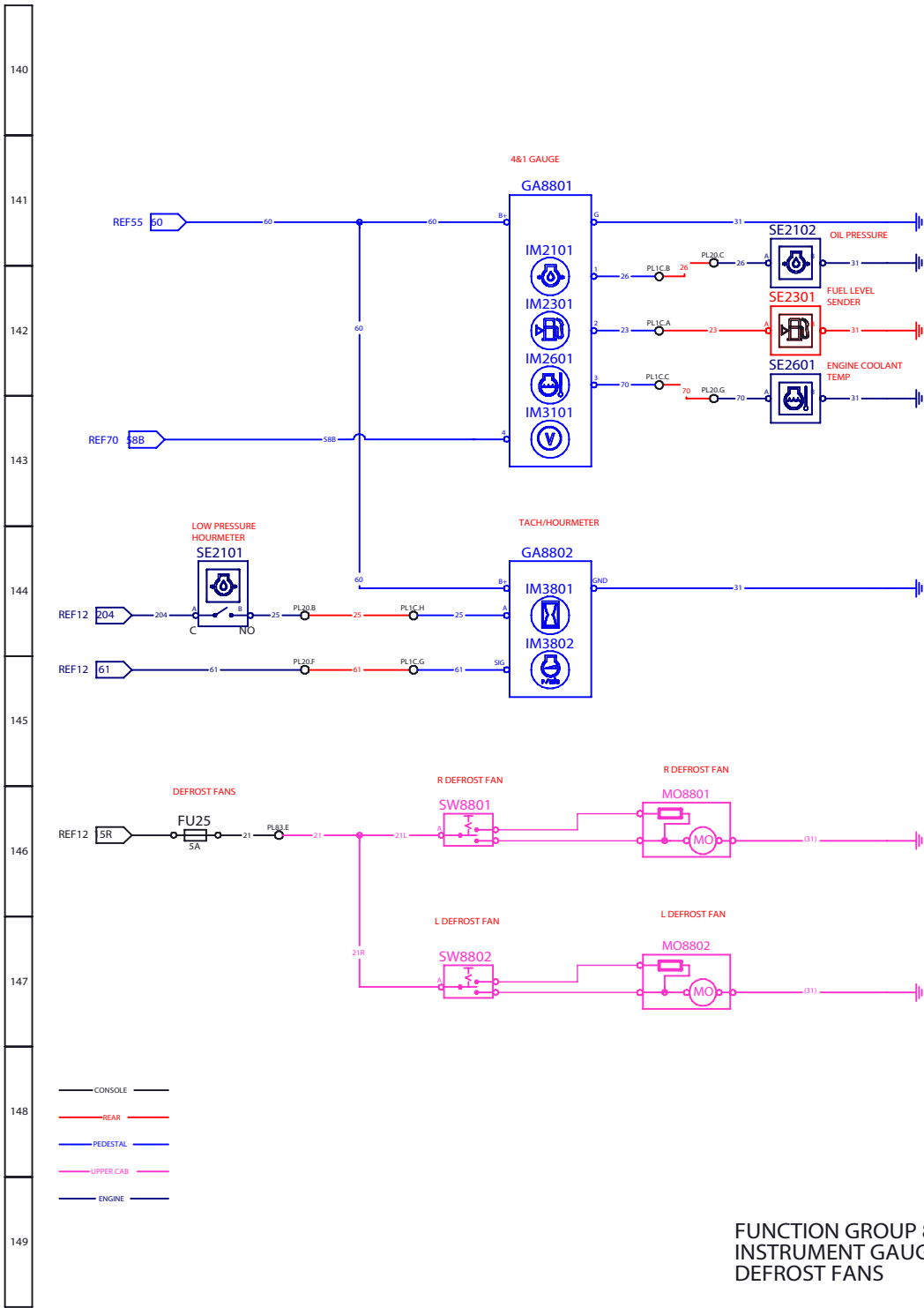


Figure 6-20.

NOTES

The diagram illustrates the wiring for the Float Module, divided into two sections: EEC Models and Non-EEC Models.

EEC Models:

- Front Float:** SW9107 (58B REF70) connected to PL91.A and PL91.H.
- Rear Float:** SW9108 (58B REF70) connected to PL91.A and PL91.B.
- Float Enable:** SW9101 (58B REF70) connected to PL91.A and PL91.D.
- Float Module:** A central unit with terminals PL91.A, PL91.B, PL91.C, PL91.D, PL91.E, PL91.F, PL91.G, and PL91.H.
- Float Enable Indicator:** LC9101 (1A, 2A, 1B, 2B) connected to PL91.F and PL91.G.
- FRT Float Solenoid Valve:** MA9103 connected to PL91.G and PL91.A.
- Rear Float Solenoid Valve:** MA9104 connected to PL91.A and PL91.C.

Non-EEC Models:

- Front Float:** SW9107 (58B REF70) connected to PL91.A and PL91.H.
- Rear Float:** SW9108 (58B REF70) connected to PL91.A and PL91.B.
- Float Jumper:** A unit with terminals PL91.A, PL91.B, PL91.C, and PL91.D.
- FRT Float Solenoid Valve:** MA9103 connected to PL91.G and PL91.A.
- Rear Float Solenoid Valve:** MA9104 connected to PL91.A and PL91.C.

Legend:

- Console — (Black)
- Rear — (Red)
- Pedestal — (Blue)
- Rear Float — (Green)
- Front Float — (Brown)

NOTES

HYDRAULIC SCHEMATICS (1010609)

Bogie Axle

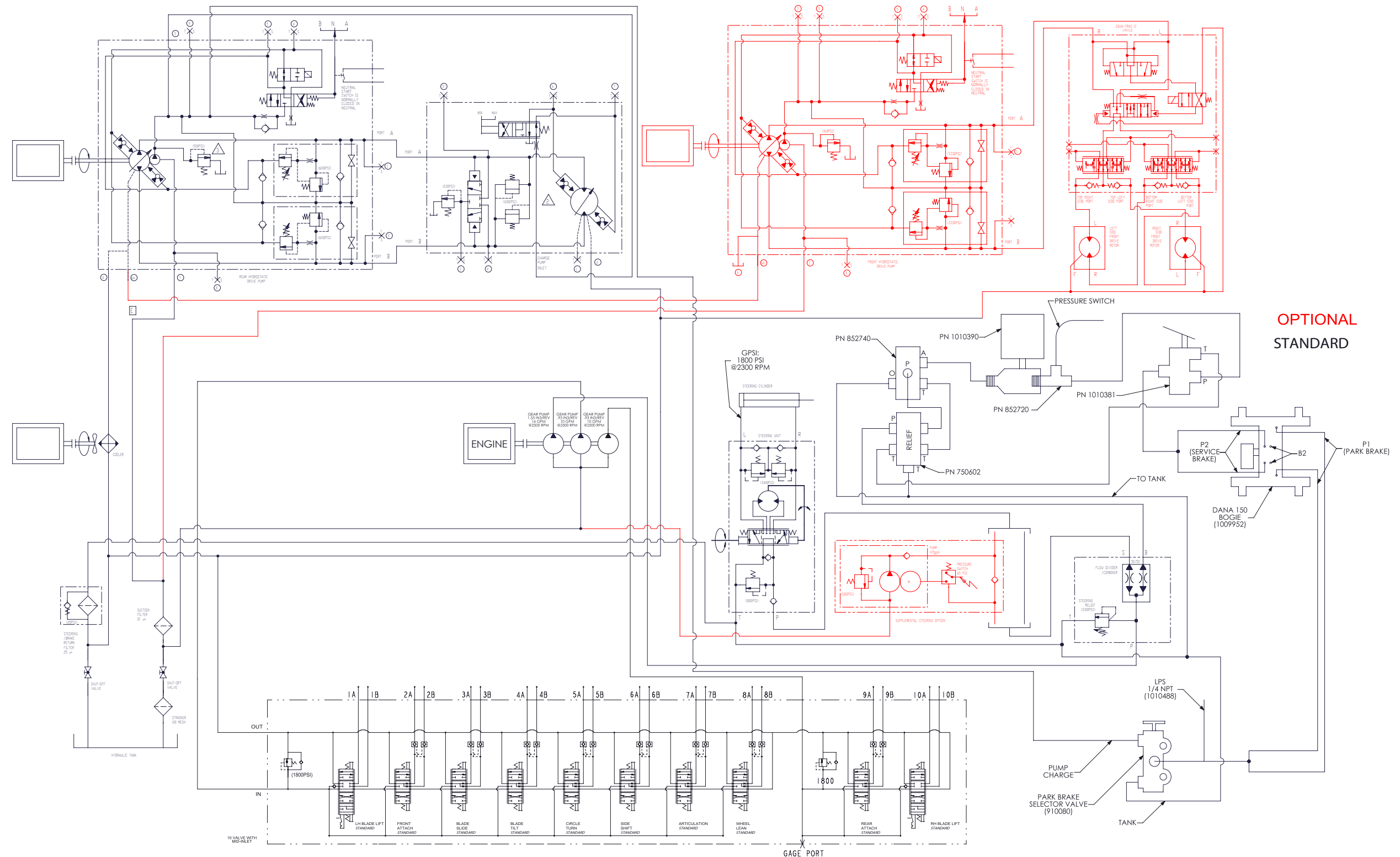


Figure 6-22.

NOTES



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REPLACEMENT PARTS LIST

Description	Part #
COWLING	
Trim-Seal	107760
CAB	
Door Seal, P-Stem Bulb	12755801
Kit, Insulation, Enclosed Cab	120588
Alarm, Back-Up, Warning Unit	11850145
HYDRAULIC SYSTEM	
Filter Element-Cab Fresh Air Intake	12755168
Filter Element- Return- 25 Micron - Series 6	116158
Filter-Suction-IO Micron-Long	115570
MISCELLANEOUS	
Decal, Kit, Decorative, 695 (AWD / Non-AWD)	1014694
Manual, 695	1012106-01
SEALS (OTHER)	
Seal, Outer, Wheel Axle, 3 In.	100562
Seal, Front Wheel Hub	100383
Seal, Bottom King Pin Shaft HSG	100770
Seal, Edge, Top Air Baffle	12755944
Seal, Long, Side Baffle, Tier-3	120189
Seal, Short, Side Baffle, Tier-3	120190
Seal, Art. Joint	100237
SEAL KITS	
Seal Kit - Steering (Cyl. P/N: 1010150)	1010139-01
Seal Kit - Wheel Lean (Cyl. P/N: 1010147)	1010147-01
Seal Kit - Steering (Cyl. P/N: 1010139)	1010139-01
Seal Kit - Rear Ripper (Cyl. P/N: 1010145)	1010140-01
Seal Kit - Front Blade (Cyl. P/N: 1010144)	1010140-01
Seal Kit - Blade Turn (Cyl. P/N: 1010142)	1010139-01
Seal Kit - Circle Shift (Cyl. P/N: 1010143)	1010140-01
Seal Kit - Blade Lifts (Cyl. P/N: 1010140)	1010140-01
Seal Kit - Blade Slide (Cyl. P/N: 1010141)	1010140-01
Seal Kit - Blade Tilt (Cyl. P/N: 1010146)	1010146-01
Seal Kit - Articulation (Cyl. P/N: 1010148)	1010140-01
ENGINE	
Element, Primary, Air Filter	988962-01
Filter Element-Cab Fresh Air Intake	12755168

REPLACEMENT PARTS LIST (CONT.)

Description	Part #
Filter, Fuel, Engine, Cummins QSB4.5	1010325-05
Filter, Oil, Engine, Cummins QSB4.5	1010325-04
V-Belt, L4 45" X 0.50	1008969
LIGHTS / WIPERS / SIGNALS	
Domelight, 12V - Bolt On Cab - Push Button	12755030
Headlight, Hanging, Left, 12V	12756769SRV
Headlight, Hanging, Right, 12V	12756770SRV
Strobe Light, Low Amber, Low	12755603
Worklight, 12V, Hanging	11039856
Arm, Wiper, 24 In. Pantograph, Blk.	12755023
Blade, Wiper, 28" Flex, Blk.	12755024
Signal Switch-Turn/High	400085

Abbreviations

Abbr.	Definition
A.R.	As Required
AMP.	Amperes
ART.	Articulation
Aux	Auxiliary
AWD	All Wheel Drive
BLK.	Black
Brkt.	Bracket
c/w	Complete With
CYL.	Cylinder
DIA	Diameter
Frt.	Front
Ft.	Feet
FT	Full Thread
Gnd.	Ground
Grd.	Guard
hp	Horsepower
HYD.	Hydraulic
In.	Inches
Inst.	Installation
Lg.	Large

Abbr.	Definition
LH.	Left-Hand
mm	Millimeters
Mtr.	Motor
O.D.	Outside Diameter
Ply	Plies
P/N	Part Number
RH.	Right-Hand
Ref	Reference
RGT	Right
Rt.	Right
ROPS	Rollover Protective Structure
SCRW	Screw
Sngl.	Single
S/N	Serial Number
Sty.	Style
V	Volt(s)
Zi	Zinc-Plated
NOM.	Nominal
WSHR.	Washer
WLDMT.	Weldment

MAIN FRAME AND FRONT FRAME

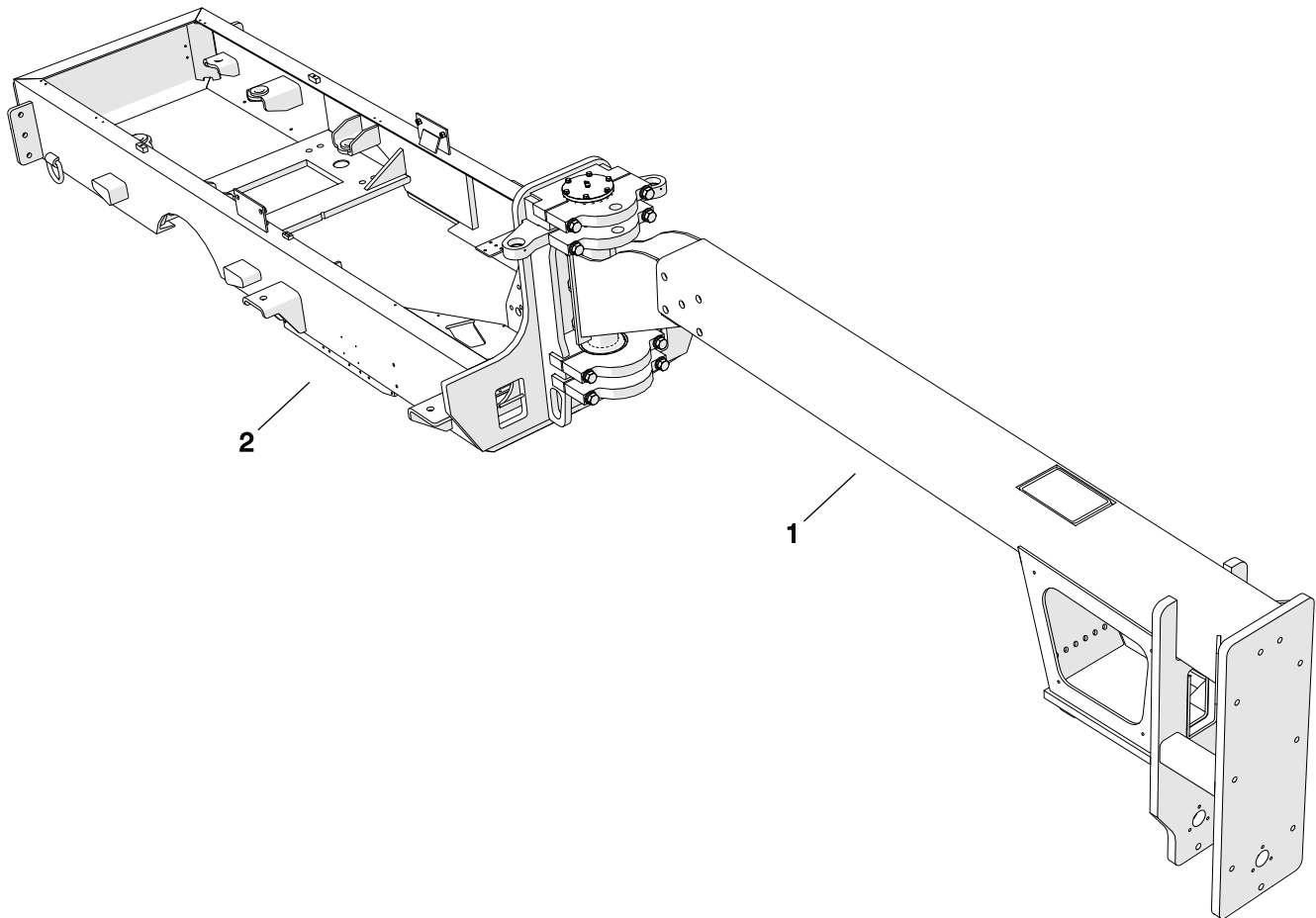


Figure 7-1.

Main Frame and Front Frame Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12758100	1	Weldment, Frame, Front, St 2	
2	1010208	1	Weldment, Frame, 695, Dana Bogie	

FRONT FRAME ASSEMBLY

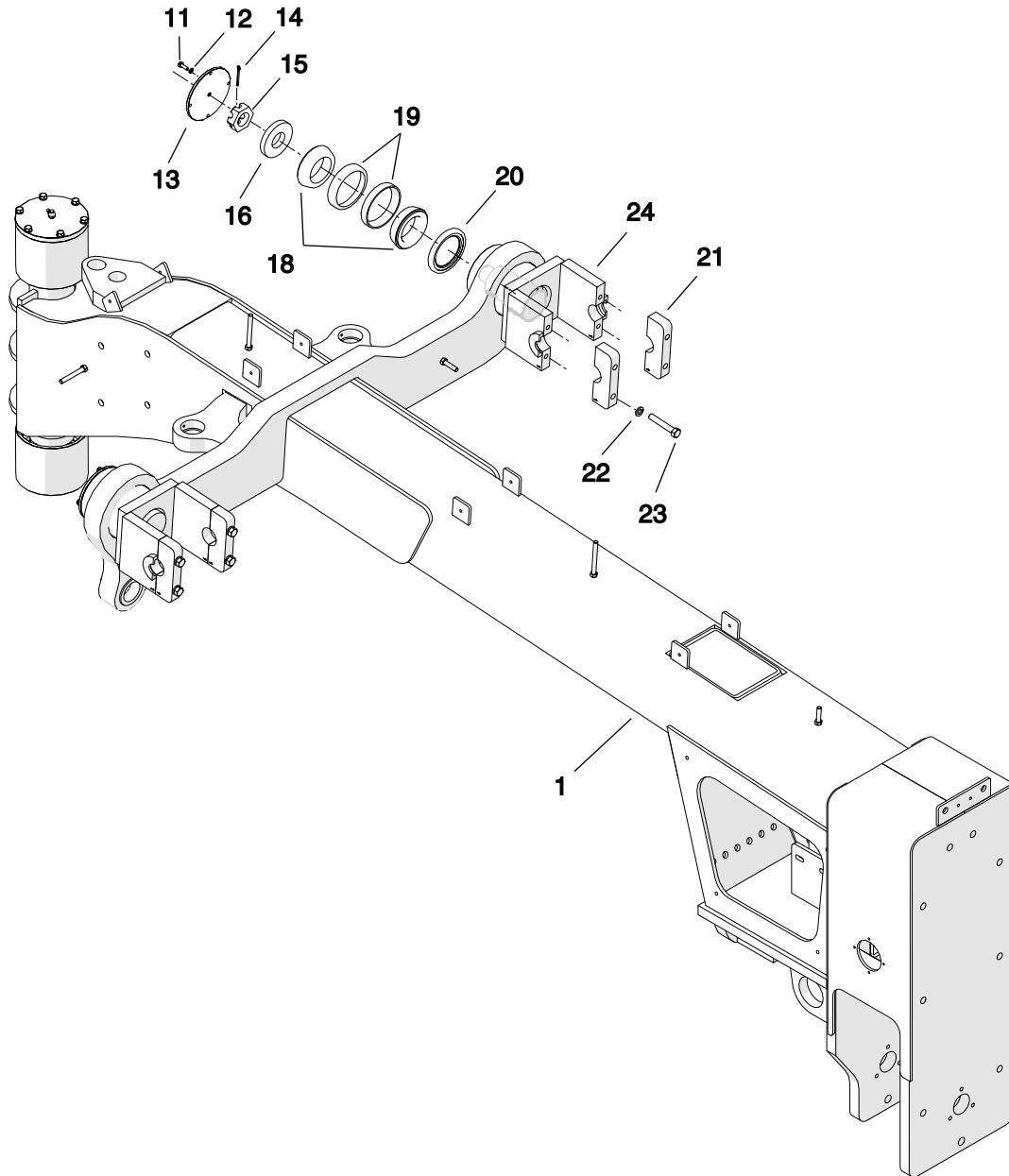


Figure 7-2.

Front Frame Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12758100	1	Weldment, Frame, Front, ST 2	
11	100-4-20-12-5F	8	CSHH, 1/4-20 X 0.75, GR5, FT	
12	302-4	8	Washer, Lock, 1/4	
13	100243	2	Plate, Trunnion Housing Cover	
14	13A-0548ZI	2	Cotter Pin, 5/32 X 3 Plated	
15	100242	2	Slotted Hex Jam Nut - 1-1/2 -12	
16	109174	2	Retainer Washer - Trunnion	
18	100240-CMG	4	Bearing, Trunnion	
19	100241	4	Race, C-60; 70; 80 Trunnion	
20	100562	2	Seal, Outer, Wheel Axle, 3 In.	
21	12757966-02	4	Plate, Side Cap	
22	118-5	8	Washer, Lock, 1/2	
23	100-8-13-48-5	8	CSHH, 1/2-13 X 3, GR5	
24	12757966-01	4	Plate, Side Bottom	

ARTICULATION JOINT

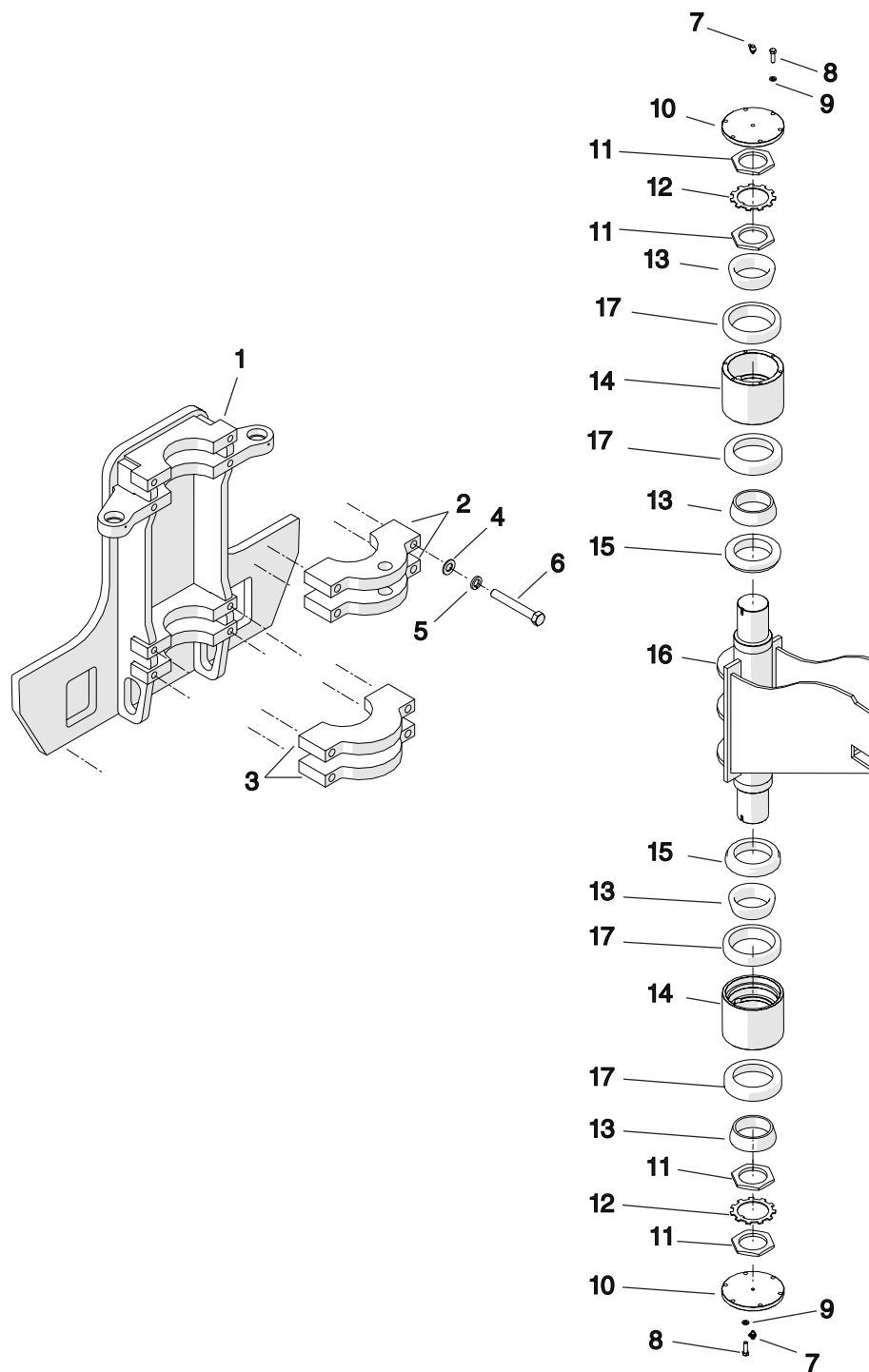


Figure 7-3.

Articulation Joint Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	117245	1	Weldment Headplate, C-Series Grader	
2	12754560	2	Bracket, Articulation Lock Clamp -Top Cap	
3	12754561	2	Bracket, Articulation Joint Bottom Cap (A)	
4	300-14	8	Washer, Flat, SAE, 0.875	
5	302-14	8	Washer, Lock, 7/8	
6	100-14-9-104-8	8	CSHH, 7/8-9 X 6.5, GR8	
7	107514	2	Relief Grease Fitting	
8	102-206-1A	12	CSHH, 0.375-16 X 1.25, GR5	
9	118-3	12	Washer, Lock, 3/8	
10	100232	2	Cap, ART. BRG. HSG., C60-86	
11	100233	4	Nut, Art. Joint	
12	100234	2	Lock Washer, Art. Joint	
13	100235	4	Bearing, Art. Joint / Tandem	
14	100229	2	Bearing Housing, Articulation	
15	100237	2	Seal, Art. Joint	
16	Ref	1	Articulation Shaft Weldment	
17	100236	4	BRG. Race ART. Joint	

FRONT FRAME HYDRAULIC

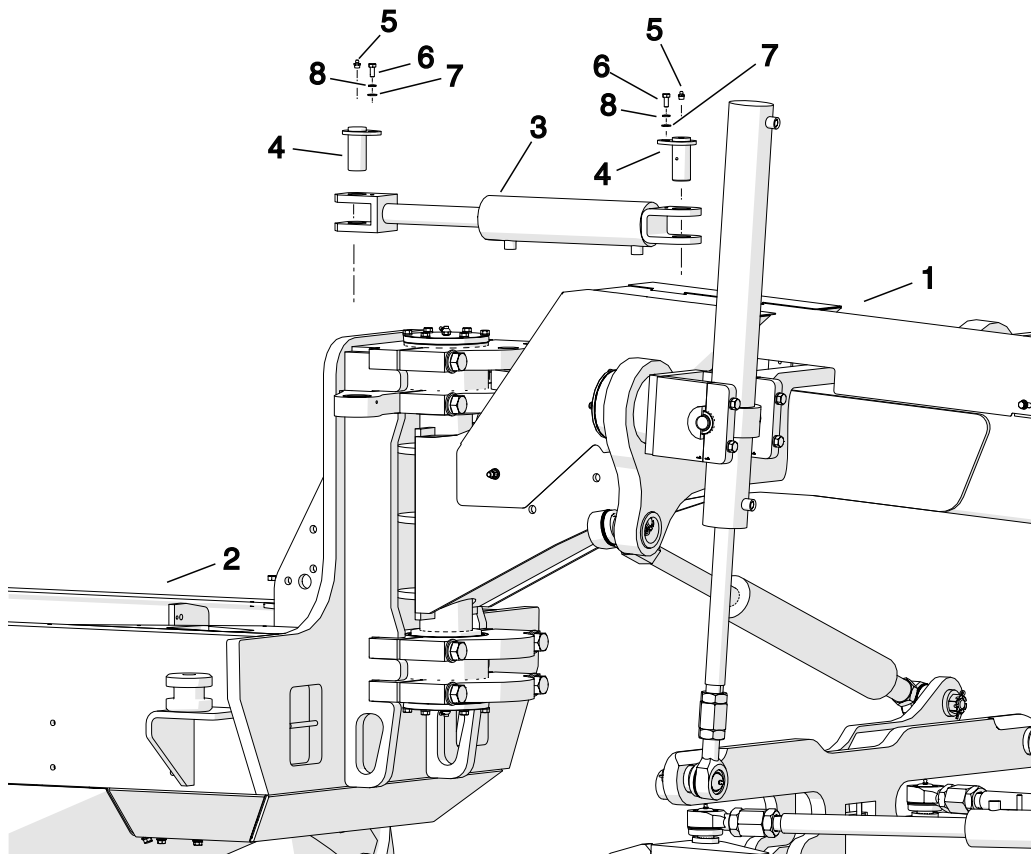


Figure 7-4.

Front Frame Hydraulic Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12758101	1	Subassembly, Frame, Front	
2	1010208	1	Weldment, Frame, 695, Dana Bogie	
3	1010148	2	Cylinder, Hydraulic, 3.00 X 10.00 X 1.50 Rod	(also uses P/N: 1009972)
4	117255	4	Weldment, Pin, Articulation Cylinders	
5	29A-02	4	Grease Fitting, 1/8 NPT STRT.	
6	100-6-16-16-5F	4	CSHH, 3/8-16 X 1, GR5, FT	
7	300-6	4	Washer, Flat, SAE, 3/8	
8	118-3	4	Washer, Lock, 3/8	

TIRE ASSEMBLY AND AXLES (W/OUT AWD)

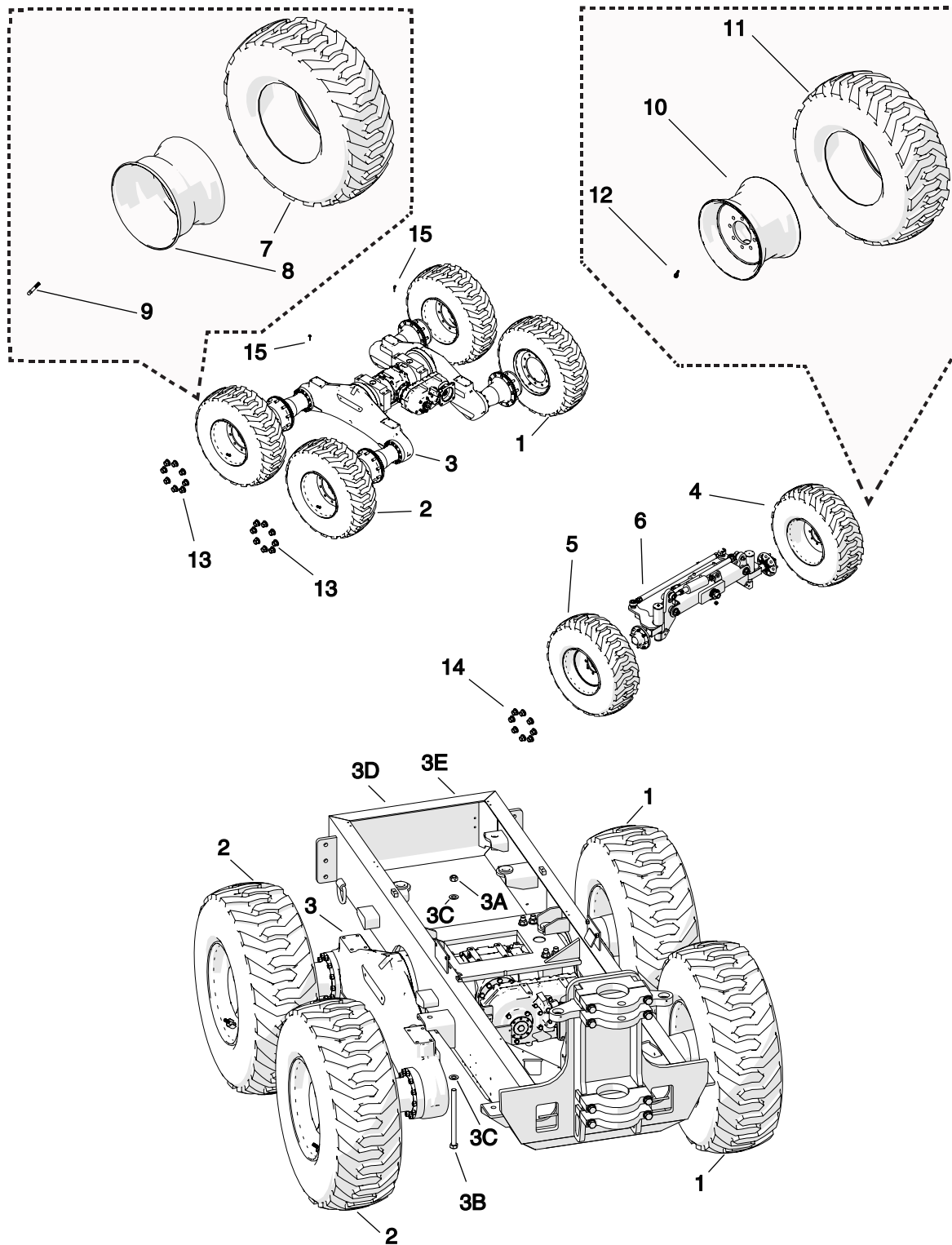


Figure 7-5.

Tire Assembly and Axles (w/out AWD) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010197L	2	Left Wheel, Tire Assembly, W/ Dana	
2	1010197R	2	Right Wheel, Tire Assembly, W/ Dana	
3	1009952	1	Axle, Drive Assembly, Dana 150 Bogie	
3A	95383832	8	7/8-14 Locknut	
3B	100-14-14-192-8	8	CSHH, 7/8-14 X 12, GR8	
3C	81059	16	Washer, Flat, SAE, 0.875	
3D	1010208	1	Weldment, Frame, 695, Dana Weldment,	
3E	1010208	1	Frame, 695, Dana Bogie Tire & Wheel	
4	100511L	1	Assembly	
5	100511R	2	Tire & Wheel Assembly	
6	117236	1	STD 50 DEG. Leaning Front Axle Assembly	Details in Figure 7-7
7	100514	1	Tire, 15 X 19.5 Gauge Tread, 8 Ply.	
8	1010198	1	Wheel, W/ Dana	
9	100513	1	Two Piece Air Valve, Tire / Wheel Standard	(housing and core)
10	100512	1	Wheel Assembly 12.25 X 19.5 Tire, 15" X	
11	110340	1	19.5" 8 Ply.	
12	20192233	1	Valve Stem	
13	983552	32	Nut, Wheel, Flat, M22	
14	100391	16	Lug Nut, 5/8 X 18 NF HEX	
15	1010669	2	Fitting, Grease, Dana 150	
Ref	1010060	2	Pin, Bogie Axle	
Ref	1010209	1	Assembly, Frame, 695, With Dana Bogie	
Ref	1010655	1	Bracket, Oil Drain Bulkhead	(not shown)

FRAME AND FRONT AXLE INSTALLATION

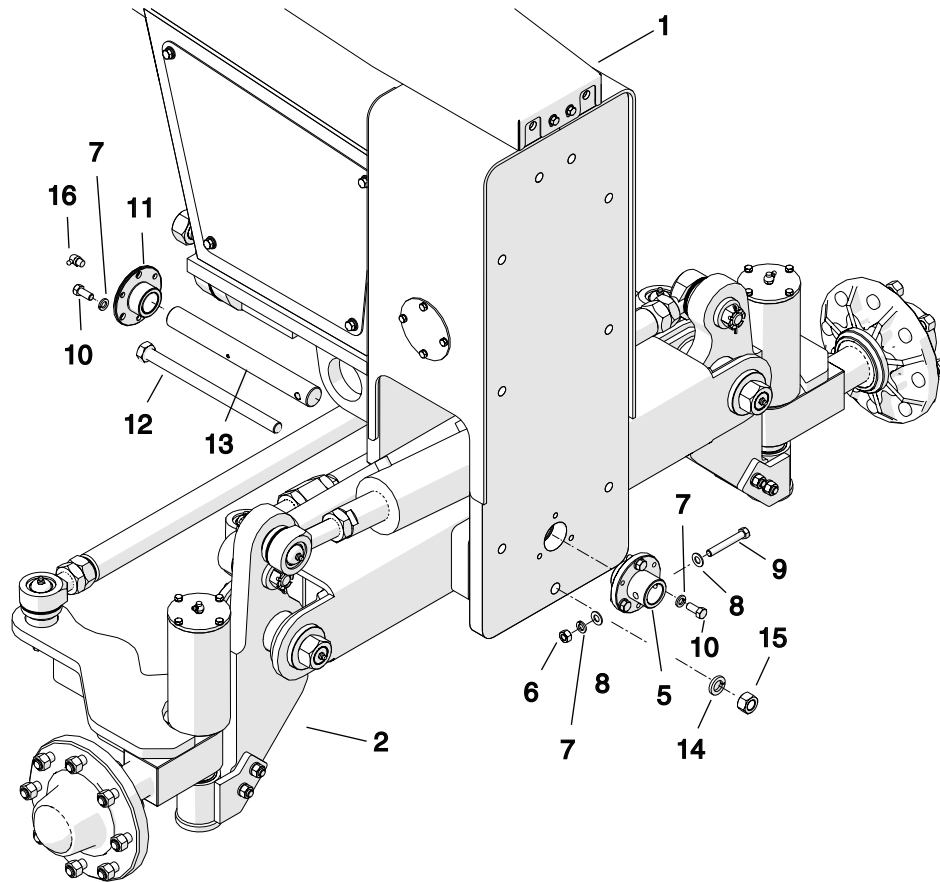


Figure 7-6.

Frame and Front Axle installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	117238	1	Install, 50 Deg. STD Leaning Front Axle	
1	12758099	1	Weldment, Frame, Front, ST. 1	
2	117236	1	STD 50 Deg. Leaning Front Axle	
5	118406	1	Flange, Front Axle, C-Series	
6	200-7-14-8	1	Nut, Hex, 7/16-14, GR8	
7	302-7	7	Washer, Lock, 7/16	
8	300-7	2	Washer, Flat, SAE, 7/16	
9	100-7-14-48-8F	1	CSHH, 7/16-14 X 3, GR8, FT	
10	100-7-14-16-8F	6	CSHH, 7/16-14 X 1, GR8, FT	
11	12757682	1	Bolt In Flange, Rear, Frt. Axle	
12	50A-1292ZI	1	Hex C/S 3/4 x 11-1/2 UNC GR 8 Plain	
13	118405	1	Pin, Oscillation, C-Series	
14	302-12	1	Washer, Lock, 3/4	
15	200-12-10-8	1	Nut, Hex, 3/4-10, GR8	
16	29B-02	1	Grease Fitting, 1/8 NPT 90 DEG	

FRONT AXLE ASSEMBLY

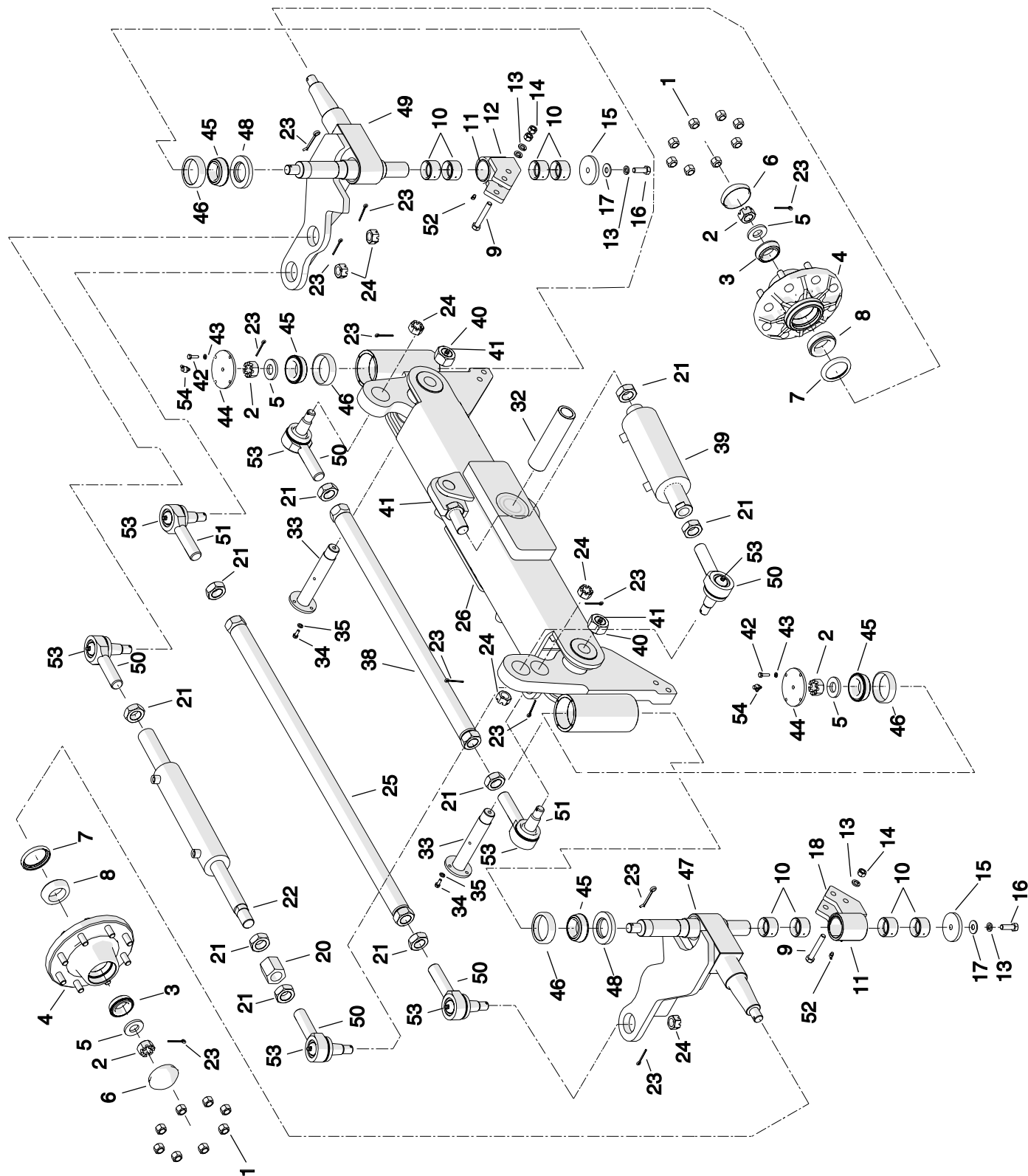


Figure 7-7.

Front Axle Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	100391	16	Lug Nut, 5/8 X 18 NF HEX	
2	206-16-14-5	4	Nut, Hex, Slotted, 1-14, GR5	
3	100387	2	Bearing Cone Outer, Frt. Wheel Hub	
4	12754890	2	Front Wheel Hub Pkg.	
5	100388	4	Heavy Washer, 1.06 X 2-1/8 X 1/4 - 84 Up	
6	100390	2	Cap, 84 Up, Front Hub - Began 84	
7	100383	2	Seal, Front Wheel Hub	
8	100384	2	Bearing Cone, Inner, JLM104948	
9	100-8-13-52-5	4	CSHH, 1/2-13 X 3.25, GR5	
10	107393	8	Bushing, Bot King Pin	
11	100773	4	Bronze Bushing, King Pin	
12	117837SRV	1	Weldment, Bottom Cap Kingpin	
13	118-5	4	Washer, Lock, 1/2	
14	200-8-13-5	4	NUT, HEX, 1/2-13, GR5	
15	100529	2	Washer, Three Inch	
16	100-8-13-24-5	2	CSHH, 1/2-13 X 1.5, GR5	
17	120-5	2	WASHER, FLAT, USS, 1/2	
18	117836	1	Weldment, Bottom Cap, Kingpin	
20	100222	1	CONN NUT, 1 1/4-12 X 2 IN HI-NUT	
21	202-20-12-5	9	NUT, HEX, JAM, 1-1/4-12, GR5	
22	1010150	1	CYL, HYD, 2.50 X 10.50 X 1.50 ROD	
23	13A-0432ZI	11	Cotter Pin, 1/8 X 2 Plated	
24	31H-14	7	HEX NUT 7/8 UNF SLOTTED	(one - not shown)
25	117768	1	Weldment, Tie Rod, RWD	
26	117187	1	Front Axle Tube Frame	
32	119744	1	Nylon Bushing, Center	
33	117202	2	Wheel Lean Pin Weldment, C-Series	
34	100-4-20-12-5F	6	CSHH, 1/4-20 X 0.75, GR5, FT	
35	302-4	6	Washer, Lock, 1/4	
38	12757718	1	Weldment, Tie Rod, Lean	
39	1010147	1	Cylinder, Hydraulic, 3.50 X 4.50 X 2.00 Rod	
40	200-20-12-5	2	Nut, Hex, 1-1/4-12, GR5	
41	29A-02	9	Grease Fitting 1/8 NPT STRT.	
42	100-4-20-16-5	8	CSHH, 1/4-20 X 1, GR5	
43	302-5	8	Washer, Lock, 5/16	
44	107380	2	Cap, King Pin HSG, Machined	
45	100768	4	Bearing, King Pin Shaft	

FRONT AXLE ASSEMBLY (CONT.)

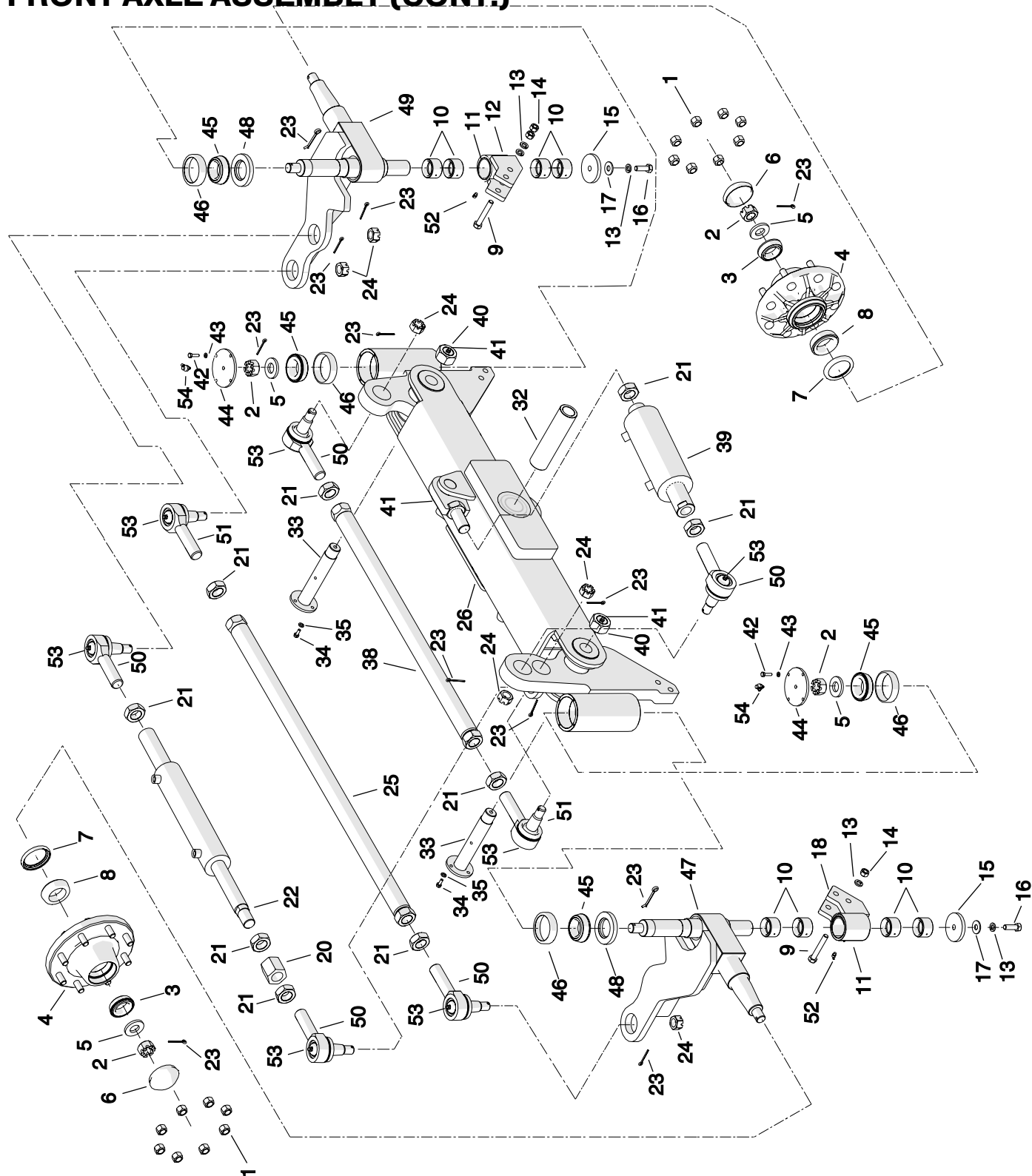


Figure 7-7.

Front Axle Assembly Parts List (Cont.)

Item No.	Part Number	Qty.	Description	Remarks
46	100769	4	Bearing Cup, King Pin, 25520	
47	117228	1	Weldment, Steering Arm, Right	
48	100770	2	Seal, Bottom King Pin Shaft HSG	
49	117232SRV	1	Weldment, Steering, Arm, Left	
50	101637	5	Ball Joint Socket Assembly - Right	(includes 140610)
51	100225	2	Socket Assembly-Ball Joint- Left Hand	(includes 100218 and 140610)
52	29C-02	2	Grease Fitting, 1/8 NPT 45 DEGREE	
53	140610	4	Fitting, Lube, Str.,1/4"-28	
54	107514	2	Relief Grease Fitting	

FRONT FRAME WITH HYDRAULICS

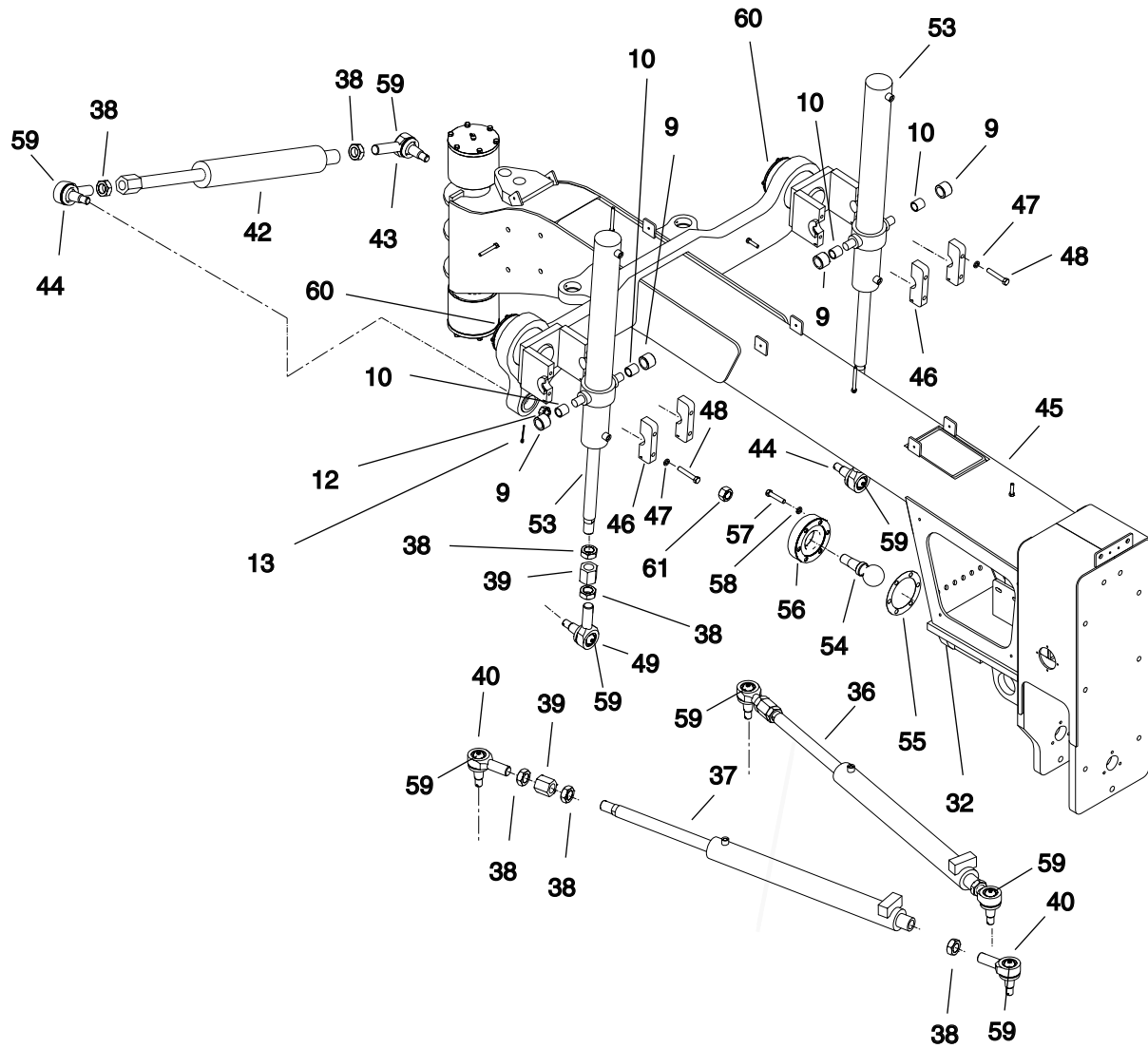


Figure 7-8.

Front Frame with Hydraulics Parts List

Item No.	Part Number	Qty.	Description	Remarks
9	100221	4	Bearing, Lift Cylinder, Trunnion	
10	100220	4	Steel Bushing, Trunnion	
12	31H-14	8	Hex Nut 7/8 UNF-SLOTTED	(2 not shown)
13	13A-0432ZI	8	Cotter Pin, 1/8 X 2 -PLATED	(2 not shown)
36	113760SRV	2	Complete Circle Turn Hydraulic	
37	1010142	2	CYL., HYD., 2.50 X 24.00 X 1.50 ROD	
38	202-20-12-5	12	Nut, Hex, Jam, 1-1/4-12, GR5	
39	100222	2	CONN NUT, 1 1/4-12 X 2 IN HI-NUT, Plain	
40	1011580	4	Ball Joint, Cut, 4.0"	
42	1010143	1	CYL., HYD., 3.00 X 17.00 X 1.50 ROD	
43	101637	1	Ball Joint Socket Assembly - Right	(Grease Fitting - 140610 - not shown)
44	100223	1	Ball Joint, Cut	(Grease Fitting - 140610 - not shown)
45	12758101	1	Subassembly, Frame, Front	
46	12757966-02	4	Plate, Side Cap	
47	118-5	8	Washer, Lock, 1/2	
48	100-8-13-48-5	8	CSHH, 1/2-13 X 3, GR5	
49	118503	1	Ball Joint, Cut 5"	
53	1010140	2	CYL., HYD., 3.00 X 28.00 X 1.50 Rod	
54	130106	1	Ball, Drawbar Pull	
55	100227	13	Shim 0.010	
56	130101	1	Socket Half, Drawbar Pull Ball	
57	302-7	6	Washer, Lock, 7/16	
58	100-7-14-16-8F	6	CSHH, 7/16-14 X 1, GR8, FT	
Ref	117259	1	Assembly, Cylinder, Blade Lift, Right	
Ref	100228	1	Shim 5	(not shown)
Ref	12757968	2	Weldment, Blade Lift Trunnion	
59	140610	8	Fitting, Lube, STR, 1/4"-28	
60	107514	2	Relief Grease Fitting	(on back of Trunnions)
61	200-20-12-8	1	Nut, Hex, 1-1/4-12, GR8	

BLADE LIFT AND TURNTABLE ASSEMBLY

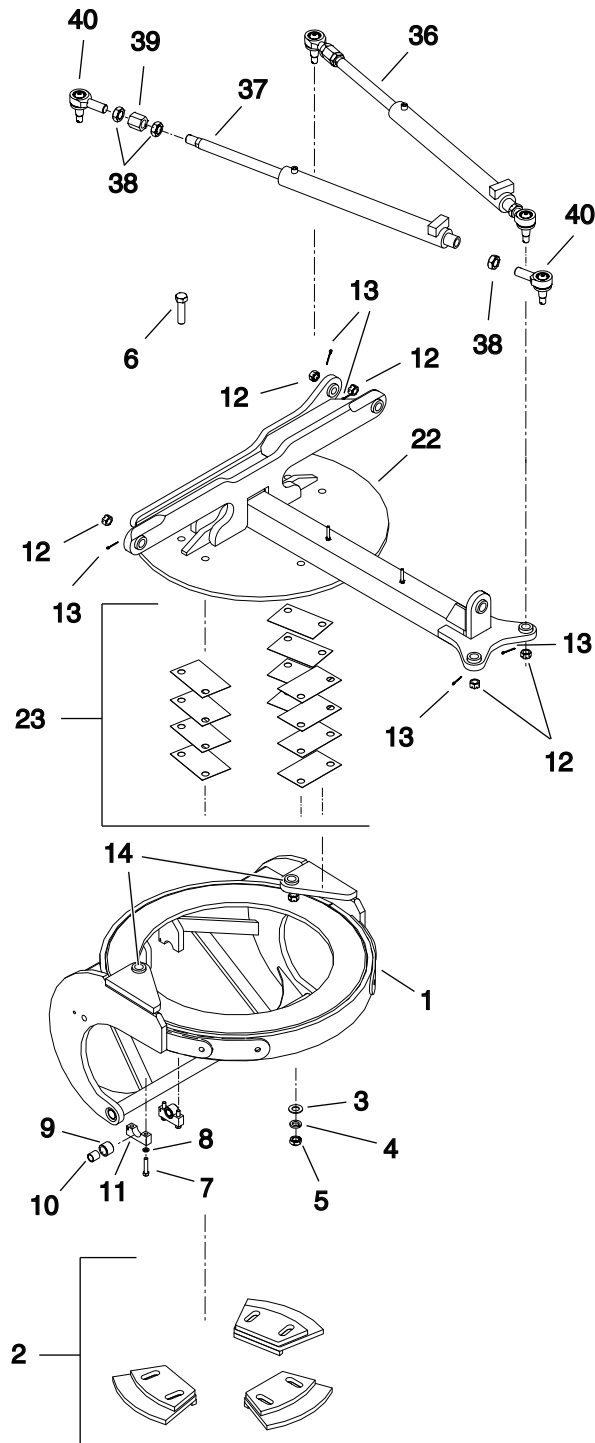


Figure 7-9.

