Mighty Sweep

2003-8

Operators, Maintenance and Parts Manual

GEFFS MANUAL PART NUMBER
B80008-2012
EFFECTIVE SERIAL NUMBER 120926
REVISED 9/20/2012

NOTE: IT IS THE RESPONSIBILITY OF THE CUSTOMER OR USER'S MANAGEMENT TO TRAIN, EDUCATE, AND SUPERVISE THE EMPLOYEE IN THE PROPER OPERATION AND MAINTENANCE OF THIS EQUIPMENT.

GEFFS MANUFACTURING, INC.
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GEFFS MANUFACTURING INC.

Introduction

READ THIS MANUAL **carefully** to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

THIS MANUAL INCORPORATES operation and maintenance information for the GEFFS Manufacturing, Inc. Mighty Sweep. It is a compilation of the best information available at the time of writing. Some information may be specific to options not on all machines. All information and specifications are subject to change without notice.

USE ONLY CORRECT REPLACEMENT PARTS AND FASTENERS. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction of forward travel.

WRITE SERIAL NUMBERS in the back page of Introduction Section. Accurately record all the numbers to help in tracing the machine should it be stolen. File the serial numbers in a secure place off the machine.

WARRANTY is provided as part of GEFFS Manufacturing Inc. support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate, which is in the Introduction Section.

This warranty provides the assurance that GEFFS Manufacturing, Inc. will back its products where defects appear within the warranty period. In some circumstances, GEFFS Manufacturing, Inc. also provides improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering the machine will result in such action.

An extended warranty program is also available through GEFFS Manufacturing, Inc.

 WARNING: THE MODEL 2003-8 IS A PIECE OF CONSTRUCTION EQUIPMENT. IT IS NOT MANUFACTURED PRIMARILY FOR USE ON OPEN PUBLIC STREETS OR HIGHWAYS NOR IS IT TO BE CONSIDERED SUITABLE FOR USE AS A MOTOR VEHICLE TO BE OPERATED OR USED ON PUBLIC STREETS, ROADS OR HIGHWAYS BY ANYONE WITHOUT FIRST ASSURING THAT ALL APPLICABLE SAFETY REQUIREMENTS AND PRECAUTIONS REQUIRED BY LAW OF SUCH USE HAVE BEEN MET.

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GEFFS MANUFACTURING, INC

ONE YEAR BROOM WARRANTY

GEFFS MANUFACTURING, INC.

ALL NEW MACHINES AND PARTS ARE GUARANTEED AGAINST DEFECTIVE WORKMANSHIP AND/OR MATERIALS FOR A PERIOD OF ONE YEAR (12) MONTHS FROM DATE OF DELIVERY. GEFFS MANUFACTURING, INC. HEREAFTER KNOWN AS "THE MANUFACTURER" ASSUMES RESPONSIBILITY AND MAKES WARRANTY WITH RESPECT TO ENGINES, ENGINE ACCESSORIES, TRANSMISSION, AXLES, TIRES, HYDRAULIC MOTORS, HYDRAULIC PUMPS, OR OTHER PURCHASED COMPONENTS BEYOND THE WARRANTY OF THE SUPPLIER OF SAME.

THIS WARRANTY WILL NOT APPLY TO STANDARD WEAR PARTS TO INCLUDE BUT NOT LIMITED TO:

1) BROOM WAFER BRISTLES
2) RUBBER PRODUCTS
3) HYDRAULIC HOSES
4) FILTERS: FUEL, ENGINE OIL, HYDRAULIC OIL, TRANSMISSION OIL, COOLING , CAB PRESSURIZER
5) FLUIDS: FUEL, ENGINE OIL, HYDRAULIC OIL, TRANSMISSION OIL, ANTIFREEZE
6) LIGHT BULBS, SEAL BEAMS, CLEARANCE LIGHT BULBS
7) PAINT CHIPPING
8) WEATHER CHECK ITEMS FROM STORAGE OUTDOORS
9) TIRES
10) GLASS

THIS WARRANTY FURTHER WILL NOT APPLY TO OWNER MAINTENANCE RESPONSIBILITY ITEMS:

1) LOOSE BOLTS AND NUTS
2) LEAKS DUE TO LOOSE HYDRAULIC FITTING AND HOSE CONNECTIONS
3) BEARINGS DUE TO LACK OF MAINTENANCE

THIS WARRANTY FURTHER WILL NOT APPLY TO A MACHINE, WHICH HAS BEEN REPAIRED BY ANYONE OTHER THAN AN AUTHORIZED GEFFS MANUFACTURING, INC. DISTRIBUTOR USING GENUINE GEFFS MANUFACTURING, INC. PARTS, IMPROPER INSTALLATION, NOR DOES THIS WARRANTY APPLY TO USED EQUIPMENT OR DAMAGE THAT RESULTS FROM ACCIDENTS, ALTERATIONS, MISUSE, ABUSE, NATURAL WEAR AND TEAR, MALICIOUS MISCHIEF, VANDALISM, RIOTS, WARS, OR ACTS OF GOD. THE MANUFACTURER'S OBLIGATION UNDER THIS WARRANTY IS LIMITED TO THE REPLACEMENT OF ANY PART(S) WHICH SHALL BE FOUND TO BE DEFECTIVE WITHIN TWELVE(12) MONTHS FROM THE DATE OF DELIVERY TO THE ORIGINAL PURCHASER. THE MANUFACTURER'S WARRANTY DOES NOT OBLIGATE THE MANUFACTURER TO BEAR ANY OTHER COSTS EXCEPTING THE FURNISHING OF REPLACEMENT PART(S) FOR THE DEFECTIVE PART(S) AND LABOR FOR INSTALLATION OF THE DEFECTIVE PART(S). ALL OTHER DAMAGES, INCLUDING, BUT NOT LIMITED TO, ANY LOSS OR DAMAGE RESULTING FROM THE USE, OR LOSS OF USE, OF ANY OF SAID PRODUCTS, ARE HEREBY EXPRESSLY WAIVED. NO REPRESENTATIVE OF THE MANUFACTURER IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY, AND NO ATTEMPT TO REPAIR THE PRODUCTS OF THE MANUFACTURER BY ANY REPRESENTATIVE OF THE MANUFACTURER SHALL CHANGE OR EXTEND THIS WARRANTY IN ANY WAY.
APPROVED PARTS TO BE SUBSTITUTED FOR THOSE PARTS FOUND TO BE DEFECTIVE ARE TO BE FURNISHED TO THE CUSTOMER BY THE MANUFACTURER, F.O.B. FACTORY FREE OF CHARGE. INSTALLATION OF SUCH PARTS IS TO BE MADE BY, AND AT THE EXPENSE OF, THE MANUFACTURER OR AUTHORIZED SUBCONTRACTOR DURING THE WARRANTY PERIOD, **UNLESS THE PURCHASER IS AUTHORIZED IN WRITING BY THE MANUFACTURER TO MAKE SUCH INSTALLATION AT THE MANUFACTURER'S EXPENSE**. **ANY PARTY REPLACING WARRANTY PARTS AND/OR SERVICES MUST COMPLETE THE CORRECTIVE ACTION & WARRANTY REQUEST FORM OR THE MANUFACTURER WILL NOT WARRANTY THE PART(S) AND/OR SERVICE.** PARTS CLAIMED TO BE DEFECTIVE, AND FOR WHICH FREE REPLACEMENT IS DESIRED, MUST BE RETURNED TO THE MANUFACTURER, F.O.B. POCATELLO, IDAHO OR TO SUCH OTHER PLACE AS THE MANUFACTURER MAY DESIGNATE FOR INSPECTION.

GEFFS MANUFACTURING, INC., 950 SOUTH MAIN ST, POCATELLO, ID 83204

THE ABOVE WARRANTY IS VALID ONLY IF THE SYSTEM HAS BEEN USED AND MAINTAINED IN ACCORDANCE WITH THE INSTRUCTIONS CONTAINED IN THE OWNERS MANUAL. **FAILURE TO KEEP DETAILED MAINTENANCE RECORDS COULD RESULT IN VOIDING MANUFACTURER'S WARRANTY.**
GEFFS MANUFACTURING, INC. RESERVES THE RIGHT TO CHANGE ITS DESIGN AT ANYTIME WITHOUT INCURRING OBLIGATION TO MAKE SUCH DESIGN CHANGES ON MACHINES PREVIOUSLY SOLD.
THE ABOVE WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF SUITABLITY FOR A PARTICULAR PURPOSE. IT IS EXPRESSLY AGREED THAT GEFFS MANUFACTURING, INC. ASSUMES NO LIABILITY FOR INCIDENTAL AND CONSEQUENTIAL DAMAGES ARISING OUT OF A BREACH OF THIS CONTRACT, INCLUDING ANY WARRANTIES ARISING THEREFROM, AND PURCHASER REMEDIES SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PART(S) AND LABOR FOR INSTALLATION AS DESCRIBED ABOVE.

**** MUST BE SIGNED TO BE VALID ****

_____

JEFFERY L. MATKIN CEO/PRESIDENT

Serial Numbers:

Mighty Sweep # _____

Engine # _____

Rear Axle # _____

Section 1

Safety

This section provides information about general and specific safety practices and procedures. Always follow good safety practices and procedures. Carefully read all safety messages in this manual and on your machine safety signs.

Personnel must take time to read this section thoroughly. If uncertain about any information represented, contact your supervisor or GEFFS Manufacturing, Inc. at 1-888-447-2882 for clarification before operation.

If you are not experienced with operation of this equipment, make certain you receive instruction from your supervisor before beginning work. Operate the sweeper in a clear open area to familiarize yourself with the controls and operating characteristics.

RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word - DANGER, WARNING, or CAUTION - is used with the safety-alert symbol.

DANGER indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed.

CAUTION indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs.

WARNING or CAUTION also calls attention to safety messages in this manual.

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

⚠ WARNING: FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from GEFFS Manufacturing, Inc.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instructions.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact GEFFS Manufacturing, Inc.

⚠ WARNING: DRIVING THE SELF-PROPELLED SWEEPER

Operate the self-propelled sweeper only when operator is seated, seat belt securely fastened and all guards are in their correct position.

Before driving away, check immediate vicinity of machine for bystanders. Use the horn as a warning immediately before driving away.

Riders are subject to injury such as being thrown off the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.

Manually check all primary controls for proper function prior to each prior of operation or use.

Before dismounting be certain that the parking brake is set and the transmission is in neutral.

⚠ WARNING: USE SAFETY LIGHTS AND DEVICES

Slow moving self-propelled equipment and attachments can create a hazard when driven on public roads. They are difficult to see, especially at night. Avoid personal injury or death resulting from collision with a vehicle.

Whenever driving on public roads, use flashing warning lights and turn signal according to local regulation. To increase visibility, use the lights and devices provided with your machine.

Keep safety items in good condition. Replace missing and damaged items.

⚠ WARNING: WORK IN VENTILATED AREA

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

WORK IN CLEAN AREA

Before starting a job:

Clean work area and machine.
Make sure you have all necessary tools to do your job.
Have the right parts on hand.
Read all instructions thoroughly. Do not attempt shortcuts.

ILLUMINATE WORK AREA SAFELY

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure a wire cage encloses the bulb. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

USING HIGH-PRESSURE WASHERS

IMPORTANT: Directing pressurized water at electronic/electrical components or connectors, bearings and hydraulic seals, fuel injection pumps or other sensitive parts and components may cause product malfunctions. Reduce pressure, and spray at a 45° or 90° angle.

⚠ WARNING: USE PROPER LIFTING EQUIPMENT

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.

USE PROPER TOOLS

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurements tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting GEFFS Manufacturing, Inc. specifications.

USING SPECIAL TOOLS

Faulty or broken tools can result in serious injury. When constructing tools, use proper, quality materials and good workmanship.

Do not weld tools unless you have the proper equipment and experience to perform the job.

⚠ WARNING: SUPPORT MACHINE PROPERLY

Always lower the attachment to the ground before you work on the machine. If you must work on the lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

⚠ WARNING: HANDLE FLUIDS SAFELY - AVOID FIRES

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Fill fuel tank outdoors.

Make sure machine is clean of trash, grease and debris. Always clean up spilled fuel.

Do not store oily rags. They can ignite and burn spontaneously.

Overfilling may cause spillage due to fuel expansion. Clean up any spilt fuel.

Transport and store fuel only in an approved manner.

⚠ Caution: PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Do not change a battery when it is frozen, it may explode. Warm the battery to 16°C (60°F).

⚠ Caution: PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed in eyes.

Avoid the hazard by:

1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Using proper jump-start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid on skin.
3. Flush your eyes with water for 15-30 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 quarts (2 L).
3. Get medical attention immediately.

⚠ Caution: AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

⚠ Caution: AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluid.

If an accident occurs, see a doctor immediately. Any fluid injected in the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

⚠ Caution: HANDLE CHEMICAL PRODUCTS SAFELY

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with GEFFS Manufacturing, Inc. equipment include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products, physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

Contact GEFFS Manufacturing, Inc. for MSDS's on chemical products used with GEFFS Manufacturing, Inc. equipment.

⚠ Caution: REMOVE PAINT BEFORE WELDING OR HEATING

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well-ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating.

If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.

If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

⚠ WARNING: AVOID CONTACT WITH MOVING PARTS

Keep hands, feet and clothing away from power driven parts. Never clean, lubricate or adjust machine when it is running.

PRACTICE SAFE MAINTENANCE

Understand service procedure before doing work.

Never lubricate, service or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil or debris.

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

⚠ Caution: SERVICE COOLING SYSTEM SAFELY

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to the first stop then relieve the pressure before removing completely.

DISPOSE OF WASTE PROPERLY

Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with GEFFS Manufacturing, Inc. include such items as oil, fuel, coolant, filters, and batteries.

Use leak proof containers when draining fluids. Do not use food or beverage containers that may mislead someone in drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center.

Notes

Section 2

Descriptions

A. General

The GEFFS Manufacturing, Inc. Mighty Sweep 2003-8 self-propelled broom sweeper has been designed for the removal of materials from hard surfaced areas. The material is generally moved to the left or right of the sweeping pattern with no provisions for picking up the material.

The base machine consists of:

Chassis	Engine
Hydrostatic Transmission Drive System	Brakes
Tires and Wheels	Steering System
Broom	Hydraulic System
Roll Over Protective Structure (R.O.P.S.)	Electrical System
Cab	

The machine serial number location is on the left side just in front of the engine compartment.

Model 2003-8 indicates that this machine is a model built in 2003 with an 8-foot broom width.

Serial number example (031201)

03 - represents the year the machine was built.
12 - represents the month the machine was built.
01 - represents the number of the machine that was manufactured.

WARNING: Always keep hands, feet and clothing away from power driven parts. Never clean, lubricate or adjust machine when it is running.

Keep your machine in proper working condition.

Operate broom sweeper only when all guards are in their correct position.

B. Chassis

The frame is an all welded 1/4", 3/8” and 1/2” steel chassis. Gussets are provided at all stress points, cross-members are included, as necessary, as are mounting provisions for all required components and accessories.

Chassis includes mounting provisions for a solid rear axle and drive motor mount plate, as well as the oscillating front axle.

Chassis includes mounting provisions for certified R.O.P.S., cab that is attached with specified hardware. R.O.P.S. can be removed and replaced without affecting certification.

C. Engine

Power is provided by a 275 C.I.D. 4 cylinder liquid cooled John Deerediesel engine Model 4045TF285 rated at 85 bhp at 2400 rpm. Engine includes 12-volt DC electrical system, starter and 75-amp alternator.

Clean air is supplied through a heavy-duty Donaldson type dry air cleaner, includes a primary element, a safety element and an external pre-cleaner. Air cleaner housing includes a vacuator valve and a restriction (service) indicator.

The engine oil system is pressurized and regulated with a spin-on filter and filter by-pass.

The engine is mounted on six (4) engine isolators.

Engine exhaust is routed vertically above the engine through a muffler.

Engine fuel system includes a 32-gallon plastic fuel reservoir, dual spin-on pressure filters with water separator and drain.

The engine throttle controls the RPM, which controls the pumps fluid flow. The engine RPM will effect the travel speed and the broom rotation RPM.

WARNING: Always work in a ventilated area. Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension. If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

D. Hydrostatic Transmission Drive

The machine is driven by an Linde infinitely variable hydrostatic transmission consisting of a variable displacement pump and a fixed displacement motor. The hydrostatic transmission will develop 6000 psi. The operator controls consist of one (1) joystick which control the stroke of the variable piston displacement pump. Control of the variable piston displacement pump is the key to controlling vehicle speed. The pump transmits prime mover horsepower when the operator moves the joystick either forward or reverse. This in turn, at any given input speed, produces a certain flow from the pump. This flow rate is transferred through high-pressure lines to the motor. The ratio of the volume of flow from the pump to the fixed displacement motor will determine the speed of the motor output shaft. Moving the joystick in reverse allows the motor to reverse direction and propel the broom in reverse.

The operator presence switch prevents the broom from moving when it is in the off position. The switch must be in the on position and the brake pedal depressed before the pump will allow flow to the motor.

The machine is capable to travel speeds of 0-10 mph and 0-20 mph by switching the toggle switch on the side console.

Speed of the output shaft is controlled by adjusting the displacement flow of the transmission and the engine RPM. Load (working pressure) is determined by the external conditions (i.e. grade, ground conditions, etc.) and this establishes the demand on the system.

Pump and motor are contained in separate housings. All valves required are included in either the pump or motor assemblies.

Oil is drawn from the reservoir through the 10-micron suction filter through the pump and motor, and back to the reservoir.

The Linde Motor drives a short driveline to a Dana Model 44 rigid semi-float rear axle. Rear axle includes drum brakes and parking brake.

WARNING: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. If accident occurs, see a doctor immediately.

Always keep hands, feet and loose clothing away from power driven parts. Never clean, lubricate or adjust machine when it is running.

Keep your machine in proper working condition.

E. Brakes

Mighty Sweep includes a 4 wheel self-adjusting, automotive system, which includes front disc and rear drum brakes. Dual master cylinder provides separate circuit for front and rear. Rear drums include parking brake mechanism connected to adjustable pull lever at operator's station.

F. Tires and Wheels

Machine includes automotive type 5 bolt 5.5-inch diameter bolt circle, 16-inch diameter x 6-inch wide front and rear wheels. Tires are LT225-75R16 tire 6 ply, highway tread design. Tire Pressure is 50 psi. Check the lug nuts daily, torque to 100 foot-pounds.