Blade Lift and Turntable Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	1008980	1	Assembly, Turntable, 695 Circle/	
1	117267	1	Arms Assembly - C80, Tilt	
2	100297SRV	3	Alignment Block Weldment	
3	300-16	6	Washer, Flat, SAE, 1	
4	302-16	6	Washer, Lock, 1	
5	202-16-8-5	6	Nut, Hex, Jam, 1-8, GR5	
6	100-16-8-64-8F	6	CSHH, 1-8 X 4, GR8, FT.	
7	100-8-13-48-5	4	CSHH, 1/2-13 X 3, GR5	
8	118-5	4	Washer, Lock, 1/2	
9	100221	6	Bearing, Lift Cylinder, Trunnion	
10	100220	6	Steel Bushing, Trunnion	
11	117672	2	Top Cap - Trunnion Side Plate	
12	31H-14	8	Hex Nut 7/8 Unf Slotted	(2 not shown connects to 117267)
13	13A-0432ZI	8	Cotter Pin, 1/8 X 2 Plated	(2 not shown connects to 117267)
14	100224	2	Tapered Bushing-Ball Joint	
22	1010146	1	Cylinder, Hydraulic, 3.50X10.00X1.75 Rod	(One Grease point)
23	100298	12	Thick Shim, Circle	
36	113760SRV	2	Complete Circle Turn Hydraulic	
37	1010142	2	CYL, HYD, 2.50 X 24.00 X 1.50 Rod	
38	202-20-12-5	6	Nut, Hex, Jam, 1-1/4-12, GR5	
39	100222	2	CONN. Nut, 1 1/4-12 X 2 IN HI-NUT, Plain	
40	29A-02	6	Cylinder, Hydraulic, 3.50X10.00X1.75 Rod	(2 not shown on illustration)
Ref	140610	1	Cylinder, Hydraulic, 3.50X10.00X1.75 Rod	(Grease point for 1010146)

10 FT. MOLDBOARD (STANDARD)

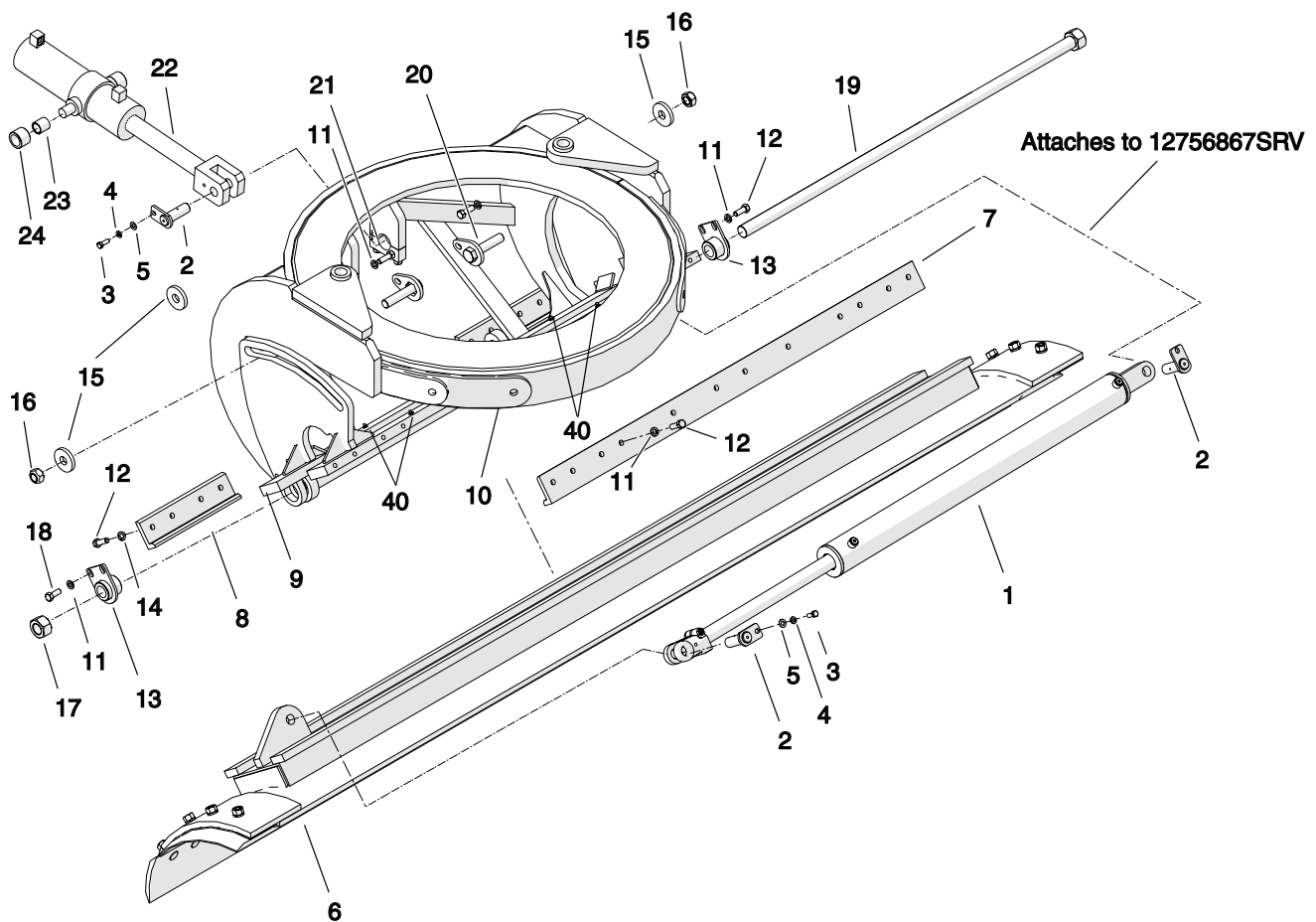


Figure 7-10.

10 Ft. Moldboard (Standard) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010141	1	CYL, HYD, 3.00X36.00X1.50 ROD	
2	110596	3	Weldment, Cylinder Mounting	
3	100-6-16-16-5F	3	CSHH, 3/8-16 X 1, GR5, FT	
4	118-3	3	Washer, Lock, 3/8	
5	300-6	3	Washer, Flat, SAE, 3/8	
6	1010131	1	Assembly, Moldboard, 10 Ft. 695	
7	100329	1	Keeper-Blade Slide Top-52 In. - B Model	
8	100327	2	Keeper-Blade Slide Bottom-12 In. Long	
9	12756867SRV	1	Moldboard Slide Weldment, C80 - C Series	
10	117268	1	Circle/Arms Weldment, C80 - C Series - Stage-1	
11	118-5	30	Washer, Lock, 1/2"	
12	100-8-13-24-8F	20	CSHH, 1/2-13 X 1.5, GR8, FT	
13	12757900SRV	2	Weldment, Bushing, Blade Tilt	
15	108856	2	Washer, 0.38 X 2.5 OD	
16	204-14-14-8	2	Nut, Lock, Stover, 7/8-14, GR8	
17	200-20-7-5	1	Nut, Hex, 1-1/4-7, GR5	
18	100-8-13-20-8F	4	CSHH, 1/2-13 X 1.25, GR8, FT	
19	112407SRV	1	Tilt Bar Weldment, C80	
20	117772	2	Weldment, Moldboard Tilt Pin	
21	102-407-1A	2	CSHH, 0.500-13 X 1.50, GR5	
22	1010146	1	Cylinder, Hydraulic, 3.50 X 10.00 X 1.75 Rod	
23	100220	2	Steel Bushing, Trunnion	
24	100221	2	Bearing, Lift Cylinder, Trunnion	
Ref	12756866	1	Install Blade Slide Assembly - C80 - C Series	
Ref	1008991	1	Assembly, Moldboard Installation, 695	

MOLDBOARD ASSEMBLY

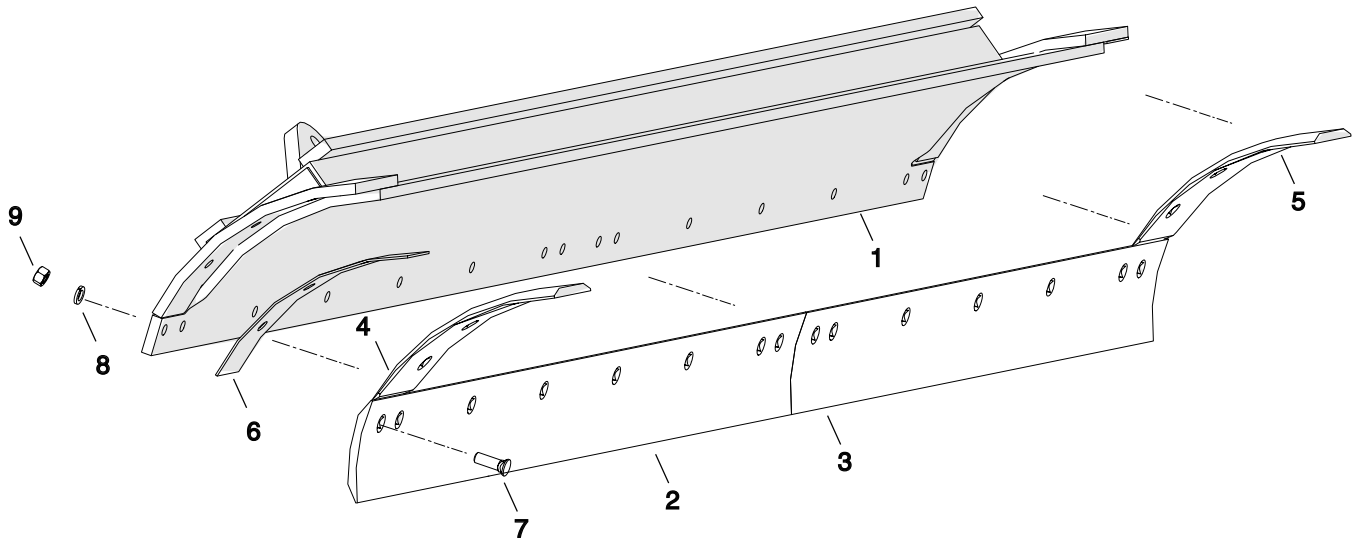


Figure 7-11.

Moldboard Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12756873	1	Weldment, 10 Ft. Moldboard	
Ref	117701	Ref.	Weldment, 11 Ft. Moldboard	
Ref	117702	Ref.	Weldment, 12 Ft. Moldboard	
2	100335	A.R.	Cutting Edge, 72 In. (6 Ft.)	12' uses 2; 11' uses 1
3	100328	A.R.	Cutting Edge 60 In.	11' uses 1; 10' uses 2
4	12757743	1	End Bit, Right, C Model	
5	12757744	1	End Bit, Left, C Model	
6	1010990	2	Plate, Shim, L.H.	
7	40F-1016	21	Plow Bolt - 5/8 x 2 UNC	
8	118-6	21	Washer, Lock, 5/8	
9	200-10-11-8	21	Nut, Hex, 5/8-11, GR8	
Ref	117699SRV	1	Assembly, 11 Ft. Moldboard	
Ref	117700SRV	1	Assembly, 12 Ft. Moldboard, "C"	

Note: 11' and 12' Moldboards are an option for the 695 Grader.

CAB (OPTION) AND CANOPY

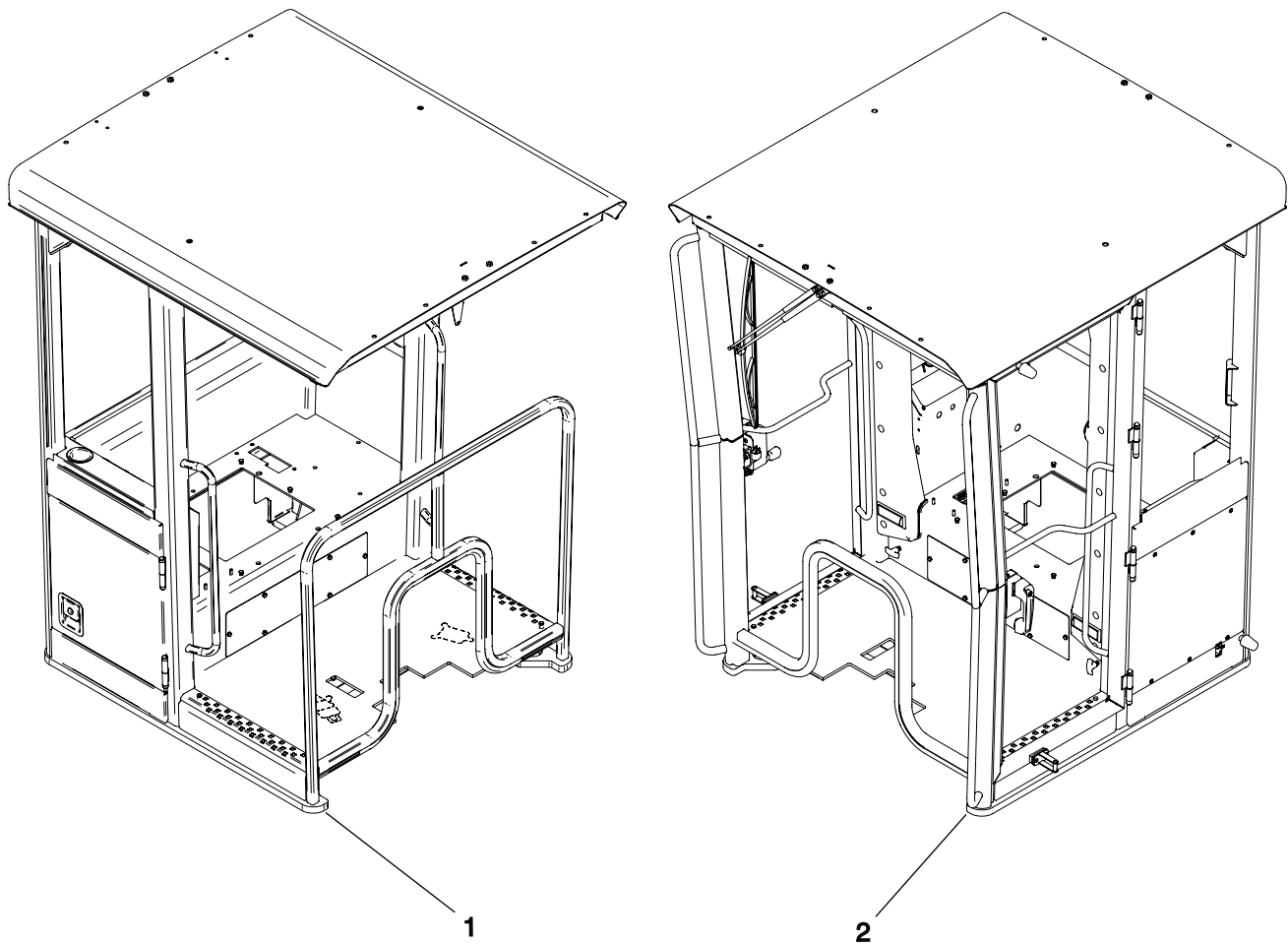


Figure 7-12.

Cab (Option) and Canopy Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12757545	1	Bolt On Canopy, FOPS/ROPS Cab	
2	12754409	1	Bolt On Enclosed, FOPS/ROPS Cab	

DOOR (FOR ENCLOSED CAB)

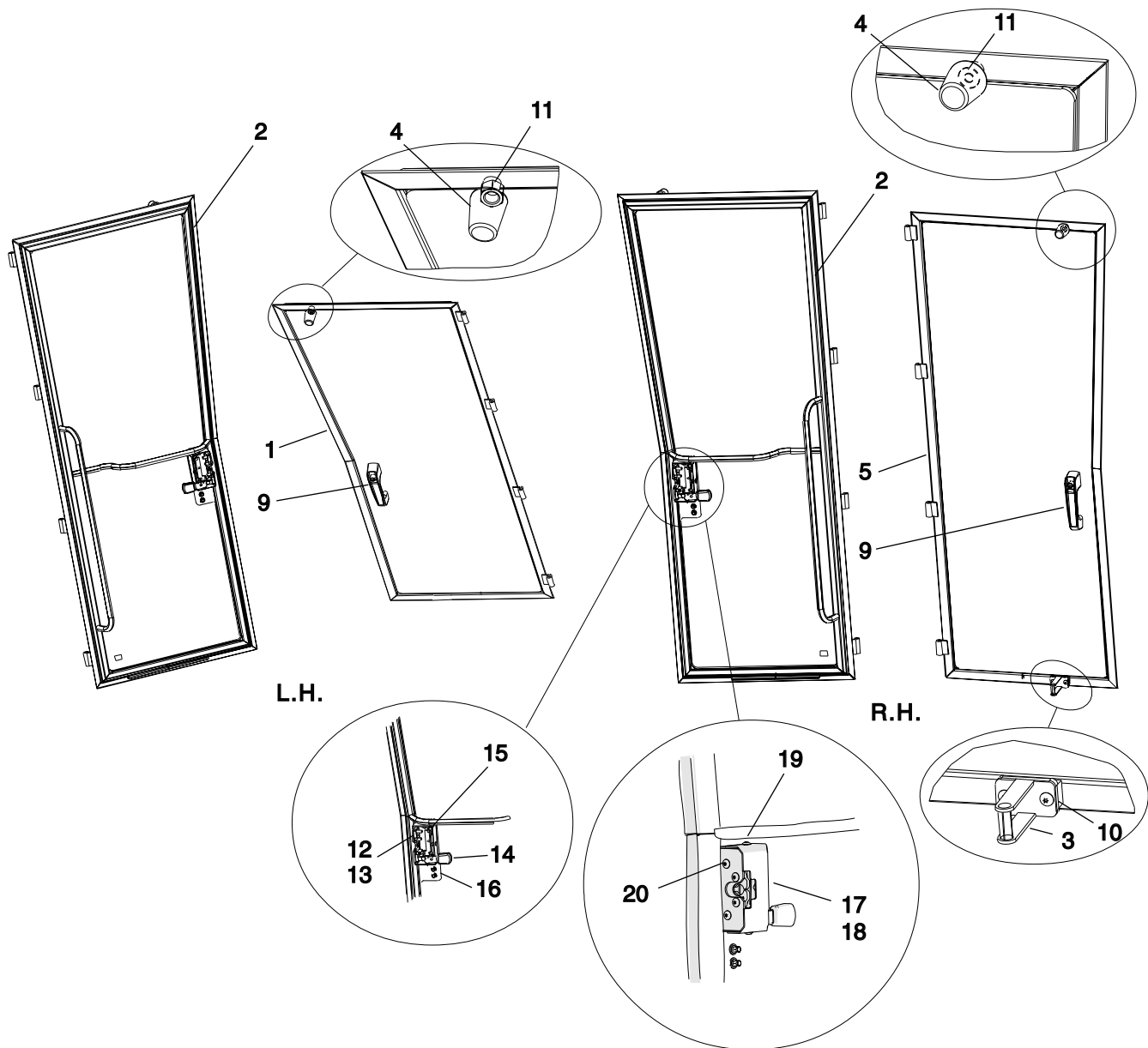


Figure 7-13.

Door (for Enclosed Cab) Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	12755201	1	Left Door Assembly W/ Glass & Handle	(includes items 1 to 4, 11)
1	120500	1	Door - L.H.	
2	12755801	1	Door Seal, P-Stem Bulb	
3	12755804	2	Weld'T - Striker - Hold-Open	
4	12755044	1	Bumper, Rubber, 2" Cone EPDN, Cab Door	
Ref	12755521	1	Right Door / Glass Assembly	(includes items 5 to 8, 11)
5	120496SRV	1	Door - R.H.	
9	115491	2	Handle, Outside W/ Key TRI MK	
10	12756484	1	Spacer	
11	30A-05ZI	1	Hex Nut 5/16-18 UNC GR 5 ZINC	
12	115488	1	Door Latch-TRI/MARK-LH	
13	115489	1	Door Latch-TRI/MARK-RH	
14	12755538	4	Grip BLK Plastic	
15	12755794	2	BLT,.438-14 SHDLR Striker/WSHR	
16	12755795	4	Washer	
17	12755800	1	Cover, Door Latch, Interior, L.H.	
18	12755802	1	Cover, Door Latch, Interior, R.H.	
19	12755528	10	SCRW,.25-20X.625 TRUS,TORX	
20	12755711	8	SCRW,.25-20X1 TRUS,TORX,T27	

DOOR LATCH ASSEMBLY (FOR ENCLOSED CAB)

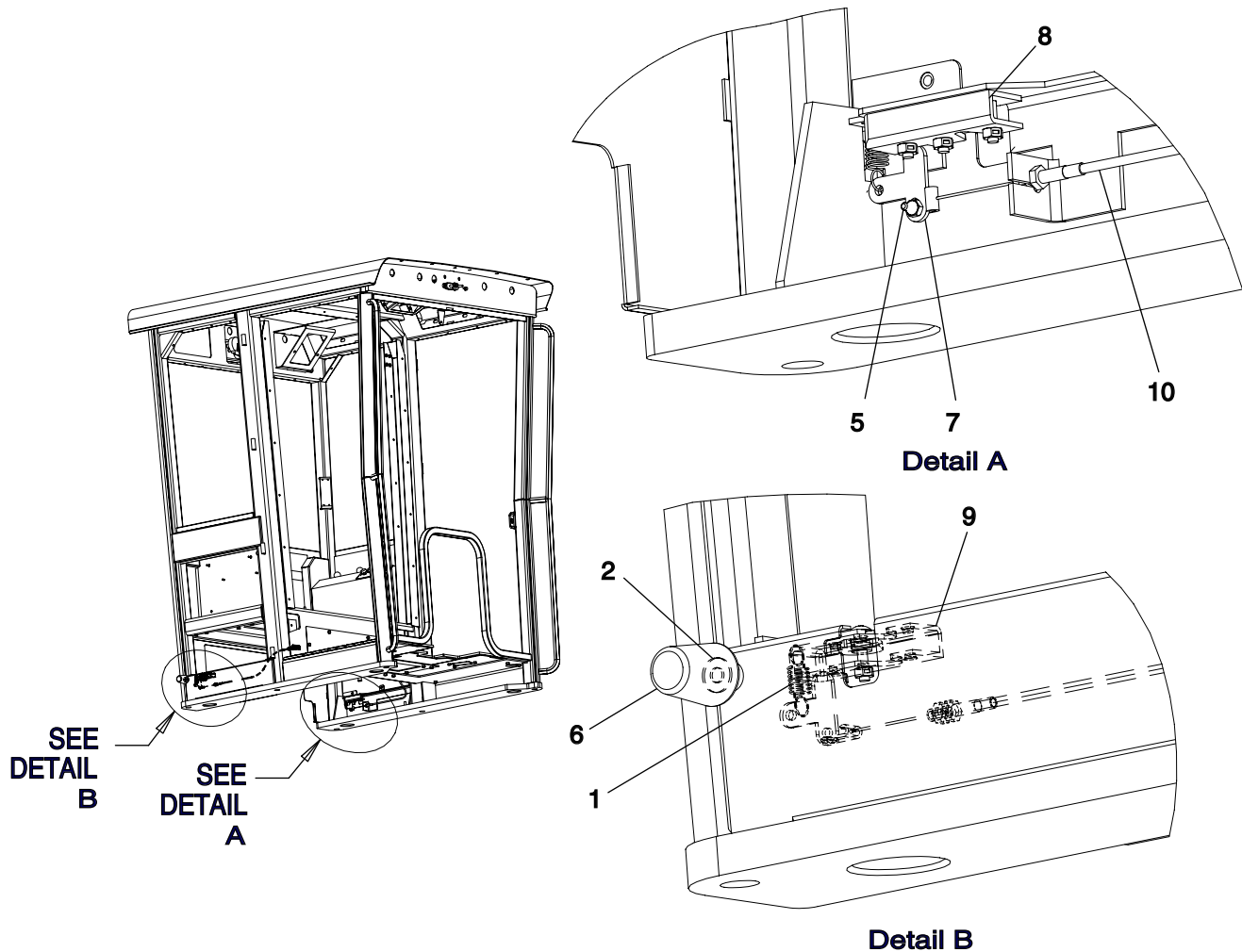


Figure 7-14.

Door Latch Assembly (for Enclosed Cab) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12756617	2	Spring, Return, Hold Open Latch	
2	12756618	2	Washer, 0.376ID X 0.88OD X 0.08 T, F	
5	12755547	2	Screw, #10-24 X 0.63, SKT, HX, ES5BF	
6	12755044	2	Bumper, Rubber, 2" Cone EPDN	
7	12755548	2	Nut, #10-24 Hex, NK, G5, ES5CZ	
8	12755039	1	Latch, Sngl. Stage, Sngl. Jaw	
9	12755041	1	Latch, Sngl. Stage, Sngl. Rt.	
10	12756619	2	Cable Assembly, Hold Open Release	

CAB GLASS (FOR ENCLOSED CAB)

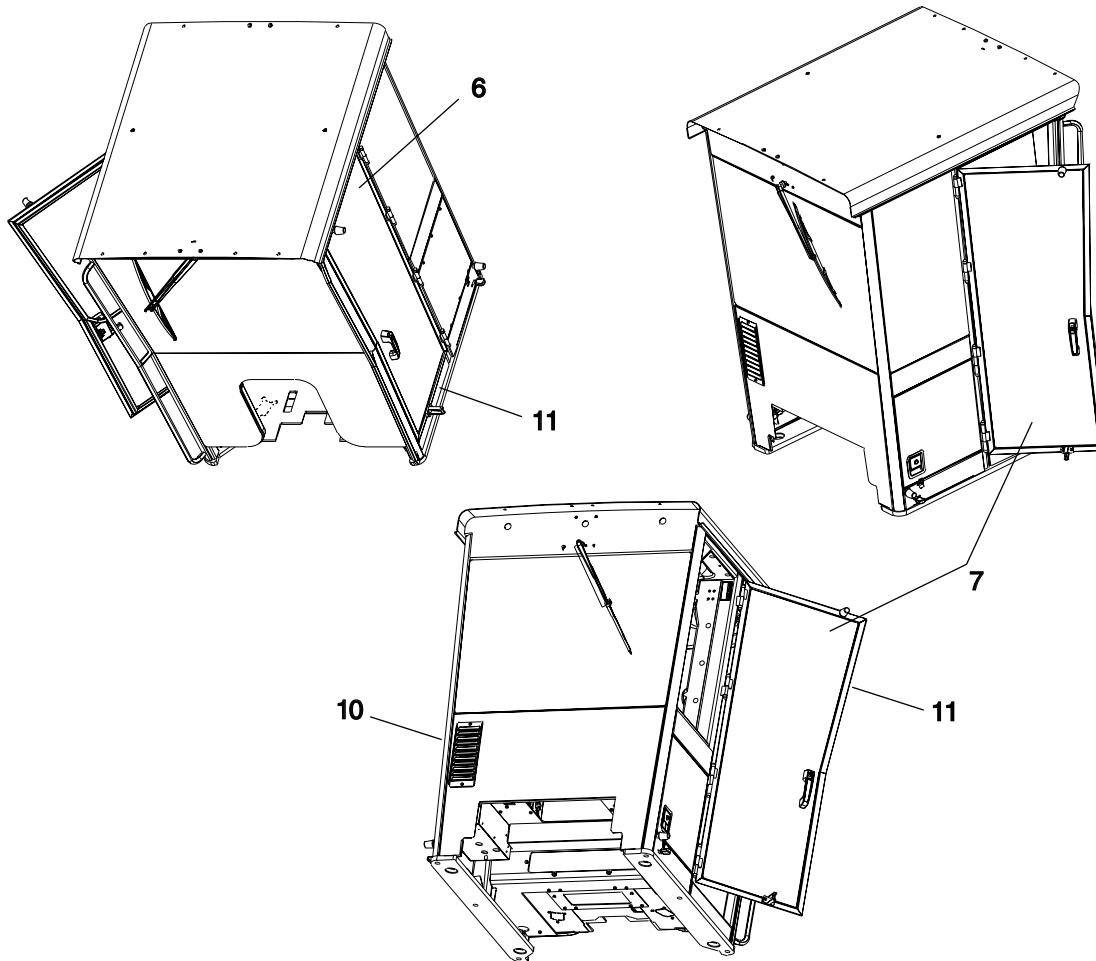


Figure 7-15.

Cab Glass (for Enclosed Cab) Parts List

Item No.	Part Number	Qty.	Description	Remarks
6	12754539	1	Glass Only - LH. Door	
7	12754540	1	Glass-Door-RH.-Bolt On Cab	

HATCH (FOR CAB AND CANOPY)

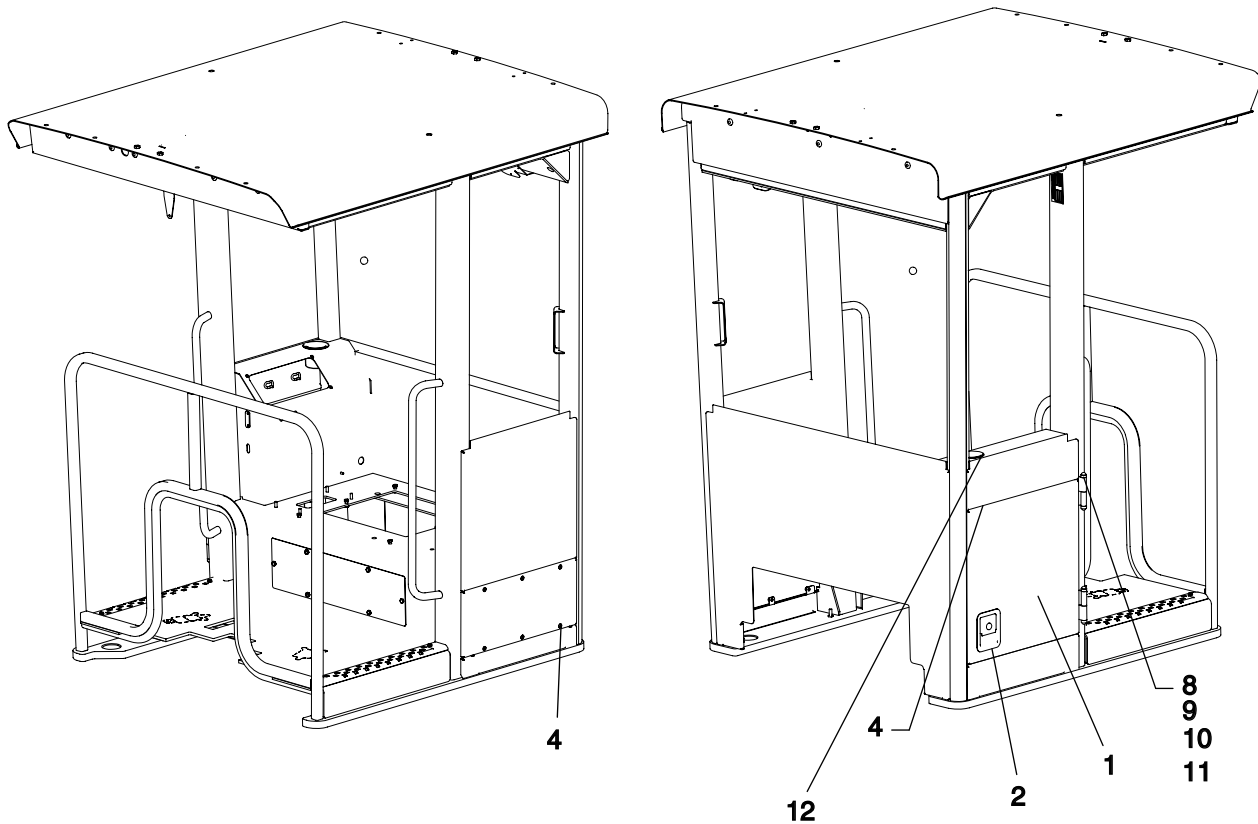


Figure 7-16.

Hatch (for Cab and Canopy) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12755805	1	Weld'T, Access Door, Rgt.	
2	12755793	1	Latch, Paddle, Blk., Cab Access Door	
4	12755528	8	Screw, 0.25-20 X 0.625 TRUS, TORX	
8	12755529	2	BLT 0.38-16 X 4.50, HEX, 304SS	
9	12756618	2	Washer, 0.376ID X 0.88OD X 0.08 T, F	
10	36N-06ZI	2	Lock Nut, Hex, 0.38-16, All Metal Lock	
11	12755035	4	Cap, Hex, Dome 3/8 Blk.	
12	12755046	1	Cup Holder, 3.0, 2.875 MTG, HLE, Blk.	

ACCESS DOOR ASSEMBLY (FOR ENCLOSED CAB)

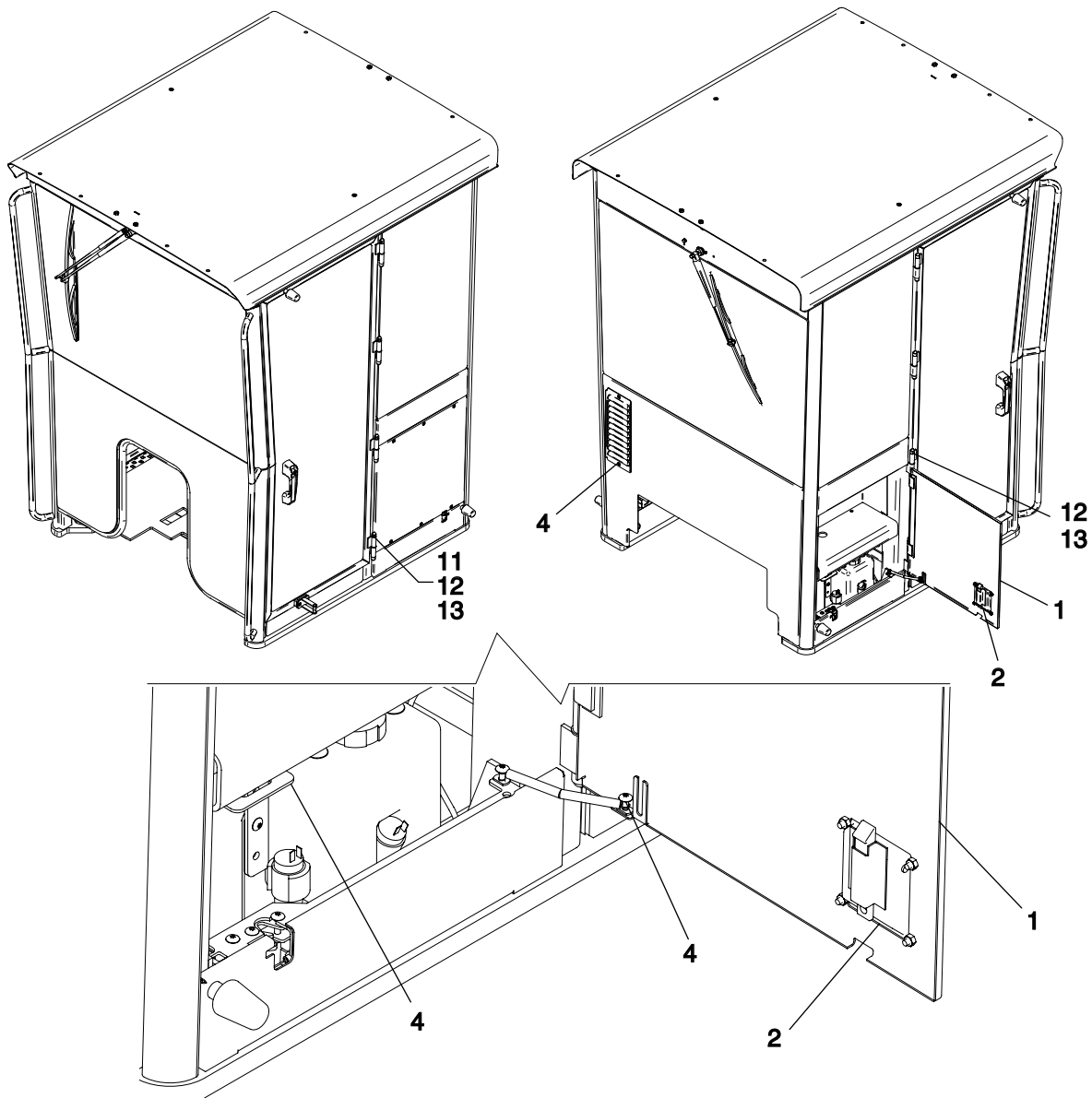


Figure 7-17.

Access Door Assembly (for Enclosed Cab) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12755805	1	Weld'T, Access Door, RGT	
2	12755793	1	Latch Paddle, BLK, Cab Access door	
4	12755528	6	Screw, 0.25-20 X 0.625 TRUS, TORX	
11	12755529	6	BLT 0.38-16 X 4.50, HEX, 304SS	
12	12755035	16	Cap Hex, Dome 3/8 BLK	
13	12756618	8	Washer, 0.376ID X 0.88OD X 0.08 T, F	

CAB INTERIOR (FOR CANOPY)

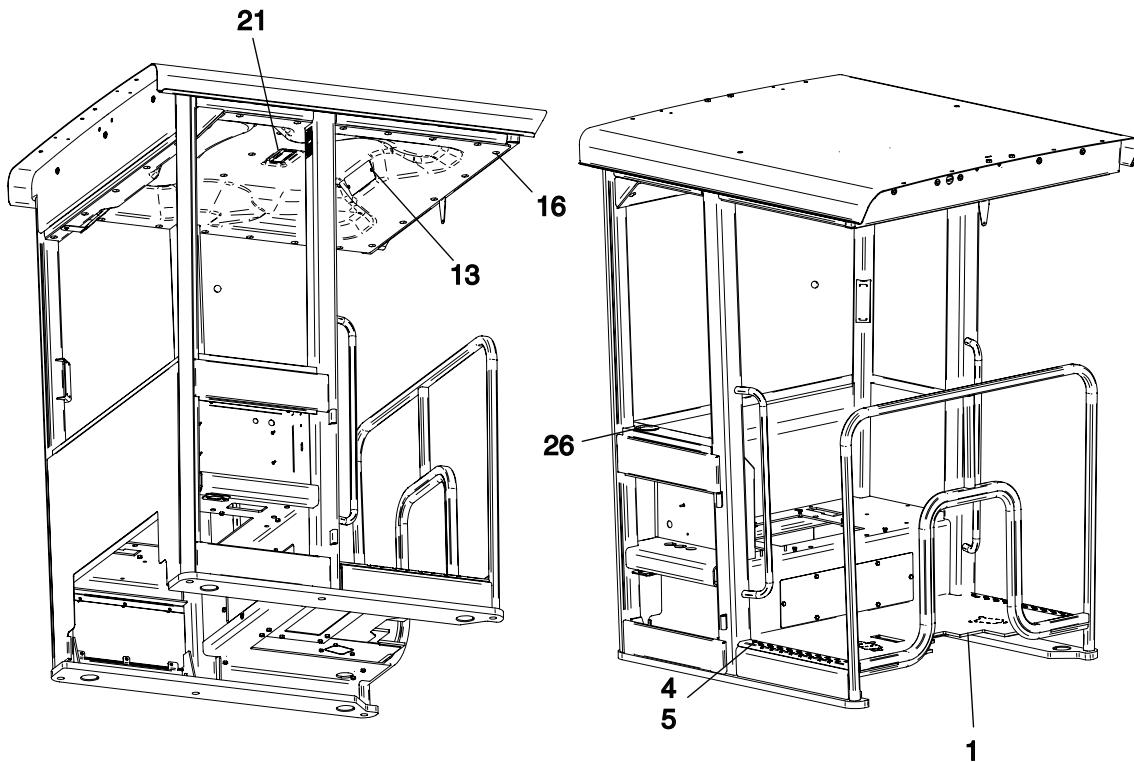


Figure 7-18.

Cab Interior (for Canopy) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12755019	1	Floormat, Foam/Plastic	
4	12755022	4	Spacer, OD=5/8", ID=13/32", L=1/2"	
5	114624	4	Screw, 5/16-18 X 1-1/4, SPINLOCK	
13	12755524	2	SCRW, #10-24X.5 TRUZ, TORX, BLK	
16	12755033	36	Xmas Tree Fastner, Blk.	
21	12755030	1	Domelight, 12V - Bolt On Cab - Push Button	
26	12755046	1	Cup Holder, 3.0, 2.875 MTG, HLE, Blk.	

CAB INTERIOR ASSEMBLY (FOR ENCLOSED CAB)

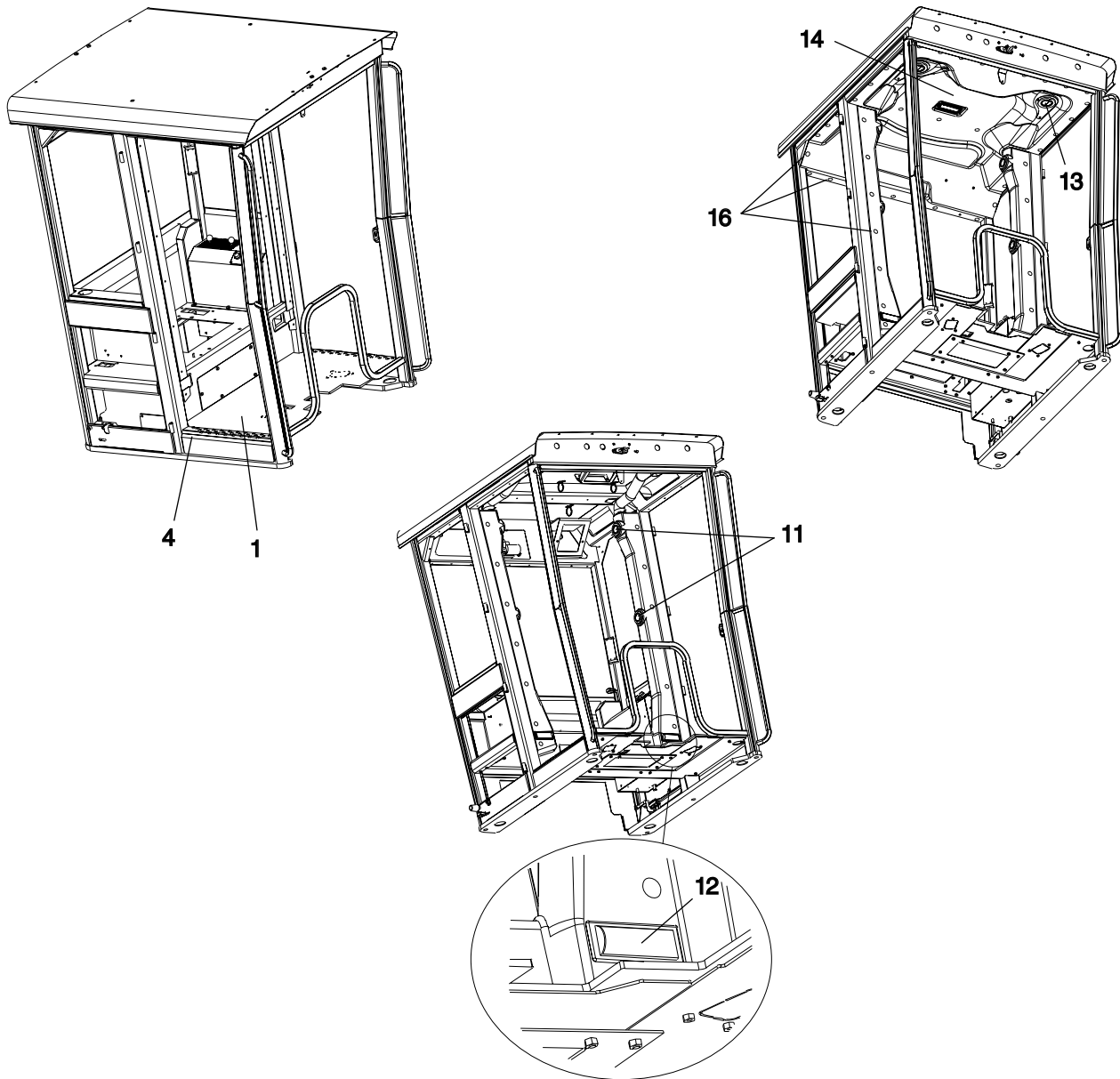


Figure 7-19.

Cab Interior Assembly (for Enclosed Cab) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12755019	1	Floormat, Foam/Plastic	
4	12755022	4	Spacer, OD=5/8", ID=13/32", L=1/2"	
11	12755032	4	Louver, A/C, Small Round, Fits 2.04 Hole	
12	12755031	2	Louver, A/C, Lower Rect.	
13	12755029	2	Louver, 4" Round W/2-1/2 HA	
14	12755017	1	Headliner, Plastic	
16	12755033	A.R.	Xmas Tree Fastner, Blk.	

CAB AND CANOPY GROUPS

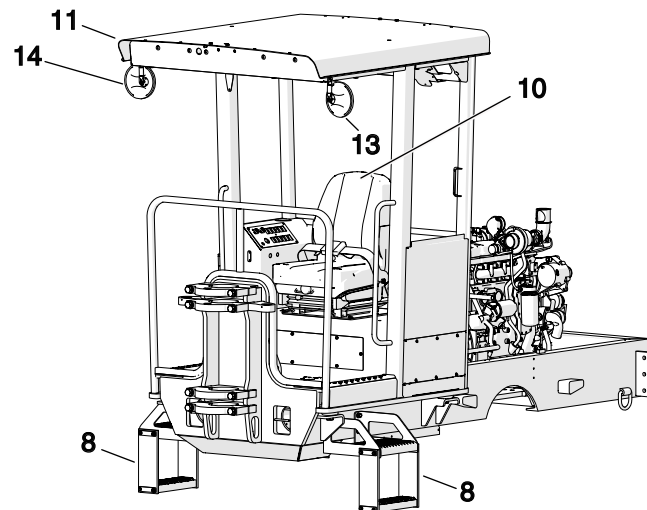
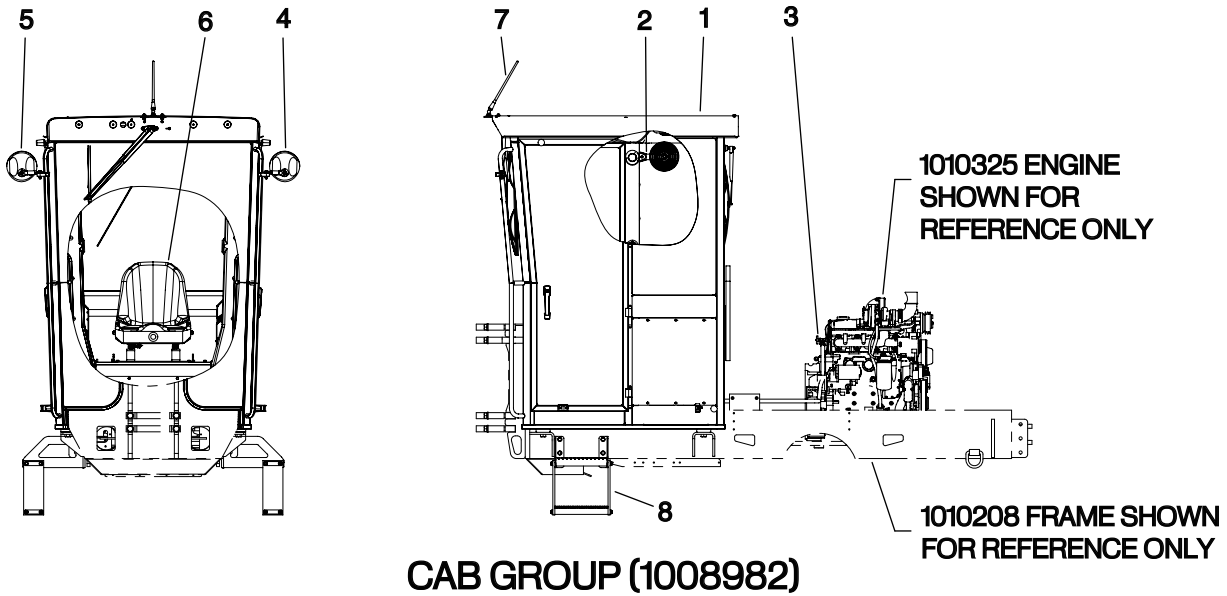


Figure 7-20.

Cab and Canopy Groups' Part List

Item No.	Part Number	Qty.	Description	Remarks
Ref	1008982	1	Group, Cab, 695	Fig 7-20
1	1009003	1	Assembly, Cab, G700	Fig. 7-21 and 7-22
2	111939	1	Option - Defroster Fan Package	Fig. 7-23
3	120561	1	Option, Cab Heat, QSB4.5 Tier 3	Fig. 7-24
4	12755265	1	Installation-Left Side Mirrors, Enclosed Bolt On Cab	Fig. 7-25
5	12755266	1	Installation- Right Side Mirrors, Enclosed Cab	Fig. 7-25
6	1009005	1	Assembly, Cloth Seat	Fig. 7-26
7	12755928	1	Radio Installation - With Detachable Front And Remote Control	Fig. 7-27
8	12754552	1	Installation, Step Package, G-Series	Fig. 7-28
Ref	1008983	1	Group, Canopy, 695	Fig 7-20
8	12754552	1	Installation, Step Package, G-Series	Fig. 7-28
10	12755326	1	Installation-Deluxe Vinyl Seat	Fig. 7-30
11	12757546	1	Installation, Bolt On Canopy	Fig. 7-29
13	12755188	1	Installation-LH Outside Mirror-Bolt On Canopy Cab	Fig. 7-25
14	12755187	1	Installation-RH Outside Mirror-Bolt On Canopy Cab	Fig. 7-25
Ref	12755171	1	Option - Vandalism Pkg - Bolt On Canopy Cab	Not shown in view; see Fig. 7-78 for more information

CAB ASSEMBLY

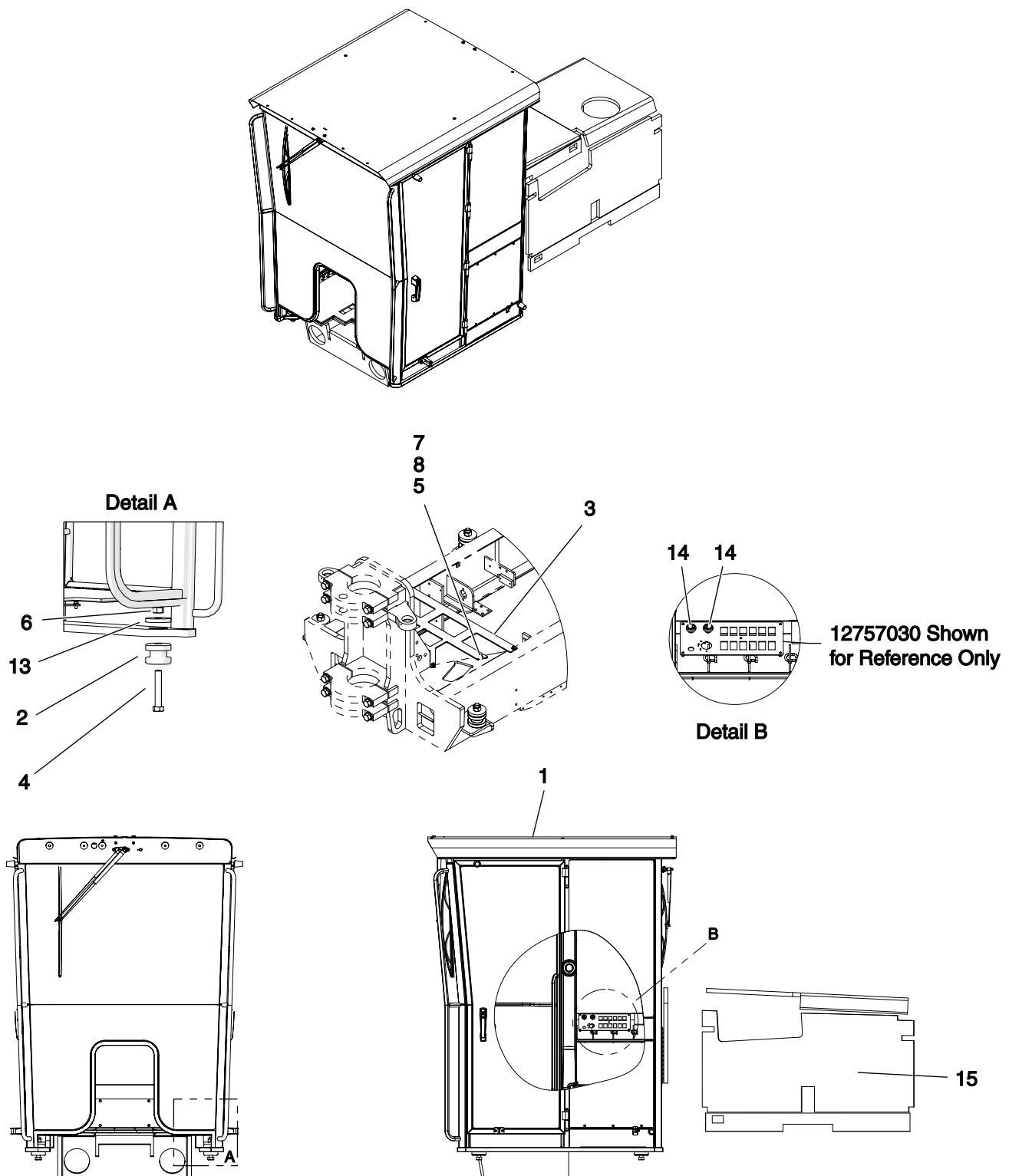


Figure 7-21.

Cab Assembly Part List

Item No.	Part Number	Qty.	Description	Remarks
1	12754409	1	Enclosed ROPS / FOPS Canopy Cab	
2	12754576	4	Cab Isolation Mount - Two Piece	
3	12754953	1	Cross Brace, Cab, Laser Cut	
4	100-14-9-80-8	4	CSHH, 7/8-9 X 5, GR8	
5	100-5-18-12-5F	6	CSHH, 5/16-18 X 0.75, GR5, FT	
6	200-14-9-8	4	Nut, Hex, 7/8-9, GR8	
7	119-2	6	Washer, Flat, SAE, 5/16	
8	302-5	6	Washer, Lock, 5/16	
Ref	11305263	1	Relay, Cube, 12V, Unsealed	
Ref	115905	1	FUSE-5 AMP-TYPE ATO/ATC	
Ref	115906	1	FUSE-10 AMP-TYPE ATO/ATC	
Ref	115909	1	FUSE-25 AMP-TYPE ATO/ATC	
13	12754577	4	Washer, Isolator Mount	
14	73119-CMG	2	Switch-Wiper/Washer	
15	120588	1	Kit, Insulation, Enclosed Cab Option, Tier 3	Fig. 7-22
Ref	12754934	1	Installation, Cross Braces, Cab Insulation	
Ref	1009003	1	Assembly, Cab, G700	

COWLING INSULATION ASSEMBLY

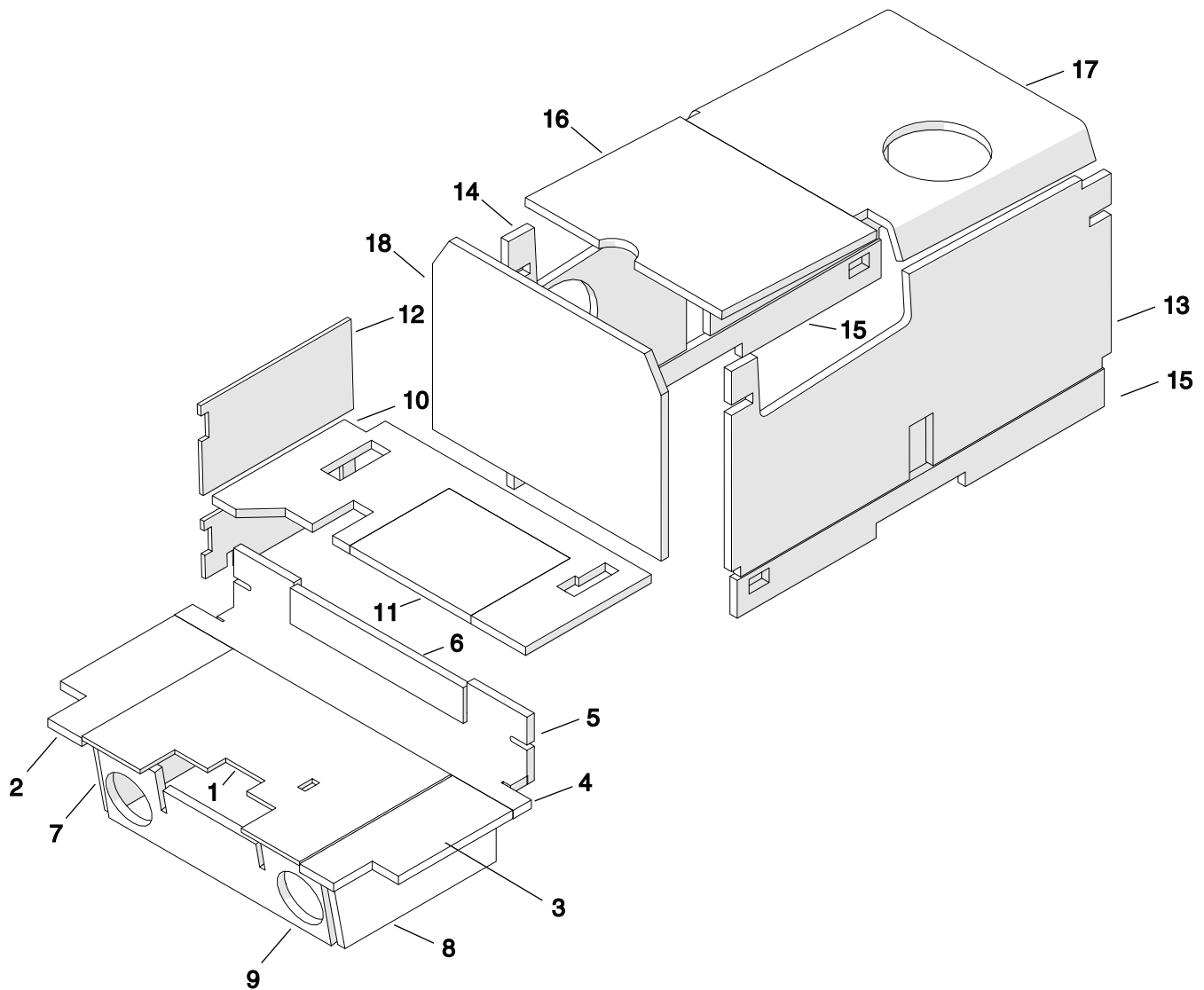


Figure 7-22.

Cowling Insulation Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12755139	1	Insulation, Floor Board	
2	12755114	1	Insulation, Cab Right Side	
3	12755115	1	Insulation, Cab, Left Side	
4	12755116	1	Insulation, Cab (3)	
5	12755118	1	Insulation, Cab (5)	
6	12755119	1	Insulation, Cab (6)	
7	12755136	1	Insulation, Frame, Right Side Front	
8	12755137	1	Insulation, Frame, Left Side Front	
9	12755135	1	Insulation, Frame, Front Center	
10	12754972	1	Insulation, Seat Deck & Seat	
11	12755117	1	Insulation, Cab, Seat Deck	
12	12755138	1	Insulation, Inspection Door	
13	120582	1	Insulation, Cowling Door, Left, Tier 3	
14	120583	1	Insulation, Cowling Door, Right, Tier 3	
15	120584	2	Insulation, Cowling Door Sill, Tier 3	
16	120586	1	Insulation, Hood, Front, Tier 3	
17	120585	1	Insulation, Hood, Rear, Tier 3	
18	12755300	1	Insulation, Hydraulic Tank	
Ref	120588	1	Kit, Insulation, Enclosed Cab	

DEFROSTER FAN (OPTION)

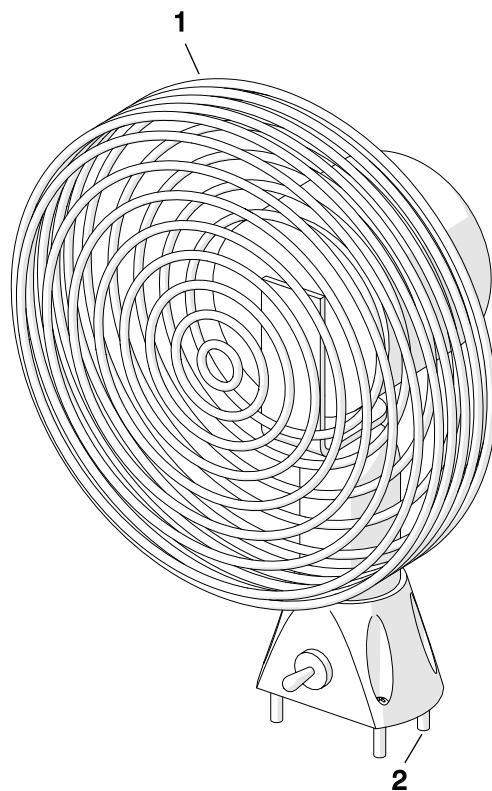


Figure 7-23.

Defroster Fan (Option) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	105777	1	Fan, Defroster-Service Mate-12V DC	
2	121-#10-24-12F	4	RHMS, CROSS, #10-24 X 0.75, FT	
Ref	115911	1	FUSE-40 AMP-TYPE ATO/ATC	
Ref	134B-156	1	Terminal, Male, Bullet, 0.156, 16-14 AWG, Blue	
Ref	111939	1	Option - Defroster Fan Package	

HEATER PLUMBING INSTALLATION (OPTION)

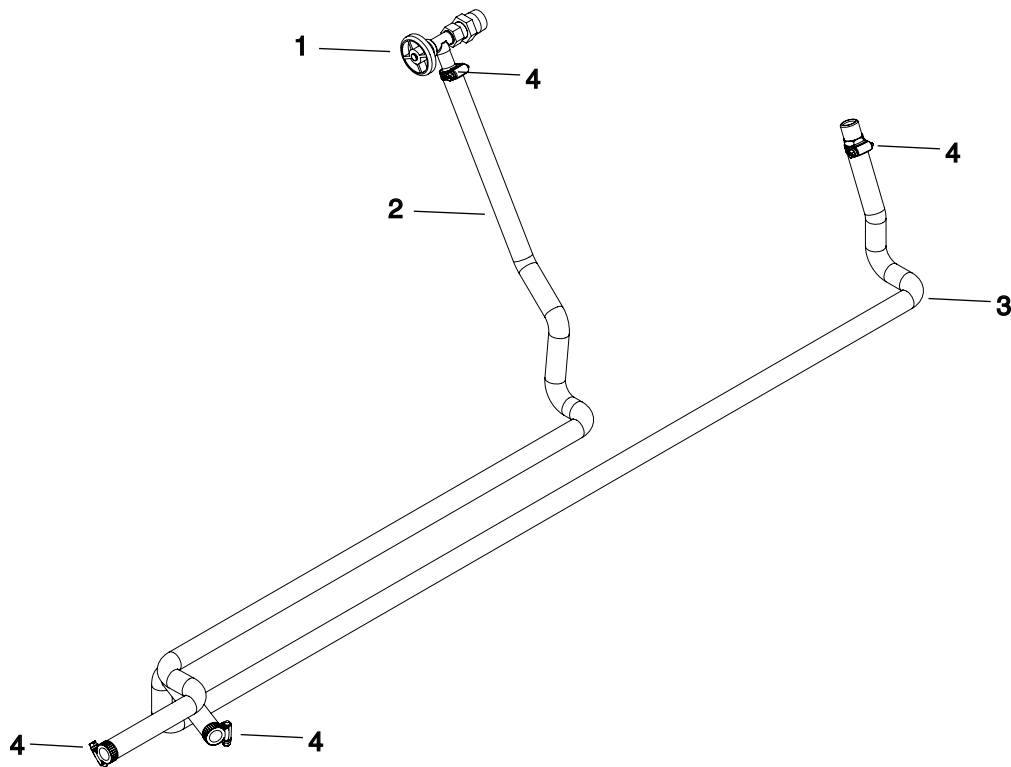


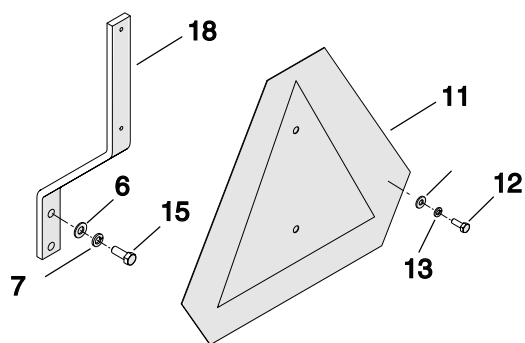
Figure 7-24.

Heater Plumbing Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	108612	1	Cut Off Valve, Heater Hot Water, 5/8" Hose	
2	122702	1	Hose, Heater, 5/8 ID X 54" Lg.	
3	117281	1	Hose, Heater, 5/8 ID X 60" Lg.	
4	22B-10	4	Clamp, Hose #10	
Ref	120561	1	Option, Cab Heat, QSB4.5 Tier 3	

REARVIEW MIRRORS AND REFLECTORS (OPTION)

SMV sign installation (12754774):



SMV sign installation (12754742):

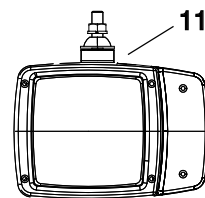
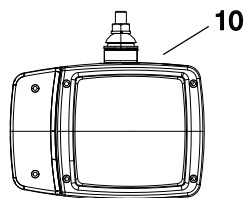
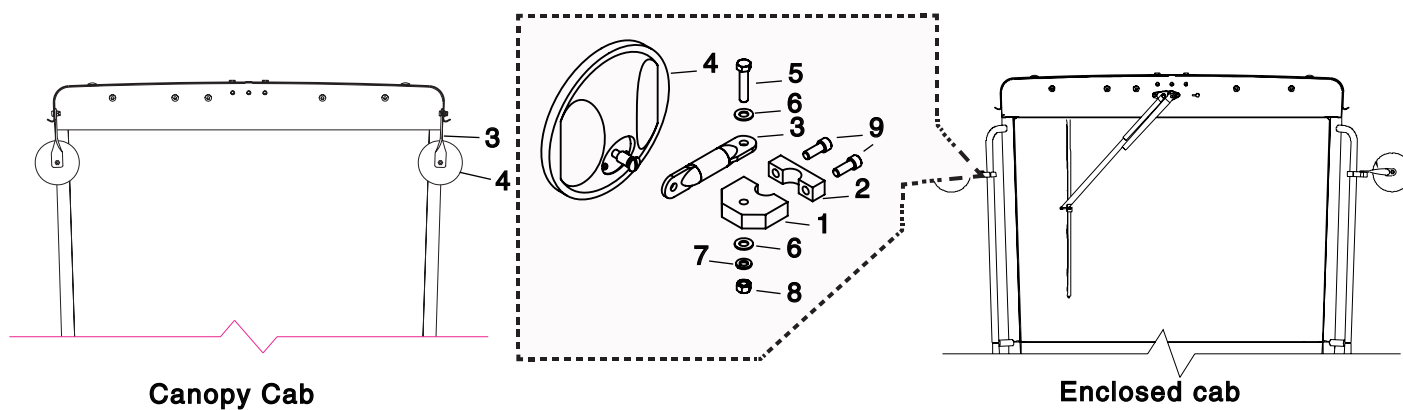
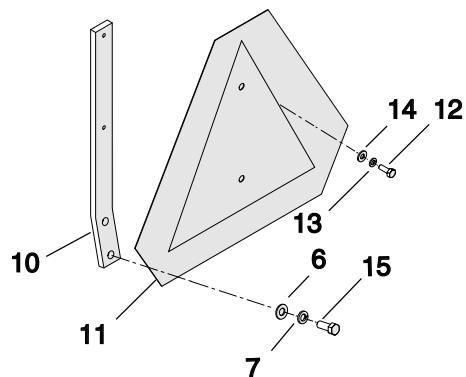


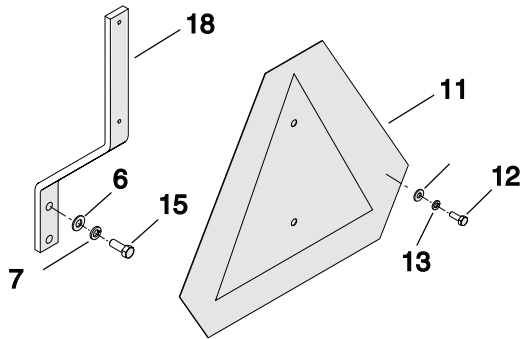
Figure 7-25.

Rearview Mirrors and Reflectors Parts List

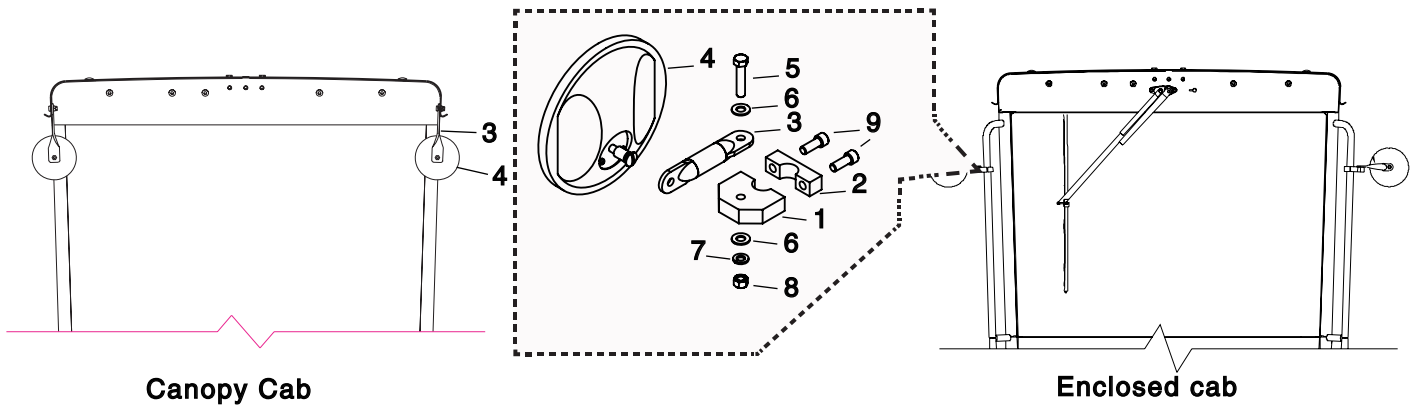
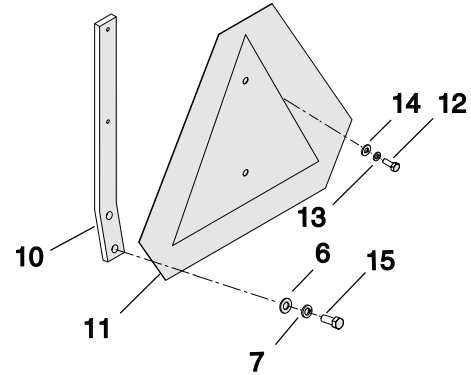
Item No.	Part Number	Qty.	Description	Remarks
Ref	12754742	1	SMV Installation With Rear Attachment	(Option)
Ref	12754774	1	SMV Sign Install, No Rear Attachments	(Option)
Ref	12755266	1	Installation- Right Side Mirrors	ENCLOSED CAB
Ref	12757323	1	Inst, Cab Headlamps, Volvo Style	
Ref	12755265	1	Installation-Left Side Mirrors	ENCLOSED CAB
1	12754776	1 or 2	Mirror Mounting Clamp	Bolt On Cab
2	12756524	1 or 2	Cap, Mirror Bracket Clamp	
Ref	12755188	1	Installation-LH Outside Mirror	Bolt On Canopy Cab
Ref	12755187	1	Installation-RH Outside Mirror	
3	12755140	1 or 2	Mirror Arm-Short	Cab or Canopy
4	100857	1 or 2	Mirror- 7 1/2 " Round Convex	Cab or Canopy
5	100-6-16-28-5	1 or 2	CSHH, 3/8-16 X 1.75, GR5	
6	300-6	2 or 4	Washer, Flat, SAE, 3/8	
7	118-3	1 or 2	Washer, Lock, 3/8	
8	200-6-16-5	1 or 2	Nut, Hex, 3/8-16, GR5	
9	102-6-16-16-F	2 or 4	CSSH, 3/8-16 X 1, FT	
10	12756769SRV	1	Headlight, Hanging, Left, 12V	
11	12756770SRV	1	Headlight, Hanging, Right, 12V	
SMV sign installation (12754742):				(Option)
10	12755837	1	Brkt., SMV Sign, With Rear	(mounts to rear of Frame)
11	P70036	1	Sign, Slow Moving Vehicle	
12	100-4-20-12-5F	2	CSHH, 1/4-20 X 0.75, GR5, FT	
13	302-4	2	Washer, Lock, 1/4	
14	300-4	2	Washer, Flat, SAE, 1/4	
15	100-6-16-16-5F	2	CSHH, 3/8-16 X 1, GR5, FT	
7	118-3	2	Washer, Lock, 3/8	
6	300-6	2	Washer, Flat, SAE, 3/8	
SMV sign installation (12754774):				(Option)
11	P70036	1	Sign, Slow Moving Vehicle	(no rear attachments)
15	100-6-16-16-5F	2	CSHH, 3/8-16 X 1, GR5, FT	
18	12754775	1	SMV Sign Mounting Brkt.	(no rear attachments)

REARVIEW MIRRORS AND REFLECTORS (CONT.)

SMV sign installation (12754774):



SMV sign installation (12754742):



Canopy Cab

Enclosed cab

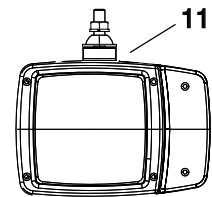
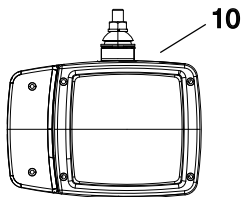


Figure 7-25

Rearview Mirrors and Reflectors Parts List (Cont.)

Item No.	Part Number	Qty.	Description	Remarks
6	300-6	2	Washer, Flat, SAE, 3/8	
7	118-3	2	Washer, Lock, 3/8	
13	302-4	2	Washer, Lock, 1/4	
12	100-4-20-12-5F	2	CSHH, 1/4-20 X 0.75, GR5, FT	

SEAT INSTALLATION (CAB ONLY)

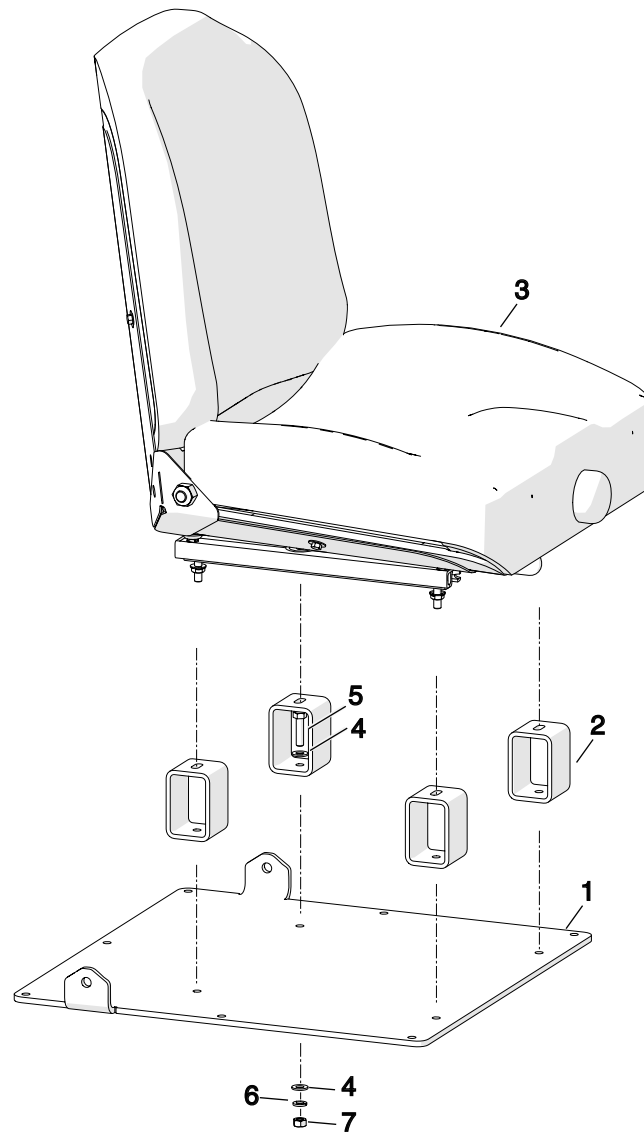


Figure 7-26.

Seat Parts List (Cab Only)

Item No.	Part Number	Qty.	Description	Remarks
1	12754910	1	Plate, Seat Mount	
2	1009530	4	Tube, Seat Riser	
3	1009334	1	Seat,Cloth	
4	119-2	8	Washer, Flat, SAE, 5/16	
5	100-5-18-20-5F	4	CSHH, 5/16-18 X 1.25, GR5, FT	
6	302-5	4	Washer, Lock, 5/16	
7	200-5-18-5	4	Nut, Hex, 5/16-18, GR5	
Ref	1009005	1	Assembly, Cloth Seat	

RADIO COMPONENTS

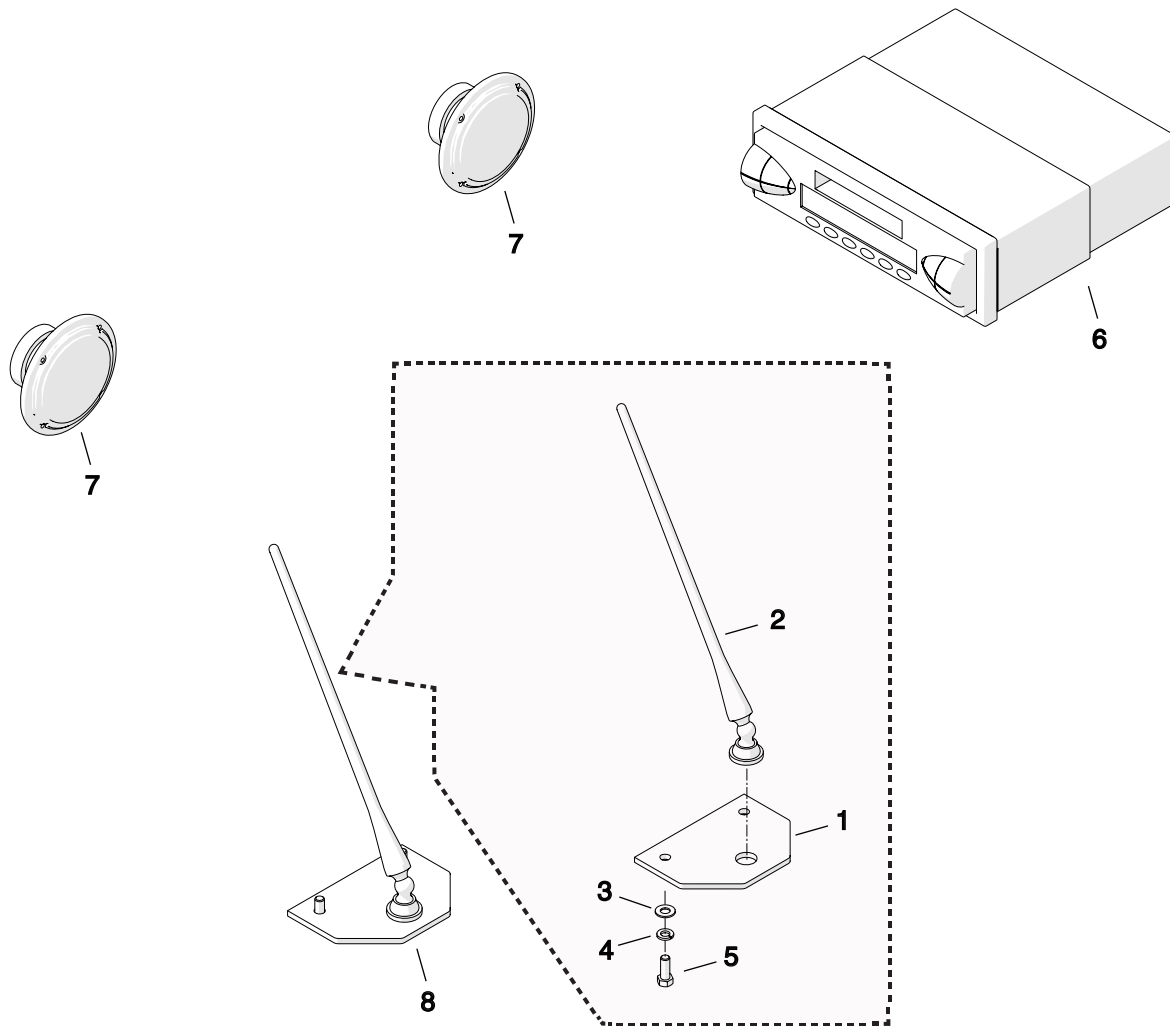


Figure 7-27.

Radio Components Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	117548	1	Antenna Mounting Bracket	
2	117547	1	Rubber Antenna	
3	300-6	2	Washer, Flat, SAE, 3/8	
4	118-3	2	Washer, Lock, 3/8	
5	100-6-16-16-5F	2	CSHH, 3/8-16 X 1, GR5, Ft.	
6	12755929	1	Radio With Detachable Front, CD, And Remote Control	
7	116812	1	Pair of 4" Speakers	
8	117549	1	Rubber Antenna Mounting	
Ref	12755978	1	Speaker For Radio - 4" (Single)	
Ref	12755928	1	Radio Installation	
Ref	12755930	1	Radio Cover Plate - Bolt On Cab	

FOOT STEPS

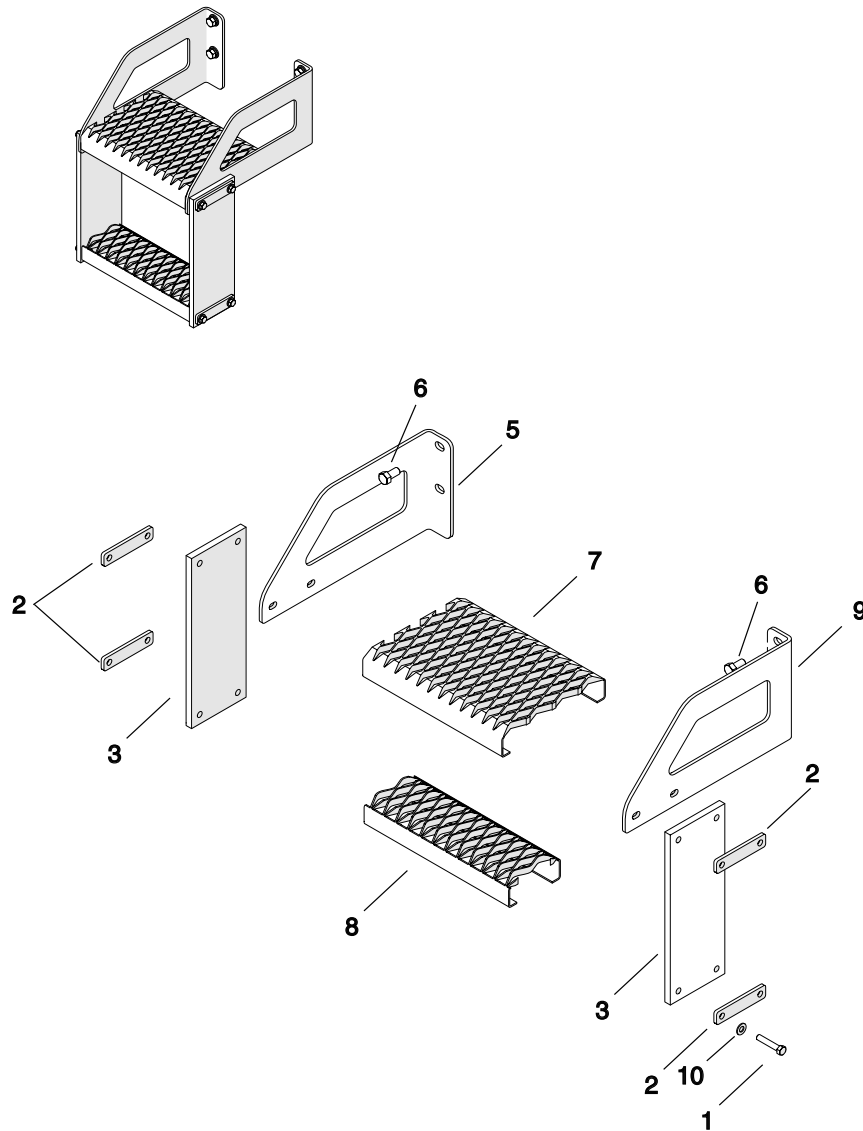


Figure 7-28.

Foot Steps Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	116228	16	3/8 - 16 X 1 1/2 SERR Flange Bolt	
2	115465	12	Bottom Step Belt Mtg. Plate	
3	115467	4	Belt, Side-Step-C80A	
4	12754951	4	Tab, Top Step	
5	12754509	2	Bracket - Step - Top - Left Hand	
6	114625	8	1/2-13 X 3/4 Unc Serr Flange Bolt	
7	12754952	2	Step, Top-9.5 Long	
8	115464	2	Step, Bottom - Sawed Material	
9	12754508	2	Bracket-Step-Top-Right Hand	
10	36E-06ZI	20	Nut, 3/8-16, Spinlock, Zinc	
Ref	12754552	1	Installation, Step Package, G-Series	(Both Sides)
Ref	12754572SRV	2	Step Assembly, (One Side) - G-Series W/Wide Top Step	
Ref	115466	1	Weldment, Step-Bottom	
Ref	12754950	1	Top Step Weldment, Wide	

CANOPY INSTALLATION

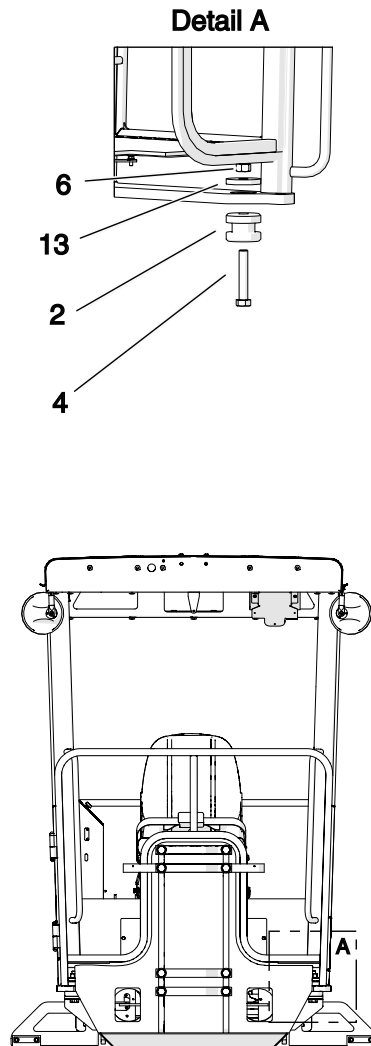


Figure 7-29.

Canopy Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	12757546	1	Installation Bolt on Canopy, FOPS/ROPS CAB	
2	12754576	4	Cab Isolation Mount - Two Piece	
4	100-14-9-80-8	4	CSHH, 7/8-9 X 5, GR8	
6	200-14-9-8	4	Nut, Hex, 7/8-9, GR8	
13	12754577	4	Washer, Isolator Mount	

CANOPY SEAT

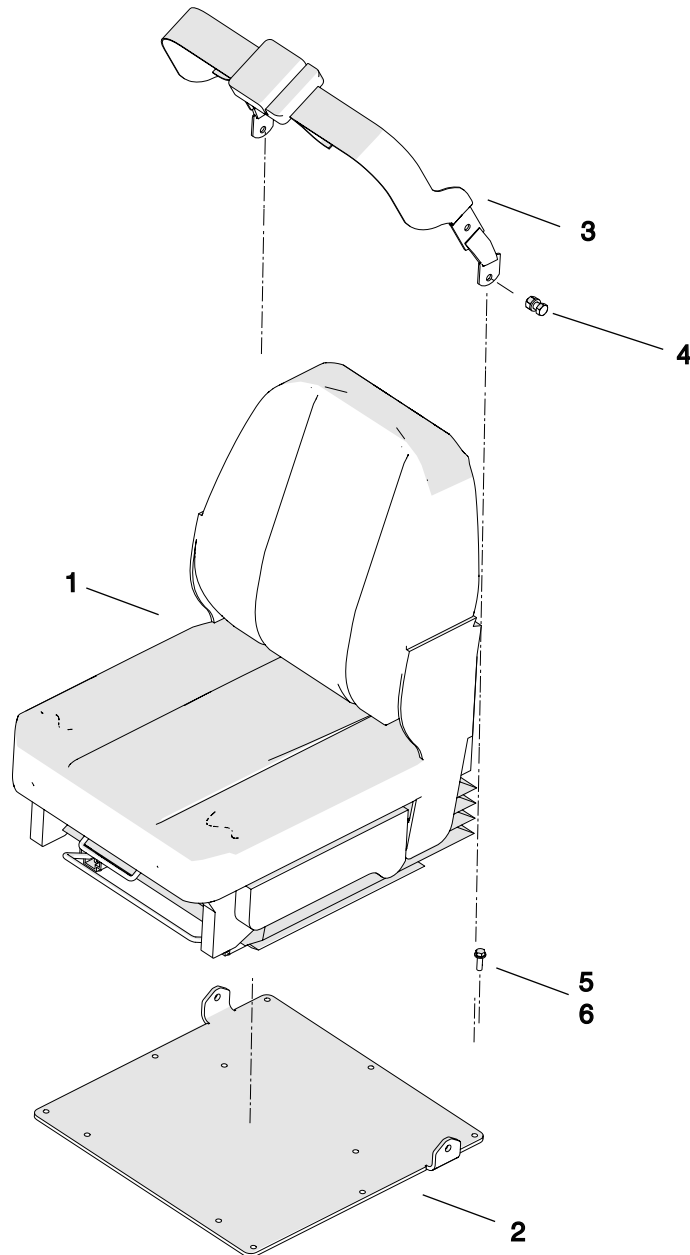


Figure 7-30.

Canopy Seat Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	12755326	1	Installation-Deluxe Vinyl Seat	G80 & 86 Only
1	1009335	1	Seat-KAB 301-Vinyl-EEC	Hardware is included
2	12754910	1	Plate, Seat Mount	
3	12755010	1	Belt-Seat-W/Non-Adjust 10" Tether	3 In. Wide
4	114237	4	Mtg Kit - Seat Belt Tethers	Shipped as a kit
5	100-5-18-20-5F	7	CSHH, 5/16-18 X 1.25, GR5, FT	Bolts to Seatdeck
6	302-5	7	Washer, Lock, 5/16	Bolts to Seatdeck

WIPER (CAB AND CANOPY)

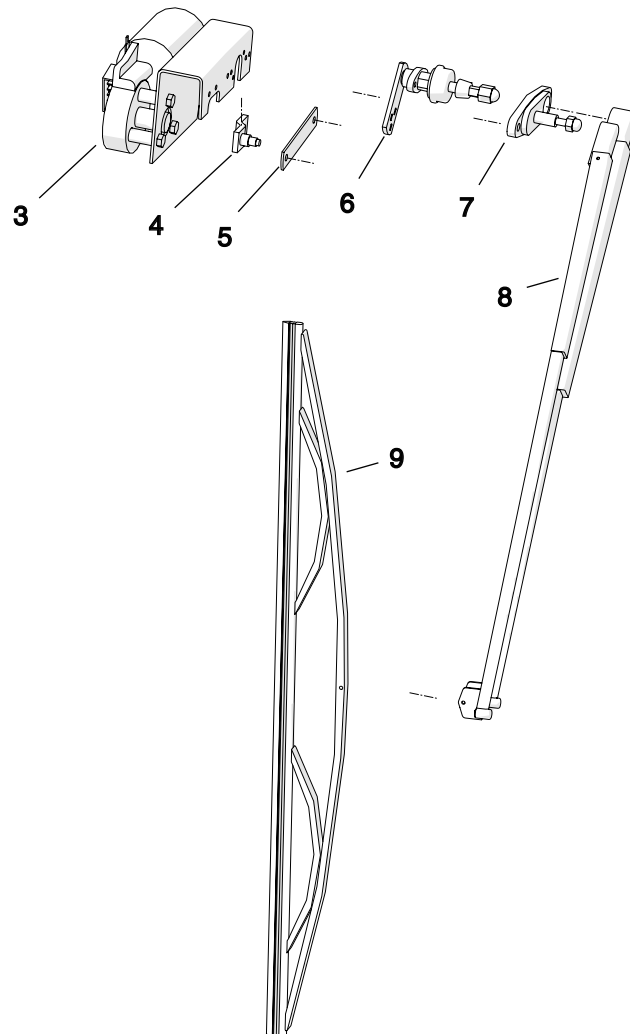


Figure 7-31.

Wiper (Cab and Canopy) Parts List

Item No.	Part Number	Qty.	Description	Remarks
3	12755013	2	Motor, Wiper, 12V	
4	12756797	2	Arm, Driver, Wiper, WWJ, 68/85/108	
5	12755048	2	Link, Connecting	
6	12755036	2	Shaft, Wiper 1" Pivot	
7	12755027	2	Mount Plate, Pivot Assembly	
8	12755023	2	Arm, Wiper, 24 In. Pantograph, Blk.	
9	12755024	2	Blade, Wiper, 28" Flex, Blk.	

CONSOLE AND CONTROLS GROUP

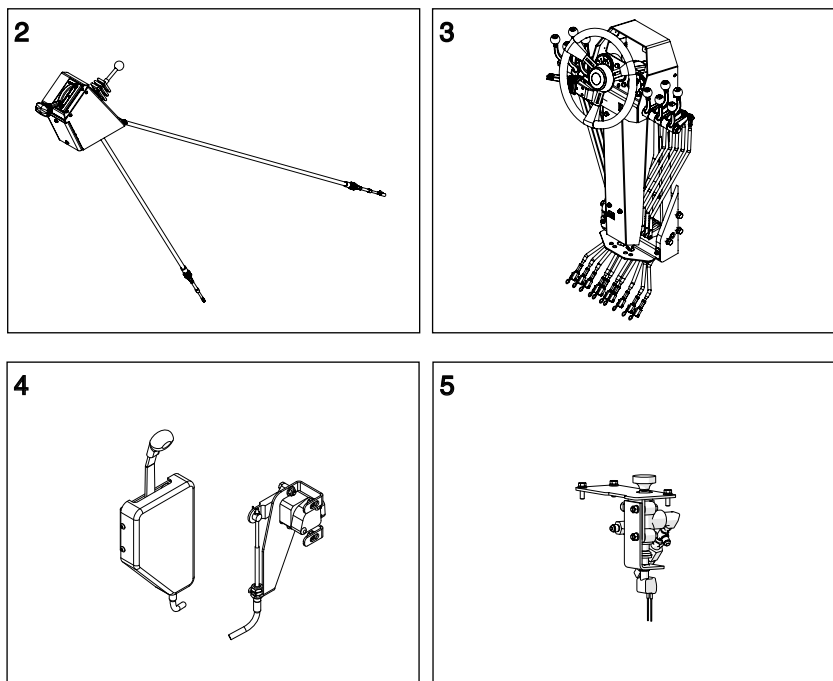


Figure 7-32.

Console and Controls Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
2	12754809	1	Installation, Transmission Controls, RH. Bolt On Cab	Figures 7-33 and 7-34
3	12756355	1	Installation, Pedestal, 10-Lever, Mid-Inlet	Figures 7-35 to 38
4	12756476	1	Installation, Hand Throttle	Fig. 7-39
5	1010529	1	Control Assembly, Park Brake, With 150 Bogie	Fig. 7-40

TRANSMISSION CONTROLS INSTALLATION

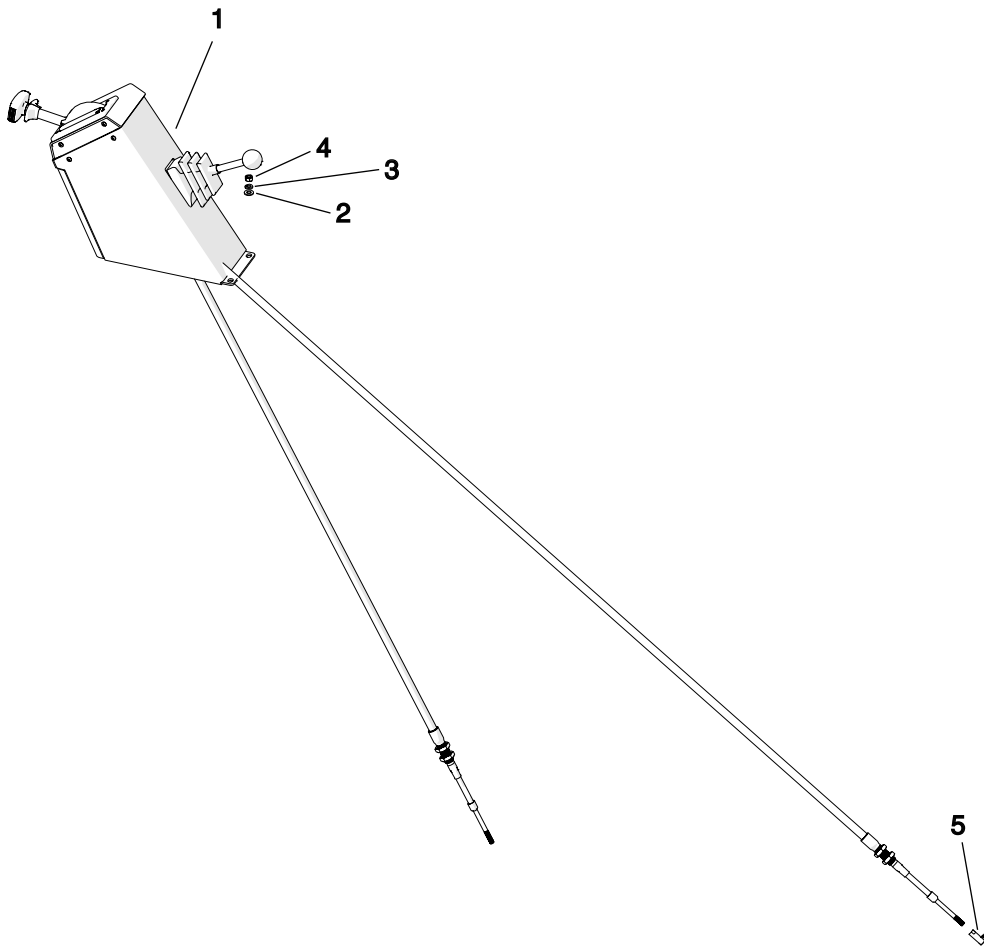


Figure 7-33.

Transmission Controls Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	12754809	1	Installation, Transmission	
1	12754808	1	Assembly, Transmission Control Pedestal	Bolts on Cab
2	119-2	4	Washer, Flat, SAE, 5/16	
3	302-5	4	Washer, Lock, 5/16	
4	200-5-18-5	4	Nut, Hex, 5/16-18, GR5	
5	106517	1	Ball Joint-1/4In.	

TRANSMISSION CONTROL PEDESTAL ASSEMBLY

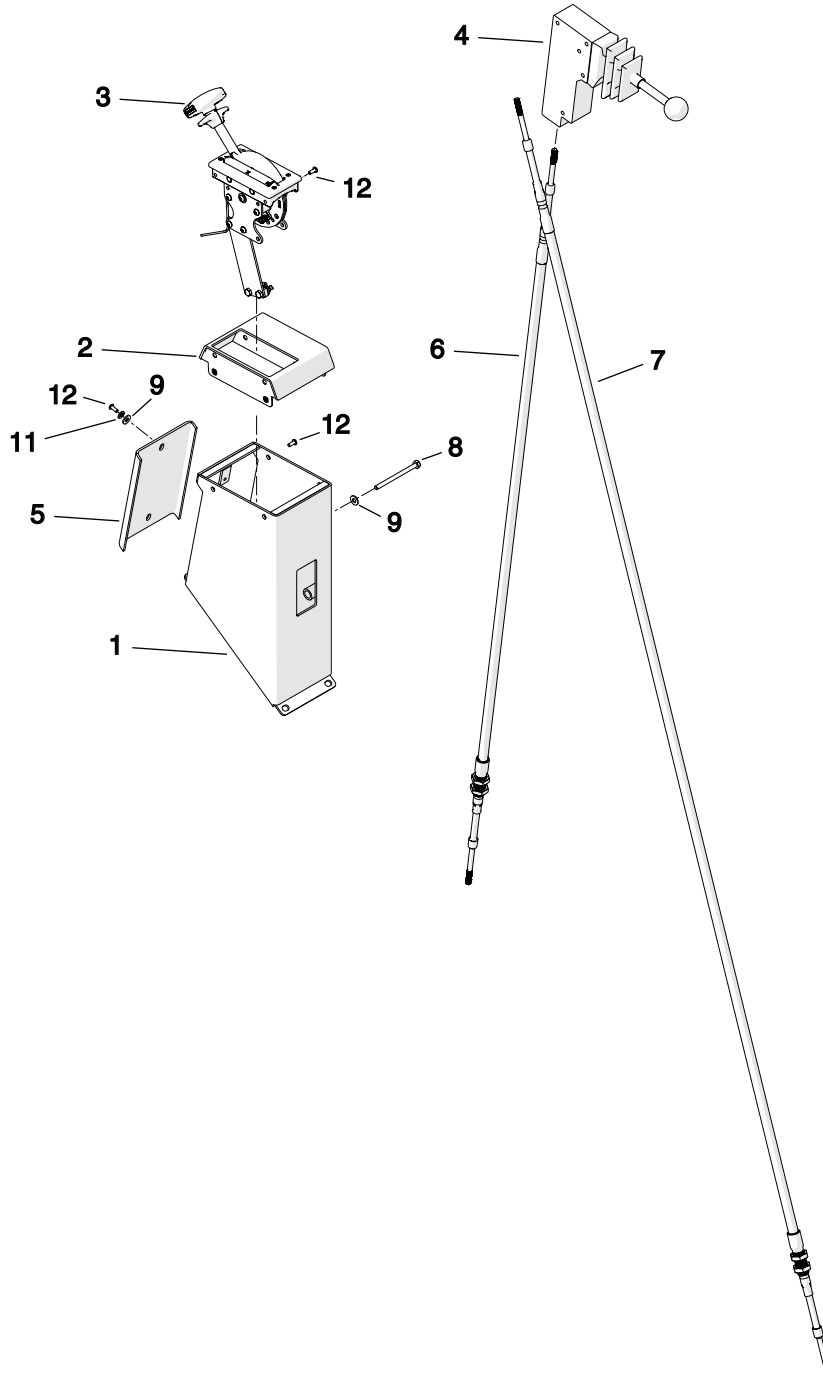


Figure 7-34.

Transmission Control Pedestal Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12757869	1	Weldment, Pedestal, Transmission Controls	
2	1009921	1	Cover, Control Console, Trans.	
3	1009885	1	Control Lever, T-Handle	
4	12754810	1	2-Speed Shift Lever Assembly, 7" Handle	
5	12757870	1	Access Cover, Pedestal, Transmission Controls	
6	112813	1	Cable, 2-Speed Shifter 60 In.	
7	112815	1	Cable, Hyd Pump 88 In.	
8	100-4-20-56-5	3	CSHH, 1/4-20 X 3.5, GR5	
9	300-4	5	Washer, Flat, SAE, 1/4	
11	302-4	2	Washer, Lock, 1/4	
12	117-#10-24-8	10	CSSBH, #10-24 X 0.5	
Ref	1010095	1	Plate, Spacer Wescon	(not shown)
Ref	12754808	1	Assembly, Transmission Control Pedestal	
Ref	204-4-20-5	3	Nut, Lock, Stover, 1/4-20, GR5	Stover nuts on back side of 12754810

LeeBoy Model 695 Motor Grader

Pedestal Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	12756355	1	Installation, Pedestal, 10 Lever, Mid-Inlet	
1	12756358	1	Sub Assembly, Pedestal, 10-Lever, Mid-Inlet	
2	73587	1	Control Knob-Articulation	
3	73589	1	Control Knob- Wheel Lean	
4	73590	2	Control Knob-Blade Lift	
5	73594	1	Control Knob-Circle Shift	
6	73588	1	Control Knob-Scarifier	
7	73592	1	Control Knob-Circle Turn	
8	73591	1	Control Knob-Blade Tilt	
9	73593	1	Control Knob-Slide Shift	
10	73595	1	Control Knob-V-Plow	
11	115772	1	Steering Wheel, 14"	
12	100402	1	Nut-Steering Wheel-Fine Thread	
13	115330	1	Front Cover - Pedestal	
14	112662	1	Horn Button	
15	12756838	1	Install, Switch, Combination	(See Fig. 7-37)
16	12754521	1	Gauge-4-in-1-Beede- Fog Resistant	
17	12754596	1	Gauge-Tach/Hourmeter-Beede Fog Resistant- Note	
18	12754741	1	Plate, Bulkhead, Pedestal	
19	115715	1	Spring Shock, Pedestal -800N	
20	115714	1	Head,Actuator-Gas Spring	
21	115880SRV	1	Pedal Weldment - Gas Spring Actuator	
22	115878	1	Nut - M10 X 1	
23	116023	1	Mount, Lower-Gas Spring	
24	1011579	1	Spacer, Cylinder	
25	1011578	1	Washer, Rubber	
26	12756459	1	Rear Cover Plate, Pedestal	
27	26019-CMG	1	Door Bumper	
28	12756283	4	Nut, Spring Steel, Type, 1/4-20 UNC	
29	12755528	4	SCRW, 0.25-20 X 0.625 TRUS, TORX	
30	56A-0816ZI	1	1/2 - 13 All Thread - 2 Inch Long	
31	350080	10	Pin, Clevis, 0.250 X 0.875	
32	13L-01	10	Hairpin Cotter (Hitchpin) 1/16	
33	116-3	10	Nut, Hex, 0.375-16	
34	100-5-18-28-5	1	CSHH, 5/16-18 X 1.75, GR5	
35	204-5-18-5	1	Nut, Lock, Stover, 5/16-18, GR5	
36	100-5-18-32-5	2	CSHH, 5/16-18 X 2, GR5	

PEDESTAL INSTALLATION (CONT.)

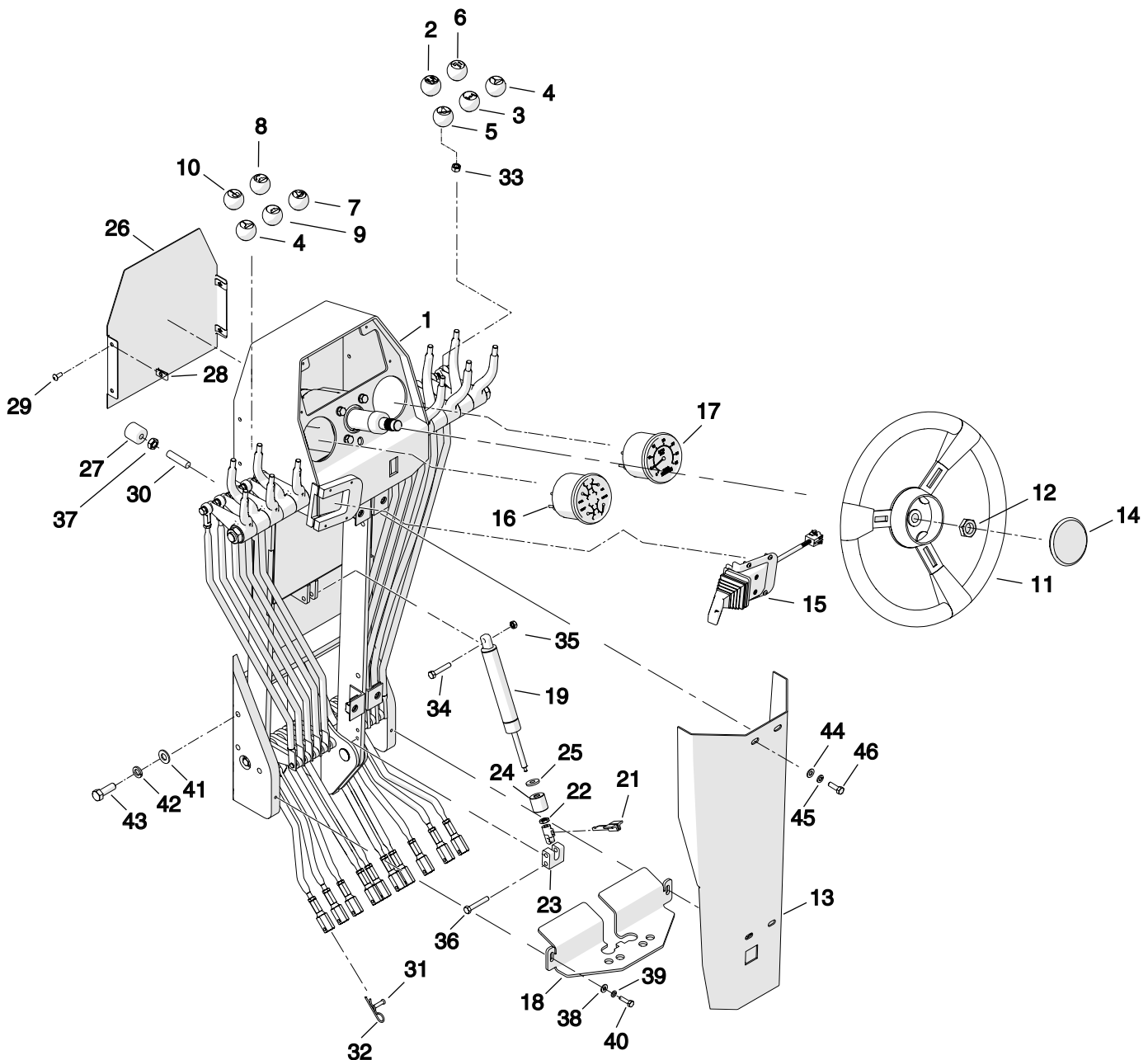


Figure 7-35.

Pedestal Installation Parts List (Continued)

Item No.	Part Number	Qty.	Description	Remarks
37	202-8-13-5	1	Nut, Hex, Jam, 1/2-13, GR5	
38	300-4	2	Washer, Flat, SAE, 1/4	
39	302-4	2	Washer, Lock, 1/4	
40	100-4-20-16-5F	2	CSHH, 1/4-20 X 1, GR5, FT	
41	300-8	6	Washer, Flat, SAE, 1/2	
42	118-5	6	Washer, Lock, 1/2	
43	100-8-13-24-5	6	CSHH, 1/2-13 X 1.5, GR5	
44	119-2	4	Washer, Flat, SAE, 5/16	
45	302-5	4	Washer, Lock, 5/16	
46	100-5-18-16-5F	4	CSHH, 5/16-18 X 1, GR5, FT	

10-LEVER SUBASSEMBLY INSTALLATION

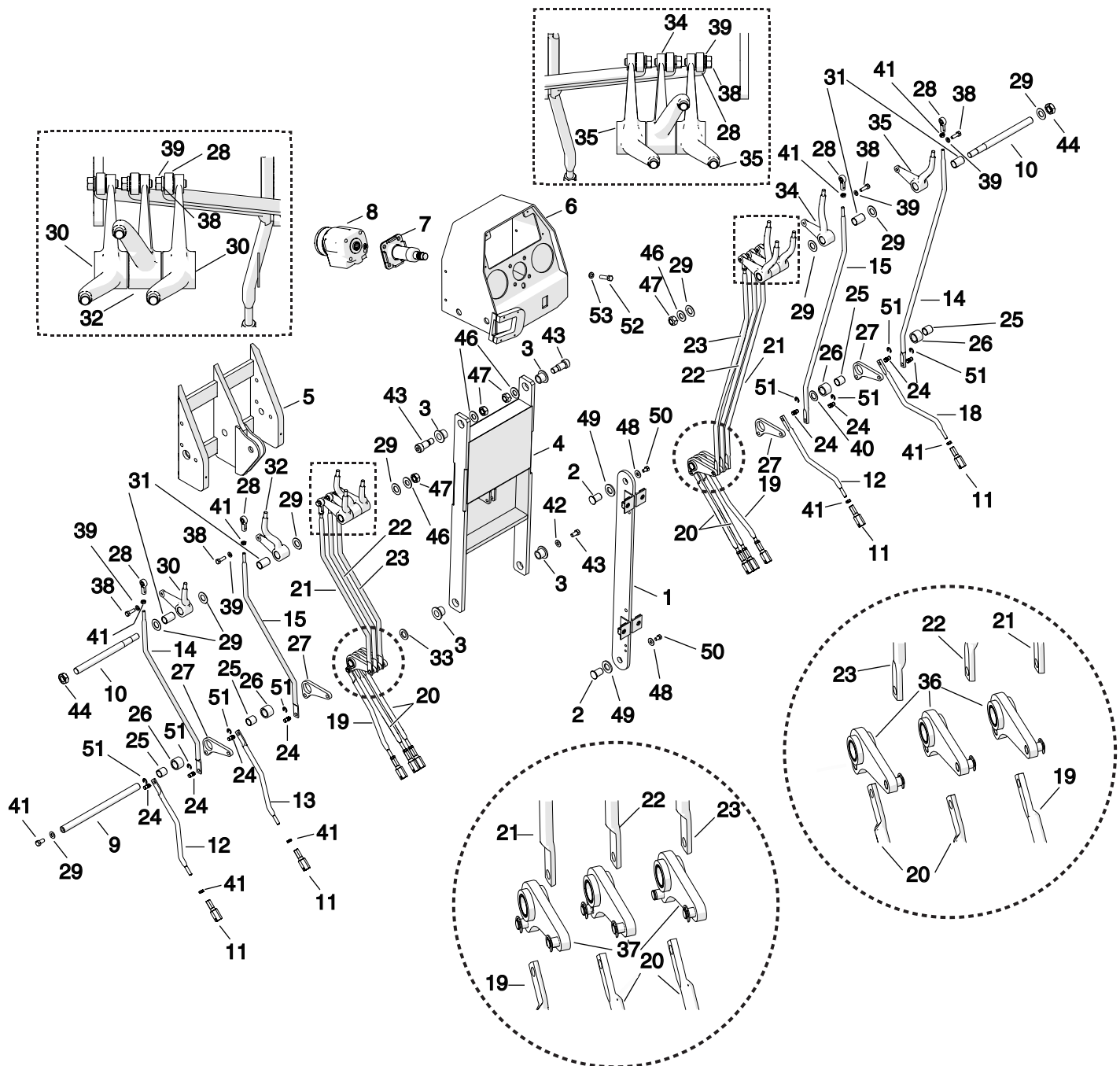


Figure 7-36.

10-Lever Subassembly Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12754916	1	Weldment, Front Link, Pedestal	
2	12754930	2	Pivot Pin, Pedestal, Lower Front Link	
3	115420	4	Bushing, BRZ-1 X 0.75 X 0.75	
4	12758299	1	Weldment, Rear Pedestal Linkage	
5	115444	1	Weldment-Pedestal Mount	
6	12756460	1	Weldment, Cover, Gauge Housing	
7	112663	1	Steering Column, 3.26In (100 mm)	
8	100397	1	Steering Control Unit-14.1 CI	
9	115442	1	Shaft-Bell Crank Pivot	
10	69709	2	Shaft-Control Levers	
11	78407	10	Ball Joint Husco Valve	
12	78409	2	Control Rod-Lower-2 And 9 Includes 78407 Rod End & Nut	
13	78410	1	Control Rod-Lower-3 And 8 Includes 78407 Rod End & Nut	
14	96134	2	Control Rod-Upper-1 And 10 Includes 96144 Rod End & Nut	
15	96135	2	Control Rod-Upper-2 And 9 Includes 96144 Rod End & Nut	
18	78408	1	Control Rod Lower 1 And 10 Includes 78407 Rod End & Nut	
19	78411	2	Control Rod-Lower-4 And 7 Includes 78407 Rod End & Nut	(Rod only)
20	78412	4	Control Rod-Lower- 5 And 6 Includes 78407 Rod End & Nut	(Rod only)
21	96136	2	Control Rod-Upper-3 And 8 Includes 96144 Rod End & Nut	(Rod only)
22	96137	2	Control Rod-Upper-4 And 7 Includes 96144 Rod End & Nut	(Rod only)
23	96138	2	Control Rod-Upper-5 And 6 Includes 96144 Rod End & Nut	(Rod only)
24	96710	20	Pivot Pin	
25	122886	10	Bushing, Bellcrank	
Ref	122887	10	Weldment, Bellcrank, Pedestal	
26	122884	10	Bushing Housing, Bellcrank	
27	122885	10	Bellcrank Lever, Drilled	
28	96144	10	Rod End	
29	69593	12	Thrust Bearing-Thin (.063" Thick)	
30	12742623	3	Extended Hand Lever, LH. Rear Side	
31	69589	10	Bushing-Control Lever	
32	12742622	2	Extended Hand Lever, Left Front Side	
33	69592	1	Thrust Bearing-Thick (0.125" Thick)	
34	12742624	2	Extended Hand Lever, Right Front Side	
35	12742625	3	Extended Hand Lever, Right Back Side	
36	115742	5	Bell Crank Assembly, RH.	
37	115741	5	Bell Crank Assembly, LH.	
38	100-5-18-16-5F	10	CSHH, 5/16-18 X 1, GR5, FT	

10-LEVER ASSEMBLY INSTALLATION (CONT.)

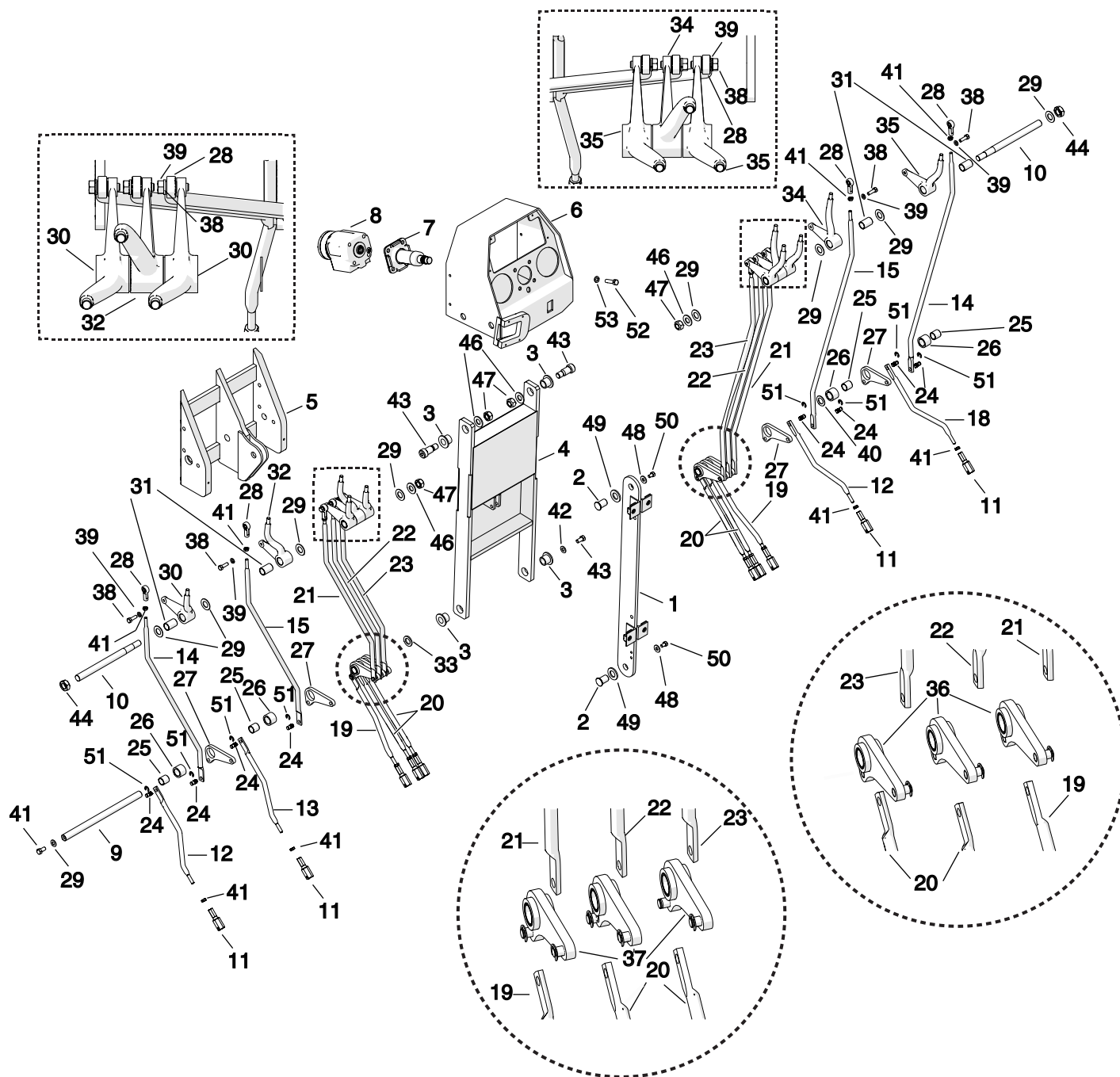


Figure 7-36.

10-Lever Assembly Installation Parts List (Cont.)

Item No.	Part Number	Qty.	Description	Remarks
39	302-5	10	Washer, Lock, 5/16	
40	69591	1	Thrust Bearing-Thin	
41	202-5-24-5	20	Nut, Hex, Jam, 5/16-24, GR5	
42	300-6	2	Washer, Flat, SAE, 3/8	
43	100-6-16-12-5F	2	CSHH, 3/8-16 X 0.75, GR5, FT	
44	202-12-10-5	2	Nut, Hex, Jam, 3/4-10, GR5	
45	118-12-16-5/8X11	2	Sholder Bolt, Dia. 3/4 X 1L, 5/8 X 11	
46	80694	4	Washer, Flat, SAE, 0.562	
47	204-10-11-5	4	Nut, Lock, Stover, 5/8-11, GR5	
48	300-12	4	Washer, Flat, SAE, 3/4	
49	100-5-18-8-5F	2	CSHH, 5/16-18 X 0.5, GR5, FT	
50	301-5	2	Washer, Flat, USS, 5/16	
51	504-3/8	20	Ring, Retaining, E-Ring, 3/8 Shaft, 0.039 GW	
52	100-6-16-24-5F	4	CSHH, 3/8-16 X 1.5, GR5, FT	
53	118-3	4	Washer, Lock, 3/8	

TURN SIGNAL INSTALLATION

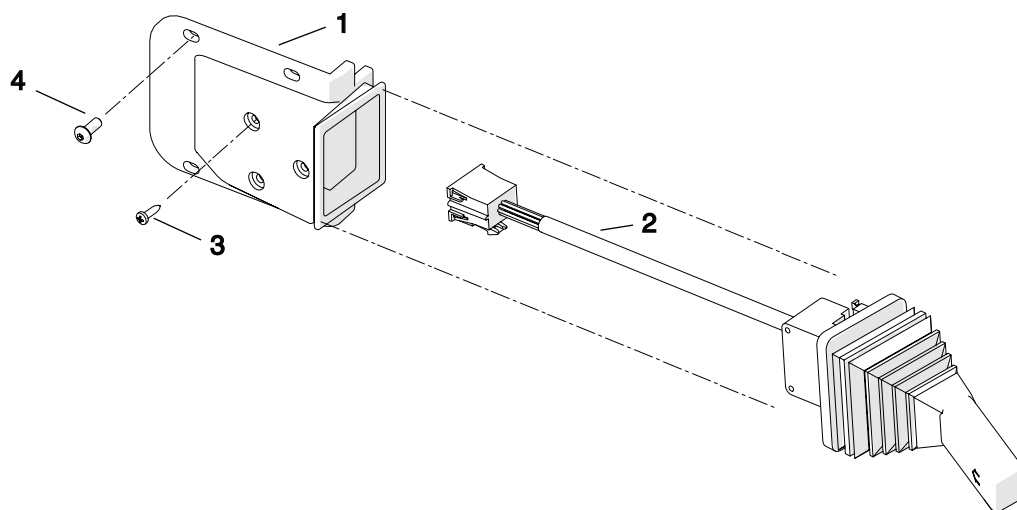


Figure 7-37.