G. Steering System

Power steering is fully fluid linked, consisting of a manually operated directional control valve and a steering cylinder attached to the left hand steering arm. Fluid pressure is supplied from the priority flow control valve in the valve manifold to the steering control valve and is there directed to the appropriate side of the steering cylinder. Steering control orbital valve is a non-load reaction design, which holds the axle position whenever the operator releases the steering wheel.

H. Broom Assembly

Broom consists of a steel core with a shaft extending from one end for bearing support and a drive plate attached to the other end. The core is driven by a direct single drive, high torque hydraulic motor containing a four (4) square pin drive hub and taper alignment shaft. The design allows for the motor to be enclosed inside the drive end of the core. The 8 foot core will accept approximately 46 standard 10" x 32" poly or steel wafers and spacers as required.

The broom is mounted on an arm, which is attached to the frame with a tapered roller bearing spindle assembly. This broom arm can swing, using a hydraulic cylinder to a maximum of 45° right or left.

The broom can also be raised or lowered hydraulically with a single lift cylinder. Both swing and lift control valves are manual and located at operator's station. The broom hydraulic system features an adjustable broom counterbalance circuit, which is adjustable from the

operator's station. With the control knob the operator adjusts the pressure in the lift cylinder, which increases or decreases the broom pressure on the ground and therefore the sweeping pattern width. This circuit only functions when the broom lift control switch is in the "ON" position. Once the desired sweeping pattern is obtained the control knob will stay in this position and the system will maintain this preset pattern regardless of the variations in the road surface or broom wear. The broom arm design also allows for the broom to oscillate about an axis along the longitudinal centerline of the sweeper to permit full contact of the brush left or right on uneven surfaces.

The broom wafers are covered by a 16 gauge steel 160° cover, and a rubber blast shield which is suspended down in front of the broom to prevent debris from being thrown vertically and into the front of the sweeper.

WARNING: Always keep hands, feet and loose clothing away from power driven parts. Never clean, lubricate or adjust machine when it is running.

Keep your machine in proper working condition.

Operate broom sweeper only when all guards are in their correct position.

I. Hydraulic System

Hydraulic oil is contained in the 30 gallon pressurized "L" shape reservoir. Total system capacity is 38 gallons. The reservoir is pressurized to 10 psi by fluid expansion and includes two cleanout covers, one at the front and the other on the top. It includes a baffle that separating inlet and outlet ports. There is a fluid level gauge that can be seen inside the engine compartment on the left side.

All hydraulic fluid returns to the reservoir at the rear and travels forward around the baffle to the suction ports. The auxiliary circuit returns all fluid through a hydraulic oil diffuser and draws all hydraulic fluid through a 100 mesh suction strainer.

The reservoir has two separate suction lines. One line for hydrostatic drive system, the other supplies the auxiliary hydraulic functions. The hydrostatic system draws fluid from the front of the reservoir through a 100 mesh suction strainer. The hydraulic transmission offers variable control of speed and direction. The operator has complete control of the sweeper with the joystick for starting and stopping, in forward or reverse motion.

Speed of the output shaft is controlled by adjusting the displacement flow of the transmission and the engine RPM. Load (working pressure) is determined by the external conditions (i.e. grade, ground conditions, etc.) and this establishes the demand (5000 psi max) on the system.

Pump and motor are contained in separate housings. All valves required are included in either the pump or motor assemblies. Fluid supplied by the charge pump is circulated in a closed loop through the pump and motor. A certain amount of internal leakage naturally occurs in the pump and motor. This leakage is used to lubricate and cool the pump and motor prior to returning to the oil reservoir through the case drain hoses.

The auxiliary hydraulic circuit draws fluid through a 100 mesh suction strainer located inside the reservoir. Fluid then enters the accessory pump, which is a 27 GPM gear type pump when the engine is running at 2400 RPM.

All fluid from the auxiliary pump run through the valve manifold system. Here the broom steering is given 2.5 GPM dedicated flow The remainder of the flow, approximately 1.5 GPM, supplies fluid for control of the swing cylinder and broom lift cylinder..Fluid to the steering orbital motor (open center) is returned to the manifold prior to returning to the hydraulic tank. Fluids from the Swing and Lift cylinders also return to the manifold prior to returning to the hydraulic tank.

The hydraulic broom counterbalance circuit functions when the lift control switch is turned "ON", allowing it to float during the sweeping operation. The operator remotely adjusts a relief valve that controls the pressure to the broom lift cylinder and maintains the broom pressure on the surface being swept.

The excess flow of fluid from the accessory pump will be variable depending on engine RPM. This flow routes directly to the broom drive motor which has a fixed displacement. The broom rotation rpm therefore is a variable speed and a function of the engine RPM to a maximum of 23 GPM with approximately 260 RPM for the broom.

An ON-OFF valve provides the broom operation. The valve diverts oil to the return line when the broom motor is off. Closing the valve blocks the oil path to the return line, forcing the oil to go through the broom motor.

All of the fluids in the auxiliary circuit returns to the reservoir through a 10-micron return filter and an oil cooler with a pressure bypass. Fluid returns to the rear of the reservoir through an internal oil diffuser accessible by removal of the rear clean out port cover. As in all hydraulic systems reliability depends upon clean and cool hydraulic oil.

J. Roll Over Protection Structure (R.O.P.S)

The machine is provided with a certified R.O.P.S roll bar that is attached to the frame with specified hardware. R.O.P.S. can be removed and replaced without affecting certification.

DANGER: Never remove the R.O.P.S. roll bar from the machine!

Never operate the machine if the R.O.P.S roll bar is damaged or if it has been removed!

Always replace a damaged R.O.P.S roll bar with a certified roll bar! Never try to repair or straighten the R.O.P.S. roll bar!

Always use the proper Grade of Hardware.

K. Electrical System

The machine is provided with a 12-volt DC electrical system that includes a 75-amp alternator (minimum). A larger alternators are available as an option.

L. Cab

The cab is pressurized with filtered fresh outside air. It includes the pressurizing system, air conditioning and heating. . The glass is tempered and tinted. A defrost kit, window wiper and window washer is optional (front, rear, or both windows). The steering column has a choice of fixed or telescoping/tilt. The seat is cushioned with a seat belt. Under the seat is a storage area. The Sauer Danfoss display is utilized for all system monitoring. Sound insulation is included with the cab to reduce the noise inside. The cab doors can be locked to prevent theft.

M. 2-Speed

The 2-speed operation is a standard that will allow the machine to operate in low gear or high gear. The machine will operate and sweep in either gear. The hydrostatic pump is electrically controlled to allow either low speed 0-10 mph or high speed 0-20 mph travel. The switch is located to the right of the operator near the forward/neutral/reverse joystick.

DANGER: Death or injury may occur if the below instructions are not followed.

1. **The changing of speeds should only be done when vehicle is stopped.**
2. **<u>Do not</u> try to shift while machine is in motion!**

Section 3

Specifications

A. General

Diesel Engine –

85 hp, 275CID
Tier III compliant
4-cylinder
Water cooled, thermostat range 173° - 196°
12-volt DC, 75-amp minimum

Drive Train –

Heavy-duty Linde hydrostatic transmission
Variable speed, 6000-psi max system pressure
0 – 20 MPH max
2-speed electrical shift

Front Steering Axle –

Automotive type tube with spindles
Hydraulic disc brakes
18° oscillation

Rear Drive Axle -

Dana heavy-duty truck type, rigid
Semi-float differential
Hydraulic drum brakes

Tires, Wheels and Pressures –

Wheels, 16" Steel, 5 hole
Tires, LT225/75 R16, 6-ply
Tire pressure – 50 psi
Lug nut torque – 100 foot-pounds

Auxiliary Pump –

27-GPM
2.5-GPM priority steering
1500-psi system pressure

Broom Wafer –

Poly, 10 X 32
Steel wire, 10 X 32

Broom RPM –

260 rpm max

Electrical system –

12 volts DC

Lighting system –

Tail/stop lights, 12 volt DC
Strobe light, 12 volt DC
Work lights, 12 volt DC

Hydraulic Filters –

Transmission suction 100 mesh suction screen, 10 micron filter
Return, 10-micron
Auxiliary suction, 100-mesh

Water Spray System –

Tank capacity, 150 gallons, Weight full – 1245 Pounds
Pump, 12 volt DC
Pump flow, 1.5 GPM
Pump pressure, 60 psi
Fluid strainer, 80-mesh
Nozzle filtration, 100-mesh

Air Conditioning –

18,000 BTU/HR

Heating –

28,600 BTU/HR

Pressure Fan –

800 CFM with filter

Windshield Washers –

Front, Standard
Rear, Optional

B. Capacities

Fuel tank - - - - - - - 32 gallons
233 Pounds of Fuel

Hydraulic tank - - - - - - - 30 gallons
219 pounds of hydraulic oil

Total hydraulic system - - - - - - - 38 gallons
277 Pounds of Hydraulic Fluid

Engine capacities - - - - - - - see engine manual

Coolant - - - - - - - 5 gallons (50/50 mix)

Rear axle capacity - - - - - - - 1 3/4 quarts

Brake hydraulic system - - - - - - - 1 quarts

C. Dimensions

Weight –	Sweeper Dry	6420 Pounds
	Sweeper With Fuel & Hydraulic Fluid	6770 Pounds
	Sweeper With Fuel, Hydraulic & Water	8015 Pounds

Wheel Base - 11’ (132”)

Total Length - 16’ 4” (196”)

Shipping Width - 8’ (97.25”)

Outside Tire to Tire Width Front – 5' 6” (66”)
Outside Tire to Tire Width Rear – 5' 4” (64”)

Shipping Height - 9’ 8” Top of Strobe Light
9' 11” Top of Turbo
9' 10” top of Radio Antenna

Turning Radius - Inside, 16’ 8”
Outside, 22”

Notes

Section 4

Prestarting Checks

BEFORE STARTING CHECKS

Before starting the engine for the first time each day:

- Visually inspect the entire machine for any damage or required repairs prior to starting the engine.
-
- Check engine oil level. Do not operate engine when oil level is below mark on dipstick.
-
- Check coolant level.
-
- On level ground check hydraulic oil level. Add oil if you need to. Do not overfill.
-
- Check engine air intake system and element.
-
- Check the cap screws located on the bell and motor housing. Tighten to 21-foot
- pounds torque. Check <u>every **40 hours**</u> of use.
-
- With key on, fuel gauge will appear on display will show the amount of fuel in tank.
-
- Fuel tank capacity is 32 U S Gallons.
-
- If dirty fuel has been used, follow the procedure in your engine manual to replace filters and clean the system.
-
- If engine has not been operated for a long time, see engine manual for starting procedure.
-
- Grease the machine every 50 hours.

 **CAUTION: Never attempt to start sweeper by towing. Severe damage to hydrostatic transmission pump and motor will result.**

Notes

Section 5

Operating the Sweeper

This section provides information on operational checks, and procedures necessary for the safe operation and maintenance of the GEEFS Mighty Sweep broom. All safety precautions and warnings must be adhered to in order to prevent injury to operation and maintenance personnel as well as innocent bystanders, equipment and property around operation area.

CAUTION: When the law requires, make sure that the flashing warning lights are turned on when traveling on, streets, roads or highways

A. Starting the Engine

WARNING: Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

Be certain that controls are in the neutral position, park brake is set, and all persons are clear of sweeper before starting engine.

Sound horn before starting engine to clear people away from sweeper.

CAUTION: If you have any problems starting the engine, see the engine manual for the proper way to start your engine.

If you are starting the engine for the first time, refer to the engine manual for information regarding the initial break-in procedure.

Avoid overheating the engine. The temperature of the coolant, a mixture of 50% ethylene-gylcol and 50% water, must not exceed 225°F.

Avoid low coolant temperature operation. Continual operation at low coolant temperature below 140°F can be harmful to the engine.

STEPS TO STARTING ENGINE

1. Place forward/reverse joystick in neutral position.
2. Raise the throttle by pressing the rocker throttle on the joystick.
3. Sound horn before starting engine.
4. Turn ignition key clockwise to the start position (Crank engine).

CAUTION: Do not operate starter motor continuously for more than 30 seconds. Allow starter motor to cool for at least 2 minutes between unsuccessful attempts.

NOTE: If the forward/neutral/reverse joystick is not in the neutral position the machine **will not start**.

5. Lower the engine RPM to the idle position as soon as the engine starts.
7. After engine has started, check all gauges for proper levels of operation.

CAUTION: Avoid full throttle operation when engine is cold.

When the sweeper has set for a long period of time, start the engine and let it idle at the low RPM for 5 minutes minimum. This will allow the hydraulic pump to charge the system.

B. Starting the Engine In Cold Weather

CAUTION: Be cautious when starting the engine in cold weather (below 32°F).

If the temperature is below 10°F, preheat the hydraulic oil to 32°F before starting the engine. This will prevent damage to the hydraulic pumps and motors.

Let the engine idle at the low RPM for 5 minutes minimum. This will allow the hydraulic oil to warm and the hydraulic pump to charge the system.

Check your engine manual before using starter fluid.

If you have any problems starting the engine, see the engine manual for the proper way to prime and start the engine.

NOTE: If the sweeper is to be operated in very cold weather on a regular basis, installation of an engine water heater is recommended. This will decrease stress and reduce wear on the engine and electrical system.

C. Stopping the Engine

IMPORTANT: Before stopping an engine that has been operating at working load, idle engine at least 2 minutes (1400 rpm maximum) with no load to cool hot engine parts.

1. Move the forward/neutral/reverse joystick to the **NEUTRAL** position.
2. Apply the park brake.
3. Lower the engine rpm by the rocker switch on top of the forward/netrual reverse joystick to **IDLE** position.
4. Turn the operator presence switch to off.
5. Turn the key to the **OFF** position.

CAUTION: Remove key from switch to prevent accidents and battery discharge.

D. Controls

Brakes- Foot brake pedal (service brake, right foot pedal, optional location on the left)
Depress to slow or halt machine movement.
Parking Brake Lever (left side of seat on the floor)
Lift and pull back handle to apply.
Push forward and down to release
Parking Brake Adjustment Knob
Turn knob clockwise to increase brake tension.
Turn knob counter-clockwise to decrease tension.

CAUTION: Parking brake is as its name suggests, is for holding machine when it is not in operation. Parking brake must be released when operating machine. Hydrostatic transmission provides enough power to easily overcome parking brake when it is engaged.

Engine Throttle - Rocker Switch on top of the forward/neutral/reverse joystick press right or left to raise or lower engine rpm.

Joystick Controls - Move the control to the right to swing the broom to the right.
Move the control to the left to swing the broom to the left.
Move the control back will lift the broom.
Move the control forward will lower the broom.
Switch on handle will turn the broom rotation "ON" or "OFF" (each time the switch is toggled it will cycle the broom motor, "ON"/"OFF"/"ON")

Broom Float Switch - Turns the broom float "ON" or "OFF". Hydraulic counterbalance circuit functions only when switch is in turned "ON". NOTE: Swing arm will not operate when float is ON.

Hydraulic Counterbalance Control - With broom float switch "ON", turn adjuster clockwise to decrease sweeping pattern, turning adjuster counterclockwise to increase down pressure and increase sweeping pattern.

Steering Wheel - Wheel controls hydraulic power steering through fluid link to cylinders.

CAUTION: System does not return front wheels to a straight-ahead position when the operator releases the wheel. When the wheel is released, the wheel will remain in that position.

Operator's Seat Adjustment - Moving the lever on the left side of seat base allows for adjustment forward and back. The knob located behind the seat will adjust the height of the seat.

Heater (if Equipped) - Three (3) speed fan switch located on the left hand side of cab on AC/heater control panel.

Wipers, Front and Rear (if Equipped) - A switch is located on the left side of the steering column.

Strobe Light Switch - Located on the front control console

Back-up Alarm - Automatically sounds alarm whenever the Forward/neutral/Reverse is in the reverse position.

Traffic Horn - Electric horn operated by horn button switch on center of steering wheel.

NOTE: Engine must be "ON" or switch in accessory position.

Headlights - A push/pull switch located on the right hand side of the steering column operates the working lights.

Turn Signals and Flashers - Controlled by lever attached to steering column. Move lever up to signal right turn, move lever down to signal left turn. Pull hazard lever out to activate emergency flashers.

NOTE: Operation of turn signal will deactivate hazard-warning flashers. Operator must turn signal off manually.

Dome Light - Switch is located on the overhead pressurize fan unit.

WARNING: DO NOT USE ETHER (starting fluids) unless specifically instructed to do so by the engine manufacturer.

Water Spray System (If equipped) - One-quarter turn valve must be open to allow fluid transfer through the strainer to the pump. Turn the pump "ON" with a toggle switch located on left side of steering column. The pressure can be adjusted by turning the knob clockwise on the regulator valve until desired pattern and flow is achieved.

IMPORTANT: Standard system includes TEE-Jet 8001 nozzle tips. If additional volume is desired, tip size can be changed.

E. Instrumentation (Gauges and Warning Lights located on the display located on the console with the steering column)

Tachometer - Indicates the engine operating speed in 100-RPM increments.

IMPORTANT: Engine RPM also controls broom RPM.

Hour Meter – Included with tachometer. Indicates hours in tenths that the engine has operated.

Engine Oil Pressure Gauge - Indicates the engine oil pressure.

IMPORTANT: Engine oil pressure will drop slightly as engine temperature increases.

Engine Water (coolant) Temperature Gauge - Indicates the coolant temperature. Normal operating temperature should be between 165° to 217° F (73° to 103° C).

CAUTION: Do not operate engine over 225° F or engine damage could result.

Explosive release of fluids from pressurized cooling system can cause serious burns.

Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to the first stop then relieve the pressure before removing completely.

Volt Meter - Indicates the state of the battery charge, in volts.

Amp Meter - Indicates battery amperage draw.

Fuel Level Gauge - Indicates the level of the fuel in the fuel tank.

Hydraulic Fluid Temperature - Indicates the hydraulic oil temperature is in the reservoir.

Warning Indicator Lights - Park brake indicator: Indicates parking brake is set when lit.

Engine Warnings - Low oil pressure with audible indicator: Indicates oil pressure is below recommended limits when lit and buzzer is audible.

High Water temperature indicator: Indicates coolant temperature is above engine manufacturer's recommendation limits.

Engine Faults: All engine faults are located on the display.

Hydraulic Fluid Level Indicator - Located in the engine compartment on the hydraulic reservoir. Sight gauge shows the hydraulic oil level in the reservoir. Level should be kept midway between lines.

IMPORTANT: Check the 5/16 cap screws located on the bell and motor housing <u>every **40 hours**</u> for tightness. Tighten to 21-foot pounds torque.

G. Towing the Sweeper

If the sweeper cannot be moved under its own power, a trailer should transport it. If this is not possible and machine must be moved follow the instructions below.

IMPORTANT: All brakes are functional without engine operation.

WARNING: Steering will function without engine power but will be considerable slower than normal.

Towing is for emergency movement only.

<u>Do not exceed 34 MPH.</u>

1. Remove the drive shaft from the rear axle differential and slide the front yoke off the drive motor shaft.

2. Attach the towrope, chain or strap to the tie down rings that are provided with the machine.

Description of Operation

Setup:
The Setup screen on the DP250 display has setting for screen brightness, low fuel level, foot pedal selection and input calibration.
This screen is password protected. Please contact factory for correct password.
Press the SELECT button to select the digit. Press the Up or Down arrow button to adjust the value. Press the ENTER button to submit the password.
If the password is correct the Setup screen will appear. If the wrong password is entered the display will return to the Main screen.
Note: Pressing the Enter button without changing the digits will return the display to the Main screen.

Screen brightness:
The brightness can be set to manual or automatic adjustment. In automatic the DP250 uses the built in light sensor to determine screen brightness.

Low Fuel Level Warning:
This is the percentage of fuel left in the tank where the low fuel indicator will come on the main screen of the DP250 display.

Foot Pedal Installed:
This will be set to YES if the machine is equipped with the optional electronic foot pedal for machine speed control. If installed there is also a switch to select between Joystick and foot pedal control.

Reset Joy/Ped/Pot Cal:
This is used to clear any stored calibration values. Typically it would only be used if one of the input devices was repaired or replaced.

Calibration:
The joystick, foot pedal and the broom down pressure pot must be calibrated for the controller to be operational. The faults screen on the DP250 will show the NO CAL fault if the device has not been calibrated.

Calibration **:**

1. Place the joystick in the center position, the pressure pot in the full clockwise position and the foot pedal in its normal up position.
2. Press the SELECT button to select JOY/PED/POT CAL.
3. Press the down arrow button to clear any stored values.
4. Wait approx. 5 seconds for the controller to capture the joystick CEN position, and the MAX position of the pot and foot pedal.
5. Shift the joystick to the full forward position, the pressure pot to the full counter clockwise position and press the foot pedal to the full down position.

6. Wait approx. 5 seconds for the controller to capture the joystick MAX position, and the MIN position of the pot and foot pedal.
7. Shift the joystick to the full reverse position (release the foot pedal).
8. Wait approx. 5 seconds for the controller to capture the joystick MIN position.
9. Return the joystick to neutral.

Propel Function:
The hydro drive propels the vehicle and a hydraulic driven broom sweeps the road surface.
The hydro drive can be controlled two ways; with the foot pedal and joystick or with the joystick alone. Selection of the control is made with the Joystick / Foot Pedal selector switch. With the switch in the Joystick position the machines direction and speed are controlled with the joystick alone. With the switch in the Foot Pedal position the machine direction is controlled with the joystick and the speed is controlled with the foot pedal.

There are two propel modes: Work Mode and Travel Mode. In work mode the top speed of the machine is limited to 10 mph. The joystick or foot pedal (optional) will operate full stroke over this limited value giving the operator very precise speed control.
In Travel mode the machine is allowed to achieve full speed.

Enable the hydro drive: Place the Run/Stop Switch in the Run position, the joystick in neutral and release the park brake to enable the propel function.
Once enabled, the propel function will be disabled in the event of a propel system fault, if the Run/Stop Switch is placed in the Stop position or the park brake is applied..

Neutral Timeout: There is also a neutral timeout that will disable propel regardless of the position of the Run/Stop switch. If the joystick is in neutral for a given amount of time (set by the service tool) the propel function is disabled and the DP250 display will show a warning that the Neutral Timeout has occurred.
The operator must either press the brake pedal or place the Run Stop switch to the stop position and then back to Run to regain control. The neutral timeout will not occur as long as the brake pedal is pressed or the park brake is set.

Engine Control Function:
The engine RPM is controlled from a rocker switch on the joystick handle. The RPM command is adjusted by increments of 10 with each press of the button. If the button is held down the command will scroll up (or down) until it reaches the max (or minimum) settings, which are service tool adjustable.
The system also has an anti-stall function that will back off the propel command in the event that the engine RPM droops below the commanded value.

Broom Control:
The operator can control Broom On/Off, Left/Right and Lift/Lower functions all with the dual axis joystick. The Run/ Stop switch must be in the Run position. The push button on the handle will turn the broom on and off. Pull the joystick back to lift the broom, push the joystick forward to lower it. Move the joystick left and the broom will turn left and likewise for broom right.

Broom Float: In addition to the joystick functions the operator can control the broom down pressure with the down pressure potentiometer. To activate place the Float switch in the Float position.
The down pressure coil will not energize if the engine is not running or the Run / Stop switch is in the Stop position.

DP250 Screens

Startup Screen

Main Screen

Faults Screen

Engine Faults Screen

Hydraulics Screen

Setup Screen

Notes

Section 6

Shipping

NOTE: GEFFS Manufacturing, Inc. Mighty Sweep broom is shipped fully assembled from the factory and is ready to be placed into operation.

A. Shipment

Shipping from one location to another should be done according to the following list of recommended procedures and practices for safe shipment.

1. Mighty Sweep should be transported on a trailer capable of hauling 6000 GVW and of suitable size to accommodate over all machine dimensions.
2. Machine should be backed onto the trailer under its own power. If machine must be winched onto trailer, follow the towing instructions.
3. Use the tie down rings that are provided on the bottom of the frame (front and rear).

WARNING: When the machine is positioned on the trailer and tied down, parking brake should be applied before transporting.

IMPORTANT: The machine must be transported backwards on the trailer.

The broom should be positioned 90° to the frame that is the narrowest width position for shipment.

The machine should be shipped with the broom in the raised position to prevent folding of the bristles against the trailer deck.

4. All electrical accessories and switches should be shut off.

5. All cab doors and engine compartment doors should be latched and locked before shipping.

IMPORTANT: Latch the doors closed during transportation.

6. Fluid tank on the front of machine should be drained before transporting machine. All the valves should be shut. (If equipped)

B. Unloading

CAUTION: Exercise extreme caution during the unloading of the machine. Method of transportation and type of equipment used for transporting will dictate the procedure necessary.

Personal operating the equipment during unloading should be familiar with its operation and be thoroughly aware of all appropriate information contained in this manual regarding safety and operating the machine.

Due to the design and function of the machine it is preferable to drive the sweeper under its own power from the trailer. A suitable unloading area and facilities will be necessary depending on the type of trailer used for transporting.

Review the shipment procedures and follow in reverse to safely unload the machine. All safety precautions apply to the unloading process.

C. Receipt Inspection

Inspect newly arrived sweepers immediately for shipping damage. Note any damages or shortages on the shipping documents. Follow the inspection checklist below before putting the unit into operation.

1. Check unit for obvious structural or cosmetic damage.
2. Check tires for damage and proper inflation pressure and the lug nuts for tightness.
3. Check overall machine for loose or missing fasteners.
4. Check engine coolant level.
5. Check engine oil level.
6. Check hydraulic system fluid level.
7. Check engine air intake system for loose clamps or connections.
8. After machine has run for several minutes check for leaks in the hydraulic system, engine oil system and engine coolant system.

Section 8

This section contains information concerning regularly schedules servicing and preventative maintenance. Personal servicing this machine should keep accurate and complete records of the service preformed. The schedule established herein is a minimum. For service or maintenance beyond the scope of this chapter, contact components manufacturer's distributor or dealer. Operating personnel must perform service checks regularly. If abnormal conditions are detected, inform maintenance personnel immediately.

Lubrication Chart

Geffs Manufacturing, Inc. uses only Pennzoil products for their lubrication needs. The following list is a competitive cross-reference list for these Pennzoil products. Other brands of lubricant can be used if it meets the same standard as the brands listed below. Hydraulic oil must meet the ISO 32 standard. Hydraulic oil must be filtered with a 3-micron filter before adding the oil to the system. Always use a good quality of multi-purpose grease to lubricate bearings, u-joints, and axle pivot.

Brands	Hydraulic System	Engine Oil	Axle Oil	Brake Fluid
Pennzoil	AW 32 ISO 32	SAE 15W-40	SAE 80W90 GL5	DOT 3
Amoco	AW 32	SAE 15W-40	SAE 80W90	DOT 3
Chevron	AW Hydraulic Oil 32	SAE 15W-40	SAE 80W90	DOT 3
Conoco	Super Hydraulic Oil 32	SAE 15W-40	SAE 80W90	DOT 3
Exxon	Nuto H 32	SAE 15W-40	SAE 80W90	DOT 3
Gulf		SAE 15W-40	SAE 80W90	DOT 3
Mobil	AW Hydraulic Oil 32	SAE 15W-40	SAE 80W90	DOT 3
Quaker State		SAE 15W-40	SAE 80W90	DOT 3
Texaco	Rando HD 32	SAE 15W-40	SAE 80W90	DOT 3
Valvoline	AW Hydraulic Oil 32	SAE 15W-40	SAE 80W90	DOT 3

Lubrication Maintenance Schedule

Maintenance Schedule	New Done At Factory Before Shipping	Daily	Bi-Weekly Every 25 Hours	Weekly or Every 50 Hours	Yearly or Every 250 Hours	See Product Manual For Time	If Over Heats
Engine Oil Level Check		**X**			**X**		**X**
Engine Radiator Level Check		**X**			**X**	**X**	**X**
Axle Differential Level Check	**X**			**X**	**X**		**X**
Hydraulic Tank Oil Level Check	**X**			**X**	**X**		**X**
Engine Oil & Filter Change	**X**				**X**	**X**	**X**
Hydraulic Filters Change	**X**				**X**		**X**
Hydraulic Oil Change *	**X**						**X**
Bearings Grease				**X**	**X**		**X**
Front Axle Pivot Grease			**X**		**X**		
U-joints Grease				**X**	**X**		
Engine Air Cleaner Check		**X**			**X**		
Steering Rod Ends				**X**			
Steering Cylinder Pivot Mount				**X**			
Broom Arm Pivot				**X**			
2-Speed Gearbox	**X**				**X**		**X**

* Change Hydraulic Oil every 1000 hours with filtered oil.

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Exxon	Nuto H 32	SAE 15W-40	SAE 80W90	DOT 3
Gulf		SAE 15W-40	SAE 80W90	DOT 3
Mobil	AW Hydraulic Oil 32	SAE 15W-40	SAE 80W90	DOT 3
Quaker State		SAE 15W-40	SAE 80W90	DOT 3
Texaco	Rando HD 32	SAE 15W-40	SAE 80W90	DOT 3
Valvoline	AW Hydraulic Oil 32	SAE 15W-40	SAE 80W90	DOT 3

Lubrication Maintenance Schedule

Maintenance Schedule	New Done At Factory Before Shipping	Daily	Bi-Weekly Every 25 Hours	Weekly or Every 50 Hours	Yearly or Every 250 Hours	See Product Manual For Time	If Over Heats
Engine Oil Level Check		**X**			**X**		**X**
Engine Radiator Level Check		**X**			**X**	**X**	**X**
Axle Differential Level Check	**X**			**X**	**X**		**X**
Hydraulic Tank Oil Level Check	**X**			**X**	**X**		**X**
Engine Oil & Filter Change	**X**				**X**	**X**	**X**
Hydraulic Filters Change	**X**				**X**		**X**
Hydraulic Oil Change *	**X**						**X**
Bearings Grease				**X**	**X**		**X**
Front Axle Pivot Grease			**X**		**X**		
U-joints Grease				**X**	**X**		
Engine Air Cleaner Check		**X**			**X**		
Steering Rod Ends				**X**			
Steering Cylinder Pivot Mount				**X**			
Broom Arm Pivot				**X**			
2-Speed Gearbox	**X**				**X**		**X**

* Change Hydraulic Oil every 1000 hours with filtered oil.

Section 10

Trouble Shooting

Proper troubleshooting begins with an organized approach to the problem at hand. Begin with investigation of the most probable cause, following the guidelines below.

Study the problem thoroughly before taking action.

Did warning signs precede the problem? If so, what were they? What would they indicate?

Is scheduled maintenance current on all parts and systems involved?

Has similar trouble occurred before? What action was taken at that time?

Can engine be operated without further damage?

Check the most convenient things first.

Don't begin major work before checking all other possibilities.

Reconsider all known facts and clues before proceeding to more in-depth work.

Remember, failure of certain parts may be caused by malfunction of another part of system.

The troubleshooting charts lists problems that might be encountered in the operation of the sweeper. The solution listed may direct the repairperson to a possible faulty component.

WARNING: Maintenance and repairs should not be attempted by other than experienced mechanics or personnel under the direct supervision of an experienced mechanic. Failure to comply may result in damage to equipment and/or injury or death to personnel.

CAUTION: Review and follow all safety instructions before performing any maintenance. To prevent injury, never lubricate or service sweeper, engine or clean the machine while it is running. Engine must be off, park brake engaged, and key removed.

Extreme care should be taken to assure that no foreign matter enters your hydraulic system. Always clean off fittings and hoses before connecting them together. If lines are disassembled, cap both ends to eliminate foreign matter from entering your hydraulic system. Severe damage may occur to the sweeper hydraulic system.

Do not use Teflon tape: use thread sealant.

Hydraulic oil must be filtered with a 3-micron filter before adding the oil to the hydraulic system.

A. Engine

If there are any problems with the engine or it needs servicing, refer to the manufacture's manual for the proper maintenance and trouble shooting procedures. If you need assistance contact your local engine dealer or Geffs Manufacturing, Inc.

Engine will not crank over. (See also Section H Electrical System)

1. If the transmission Forward/Neutral/Reverse Joystick is not in the neutral position the engine **will not start**.
2. Check the battery cables and terminals.
3. Check the starter cables and terminals.
4. Check the starter solenoid.
5.

B. Hydrostatic Transmission (6000 psi maximum system pressure)

1. Sweeper fails to move under power.
    a. Parking brake set.
    b. Joystick in neutral position
    c. neutral time out occurred step on brake pedal to engage.
    d. Inadequate oil level in hydraulic reservoir.
    e. Drive coupler missing or damaged.
    f. Inadequate oil flow through transmission suction filter.
    g. Driveline mechanical failure.

For detailed troubleshooting information on hydrostatic transmission refer to Eaton parts and repair manual available from and Eaton representative.

C. Hydraulic System (1500 psi maximum system pressure)

1. Thoroughly review description of hydraulic system in this manual.
2. Use logical steps to determine cause of malfunction.
3. Identify the function or functions that require troubleshooting.
4. If possible, trace malfunction to source: pump, control, motor or cylinder.
5. Determine if pressure or volume is inadequate for function as specified.
6. Hydraulic system pressures.
    a. Priority circuit = 1500 psi (Steering, Swing and Lift)
    b. Main circuit = 1500 psi (Broom speed)

7. Hydraulic system flows.
    a. Priority circuit = 4 gpm (Steering, Swing and Lift)
    b. Main circuit = 23 gpm (Broom speed)

All the hydraulic functions with the exception of the hydrostatic transmission system are run off of the small pump. The controls for the steering, swing and broom lift are in the integral control valve block. After defining the system that has failed, refer to the cartridge or cartridges that control that system.

D. Integral Control Valve

Problem	Possible cause	Correction
No power steering	Inadequate fluid flow to steering orbital valve. Inadequate pressure to steering orbital valve.	Inspect or replace priority valve cartridge Inspect, clean or replace relief valve cartridge
No broom swing or lift	Inadequate flow from pump Inadequate pressure	Inspect or replace priority valve cartridge Inspect, clean or replace relief valve cartridge
Inappropriate swing or lift speed	Fluid flow to cylinders too high or low	Priority valve cartridge or priority flow control orifice in pump cover.

E. Steering

Most steering problems can be corrected if the problem is properly defined. The entire steering system should be evaluated before removing any components. The steering control unit is generally not the cause of most steering problems. The following is a list of steering problems along with possible causes and suggested corrections.

Problem	Possible cause	Correction
Slow steering, hard steering, or loss of power assist.	Worn or malfunctioning pump. Stuck flow divider piston. Worn pump compensator allowing the system pressure to be less than specified. Malfunctioning relief valve allowing the system pressure to be less than specified. Overloaded steer axle.	Replace pump. Replace flow divider. Replace pump and compensator. Replace the relief valve. Reduce load.
Wandering - vehicle will not stay in a straight line.	Air in the system due to: Low level of hydraulic fluid, pump cavitation, leaky fitting or pinched hose. Worn mechanical linkage or bending of	Correct by adding fluid Repair or replace hose. Repair or replace linkage

	linkage. Bent cylinder rod. Loose cylinder piston. Severe wear in steering control unit.	 Repair or replace cylinder Repair or replace cylinder. Replace the steering control unit.
Drift - vehicle veers slowly in one direction.	Worn or damaged steering linkage.	Replace linkage and align front end.
Slip - a slow movement of steering wheel fails to cause any movement of steered wheels.	Leakage of cylinder piston seals. Worn steering orbital.	Replace seals. Replace steering orbital.
Temporary hard steering or hang-up.	Thermal shock. *	Check unit for proper operation and cause of thermal shock. *
Erratic steering	Air in system due to low hydraulic fluid level, pump cavitation or leaky fitting. Pinched hose. Loose cylinder piston. Thermal Shock* damage. Sticking flow control spool.	Correct fluid level. Repair or replace hose. Replace cylinder Replace steering orbital. Replace flow control valve.
Spongy or soft steering.	Air in hydraulic system. Most likely air trapped in cylinders or lines. Low fluid level.	Bleed air out of system. Placing ports on top of the cylinder will help prevent air trapping. Add fluid and check for leaks.
Free wheeling - steering turns with slight resistance but results in little or no steered wheel action.	Leaking crossover relief or anti-cavitation valve in cylinder lines. Piston seal blown out.	Repair or replace the valve. Correct and replace seal.
Free wheeling - steering wheel turns freely with no feeling of pressure and no action on steered wheels.	Steering column upper shaft is loose or damaged. Lower spindle of column may be damaged or broken. Steering orbital has a lack of fluid. This can happen on start-u, after repair, or long	Tighten steering wheel nut or replace damaged part. Repair or replace column. Usually starting engine and allowing system to pressurize will cure problem.

	periods of non-use. No flow to steering orbital can be caused by: 1. Low fluid level. 2. Ruptured hose. 3. Internal steering orbital damaged due to thermal shock. *	 Add fluid and check for leaks. Replace hose. Replace steering orbital.
Excessive free play at steered wheels.	Broken or worn linkage between cylinder and steered wheels. Leaky cylinder seals.	Check for loose fitting bearings and anchor points in steering linkage between cylinder and steered wheels. Replace cylinder seals.
Steering unit locks up.	Large particles in meter section. Insufficient hydraulic power. Severe wear and/or broken pin. Thermal Shock*	Clean unit. Check hydraulic power supply. Replace the unit. Replace the steering orbital.
Steering wheel oscillates or turns by itself.	Parts assembled wrong. Steering orbital improperly timed. Lines connected to wrong ports.	Correctly install. Correct timing. Reconnect lines correctly.
Steered wheels turn wrong direction when operator activates steering wheel.	Lines connected to wrong cylinder ports.	Reconnect lines correctly.
Steering wheel kicks at start of steering.	No inlet check valve on steering orbital.	Install a check valve.