Turn Signal Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	402213	1	Housing, Cast, Turn Signal	
2	400085	1	Signal Switch-Turn/High	
3	61A-0504ZI	3	Screw, Phillips, #5 X 1/2"L, Round Head, Self-Tapping	
4	117-#10-24-8	4	CSSBH, #10-24 X 0.5	
Ref	12756838	1	Install, Switch, Combination	

STEERING WHEEL ASSEMBLY

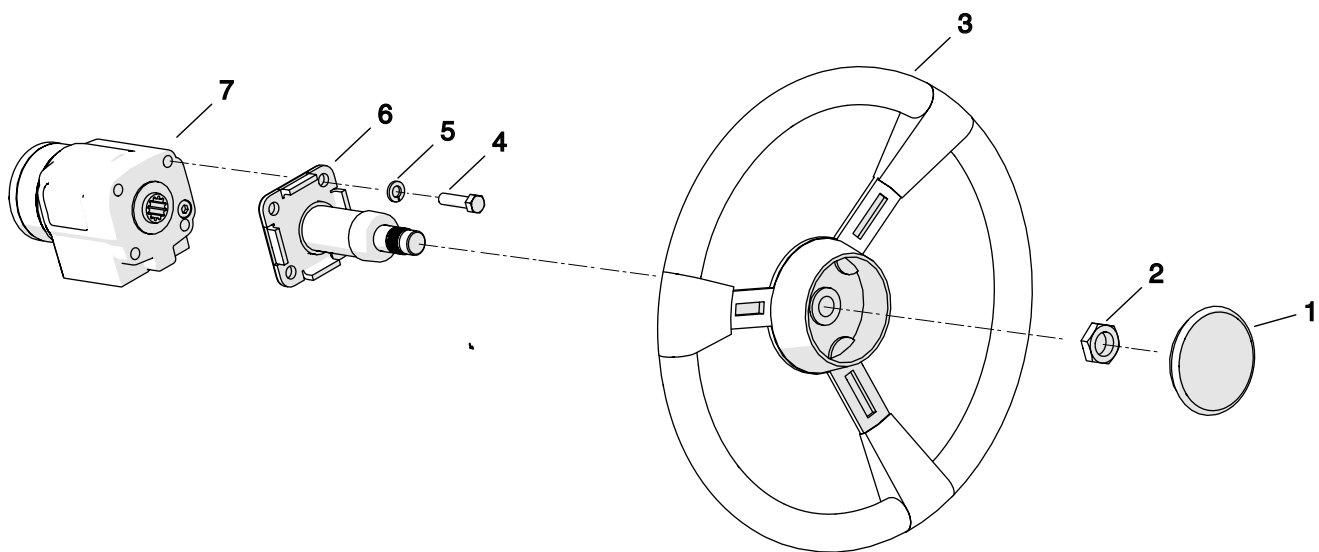


Figure 7-38.

Steering Wheel Assembly

Item No.	Part Number	Qty.	Description	Remarks
1	112662	1	Horn Button	
2	100402	1	Nut-Steering Wheel-Fine Thread	
3	115772	1	Steering Wheel, 14"	
4	100-6-16-24-5F	4	CSHH, 3/8-16 X 1.5, GR5, FT	
5	118-3	4	Washer, Lock, 3/8	
6	112663	1	Steering Column, 3.26 In. (100mm)	
7	100397	1	Steering Control Unit-14.1 CI	

HAND THROTTLE ASSEMBLY

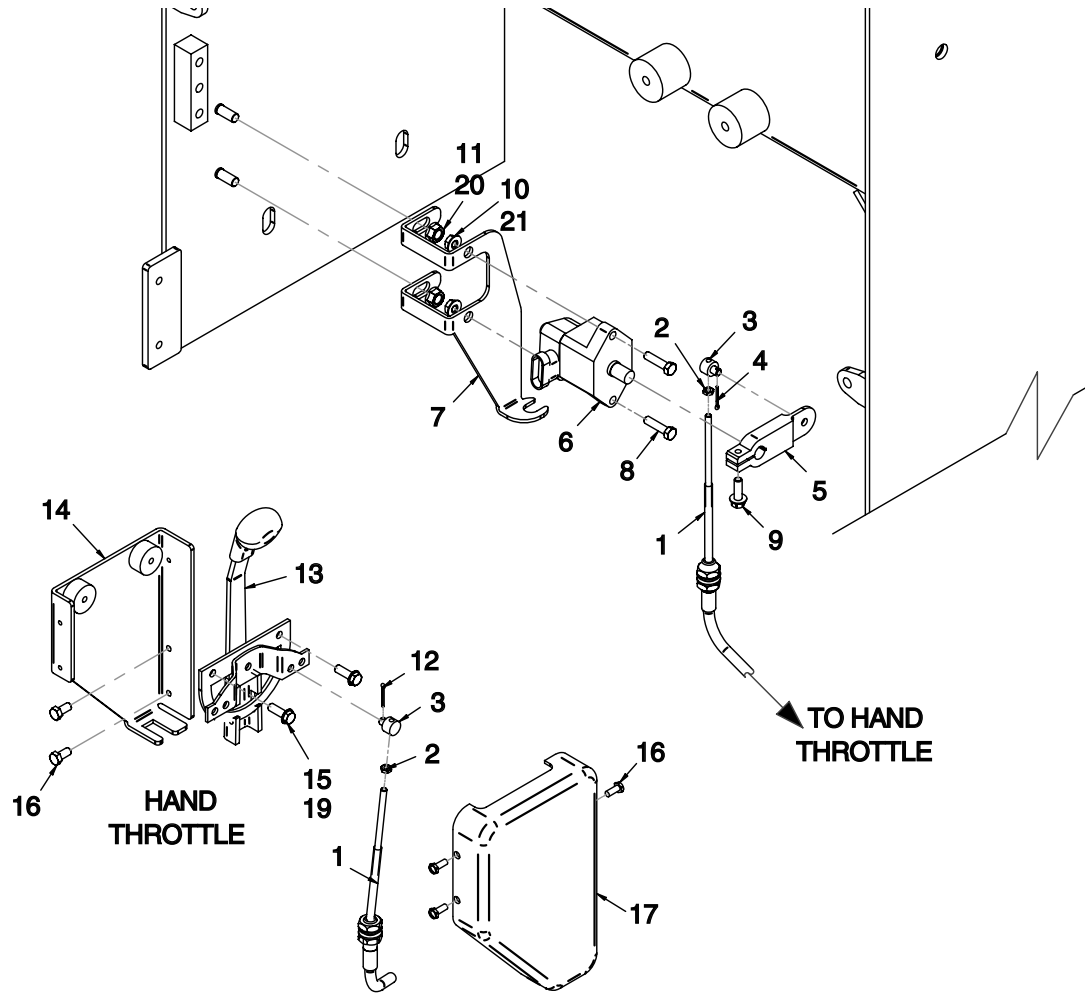


Figure 7-39.

Hand Throttle Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	112816	1	Hand Throttle Cable, W/O Foot Pedal	
2	33A-10	2	Hex Nut #10-32 UNF Zinc	
3	84162	2	Clevis, Control Cable, #10-32 UNF-2B, Brass	
4	13L-02	1	Hairpin Cotter (Hitchpin) 1/8	
5	12756438	1	Lever, TPS, Remote, Hand	
6	12756291	1	Sensor, Throttle Position, Remote	
7	12756436	1	Bracket, TPS, Remote	
8	100-4-20-16-5F	2	CSHH, 1/4-20 X 1, GR5, FT	
9	100-4-20-12-5F	1	CSHH, 1/4-20 X 0.75, GR5, FT	
10	204-4-20-5	2	Nut, Lock, Stover, 1/4-20, GR5	
11	204-5-18-5	2	Nut, Lock, Stover, 5/16-18, GR5	
12	13A-0212ZI	1	Cotter Pin	
13	84663	1	Hand Throttle Lever	
14	12754749	1	Hand Throttle Bracket	
15	100-4-20-8-5F	4	CSHH, 1/4-20 x 0.5, GR5, FT	
16	117-#10-24-8	3	CSSBH, #10-24 X 0.5	
17	12754753	1	Plastic Cover, Hand Throttle	
19	302-4	2	Washer, Lock, 1/4	
20	300-4	2	Washer, Flat, SAE, 1/4	
21	119-2	2	Washer, Flat, SAE, 5/16	
Ref	12756476	1	Installation, Hand Throttle, Tier 2	
Ref	12756453	1	Installation, Throttle Position	

PARKING BRAKE

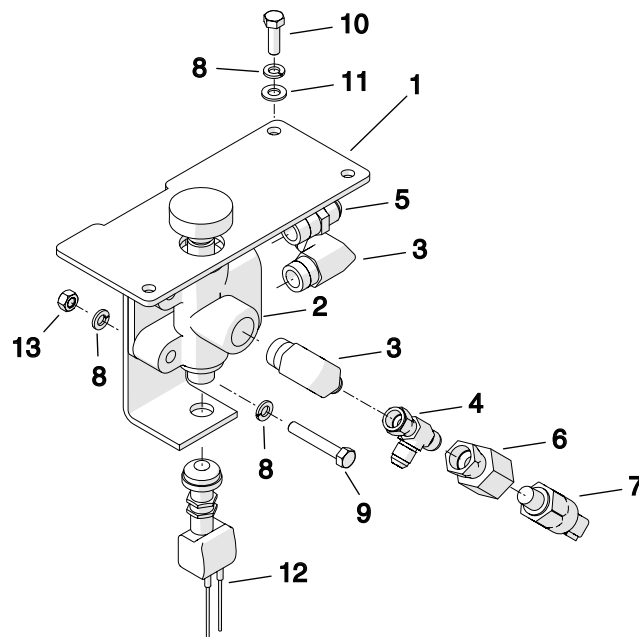


Figure 7-40.

Parking Brake Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	1010529	1	Control Assembly, Park Brake, With 150 Bogie	
1	121802	1	Weldment, Bracket, Fail-Safe	
2	910080	1	Valve, Selector	
3	2501-6-8	2	Adapter, Elbow, 90 Deg, -6 JIC / -8	
4	6602-6-6-6	1	Adapter, Run Tee, Swivel, -6 JIC / -6	
5	2404-8-8	1	Adapter, Connector, -8 JIC / -8	
6	6505-6-6	1	Adapter, Male Pipe/Swivel, -6 NPTF	
7	1010488	1	Switch, Low Pressure, 200 PSI	
8	302-5	7	Washer, Lock, 5/16	
9	100-5-18-32-5	2	CSHH, 5/16-18 X 2, GR5	
10	100-5-18-16-5F	3	CSHH, 5/16-18 X 1, GR5, Ft.	
11	119-2	3	Washer, Flat, SAE, 5/16	
12	113085	1	Momentary Switch, Long Stem	
13	202-5-18-5	2	Nut, Hex, Jam, 5/16-18, GR5	

695 DETAIL GROUP

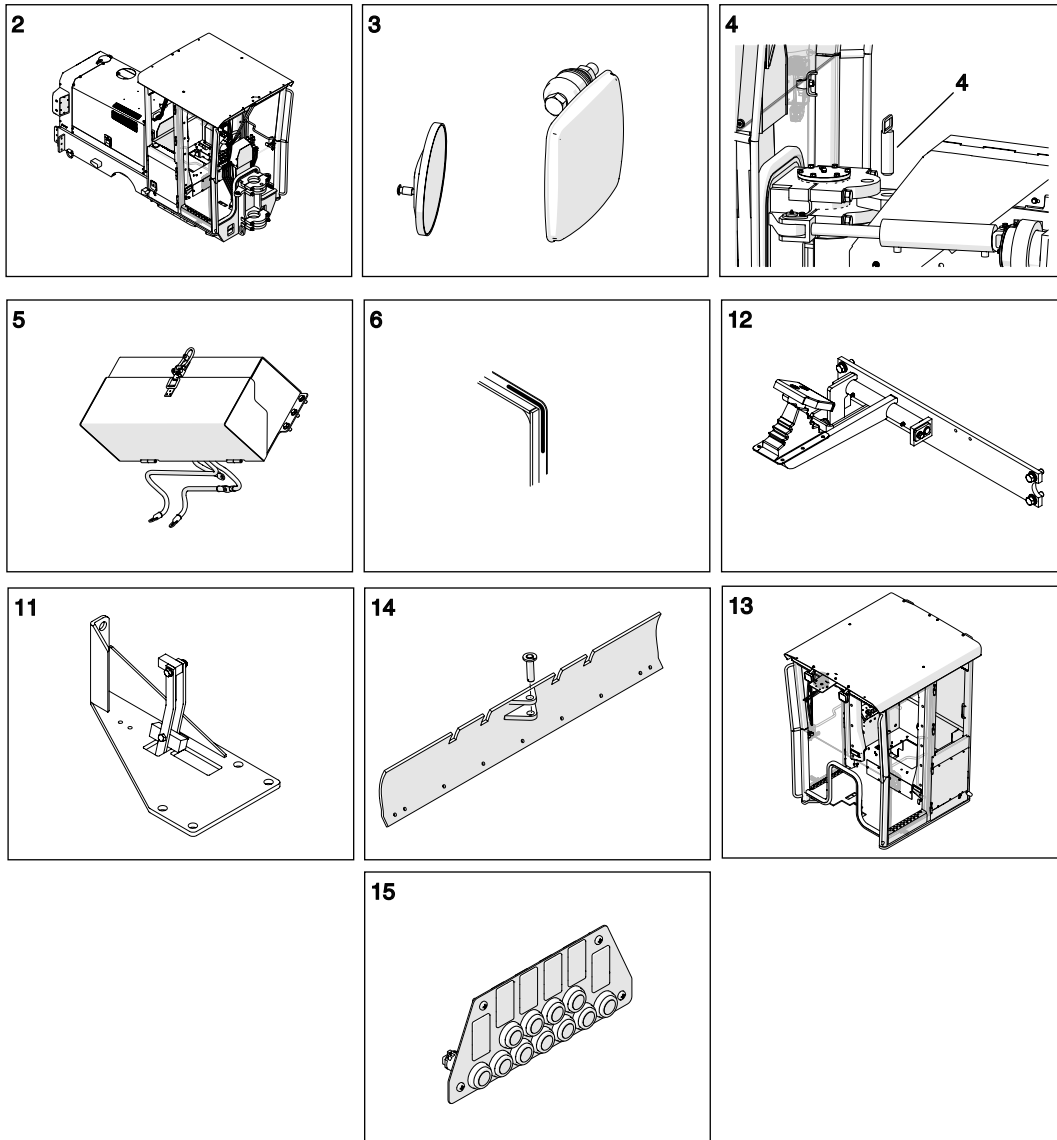


Figure 7-41.

695 Detail Parts List Group

Item No.	Part Number	Qty.	Description	Remarks
3	12757323	1	Inst., Cab Headlamps, Volvo Sty.	Fig. 7-25
4	12757607	1	Wldmt., Artic Lock Pin	Fig. 7-41
5	122773	1	Installation, C6X-C8X Battery	Fig. 7-45
6	107543	3	Window Trim - Cab	Fig. 7-41
11	1010628	1	Assembly, Shifter Base	Fig. 7-47
12	12754956	1	Install, Brake Pedal Assembly - Right	Fig. 7-46
13	1008995	1	Assembly, Exterior Lights, 695	Fig. 7-44
14	115565	1	Installation - Tow Pin	Figure 7-76
15	1009006	1	Group, Indicator Lights, 695 Group,	Fig. 7-43
Ref	1014907	1	Decals, 695	(See the "Replacement Parts List" on page 7-4)

Note: AWD
Detail Group
begins on
page 7-187.

INSTRUMENT PANELS (AND ELECTRICAL)

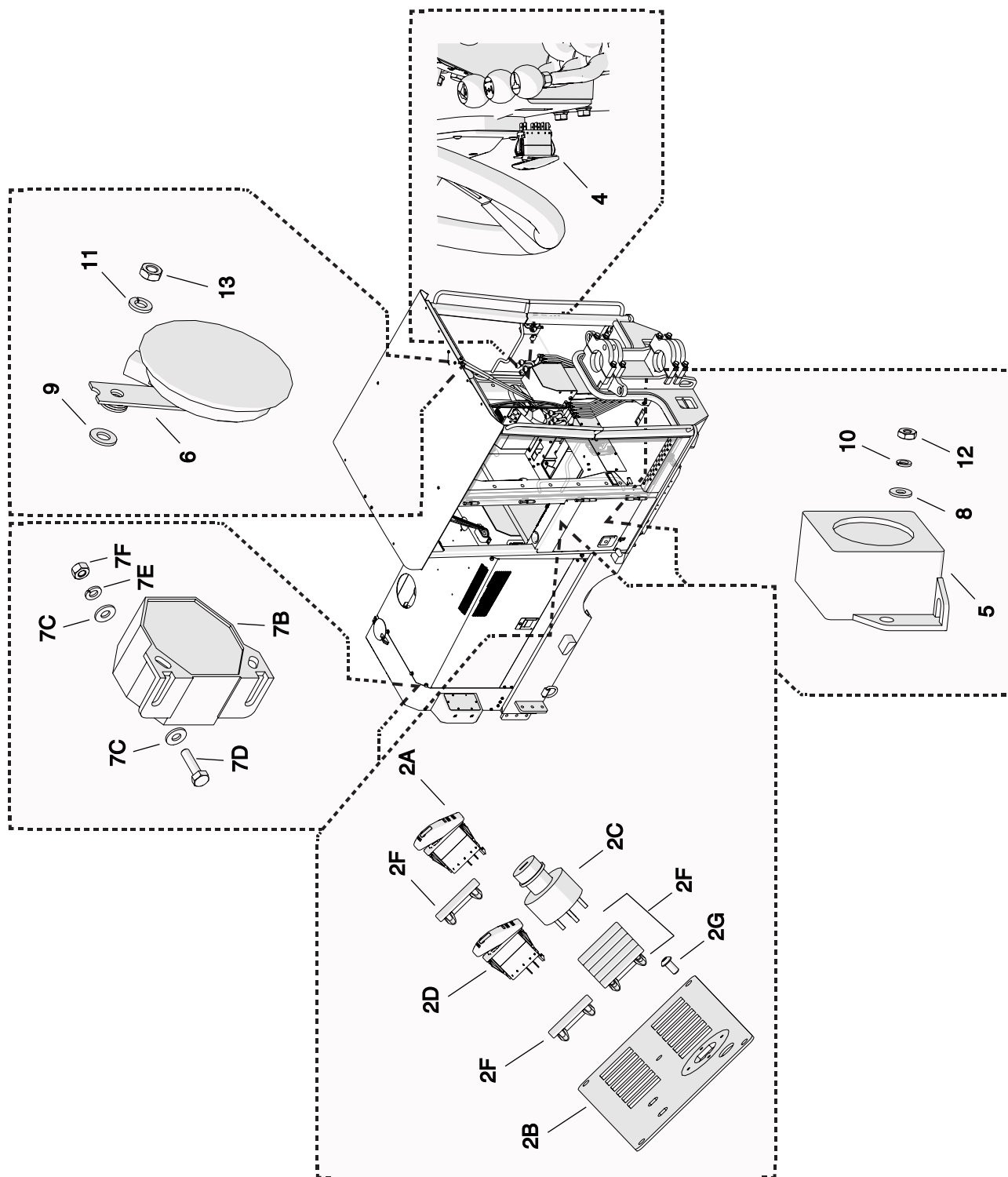


Figure 7-42.

Instrument Panels (and Electrical) Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	12756920	1	Installation, Switch Panel, Right Side	
2A	12756907	1	Switch, Front Float, 12V, Grey	
2B	122340	1	Switch Panel, Console, Right Side	
2C	122267	1	Ignition Switch, With Key	
2D	12756895	1	Switch, Headlights, Parklights, 12V, Black	
2E	12756911-01	1	Decal, Oper, Work Lights, Front	
2F	115720	7	Plug, Rocker Switch Blank	
2G	117-4-20-8	4	CSSBH, 1/4-20 X 0.5	
Ref	12756899	1	Switch, Beacon Lights, 12V, Grey	(Not shown)
Ref	12756898	1	Switch, Wklts., Rear, 12V, Grey	(Not shown)
Ref	12756897	1	Switch, Wklts., Front, 12V, Grey	(Not shown)
Ref	73119-CMG	2	Switch-Wiper/Washer	(Not shown)
4	12756911	1	Switch, Hazard Lights, 12V, Red	
5	57224	1	Alarm-Brake System	
6	11884428	1	Horn, 12V, 110DB @ 13V & 2M, 415 HZ	
Ref	12757109	1	Installation, Back-Up Alarm	
Ref	12757503	1	Installation, Backup Alarm, Switch	(Not shown)
7B	11850145	1	Alarm, Back-Up, Warning Unit	
7C	300-4	4	Washer, Flat, SAE, 1/4	
7D	100-4-20-16-5F	2	CSHH, 1/4-20 X 1, GR5, FT	
7E	302-4	2	Washer, Lock, 1/4	
7F	200-4-20-5	2	Nut, Hex, 1/4-20, GR5	
8	300-#10	1	Washer, Flat, SAE, #10	
9	119-2	5	Washer, Flat, SAE, 5/16	
10	900077	1	Washer, Lock, #10	
11	302-5	1	Washer, Lock, 5/16	
12	209-#10-24	1	Nut, Hex, Mach, #10-24	
13	202-5-18-5	1	Nut, Hex, Jam, 5/16-18, GR5	

INDICATOR LIGHTS GROUP

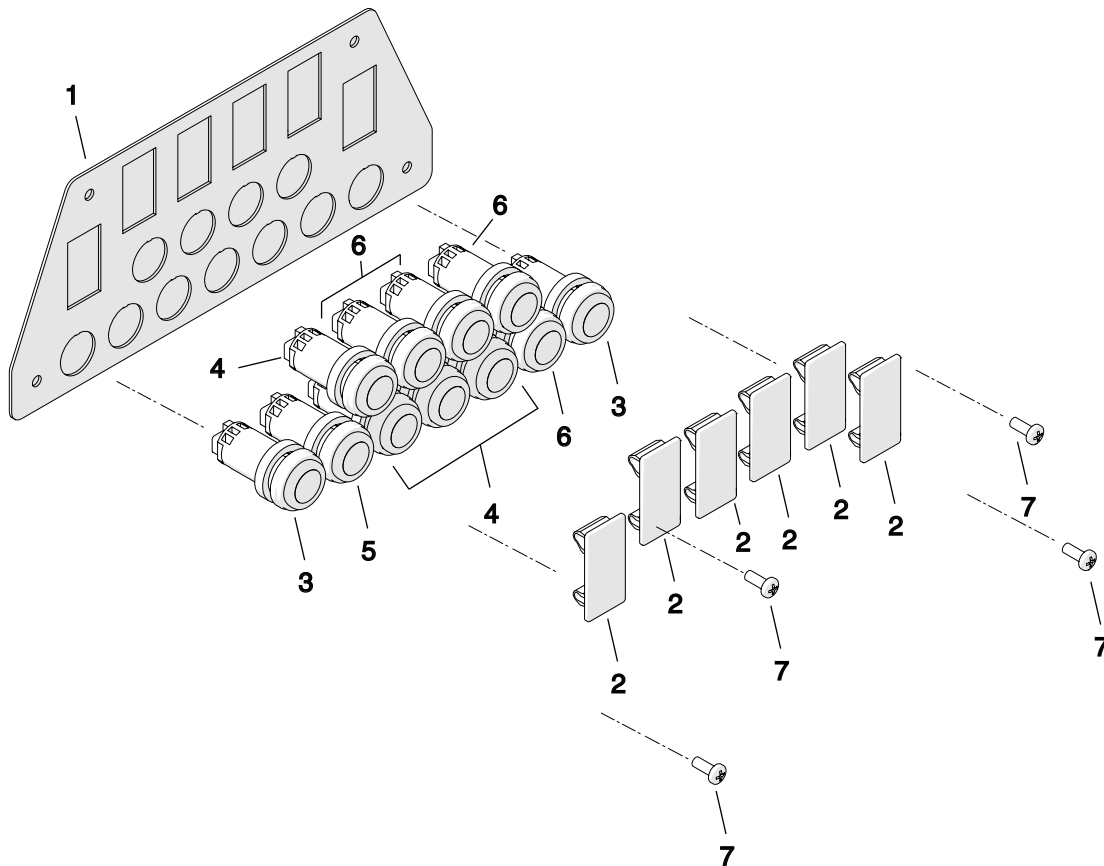


Figure 7-43.

Indicator Lights Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	1009006	1	Group, Indicator Lights, 695 Mounting	
1	1010441	1	Plate, Indicator Lamp, Turbo	
2	115720	5	Plug,Rocker Switch Blank	
3	1010445	2	Lamp, Idec Indicator, Green	
4	1010442	4	Lamp, Idec Indicator, Red	
5	1010444	1	Lamp, Idec Indicator, Blue	
6	1010443	4	Lamp, Idec Indicator, Amber	
7	122-#10-24-8F	4	PHMS, CROSS, #10-24 X 0.5, FT	

EXTERIOR LIGHT ASSEMBLY

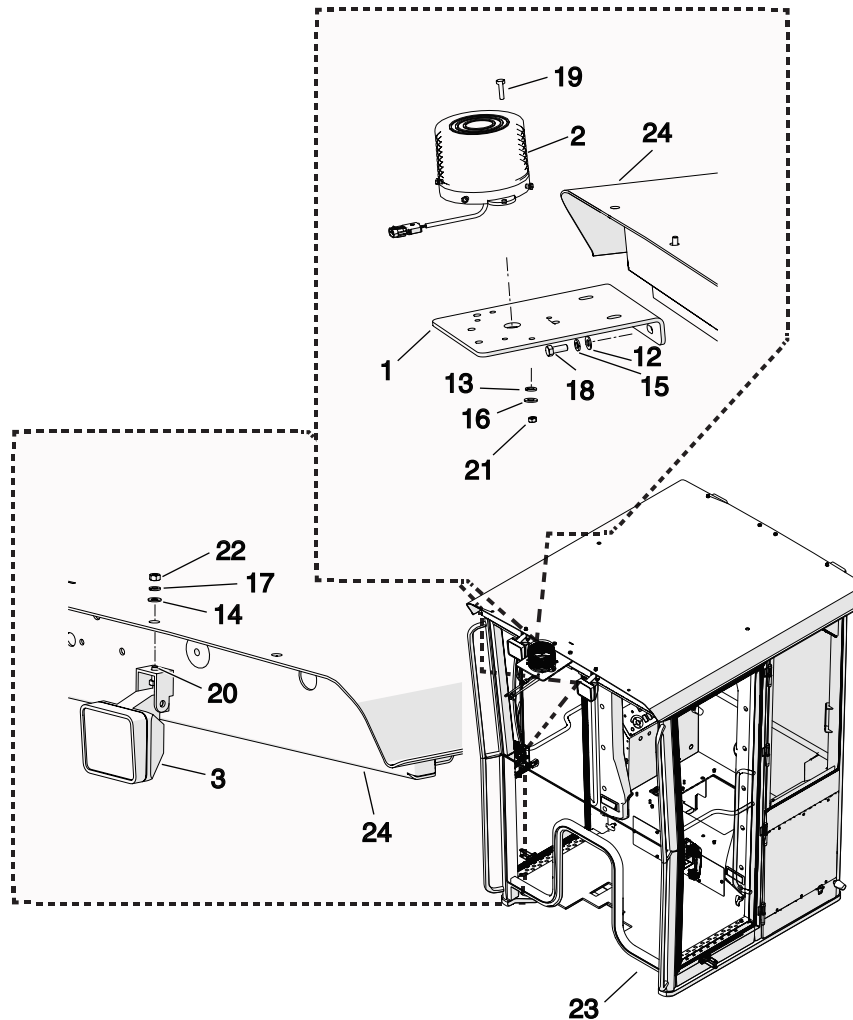


Figure 7-44.

Exterior Light Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12754761	1	Rear Strobe Light Mounting Bracket	
2	12755603	1	Strobe Light, Low Amber, Low	
3	11039856	4	Worklight, 12V, Hanging	
Ref	969161	1	Fuse, 10 AMP	
Ref	11305263	1	Relay, Cube, 12V, Unsealed	
12	300-6	4	Washer, Flat, SAE, 3/8	
13	300-4	2	Washer, Flat, SAE, 1/4	
14	119-2	4	Washer, Flat, SAE, 5/16	
15	118-3	4	Washer, Lock, 3/8	
16	302-4	2	Washer, Lock, 1/4	
17	302-5	4	Washer, Lock, 5/16	
18	100-6-16-16-5F	4	CSHH, 3/8-16 X 1, GR5, FT	
19	100-4-20-16-5F	2	CSHH, 1/4-20 X 1, GR5, FT	
20	100-5-18-12-5F	4	CSHH, 5/16-18 X 0.75, GR5, FT	
21	200-4-20-5	2	Nut, Hex, 1/4-20, GR5	
22	200-5-18-5	4	Nut, Hex, 5/16-18, GR5	
23	1008995	1	Assembly, Exterior Lights, 695	
24	12754409	1	Enclosed ROPS / FOPS Canopy Cab	

BATTERY INSTALLATION

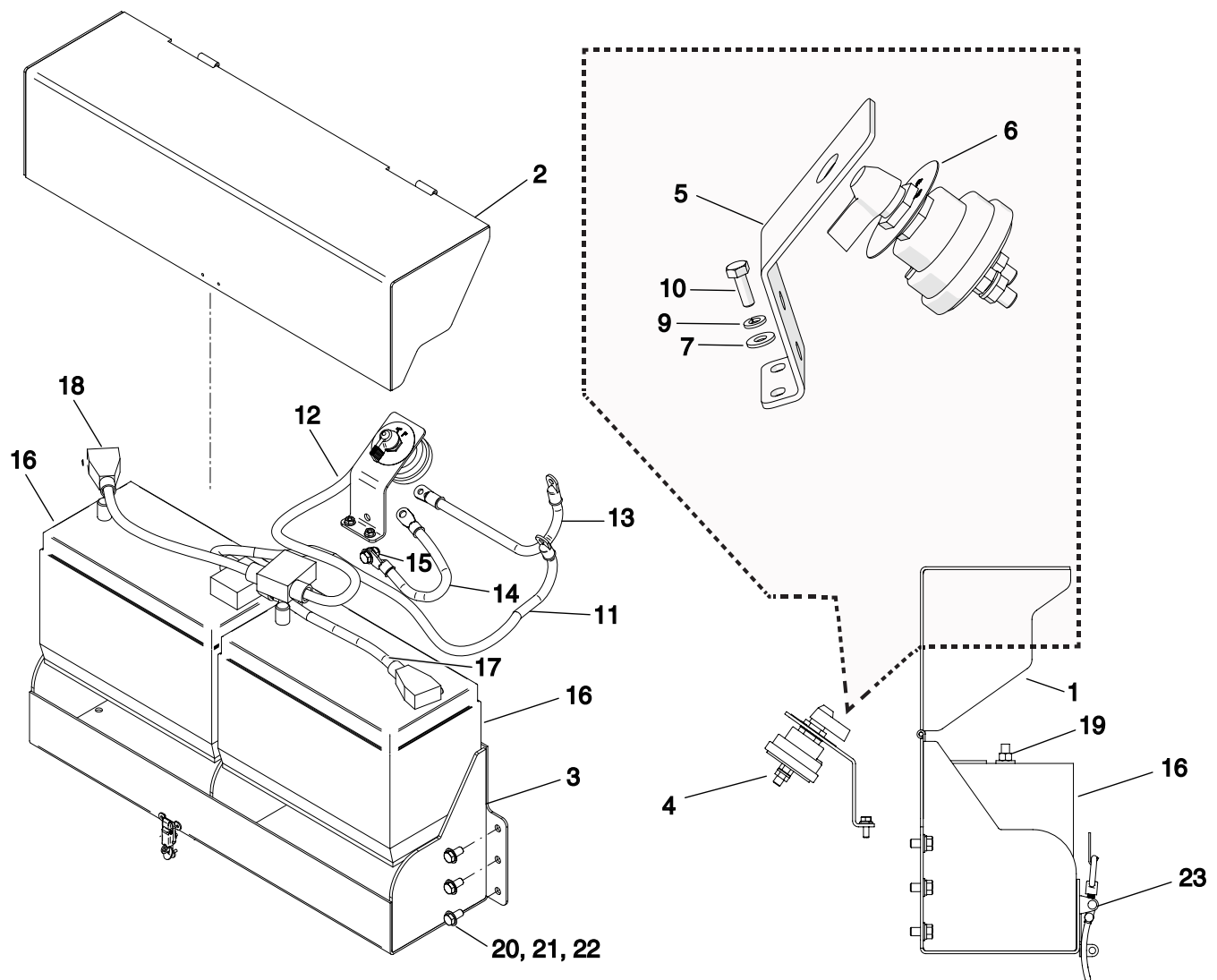


Figure 7-45.

Battery Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	120506SRV	1	Installation, Double Battery Box, Tier-3	
2	120507	1	Weldment, Lid, Double Battery	
3	120508	1	Weldment, Bottom, Double	
4	112842	1	Inst.-Battery Disconnect Switch	
5	112843	1	Mounting Plate, Battery Isolation Switch	
6	109740	1	Switch, Master Disconnect, Battery	
7	300-4	2	Washer, Flat, SAE, 1/4	
9	302-4	2	Washer, Lock, 1/4	
10	100-4-20-12-5F	2	CSHH, 1/4-20 X 0.75, GR5, FT	
11	122796	1	Cable, Battery, Positive To ISO SW, 22"	
12	122798	1	Cable, Battery, Negative To Starter Gnd., 42"	
13	120632	1	Cable, Starter Positive To ISO SW	
14	120642	1	Cable, Starter Ground To Frame	
15	36E-06ZI	1	Nut, 3/8-16, Spinlock, Zinc	
Ref.	122773	1	Installation, C6X-C8X Battery, Thd. Stud Terminals	
16	122725	2	Battery, 12V, Top Threaded Studs - 660 CCA @ 0 Deg F	
17	122795	1	Cable, Battery, Positive To Positive, 17"	
18	122797	1	Cable, Battery, Negative To Negative, 17"	
19	200-6-16-5	4	Nut, Hex, 3/8-16 ,GR5	
20	300-6	6	Washer, Flat, SAE, 3/8	
21	302-6	6	Washer, Lock, 3/8	
22	100-6-16-12-5F	6	CSHH, 3/8-16 X 0.75, GR5, FT	
23	121180	1	Latch, Battery Box, Tandem	

BRAKE PEDAL INSTALLATION

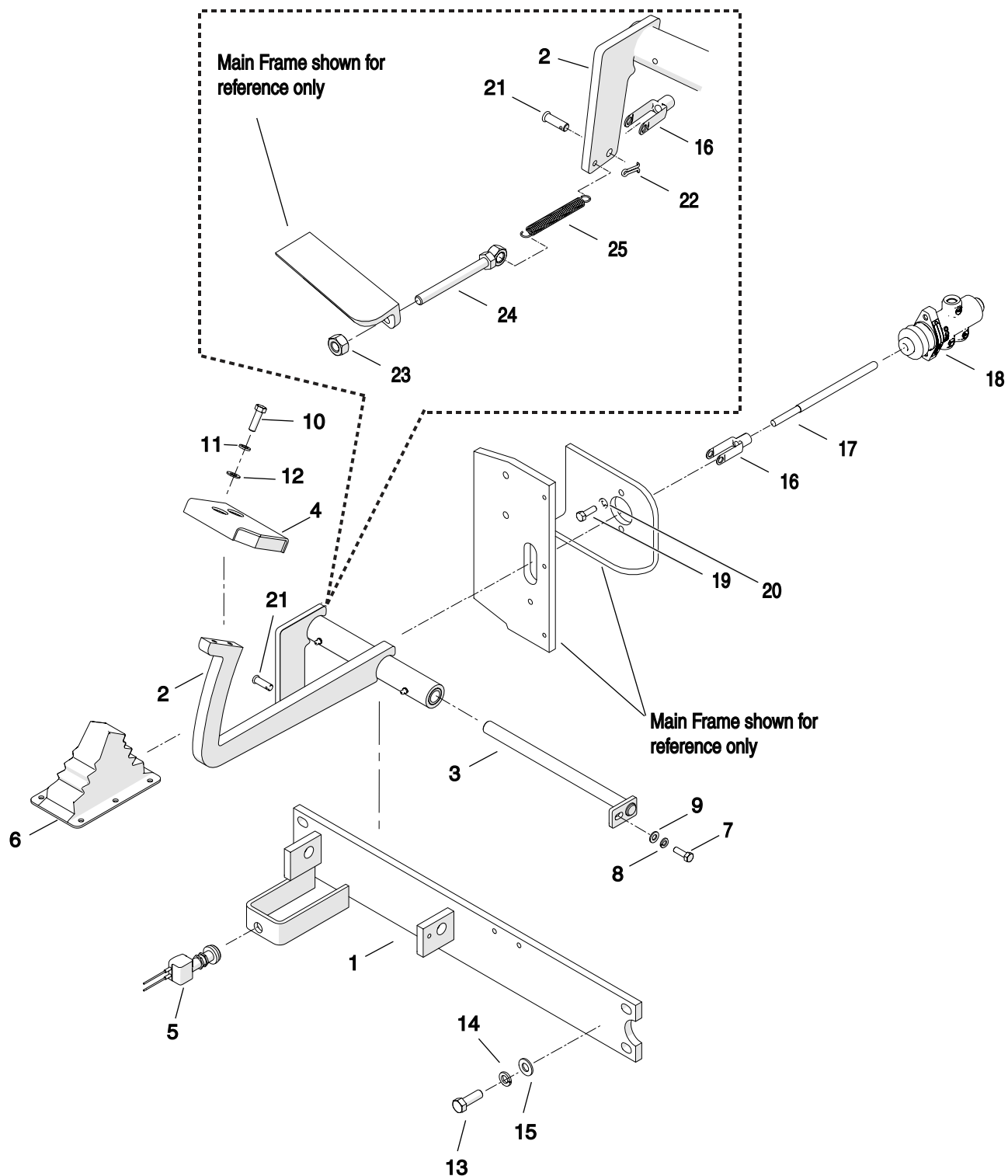
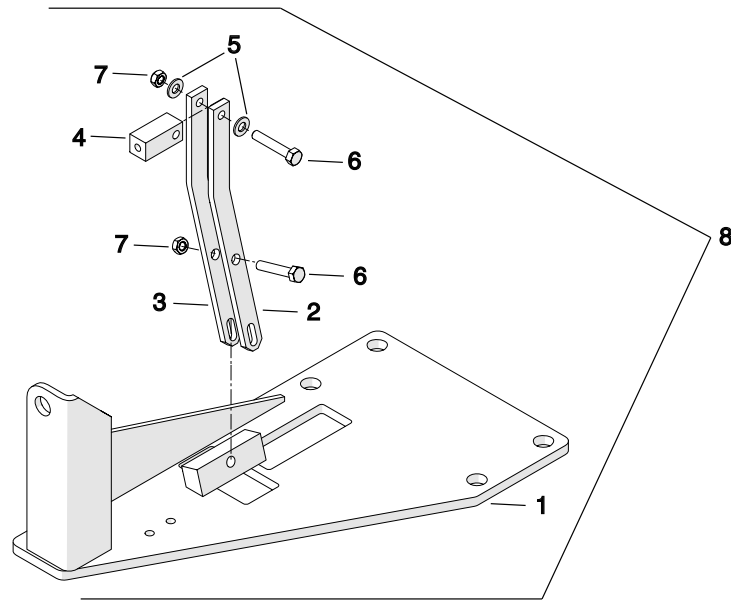


Figure 7-46.

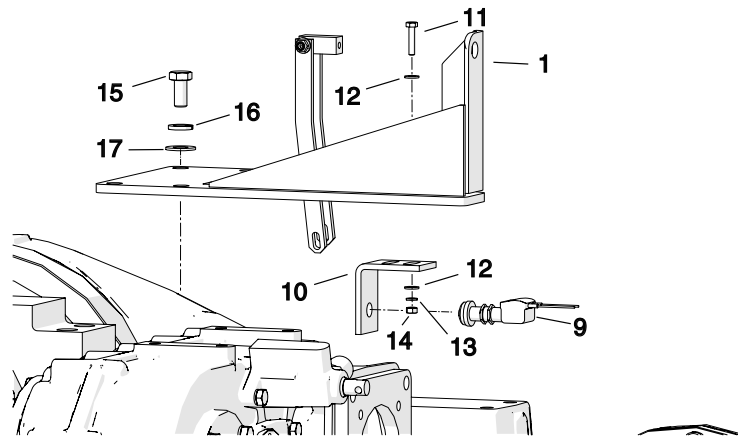
Brake Pedal installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	112776	1	Weldment, Brake Pedal Mount	
2	12754948	1	Weldment, Brake Pedal, Right	
3	112782	1	Weldment, Pin, Brake Pedal Mount	
4	1009676	1	Weldment, Brake Pedal	
5	113085	1	Momentary Switch, Long Stem	
6	96525	1	Rubber Boot	
7	100-5-18-16-5	1	CSHH, 5/16-18 X 1, GR5	
8	302-5	1	Washer, Lock, 5/16	
9	119-2	1	Washer, Flat, SAE, 5/16	
10	102-206-1A	2	CSHH, 0.375-16 X 1.25, GR5	
11	118-3	2	Washer, Lock, 3/8	
12	300-6	2	Washer, Flat, SAE, 3/8	
13	100-8-13-24-5	4	CSHH, 1/2-13 X 1.5, GR5	
14	118-5	4	Washer, Lock, 1/2	
15	300-8	4	Washer, Flat, SAE, 1/2	
16	810050	1	Clevis, Shifter Cable (3/8")	
17	1010395	1	Rod, Brake, Mico	
18	1010381	1	Service, Brake, Mico Valve	
19	100-5-18-16-5F	2	Cshh, 5/16-18 X 1, Gr5, Ft	
20	302-5	2	Washer, Lock, 5/16	
21	850098	1	Pin, Clevis, 0.375X1.125	
22	95923983	1	Cotter Pin	
23	200-5-18-5	1	Nut, Hex, 5/16-18, GR5	
24	116108	1	Weldment, Spring Anchor	
25	100151	1	Spring, Brake Pedal	

SHIFTER BASE ASSEMBLY (WITH SWITCH)



Shifter Base Assembly



Shifter Base Assembly with Switch

Figure 7-47.

Shifter Base Assembly (with Switch) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010627	1	Weldment, Shifter Base, With Dana Bogie	
2	1011008	1	Link, Shift, Left	
3	1011009	1	Link, Shift, Right	
4	113117	1	Block, Cable End	
5	119-2	2	Washer, Flat, SAE, 5/16	
6	100-5-18-28-5	2	CSHH, 5/16-18 X 1.75, GR5	
7	204-5-18-5	2	Nut, Lock, Stover, 5/16-18, GR5	
8	1010628	1	Assembly, Shifter Base, With Dana Bogie	
9	113085	1	Momentary Switch, Long Stem	
10	1010656	1	Bracket, Plunger Switch High	
11	100-4-20-20-5	2	CSHH, 1/4-20 X 1.25, GR5	
12	300-4	4	Washer, Flat, SAE, 1/4	
13	302-4	2	Washer, Lock, 1/4	
14	200-4-20-5	4	Nut, Hex, 1/4-20, GR5	
15	100-M14-2-30-8.8F	4	CSHH, M14 X 2 X 30, C8.8, FT	
16	302-10	4	Washer, Lock, 5/8	
17	300-10	4	Washer, Flat, SAE, 5/8	

TANK AND COVERS GROUP

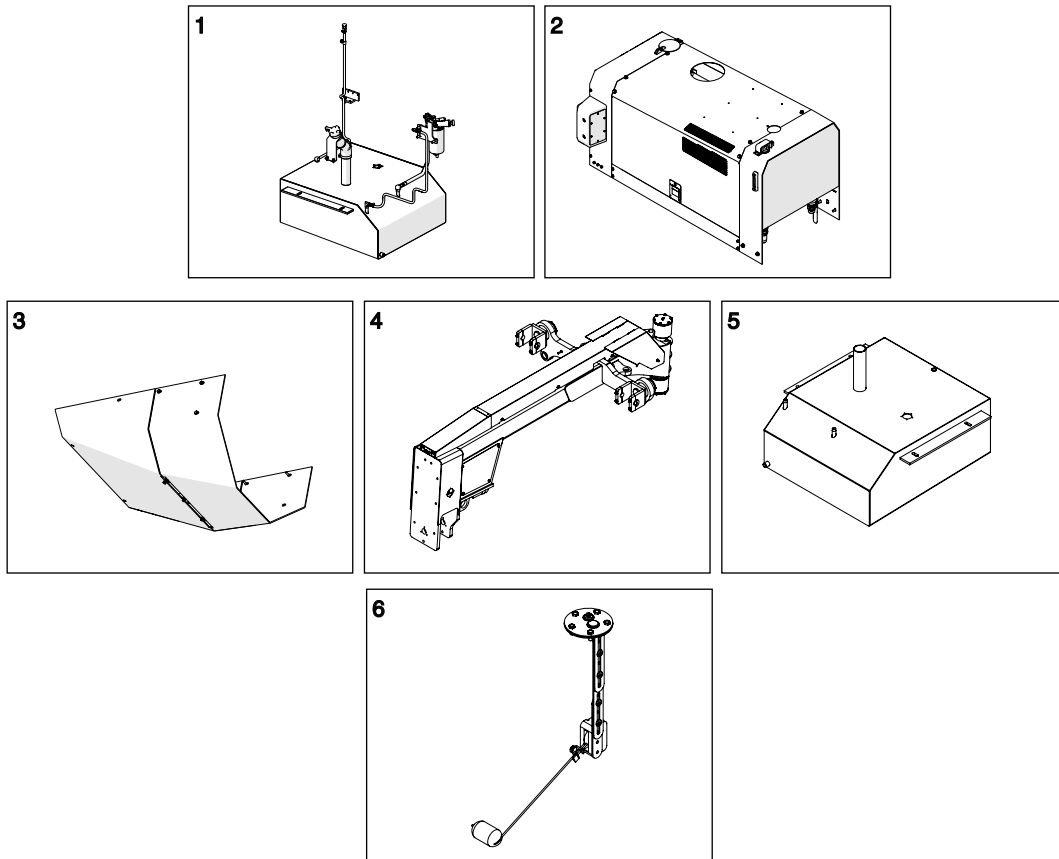


Figure 7-48.

Tank and Covers Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	120159	1	Installation, Fuel Tank, C8XCT	Fig. 7-49
2	120192	1	Installation, Cowling, Turbo	Fig. 7-50
3	12756497	1	Inst., Hyd. Mtr. Grd.	Fig 7-51
4	12758174	1	Installation, Hose Covers	Fig 7-51
5	1010254	1	Weldment, Tank, Fuel	Fig. 7-49 and 51
6	12757873SRV	1	Inst., Sensor, Fuel Level - 201	Fig. 7-49

FUEL SYSTEM

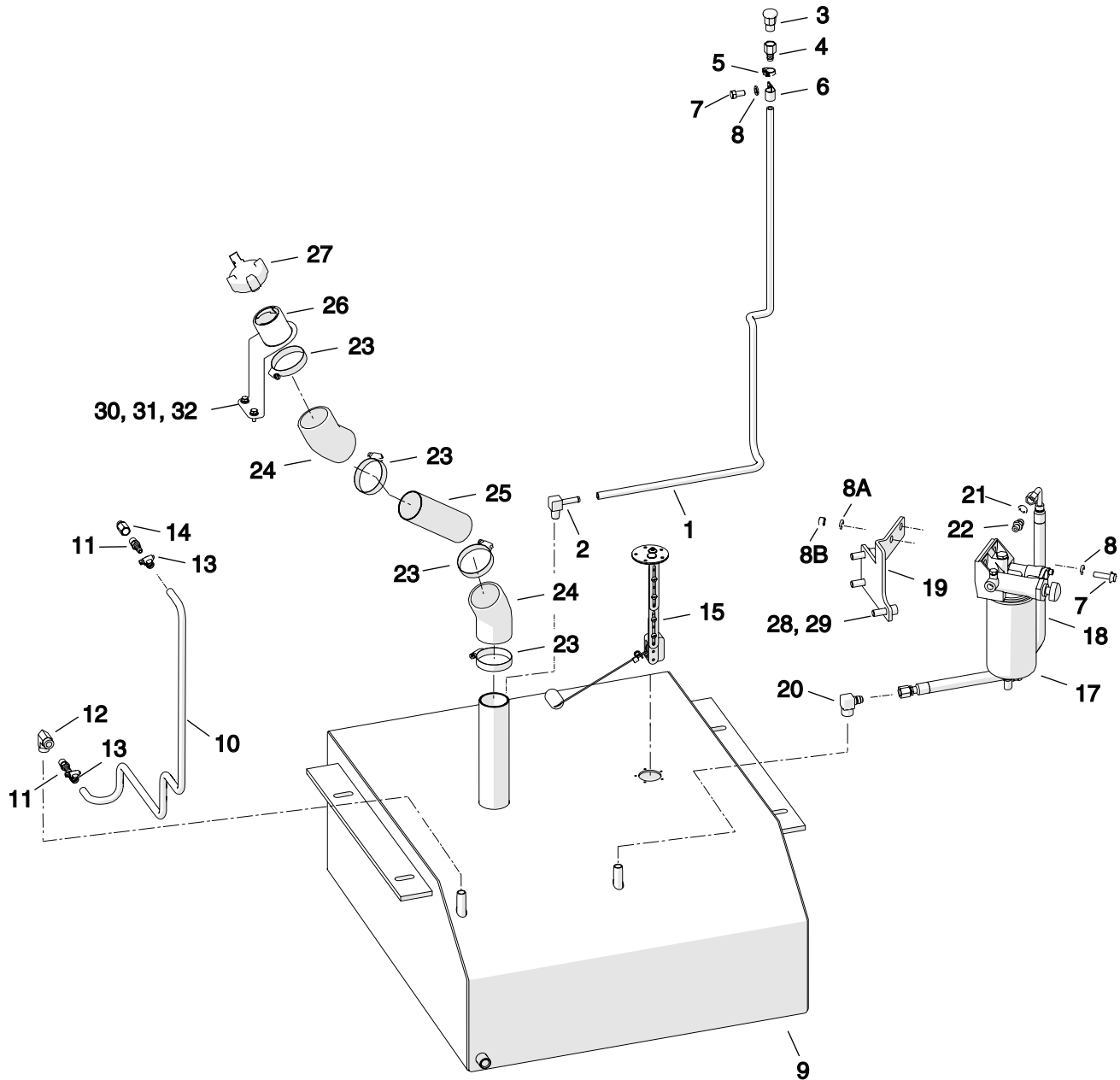


Figure 7-49.

Fuel System Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	104715X24	1	Fuel Hose, C To L, 3/8 ID X 24.00	
2	12757881	1	Fitting, 90 Deg, 3/8 Mp - 3/8 HB	
3	12757883	1	Vent, 3/8 MP, Alemite	
4	12757643	1	Fitting, Straight, 3/8 FP - 3/8 HB, Brass	
5	115263	1	Hose Clamp, Plastic-0.569-0.650	
6	112374	2	5/8 Insulated Clamp 13/32 Hole	
7	100-6-16-22-5F	2	CSHH, 3/8-16 X 1.375, GR5, FT	
8	300-6	2	Washer, Flat, SAE, 3/8	
8A	118-3	2	Washer, Lock, 3/8	
8B	116-3	2	Nut, Hex, 0.375-16	
9	1010254	1	Weldment, Tank, Fuel, With Bogie	
10	114968	4	Hose, Fuel Return 97 Turbo, Clear Yellow 5/16 ID	
11	121C-0504	2	Brass Hose Barb, 5/16 I.D. Hose	
12	12757984	1	Fitting, 3/8 FP - 1/4 FP, 90 Deg Elbow	
13	114979	2	Hose Clamp 0.457 To 0.520	
14	119A-0412	1	Adapter, Fitting, 1/4-18 Pipe To 12 mm Thread	
15	140040	1	Inst., Sensor, Fuel Level	
17	1010325-01	1	Separator, Fuel Water, QSB4.5	
18	115321x24	1	Hose Assembly	
19	122438	1	Bracket, Fuel Water Separator	(See Engine Assembly)
20	110U-0606	1	MJ-MP 90 DEGREES	
21	119R-12	2	O-Ring, 12mm O-Ring Port Fitting	
22	119C-0612	1	Adapter, Straight, 06 MJIC To 12 mm O-Ring Port	
23	33050	4	Clamp, Hose, #36	
24	12757878	2	Elbow, 45Deg., 2.25 R, Rubber	
25	12757876	1	Tube, Connector, Fuel Fill	
26	12757874	1	Weldment, Fuel Fill	(bolted to Frame)
27	140030FL	1	Cap, Fuel Tank, Lockable	
28	118-5	3	Washer, Lock, 1/2	
29	102-M12-1.75-35-8.8F	3	CSSH, M12 X 1.75 X 35, C8.8, FT	
30	300-4	2	Washer, Flat, SAE, 1/4	
31	302-4	2	Washer, Lock, 1/4	
32	100-4-20-12-5F	2	CSHH, 1/4-20 X 0.75, GR5, FT	
Ref	120159	1	Installation, Fuel Tank, C8XCT	

ENGINE COVER ASSEMBLY

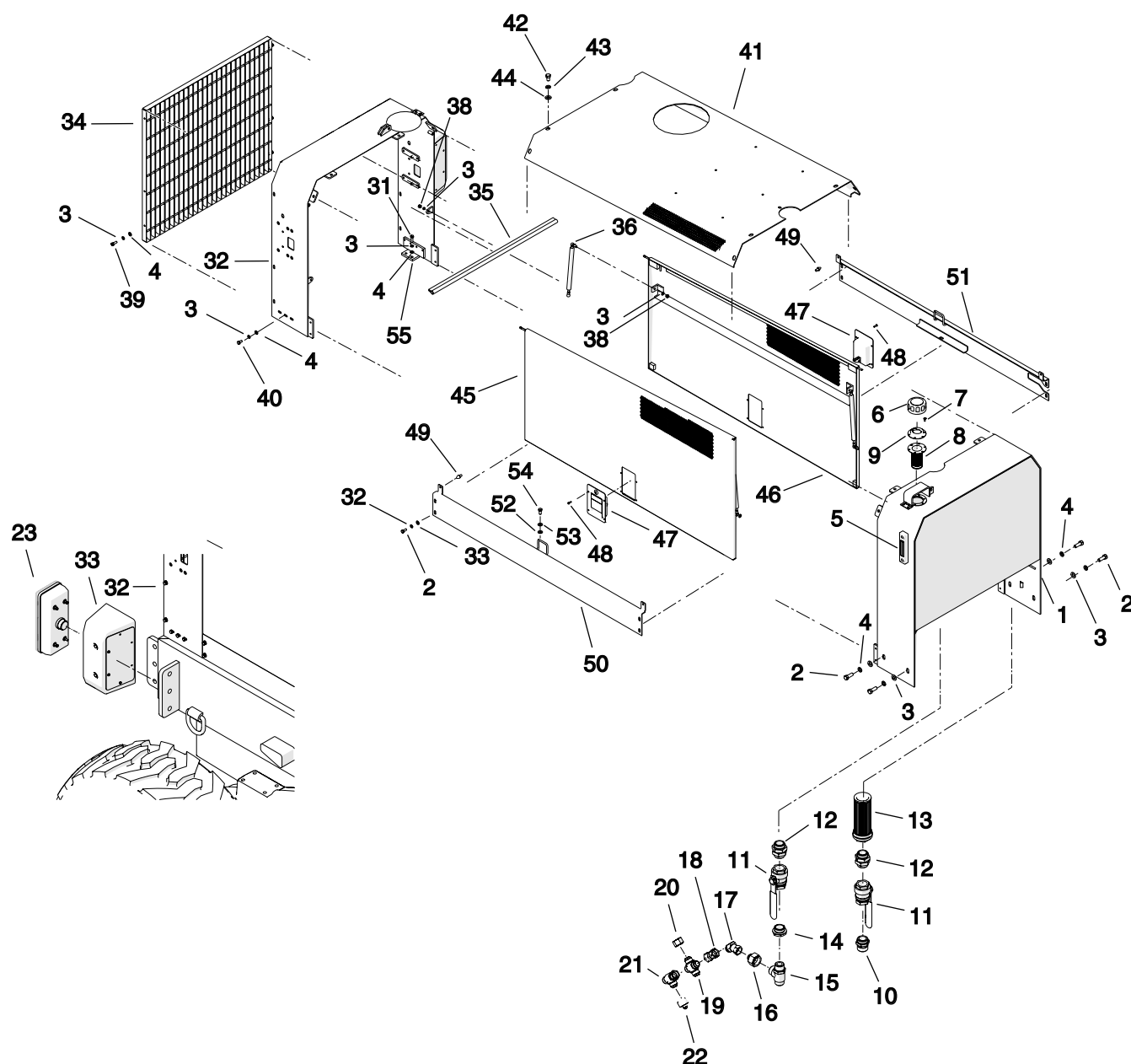


Figure 7-50.

Engine Cover Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	120192	1	Installation, Cowling, Turbo Tier-3	
1	120199	1	Weldment, Hyd. Tank, Tier-3	
2	100-5-18-12-5F	16	CSHH, 5/16-18 X 0.75, GR5, FT	
3	302-5	52	Washer, Lock, 5/16	
4	119-2	36	Washer, Flat, Sae, 5/16	
5	100455	1	Hydraulic Oil Level/Temp Sight	(Assembly includes hardware)
6	110815	1	Filler Breather - Complete Assembly	
7	63A-1004ZI	6	Hex Mach Screw, 10-24X1/2, Self	
8	100452	1	Strainer, Hyd. Tank	
9	100451	1	Filler Neck	
10	111E-2424	1	Connector-Str-24Mo To 24MJ	
11	117C-24	2	Ball Valve - # 24 Sae O-Ring	
12	111P-2424	2	Union-24MO To 24MO	
13	115538	1	Strainer-Suction-24 O-Ring Out	
14	111R-2420	1	Bushing-24MO To 20FO	
15	111D-2020	1	Tee-Run-Str-20	
16	110AH-1620	1	Straight Reducer	
17	35014	1	Fitt, 45 16MJ-16FJ	
18	6565-16-16	1	Adapter, Union, Double Swivel, -16 JIC / -16 JIC	
19	304-C-16	1	Adapter, Cap, Nut, -16	
20	2650-16-16-16-16	1	Adapter, Cross, -16 JIC/-16 JIC/-16 JIC/-16 JIC	
21	6602-16-16-16	1	Adapter, Run Tee, Swivel, -16 JIC/-16 JIC/-16 JIC	
22	2406-16-8	1	Adapter, Reducer, -16 JIC / -8 JIC	
Ref	12757130	1	Subassembly, Tail Light, 12V, LH	
23	12757129	1	Subassembly, Tail Light, 12V, RH	
31	100-5-18-18-5	4	CSHH, 5/16-18 X 1.125, GR5	
32	120194	1	Weldment, Radiator Shroud, Turbo Tier-3	
33	12757127	2	Sub-Assembly, Tail Light Housing	
34	120212	1	Weldment, Grille, Tier-3	
35	12755944	1	Seal, Edge, Top Air Baffle	
36	57728	4	Spring Shock Assembly-Side	
38	200-5-18-5	8	Nut, Hex, 5/16-18, GR5	
39	100-5-18-14-5F	6	CSHH, 1/2-18 X 0.875, GR5, FT	
40	100-5-18-10-5F	6	CSHH, 1/2-18 X 0.625, GR5, FT	
41	120495	1	Hood, Formed, Tier 3	
42	100-8-13-12-5F	8	CSHH, 1/2-13 X 0.75, GR5, FT	

ENGINE COVER ASSEMBLY (CONT.)