*Thermal Shock – a condition caused when the hydraulic system is operated for sometime without turning the steering wheel so that fluid in the reservoir and system is hot and the steering orbital is relatively cool (more than 50°F temperature differential). When the steering wheel is turned quickly the result is temporary seizure and possible damage to internal parts of the steering orbital. Total freewheeling may follow the temporary seizure.

F. Broom Swing and Lift

The entire system should be evaluated before removing any components. The following is a list of problems with possible causes and suggested corrections.

Problem	Possible Cause	Correction
Slow swing or lift, loss of power.	Worn or malfunctioning pump.	Repair or replace pump.
	Stuck flow divider cartridge.	Repair or replace cartridge.
	Stuck relief valve cartridge.	Repair or replace cartridge.
	Warn pump allowing system pressure to be less than specified.	Repair or replace pump.
Surging of broom left to right.	Air in the system due to: low level of hydraulic fluid, pump cavitation, leaky fitting or pinched hose.	Correct by adding fluid Repair or replace hose.
	Worn or bent mechanical linkage.	Repair or replace linkage.
	Bent cylinder rod.	Replace cylinder.
	Loose cylinder piston.	Repair or replace cylinder.
Erratic swing.	Air in the system due to: low level of hydraulic fluid, pump cavitation, leaky fitting or pinched hose.	Correct by adding fluid Repair or replace hose.
	Loose cylinder piston.	Replace cylinder.
	Sticking flow divider valve.	Repair or replace.
Excessive free play.	Broken or worn linkage between cylinder and broom.	Repair or replace.
	Leaky cylinder.	Repair or replace.
Broom will not lower to float position.	Counterbalance control adjustment overriding control valve.	Readjust control.

G. Broom Drive

The entire system should be evaluated before removing any components. The following is a list of problems with possible causes and suggested corrections.

Problem	Possible Cause	Correction
No power or inadequate power.	Worn or malfunctioning pump or motor. Stuck relief valve cartridge. Low system pressure by worn pump.	Repair or replace pump or motor. Repair or replace. Repair or replace pump.
Surging of broom rpm.	Air in the system due to: low level of hydraulic fluid, pump cavitation, leaky fitting or pinched hose.	Correct by adding fluid Repair or replace hose.

H. Electrical System

Engine Status	Voltmeter Reading	Indication	Correction
Running	13.5 - 14 volts	Normal Condition	None
Running	Less than 13.5 volts or More than 14.0 volts	Alternator or Voltage Regulator Malfunction	Contact Dealer
Will Not Start	12-12.5 volts	Weak Battery	Charge Battery
Will Not Start	Less than 12 volts	Weak Battery or Defective Battery Cell	Charge Battery or Replace Battery
Stopped	Excessive Current Draw	Short Circuit	Inspect System

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P.O. Box 4885
Pocatello, Idaho 83205-4885
208-232-1100

USER GUIDE

GEFFS MANUFACTURING INC.

MIGHTY SWEEP
VEHICLE CONTROL MANUAL

Table of Contents

I. Revisions

LEVEL	DESCRIPTION – ECO NUMBER	DATE	BY
100	Created	2/7/11	AP
101	Moved input for hydraulic oil temp.	2/10/11	AP
102	Added park brake indicator. Added Float On input.	2/17/11	AP
103	Added password protect to Setup screen	2/17/11	AP

II. Software Specification

Module	NODE #	HWD Version	Baud Rate	Program Number
MC050-020	11	1010xxxxv210	250	SA43xxxxx
DP250	12	7003xxxxv100	250	SA43xxxxx

III. Description of Operation

Setup:

The Setup screen on the DP250 display has setting for screen brightness, low fuel level, foot pedal selection and input calibration.

This screen is password protected. The default password is **208**, but can be changed with the laptop service tool.

Press the SELECT button to select the digit. Press the Up or Down arrow button to adjust the value. Press the ENTER button to submit the password.

If the password is correct the Setup screen will appear. If the wrong password is entered the display will return to the Main screen.

Note: Pressing the Enter button without changing the digits will return the display to the Main screen.

Screen brightness:

The brightness can be set to manual or automatic adjustment. In automatic the DP250 uses the built in light sensor to determine screen brightness.

Low Fuel Level Warning:

This is the percentage of fuel left in the tank where the low fuel indicator will come on the main screen of the DP250 display.

Foot Pedal Installed:

This will be set to YES if the machine is equipped with the optional electronic foot pedal for machine speed control. If installed there is also a switch to select between Joystick and foot pedal control.

Reset Joy/Ped/Pot Cal:

This is used to clear any stored calibration values. Typically it would only be used if one of the input devices was repaired or replaced.

Calibration:

The joystick, foot pedal and the broom down pressure pot must be calibrated for the controller to be operational. The faults screen on the DP250 will show the NO CAL fault if the device has not been calibrated.

Calibration **:**

1. Place the joystick in the center position, the pressure pot in the full clockwise position and the foot pedal in its normal up position.
2. Press the SELECT button to select JOY/PED/POT CAL.
3. Press the down arrow button to clear any stored values.
4. Wait approx. 5 seconds for the controller to capture the joystick CEN position, and the MAX position of the pot and foot pedal.
5. Shift the joystick to the full forward position, the pressure pot to the full counter clockwise position and press the foot pedal to the full down position.
6. Wait approx. 5 seconds for the controller to capture the joystick MAX position, and the MIN position of the pot and foot pedal.
7. Shift the joystick to the full reverse position (release the foot pedal).
8. Wait approx. 5 seconds for the controller to capture the joystick MIN position.
9. Return the joystick to neutral.

Propel Function:

The hydro drive propels the vehicle and a hydraulic driven broom sweeps the road surface.
The hydro drive can be controlled two ways; with the foot pedal and joystick or with the joystick alone. Selection of the control is made with the Joystick / Foot Pedal selector switch. With the switch in the Joystick position the machines direction and speed are controlled with the joystick alone. With the switch in the Foot Pedal position the machine direction is controlled with the joystick and the speed is controlled with the foot pedal.

There are two propel modes: Work Mode and Travel Mode. In work mode the top speed of the machine is limited to a service tool adjustable value. The joystick or foot pedal will operate full stroke over this limited value giving the operator very precise speed control.
In Travel mode the machine is allowed to achieve full speed.

Enable the hydro drive: Place the Run/Stop Switch in the Run position, the joystick in neutral and release the park brake to enable the propel function.
Once enabled, the propel function will be disabled in the event of a propel system fault, if the Run/Stop Switch is placed in the Stop position or the park brake is applied..

Neutral Timeout: There is also a neutral timeout that will disable propel regardless of the position of the Run/Stop switch. If the joystick is in neutral for a given amount of time (set by the service tool) the propel function is disabled and the DP250 display will show a warning that the Neutral Timeout has occurred.
The operator must either press the brake pedal or place the Run Stop switch to the stop position and then back to Run to regain control. The neutral timeout will not occur as long as the brake pedal is pressed or the park brake is set.

Engine Control Function:

The engine RPM is controlled from a rocker switch on the joystick handle. The RPM command is adjusted by increments of 10 with each press of the button. If the button is held down the command will scroll up (or down) until it reaches the max (or minimum) settings, which are service tool adjustable.
The system also has an antistall function that will back off the propel command in the event that the engine RPM droops below the commanded value.

Broom Control:

The operator can control Broom On/Off, Left/Right and Lift/Lower functions all with the dual axis joystick. The Run/ Stop switch must be in the Run position. The push button on the handle will turn the broom on and off. Pull the joystick back to lift the broom, push the joystick forward to lower it. Move the joystick left and the broom will turn left and likewise for broom right.

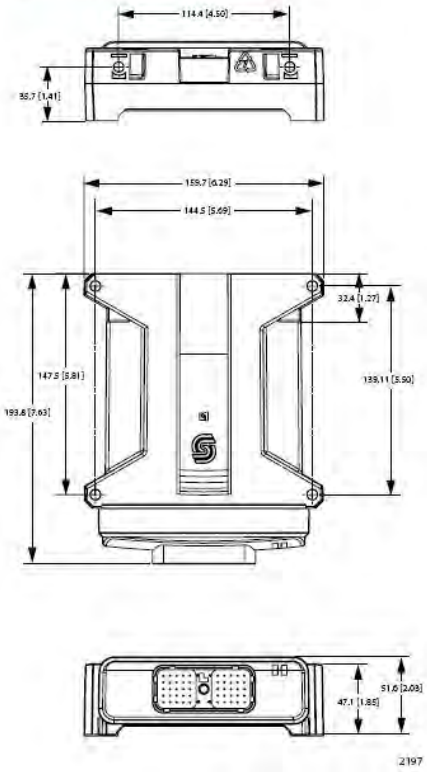
Broom Float: In addition to the joystick functions the operator can control the broom down pressure with the down pressure potentiometer. To activate place the Float switch in the Float position.
The down pressure coil will not energize if the engine is not running or the Run / Stop switch is in the Stop position.

IV. I/O Table MC050-20:

SAUER DANFOSS

MC050-020-00000 PLUS 1™ Controller

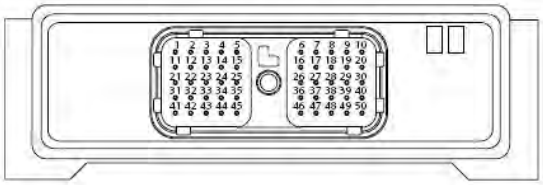
Dimensions and Pin Assignment



MC050-020-00000 mounting dimensions.

Power ground -	C1-P1
Power supply +	C1-P2
CAN1 +	C1-P3
CAN1 -	C1-P4
AIN/CAN1 shield	C1-P5
DIN	C1-P6
DIN	C1-P7
5 V DC sensor power +	C1-P8
Sensor power ground -	C1-P9
DIN	C1-P10
DIN	C1-P11
DIN	C1-P12
DIN	C1-P13
DIN	C1-P14
DIN	C1-P15
DIN	C1-P16
DIN	C1-P17
DIN/AIN	C1-P18
DIN/AIN	C1-P19
CAN2 +	C1-P20
CAN2 -	C1-P21
AIN/CAN2 shield	C1-P22
DIN/AIN	C1-P23
DIN/AIN	C1-P24
DIN/AIN/FreqIN	C1-P25

DIN/AIN/FreqIN	C1-P26
DIN/AIN/FreqIN	C1-P27
DIN/AIN/FreqIN	C1-P28
DIN/AIN/FreqIN	C1-P29
DIN/AIN/FreqIN	C1-P30
AIN/Temp/Rheo	C1-P31
AIN/Temp/Rheo	C1-P32
DOUT	C1-P33
DOUT	C1-P34
DOUT	C1-P35
DOUT	C1-P36
DOUT	C1-P37
DOUT	C1-P38
DOUT/PVE Pwr1	C1-P39
DOUT/PVE Pwr2	C1-P40
PWMOUT/DOUT/PVE 1OUT	C1-P41
PWMOUT/DOUT/PVE 1OUT	C1-P42
PWMOUT/DOUT/PVE 1OUT	C1-P43
PWMOUT/DOUT/PVE 2OUT	C1-P44
PWMOUT/DOUT/PVE 2OUT	C1-P45
PWMOUT/DOUT/PVE 2OUT	C1-P46
Power supply +	C1-P47
Power supply +	C1-P48
Power supply +	C1-P49
Power supply +	C1-P50



MC050-020-00000 50 pin connector.

Above pinouts are for device pins.
Use care when wiring mating connector.

Specifications

Product Parameters	
Supply voltage:	9 to 36 V
Operating temperature (ambient):	-40 to 70° C
Storage temperature:	-40 to 85° C
IP rating:	IP 67
EMI/RFI rating:	100 V/M
Weight:	0.53 kg (1.16 lb)
Vibration:	IEC 60068-2-64
Shock:	IEC 60068-2-27 test Ea
Maximum current:	40 A

Ordering Information	Part Number
MC050-020-00000	10100994
Related Products	**Part Number**
USB to CAN communicator	1091099
Deutsch mating connector bag assembly	10100946
PLUS 1 GUIDE single user license	10101000
Comprehensive Technical Information	
PLUS 1 Controller Family Technical Information manual order number:	DKMH.PB.700.A1.02/ 520L0719
Product literature is on line at:	www.sauer-danfoss.com

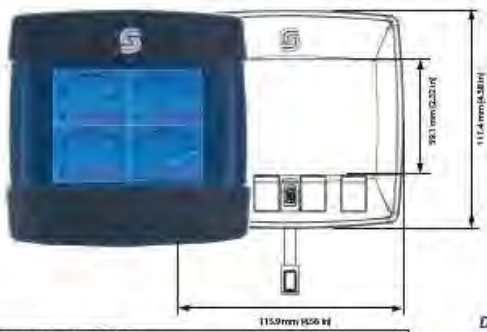
DKMH.PD.760.H1.02/520L0715 01/2004

V. I/O Table DP250:

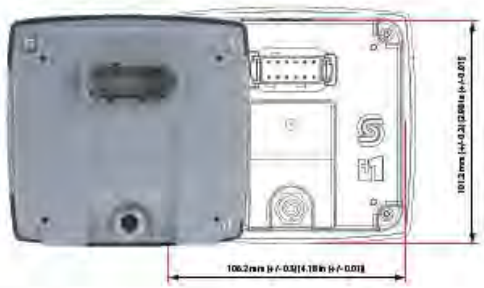
SAUER DANFOSS

DP250 Series
PLUS+1 Display

DP250 Dimensions



Mounting Panel Cutout Dimensions



DP2XX Series Model Code		
A	***Model Name***	
	DP250	Color Graphical Display
B	***Inputs/CAN Options***	
	00	1 CAN port
	01	1 CAN port, 4 DIN/AIN
	02	1 RedCAN port
	05	User Configurable: 2 CAN ports or 1 CAN port, 4 DIN/AIN
	06	User Configurable: 1 RedCAN port, 1 CAN port or 1 RedCAN port, 2 DIN/AIN
	Real Time Clock/ Low Temperature Functionality	
C	01	RTC and LTF
D	***Flash Memory/Application Key***	
	04	16MB without Application Key
	05	16MB with Application Key
E	***Application Log***	
	00	None
	05	16 MB
F	***USB Port Type***	
	00	None
	01	USB Device in Front
	02	USB Device in Rear

DP250 Series Ordering Information

Model	Part Num.
DP250-00-00-04-00-00	11080686
DP250-00-01-05-00-00 (EIC Installed)	11075899
DP250-01-01-04-05-00	11075900
DP250-01-01-05-05-00	11077442
DP250-05-01-04-05-00	11060814
DP250-05-01-05-05-00	11077443
DP250-06-01-04-05-01	11060816
DP250-06-01-05-05-01	11077444
DP250-02-01-04-05-02	11060919

DP250 Series Accessory Information

Model	Part Num.
DP2XX Panel Mounting Kit	11079236
Deutsch 12-pin Connector Kit (DTM06-12SA)	10100944
Binder Connector and Cable Kit (Series 702)	10103497

DP250 Series Specifications

Processor	ARM 7 core, 16/32 bit/ 72 MHz
RAM	64KB on-chip, 1MB on board
FRAM	16 KB
Supply Voltage/ Current Consumption	9–63 Vdc/6.5W Heater 10W
Connector	Deutsch DTM-12
LCD Glass	TFT with 12-bit resolution
Resolution	320 x 240 pixels
Viewable Area	70.08 mm x 52.56 mm [3.15 x 2.16]
IP Rating	IP67 or IP54
Operation Temperature	–30 °C — +70°C [–22°F — +158°F]
Storage Temperature	–40 °C — +85°C [–40°F — +176°F]
Weight	250g [0.5lb]
Vibration/Shock	5g/ 50g
EMC/ESD	100V/m / 15kV

The DP250 front mini-USB model option carries an IP54 ingress rating. The USB cover/ plug must be in place for full IP54 protection. This model variant is recommended for in-cab installation only.

For full IP67 ingress rating of rear USB models, the cable or plug must be in place.

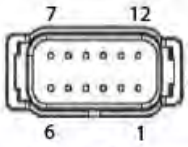
DP250 Binder Series 702 USB connector pin out information

1	Vbus
2	Data -
3	Data +
4	N/C
5	Ground
6	N/C
7	N/C
8	N/C

DP250 USB mini-B connector pin out information

1	Vbus
2	Data -
3	Data +
4	Device ID (NC)
5	Ground

Use care when wiring mating connector. Diagrams show device pins.



DP250 Series Deutsch 12-pin connector pin out information

1	Power ground-
2	Power supply+
3	CAN 0+
4	CAN 0–
5	AIN/ CAN Shield
6	See Code B option/TI
7	See Code B option/TI
8	See Code B option/TI
9	See Code B option/TI
10	DIN/AIN,FREQ IN/ CURRENT IN, RHEOSTAT
11	DIN/AIN,FREQ IN/ CURRENT IN, RHEOSTAT
12	DOUT (0.5A)

Comprehensive technical information: DP2XX Graphical Display Family Technical Information, L102602

Sauer-Danfoss product literature is online at www.sauer-danfoss.com

L1026137 • Rev AA • Mar 2010

CE COMPLIANT

VI. DP250 Screens

Startup Screen

Main Screen

Faults Screen

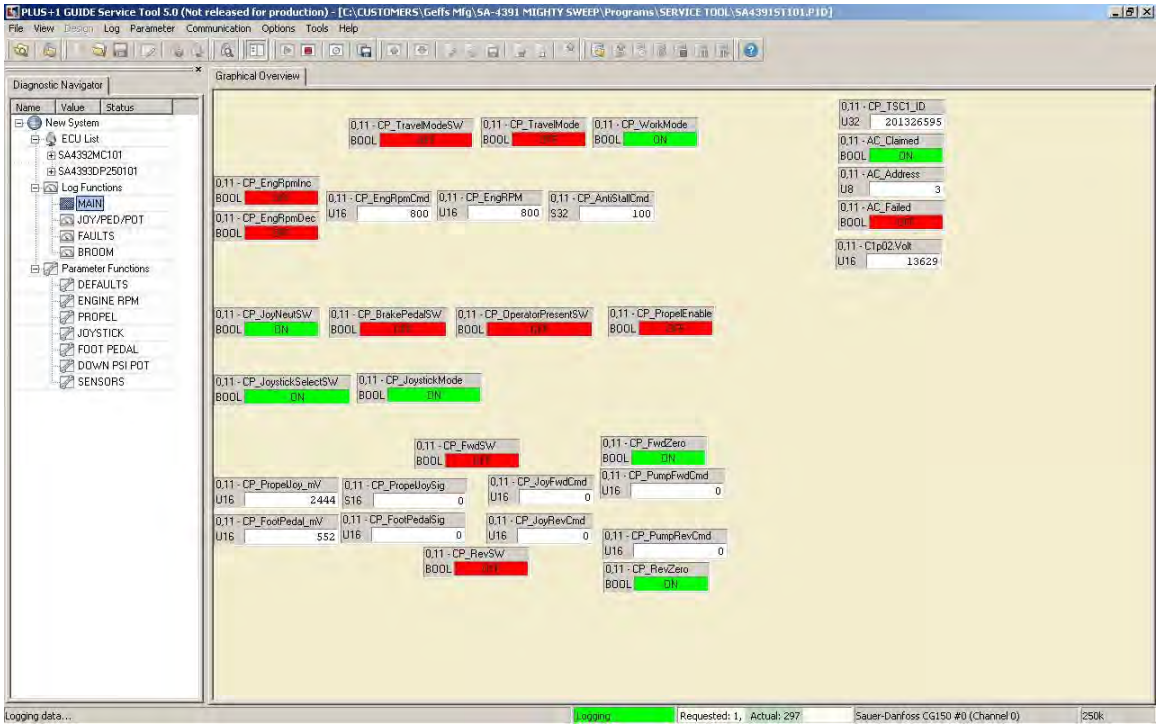
Engine Faults Screen

Hydraulics Screen

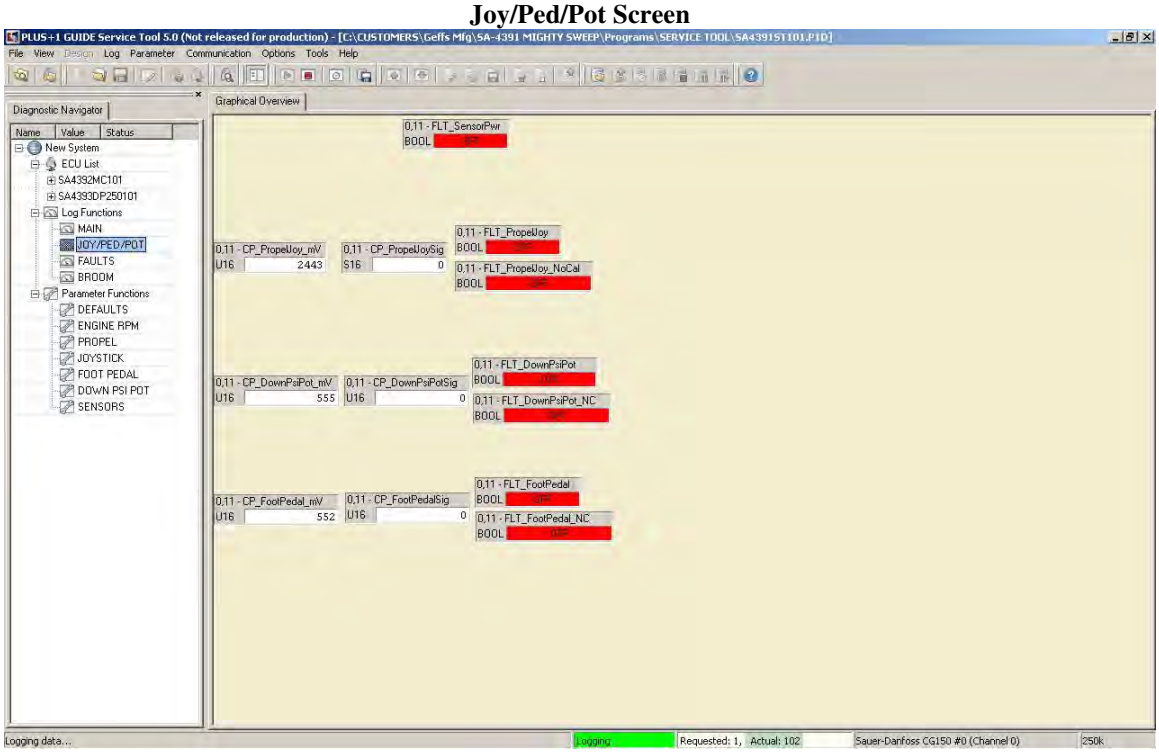
Setup Screen

VII. Service Tool

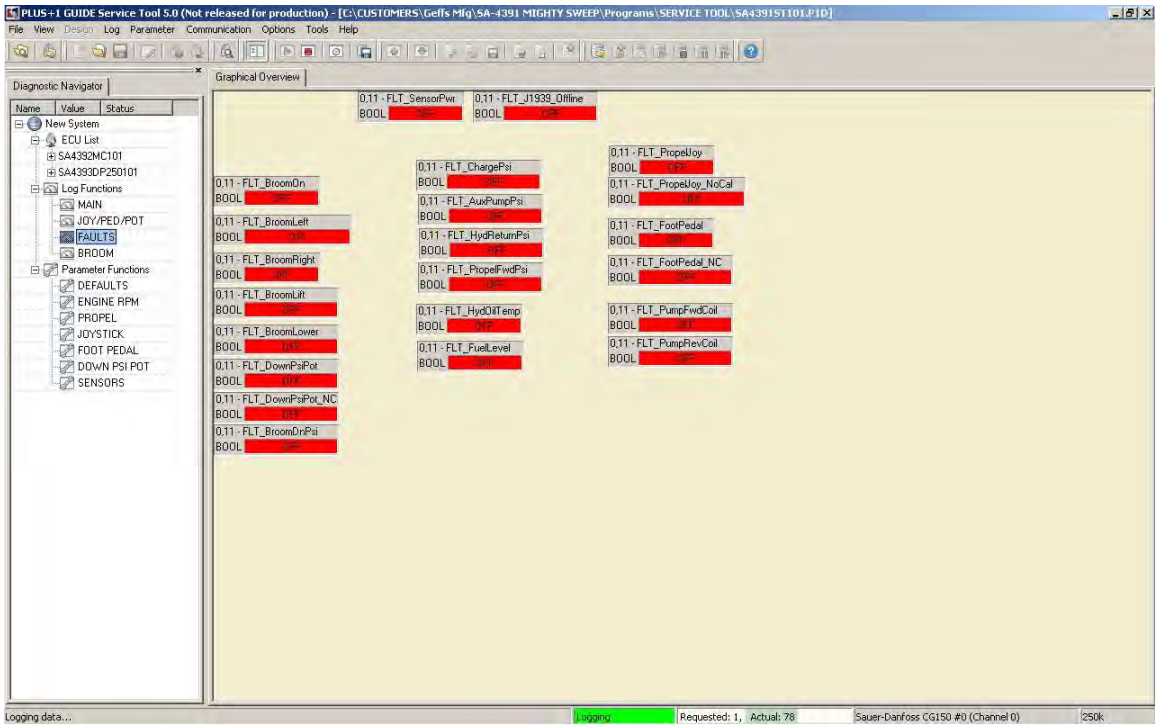
Main Screen



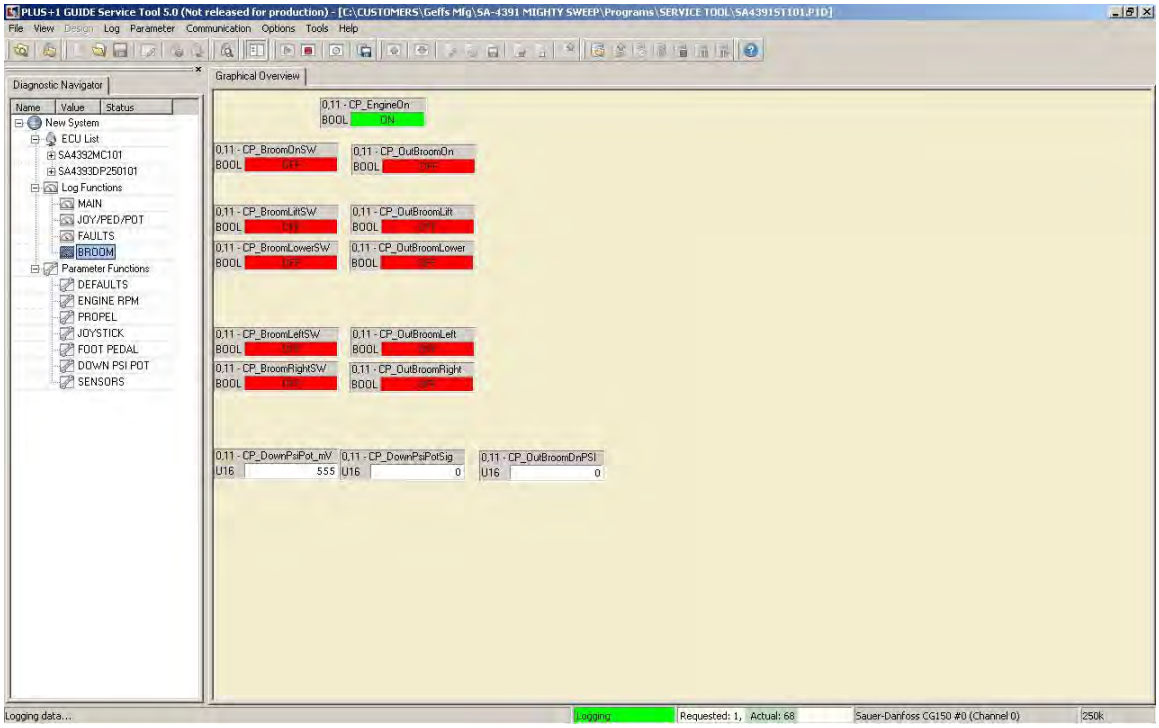
Joy/Ped/Pot Screen



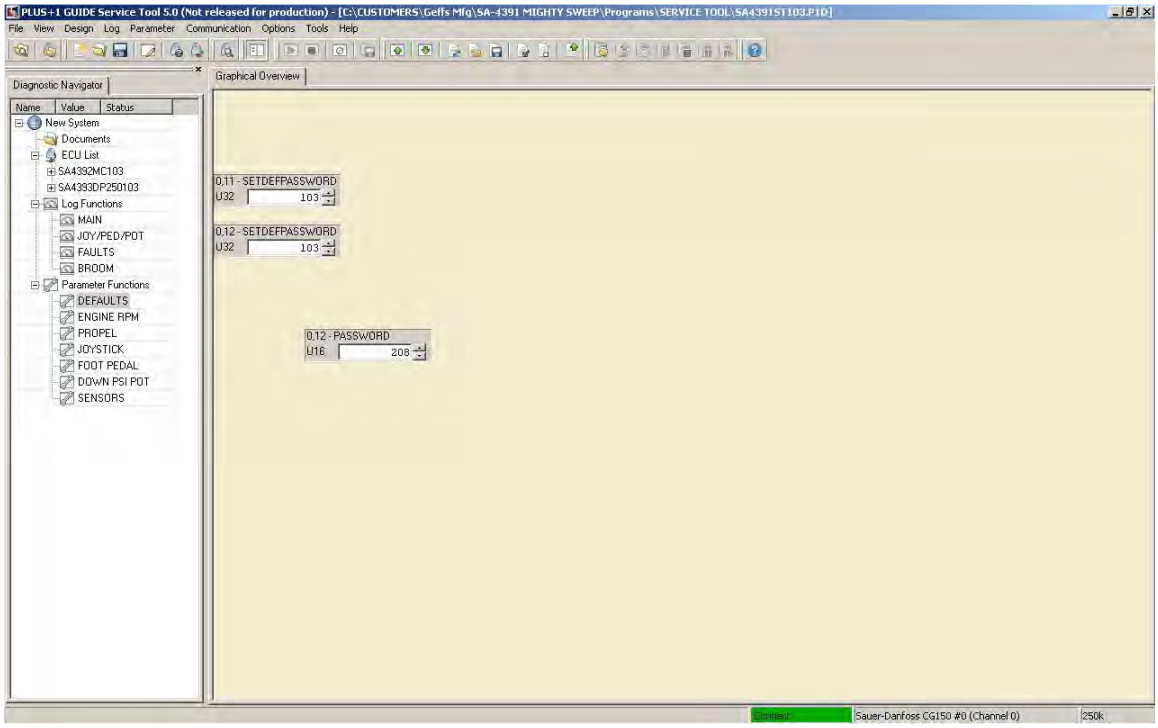
Faults Screen



Broom Screen

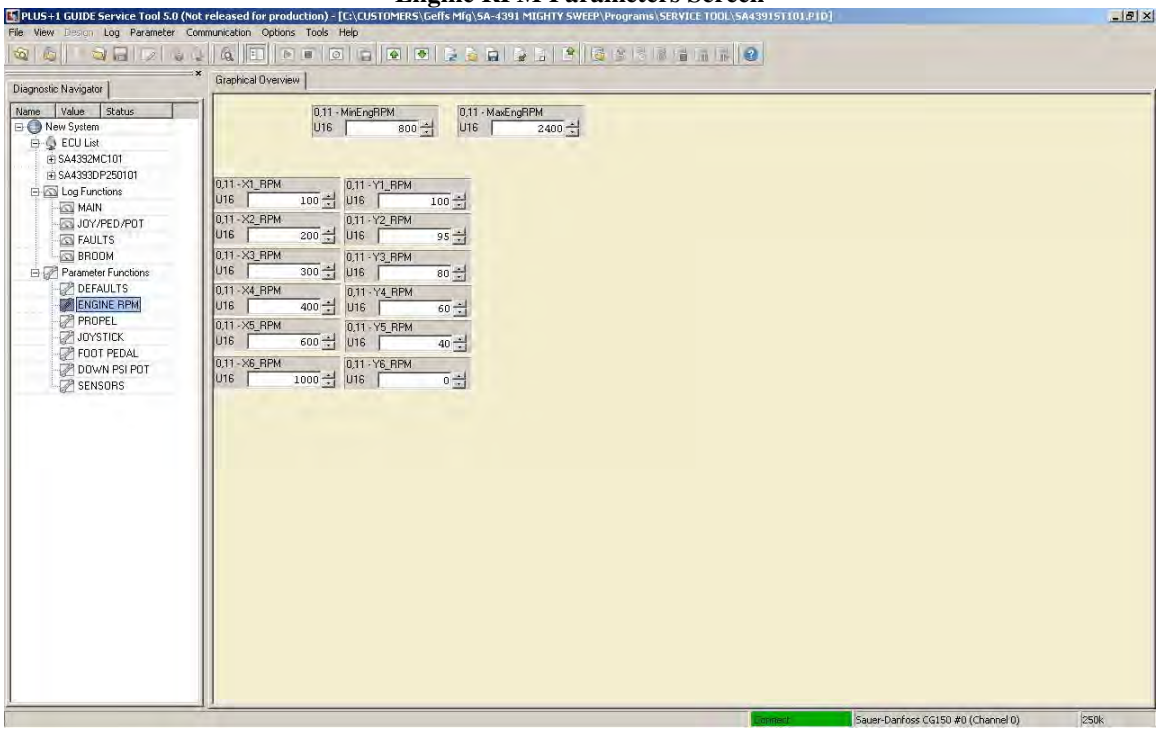


Defaults Parameters Screen

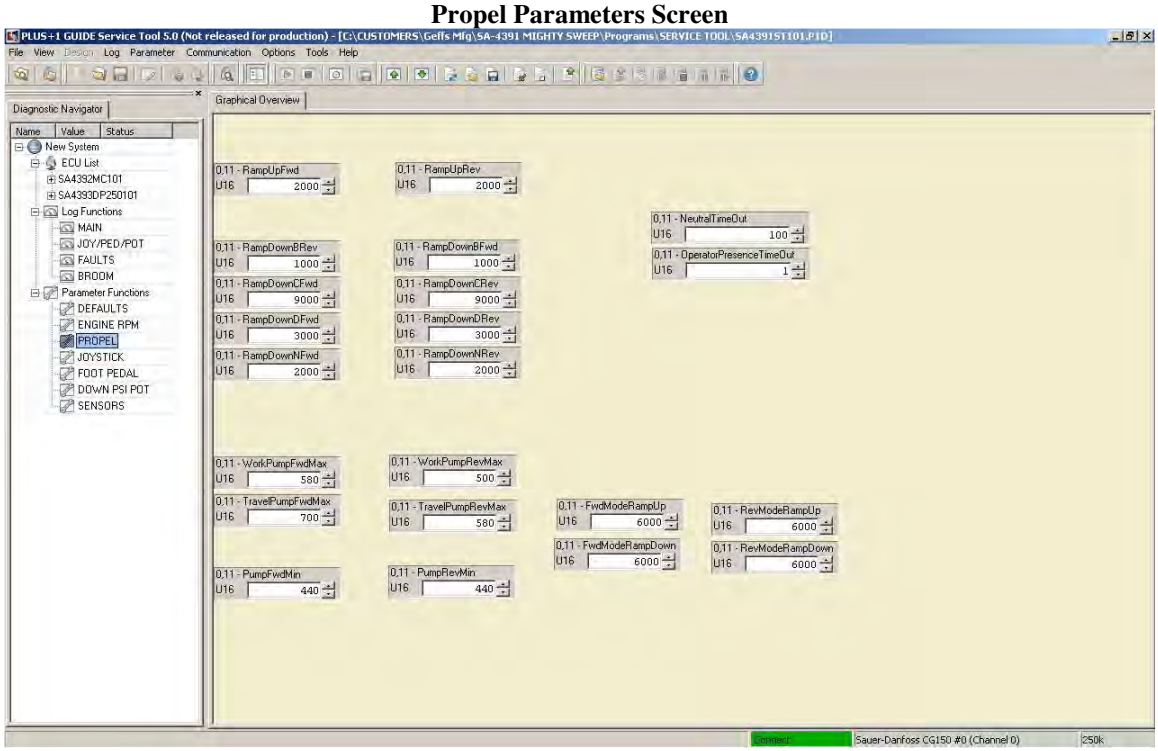


Press the "Upload Parameters From ECU" button.
Enter 2011 into the SETDEFPASSWORD BOXES and press the "Download Parameters to ECU" button to reset parameters to the factory defaults.
The value in the PASSWORD box is the Setup Screen password. This must only be set to a 3 digit number. Do not change unless necessary.