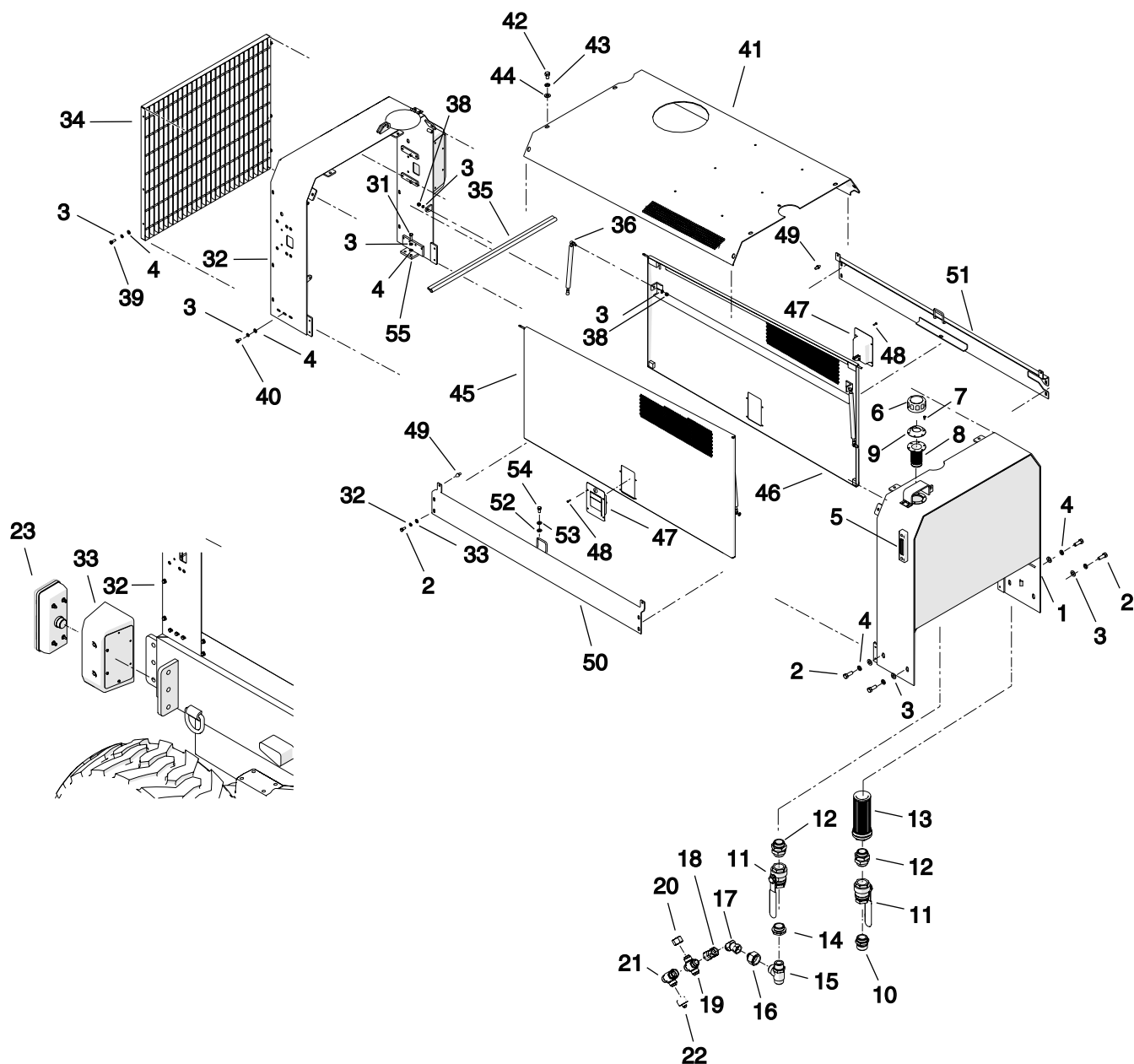


Figure 7-50.

Engine Cover Assembly Parts List (Cont.)

Item No.	Part Number	Qty.	Description	Remarks
43	118-5	8	Washer, Lock, 1/2	
44	300-8	8	Washer, Flat, SAE, 1/2	
45	120497	1	Weldment, Right Side Door	
46	120501	1	Weldment, Left Side Door	
47	65033	2	Latch Assembly-W/Tumbler/Key/Black	
48	76B-068	8	Blind Rivet 3/16 #68	
49	52811-CMG	4	Bumper, Door Side Panel	
50	120490-CMG	1	Weldment, Bottom Right Cover	
51	120493	1	Weldment, Bottom Left Cover	
52	300-6	2	Washer, Flat, SAE, 3/8	
53	118-3	2	Washer, Lock, 3/8	
54	100-6-16-12-5F	2	CSHH, 3/8-16 X 0.75, GR5, FT	
Ref	120193	1	Installation, Radiator Shroud, Turbo Tier-3	
55	1010179	2	Weldment, Radiator Cover	
Ref	120198	1	Installation, Hydraulic Tank	
Ref	120211	1	Installation, Grille, Tier-3	

FRONT COVERING AND FUEL TANK ASSEMBLY

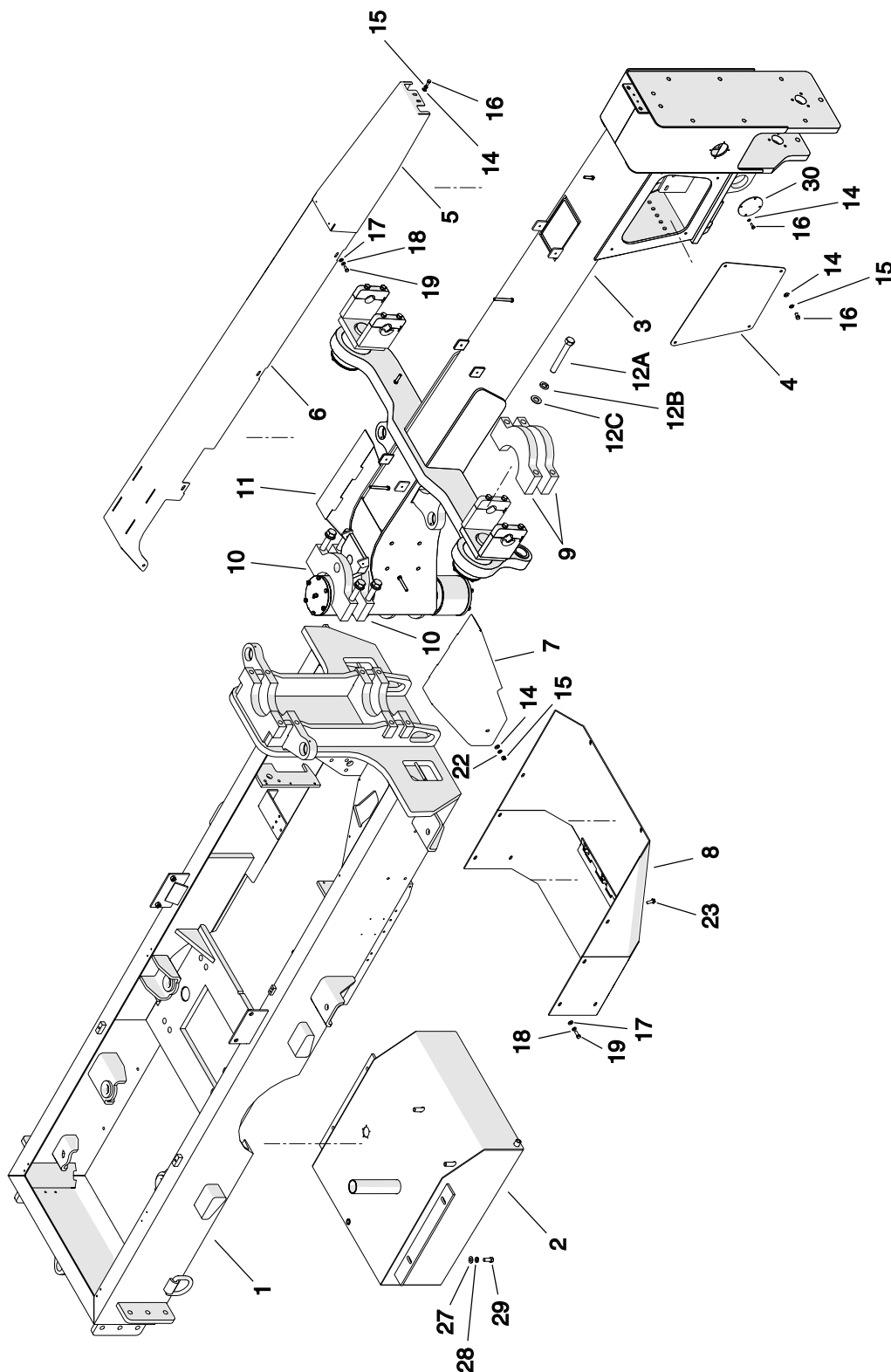


Figure 7-51.

Front Covering and Fuel Tank Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010208	1	Weldment, Frame, 695, Dana	
2	1010254	1	Weldment, Tank, Fuel, With Bogie	
3	12758101	1	Subassembly, Frame, Front	
4	12757970	2	Side Cover, C-Series Front Frame	
5	117669	1	Hose Cover, Front, C-Series	
6	117640	1	Hose Cover, Front Boom	
7	117642	1	Cover, Boom-Back-RH.	
Ref	12756497	1	Inst., Hyd. Mtr. Grd.	
Ref	118270	1	Assembly, Hydraulic Motor Guard	
8	12757820	1	Weldment, Hydraulic Motor Guard	
9	12754561	2	Bracket, Articulation Joint	
10	12754560	2	Bracket, Articulation Lock Clamp	
11	117641	1	Cover, Boom-Back-LH.	
12A	100-14-9-104-8	8	CSHH, 7/8-9 X 6.5, GR8	
12B	302-14	8	Washer, Lock, 7/8	
12C	300-14	8	Washer, Flat, SAE, 7/8	
14	300-6	20	Washer, Flat, SAE, 3/8	
15	118-3	12	Washer, Lock, 3/8	
16	100-6-16-12-5F	18	CSHH, 3/8-16 X 0.75, GR5, FT	
17	119-2	16	Washer, Flat, SAE, 5/16	
18	302-5	16	Washer, Lock, 5/16	
19	100-5-18-12-5F	16	CSHH, 5/16-18 X 0.75, GR5, FT	
22	116-3	2	Nut, Hex, 0.375-16	
23	115732	3	Screw, 3/8-16 X 1, Spinlock, Zinc	
27	300-8	4	Washer, Flat, SAE, 1/2	
28	302-9	4	Washer, Lock, 9/16	
29	100-8-13-20-5F	4	CSHH, 1/2-13 X 1.25, GR5, FT	
30	118714	8	Plate, RWD Bulkhead, Burnout	
Ref	120159	1	Installation, Fuel Tank, C8XCT-3	
Ref	12758174	1	Installation, Hose Covers	

CUMMINS ENGINE GROUP

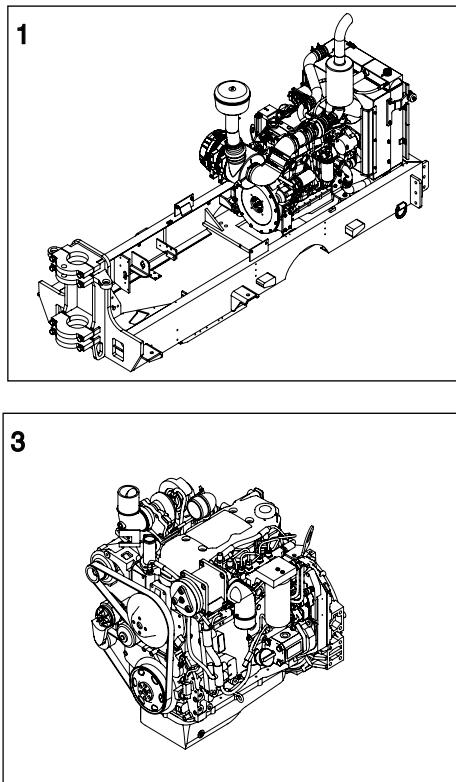


Figure 7-52.

Cummins Engine Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1008981	1	Assembly, Cummins Engine, 695	Fig. 7-53 to 7-60
3	1010325	1	Tier 3 Turbo Engine, Cummins, B4.5 T3 Dana Bogie	Fig. 7-57

CUMMINS ENGINE ASSEMBLY

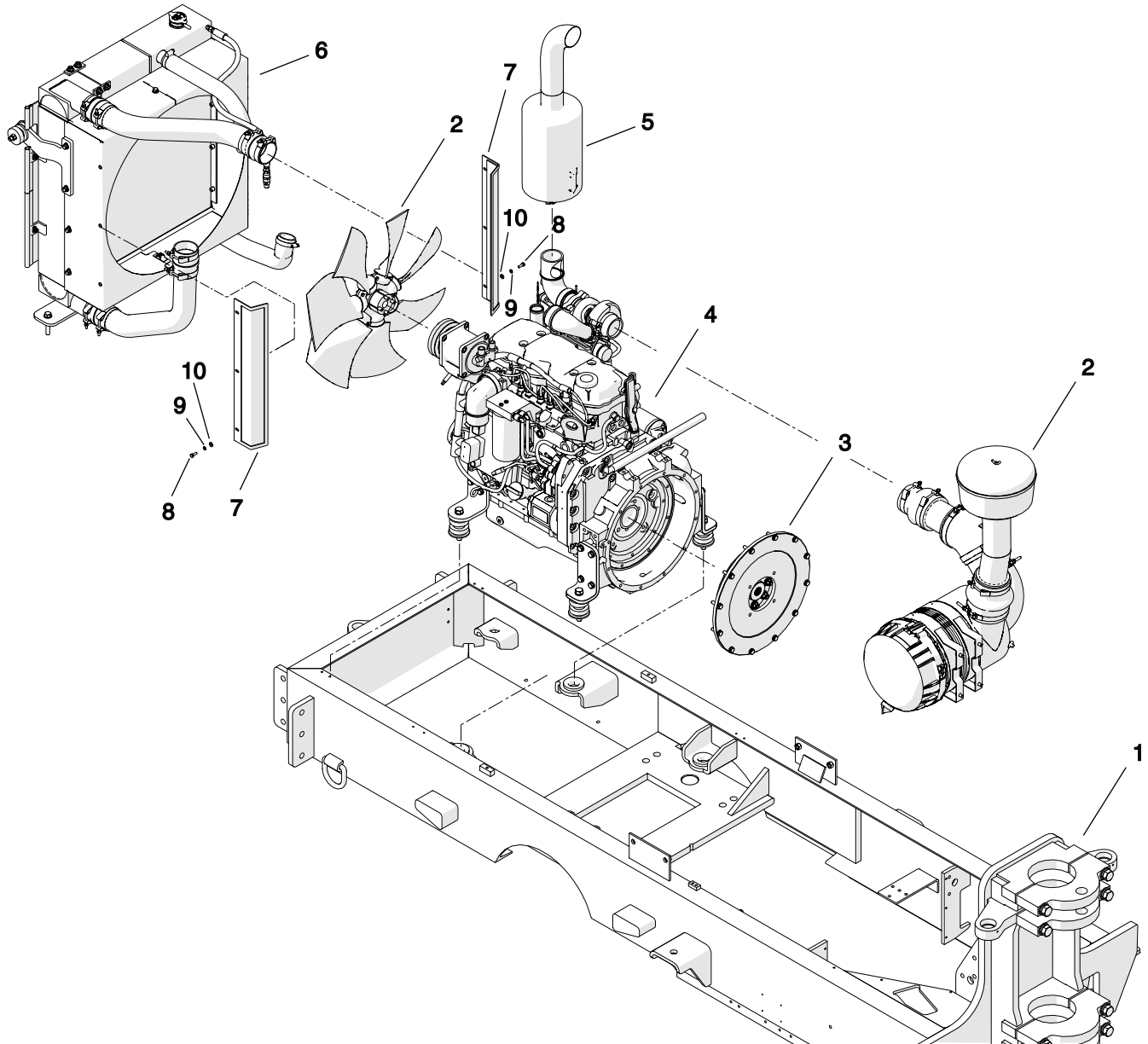


Figure 7-53.

Cummins Engine Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010208	1	Weldment, Frame, 695	
2	1008994	1	Assembly, Air Intake, G700	
3	114308	1	Pump Drive Install, C60-80 Turbo	
4	120169	1	Installation, Engine Mounts, C8XCT-3	
Ref	1008981	1	Assembly, Cummins Engine, G700	
5	114397	1	Installation, Muffler, Turbo	
6	120172	1	Installation, Heat Exhchange, Tier-3	
7	120638	2	Weldment, Finger Guard, Tier 3	
8	100-4-20-12-5F	6	CSHH, 1/4-20 X 0.75, GR5, FT	
9	302-4	6	Washer, Lock, 1/4	
10	300-4	6	Washer, Flat, SAE, 1/4	
Ref	120173	1	Sub-Assembly, Tier-3 Turbo, Cummins, QSB4.5	
Ref	109668	2	Antifreeze, Green, Gallon	

AIR INTAKE ASSEMBLY

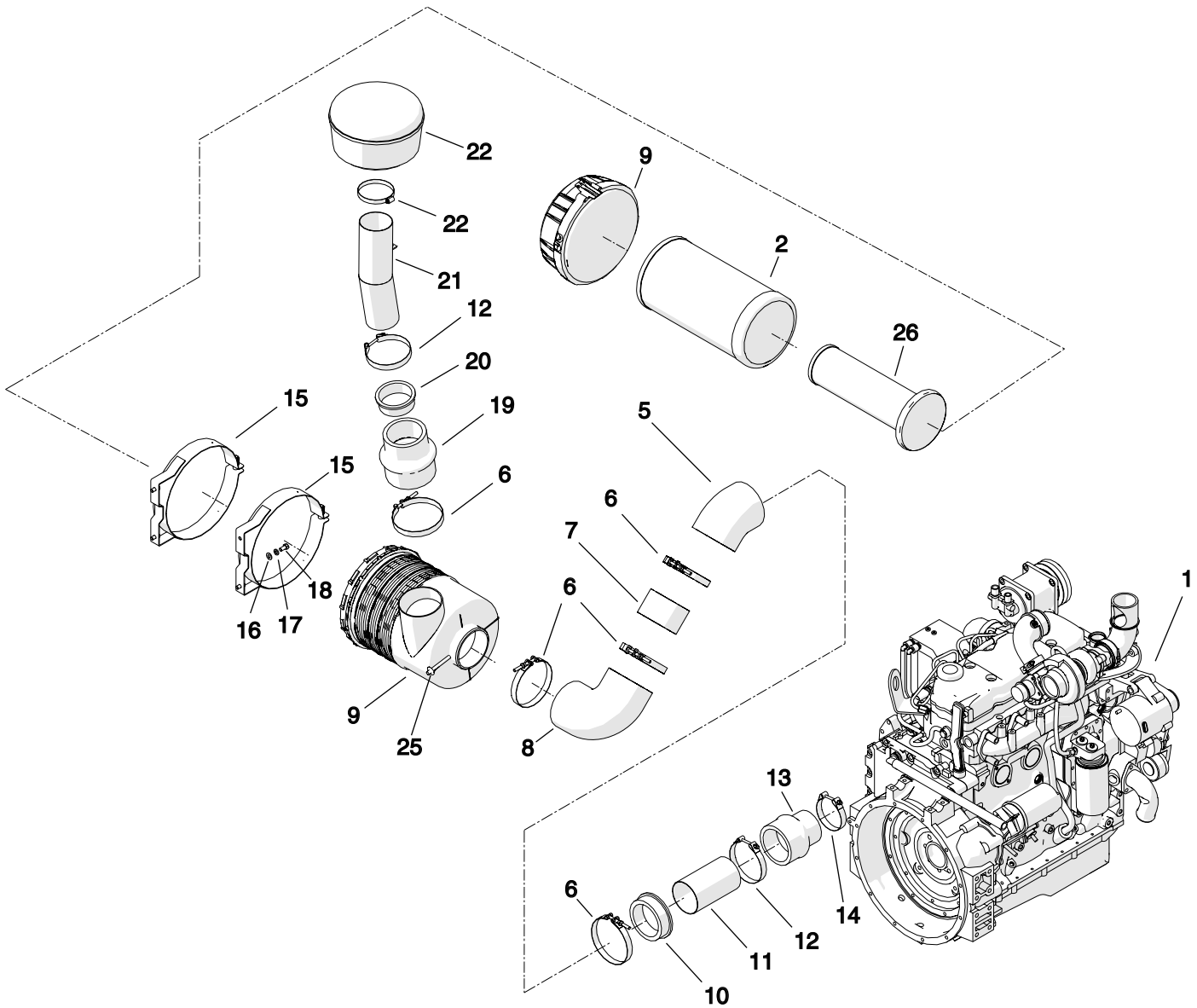


Figure 7-54.

Air Intake Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010325	1	Tier 3 Turbo Engine, Cummins	
2	988962-01	1	Element, Primary, Air Filter	
5	120517	1	45-Degree Elbow, Rubber, Tier-3	
6	120524	5	Outlet Band Clamps, Air Filter	
7	120521	1	Round Tube, Air Intake, Tier 3 (Alum. 3", 5" Dia.)	
8	120516	1	90 Degree Elbow, Rubber, Tier-3 Intake	
9	988962	1	Air Cleaner Assembly, QSB4.5	
10	120518	1	Reducer Insert, 5 ID, Tier-3 Intake	
11	120522	1	Round Tube, Air Intake, Tier 3 (Alum. 6.75", 4" Dia.)	
12	22A-450	2	Hose Clamp- 4.50 In. / 4.28 In. TB	
13	120519	1	Rubber Reducer, 4"ID X 3"ID, Tier-3	
14	22A-344	1	Hose Clamp- 3.24In. / 3.59 In. TB	
15	120514	2	Band Clamp, Air Filter, Tier-3	
16	300-6	4	Washer, Flat, SAE, 3/8	
17	118-3	4	Washer, Lock, 3/8	
18	100-6-16-12-5F	4	CSHH, 3/8-16 X 0.75, GR5, FT	
19	120526	1	Rubber Reducer, 5"ID X 4"ID, Tier 3	
20	120451	1	Reducer, Rubber, 4 ID	
21	120736	1	Weldment, Air Tube, Tier 3	
22	104711	1	Pre-cleaner	
25	115340	1	Sender-Service Indicator	
Ref	1008994	1	Assembly, Air Intake, 695	
26	988962-02	1	Element, SEC, Air Filter	

PUMP DRIVE INSTALLATION

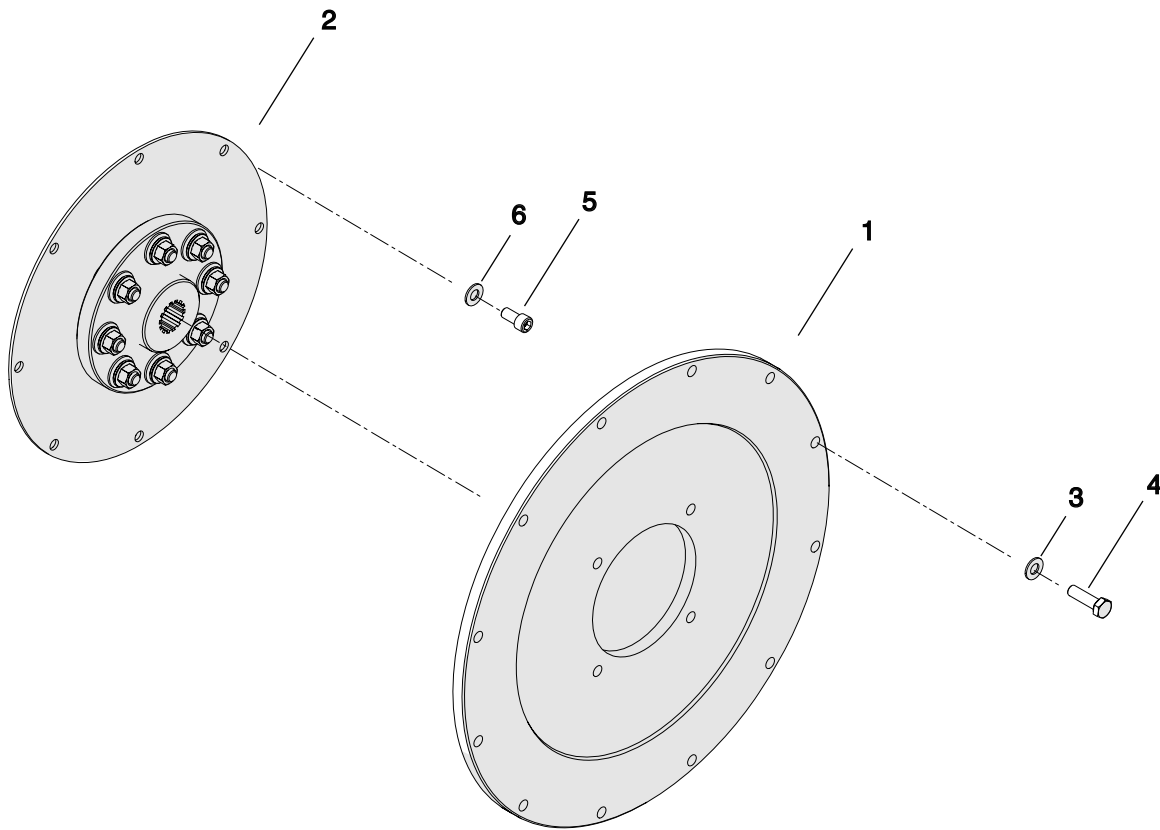


Figure 7-55.

Pump Drive Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	114521	1	Pump Mounting Plate	
2	113259	1	Pump Drive Coupling/Flex Plate	(mounts to Engine)
3	302-M10	12	Washer, Lock, M10	
4	100-M10-1.5-35-8.8F	12	CSHH, M10 X 1.5 X 35, C8.8, FT	
5	102-6-16-12-F	8	CSHH, 3/8-16 X 0.75, FT	
6	300-6	8	Washer, Flat, SAE, 3/8	
Ref	114308	1	Pump Drive Install, C60-80 Turbo	

ENGINE MOUNTING

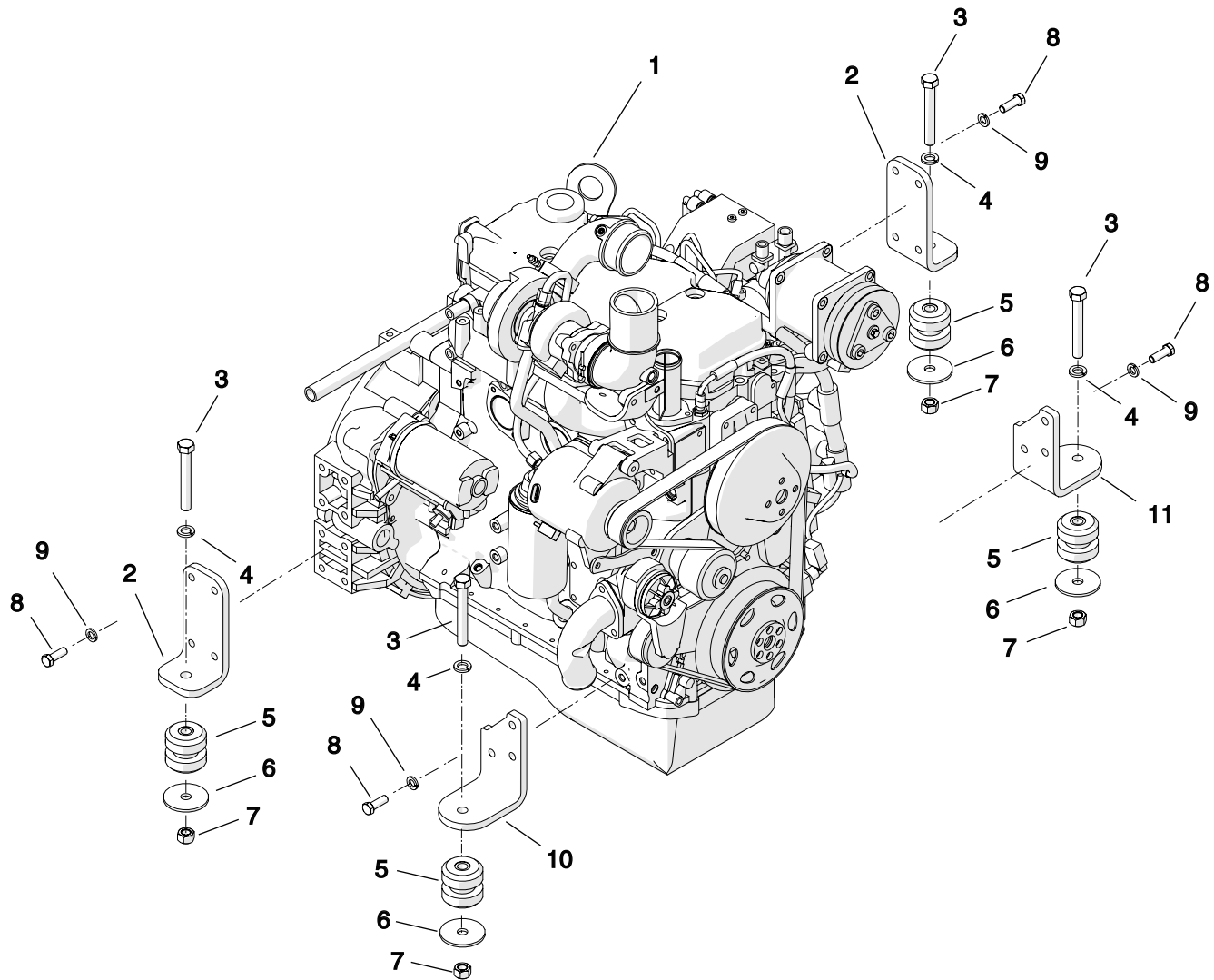


Figure 7-56.

Engine Mounting Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010325	1	Tier 3 Turbo Engine, Cummins, B4.5 T3 Dana Bogie	
2	1010196	2	Bracket, Engine Mount, Front	
3	100-10-11-72-8	4	CSHH, 5/8-11 X 4.5, GR8	
4	118-6	4	Washer, Lock, 5/8	
5	113360	4	Engine Mount, Rubber Isolation, Two-Piece	
6	113683	4	Washer, Engine Mount, C50-80	
7	200-10-11-8	4	Nut, Hex, 5/8-11, GR8	
8	100-M12-1.75-35-8.8F	14	CSHH, M12 X 1.75 X 35, C8.8, FT	
9	118-5	14	Washer, Lock, 1/2	
10	120533	1	Engine Mount, Right, Tier-3 Turbo	
11	120534	1	Engine Mount, Left, Tier-3 Turbo	
Ref	120169	1	Installation, Engine Mounts, C8XCT-3	

CUMMINS ENGINE SUBASSEMBLY

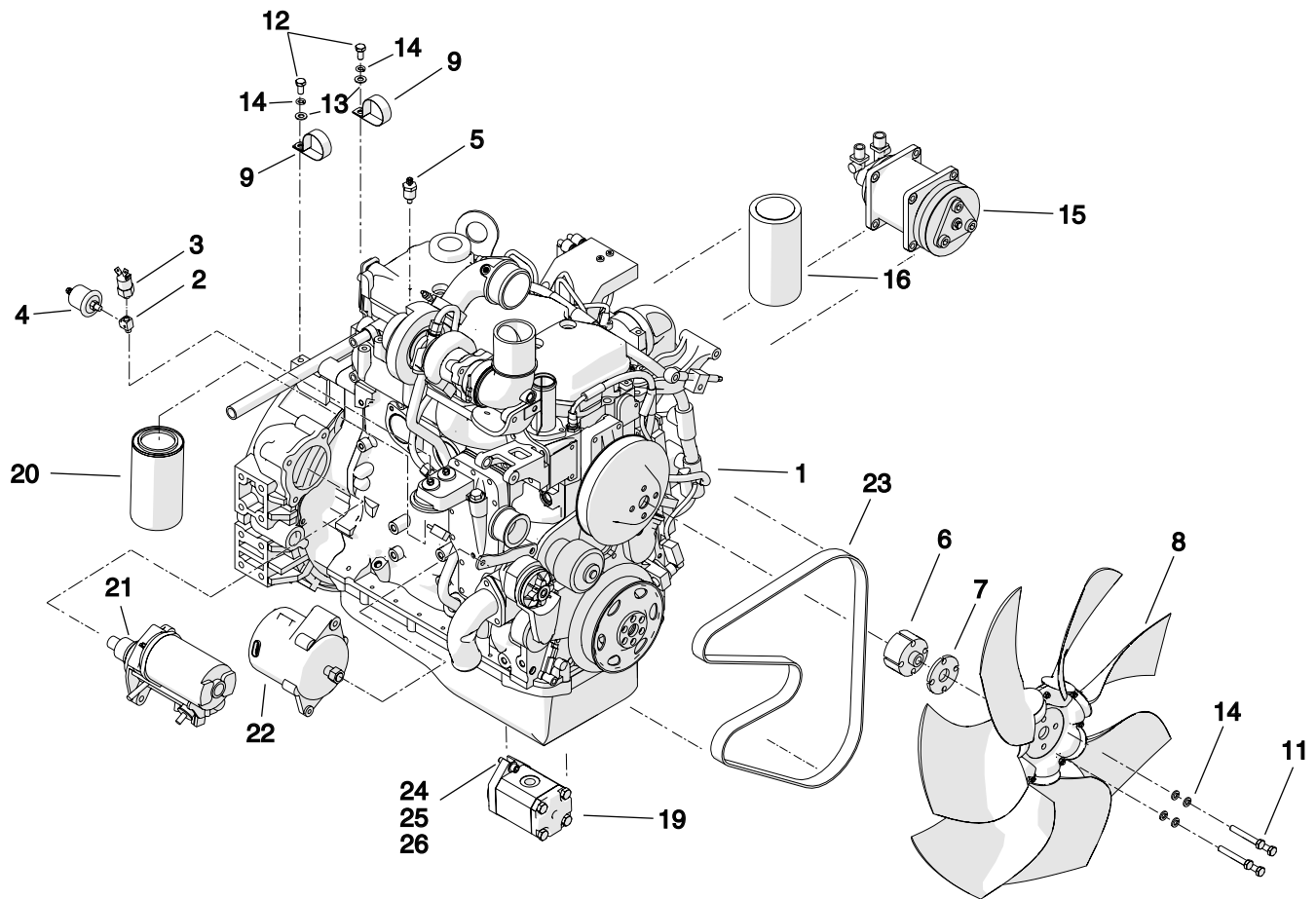


Figure 7-57.

Cummins Engine Subassembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010325	1	Tier 3 Turbo Engine, Cummins, B4.5 T3 Dana Bogie	
2	115V-02	1	Adapter, Tee, 1/8-27 Female, Female, Male	
3	102437	1	Switch, Low Pressure 04PSI (Tach / Hourmeter)	
4	115337	1	Sender-Oil Press-100PSI-Beede- Series VI	
5	115338	1	Sender, Water Temp, Beede	
6	118811	1	Spacer, Fan, 1.5" Thick, 60mm Bolt	
7	118810	1	Spacer, Fan, 0.25" Thick, 60mm Bolt Circle	
8	119609	1	Multi-Wing Fan, 25" Diam. 7 Blades	
9	36894	2	Clamp, Insulated Band, 2"	
11	100-M10-1.5-70-8.8F	4	CSHH, M10 X 1.5 X 70, C8.8, FT	
12	100-M10-1.5-20-8.8F	2	CSHH, M10 X 1.5 X 20, C8.8, FT	
13	300-6	2	Washer, Flat, SAE, 3/8	
14	302-M10	6	Washer, Lock, M10	
Ref	120803	1	Inst., Electrical, Engine, Tier-3	(not shown)
15	12755061	1	Compressor, Bolt On Cab - Perrin A/C	
16	1010325-05	1	Filter, Fuel, Engine, Cummins QSB4.5	
19	100264	1	Pump, Gear, C50-C76	
20	1010325-04	1	Filter, Oil, Engine, Cummins QSB4.5	
21	1010325-02	1	Starter, Engine, Cummins QSB4.5	
22	1010325-03	1	Alternator, Engine, Cummins QSB4.5	
23	1008969	1	V-Belt, L4 45" X 0.50	
24	118-5	2	Washer, Lock, 1/2	
25	100-8-13-28-8	2	CSHH, 1/2-13 X 1.75, GR8	
26	300-8	2	Washer, Flat, SAE, 1/2	
Ref	120173	1	Sub-Assembly, Tier-3 Turbo, Cummins, QSB4.5	

TURBO MUFFLER INSTALLATION

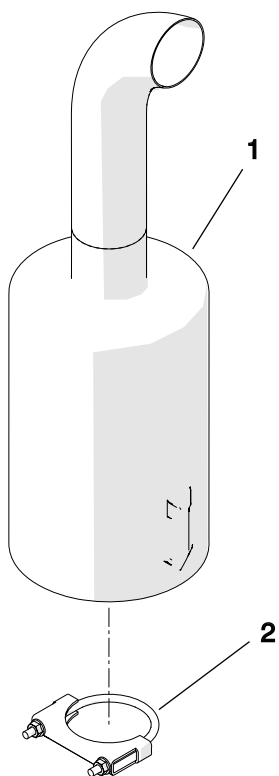


Figure 7-58.

Turbo Muffler Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	115284	1	Muffler Assembly, All, Nelson (Warehouse)	
2	115521	1	Clamp, Muffler, 3-1/4 Dia. - Cummins Engine	
Ref	114397	1	Installation, Muffler, Turbo	

HEAT EXCHANGE INSTALLATION

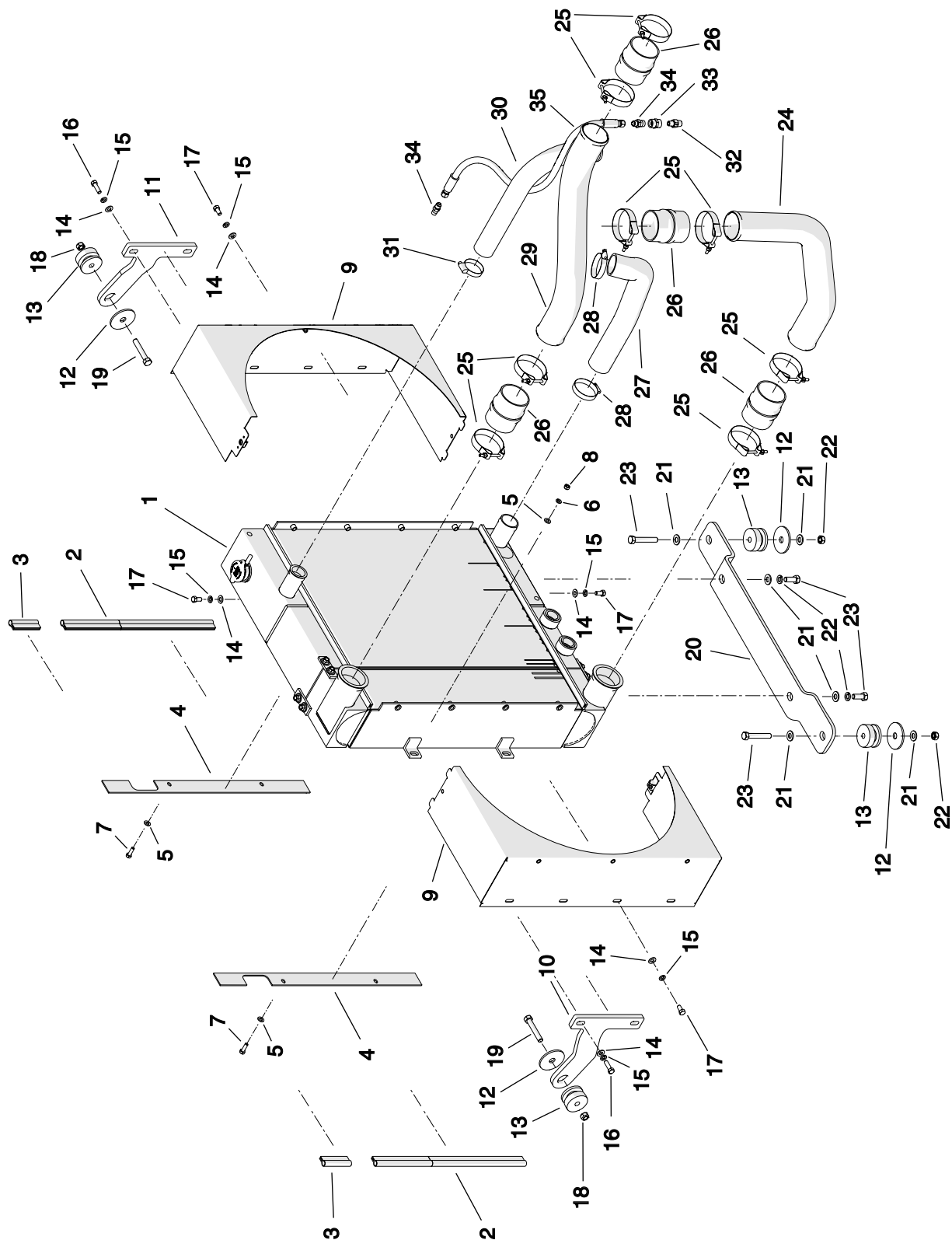


Figure 7-59.

Heat Exchange Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	120765	1	Cooling Package, AKG - Tier-3	
2	120189	2	Seal, Long, Side Baffle, Tier-3	
3	120190	2	Seal, Short, Side Baffle, Tier-3	
4	120188	2	Bar, Side Baffle, Cooler, Tier 3	
5	119-2	8	Washer, Flat, SAE, 5/16	
6	302-5	4	Washer, Lock, 5/16	
7	100-5-18-16-5F	4	CSHH, 5/16-18 X 1, GR5, FT	
8	200-5-18-5	4	Nut, Hex, 5/16-18, Gr5	
9	120734	2	Weldment, Fan Shroud, Tier-3	
10	120635	1	Plate, Right Radiator Bracket	
11	120634	1	Plate, Left Radiator Bracket	
12	113683	4	Washer, Engine Mount, C50-80	
13	109747	4	Rubber Mount-Radiator-Center Bond	
14	300-6	10	Washer, Flat, SAE, 3/8	
15	118-3	10	Washer, Lock, 3/8	
16	100-6-16-20-5F	4	CSHH, 3/8-16 X 1.25, GR5, FT	
17	100-6-16-12-5F	6	CSHH, 3/8-16 X 0.75, GR5, FT	
18	204-8-13-5	4	Nut, Lock, Stover, 1/2-13, GR5	
19	100-8-13-48-5	4	CSHH, 1/2-13 X 3, GR5	
20	120176	1	Bar, Heat Exchange Cradle, Tier-3	
21	300-8	6	Washer, Flat, SAE, 1/2	
22	118-5	2	Washer, Lock, 1/2	
23	100-8-13-20-5F	2	CSHH, 1/2-13 X 1.25, GR5, FT	
24	120185	1	Tube, Charge Air, Tier 3 Outlet	
25	22A-300	8	Hose Clamp - 2.78 In. / 3.09 In.	
26	119524	4	Connector, Straight Hose, Charge Air, 3" ID Silicone	
27	120457	1	Radiator Hose, Bottom, Tier-3	
28	22B-36	2	Clamp, Hose, #36	
29	120184	1	Tube, Charge Air, Tier-3 Inlet	
30	120460	1	Radiator Hose, Top, Tier-3	
31	22b-28	2	#28 Hose Clamp	(one shown)
32	12757895	1	Check Valve, 3/8 Mp - 1/4 MP	
33	Ref	1	5000 Hexagon Pipe Coupling	
34	Ref	1	2404 Male Connector	
35	111740x31	1	Hyd. Hose	
Ref	120172	1	Installation, Heat Exhchange, Tier-3	

ENGINE HEATER

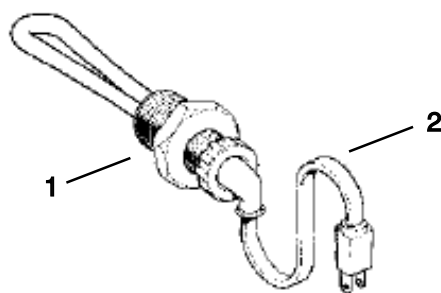


Figure 7-60.

Engine Heater Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	95288	1	Block Heater, Thread In.	
2	3905113	1	Cord	

HYDRAULIC GROUP

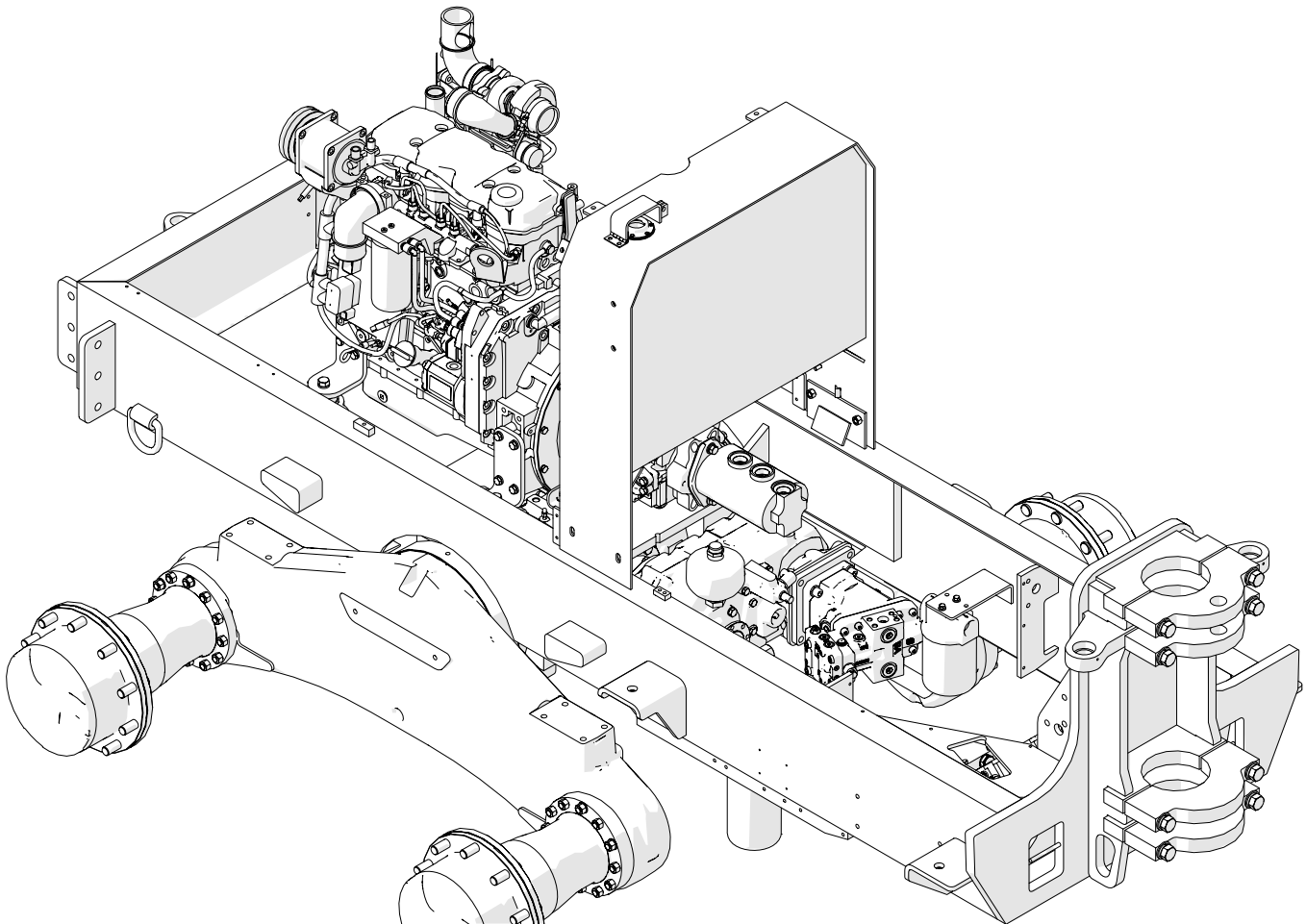


Figure 7-61.

Hydraulic Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1010407	1	Group, Hydraulic, 695	See next Four (4) Figures for details
Ref	115940	1	Install, 10 Spool Valve Assembly	Fig. 7-67 and 64
Ref	12754645	1	Hyd. Return Plumbing, G80/86	
Ref	12754649	1	Hyd. Suction Plumbing, G86	
Ref	12756669	1	Installation, Centralized Test	Fig. 7-63 and 7-66
Ref	12756276	1	Inst., Gear Pump, Twin Flow	Fig. 7-63
Ref	12756277	1	Inst., Hydrostatic Pump, NAFTA	Fig. 7-63
Ref	115998	1	Circle Turn Cushion Valve, Ins.	Fig. 7-62
Ref	750602	1	Manifold W/Relief, 3000 Brake	Fig. 7-65
Ref	852720	1	Switch, Brake, Low Press	Fig. 7-65
Ref	852740	1	Valve, Brake Charge	Fig. 7-65
Ref	1010381	1	Service, Brake, Mico Valve	Fig. 7-65
Ref	1010390	1	Accumulator, 60 Cir., Brake Sys.	Fig. 7-65
Ref	1000569	1	Motor, Hyd, 4.92 Cir., 2-Speed	Fig. 7-62
Ref	1010487	1	Kit, Hose, Main, With 150 Bogie	Purchased as One (1) Kit
Ref	1010609	1	Schematic, 695 With Dana Bogie Axle	See Section 6 for Schematic
Ref	115726	1	Hydraulic Steer/Brake Circuit, Twin Flow	See Section 6 for Schematic

HYDRAULIC GROUP - VIEW 1 OF 4

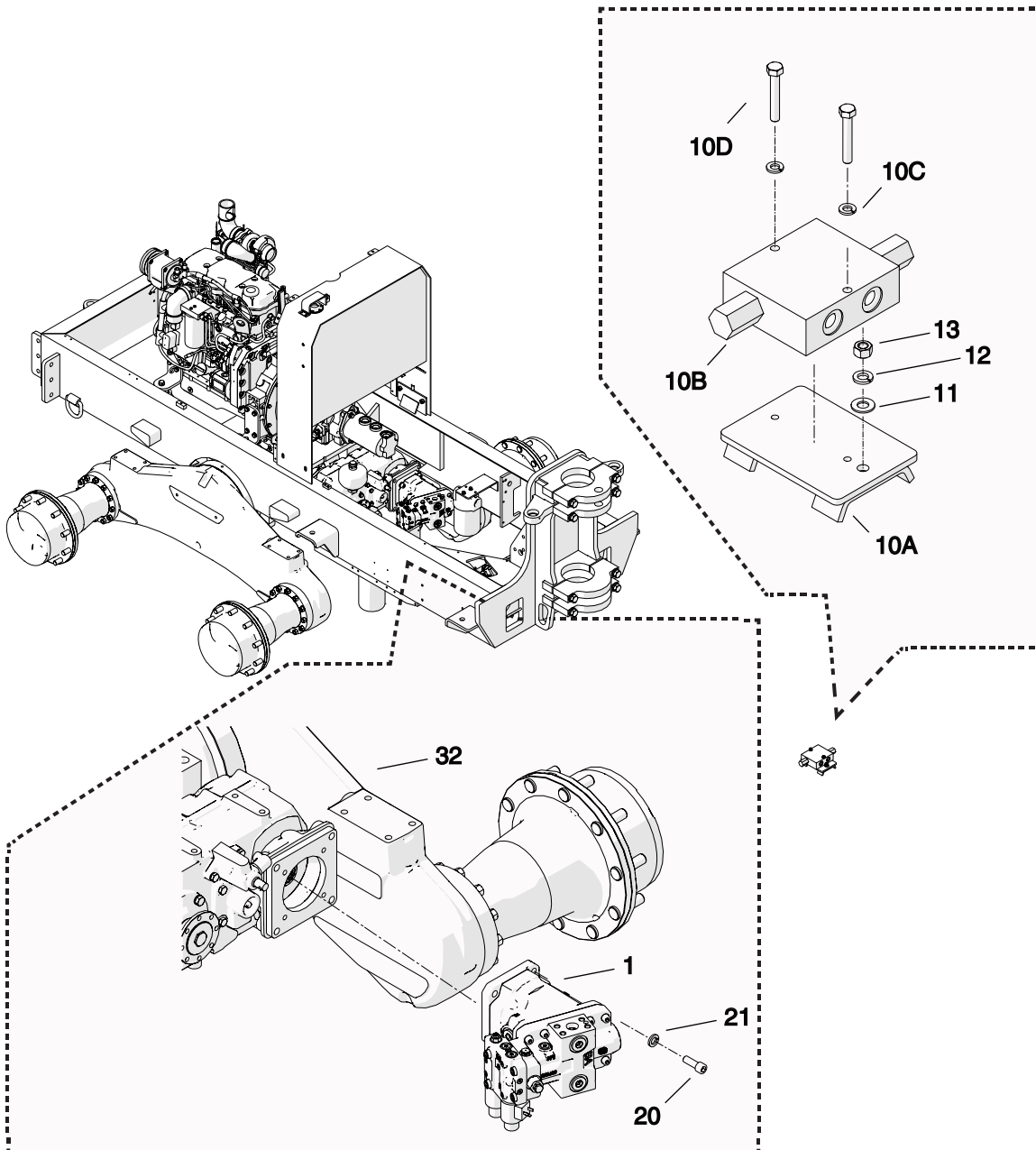


Figure 7-62.

Hydraulic Group Parts List - View 1 of 4

Item No.	Part Number	Qty.	Description	Remarks
Ref	1010407	1	Group, Hydraulic, 695	
1	1000569	1	Motor, Hyd., 4.92 Cir., 2-Speed	
Ref	115998	1	Circle Turn Cushion Valve, Installation Kit	Assembly Part Number
10A	116477	1	Weldment, Cushion Valve	
10B	122084	1	Circle Turn Cushion Valve	
10C	302-5	2	Washer, Lock, 5/16	
10D	100-5-18-32-5	2	CSHH, 5/16-18 X 2, GR5	
20	102-M14-2.0-40-8.8F	4	CSHH, M14X2.0 X 40, C8.8, FT	
21	118-6	4	Washer, Lock, 5/8	
32	1009952	1	Axle, Drive Assembly, Dana 150 Bogie	See Figure 7-5
11	300-6	1	Washer, Flat, SAE, 3/8	
12	118-3	4	Washer, Lock, 3/8	
13	116-3	1	Nut, Hex, 0.375-16	

HYDRAULIC GROUP - VIEW 2 OF 4

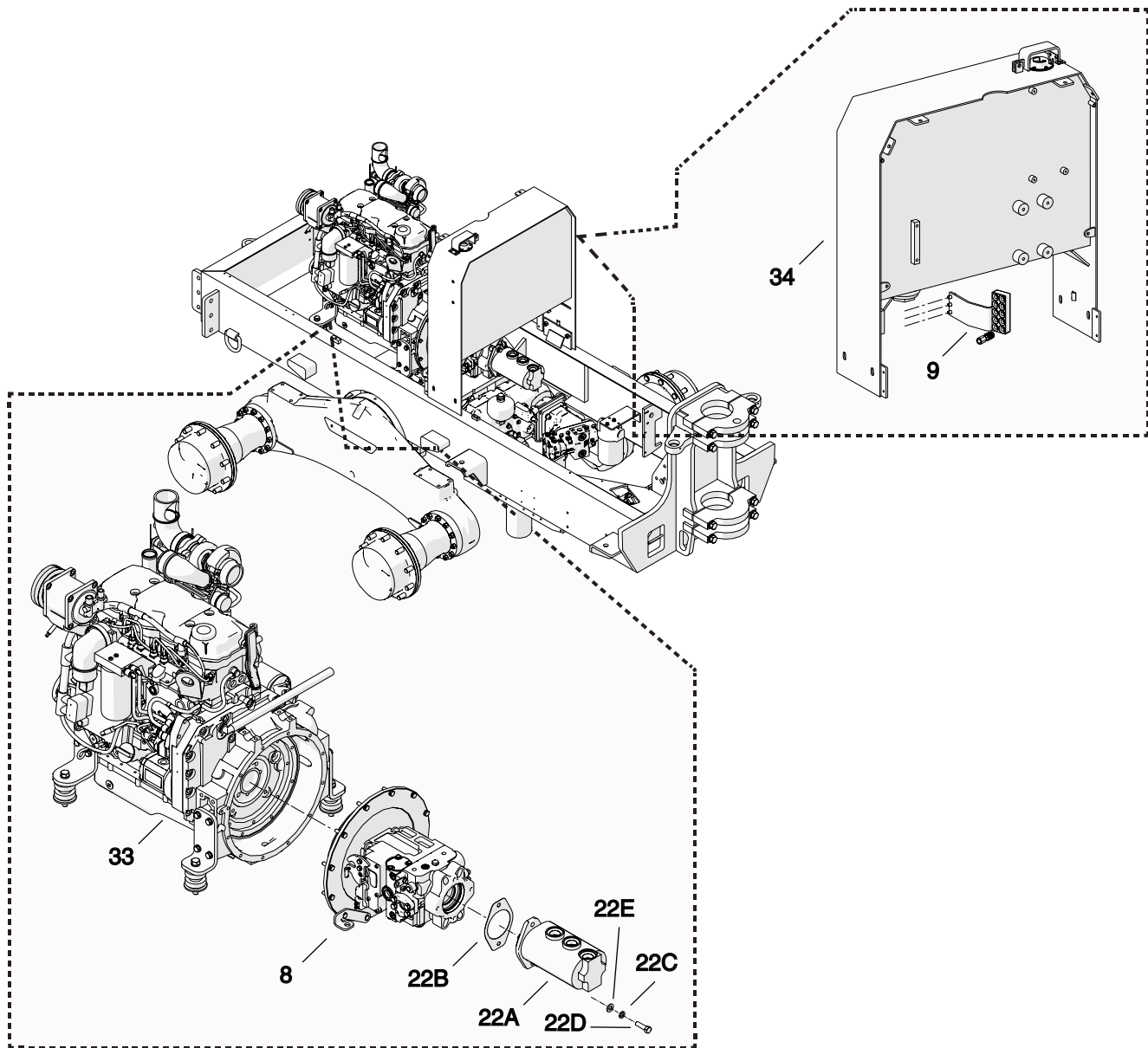


Figure 7-63.

Hydraulic Group Parts List - View 2 of 4

Item No.	Part Number	Qty.	Description	Remarks
Ref	1010407	1	Group, Hydraulic, 695	
8	12756277	1	Installation, Hydrostatic Pump, NAFTA, RWD	See Figure 7-69
9	12756669	1	Installation, Centralized Test Port Block	See Figure 7-63
Ref	12756276	1	Installation, Gear Pump, Twin Flow	
22A	115319	1	Triple Gear Pump - 16-10-10 GPM	
22B	110362	1	Gasket - B-Pad	
22C	118-5	2	Washer, Lock, 1/2	
22D	100-8-13-28-8	2	CSHH, 1/2-13 X 1.75, GR8	
22E	300-8	2	Washer, Flat, SAE, 1/2	
33	120169	1	Installation, Engine Mounts	See Figure 7-56
34	120199	1	Weldment, Hyd. Tank, Tier-3	See Figure 7-50

HYDRAULIC GROUP - VIEW 3 OF 4

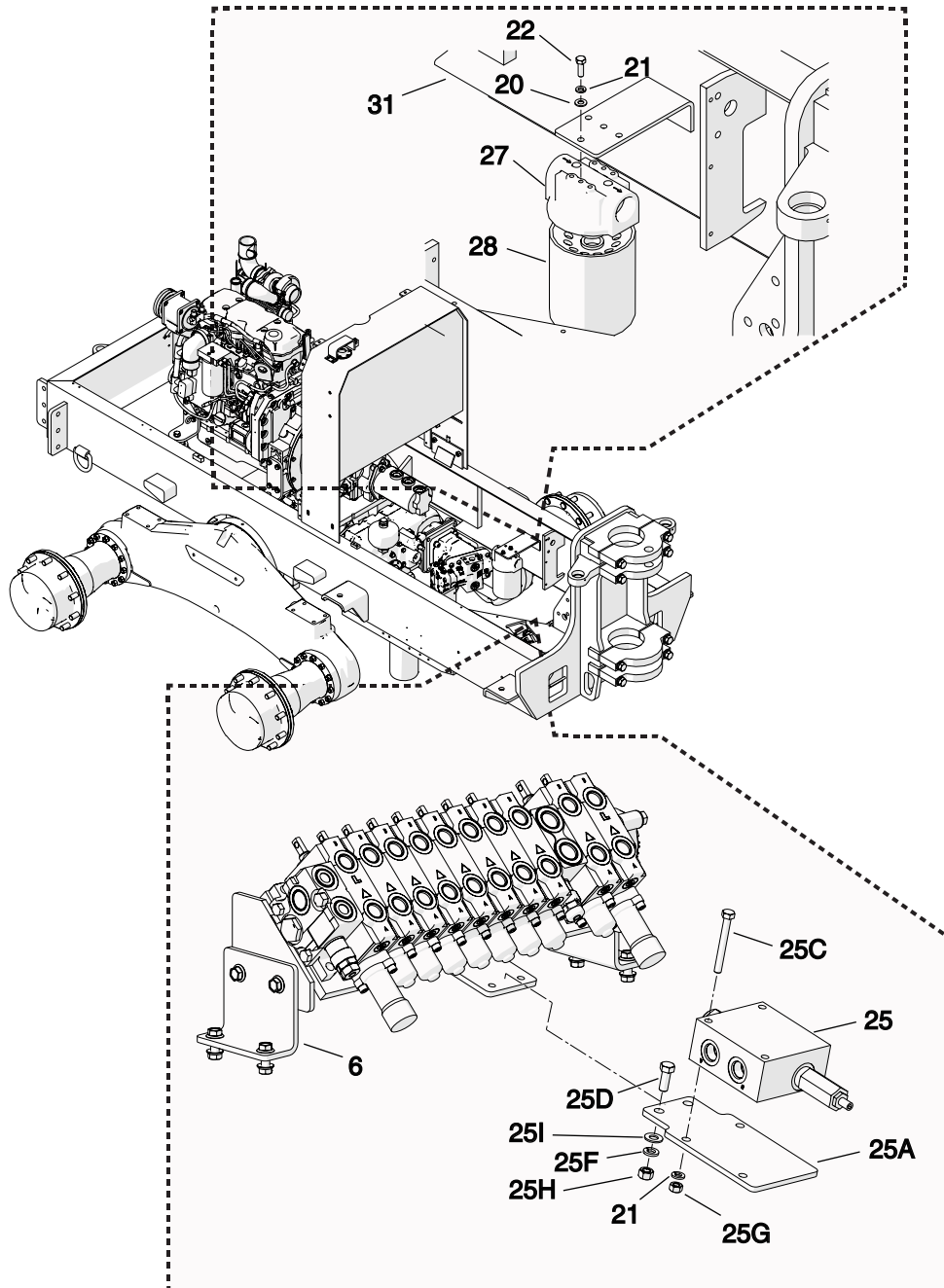


Figure 7-64.