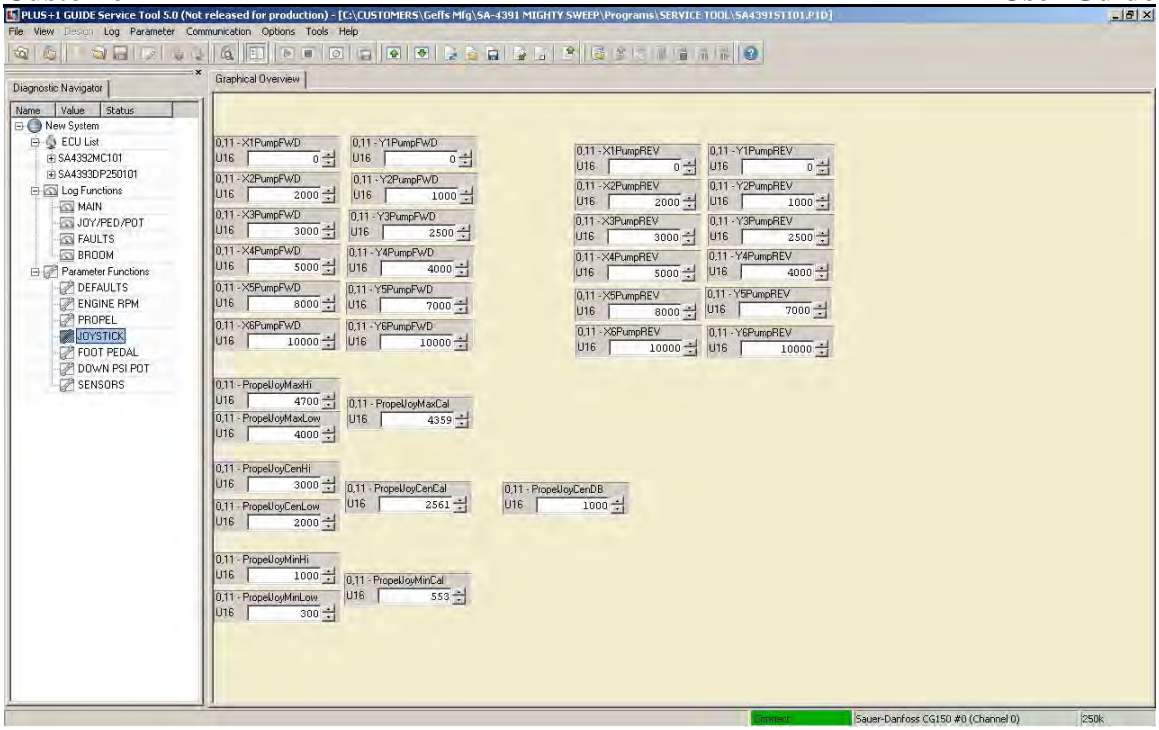
Engine RPM Parameters Screen



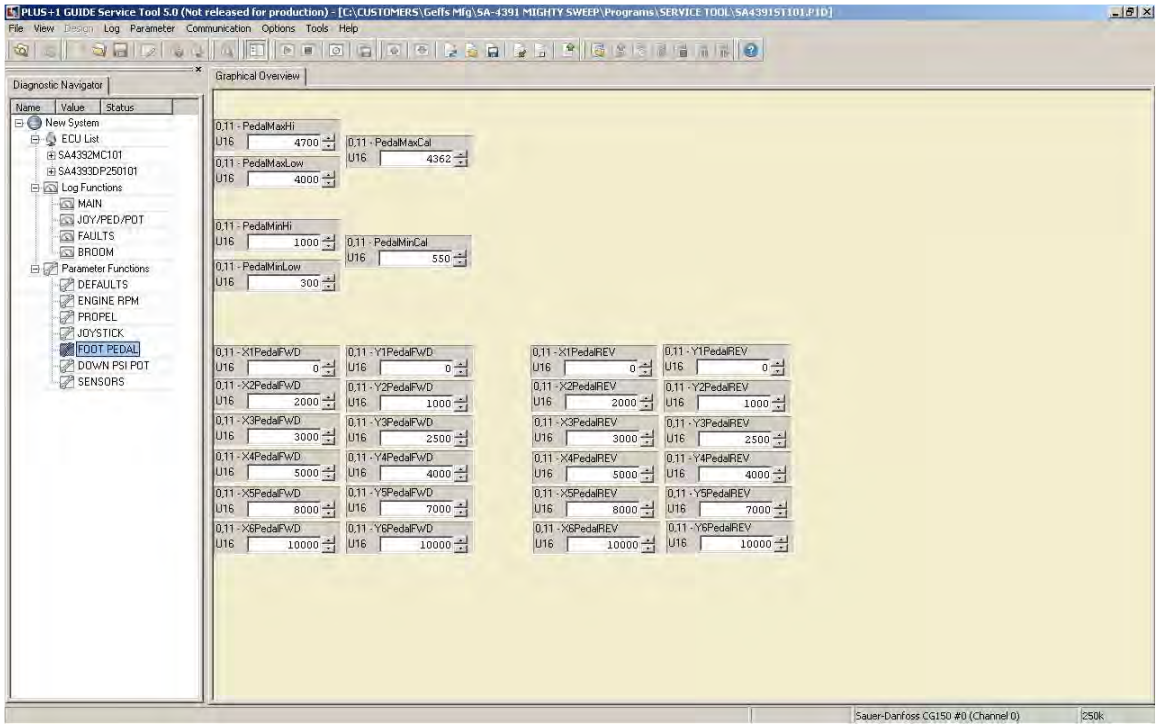
Propel Parameters Screen



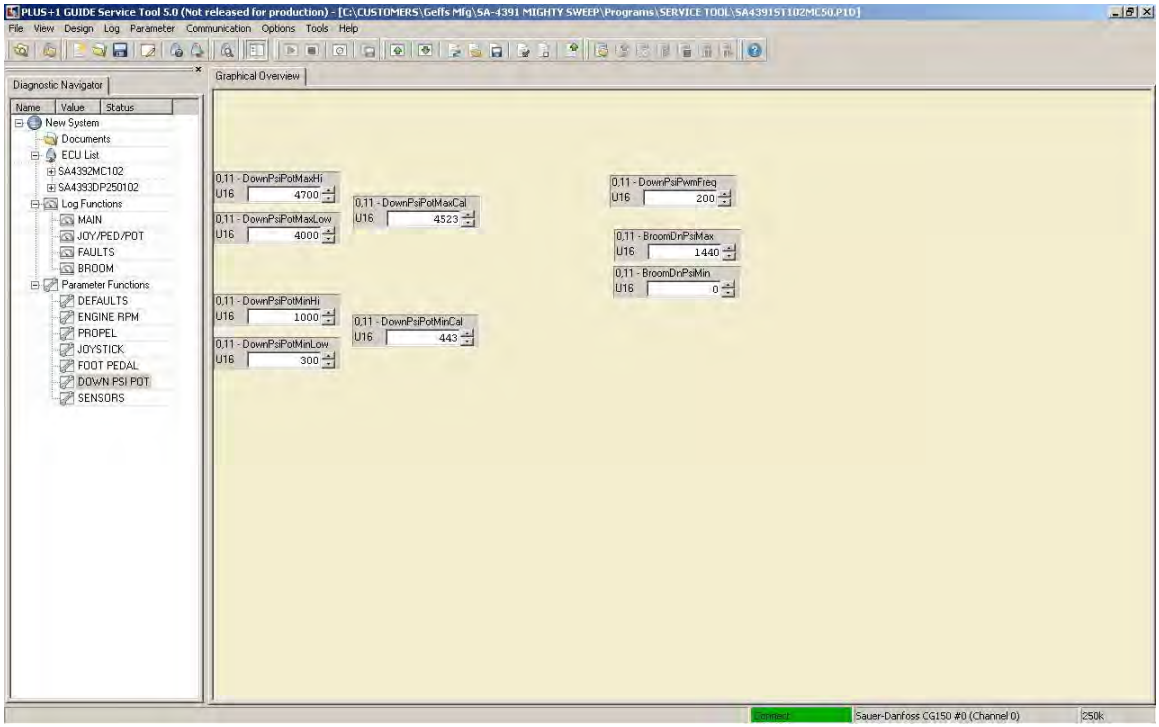
Joystick Parameters Screen


PLUS+1 GUIDE Service Tool 5.0 (Not released for production) - [C:\CUSTOMERS\Gelfs Mfg\SA-4391 MIGHTY SWEEP\Programs\SERVICE TOOL\SA439151101.PTD]
File View Design Log Parameter Communication Options Tools Help
Diagnostic Navigator
Name Value Status
New System
ECU List
SA4392MC101
SA4393DP250101
Log Functions
MAIN
JOY/PED/POT
FAULTS
BROOM
Parameter Functions
DEFAULTS
ENGINE RPM
PROPEL
JOYSTICK
FOOT PEDAL
DOWN PSI POT
SENSORS
Graphical Overview
0,11 - X1PumpFWD U16 0
0,11 - Y1PumpFWD U16 0
0,11 - X2PumpFWD U16 2000
0,11 - Y2PumpFWD U16 1000
0,11 - X3PumpFWD U16 3000
0,11 - Y3PumpFWD U16 2500
0,11 - X4PumpFWD U16 5000
0,11 - Y4PumpFWD U16 4000
0,11 - X5PumpFWD U16 8000
0,11 - Y5PumpFWD U16 7000
0,11 - X6PumpFWD U16 10000
0,11 - Y6PumpFWD U16 10000
0,11 - X1PumpREV U16 0
0,11 - Y1PumpREV U16 0
0,11 - X2PumpREV U16 2000
0,11 - Y2PumpREV U16 1000
0,11 - X3PumpREV U16 3000
0,11 - Y3PumpREV U16 2500
0,11 - X4PumpREV U16 5000
0,11 - Y4PumpREV U16 4000
0,11 - X5PumpREV U16 8000
0,11 - Y5PumpREV U16 7000
0,11 - X6PumpREV U16 10000
0,11 - Y6PumpREV U16 10000
0,11 - PropeUoyMaxHi U16 4700
0,11 - PropeUoyMaxLow U16 4000
0,11 - PropeUoyMaxCal U16 4359
0,11 - PropeUoyCenHi U16 3000
0,11 - PropeUoyCenLow U16 2000
0,11 - PropeUoyCenCal U16 2561
0,11 - PropeUoyCenDB U16 1000
0,11 - PropeUoyMinHi U16 1000
0,11 - PropeUoyMinLow U16 300
0,11 - PropeUoyMinCal U16 553
Connect
Sauer-Danfoss CG150 #0 (Channel 0)
250k