Hydraulic Group Parts List - View 3 of 4

Item No.	Part Number	Qty.	Description	Remarks
Ref	1010407	1	Group, Hydraulic, 695	
6	115940	1	Install, 10 Spool Valve Assy W/Mid Inlet	See Figure 7-67
20	119-2	4	Washer, Flat, SAE, 5/16	
21	302-5	7	Washer, Lock, 5/16	
22	100-5-18-16-5F	4	CSHH, 5/16-18 X 1, GR5, FT	
Ref	115726	1	Hydraulic Steer/Brake Circuit, Twin Flow	See Section 6 for Schematic
Ref	117463	1	Install, Flow Divider With Internal Relief	Assembly Part Number
25A	117405	1	Plate, Flow Divider Mounting Bracket	
25B	117406	1	Assembly, Flow Divider, W/ Internal Relief Valve	
25C	100-5-18-44-5	3	CSHH, 5/16-18 X 2.75, GR5	
25D	100-6-16-16-5F	2	CSHH, 3/8-16 X 1, GR5, FT	
25F	118-3	2	Washer, Lock, 3/8	
25G	200-5-18-5	3	Nut, Hex, 5/16-18, GR5	
25H	200-6-16-5	2	Nut, Hex, 3/8-16, GR5	
25I	300-6	2	Washer, Flat, SAE, 3/8	
27	115569	1	Filter Head-Suction-24FO	
28	116158	1	Filter Element- Return- 25 Micron - Series 6	
31	1010208	1	Weldment, Frame, 695, Dana Bogie	See Figure 7-2 and 7-3

HYDRAULIC GROUP - VIEW 4 OF 4

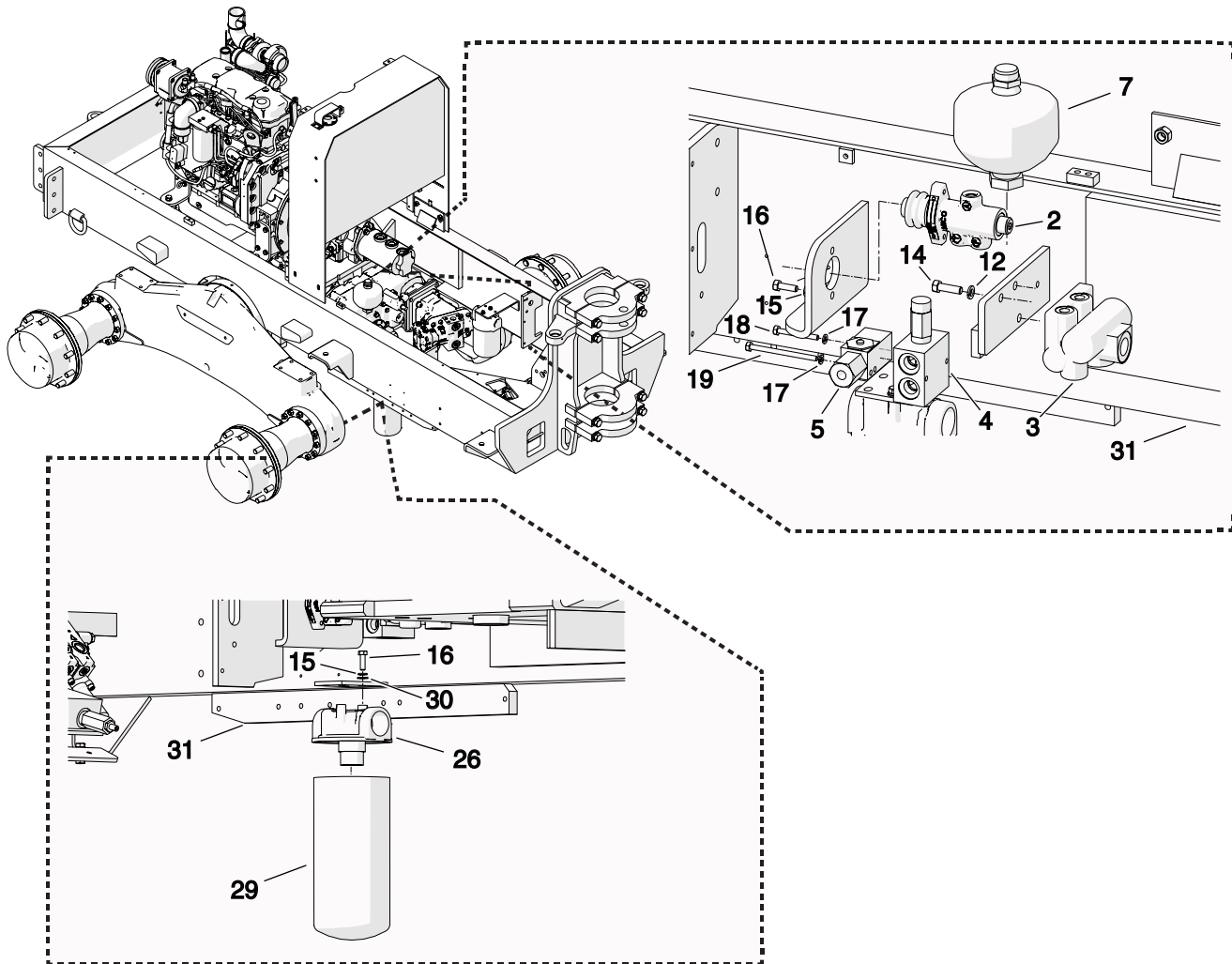


Figure 7-65.

Hydraulic Group Parts List - View 4 of 4

Item No.	Part Number	Qty.	Description	Remarks
Ref	1010407	1	Group, Hydraulic, 695	
2	1010381	1	Service, Brake, Mico Valve	
3	852740	1	Valve, Brake Charge	
4	750602	1	Manifold W/Relief, 3000 Brake	
5	852720	1	Switch,Brake,Low Press	SET AT 1300PSI
7	1010390	1	Accumulator, 60 Cl, Brake System	
12	118-3	3	Washer, Lock, 3/8	
14	100-6-16-20-5	3	CSHH, 3/8-16 X 1.25, GR5	
15	302-5	2	Washer, Lock, 5/16	
16	100-5-18-16-5F	2	CSHH, 5/16-18 X 1, GR5, FT	
17	302-4	2	Washer, Lock, 1/4	
18	100-4-20-36-5	1	CSHH, 1/4-20 X 2.25, GR5	
19	100-4-20-60-5	1	CSHH, 1/4-20 X 3.75, GR5	
26	115571	1	Filter Head-Return=20FO	
29	115570	1	Filter-Suction-IO Micron-Long	
30	119-2	4	Washer, Flat, SAE, 5/16	
31	1010208	1	Weldment, Frame, 695, Dana Bogie	See Figure 7-2 and 7-3

CENTRALIZED TEST PORT BLOCK INSTALLATION

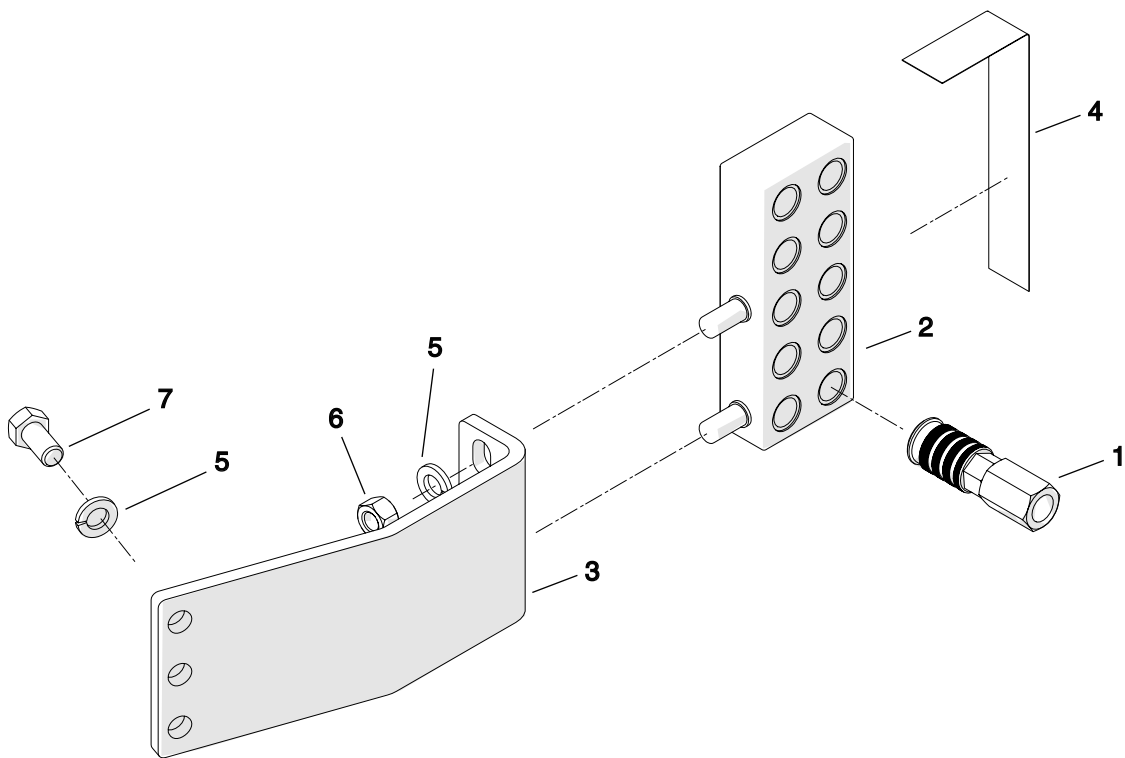


Figure 7-66.

Centralized Test Port Block Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	97714	1	Test Port Coupler (0.25 NPT)	
2	12756670	1	Test Port Block W/ Studs	
3	12756666	1	Plate, Test Port Mounting Bracket	
4	12756671	1	Decal, Test Ports	
5	118-3	5	Washer, Lock, 3/8	
6	200-6-16-5	2	Nut, Hex, 3/8-16, GR5	
7	100-6-16-12-5F	3	CSHH, 3/8-16 X 0.75, GR5, FT	
Ref	12756669	1	Installation, Centralized Test Port Block	

HYDRAULIC VALVE BANK

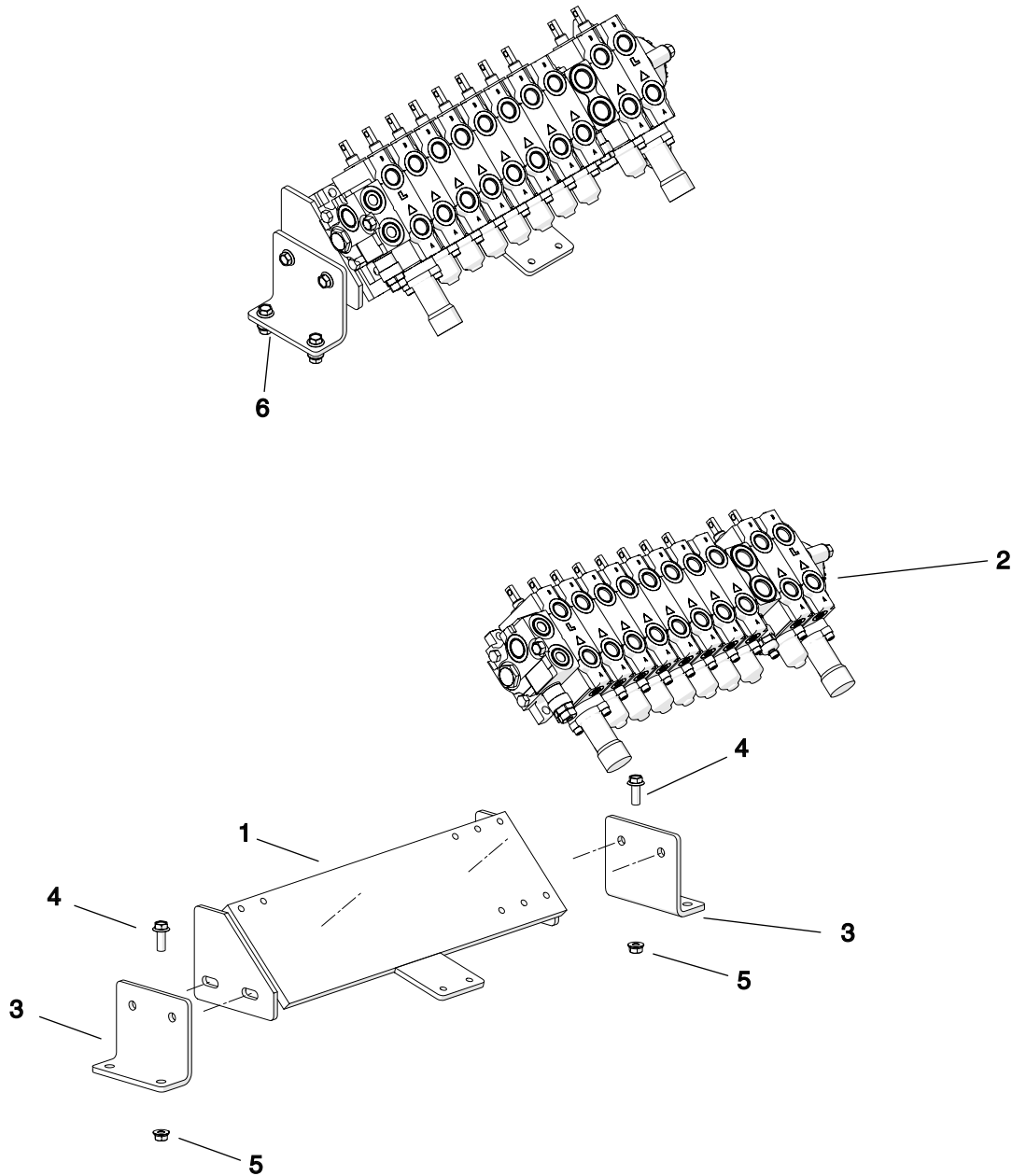


Figure 7-67.

Hydraulic Value Bank Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	115372	1	Weldment, Control Valve Body	
2	120141	1	Control Valve Assembly, 10-Spool	
3	12754722	2	Plate, Control Valve Mounting	
4	115732	8	Screw, 3/8-16 X 1, Spinlock, Zinc	
5	36E-06ZI	8	Nut, 3/8-16, Spinlock, Zinc	
6	115940	1	Install., 10-Spool Valve Assembly W/Mid Inlet	

MANIFOLD VALVE-END MECHANISM KITS

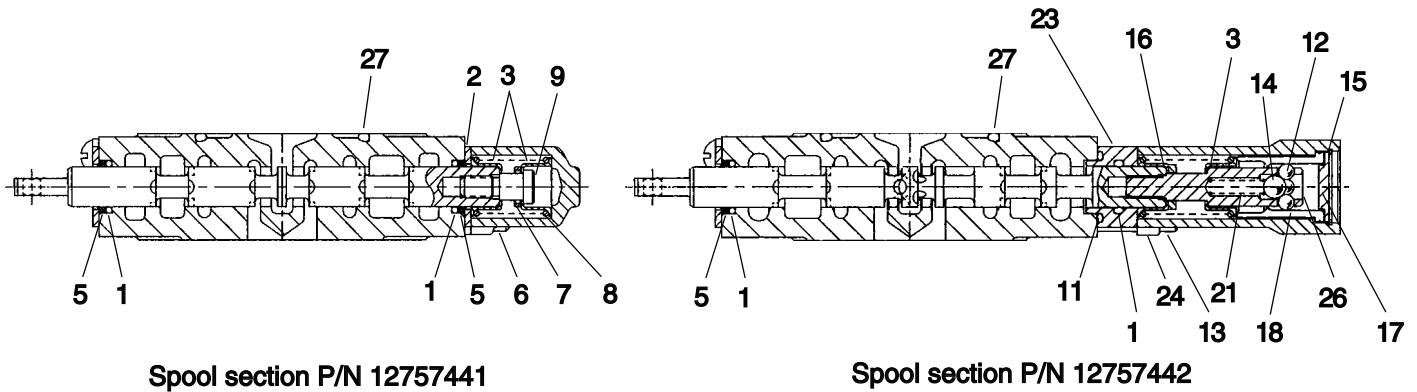


Figure 7-68.

Manifold Value-End Mechanism Kits' Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	116407	1	Kit-End Mechanism, Power Section	includes items 1 to 9
1	109659	2	O-Ring, Control Valve Spool	
2	112259	1	Spool End Seal Plate- Husco	
3	112260	2	Spring Seat, Husco Valve	
5	109660	2	Wiper Ring, Control Valve Spool	
6	112265	2	Cap Screw-Soc. Hd. Husco End Cap	
7	116421	1	Spool Stop	
8	113785	1	Control Valve Spring - Blue- 25.5 In. LB Rate - Husco	
9	112262	1	Screw, Spool End, Husco Power Section	
AR	116406	1	Kit-End Mechanism - Float	includes items 10 to 26
11	116409	1	O-Ring, Spacer On Float Section	
12	116110SRV	4	Brake Pedal Pad-Right	
13	116411	2	Cap Screw-Soc.Hd., Husco Valve	
14	116412	1	Ball, Large - Float Spool	
15	116413	1	Retaining Ring, Int, Float Endcap	
17	116414	1	Spacer, Float Spool	
18	116416	1	Sleeve-Detent	
21	116417	1	Spring, Float Section, Pushes Against Balls	
23	116418	1	Spacer-Cap,Spool	
24	116419	2	Spacer, Flat Spool	
26	116415	1	Spool End-Detent Pin, Float Section	
27	100472	A.R.	O-Ring, Between Control Valve Sections	
28	107981	A.R.	Poppet, Husco Power Sec.	
29	107982	A.R.	Poppet Spring, Husco Power Sec.	

HYDROSTATIC DRIVE PUMP INSTALLATION

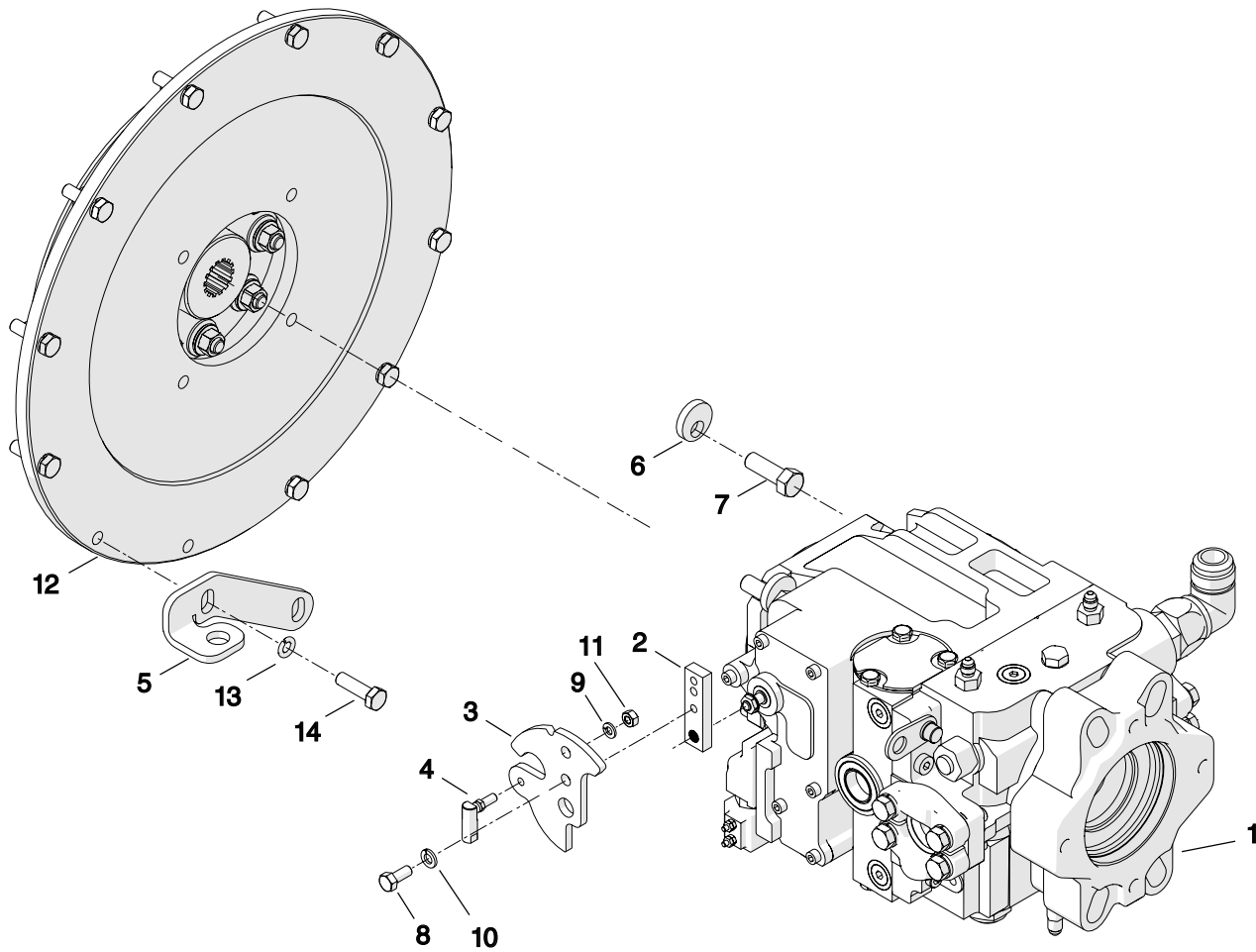


Figure 7-69.

Hydrostatic Drive Pump Installation List

Item No.	Part Number	Qty.	Description	Remarks
1	12755992	1	Pump Hyd. NAFTA-RWD S90-75CC-B-Pad	
2	118813	1	Pump Lever, 90 Series, RWD	
3	12757958	1	Plate, Backup/Neutral Start	
4	106517	1	Ball Joint-1/4In.	
5	12757033	1	Plate, Cable Anchor, Pump, Forward	
6	105571	4	Thick Washer, W/ Offset Hole	
7	100-8-13-24-8	4	CSHH, 1/2-13 X 1.5, GR8	
8	100-5-18-12-5F	2	CSHH, 5/16-18 X 0.75, GR5, FT	
9	302-4	1	Washer, Lock, 1/4	
10	302-5	2	Washer, Lock, 5/16	
11	200-4-28-5	1	Nut, Hex, 1/7-28, GR5	
12	114308	1	Pump Drive Install., C60-80 Turbo	
13	302-M10	12	Washer, Lock, M10	
14	100-M10-1.5-35-8.8F	12	CSHH, M10 X 1.5 X 35, C8.8, FT	
Ref	12756277	1	Installation, Hydrostatic Pump, NAFTA, RWD	

OPTION GROUP

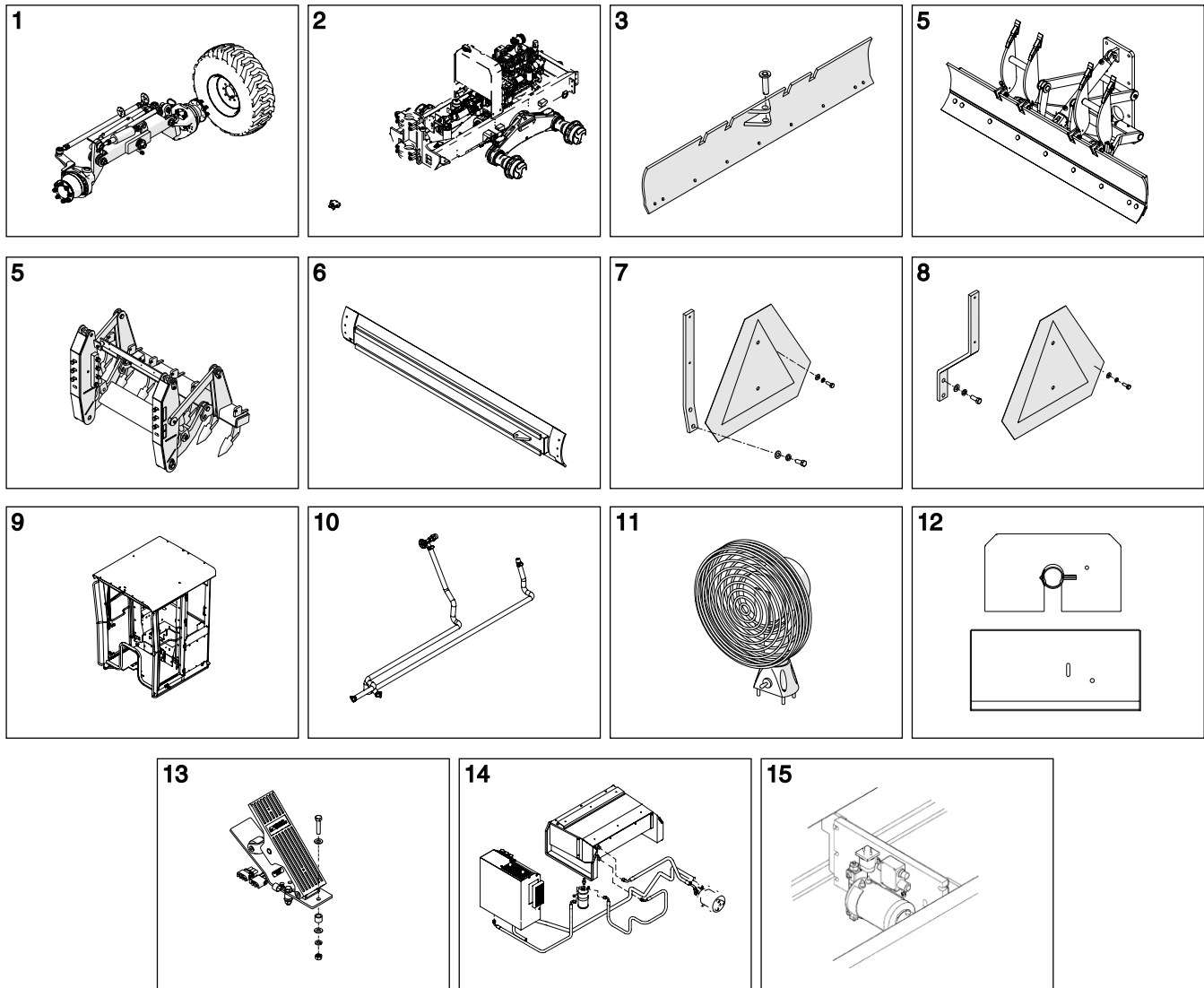


Figure 7-70.

Option Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1008999	1	Group, Front Axle AWD, 695	See Figures 7-71 and 72
2	1009029	1	Group, Hydraulic AWD, 695	See Figures 7-73 to 7-75
3	111927SRV	1	Option - Front Tow Hitch Pkg.	See Figure 7-76
4	12758165	1	Option, 7 Ft. Dozer With Float, G7	See Figure 7-77 and 7-78
4	12758166	1	Option, 8 Ft. Dozer With Float, G7	See Figure 7-77 and 7-78
5	12756521	1	Option, Installation, 7-Tooth	See Figure 7-79
6	117701	1	Weldment, 11 Ft. Moldboard	See Figure 7-11
6	117702	1	Weldment, 12 Ft. Moldboard	See Figure 7-11
7	12754742	A.R	SMV Installation With Rear Attachment	See Figure 7-25
8	12754774	A.R	SMV Sign Install, No Rear Attachments	See Figure 7-25
9	12754409	1	Enclosed ROPS / FOPS Canopy Cab	Cab Info. starts at Fig. 7-12
10	120561	1	Option, Cab Heat, QSB4.5 Tier 3	See Figure 7-24
11	111939	1	Option - Defroster Fan Package	See Figure 7-23
12	12755171	1	Option - Vandalism Pkg. - Bolt On Canopy Cab	See Figure 7-80
13	12756481	1	Option, Accelerator Pedal	See Figure 7-81
14	1009004	1	Option, Air Cond., 695	See Figure 7-82 - 7-84
15	12757267	1	Option, Secondary Steering	See Figure 7-85

AWD WHEELS AND FRONT AXLE (OPTION)

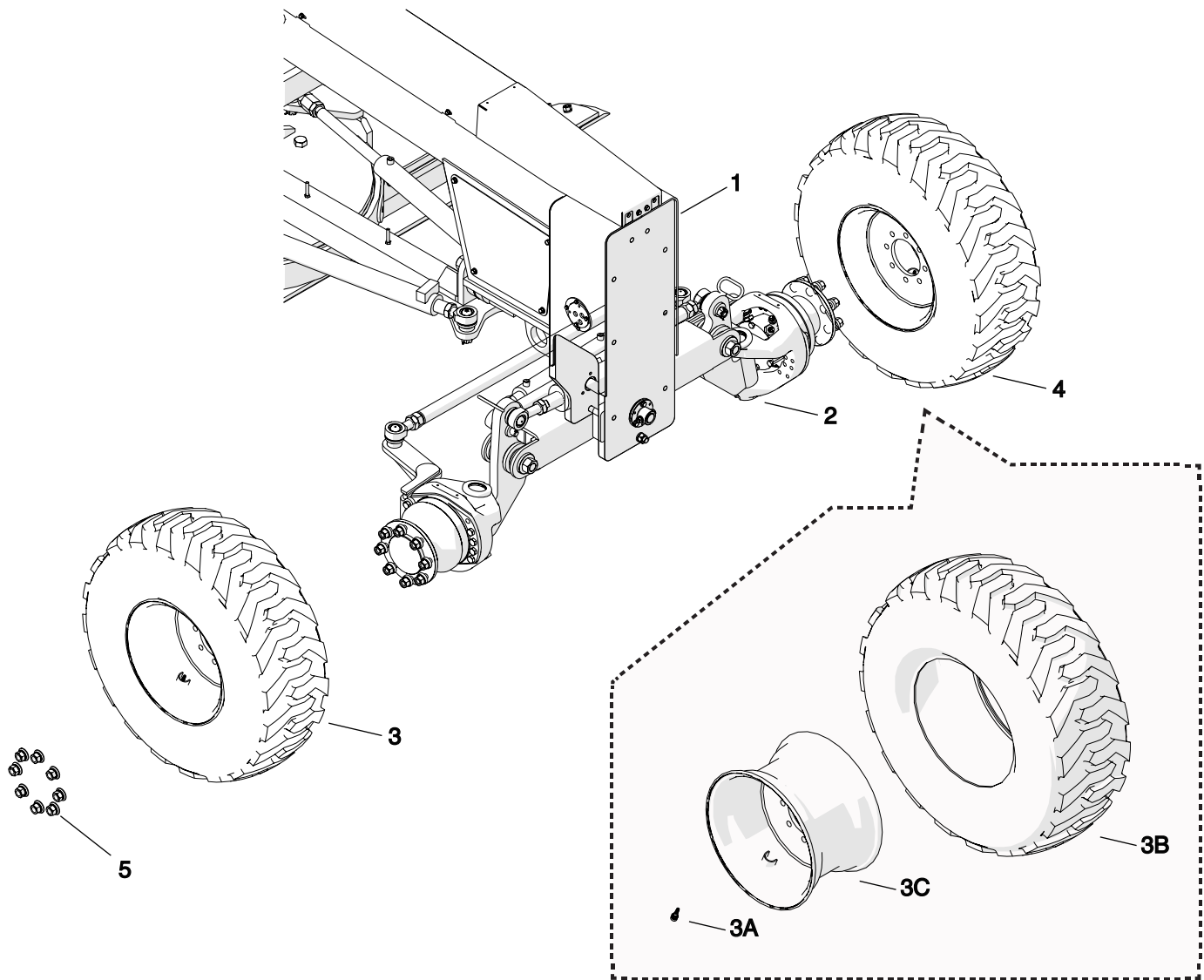
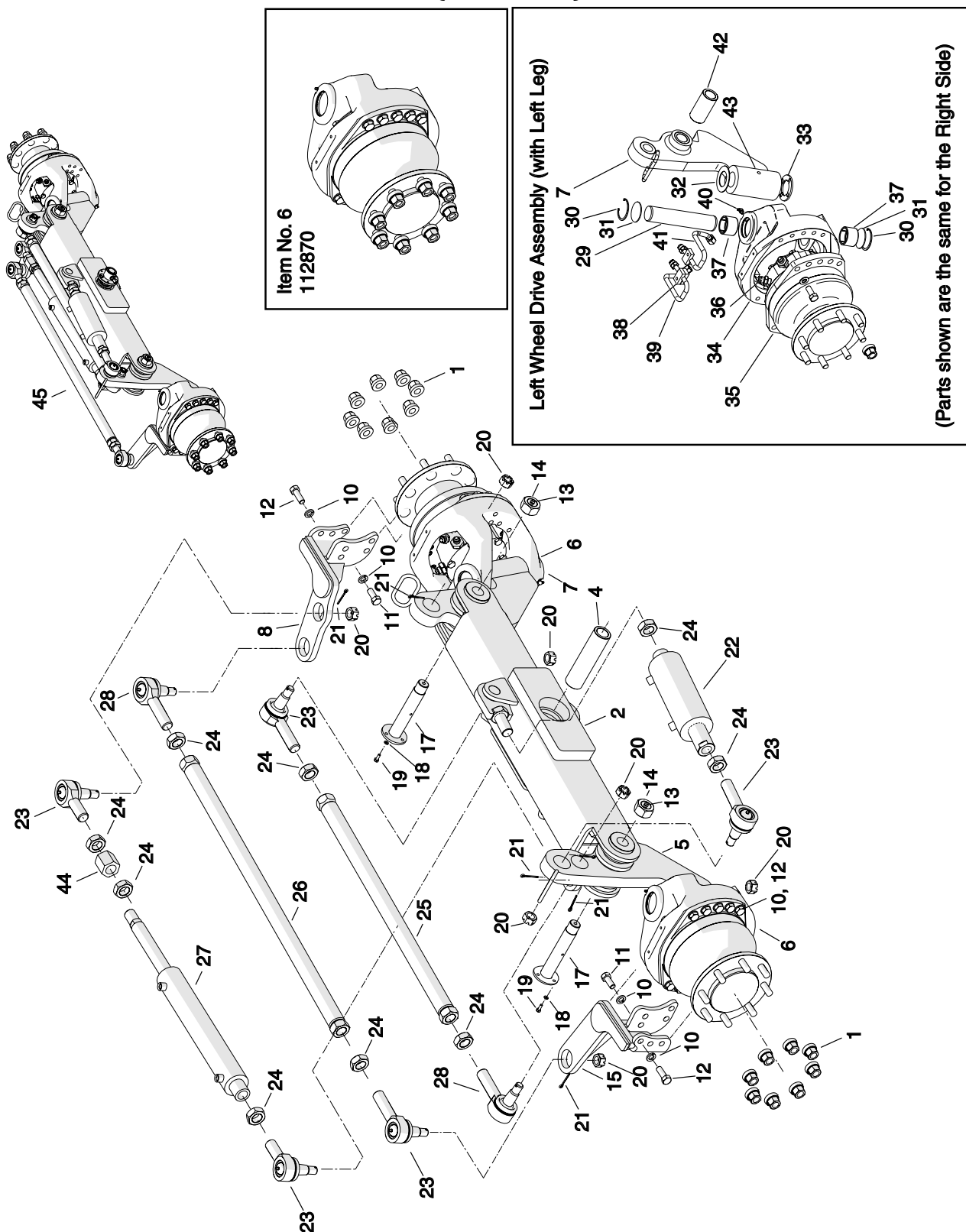


Figure 7-71.

AWD Wheels and Front Axle (option) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12758099	1	Weldment, Frame, Front, ST 1	
2	117237	1	Inst., Axle, Front, AWD, 2005	
3	100518L	1	Tire & Wheel Assembly, 15 X 19.5, LH	
3A	100513	2	Two Piece Air Valve, Tire/Wheel	(same P/N for both Wheels)
3B	100514	2	Tire, 15 X 19.5 Guard Tread, 8 Ply.	(same P/N for both Wheels)
3C	100519	2	Front Wheel Weldment, 12.25 X 19.5	(same P/N for both Wheels)
4	100518R	1	Tire & Wheel Assembly, 15 X 19.5, RH	
5	100377	16	Lug Nut, FWD, Dyneer - 20 mm	
Ref	117186	1	Assembly, AWD Axle, C-Series Grader	
Ref	116842	8	Screw, 1/4-20 X 3/4, Spinlock	

AWD FRONT AXLE ASSEMBLY (OPTION)



AWD Front Axle Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	100377	16	Lug Nut, Fwd, Dyneer - 20 mm	
2	117187	1	Front Axle Tube Frame	
4	119744	1	Nylon Bushing, Center	
5	117205SRV	1	Weldment, Leg, Right, C-Series	
6	112870	2	Wheel Drive Assembly	(See Manufacturer's Manual)
7	117211SRV	1	Weldment, Leg, Left, C-Series Grader, AWD	
8	118547SRV	1	Weldment, Steering Arm, Left, AWD	
10	302-10	28	Washer, Lock, 5/8	
11	100-10-11-24-8F	8	CSHH, 5/8-11 X 1.5, GR8, FT	
12	100-10-11-28-8F	20	CSHH, 5/8-11 X 1.75, GR8, FT	
13	29A-02	4	Grease Fitting, 1/8 NPT Strt.	
14	200-20-12-5	2	Nut, Hex, 1-1/4-12, GR5	
15	118548SRV	1	Weldment, Steering Arm, Right, AWD	
17	117202	2	Wheel Lean Pin Weldment, C-Series	
18	302-4	6	Washer, Lock, 1/4	
19	100-4-20-12-5F	6	CSHH, 1/4-20 X 0.75, GR5, FT	
20	31H-14	7	Hex Nut 7/8 UNF- Slotted	(one not shown)
21	13A-0432ZI	7	Cotter Pin, 1/8 X 2-Plated	
22	1010147	1	Cylinder, Hydraulic, 3.50 X 4.50 X 2.00 Rod	
23	101637	5	Ball Joint Socket Assembly - Right-Hand Thread	
24	202-20-12-5	9	Nut, Hex, Jam, 1-1/4-12, GR5	
25	12757718	1	Weldment, Tie Rod, Lean	
26	117195	1	Weldment, Tie-Rod, Steering, C86C	
27	1010139	1	Cyl., Hyd., 2.50 X 15.00 X 1.50 Rod	
28	100225	2	Socket Assembly-Ball Joint- Left Hand Thread+	
29	100363	2	King Pin, AWD	
30	100361	4	Snap Ring, FWD, Dyneer	
31	100362	4	Plug, FWD, Dyneer	
32	112867	2	Steel Washer	
33	112866	2	Thrust Washer, Brass	
34	100365	2	Frame Wheel, Motor	
35	100376	2	Fwd Wheel Motor, Dyneer	
36	111E-0808	2	Connector, Straight Thread #8	
37	100364	4	Bushing, FWD Kingpin, Brass	
38	100381	4	Tube Clamp, Dyneer FWD	
39	100378	2	Tube, Left, FWD	
40	2B-04	4	Grease Fitting	

AWD FRONT AXLE ASSEMBLY (OPTION)

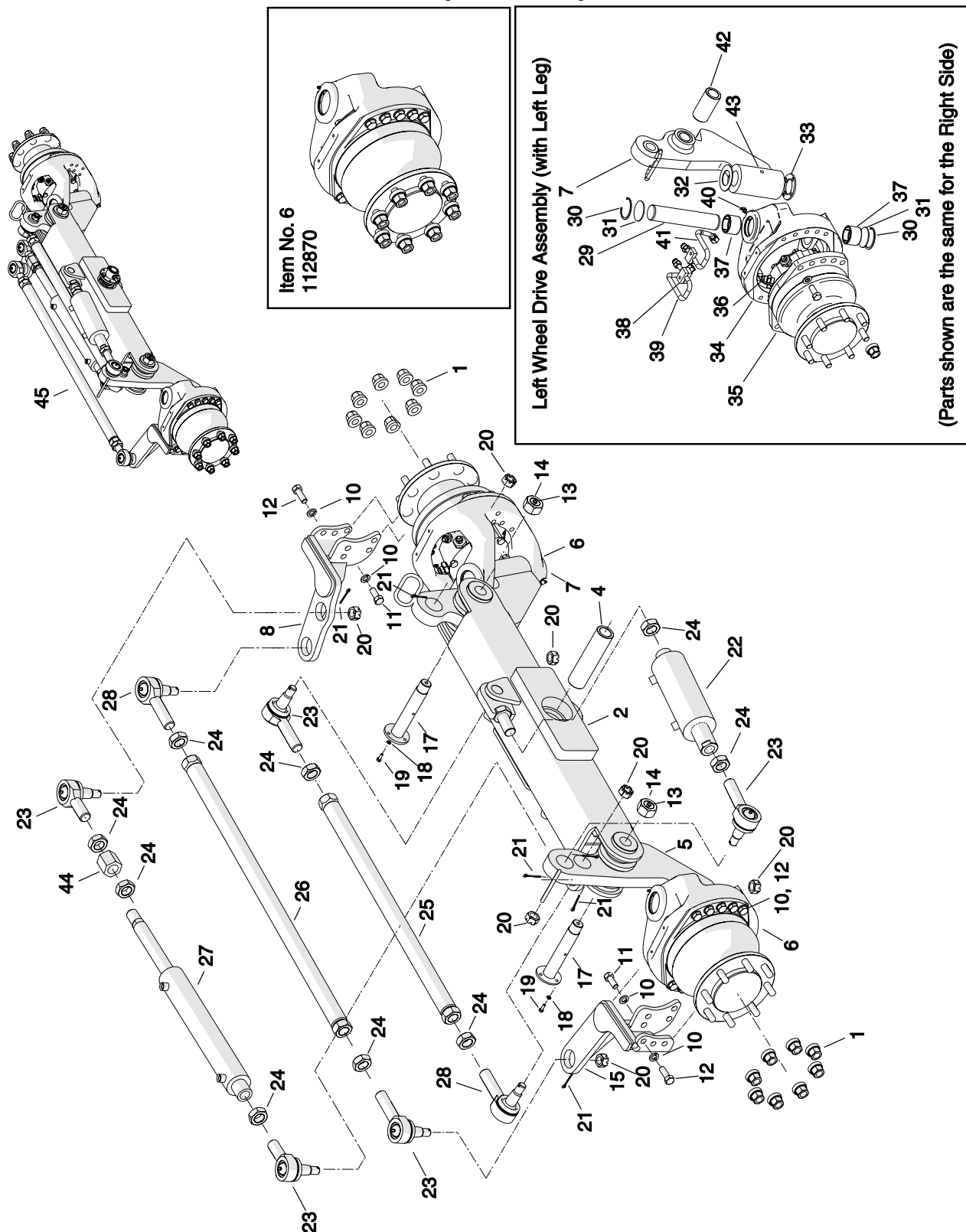


Figure 7-72.

AWD Front Axle Parts List (Cont.)

Item No.	Part Number	Qty.	Description	Remarks
41	100379	2	Tube, Right, FWD	
42	119673	2	Nylon Bushing, Wheel Lean	
43	112878	2	Set Screw, Special - FWD Frame	
44	100222	1	CONN NUT, 1 1/4-12 X 2 IN HI-NUT,	
45	117237	1	INST., Axle, Front, AWD, 2005	

AWD HYDRAULIC GROUP (OPTION)

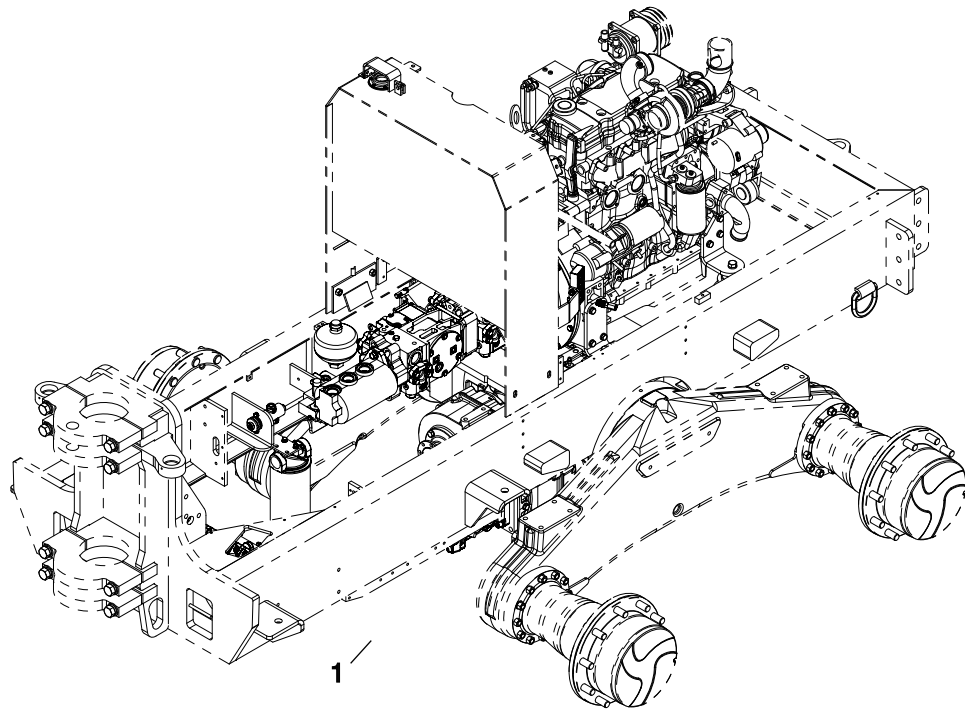


Figure 7-73.

AWD Hydraulic Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	1009029	1	Group, Hydraulic, 695	
Ref	115940	1	Install, 10-Spool Valve Assembly	Fig. 7-67
Ref	12754645	1	Hyd. Return Plumbing, G80/86	
Ref	12754649	1	Hyd. Suction Plumbing, G86	
Ref	12756669	1	Installation, Centralized Test	Fig. 7-63 and 7-66
Ref	12756276	1	Inst., Gear Pump, Twin Flow	Fig. 7-63
Ref	12756278	1	Inst., AWD Hydrostatic Pumps, NAFTA	Fig. 7-74
Ref	115998	1	Circle Turn Cushion Valve, Ins.	Fig. 7-62
Ref	750602	1	Manifold W/Relief, 3000 Brake	Fig. 7-65
Ref	852720	1	Switch, Brake, Low Press	Fig. 7-65
Ref	852740	1	Valve, Brake Charge	Fig. 7-65
Ref	1010381	1	Service, Brake, Mico Valve	Fig. 7-65
Ref	1010390	1	Accumulator ,60 CI, Brake Sys.	Fig. 7-65
Ref	1000569	1	Motor, Hyd., 4.92 Cir., 2-Speed	Fig. 7-62
Ref	1010487	1	Kit, Hose, Main, With 150 Bogie	Purchased as One (1) Kit
Ref	1010609	1	Schematic, 695 With Dana Bogie Axle	See Section 6
Ref	115726	1	Hydraulic Steer/Brake Circuit, Twin Flow	See Section 6
Ref	1010986	1	Kit, Hose, AWD 695	Purchased as One (1) Kit
Ref	A.R	1	AWD Valve Assembly	Fig. 7-72

AWD HYDROSTATIC PUMPS (OPTION)

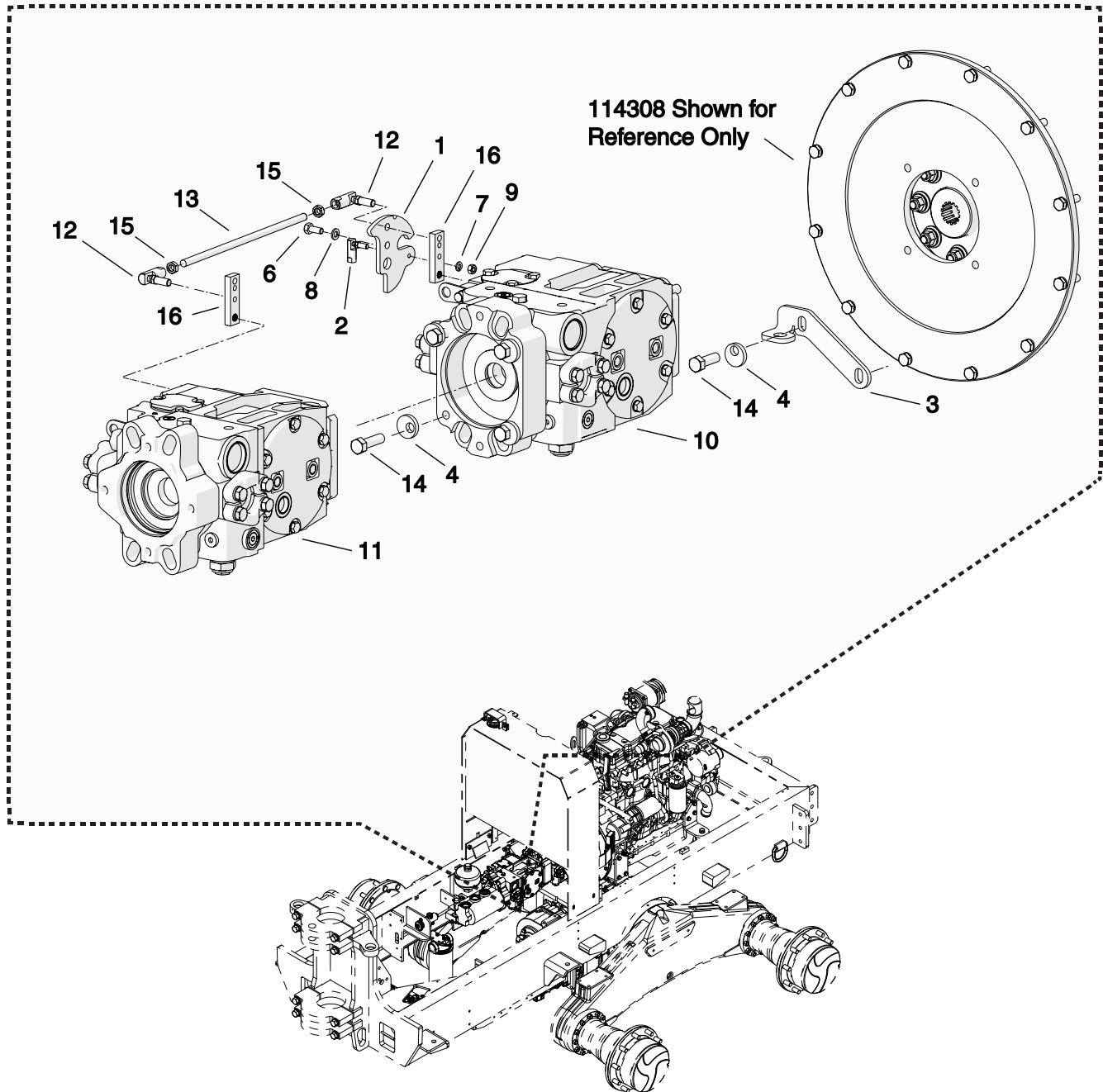


Figure 7-74.

AWD Hydrostatic Pumps Part List

Item No.	Part Number	Qty.	Description	Remarks
Ref	1009029	1	Group, Hydraulic, 695	
Ref	12756278	1	Inst., AWD Hydrostatic Pumps, NAFTA	
1	12757958	1	Plate, Backup/Neutral Start Switches	
2	106517	1	Ball Joint-1/4 In.	
3	12757033	1	Plate, Cable Anchor, Pump, Forward	
4	105571	8	Thick Washer, W/ Offset Hole	
6	100-5-18-12-5F	1	CSHH, 5/16-18 X 0.75, GR5, FT	
7	302-4	1	Washer, Lock, 1/4	
8	302-5	1	Washer, Lock, 5/16	
9	200-4-28-5	1	Nut, Hex, 1/4-28, GR5	
10	12755994	1	Pump Hydraulic NAFTA-AWD-RR S90-75CC-C-Pad	
11	12755993	1	Pump Hydraulic NAFTA-AWD-FR S90-55CC-B-Pad	
12	100500	2	Rod End Ball Joint, 3/8"	
13	56B-0692ZI	1	Rod Threaded - 0.38 X 24 UNF X 11	
14	100-8-13-28-8	4	CSHH, 1/2-13 X 1.75, GR8	
15	202-6-24-5	2	Nut, Hex, Jam, 3/8-24, GR5	
16	113706	2	Pump Lever, Modified, FWD	

AWD VALVE ASSEMBLY (OPTION)

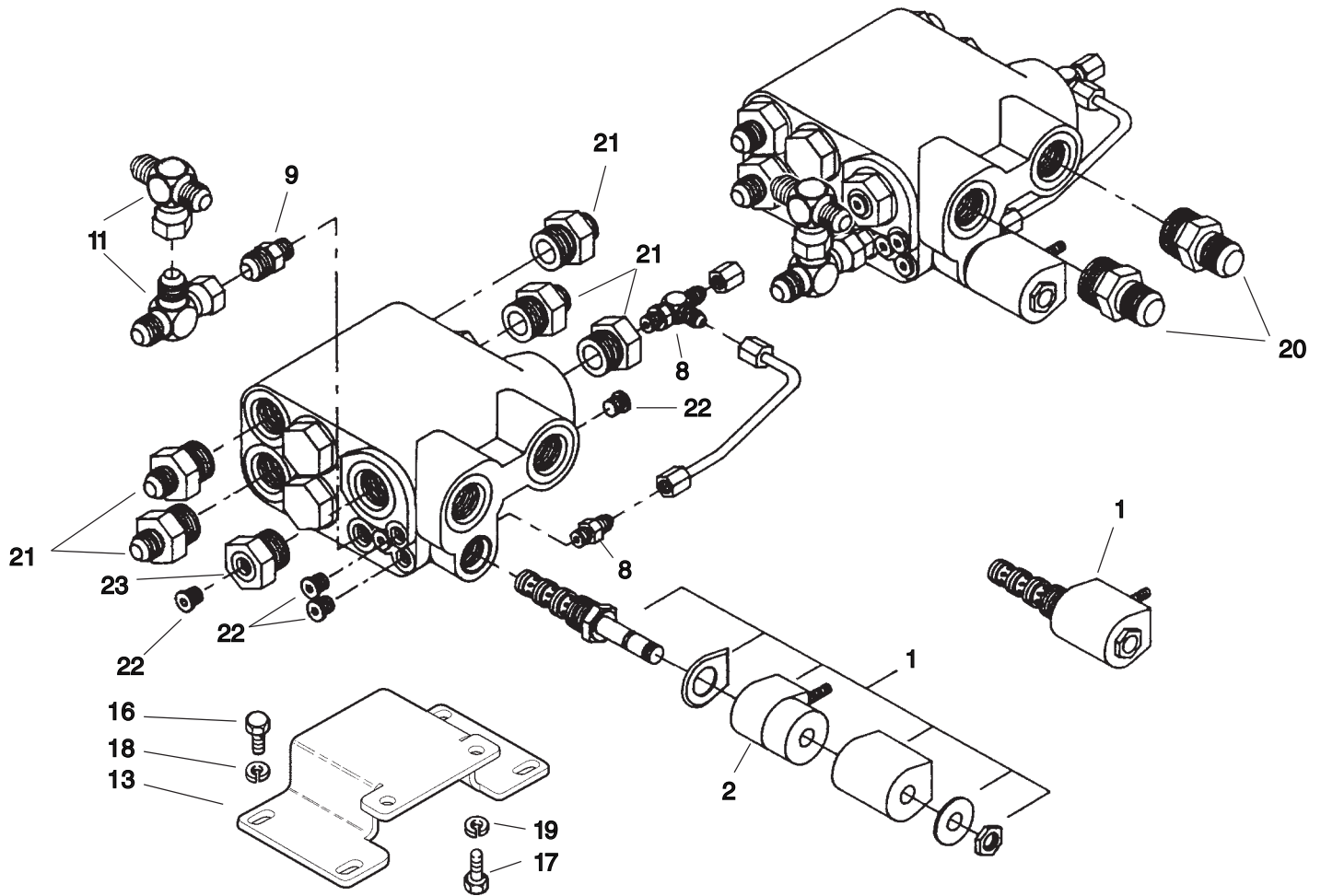


Figure 7-75.

AWD Valve Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	101407	1	Solenoid Valve, FWD TRAC II	
2	111799	1	Solenoid Coil-Dyneer	
8	111E-0404	2	MJ-MB Straight O-Ring Adapter (SAME AS 110913)	
9	111E-0808	1	Connector, Straight Thread #8 O-RING TO #8 JIC	
11	112C-08	2	Adapter, Tee #8 JIC	
13	12754717	1	Bracket, Formed, Equatrac Valve	
16	50A-0508ZI	4	HEX C/S 5/16 X 1 UNC GR 5 ZINC	
17	50A-0610ZI	2	HEX C/S 3/8 x 1-1/4 UNC GR5 ZINC	
18	14A-05ZI	4	Lockwasher 5/16 USS GR 5 ZINC	
19	14A-06ZI	2	Lockwasher 3/8 USS GR 5 ZINC	
20	111E-1212	2	Adapter Straight - #12 male JIC x #12 male O-RING	
21	111E-0810	4	Adapter #10 O-RING TO #8 JIC	
22	988821-11	4	Plug, SAE #4	
23	Ref	1	(unserviceable part)	

FRONT TOW HITCH ASSEMBLY (OPTION)

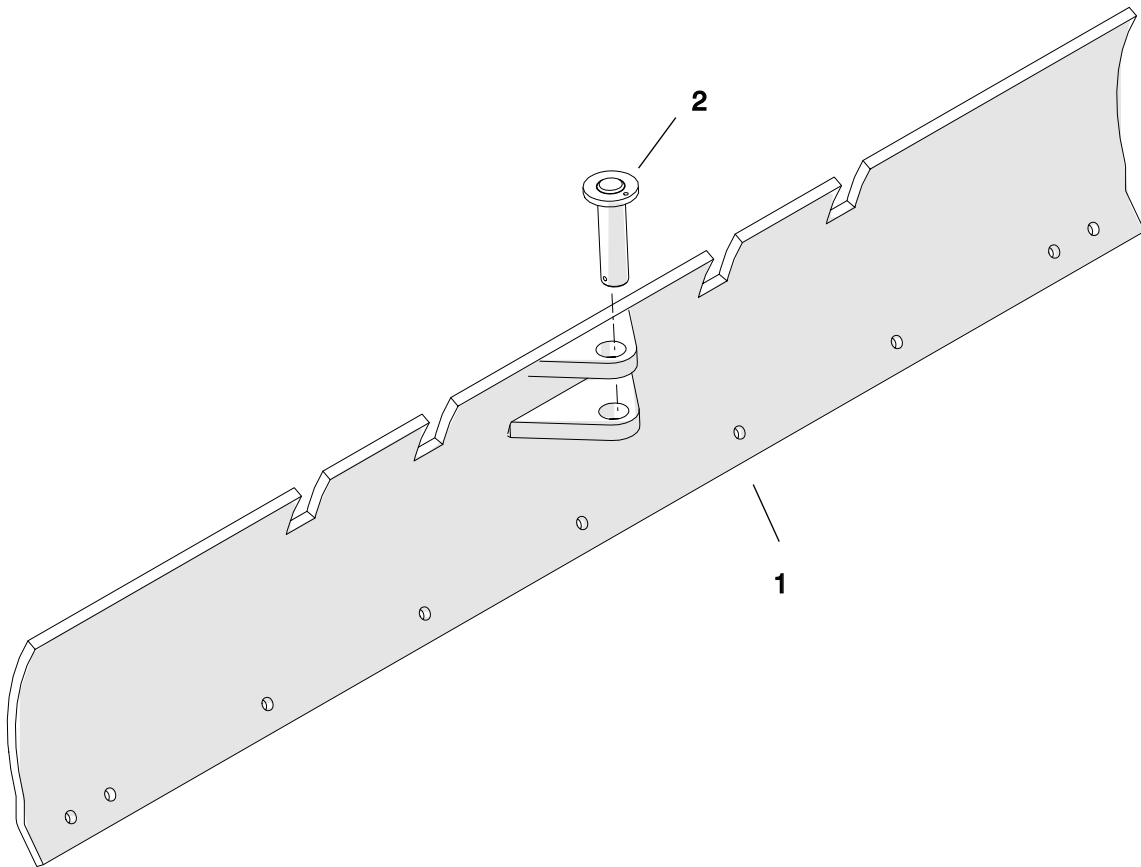


Figure 7-76.