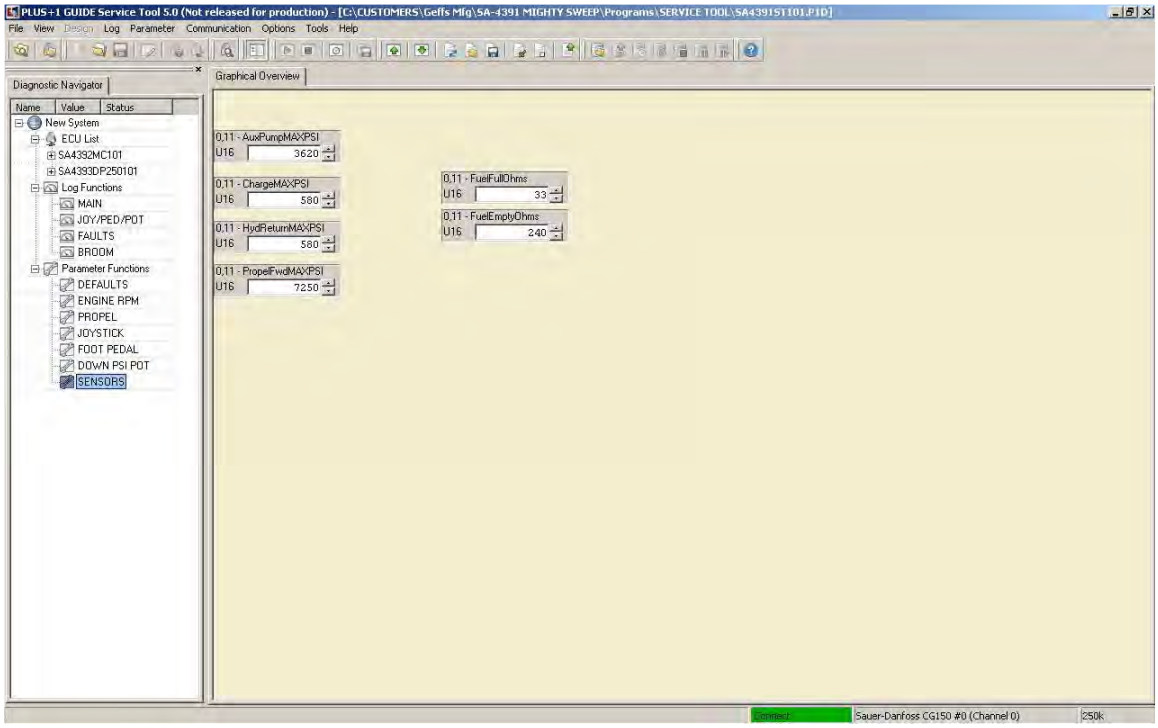
Foot Pedal Parameters Screen



Down PSI Pot Parameters Screen



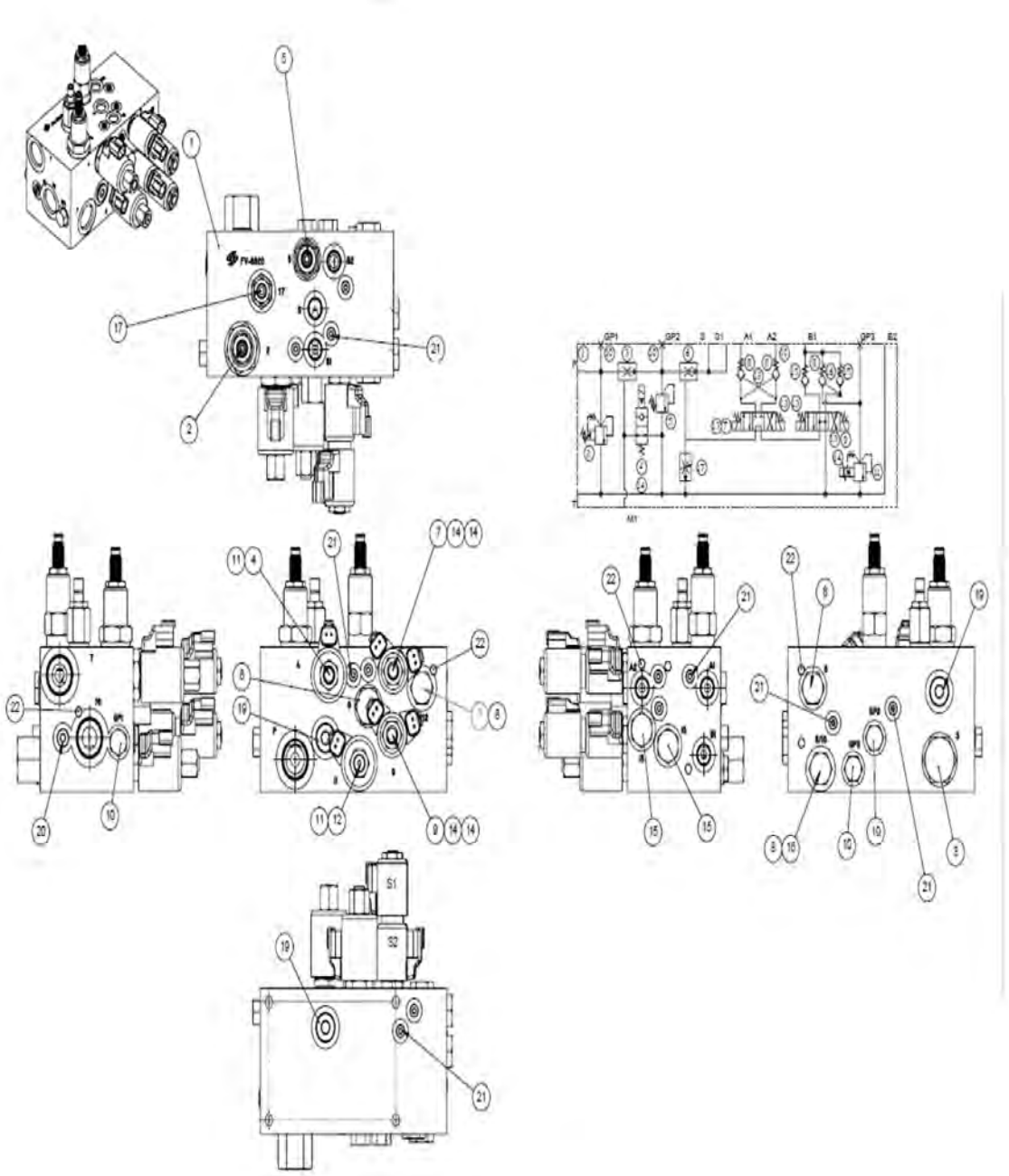
Sensors Parameters Screen



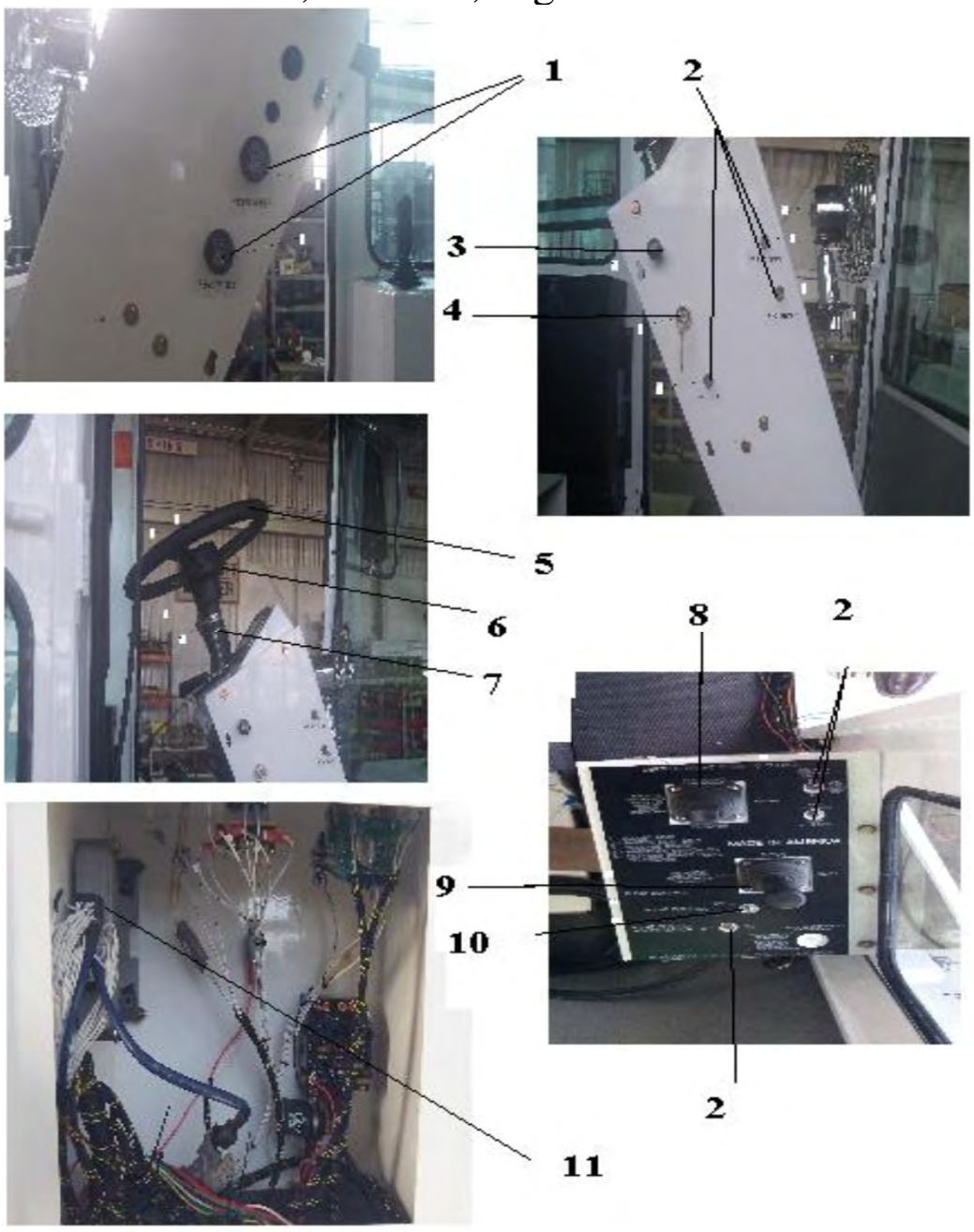
Hydraulic System

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
2	80838	Pressure Filler Breather	1	
2	80286	Filter, Return, SAE	1	Complete
	80286A	Filter Element, Spin-on	1	
51	B81925	Valve, Push-Pull, Steering , Cutoff, Tow Packag	1	optional
51	B80816	Hydraulic Cylinder, Steering	1	
52	B80817	Hydraulic Cylinder, Lift	1	
53	B80818	Hydraulic Cylinder, Swing	1	
54	80819	Hydraulic Oil Cooler	1	
56	B80993	Adapter, Housing, Bell	1	
57	B81896	Hydrostatic Pump, Linde	1	
58	B81897-3	Hydraulic Propel Motor	1	
59	B81898	Hydraulic Pump, Accessory, 28 GPM	1	
60	B81899	Steering Orbital Motor	1	
61	B80815	Hydraulic Motor, Broom Drive	1	
62	B81907	Hydraulic Control Manifold	1	
	B81955	Filter, Hydraulic Transmission, Spin-on	1	
	B81962-1	Transducer, Pressure, 580 PSI	1	
	B81962-2	Transducer, Pressure, 7250 PSI	1	
	B81962-3	Transducer, Pressure, 3626 PSI	2	
	B81942	Hose, 3/4”, 6000 PSI, JIC Straight Swivels	2	
	B81993	Plug, Hex, O-ring, 32	1	
	B81995	Fitting, Hyd, Elbow, 12 JIC-20 O-ring	2	

Hydraulic Control Manifold



Seat, Console, Lights & Misc.

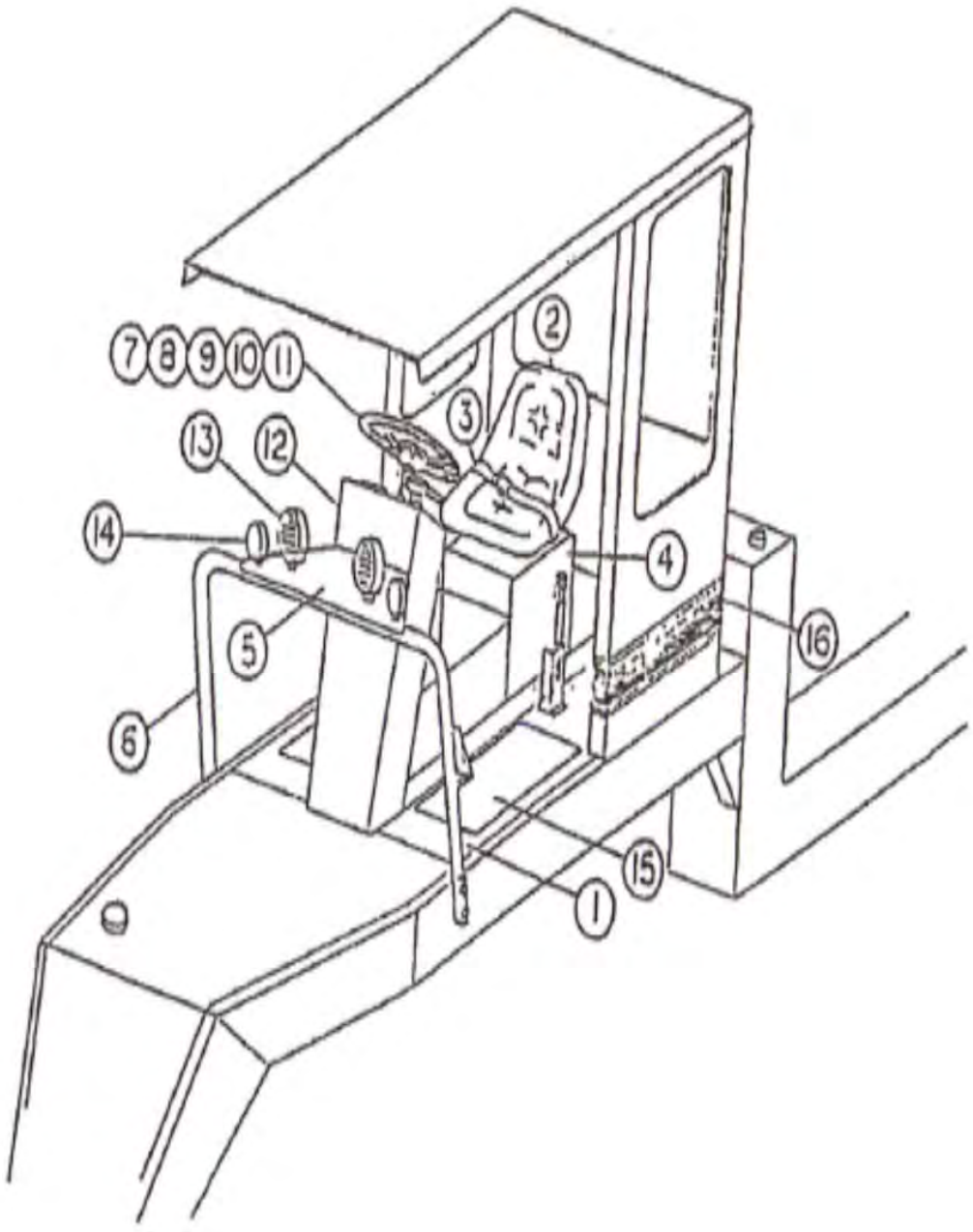


Hydraulic Control Manifold

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
	B81907	Hydraulic Control Manifold	1	Complete
1	B81907-1	Manifold Valve Body	1	
2	B81907-6	Valve, Relief, 250-3000 psi	1	
3	B81907-7	Valve, Priority	1	
4	B81907-8	Valve, Solenoid, Poppet	1	
5	B81907-9	Valve, Relief, 250-1800 psi	1	
6	B81907-10	Valve, Flow Control, 2.5 GPM	1	
7	B81907-3	Valve, Cartridge, Tandem Spool	1	
8	B81907-12	Valve, check, 30 psi	3	
9	B81907-11	Valve, Solenoid, 3 Position, 4 way, Open Center	1	
10	B81907-13	Plug, SAE-06	3	
11	B81907-15	Coil, 12 VDC, Duetsch, Broom On/Off	2	
12	B81907-20	Valve, Proportional, Relief, Float	1	
13	B81907-5	Valve, Piston, Dual	1	
14	B81907-14	Coil, 12VDC, Duetsch, Up/Dn & Swing	4	
15	B81907-16	Valve, Check, 5 psi	2	
16	B81907-21	Piston, Single Pilot	1	
17	B81907-18	Valve, Flow Control,Pressure Compensated	1	
18	B81907-22	Spacer, Coil, Size 8	2	
19	B81907-23	Plug, SAE-08	3	
20	B81907-24	Plug, SAE-04	1	
21	B81907-2	Plug, SAE-02	12	
22	B81907-4	Plug, Expansion	7	

Seat, Console, Lights & Misc.

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
1	B81103-1	Switch, Wiper, Variable Speed	1	
2	81535	Switch, Toggle, ON/OFF	6	
3	B81031	Switch, Ignition	1	
4	B81032	Switch, Light, Head	1	
5	80022	Steering Wheel	1	
6	80195	Switch , Turn Signal	1	
7	B80959	Steering Column with Tilt & Telescoping	1	
8	B81798	Joystick, Broom Function	1	
9	B81906	Joystick, Broom Fwd/Rev, Throttle	1	
10	B81962-6	Potentiometer, Float	1	
11	B81964	Controller, Broom	1	
5A	B81018	Cap, Steering Wheel	1	
	B60453	Cab Floor Weld	1	
	80020	Seat with Arm Rest	1	
	B81017	Seat Belt	1	
	B60425	Seat Stand	1	
	B60391	Control Panel Weld	1	
	80270	Steering Wheel Nut	1	
	B60449	Console, Weldment	1	
	B60450	Console Cover Weldment	1	
	B60522	Console Weld with Tack only	1	
	B60525	Console Weld with Tack only Tilt/Telescoping	1	
	B60526	Console Weld with Tack and Speed Tilt/Tel	1	
	B60527	Console Cover Weld for Tilt & Telescoping	1	
	B81911	Pin, Size 16	4	
	B81913	Pin, Size 12	2	
	B81916	Receptacle, Connector,Shell Size 24	1	
	B81959	Harness, Broom, Propulsion & Functions	1	
	B81962-7	Knob, Potentiometer	1	
	B81963	Pedal, Foot, Throttle, Optional	1	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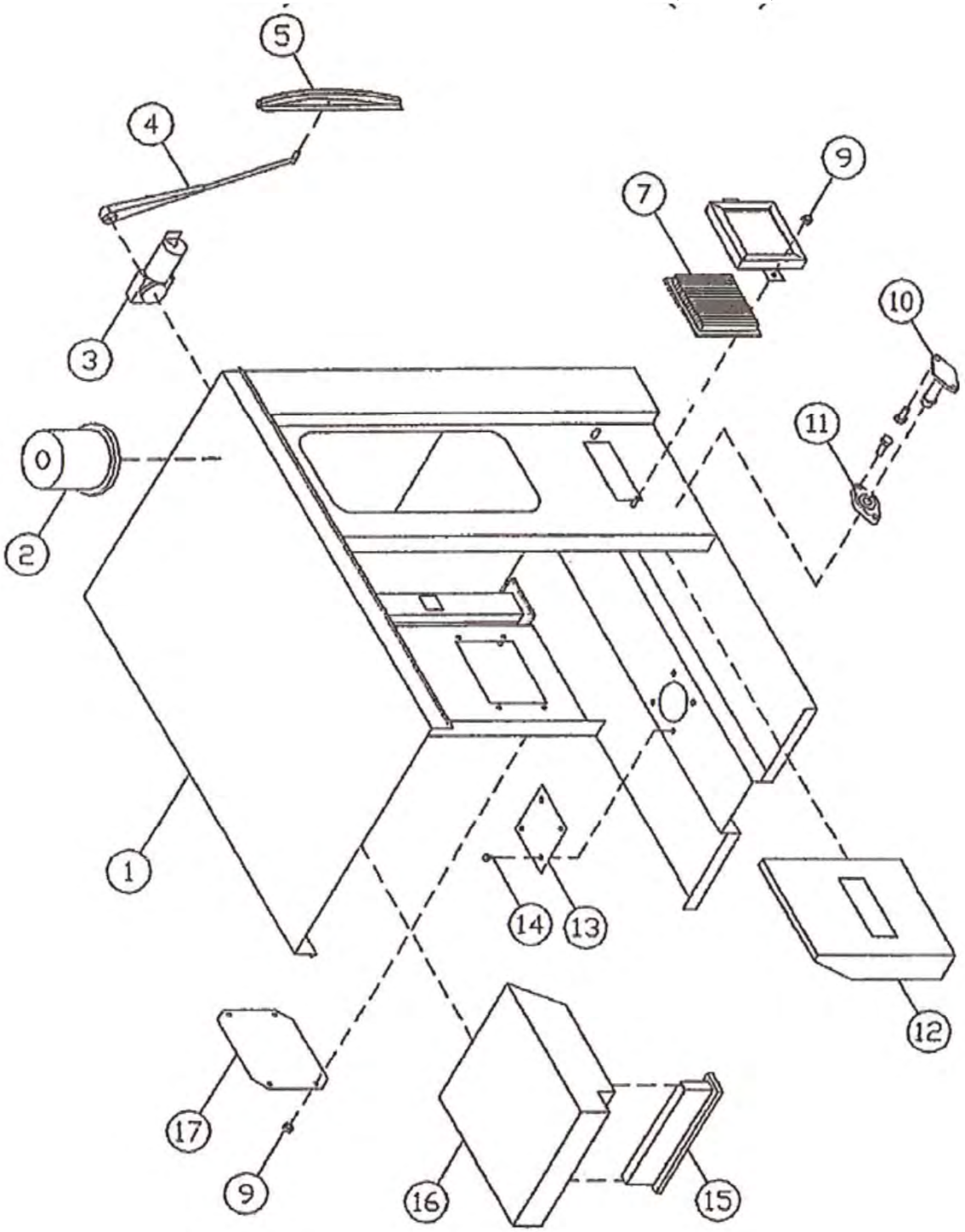
Cab, Roll Bar & Accessories

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
	81214	Relay, Back-up Alarm	1	
	80197-1	Relay, Flasher, Turn Signal	1	
7	B81026	Horn, 12 volt	1	
8	B81018	Cap, Horn, Steering, Wheel	1	
9	B81027	Relay, Horn	1	
	B81032	Switch, Light, Head	1	
	B81025	Switch, Stop Light	1	
	B80978	Light, Dome, Large	1	
	B80998	Light, Rear, Brake/Turn/Tail	2	
	B80999	Light, Front, Turn Signal	2	
	B81000	Light, Head	2	
	B81130	Light, Park Brake, Indicator, Red	1	
	B81901	Lighter, Accessory Socket	1	
	80268	Light, Strobe	1	
	80198	Light, Work	1	
	B81990	Radio, AM/FM, Clock, Roof Mount	1	
	B81798	Joystick, Broom Function	1	
	B81906	Joystick, Broom Fwd/Rev, Throttle	1	
	B81960	Display	1	
	B81103-1	Switch, Wiper, Variable Speed	1	
	B82000	Switch, Door, Jam	2	
	B81131	Switch, Wiper, Std	1	
	B50011	Mat, Floor, Cab	1	
	B50012	Liner, Cab, Front	1	
	B50013	Liner, Cab, Rear	1	
	B50014	Liner, Cab, Head	1	
	B50015	Liner, Compartmetn	1	
	B80904	Lights, Rear, Brake/Turn/Tail, LED	2	
	B81086	Switch, Brake, Park	1	
	B81292	Diode, Brake	1	
	B81901	Outlet, Accessory, Lighter	1	
	B82012	Light, Head, LED	2	

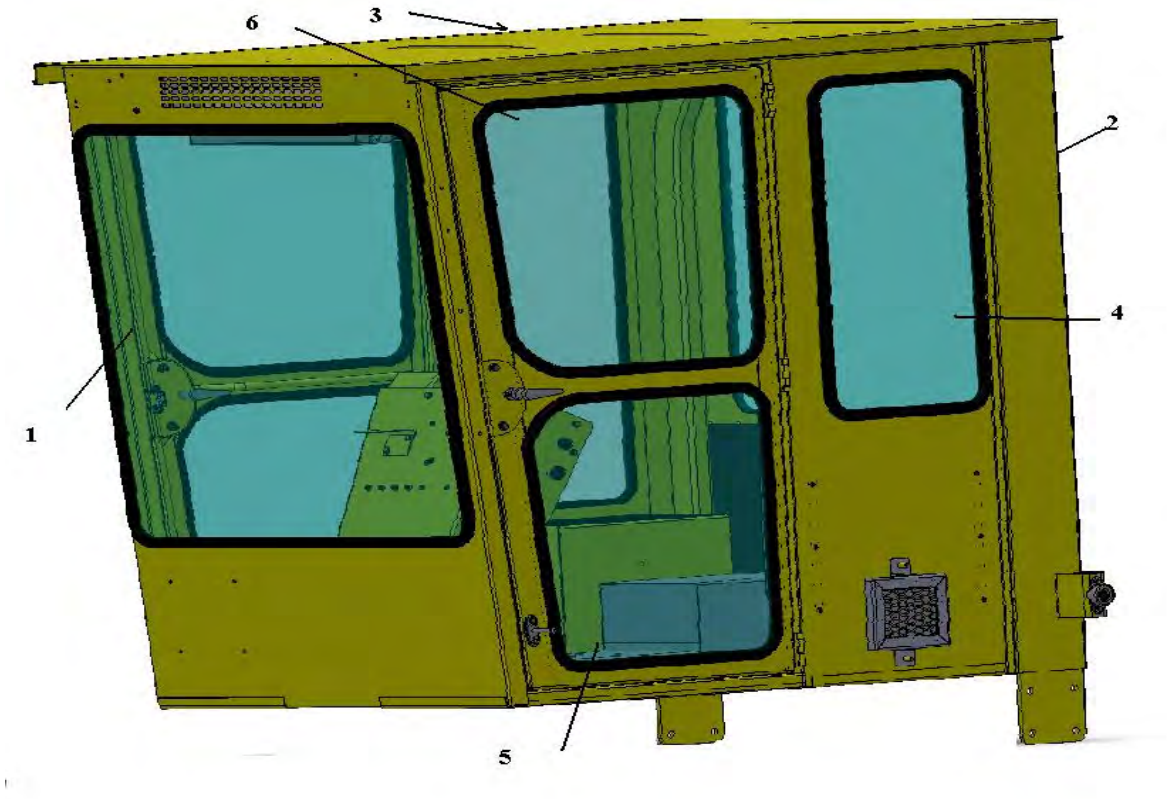
Cab, Roll Bar & Accessories (Cont.)