Front Tow Hitch Assembly (Option) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	112797	1	7' Front Blade-Formed	
2	12754678	1	Weldment, Rear Hitch Pin	
Ref	111927SRV	1	Option - Front Tow Hitch Pkg.	
Ref	112573	2	Plate - Bottom Front Tow Hitch	Plates are welded to 112797

FRONT ATTACHMENT LIFTING ARRANGEMENT (OPTION)

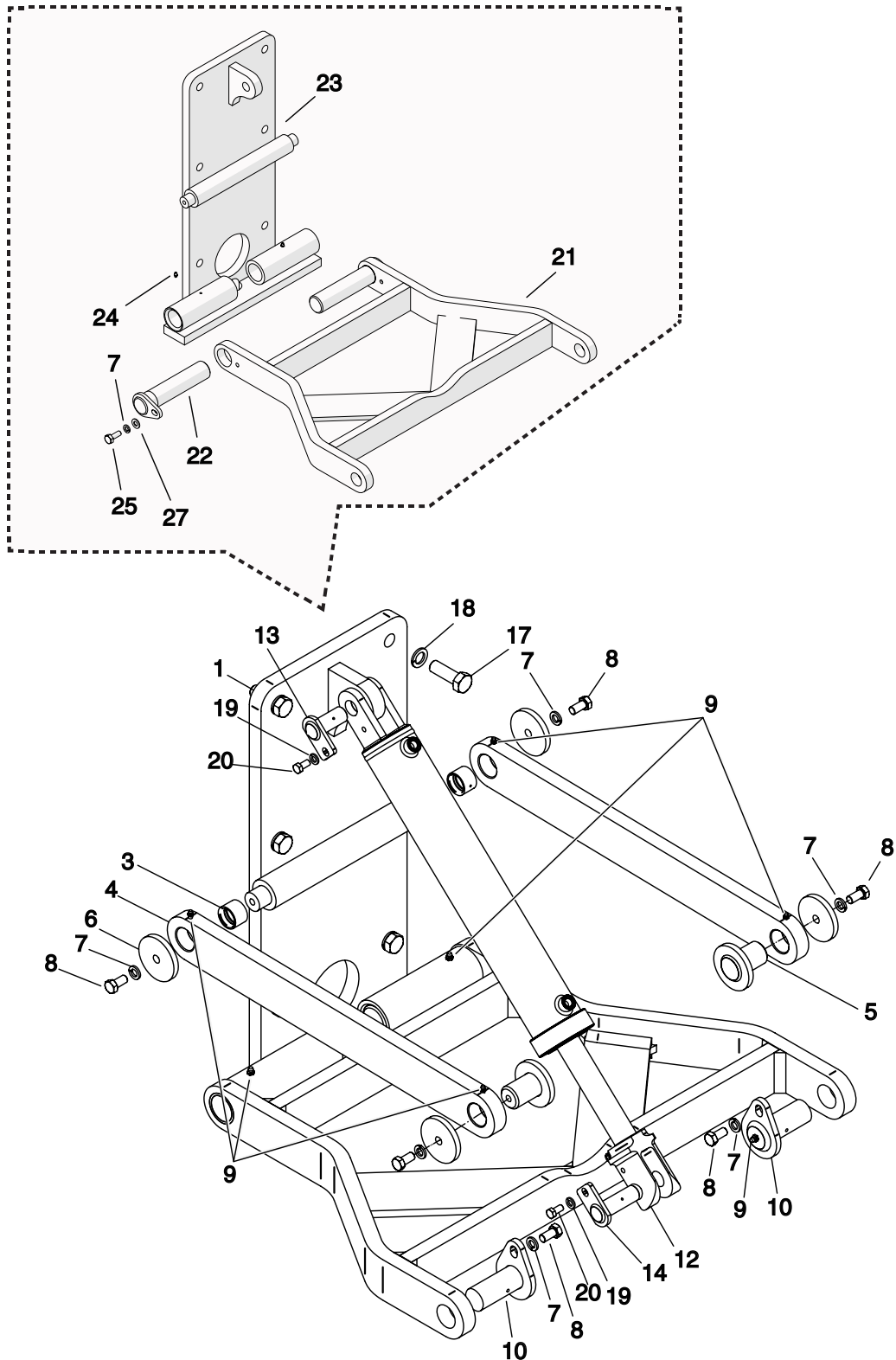


Figure 7-77.

Front Attachment Lifting Arrangement (Option) Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	12758166	1	Assembly, 8Ft Dozer	See Fig. 7-77 and 7-78
Ref	12758165	1	Assembly, 7Ft Dozer	See Fig. 7-77 and 7-78
Ref	12758133		Assembly, Front Attachment W/ Lifting Arms	Used with both the 7 and 8 FT. dozer
1	121198	1	Assembly, Front Lift Mount And Linkage	
3	103127	2	Bushing, 1.25 ID X 1.50 OD X 1.00 Lg.	
4	117706	2	Bar, Top Push Arm	
5	107663	2	Weldment, Link Pin, Front Blade	
6	100529	4	Washer, Three Inch	
7	118-5	8	Washer, Lock, 1/2	
8	100-8-13-16-8F	6	CSHH, 1/2-13 X 1.00, GR8, FT	
9	140610	8	Grease Fitting 1/4-28 Straight	(one not shown on item 10)
10	107661	2	Weldment, Link Pin, Bottom Push Arm	
12	1010144	1	Cylinder, Hydraulic, 3.00 X 17.00 X 1.50 Rod, Front Blade	
13	110597	1	Weldment, Cylinder Mounting Pin, Short	
14	110596	1	Weldment, Cylinder Mounting	
17	100-12-10-36-8	6	CSHH, 3/4-10 X 2.250, GR8	
18	302-12	6	Washer, Lock, 3/4	
19	118-3	2	Washer, Lock, 3/8	
20	100-6-16-12-5F	2	CSHH, 3/8-16 X 0.75, GR5, FT	
21	12758123	1	Weldment, Bottom Pusharm Linkage	
22	1012072	2	Weldment, Pivot Pin, Bottom Push Arm Mount	
23	12758118	1	Front Attachment Mounting Plate Weldment	
24	140610	2	Fitting, Lube, Str., 1/4"-28	
25	101-8-13-22-8F	2	CSHH, Hvy., 1-8 X 5.25, GR5, FT	
27	300-8	2	Washer, Flat, SAE, 1/2	

FRONT BLADE AND SCARIFIER (OPTION)

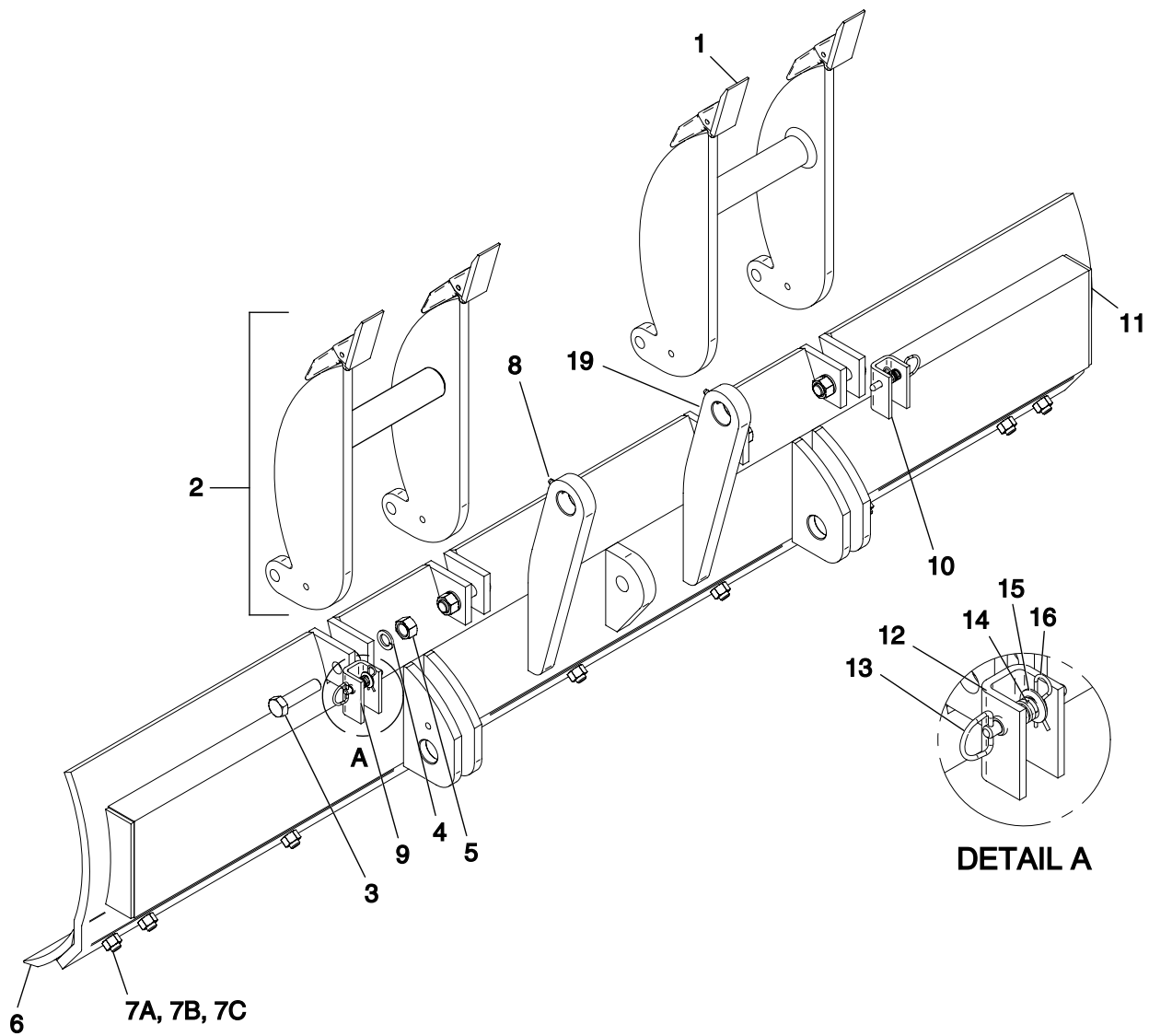


Figure 7-78.

Front Blade and Scarifier (Option) Parts List

Item No.	Part Number	Qty.	Description	Remarks
Ref	12758138	1	Fr. Blade & Scarifier Assembly - 7Ft. 4-Tooth Scarifier Includes Items 1, 2, 3, 4, 5, 6, 7A-C & 12	
Ref	12758140	1	Fr. Blade & Scarifier Assembly - 8 Ft. 4-Tooth Scarifier Includes Items 1, 2, 3, 4, 5, 6, 7A-C & 12	
1	111419	1	Scarifier Weldment, Right W/ Std.	
2	100522	2	Weldment, Front Blade Scarifier	
3	100-12-10-48-8F	4	CSHH, 3/4-10 X 3, GR8, FT	
4	302-12	4	Washer, Lock, 3/4	
5	200-12-10-8	4	Nut, Hex, 3/4-10, GR8	
6	100521	1	Cutting Edge, 7', Offset Punched	
6	108581	1	Cutting Edge, 8', Offset Punched	
7A	302-10	9	Washer, Lock, 5/8	
7B	200-10-11-5	9	Nut, Hex, 5/8-11, GR5	
7C	130220	9	Plow Bolt, 0.625-11 X 2.00	
8	29A-02	2	Grease Fitting, 1/8 NPT Strt.	
9	100532	1	Assembly, Scarifier Keeper, LH.	includes items 12 to 16
10	100531	1	Assembly, Scarifier Keeper, RH.	includes items 12 to 16
11	12758137	1	Weldment, 7 Ft. Dozer, Universal Mount	includes items 8, 9 & 10
11	12758139	1	Weldment, 8 Ft. Dozer, Universal Mount	includes items 8, 9 & 10
12	111058	2	Plate, Mounting Bracket, Keeper	
13	111055	2	Hitch Pin, Modified For Scarifier	
14	111048	2	Spring, Compression, Scarifier	
15	14C-06ZI	2	Flat Washer 3/8 USS GR 5 Zinc	
16	13L-02ZI	2	Cotter Pin - Front Scarifier Retainer	
Ref	102882	A.R.	Assembly, Shank & Tooth	
19	140610	2	Fitting, Lube, Str., 1/4"-28	
Ref	12758165	1	Option, 7 Ft. Dozer With Float, G7	
Ref	12758166	1	Option, 8 Ft. Dozer With Float, G7	

7-TOOTH REAR RIPPER ASSEMBLY (OPTION)

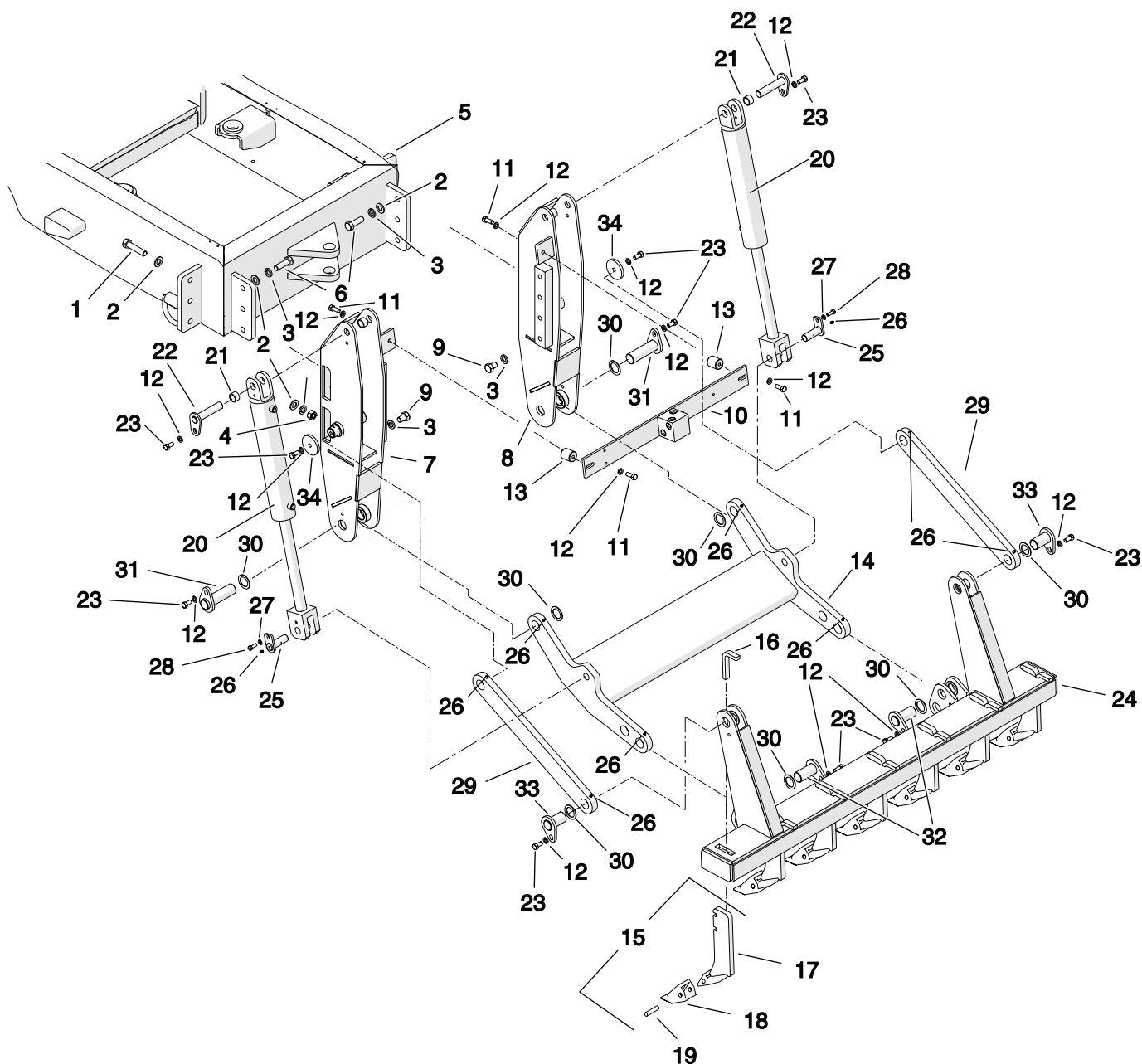


Figure 7-79.

7-Tooth Rear Ripper Assembly (Option) Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	100-12-10-52-8	6	CSHH, 3/4-10 X 3.25, GR8	
2	300-12	18	Washer, Flat, SAE, 3/4	
3	302-12	14	Washer, Lock, 3/4	
4	200-12-10-8	6	Nut, Hex, 3/4-10, GR8	
5	1010208	1	Weldment, Frame, 695, Dana	
6	100-12-10-36-8	6	CSHH, 3/4-10 X 3.25, GR8	
7	116224	1	Weldment-Upright- Right	
8	116225	1	Weldment-Upright- Left	
9	100-12-10-16-8F	2	CSHH, 3/4-10 X 1, GR8, FT	
10	12756823	1	Rear Lift Crossbar/Manifold Weldment	
11	100-8-13-20-5F	4	CSHH, 1/2-13 X 1.25, GR5, FT	
12	118-5	14	Washer, Lock, 1/2	
13	116790	2	Threaded Spacer, Manifold Bar On Rippafier	
14	116232	1	Weldment-Pull Link	
15	110296	7	Rear Ripper Shank/Tooth	(assembly number)
16	116255	7	Shank Keeper 1/2" Thick - Rear	
17	Ref	7	Burnout , Rear Scarfier Shank Plate	
18	12756508	7	Replacement Tooth, Hd Pinned Type	
19	12756510	7	Pin - For HD	
20	1010145	2	CYL., HYD., 3.00 X 14.00 X 1.50 Rod	
21	116256	4	Spacer-Cylinder-Ripper	
22	116252	2	Mtg. Pin-Cylinder-Ripper	
23	100-8-13-16-8F	2	CSHH, 1/2-13 X 1, GR8, FT	
24	12756512	1	Weldment, Extended Ripper Box	
25	110596	2	Weldment, Cylinder Mounting Pin, Long	
26	140610	8	Fitting, Lube, Str., 1/4"-28	
27	118-3	2	Washer, Lock, 3/8	
28	100-6-16-16-5F	2	CSHH, 3/8-16 X 1, GR5, FT	
29	12756516	2	Linkage Arm, Wide Ripper Box	
30	113686	12	Thrust Washer - 1.5 ID X 2.16 OD X 0.093 Thick	(not all pairs are shown)
31	116250	2	Mtg. Pin-Pull Link To Upright	
32	116249	2	Mtg. Pin-Pull Link To Box	
33	116251	2	Mtg. Pin-Linkage Bar To Upright	
34	100529	2	Washer, Three Inch	
Ref	12756515	1	Subassembly, Wide Ripper Box	
Ref	12756521	1	Option, Installation, 7-Tooth	

PROTECTIVE EQUIPMENT (OPTION)

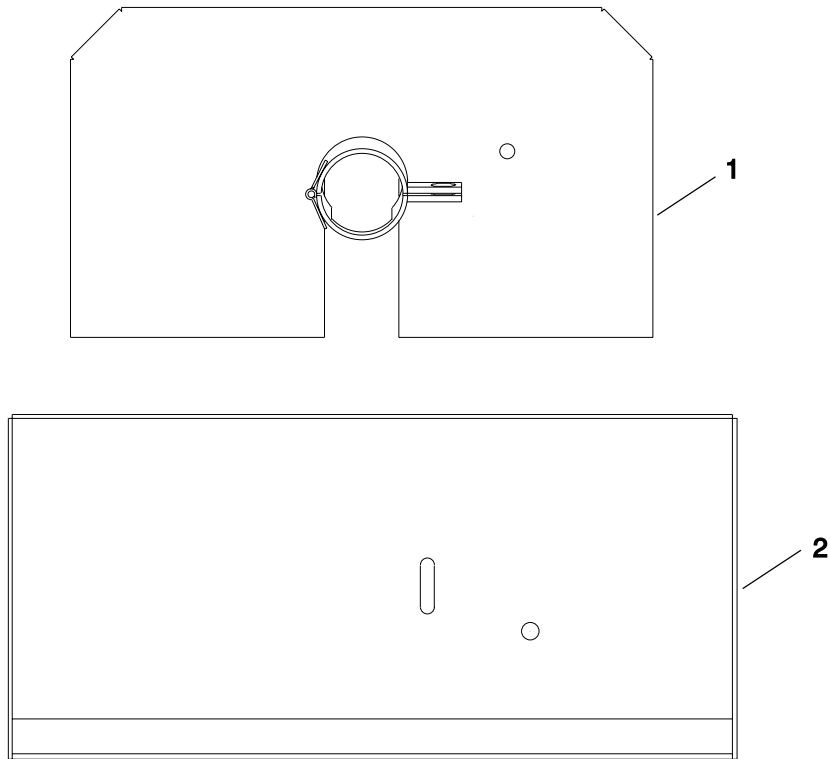


Figure 7-80.

Protective Equipment Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12757468	1	Weldment, Vandalism Cover, Pedestal	
2	12756252	1	Cover-Vandalism-Side Console-Welded	

ACCELERATOR PEDAL ASSEMBLY (OPTION)

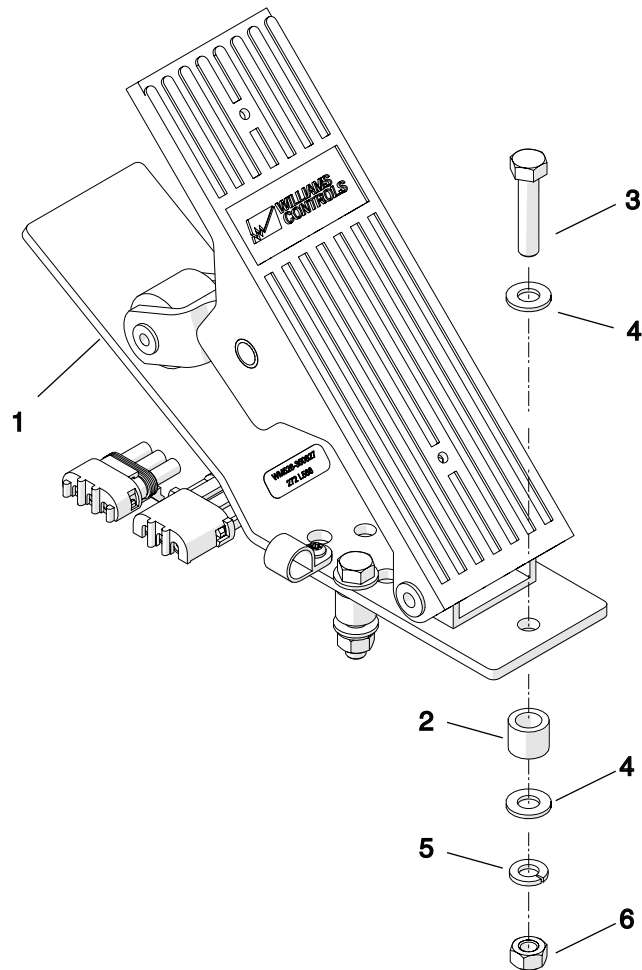


Figure 7-81.

Accelerator Pedal Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12756450	1	Pedal, Throttle Control	
2	12755022	3	Spacer, OD=5/8", ID=13/32", L=1/2"	
3	100-5-18-24-5	3	CSHH, 5/16-18 X 1.5, GR5	
4	119-2	6	Washer, Flat, SAE, 5/16	
5	302-5	3	Washer, Lock, 5/16	
6	200-5-18-5	3	Nut, Hex, 5/16-18, GR5	

AIR CONDITIONER INSTALLATION (OPTION)

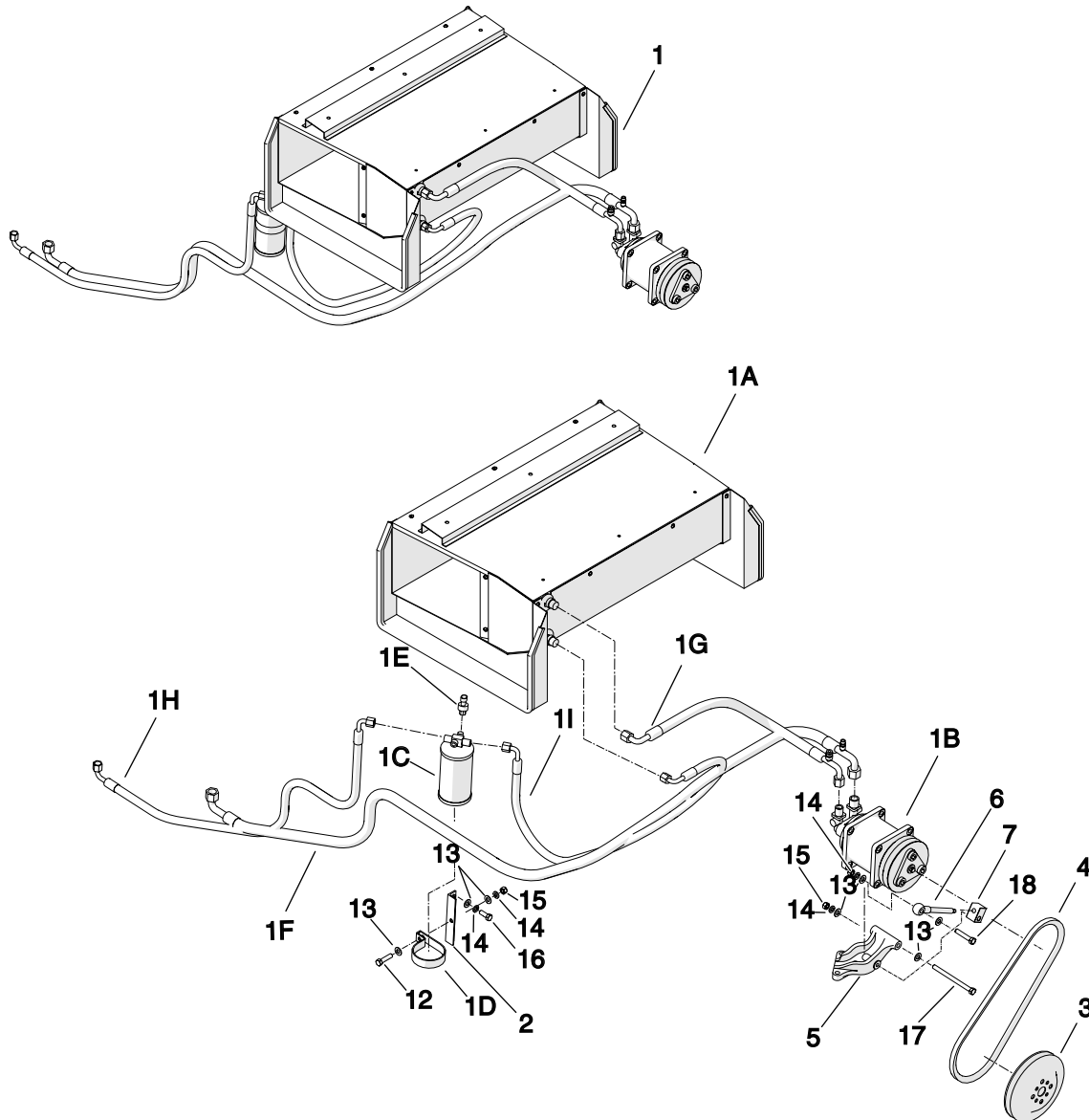


Figure 7-82.

Air Conditioner Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12754682	1	A/C Unit Kit- Compressor/Condenser	
1A	12755075	1	Condenser Assembly	
1B	12755061	1	Compressor, Bolt On Cab	
1C	12755062	1	Receiver Dryer, Cond Assembly	
1D	12755067	1	Receiver Dryer Clamp, Cond Assembly	
1E	12755077	1	Binary Switch, Cond. Assembly	
1F	12755074	1	#10 A/C Hose Assembly, Compressor To Evaporator, 80"	
1G	12755073	1	#8 A/C Hose Assembly, Condenser To Compressor	
1H	12755072	1	#6 A/C Hose Assembly, Evaporator To Dryer, 48"	
1I	12755071	1	#6 A/C Hose Assembly, Dryer To Condenser, 40"	
2	12755203	1	Angle, A/C, Drier Bracket	
3	112783	1	Pulley, A/C - Cummins Engine	
4	102976	1	Belt - A/C - Cummins	
5	120226	1	Support, A/C Compressor Mount	
6	120225	1	Adjusting Link, A/C Compressor Mount	
7	120224	1	End, Adjusting Link, A/C Compressor Mount	
12	100-6-16-24-5	1	CSHH, 3/8-16 X 1.5, GR5	
13	300-6	8	Washer, Flat, SAE, 3/8	
14	118-3	5	Washer, Lock, 3/8	
15	200-6-16-5	3	NUT, HEX, 3/8-16, GR5	
16	100-6-16-16-5F	2	CSHH, 3/8-16 X 1, GR5, FT	
17	100-6-16-80-5	1	CSHH, 3/8-16 X 5, GR5	
18	100-6-16-32-5	1	CSHH, 3/8-16 X 2, GR5	

A/C EVAPORATOR ASSEMBLY CAB UNIT (OPTION)

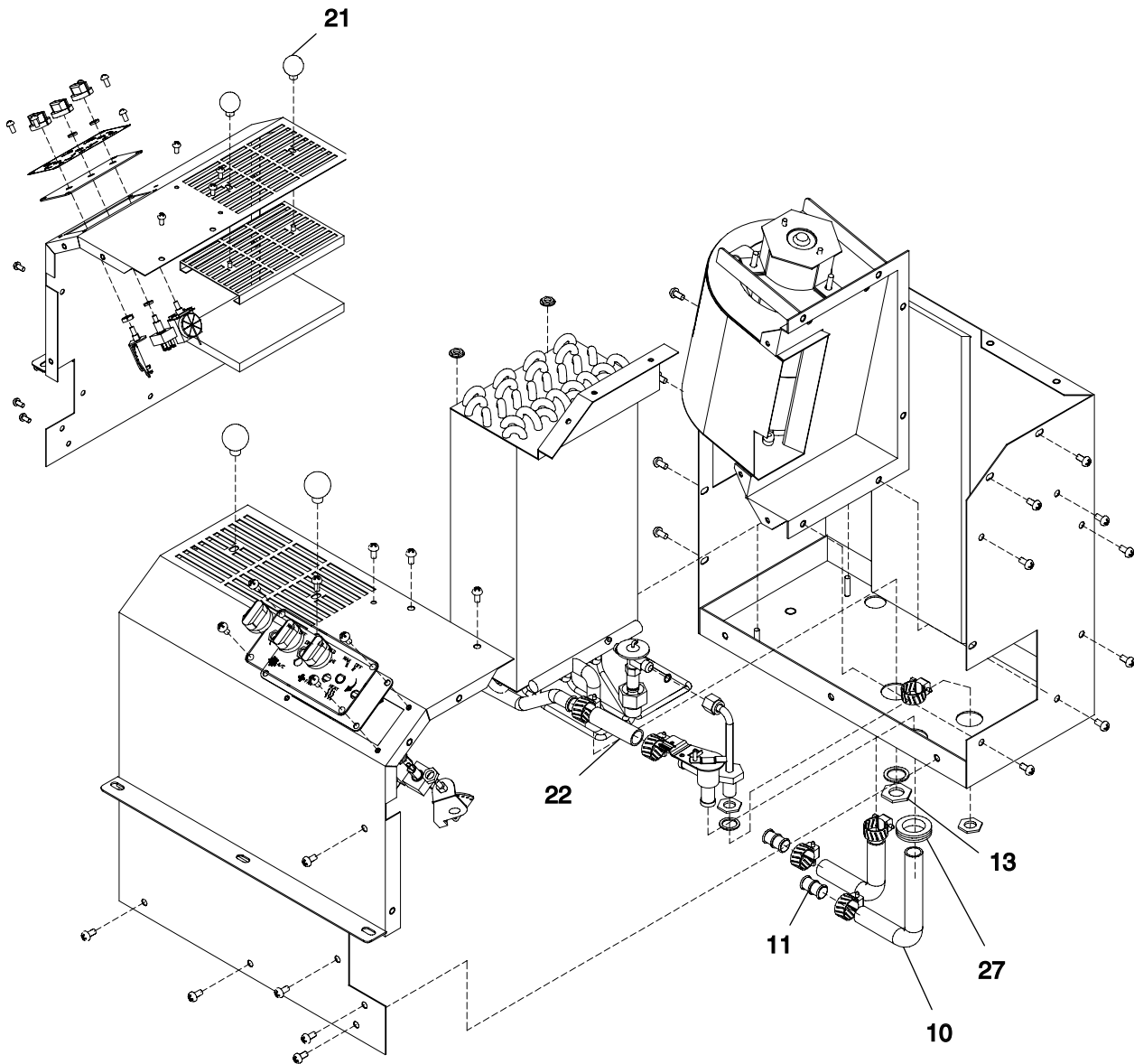


Figure 7-83.

A/C Evaporator Assembly Cab Unit Parts List

Item No.	Part Number	Qty.	Description	Remarks
10	12755500	2	Formed Hose	
11	12755499	1	Coupler	
13	12755497	1	Gasket	
21	36745-20	2	Knob	
22	12755488	1	Cut Hose	
27	12755065	1	Grommet	

A/C CONDENSOR ASSEMBLY (OPTION)

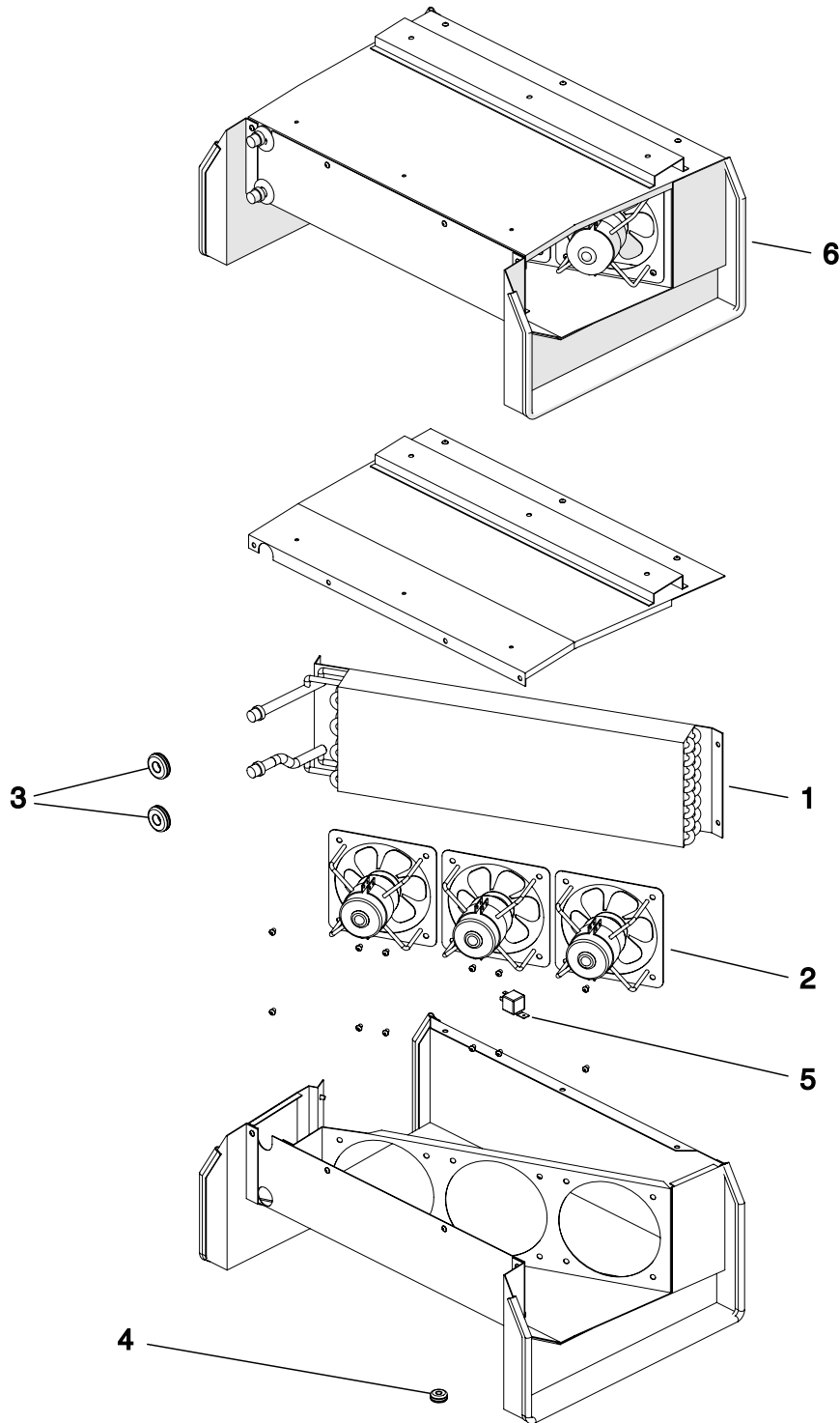


Figure 7-84.

A/C Condensor Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	12755063	1	A/C Condenser Coil, Bolt On Cab	
2	12755075-01	3	Assembly, Fan, Condenser	
3	12755065	2	Grommet	
4	12755064	1	Grommet	
5	12755078	1	Relay, A/C Condenser Assembly	
6	12755075	1	Condenser Assembly	

DEAD ENGINE STEERING ASSEMBLY (OPTION)

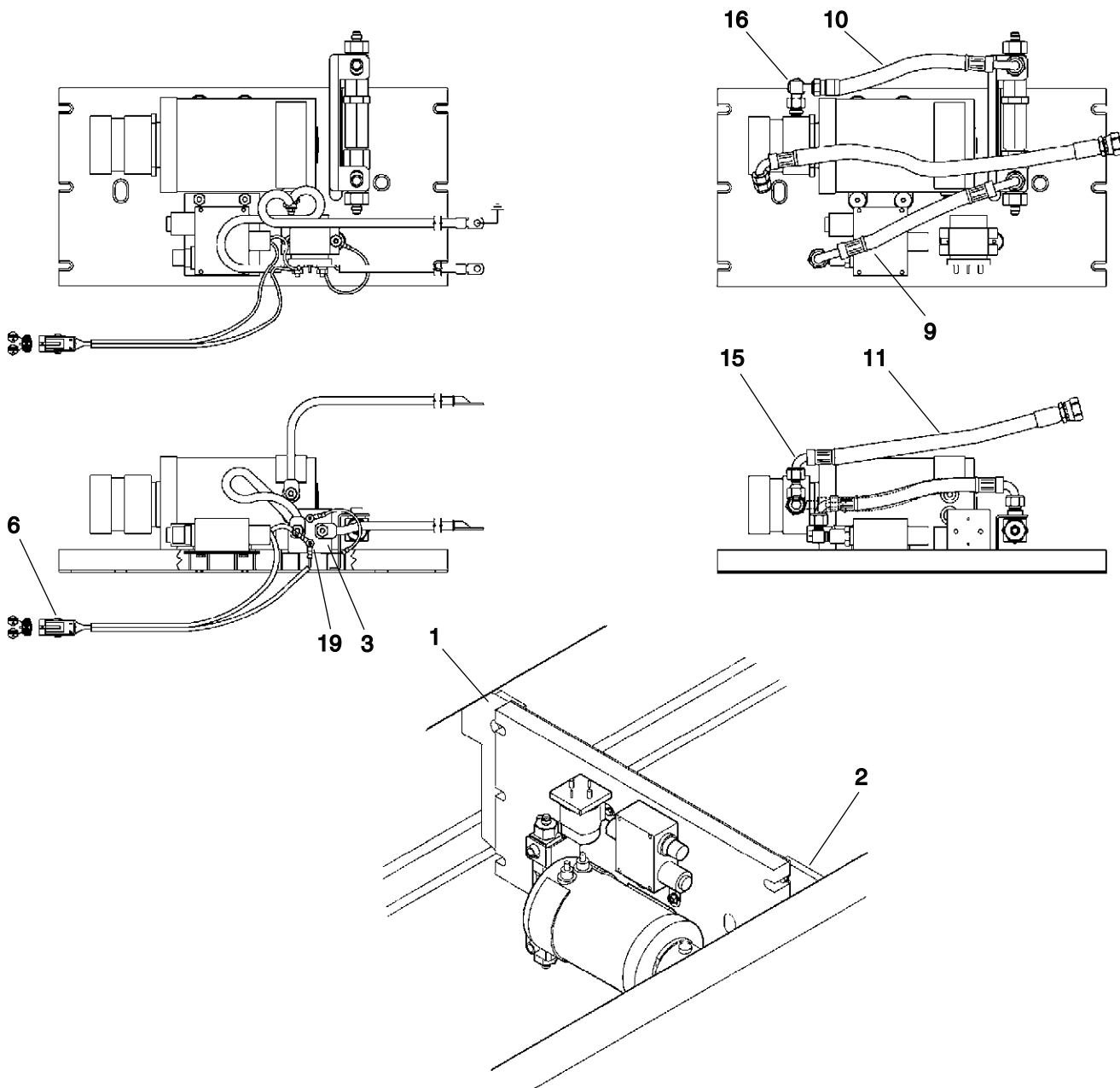


Figure 7-85.

Dead Engine Steering Assembly Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	109157	1	Plate, Battery Compartment	
2	109155	1	Plate, Brake Sound - Machined	
3	54389	1	Solenoid - Supplemental	
6	12756122	1	Harness, Cable, Secondary	
9	116343x10.75	1	Hose Assembly	
10	116343x9	1	Hose Assembly	
11	116344x19.5	1	Hose Assembly	
15	112A-08	1	Swivel Adapter 45 DEG - #8 MJIC x #8 FJIC	
16	112B-08	1	Adapter 90 Deg., #8 Female To #8	
19	130B-03	4	Terminal, #10 Ring, 16-14 AWG	
Ref	12757266	1	Inst., Secondary Steering	
Ref	12757267	1	Option, Secondary Steering	

AWD DETAIL GROUP (OPTION)

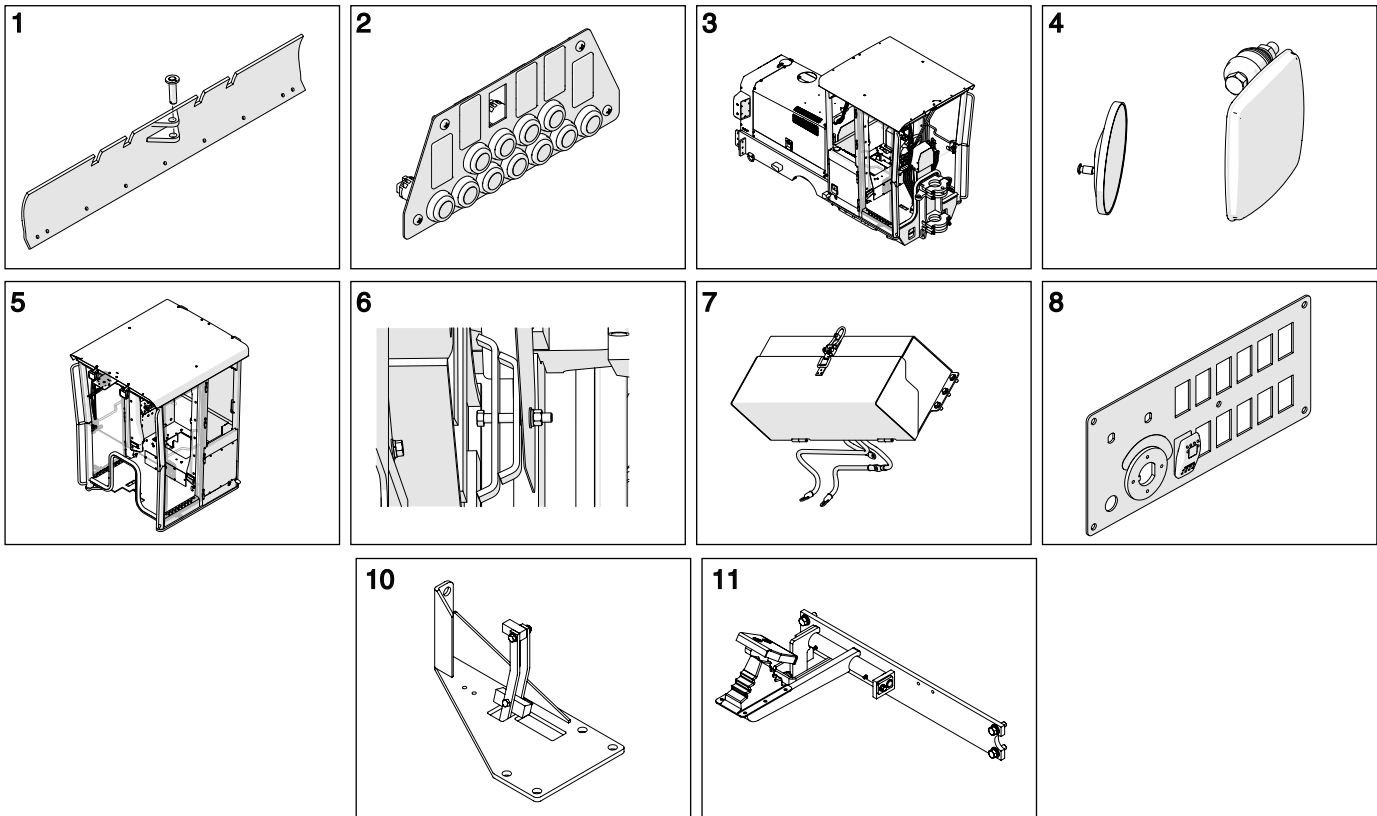


Figure 7-86.

AWD Detail Group Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	115565	1	Installation - Tow Pin	Fig. 7-76
2	1009006	1	Group, Indicator Lights, 695	Fig. 7-43
4	12757323	1	Inst., Cab Headlamps, Volvo Sty.	Fig. 7-25
5	1008995	1	Assembly, Exterior Lights, 695 INST,	Fig. 7-44
6	12756402	1	Hose Clamps, G86 Installation, C6X-	Fig. 7-87
7	122773	1	C8X Battery INST., AWD Electrical	Fig. 7-45
8	12757318	1	Assembly, Shifter Base	Fig. 7-88
10	1010628	1	Install, Brake Pedal Assembly - Right	Fig. 7-47
11	1014907	1	Group, Decals, 695	Fig. 7-46
Ref	1009030	1		(See the "Replacement Parts List" on page 7-4)

AWD HOSE CLAMP INSTALLATION (OPTION)

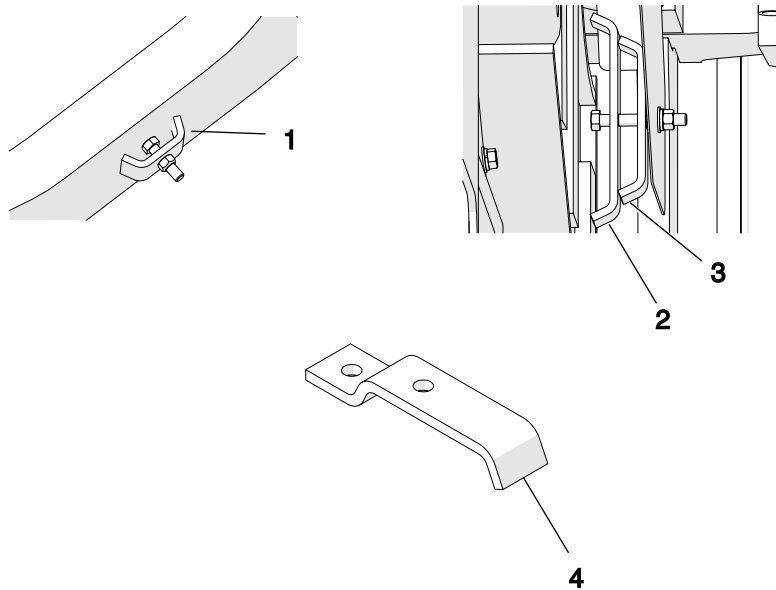


Figure 7-87.

AWD Hose Clamp Installation Parts List

Item No.	Part Number	Qty.	Description	Remarks
1	100210	1	Hold Down-2 Hose	
2	110424	1	Bar, 8 Hose Hold Down	
3	111544	1	Bar, 6 Hose Hold Down	
4	115982	1	Bar, 4 Hose Hold Down, AWD	

ALPHABETICAL PARTS INDEX

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
#10 A/C Hose Assembly, Compressor To Evaporator, 80"	12755074	7-82	1F
#28 Hose Clamp	22B-28	7-59	31
#6 A/C Hose Assembly, Dryer To Condenser, 40"	12755071	7-82	1I
#6 A/C Hose Assembly, Evaporator To Dryer, 48"	12755072	7-82	1H
#8 A/C Hose Assembly, Condenser To Compressor	12755073	7-82	1G
1/2 - 13 All Thread - 2 Inch Long	56A-0816ZI	7-35	30
1/2-13 X 3/4 Unc Serr Flange Bolt	114625	7-28	6
2404 Male Connector	Ref	7-59	34
2-Speed Shift Lever Assembly, 7" Handle	12754810	7-34	4
3/8 - 16 X 1 1/2 SERR Flange Bolt	116228	7-28	1
45-Degree Elbow, Rubber, Tier-3	120517	7-54	5
5/8 Insulated Clamp 13/32 Hole	112374	7-49	6
5000 Hexagon Pipe Coupling	Ref	7-59	33
7/8-14 Locknut	95383832	7-5	3A
7' Front Blade-Formed	112797	7-76	1
90 Degree Elbow, Rubber, Tier-3 Intake	120516	7-54	8
A/C Condenser Coil, Bolt On Cab	12755063	7-84	1
A/C Unit Kit- Compressor/Condenser	12754682	7-82	1
Access Cover, Pedestal, Transmission Controls	12757870	7-34	5
Accumulator, 60 CI, Brake Sys.	1010390	7-73, 7-65, 7-61	Ref, 7, Ref
Adapter #10 O-RING TO #8 JIC	111E-0810	7-75	21
Adapter 90 Deg., #8 Female To #8	112B-08	7-85	16
Adapter, Cap, Nut, -16	304-C-16	7-50	19
Adapter, Connector, -8 JIC / -8	8/8/2404	7-40	5
Adapter, Cross, -16 JIC/-16 JIC/-16 JIC/-16 JIC	2650-16-16-16-16	7-50	20
Adapter, Elbow, 90 Deg, -6 JIC / -8	6/8/2501	7-40	3
Adapter, Fitting, 1/4-18 Pipe To 12 mm Thread	119A-0412	7-49	14
Adapter, Male Pipe/Swivel, -6 NPTF	6/6/6505	7-40	6
Adapter, Reducer, -16 JIC / -8 JIC	2406-16-8	7-50	22
Adapter, Run Tee, Swivel, -16 JIC/-16 JIC/-16 JIC	6602-16-16-16	7-50	21
Adapter, Run Tee, Swivel, -6 JIC / -6	6602-6-6-6	7-40	4
Adapter, Straight, 06 MJIC To 12 mm O-Ring Port	119C-0612	7-49	22
Adapter Straight - #12 male JIC x #12 male O-RING t	111E-1212	7-75	20
Adapter, Tee #8 JIC	112C-08	7-75	11
Adapter, Tee, 1/8-27 Female, Female, Male	115V-02	7-57	2
Adapter, Union, Double Swivel, -16 JIC / -16 JIC	6565-16-16	7-50	18
Adjusting Link, A/C Compressor Mount	120225	7-82	6

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Air Cleaner Assembly, QSB4.5	988962	7-54	9
Alarm, Back-Up, Warning Unit	11850145	7-42	7B
Alarm-Brake System	57224	7-42	5
Alignment Block Weldment	100297SRV	7-9	2
Alternator, Engine, Cummins QSB4.5	1010325-03	7-57	22
Angle, A/C, Drier Bracket	12755203	7-82	2
Antenna Mounting Bracket	117548	7-27	1
Antifreeze, Green, Gallon	109668	7-53	Ref
Arm, Driver, Wiper, WWJ, 68/85/108	12756797	7-31	4
Arm, Wiper, 24 In. Pantograph, Blk.	12755023	7-31	8
Articulation Shaft Weldment	115506	7-2	16
Assembly, 11 Ft. Moldboard	117699SRV	7-11	Ref
Assembly, 12 Ft. Moldboard, "C"	117700SRV	7-11	Ref
Assembly, 7 Ft. Dozer	12758165	7-77	Ref
Assembly, 8 Ft. Dozer	12758166	7-77	Ref
Assembly, Air Intake, 695	1008994	7-53, 7-54	2, Ref
Assembly, AWD Axle, C-Series Grader	117186	7-71	Ref
Assembly, Cab, G700	1009003	7-20, 7-21	1, Ref
Assembly, Cloth Seat	1009005	7-20, 7-26	6, Ref
Assembly, Cummins Engine, G700	1008981	7-52, 7-53	1, Ref
Assembly, Cylinder, Blade Lift, Right	117259	7-8	Ref
Assembly, Exterior Lights, G700	1008995	7-41, 7-44, 7-45, 7-86	13, 23, 23, 5
Assembly, Fan, Condenser	12755075-01	7-84	2
Assembly, Flow Divider, W/ Internal Relief Valve	117406	7-64	25B
Assembly, Frame, 695, With Dana Bogie	1010209	7-5	Ref
Assembly, Front Attachment W/ Lifting Arms	12758133	7-77	Ref
Assembly, Front Lift Mount And Linkage	121198	7-77	1
Assembly, Hydraulic Motor Guard	118270	7-51	Ref
Assembly, Moldboard Installation, 695	1008991	7-10	Ref
Assembly, Moldboard, 10 Ft. G700	1010131	7-10	6
Assembly, Scarifier Keeper, LH.	100532	7-78	9
Assembly, Scarifier Keeper, RH.	100531	7-78	10
Assembly, Shank & Tooth	102882	7-78	Ref
Assembly, Shifter Base	1010628	7-41, 7-86, 7-47	11, 10, 8
Assembly, Transmission Control Pedestal	12754808	7-33, 7-34	1, Ref
Assembly, Turntable, G700	1008980	7-9	Ref
AWD Valve Assembly	A.R.	7-73	Ref
Axle, Drive Assembly, Dana 150 Bogie	1009952	7-5, 7-62	3, 32
Ball Joint Husco Valve	78407	7-36	11

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Ball Joint Socket Assembly - Right-Hand Thread	101637	7-7, 7-8, 7-72	50, 43, 23
Ball Joint, Cut	100223	7-8	44
Ball Joint, Cut 5"	118503	7-8	49
Ball Joint, Cut, 4.0"	1011580	7-8	40
Ball Joint-1/4 In.	106517	7-74, 7-33, 7-69	2, 5, 4
Ball Valve - # 24 SAE O-Ring	117C-24	7-50	11
Ball, Drawbar Pull	130106	7-8	54
Ball, Large - Float Spool	116412	7-68	14
Band Clamp, Air Filter, Tier-3	120514	7-54	15
Bar, 4 Hose Hold Down, AWD	115982	7-87	4
Bar, 6 Hose Hold Down	111544	7-87	3
Bar, 8 Hose Hold Down	110424	7-87	2
Bar, Heat Exchange Cradle, Tier-3	120176	7-59	20
Bar, Side Baffle, Cooler, Tier-3	120188	7-59	4
Bar, Top Push Arm	117706	7-77	4
Bearing Cone Outer, Frt. Wheel Hub	100387	7-7	3
Bearing Cone, Inner, JLM104948	100384	7-7	8
Bearing Cup, King Pin, 25520	100769	7-7	46
Bearing Housing, Articulation	100229	7-2	14
Bearing, Art. Joint / Tandem	100235	7-2	13
Bearing, King Pin Shaft	100768	7-7	45
Bearing, Lift Cylinder, Trunnion	100221	7-8, 7-9, 7-10	9, 9, 24
Bearing, Trunnion	100240-CMG	7-1	18
Bell Crank Assembly, LH.	115741	7-36	37
Bell Crank Assembly, RH.	115742	7-36	36
Bellcrank Lever, Drilled	122885	7-36	27
Belt - A/C - Cummins	102976	7-82	4
Belt, Side-Step-C80A	115467	7-28	3
Belt-Seat-W/Non-Adjust 10" Tether	12755010	7-30	3
Binary Switch, Cond. Assembly	12755077	7-82	1E
Blade, Wiper, 28" Flex, Blk.	12755024	7-31	9
Blind Rivet 3/16 #68	76B-068	7-50	48
Block Heater, Thread In.	95288	7-60	1
Block, Cable End	113117	7-47	4

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
BLT 0.38-16 X 4.50, HEX, 304SS	12755529	7-16, 7-17	8, 11
Bolt In Flange, Rear, Frt. Axle	12757682	7-6	11
Bolt On Canopy, FOPS/ROPS Cab	12757545	7-12	1
Bottom Step Belt Mtg. Plate	115465	7-28	2
Bracket - Step - Top - Left Hand	12754509	7-28	5
Bracket, Articulation Joint	12754561	7-3, 7-51, 7-2	9, 9, 3
Bracket, Articulation Lock Clamp	12754560	7-3, 7-51, 7-2	10, 10, 2
Bracket, Engine Mount, Front	1010196	7-56	2
Bracket, Formed, Equatrac Valve	12754717	7-75	13
Bracket, Fuel Water Separator	122438	7-49	19
Bracket, Oil Drain Bulkhead	1010655	7-5	Ref
Bracket, Plunger Switch High	1010656	7-47	10
Bracket, TPS, Remote	12756436	7-39	7
Bracket-Step-Top-Right Hand	12754508	7-28	9
Brake Pedal Pad-Right	116110SRV	7-68	12
Brake Pedal Weldments, Assembly	12755907	7-46	Ref
Brass Hose Barb, 5/16 I.D. Hose	121C-0504	7-49	11
BRG. Race ART. Joint	100236	7-2	17
Brkt., SMV Sign, With Rear	12755837	7-25	10
Bronze Bushing, King Pin	100773	7-7	11
Bumper, Door Side Panel	52811-CMG	7-50	49
Bumper, Rubber, 2" Cone EPDN	12755044	7-14, 7-13	6, 4
Burnout , Rear Scarfier Shank Plate	Ref	7-79	17
Bushing Housing, Bellcrank	122884	7-36	26
Bushing, 1.25 ID X 1.50 OD X 1.00 Lg.	103127	7-77	3
Bushing, Bellcrank	122886	7-36	25
Bushing, Bot King Pin	107393	7-7	10
Bushing, BRZ-1 X 0.75 X 0.75	115420	7-36	3
Bushing, FWD Kingpin, Brass	100364	7-72	37
Bushing-24MO To 20FO	111R-2420	7-50	14
Bushing-Control Lever	69589	7-36	31
Cab Body	Ref	7-15	10
Cab Isolation Mount - Two Piece	12754576	7-21, 2-29	2, 2
Cable Assembly, Hold Open Release	12756619	7-14	10
Cable, 2-Speed Shifter 60 In.	112813	7-34	6
Cable, Hyd Pump 88 In.	112815	7-34	7
Cap Hex, Dome 3/8 BLK	12755035	7-17, 7-16	12, 11
Cap Screw-Soc. Hd. Husco End Cap	112265	7-68	6
Cap Screw-Soc. Hd., Husco Valve	116411	7-68	13

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Cap, 84 Up, Front Hub - Began 84	100390	7-7	6
CAP, ART. BRG. HSG., C60-86	100232	7-2	10
Cap, Fuel Tank, Lockable	140030FL	7-49	27
Cap, King Pin HSG, Machined	107380	7-7	44
Cap, Mirror Bracket Clamp	12756524	7-25	2
Check Valve, 3/8 MP - 1/4 MP	12757895	7-59	32
Circle Turn Cushion Valve	122084	7-62	10B
Circle Turn Cushion Valve, Installation Kit	115998	7-61, 7-73, & 7-62	Ref
Circle/Arms Assembly - C80, Tilt	117267	7-9	1
Circle/Arms Weldment, C80 - C Series - Stage-1	117268	7-10	10
Clamp, Hose #10	22B-10	7-24	4
Clamp, Hose, #36	33050	7-49, 7-59	23, 28
Clamp, Insulated Band, 2"	36894	7-57	9
Clamp, Muffler, 3-1/4 Dia. - Cummins Engine	115521	7-58	2
Clevis, Control Cable, #10-32 UNF-2B, Brass	84162	7-39	3
Complete Circle Turn Hydraulic	113760SRV	7-8, 7-9	36
Compressor, Bolt On Cab	12755061	7-82, 7-57	1B, 15
Condenser Assembly	12755075	7-82	1A
Conn. Nut, 1 1/4-12 X 2 In Hi-Nut	100222	7-7, 7-8, 7-9	20, 39, 39
Connector, Straight Hose, Charge Air, 3" ID Silicone	119524	7-59	26
Connector, Straight Thread #8	111E-0808	7-72, 7-75	36, 9
Connector-Str.-24MO To 24MJ	111E-2424	7-50	10
Control Assembly, Park Brake, With 150 Bogie	1010529	7-32	5
Control Assembly, Park Brake, With 150 Bogie	1010529	7-40	Ref
Control Knob- Wheel Lean	73589	7-35	3
Control Knob-Articulation	73587	7-35	2
Control Knob-Blade Lift	73590	7-35	4
Control Knob-Blade Tilt	73591	7-35	8
Control Knob-Circle Shift	73594	7-35	5
Control Knob-Circle Turn	73592	7-35	7
Control Knob-Scarifier	73588	7-35	6
Control Knob-Slide Shift	73593	7-35	9
Control Knob-V-Plow	73595	7-35	10
Control Lever, T-Handle	1009885	7-34	3
Control Rod Lower 1 And 10 Includes 78407 Rod End & Nut	78408	7-36	18

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Control Rod-Lower- 5 And 6 Includes 78407 Rod End & Nut	78412	7-36	20
Control Rod-Lower-2 And 9 Includes 78407 Rod End & Nut	78409	7-36	12
Control Rod-Lower-3 And 8 Includes 78407 Rod End & Nut	78410	7-36	13
Control Rod-Lower-4 And 7 Includes 78407 Rod End & Nut	78411	7-36	19
Control Rod-Upper-1 And 10 Includes 96144 Rod End & Nut	96134	7-36	14
Control Rod-Upper-2 And 9 Includes 96144 Rod End & Nut	96135	7-36	15
Control Rod-Upper-3 And 8 Includes 96144 Rod End & Nut	96136	7-36	21
Control Rod-Upper-4 And 7 Includes 96144 Rod End & Nut	96137	7-36	22
Control Rod-Upper-5 And 6 Includes 96144 Rod End & Nut	96138	7-36	23
Control Valve Assembly, 10-Spool	120141	7-67	2
Control Valve Spring - Blue- 25.5 In. LB Rate - Husco	113785	7-68	8
Cooling Package, AKG - Tier-3	120765	7-59	1
Cord	3905113	7-60	2
Cotter Pin	95923983	7-45	22
Cotter Pin	13A-0212ZI	7-39	12
Cotter Pin - Front Scarfier Retainer	13L-02ZI	7-78	16
Cotter Pin, 1/8 X 2 Plated	13A-0432ZI	7-7, 7-9, 7-8, 7-72	23, 13, 13, 21
Cotter Pin, 5/32 X 3 Plated	13A-0548ZI	7-1	14
Coupler	12755499	7-83	11
Cover, Boom-Back-LH.	117641	7-51	11
Cover, Boom-Back-RH.	117642	7-51	7
Cover, Control Console, Trans.	1009921	7-34	2
Cover-Vandalism-Side Console-Welded	12756252	7-80	2
Cross Brace, Cab, Laser Cut	12754953	7-21	3
CSHH, 0.375-16 X 1.25, GR5	102-206-1A	7-2, 7-46	8, 10
CSHH, 0.500-13 X 1.50, GR5	102-407-1A	7-10	21
CSHH, 1/2-13 X 0.75, GR5, FT	100-8-13-12-5F	7-50	42
CSHH, 1/2-13 X 1, GR8, FT	100-8-13-16-8F	7-79, 7-77	23, 8
CSHH, 1/2-13 X 1.25, GR5, FT	100-8-13-20-5F	7-51, 7-59, 7-79, 7-10	29, 23, 11, 18
CSHH, 1/2-13 X 1.5, GR5	100-8-13-24-5	7-7, 7-35, 7-46, 7-69, 7-74	16, 43, 13, 7, 5
CSHH, 1/2-13 X 1.5, GR8	100-8-13-24-8	7-69	7
CSHH, 1/2-13 X 1.5, GR8, FT	100-8-13-24-8F	7-10	12
CSHH, 1/2-13 X 1.75, GR8	100-8-13-28-8	7-57, 7-63, 7-74	25, 22D, 14
CSHH, 1/2-13 X 3, GR5	100-8-13-48-5	7-1, 7-9, 7-59	23, 7, 19
CSHH, 1/2-13 X 3.25, GR5	100-8-13-52-5	7-7	9
CSHH, 1/2-18 X 0.625, GR5, FT	100-5-18-10-5F	7-50	40

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
CSHH, 1/2-18 X 0.875, GR5, FT	100-5-18-14-5F	7-50	39
CSHH, 1/4-20 X 0.5, GR5, FT	100-4-20-8-5F	7-39	15
CSHH, 1/4-20 X 0.75, GR5, FT	100-4-20-12-5F	7-1, 7-7, 7-25, 7-39, 7-49, 7-53, 7-72	11, 34, 12, 9, 32, 8, 19
CSHH, 1/4-20 X 1, GR5	100-4-20-16-5	7-7	42
CSHH, 1/4-20 X 1, GR5, FT	100-4-20-16-5F	7-35, 7-39, 7-42; 7-44 & 7-45	40, 8, 7D; 19
CSHH, 1/4-20 X 1.25, GR5	100-4-20-20-5	7-47	11
CSHH, 1/4-20 X 2.25, GR5	100-4-20-36-5	7-65	18
CSHH, 1/4-20 X 3.5, GR5	100-4-20-56-5	7-34	8
CSHH, 1/4-20 X 3.75, GR5	100-4-20-60-5	7-65	19
CSHH, 1-8 X 4, GR8, FT.	100-16-8-64-8F	7-9	6
CSHH, 3/4-10 X 1, GR8, FT	100-12-10-16-8F	7-79	9
CSHH, 3/4-10 X 2.250, GR8	100-12-10-36-8	7-77	17
CSHH, 3/4-10 X 3, GR8, FT	100-12-10-48-8F	7-78	3
CSHH, 3/4-10 X 3.25, GR8	100-12-10-52-8	7-79	1
CSHH, 3/4-10 X 3.25, GR8	100-12-10-36-8	7-79	6
CSHH, 3/8-16 X 0.75, FT	102-6-16-12-F	7-55	5
CSHH, 3/8-16 X 0.75, GR5, FT	100-6-16-12-5F	7-36, 7-50, 7-51, 7-54, 7-59, 7-66, 7-77	43, 54, 16, 18, 17, 7, 20
CSHH, 3/8-16 X 1, GR5, FT	100-6-16-16-5F	7-4, 7-10, 7-25, 7-44, 7-45, 7-64, 7-79, 7-82, 7-27	6, 3, 15, 18, 18, 25D, 28, 16, 5
CSHH, 3/8-16 X 1.25, GR5	100-6-16-20-5	7-65	14
CSHH, 3/8-16 X 1.25, GR5, FT	100-6-16-20-5F	7-59	16
CSHH, 3/8-16 X 1.375, GR5, FT	100-6-16-22-5F	7-49	7
CSHH, 3/8-16 X 1.5, GR5	100-6-16-24-5	7-82	12
CSHH, 3/8-16 X 1.5, GR5, FT	100-6-16-24-5F	7-36, 7-38	52, 4
CSHH, 3/8-16 X 1.75, GR5	100-6-16-28-5	7-25	5
CSHH, 3/8-16 X 2, GR5	100-6-16-32-5	7-82	18
CSHH, 3/8-16 X 5, GR5	100-6-16-80-5	7-82	17

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
CSHH, 5/16-18 X 0.5, GR5, FT	100-5-18-8-5F	7-36	49
CSHH, 5/16-18 X 0.75, GR5, FT	100-5-18-12-5F	7-21, 7-44, 7-45, 7-50, 7-51, 7-69, 7-74	5, 20, 20, 2, 19, 8, 6
CSHH, 5/16-18 X 1, GR5	100-5-18-16-5	7-46	7
CSHH, 5/16-18 X 1, GR5, FT	100-5-18-16-5F	7-35, 7-36, 7-59, 7-64, 7-65, 7-40	46, 38, 7, 22, 16, 10
CSHH, 5/16-18 X 1.125, GR5	100-5-18-18-5	7-50	31
CSHH, 5/16-18 X 1.25, GR5, FT	100-5-18-20-5F	7-26, 7-30	5, 5
CSHH, 5/16-18 X 1.5, GR5	100-5-18-24-5	7-81	3
CSHH, 5/16-18 X 1.75, GR5	100-5-18-28-5	7-35, 7-47	34, 6
CSHH, 5/16-18 X 2, GR5	100-5-18-32-5	7-35, 7-40, 7-62	36, 9, 10D
CSHH, 5/16-18 X 2.75, GR5	100-5-18-44-5	7-64	25C
CSHH, 5/8-11 X 1.5, GR8, FT	100-10-11-24-8F	7-72	11
CSHH, 5/8-11 X 1.75, GR8, FT	100-10-11-28-8F	7-72	12
CSHH, 5/8-11 X 4.5, GR8	100-10-11-72-8	7-56	3
CSHH, 7/16-14 X 1, GR8, FT	100-7-14-16-8F	7-6, 7-8	10, 58
CSHH, 7/16-14 X 3, GR8, FT	100-7-14-48-8F	7-6	9
CSHH, 7/8-14 X 12, GR8	100-14-14-192-8	7-5	3B
CSHH, 7/8-9 X 5, GR8	100-14-9-80-8	7-21, 2-29	4, 4
CSHH, 7/8-9 X 6.5, GR8	100-14-9-104-8	7-2, 7-3, 7-51	6, 11, 12A
CSHH, M10 X 1.5 X 20, C8.8, FT	100-M10-1.5-20-8.8F	7-57	12
CSHH, M10 X 1.5 X 35, C8.8, FT	100-M10-1.5-35-8.8F	7-55, 7-69	4, 14
CSHH, M10 X 1.5 X 70, C8.8, FT	100-M10-1.5-70-8.8F	7-57	11
CSHH, M12 X 1.75 X 35, C8.8, FT	100-M12-1.75-35-8.8F	7-56	8
CSHH, M14 X 2 X 30, C8.8, FT	100-M14-2-30-8.8F	7-47	15
CSHH, M14 X 2.0 X 40, C8.8, FT	102-M14-2.0-40-8.8F	7-62	20
CSHH, 1/2-13 X 3, GR5	100-8-13-48-5	7-8	48
CSSBH, #10-24 X 0.5	117-#10-24-8	7-34, 7-37, 7-39	12, 4, 16
CSSBH, 1/4-20 X 0.5	117-4-20-8	7-42	2G
CSSH, 3/8-16 X 1, FT	102-6-16-16-F	7-25	9
CSHH, Hvy., 1-8 X 5.25, GR5, FT	101-8-13-22-8F	7-77	25
CSSH, M12 X 1.75 X 35, C8.8, FT	102-M12-1.75-35-8.8F	7-49	29
Cup Holder, 3.0, 2.875 MTG, HLE, Blk.	12755046	7-16, 7-18	12, 26
Cut Hose	12755488	7-83	22
Cut Off Valve, Heater Hot Water, 5/8" Hose	108612	7-24	1
Cutting Edge 60 In.	100328	7-11	3

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Cutting Edge, 7', Offset Punched	100521	7-78	6
Cutting Edge, 72 In. (6 Ft.)	100335	7-11	2
Cutting Edge, 8', Offset Punched	108581	7-78	6
Cyl., Hyd., 2.50 X 10.50 X 1.50 Rod	1010150	7-7	22
Cyl., Hyd., 2.50 X 24.00 X 1.50 Rod	1010142	7-9, 7-8	37, 37
Cyl., Hyd., 3.00X36.00X1.50 Rod	1010141	7-10	1
Cyl., Hyd., 2.50 X 15.00 X 1.50 Rod	1010139	7-72	27
Cyl., Hyd., 3.00 X 14.00 X 1.50 Rod	1010145	7-79	20
Cyl., Hyd., 3.00 X 17.00 X 1.50 Rod	1010143	7-8	42
Cyl., Hyd., 3.00 X 28.00 X 1.50 Rod	1010140	7-8	53
Cylinder, Hydraulic, 3.00 X 10.00 X 1.50 Rod	1010148	7-4	3
Cylinder, Hydraulic, 3.00 X 17.00 X 1.50 Rod, Front Blade	1010144	7-77	12
Cylinder, Hydraulic, 3.50 X 10.00 X 1.75 Rod	1010146	7-10	22
Cylinder, Hydraulic, 3.50 X 4.50 X 2.00 Rod	1010147	7-7, 7-72	39, 22
Decal, Oper, Work Lights, Front	12756911-01	7-42	2E
Decal, Test Ports	12756671	7-66	4
Domelight, 12V - Bolt On Cab - Push Button	12755030	7-18	21
Door	Ref	7-15	11
Door - LH.	120500	7-13	1
Door - RH.	120496SRV	7-13	5
Door Bumper	26019-CMG	7-35	27
Door Seal, P-Stem Bulb	12755801	7-13	2
Drawbar Weldment, C-Series	117263	7-9	22
Elbow, 45Deg., 2.25 R, Rubber	12757878	7-49	24
Element, Safety, Air Filter	988962-02	7-54	26
Element, Primary, Air Filter	988962-01	7-54	2
Enclosed ROPS / FOPS Canopy Cab	12754409	7-21, 7-44, 7-45, 7-70, 7-12	1, 24, 24, 9, 2
End Bit, Left, C Model	12757744	7-11	5
End Bit, Right, C Model	12757743	7-11	4
End, Adjusting Link, A/C Compressor Mount	120224	7-82	7
Engine Mount, Left, Tier-3 Turbo	120534	7-56	11
Engine Mount, Right, Tier-3 Turbo	120533	7-56	10
Engine Mount, Rubber Isolation, Two-Piece	113360	7-56	5
Extended Hand Lever, LH. Rear Side	12742623	7-36	30
Extended Hand Lever, Left Front Side	12742622	7-36	32
Extended Hand Lever, Right Back Side	12742625	7-36	35

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Extended Hand Lever, Right Front Side	12742624	7-36	34
Fan, Defroster-Service Mate-12V DC	105777	7-23	1
Filler Breather - Complete Assembly	110815	7-50	6
Filler Neck	100451	7-50	9
Filter Element- Return- 25 Micron - Series 6	116158	7-64	28
Filter Head-Return-20FO	115571	7-65	26
Filter Head-Suction-24FO	115569	7-64	27
Filter, Fuel, Engine, Cummins QSB4.5	1010325-05	7-57	16
Filter, Oil, Engine, Cummins QSB4.5	1010325-04	7-57	20
Filter-Suction-10 Micron-Long	115570	7-65	29
Fitt, 45 16MJ-16FJ	35014	7-50	17
Fitting, 3/8 FP - 1/4 FP, 90 Deg Elbow	12757984	7-49	12
Fitting, 90 Deg, 3/8 Mp - 3/8 HB	12757881	7-49	2
Fitting, Grease, Dana 150	1010669	7-5	Ref
Fitting, Lube, Str., 1/4"-28	140610	7-77	24
Fitting, Straight, 3/8 FP - 3/8 HB, Brass	12757643	7-49	4
Flange, Front Axle, C-Series	118406	7-6	5
Flat Washer 3/8 USS GR 5 Zinc	14C-06ZI	7-78	15
Floormat, Foam/Plastic	12755019	7-18, 7-19	1, 1
Formed Hose	12755500	7-83	10
Fr. Blade & Scarifier Assembly - 7 Ft.	12758138	7-78	Ref
Fr. Blade & Scarifier Assembly - 8 Ft.	12758140	7-78	Ref
Frame Wheel, Motor	100365	7-72	34
Front Attachment Mounting Plate Weldment	12758118	7-77	23
Front Axle Tube Frame	117187	7-7, 7-72	26, 2
Front Cover - Pedestal	115330	7-35	13
Front Wheel Hub Pkg.	12754890	7-7	4
Front Wheel Weldment, 12.25 X 19.5	100519	7-71	3C
Fuel Hose, C To L, 3/8 ID X 24.00	104715X24	7-49	1
Fuse, 10 AMP	969161	7-44 & 7-45	Ref
FUSE-10 AMP-TYPE ATO/ATC	115906	7-21	Ref
FUSE-25 AMP-TYPE ATO/ATC	115909	7-21	Ref
FUSE-40 AMP-TYPE ATO/ATC	115911	7-23	Ref
FUSE-5 AMP-TYPE ATO/ATC	115905	7-21	Ref
FWD Wheel Motor, Dyneer	100376	7-72	35
Gasket	12755497	7-83	13
Gasket - B-Pad	110362	7-63	22B
Gauge-4-in-1-Beede- Fog Resistant	12754521	7-35	16
Gauge-Tach/Hourmeter-Beede Fog Resistant- Note	12754596	7-35	17

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Glass Only - LH. Door	12754539	7-15	6
Glass-Door-RH.-Bolt On Cab	12754540	7-15	7
Grader Kit-Bud Lee-FWD	103444	7-72	6
Grease Fitting	2B-04	7-72	40
Grease Fitting 1/4-28 Straight	140610	7-77, 7-78, 7-79	9, 19, 26
Grease Fitting 1/8 NPT Straight	29A-02	7-7, 7-4, 7-72, 7-77, 7-78	41, 5, 13, 2, 8
Grommet	12755065	7-83, 7-84	27, 3
Grommet	12755064	7-84	4
Group, Cab, 695	1008982	7-20	Ref
Group, Canopy, 695	1008983	7-20	Ref
Group, Decals, 695	1014907	7-41 & 7-86	Ref
Group, Front Axle AWD, 695	1008999	7-70	1
Group, Hydraulic AWD, 695	1009029	7-70, 7-73, 7-74	2, 1, Ref
Group, Hydraulic, 695	1010407	7-61, 7-62 - 65	1, Ref
Group, Indicator Lights, 695	1009006	7-41, 7-43, 7-86	15, Ref, 2
Hairpin Cotter (Hitchpin) 1/16	13L-01	7-35	32
Hairpin Cotter (Hitchpin) 1/8	13L-02	7-39	4
Hand Throttle Bracket	12754749	7-39	14
Hand Throttle Cable, W/O Foot Pedal	112816	7-39	1
Hand Throttle Lever	84663	7-39	13
Handle, Outside W/ Key TRI MK	115491	7-13	9
Harness - AWD Equatrac Valve	12755902	7-88	Ref
Harness, Cable, Secondary	12756122	7-85	6
Head, Actuator-Gas Spring	115714	7-35	20
Headlight, Hanging, Left, 12V	12756769SRV	7-25	10
Headlight, Hanging, Right, 12V	12756770SRV	7-25	11
Headliner, Plastic	12755017	7-19	14
Heavy Washer, 1.06 X 2-1/8 X 1/4 - 84 Up	100388	7-7	5
Hex C/S 3/4 x 11-1/2 UNC GR 8 Plain	50A-1292ZI	7-6	12
Hex C/S 3/8 x 1-1/4 UNC GR5 Zinc	50A-0610ZI	7-75	17
Hex C/S 5/16 X 1 UNC GR 5 Zinc	50A-0508ZI	7-75	16
Hex Mach Screw, 10-24X1/2, Self	63A-1004ZI	7-50	7

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Hex Nut #10-32 UNF Zinc	33A-10	7-39	2
Hex Nut 5/16-18 UNC GR 5 Zinc	30A-05ZI	7-13	11
Hex Nut 7/8 UNF Slotted	31H-14	7-7, 7-9, 7-72, 7-8	24, 12, 20, 12
Hitch Pin, Modified For Scarifier	111055	7-78	13
Hold Down-2 Hose	100210	7-87	1
Hood, Formed, Tier-3	120495	7-50	41
Horn Button	112662	7-35, 7-38	14, 1
Horn, 12V, 110DB @ 13V & 2M, 415 HZ	11884428	7-42	6
Hose Assembly	115321x24	7-49	18
Hose Assembly	116343x10.75	7-85	9
Hose Assembly	116343x9	7-85	10
Hose Assembly	116344x19.5	7-85	11
Hose Clamp - 2.78 In. / 3.09 In.	22A-300	7-59	25
Hose Clamp 0.457 To 0.520	114979	7-49	13
Hose Clamp- 3.24 In. / 3.59 In. TB	22A-344	7-54	14
Hose Clamp- 4.50 In. / 4.28 In. TB	22A-450	7-54	12
Hose Clamp, Plastic-0.569-0.650	115263	7-49	5
Hose Cover, Front Boom	117640	7-51	6
Hose Cover, Front, C-Series	117669	7-51	5
Hose, Fuel Return 97 Turbo, Clear Yellow 5/16 ID	114968	7-49	10
Hose, Heater, 5/8 ID X 54" Lg.	122702	7-24	2
Hose, Heater, 5/8 ID X 60" Lg.	117281	7-24	3
Housing, Cast, Turn Signal	402213	7-37	1
Hyd. Hose	111740x31	7-59	35
Hyd. Return Plumbing, G80/86	12754645	7-61 & 7-73	Ref
Hyd. Suction Plumbing, G86	12754649	7-61 & 7-73	Ref
Hydraulic Oil Level/Temp Sight	100455	7-50	5
Hydraulic Steer/Brake Circuit, Twin Flow	115726	7-61, 7-64, & 7-73	Ref
Ignition Switch, With Key	122267	7-42	2C
INST, Hose Clamps, G86	12756402	7-86	6
INST., AWD Electrical	12757318	7-86	8
Inst., AWD Hydrostatic Pumps, NAFTA	12756278	7-73 & 7-74	Ref
Inst., Axle, Front, AWD, 2005	117237	7-71, 7-72	2, Ref
Inst., Cab Headlamps, Volvo Sty.	12757323	7-41, 7-86, 7-25	3, 4, Ref
Inst., Electrical, Engine, Tier-3	120803	7-57	Ref

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DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Inst., Gear Pump, Twin Flow	12756276	7-61 & 7-73	Ref
Inst., Hyd. Mtr. Grd.	12756497	7-48, 7-51	3, Ref
Inst., Sensor, Fuel Level	140040	7-49, 7-48	15, 6
Install Blade Slide Assembly - C80 - C Series	12756866	7-10	Ref
Install, 10 Spool Valve Assembly	115940	7-61 & 7-73; 7-64, 7-67	Ref; 6, 6
Install, 50 Deg. STD Leaning Front Axle	117238	7-6	Ref
Install, Brake Pedal Assembly	12754956	7-46, 7-41, 7-86	Ref, 12, 11
Install, Flow Divider With Internal Relief	117463	7-64	Ref
Install, Switch, Combination	12756838	7-35, 7-37	15, Ref
Installation - Tow Pin	115565	7-41, 7-86	14, 1
Installation Bolt on Canopy, FOPS/ROPS CAB	12757546	2-29	Ref
Installation- Right Side Mirrors	12755266	7-25, 7-20	Ref, 5
Installation, Back-Up Alarm	12757109	7-42	Ref
Installation, Backup Alarm, Switch	12757503	7-42	Ref
Installation, Bolt On Canopy	12757546	7-20	11
Installation, C6X-C8X Battery	122773	7-41, 7-86	5, 7
Installation, Centralized Test	12756669	7-61, 73 & 66; 7-63	Ref; 9
Installation, Cowling, Turbo	120192	7-48, 7-50	2, Ref
Installation, Cross Braces, Cab Insulation	12754934	7-21	Ref
Installation, Engine Mounts	120169	7-63, 7-53, 7-56	33, 4, Ref
Installation, Fuel Tank, C8XCT	120159	7-48, 7-49 & 7-51	1, Ref
Installation, Gear Pump, Twin Flow	12756276	7-63	Ref
Installation, Grille, Tier-3	120211	7-50	Ref
Installation, Hand Throttle	12756476	7-32, 7-39	4, Ref
Installation, Heat Exhchange, Tier-3	120172	7-53, 7-59	6, Ref
Installation, Hose Covers	12758174	7-48, 7-51	4, Ref
Installation, Hydraulic Tank	120198	7-50	Ref
Installation, Hydrostatic Pump, NAFTA, RWD	12756277	7-63, 7-69, 7-61	8, Ref, Ref
Installation, Muffler, Turbo	114397	7-53, 7-58	5, Ref
Installation, Pedestal, 10 Lever, Mid-Inlet	12756355	7-35, 7-32	Ref, 3

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Installation, Radiator Shroud, Turbo Tier-3	120193	7-50	Ref
Installation, Step Package, G-Series	12754552	7-20, 7-28	8, Ref
Installation, Switch Panel, Right Side	12756920	7-42	Ref
Installation, Throttle Position	12756453	7-39	Ref
Installation, Transmission Controls, RH. Bolt On Cab	12754809	7-32, 7-33	2, Ref
Installation-Deluxe Vinyl Seat	12755326	7-20, 7-30	10, Ref
Installation-Left Side Mirrors	12755265	7-25, 7-20	Ref, 4
Installation-LH Outside Mirror	12755188	7-25, 7-20	Ref, 13
Installation-RH Outside Mirror	12755187	7-25, 7-20	Ref, 14
Insulation, Cab (3)	12755116	7-22	4
Insulation, Cab (5)	12755118	7-22	5
Insulation, Cab (6)	12755119	7-22	6
Insulation, Cab Right Side	12755114	7-22	2
Insulation, Cab, Left Side	12755115	7-22	3
Insulation, Cab, Seat Deck	12755117	7-22	11
Insulation, Cowling Door Sill, Tier 3	120584	7-22	15
Insulation, Cowling Door, Left, Tier 3	120582	7-22	13
Insulation, Cowling Door, Right, Tier 3	120583	7-22	14
Insulation, Floor Board	12755139	7-22	1
Insulation, Frame, Front Center	12755135	7-22	9
Insulation, Frame, Left Side Front	12755137	7-22	8
Insulation, Frame, Right Side Front	12755136	7-22	7
Insulation, Hood, Front, Tier 3	120586	7-22	16
Insulation, Hood, Rear, Tier 3	120585	7-22	17
Insulation, Hydraulic Tank	12755300	7-22	18
Insulation, Inspection Door	12755138	7-22	12
Insulation, Seat Deck & Seat	12754972	7-22	10
Keeper-Blade Slide Bottom-12 In. Long	100327	7-10	8
Keeper-Blade Slide Top-52 In. - B Model	100329	7-10	7
King Pin, AWD	100363	7-72	29
Kit, Hose, AWD 695	1010986	7-73	Ref
Kit, Hose, Main, With 150 Bogie	1010487	7-61 & 7-73	Ref
Kit, Insulation, Enclosed Cab	120588	7-22, 7-21	Ref, 15
Kit-End Mechanism - Float	116406	7-68	A.R.
Kit-End Mechanism, Power Section	116407	7-68	Ref
Knob	36745-20	7-83	21
Lamp, Idec Indicator, Amber	1010443	7-43	6
Lamp, Idec Indicator, Blue	1010444	7-43	5
Lamp, Idec Indicator, Green	1010445	7-43	3

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Lamp, Idec Indicator, Red	1010442	7-43	4
Latch Assembly-W/Tumbler/Key/Black	65033	7-50	47
Latch Paddle, BLK, Cab Access door	12755793	7-17, 7-16	2, 2
Latch, Sngl. Stage, Sngl. Jaw	12755039	7-14	8
Latch, Sngl. Stage, Sngl. Rt.	12755041	7-14	9
Left Door Assembly W/ Glass & Handle	12755201	7-13	Ref
Left Wheel, Tire Assembly, W/ Dana	1010197L	7-5	1
Lever, TPS, Remote, Hand	12756438	7-39	5
Link, Connecting	12755048	7-31	5
Link, Shift, Left	1011008	7-47	2
Link, Shift, Right	1011009	7-47	3
Linkage Arm, Wide Ripper Box	12756516	7-79	29
Lock Nut, Hex, 0.38-16, All Metal Lock	36N-06ZI	7-16	10
Lock Washer, Art. Joint	100234	7-2	12
Lockwasher 3/8 USS GR 5 ZINC	14A-06ZI	7-75	19
Lockwasher 5/16 USS GR 5 ZINC	14A-05ZI	7-75	18
Louver, 4" Round W/2-1/2 HA	12755029	7-19	13
Louver, A/C, Lower Rect.	12755031	7-19	12
Louver, A/C, Small Round, Fits 2.04 Hole	12755032	7-19	11
Lug Nut, 5/8 X 18 NF HEX	100391	7-5, 7-7	14, 1
Lug Nut, FWD, Dyneer - 20 mm	100377	7-71, 7-72	5, 1
Manifold W/Relief, 3000 Brake	750602	7-61 & 73; 7-65	Ref; 4
Mirror- 7 1/2 " Round Convex	100857	7-25	4
Mirror Arm-Short	12755140	7-25	3
Mirror Mounting Clamp	12754776	7-25	1
MJ-MB Straight O-Ring Adapter (SAME AS 110913)	111E-0404	7-75	8
MJ-MP 90 DEGREES	110U-0606	7-49	20
Moldboard Slide Weldment, C80 - C Series	12756867SRV	7-10	9
Momentary Switch, Long Stem	113085	7-40, 7-46, 7-47	12, 5, 9
Motor, Hyd, 4.92 Cir., 2-Speed	1000569	7-61 & 73; 7-62	Ref; 1
Motor, Wiper, 12V	12755013	7-31	3
Mount Plate, Pivot Assembly	12755027	7-31	7
Mount, Lower-Gas Spring	116023	7-35	23
Mounting Plate, Indicator Lamp, Turbo	1010441	7-43	1

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Mtg Kit - Seat Belt Tethers	114237	7-30	4
Mtg. Pin-Cylinder-Ripper	116252	7-79	22
Mtg. Pin-Linkage Bar To Upright	116251	7-79	33
Mtg. Pin-Pull Link To Box	116249	7-79	32
Mtg. Pin-Pull Link To Upright	116250	7-79	31
Muffler Assembly, All, Nelson (Warehouse)	115284	7-58	1
Multi-Wing Fan, 25" Diam. 7 Blades	119609	7-57	8
Nut - M10 X 1	115878	7-35	22
Nut, #10-24 Hex, NK, G5, ES5CZ	12755548	7-14	7
Nut, 3/8-16, Spinlock, Zinc	36E-06ZI	7-28, 7-67	10, 5
Nut, Art. Joint	100233	7-2	11
Nut, Hex, 0.375-16	116-3	7-35, 7-49, 7-51, 7-62	33, 8B, 22, 13
Nut, Hex, 1/2-13, GR5	200-8-13-5	7-7	14
Nut, Hex, 1/4-20, GR5	200-4-20-5	7-42, 7-44, 7-45, 7-47	7F, 21, 21, 14
Nut, Hex, 1/4-28, GR5	200-4-28-5	7-74, 7-69	9, 11
Nut, Hex, 1-1/4-12, GR5	200-20-12-5	7-7, 7-72	40, 14
Nut, Hex, 1-1/4-7, GR5	200-20-7-5	7-10	17
Nut, Hex, 3/4-10, GR8	200-12-10-8	7-6, 7-78, 7-79	15, 5, 4
Nut, Hex, 3/8-16, GR5	200-6-16-5	7-25, 7-64, 7-66, 7-82	8, 25H, 6, 15
Nut, Hex, 5/16-18, GR5	200-5-18-5	7-26, 7-33, 7-44, 7-45, 7-50, 7-59, 7-64, 7-81	7, 4, 22, 22, 38, 8, 25G, 6
Nut, Hex, 5/8-11, GR5	200-10-11-5	7-78, 7-45	7B, 23
Nut, Hex, 5/8-11, GR8	200-10-11-8	7-11, 7-56	9, 7
Nut, Hex, 7/16-14, GR8	200-7-14-8	7-6	6
Nut, Hex, 7/8-9, GR8	200-14-9-8	7-21, 2-29	6, 6
Nut, Hex, Jam, 1/2-13, GR5	202-8-13-5	7-35	37
Nut, Hex, Jam, 1-1/4-12, GR5	202-20-12-5	7-7, 7-8, 7-9, 7-72	21, 38, 38, 24
Nut, Hex, Jam, 1-8, GR5	202-16-8-5	7-9	5
Nut, Hex, Jam, 3/4-10, GR5	202-12-10-5	7-36	44
Nut, Hex, Jam, 3/8-24, GR5	202-6-24-5	7-74	15
Nut, Hex, Jam, 5/16-18, GR5	202-5-18-5	7-40, 7-42	13, 13
Nut, Hex, Jam, 5/16-24, GR5	202-5-24-5	7-36	41
Nut, Hex, Mach, #10-24	209-#10-24	7-42	12
Nut, Hex, Slotted, 1-14, GR5	206-16-14-5	7-7	2

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Nut, Lock, Stover, 1/2-13, GR5	204-8-13-5	7-59	18
Nut, Lock, Stover, 1/4-20, GR5	204-4-20-5	7-34, 7-39	Ref, 10
Nut, Lock, Stover, 5/16-18, GR5	204-5-18-5	7-35, 7-39, 7-47	35, 11, 7
Nut, Lock, Stover, 5/8-11, GR5	204-10-11-5	7-36	47
Nut, Lock, Stover, 7/8-14, GR8	204-14-14-8	7-10	16
Nut, Spring Steel, Type, 1/4-20 UNC	12756283	7-35	28
Nut, Wheel, Flat, M22	983552	7-5	13
Nut-Steering Wheel-Fine Thread	100402	7-35, 7-38	12, 2
Nylon Bushing, Center	119744	7-7, 7-72	32, 4
Nylon Bushing, Wheel Lean	119673	7-72	42
Option - Defroster Fan Package	111939	7-20, 7-23, 7-70	2, Ref, 11
Option - Front Tow Hitch Pkg.	111927SRV	7-70, 7-76	3, Ref
Option - Vandalism Pkg - Bolt On Canopy Cab	12755171	7-20, 7-70	Ref, 12
Option, 7 Ft. Dozer With Float, G7	12758165	7-70, 7-78	4, Ref
Option, 8 Ft. Dozer With Float, G7	12758166	7-70, 7-78	4, Ref
Option, Accelerator Pedal	12756481	7-70	13
Option, Air Cond., 695	1009004	7-70	14
Option, Cab Heat, QSB4.5 Tier 3	120561	7-20, 7-24, 7-70	3, Ref, 10
Option, Installation, 7-Tooth	12756521	7-70, 7-79	5
Option, Secondary Steering	12757267	7-70	15
O-Ring, 12mm O-Ring Port Fitting	119R-12	7-49	21
O-Ring, Between Control Valve Sections	100472	7-68	27
O-Ring, Control Valve Spool	109659	7-68	1
O-Ring, Spacer On Float Section	116409	7-68	11
Outlet Band Clamps, Air Filter	120524	7-54	6
Pair of 4" Speakers	116812	7-27	7
Pedal Weldment - Gas Spring Actuator	115880SRV	7-35	21
Pedal, Throttle Control	12756450	7-81	1
PHMS, CROSS, #10-24 X 0.5, FT	122-#10-24-8F	7-43	7
Pin - For HD	12756510	7-79	19
Pin, Bogie Axle	1010060	7-5	Ref
Pin, Clevis, 0.375X1.125	850098	7-45	21
Pin, Clevis, 0.250 X 0.875	350080	7-35	31
Pin, Oscillation, C-Series	118405	7-6	13

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Pivot Pin, Pedestal, Lower Front Link	12754930	7-36	2
Pivot Pin	96710	7-36	24
Plastic Cover, Hand Throttle	12754753	7-39	17
Plate - Bottom Front Tow Hitch	112573	7-76	Ref
Plate, Backup/Neutral Start	12757958	7-69, 7-74	3, 1
Plate, Battery Compartment	109157	7-85	1
Plate, Brake Sound - Machined	109155	7-85	2
Plate, Bulkhead, Pedestal	12754741	7-35	18
Plate, Cable Anchor, Pump, Forward	12757033	7-69, 7-74	5, 3
Plate, Control Valve Mounting	12754722	7-67	3
Plate, Flow Divider Mounting Bracket	117405	7-64	25A
Plate, Left Radiator Bracket	120634	7-59	11
Plate, Mounting Bracket, Keeper	111058	7-78	12
Plate, Right Radiator Bracket	120635	7-59	10
Plate, RWD Bulkhead, Burnout	118714	7-51	30
Plate, Seat Mount	12754910	7-26, 7-30	1, 2
Plate, Shim, L.H.	1010990	7-11	6
Plate, Side Bottom	12757966-01	7-1	24
Plate, Side Cap	12757966-02	7-1, 7-8	21, 46
Plate, Spacer Wescon	1010095	7-34	Ref
Plate, Test Port Mounting Bracket	12756666	7-66	3
Plate, Trunnion Housing Cover	100243	7-1	13
Plow Bolt - 5/8 x 2 UNC	40F-1016	7-11	7
Plow Bolt, 0.625-11 X 2.00	130220	7-78	7C
Plug, FWD, Dyneer	100362	7-72	31
Plug, Rocker Switch Blank	115720	7-42, 7-43	2F, 2
Plug, SAE #4	988821-11	7-75	22
Poppet Spring, Husco Power Sec.	107982	7-68	29
Poppet, Husco Power Sec.	107981	7-68	28
Pre-cleaner	104711	7-54	22
Pulley, A/C - Cummins Engine	112783	7-82	3
Pump Drive Coupling/Flex Plate	113259	7-55	2
Pump Drive Install, C60-80 Turbo	114308	7-53, 7-55, 7-69	3, Ref, 12
Pump Hyd. NAFTA-RWD S90-75CC-B-Pad	12755992	7-69	1
Pump Hydraulic NAFTA-AWD-FR S90-55CC-B-Pad	12755993	7-74	11
Pump Hydraulic NAFTA-AWD-RR S90-75CC-C-Pad	12755994	7-74	10
Pump Lever, 90 Series, RWD	118813	7-69	2
Pump Lever, Modified, FWD	113706	7-74	16
Pump Mounting Plate	114521	7-55	1
Pump, Gear, C50-C76	100264	7-57	19

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DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Race, C-60; 70; 80 Trunnion	100241	7-1	19
Radiator Hose, Bottom, Tier-3	120457	7-59	27
Radiator Hose, Top, Tier-3	120460	7-59	30
Radio Cover Plate - Bolt On Cab	12755930	7-27	Ref
Radio Installation	12755928	7-27, 7-20	Ref, 7
Radio With Detachable Front, CD, And Remote Control	12755929	7-27	6
Rear Cover Plate, Pedastal	12756459	7-35	26
Rear Lift Crossbar/Manifold Weldment	12756823	7-79	10
Rear Ripper Shank/Tooth	110296	7-79	15
Rear Strobe Light Mounting Bracket	12754761	7-44, 7-45	1, 1
Receiver Dryer Clamp, Cond Assembly	12755067	7-82	1D
Receiver Dryer, Cond Assembly	12755062	7-82	1C
Reducer Insert, 5 ID, Tier-3 Intake	120518	7-54	10
Reducer, Rubber, 4 ID	120451	7-54	20
Relay, A/C Condenser Assembly	12755078	7-84	5
Relay, Cube, 12V, Unsealed	11305263	7-21, 7-44, & 7-45	Ref
Relief Grease Fitting	107514	7-2	7
Replacement Tooth, Hd Pinned Type	12756508	7-79	18
Retainer Washer - Trunnion	109174	7-1	16
Retaining Ring, Int, Float Endcap	116413	7-68	15
RHMS, CROSS, #10-24 X 0.75, FT	121-#10-24-12F	7-23	2
Right Door / Glass Assembly	12755521	7-13	Ref
Right Wheel, Tire Assembly, W/ Dana	1010197R	7-5	2
Rim, 12" X 19.5"	120330B	7-5	10
Ring, Retaining, E-Ring, 3/8 Shaft, 0.039 GW	504-3/8	7-36	51
Rod End	96144	7-36	28
Rod End Ball Joint, 3/8"	100500	7-74	12
Rod Threaded - 0.38 X 24 UNF X 11	56B-0692ZI	7-74	13
Round Tube, Air Intake, Tier 3 (Alum. 3", 5" Dia.)	120521	7-54	7
Round Tube, Air Intake, Tier 3 (Alum. 6.75", 4" Dia.)	120522	7-54	11
Rubber Antenna	117547	7-27	2
Rubber Antenna Mounting	117549	7-27	8
Rubber Boot	96525	7-46	6
Rubber Mount-Radiator-Center Bond	109747	7-59	13
Rubber Reducer, 4"ID X 3"ID, Tier-3	120519	7-54	13

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Rubber Reducer, 5"ID X 4"ID, Tier-3	120526	7-54	19
Scarifier Weldment, Right W/ Std.	111419	7-78	1
Schematic, 695 With Dana Bogie Axle	1010609	7-61 & 7-73	Ref
Screw, #10-24 X 0.63, SKT, HX, ES5BF	12755547	7-14	5
Screw, 0.25-20 X 0.625 TRUS, TORX	12755528	7-16, 7-17	4, 4
Screw, 1/4-20 X 3/4, Spinlock	116842	7-71	Ref
Screw, 3/8-16 X 1, Spinlock, Zinc	115732	7-51, 7-67	23, 4
Screw, 5/16-18 X 1-1/4, SPINLOCK	114624	7-18	5
Screw, Phillips, #5 X 1/2"L, Round Head, Self-Tapping	61A-0504ZI	7-37	3
Screw, Spool End, Husco Power Section	112262	7-68	9
SCRW, #10-24X.5 TRUZ, TORX, BLK	12755524	7-18	13
SCRW, 0.25-20 X 0.625 TRUS, TORX	12755528	7-35	29
Seal, Art. Joint	100237	7-2	15
Seal, Bottom King Pin Shaft HSG	100770	7-7	48
Seal, Edge, Top Air Baffle	12755944	7-50	35
Seal, Front Wheel Hub	100383	7-7	7
Seal, Long, Side Baffle, Tier-3	120189	7-59	2
Seal, Outer, Wheel Axle, 3 In.	100562	7-1	20
Seal, Short, Side Baffle, Tier-3	120190	7-59	3
Seat,Cloth	1009334	7-26	3
Seat-KAB 301-Vinyl-EEC	12755320	7-30	1
Sender, Water Temp, Beede	115338	7-57	5
Sender-Oil Press-100PSI-Beede- Series VI	115337	7-57	4
Sender-Service Indicator	115340	7-54	25
Sensor, Throttle Position, Remote	12756291	7-39	6
Separator, Fuel Water, QSB4.5	1010325-01	7-49	17
Service, Brake, Mico Valve	1010381	7-61 & 73, 7-65	Ref, 2
Set Screw, Special - FWD Frame	112878	7-72	43
Shaft, Wiper 1" Pivot	12755036	7-31	6
Shaft-Bell Crank Pivot	115442	7-36	9
Shaft-Control Levers	69709	7-36	10
Shank Keeper 1/2" Thick - Rear	116255	7-79	16
Shim 5	100228	7-8	Ref
Shim 0.010	100227	7-8	55
Sholder Bolt, Dia. 3/4 X 1L, 5/8 X 11	118-12-16-5/8X11	7-36	45
Side Cover, C-Series Front Frame	12757970	7-51	4
Sign, Slow Moving Vehicle	P70036	7-25	11
Signal Switch-Turn/High	400085	7-37	2

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Sleeve-Detent	116416	7-68	18
Slotted Hex Jam Nut - 1-1/2 -12	100242	7-1	15
SMV Installation With Rear Attachment	12754742	7-25, 7-70	Ref, 7
SMV Sign Install, No Rear Attachments	12754774	7-25, 7-70	Ref, 8
SMV Sign Mounting Brkt.	12754775	7-25	18
Snap Ring, FWD, Dyneer	100361	7-72	30
Socket Assembly-Ball Joint- Left Hand	100225	7-7, 7-72	51, 28
Socket Half, Drawbar Pull Ball	130101	7-8	56
Solenoid - Supplemental	54389	7-85	3
Solenoid Coil-Dyneer	111799	7-75	2
Solenoid Valve, FWD TRAC II	101407	7-75	1
Spacer, Cylinder	1011579	7-35	24
Spacer, Fan, 0.25" Thick, 60mm Bolt Circle	118810	7-57	7
Spacer, Fan, 1.5" Thick, 60mm Bolt	118811	7-57	6
Spacer, Flat Spool	116419	7-68	24
Spacer, Float Spool	116414	7-68	17
Spacer, OD=5/8", ID=13/32", L=1/2"	12755022	7-18 & 19; 7-81	4; 2
Spacer-Cap,Spool	116418	7-68	23
Spacer-Cylinder-Ripper	116256	7-79	21
Speaker For Radio - 4" (Single)	12755978	7-27	Ref
Spool End Seal Plate- Husco	112259	7-68	2
Spool End-Detent Pin, Float Section	116415	7-68	26
Spool Stop	116421	7-68	7
Spring, Brake Pedal	100151	7-45	25
Spring Seat, Husco Valve	112260	7-68	3
Spring Shock Assembly-Side	57728	7-50	36
Spring Shock, Pedestal -800N	115715	7-35	19
Spring, Compression, Scarifier	111048	7-78	14
Spring, Float Section, Pushes Against Balls	116417	7-68	21
Spring, Return, Hold Open Latch	12756617	7-14	1
Standard Wheel Assembly 12.25 X 19.5	100512	7-5	3E
Starter, Engine, Cummins QSB4.5	1010325-02	7-57	21
STD 50 Deg. Leaning Front Axle	117236	7-6, 7-5	2, 6
Steel Bushing, Trunnion	100220	7-8 & 7-9; 7-10	10; 23

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Steel Washer	112867	7-72	32
Steering Column, 3.26In (100 mm)	112663	7-36, 7-38	7, 6
Steering Control Unit-14.1 CI	100397	7-36, 7-38	8, 7
Steering Wheel, 14"	115772	7-35, 7-38	11, 3
Step Assembly, (One Side) - G-Series W/Wide Top Step	12754572SRV	7-28	Ref
Step, Bottom - Sawed Material	115464	7-28	8
Step, Top-9.5 Long	12754952	7-28	7
Straight Reducer	110AH-1620	7-50	16
Strainer, Hyd. Tank	100452	7-50	8
Strainer-Suction-24 O-Ring Out	115538	7-50	13
Strobe Light, Low Amber, Low	12755603	7-44, 7-45	2, 2
Subassembly, Pedestal, 10-Lever, Mid-Inlet	12756358	7-35	1
Subassembly, Frame, Front	12758101	7-1, 7-3, 7-4, 7-8, 7-51	Ref, 3, 1, 45, 3
Subassembly, Tail Light Housing	12757127	7-50	33
Subassembly, Tail Light, 12V, LH.	12757130	7-50	Ref
Subassembly, Tail Light, 12V, RH.	12757129	7-50	23
Subassembly, Tier-3 Turbo, Cummins, QSB4.5	120173	7-53 & 7-57	Ref
Subassembly, Wide Ripper Box	12756515	7-79	Ref
Support, A/C Compressor Mount	120226	7-82	5
Switch Panel, Console, Right Side	122340	7-42, 7-88	2B, 2
Switch, AWD, 12V, Grey-Min. Qty. 100	12756901	7-88	1
Switch, Beacon Lights, 12V, Grey	12756899	7-42	Ref
Switch, Brake, Low Press	852720	7-61 & 7-73	Ref
Switch, Front Float, 12V, Grey	12756907	7-42	2A
Switch, Hazard Lights, 12V, Red	12756911	7-42	4
Switch, Headlights, Parklights, 12V, Black	12756895	7-42	2D
Switch, Low Pressure 04PSI (Tach / Hourmeter)	102437	7-57	3
Switch, Low Pressure, 200 PSI	1010488	7-40	7
Switch, Wklts., Front, 12V, Grey	12756897	7-42	Ref
Switch, Wklts., Rear, 12V, Grey	12756898	7-42	Ref
Switch, Brake, Low Press	852720	7-65	5
Switch-Wiper/Washer	73119-CMG	7-21, 7-42	14, Ref
Swivel Adapter 45 DEG - #8 MJIC x #8 FJIC	112A-08	7-85	15
Tab, Top Step	12754951	7-28	4
Tapered Bushing-Ball Joint	100224	7-1, 7-9	Ref, 14
Tee-Run-Str-20	111D-2020	7-50	15
Terminal, #10 Ring, 16-14 AWG	130B-03	7-85	19
Terminal, Male, Bullet, 0.156, 16-14 AWG, Blue	134B-156	7-23	Ref
Test Port Block W/ Studs	12756670	7-66	2

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DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Test Port Coupler (0.25 NPT)	97714	7-66	1
Thick Shim, Circle	100298	7-9	23
Thick Washer, W/ Offset Hole	105571	7-69, 7-74	6, 4
Threaded Spacer, Manifold Bar On Rippafier	116790	7-79	13
Thrust Bearing-Thick (0.125" Thick)	69592	7-36	33
Thrust Bearing-Thin (0.060" Thick)	69591	7-36	40
Thrust Bearing-Thin (0.063" Thick)	69593	7-36	29
Thrust Washer - 1.5 ID X 2.16 OD X 0.093 Thick	113686	7-79	30
Thrust Washer, Brass	112866	7-72	33
Tier 3 Turbo Engine, Cummins	1010325	7-54, 56, & 57; 7-52	1; 3
Tilt Bar Weldment, C80	112407SRV	7-10	19
Tire & Wheel Assembly (Right)	100511R	7-5	4
Tire & Wheel Assembly (Left)	100511L	7-5	5
Tire & Wheel Assembly, 15 X 19.5, LH	100518L	7-71	3
Tire & Wheel Assembly, 15 X 19.5, RH	100518R	7-71	4
Tire, 15 X 19.5 Guard Tread, 8 Ply.	100514	7-71, 7-5	3B, 7
Tire, 15" X 19.5" 8 Ply.	110340	7-5	11
Top Cap - Trunnion Side Plate	117672	7-9	11
Top Step Weldment, Wide	12754950	7-28	Ref
Triple Gear Pump - 16-10-10 GPM	115319	7-63	22A
Tube Clamp, Dyneer FWD	100381	7-72	38
Tube, Charge Air, Tier 3 Outlet	120185	7-59	24
Tube, Charge Air, Tier-3 Inlet	120184	7-59	29
Tube, Connector, Fuel Fill	12757876	7-49	25
Tube, Left, FWD	100378	7-72	39
Tube, Right, FWD	100379	7-72	41
Tube, Seat Riser	1009530	7-26	2
Two Piece Air Valve, Tire / Wheel	100513	7-5, 7-71	9, 3A
Union-24MO To 24MO	111P-2424	7-50	12
Valve Stem	20192233	7-5	12
Valve, Brake Charge	852740	7-61 & 7-73, 7-65	Ref, 3
Valve, Selector	910080	7-40	2
V-Belt, L4 45" X 0.50	1008969	7-57	23
Vent, 3/8 MP, Alemite	12757883	7-49	3

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Washer, 0.376ID X 0.88OD X 0.08 T, F	12756618	7-14, 7-61	2, 9
Washer, 0.376ID X 0.88OD X 0.08 T, F	12756618	7-17	13
Washer, 0.38 X 2.5 OD	108856	7-10	15
Washer, Engine Mount, C50-80	113683	7-56, 7-59	6, 12
Washer, Flat, SAE, #10	300-#10	7-42	8
Washer, Flat, SAE, 0.562	80694	7-36	46
Washer, Flat, SAE, 0.875	81059	7-5	3C
Washer, Flat, SAE, 1.00	300-16	7-9	3
Washer, Flat, SAE, 1/2	300-8	7-35, 7-46, 7-50, 7- 51, 7-57, 7-59, 7-63, 7-77	41, 15, 44, 27, 26, 21, 22E, 27
Washer, Flat, SAE, 1/4	300-4	7-25, 7-34, 7-35, 7-39, 7-42, 7-44, 7-45, 7-47, 7-49, 7-53	14, 9, 38, 20, 7C, 13, 13, 12, 30, 10
Washer, Flat, SAE, 3/4	300-12	7-36, 7-79	48, 2
Washer, Flat, SAE, 3/8	300-6	7-4, 7-10, 7-25, 7-27, 7-36, 7-44, 7-45, 7-46, 7-49, 7-50, 7-51, 7-54, 7-55, 7-57, 7-59, 7-62, 7-64, 7-82	7, 5, 6, 3, 42, 12, 12, 12, 8, 52, 14, 16, 6, 13, 14, 11, 25I, 13
Washer, Flat, SAE, 5/16	119-2	7-21, 7-26, 7-33, 7-35, 7-39, 7-40, 7-42, 7-44, 7-45, 7-46, 7-47, 7-50, 7-51, 7-59, 7-64, 7-65, 7-81	7, 4, 2, 44, 21, 11, 9, 14, 14, 9, 5, 4, 17, 5, 20, 30, 4
Washer, Flat, SAE, 5/8	300-10	7-47	17
Washer, Flat, SAE, 7/16	300-7	7-6	8
Washer, Flat, SAE, 7/8	300-14	7-2, 7-3, 7-51	4, 13, 12C
Washer, Flat, USS, 1/2	120-5	7-7	17

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Washer, Flat, USS, 5/16	301-5	7-36	50
Washer, Isolator Mount	12754577	7-21, 2-29	13, 13
Washer, Lock, #10	900077	7-42	10
Washer, Lock, 1	302-16	7-9	4
Washer, Lock, 1/2	118-5	7-1, 7-7, 7-8, 7-9, 7-35, 7-46, 7-49, 7-50, 7-56, 7-57, 7-59, 7-63, 7-77, 7-79, 7-10	22, 13, 47, 8, 42, 14, 28, 43, 9, 24, 22, 22C, 7, 12, 11
Washer, Lock, 1/4	302-4	7-1, 7-7, 7-25, 7-34, 7-35, 7-39, 7-42, 7-44, 7-45, 7-47, 7-49, 7-53, 7-65, 7-69, 7-72, 7-74	12, 35, 13, 11, 39, 19, 7E, 16, 16, 13, 31, 9, 17, 9, 18, 7
Washer, Lock, 3/4	302-12	7-6, 7-77, 7-78, 7-79	14, 18, 4, 3
Washer, Lock, 3/8	118-3	7-10, 7-2, 7-4, 7-36, 7-25, 7-27, 7-38, 7-44, 7-45, 7-46, 7-49, 7-50, 7-51, 7-54, 7-59, 7-62, 7-64, 7-65, 7-66, 7-77, 7-79, 7-82	4, 9, 8, 53, 7, 4, 5, 15, 15, 11, 8A, 53, 15, 17, 15, 12, 25F, 12, 5, 19, 27, 14

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Washer, Lock, 5/16	302-5	7-7, 7-21, 7-26, 7-30, 7-33, 7-35, 7-36, 7-40, 7-42, 7-44, 7-45, 7-46, 7-50, 7-51, 7-59, 7-62, 7-64, 7-65, 7-69, 7-74, 7-81	43, 8, 6, 6, 3, 45, 39, 8, 11, 17, 17, 8, 3, 18, 6, 10C, 21, 15, 10, 8, 5
Washer, Lock, 5/8	118-6	7-11, 7-47, 7-56, 7-62, 7-72, 7-78	8, 16, 4, 21, 10, 7A
Washer, Lock, 7/16	302-7	7-6, 7-8	7, 57
Washer, Lock, 7/8	302-14	7-2, 7-3, 7-51	5, 12, 12B
Washer, Lock, 9/16	302-9	7-51	28
Washer, Lock, M10	302-M10	7-55, 7-57, 7-69	3, 14, 13
Washer, Rubber	1011578	7-35	25
Washer, Three Inch	100529	7-7, 7-77, 7-79	15, 6, 34
Weld'T - Striker - Hold-Open	12755804	7-13	3
Weld'T, Access Door, Rgt.	12755805	7-16	1
Weldment Headplate, C-Series Grader	117245	7-2	1
Weldment, Rear Pedestal Linkage	12758299	7-36	4
Weldment, 10 Ft. Moldboard	12756873	7-11	1
Weldment, 11 Ft. Moldboard	117701	7-11, 7-70	Ref, 6
Weldment, 12 Ft. Moldboard	117702	7-11, 7-70	Ref, 6
Weldment, 7 Ft. Dozer, Universal Mount	12758137	7-78	11
Weldment, 8 Ft. Dozer, Universal Mount	12758139	7-78	11
Weldment, Air Tube, Tier 3	120736	7-54	21
Weldment, Bellcrank, Pedestal	122887	7-36	Ref
Weldment, Blade Lift Trunnion	12757968	7-8	Ref
Weldment, Bottom Cap Kingpin	117837SRV	7-7	12, 18
Weldment, Bottom Left Cover	120493	7-50	51
Weldment, Bottom Pusharm Linkage	12758123	7-77	21
Weldment, Bottom Right Cover	120490-CMG	7-50	50
Weldment, Bracket, Fail-Safe	121802	7-40	1
Weldment, Brake Pedal	1009676	7-46	4
Weldment, Brake Pedal Mount	112776	7-46	1
Weldment, Pivot Pin, Bottom Push Arm Mount	1012072	7-77	22

API (Cont.)

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Weldment, Bushing, Blade Tilt	12757900SRV	7-10	13
Weldment, Control Valve Body	115372	7-67	1
Weldment, Cover, Gauge Housing	12756460	7-36	6
Weldment, Cushion Valve	116477	7-62	10A
Weldment, Cylinder Mounting Pin, Long	110596	7-77, 7-10, 7-79	14, 25, 25
Weldment, Cylinder Mounting Pin, Short	110597	7-77	13
Weldment, Extended Ripper Box	12756512	7-79	24
Weldment, Fan Shroud, Tier-3	120734	7-59	9
Weldment, Finger Guard, Tier 3	120638	7-53	7
Weldment, Frame, Front, ST 1	12758099	7-71	1
Weldment, Frame, Front, ST 2	12758100	7-1, 7-6	1, 1
Weldment, Frame, 695	1010208	7-53, 7-3, 7-5, 7-51, 7-79, 7-4, 7-64, 7-65	1, 1, 3D, 1, 5, 2, 31, 31
Weldment, Front Blade Scarifier	100522	7-78	2
Weldment, Front Link, Pedestal	12754916	7-36	1
Weldment, Fuel Fill	12757874	7-49	26
Weldment, Grille, Tier-3	120212	7-50	34
Weldment, Hyd. Tank, Tier-3	120199	7-50, 7-63	1, 34
Weldment, Hydraulic Motor Guard	12757820	7-51	8
Weldment, Left Side Door	120501	7-50	46
Weldment, Leg, Left, C-Series Grader, AWD	117211SRV	7-72	7
Weldment, Leg, Right, C-Series	117205SRV	7-72	5
Weldment, Link Pin, Bottom Push Arm	107661	7-77	10
Weldment, Link Pin, Front Blade	107663	7-77	5
Weldment, Moldboard Tilt Pin	117772	7-10	20
Weldment, Pedestal, Transmission Controls	12757869	7-34	1
Weldment, Pin, Articulation Cylinders	117255	7-4	4
Weldment, Pin, Brake Pedal Mount	112782	7-46	3
Weldment, Radiator Cover	1010179	7-50	55
Weldment, Radiator Shroud, Turbo Tier-3	120194	7-50	32
Weldment, Rear Hitch Pin	12754678	7-76	2
Weldment, Right Side Door	120497	7-50	45
Weldment, Spring Anchor	116108	7-45	24
Weldment, Shifter Base, With Dana Bogie	1010627	7-47	1

DESCRIPTION	PART NUMBER	FIG. NO.	ITEM NO.
Weldment, Steering Arm, Left, AWD	118547SRV	7-72	8
Weldment, Steering Arm, Right	117228	7-7	47
Weldment, Steering Arm, Right, AWD	118548SRV	7-72	15
Weldment, Steering, Arm, Left	117232SRV	7-7	49
Weldment, Step-Bottom	115466	7-28	Ref
Weldment, Tank, Fuel	1010254	7-48, 7-49, 7-51	5, 9, 2
Weldment, Tie Rod, Lean	12757718	7-7, 7-72	38, 25
Weldment, Tie Rod, RWD	117768	7-7	25
Weldment, Tie-Rod, Steering, C86C	117195	7-72	26
Weldment, Vandalism Cover, Pedestal	12757468	7-80	1
Weldment-Pedestal Mount	115444	7-36	5
Weldment-Pull Link	116232	7-79	14
Weldment-Upright- Left	116225	7-79	8
Weldment-Upright- Right	116224	7-79	7
Weld'T, Access Door, RGT.	12755805	7-17	1
Wheel Lean Pin Weldment, C-Series	117202	7-72, 7-7	17, 33
Wheel, W/ Dana	1010198	7-5	8
Window Trim - Cab	107543	7-41	6
Wiper Ring, Control Valve Spool	109660	7-68	5
Wldmt., Artic Lock Pin	12757607	7-41	4
Worklight, 12V, Hanging	11039856	7-44, 7-45	3, 3
Xmas Tree Fastner, Blk.	12755033	7-18, 7-19	16, 16

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