Cab, Roll Bar & Accessories (Cont.)

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
1	B60451	Cab Weld	1	
2	80268	Strobe Light	1	
3	B81102	Wiper Motor, Front and Rear	1 ea	
4	B81100	Wiper Arm, Front and Rear	1 ea	
5	B81101	Wiper Blade, Front and Rear	1 ea	
7	B80992	AC Filter Element	1	
9	B60427	AC Filter Frame	1	
10	B81021	Door Stop Plunger	2	
11	B81022	Door Stop Socket	2	
12	B80987	Heating and Air Conditioning Unit, R134A	1	
13	B51188	Swing Arm Access Plate	1	
14	15087	Cap Screw, 5/16 X 1/2"	4	
15	B60502	Filter Element	1	
16	B60605	Pressurizing Blower	1	Complete
17	B51442	Access Cover Plate	1	
	B60426	R.O.P.S. Roll Bar	1	
	B51099	Roll Bar Mount	2	
	15089	Cap Screw, 5/8 X 2" UNC Grade 5	8	
	15090	Cap Screw, 5/8 x 2 1/4" UNC Grade 5	4	
	15024	Nylock Hex Nut, 5/8"	12	
	15088	Flat Washer, 5/8	24	
	15086	5/16" Nylock Hex Nut	6	
	B81099	Wiper Washer, Front and Rear	1 ea	
	B81191	Washer Nozzle, Front and Rear	1 ea	
	B81192	Washer Bulkhead Fitting, Front and Rear	1 ea	
	B81193	Washer Hose Kit, Front and Rear	1 ea	
	B51122	Cab Rear Brace	1	
	B81102-2	Harness, CW to Park		
	B81102-3	Harness, CCW to Park		
	B81102A	Motor, Wiper, 2 Speed		
	B81989	Washer, Windshield, Dual Pump, 4 liter	1	
	B81992	Harness, Twelve Lead, With Fuse Box	1	
	B81994	Insulation, Cab, Floor	1	

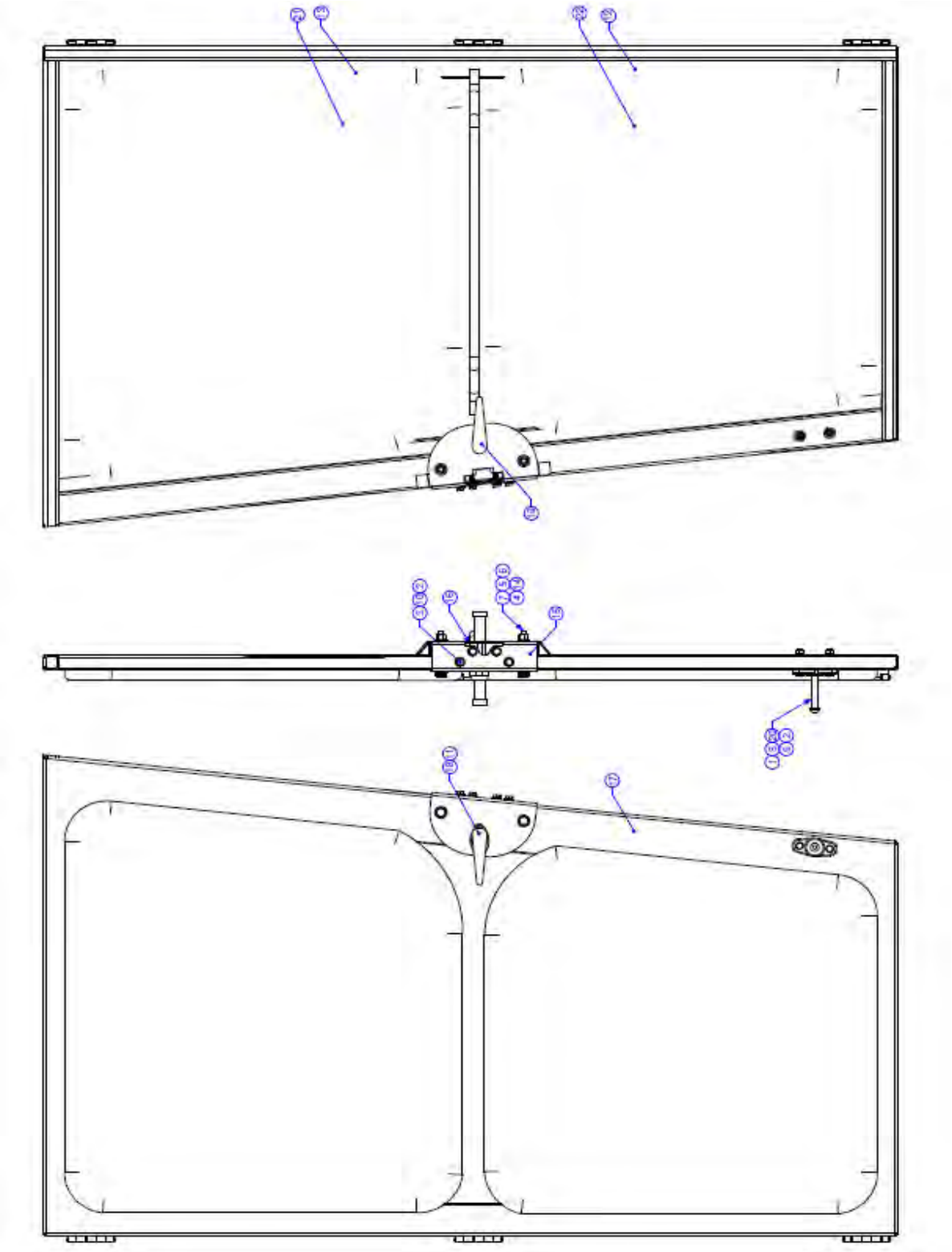
WINDOW GLASS



WINDOW GLASS

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
1	B80833	Window, Glass, Front, Tinted, Safety	1	
2	B80834	Window, Glass, Rear, Tinted, Safety	1	
3	B80836	Window, Glass, Right-hand, Tinted, Safety	1	
4	B80837	Window, Glass, Left-hand, Tinted, Safety	1	
5	B81367	Window, Glass, Door, Lower, Tinted, Safety	2	
6	B81368	Window, Glass, Door, Upper, Tinted, Safety	2	
7	16147	Weather Strip, Glass,	111.8	Feet

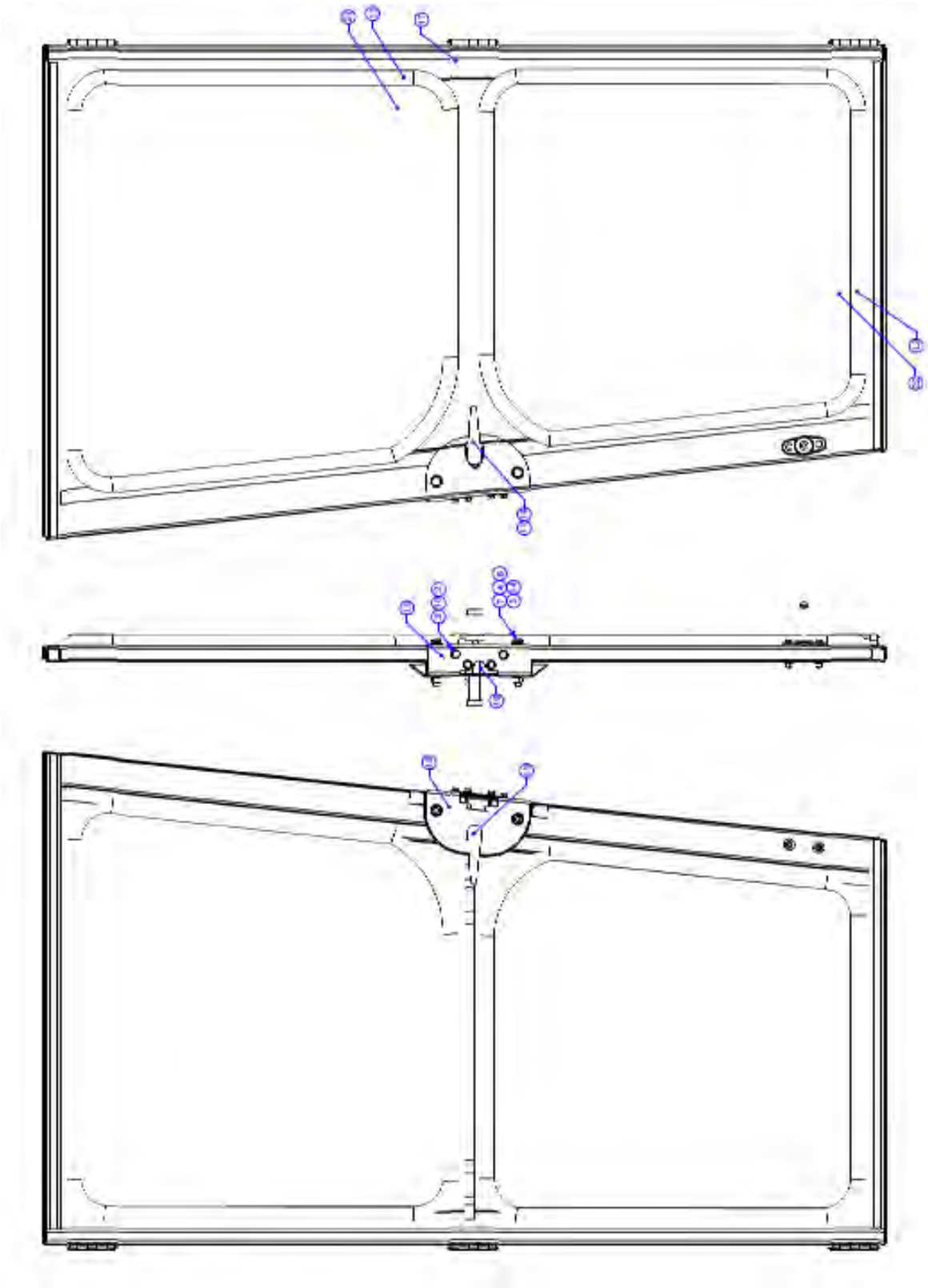
RIGHT HAND DOOR ASSEMBLY



RIGHT HAND DOOR, ASSY B60387

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
1	15003	Nut, Hex, 1/4-20, GR 8, Y-Zn-PLD	2	
2	15004	Washer, Lock, ¼, GR 8, Y-Zn-PLD	6	
3	15049	Screw, Cap, Hex, 1/4-20 x 1, GR 8, Y-Zn-PLD	4	
4	15064	Washer, Lock, 3/8, GR 8 , Y-Zn-PLD	4	
5	15065	Nut, Hex, 3/8-16, GR 8, Y-Zn-PLD	2	
6	15131-SAE	Washer, Flat, SAE, 3/8, GR 8, Y-Zn-PLD	4	
7	15152	Screw, Cap, Hex, 3/8-16 x 3, GR 8, Y-Zn-PLD	2	
8	15158	Screw, Cap, Hex, 1/4-20 x 1 ¾, GR 8 Y-Zn-PLD	2	
9	15165	Washer, Flat, USS, ¼, GR8, Y-Zn-PLD	2	
10	15202-SAE	Washer, Flat, SAE, ¼, GR9, Y-Zn-PLD	8	
11	15260	Screw, Mach, 10-32 x ½, FLH, PHH, Zn-PLD	2	
	16146	Weather Stripping, Door		
12	16147LBD	Molding, Door, Broom, Lower	1	
13	16147UBD	Molding, Door, Broom, Upper	1	
14	B50008	Spacer, Door,Broom, Lower	1	
15	B50010	Cover, Latch, Door, Cab	1	
16	B60045	Assy, Seal, Air, Latch, Door	1	
17	B60387	Right Hand Door	1	
18	B80788	Handle, Outside, Locking, Keyed	2	
19	B80789	Handle, Inside	2	
20	B81021	Plunger, Door Holder	2	
21	B81367	Window, Door, Cab, Lower	2	
22	B81368	Window, Door, Cab, Upper	2	
23	B81370	Right Hand Rotor Latch	1	
24	B81369	Left Hand Rotor Latch	1	
25	B81371	Pin, Striker, Latch	2	
26	B81022	Socket, Door Holder	2	
27	B60388	Left Hand Door	1	

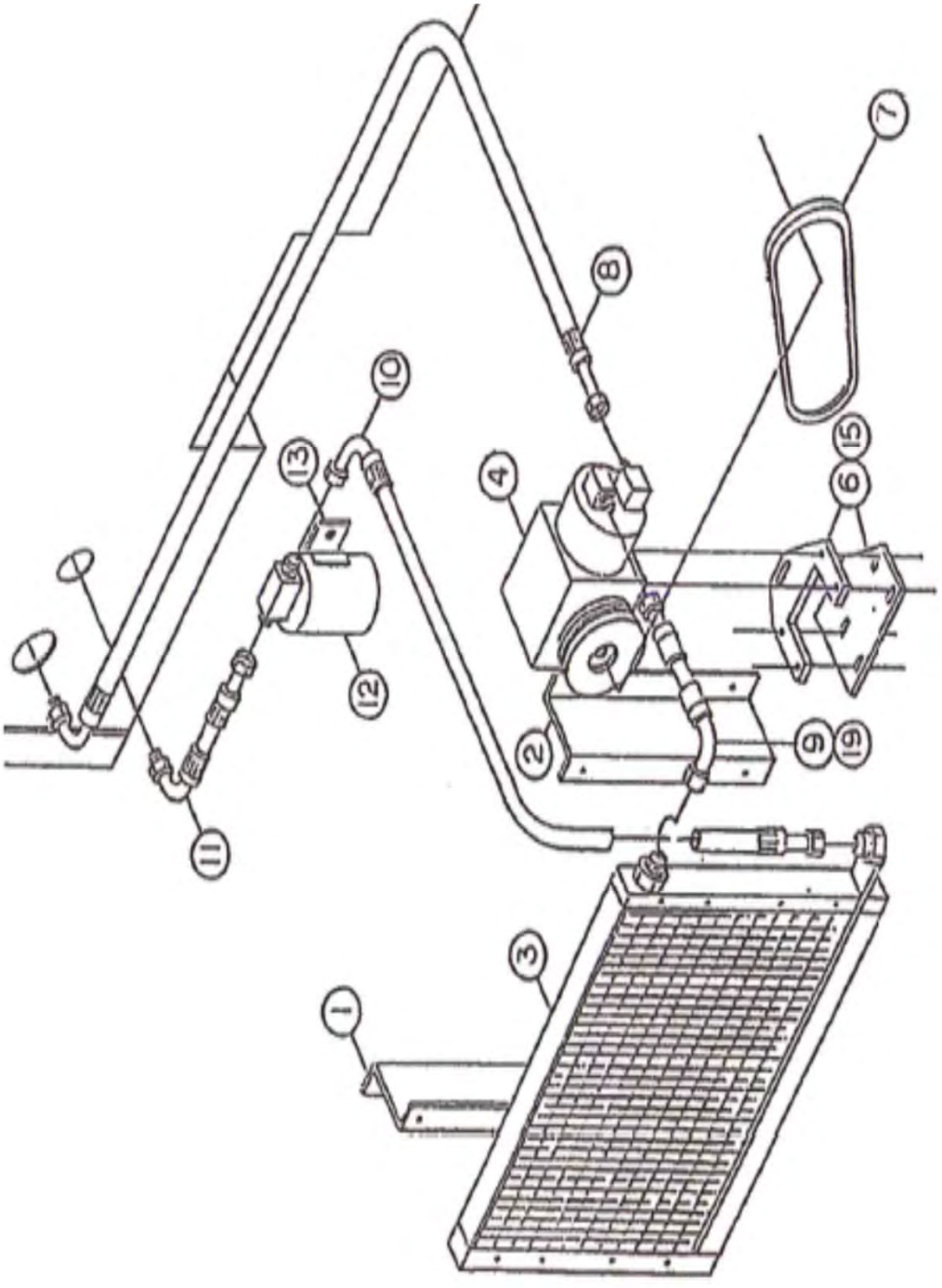
LEFT HAND DOOR ASSEMBLY



LEFTHAND DOOR ASSY B60388

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
1	15003	Nut, Hex, 1/4-20, GR 8, Y-Zn-PLD	2	
2	15004	Washer, Lock, ¼, GR 8, Y-Zn-PLD	6	
3	15049	Screw, Cap, Hex, 1/4-20 x 1, GR 8, Y-Zn-PLD	4	
4	15064	Washer, Lock, 3/8, GR 8 , Y-Zn-PLD	4	
5	15065	Nut, Hex, 3/8-16, GR 8, Y-Zn-PLD	2	
6	15131-SAE	Washer, Flat, SAE, 3/8, GR 8, Y-Zn-PLD	4	
7	15152	Screw, Cap, Hex, 3/8-16 x 3, GR 8, Y-Zn-PLD	2	
8	15158	Screw, Cap, Hex, 1/4-20 x 1 ¾, GR 8 Y-Zn-PLD	2	
9	15165	Washer, Flat, USS, ¼, GR8, Y-Zn-PLD	2	
10	15202-SAE	Washer, Flat, SAE, ¼, GR9, Y-Zn-PLD	8	
11	15260	Screw, Mach, 10-32 x ½, FLH, PHH, Zn-PLD	2	
12	16147LBD	Molding, Door, Broom, Lower	1	
13	16147UBD	Molding, Door, Broom, Upper	1	
14	B50008	Spacer, Door,Broom, Lower	1	
15	B50010	Cover, Latch, Door, Cab	1	
16	B60045	Assy, Seal, Air, Latch, Door	1	
17	B60387	Right Hand Door	1	
18	B80788	Handle, Outside, Locking, Keyed	2	
19	B80789	Handle, Inside	2	
20	B81021	Plunger, Door Holder	2	
21	B81367	Window, Door, Cab, Lower	2	
22	B81368	Window, Door, Cab, Upper	2	
23	B81370	Right Hand Rotor Latch	1	
24	B81369	Left Hand Rotor Latch	1	
25	B81371	Pin, Striker, Latch	2	
26	B81022	Socket, Door Holder	2	
27	B60388	Left Hand Door	1	

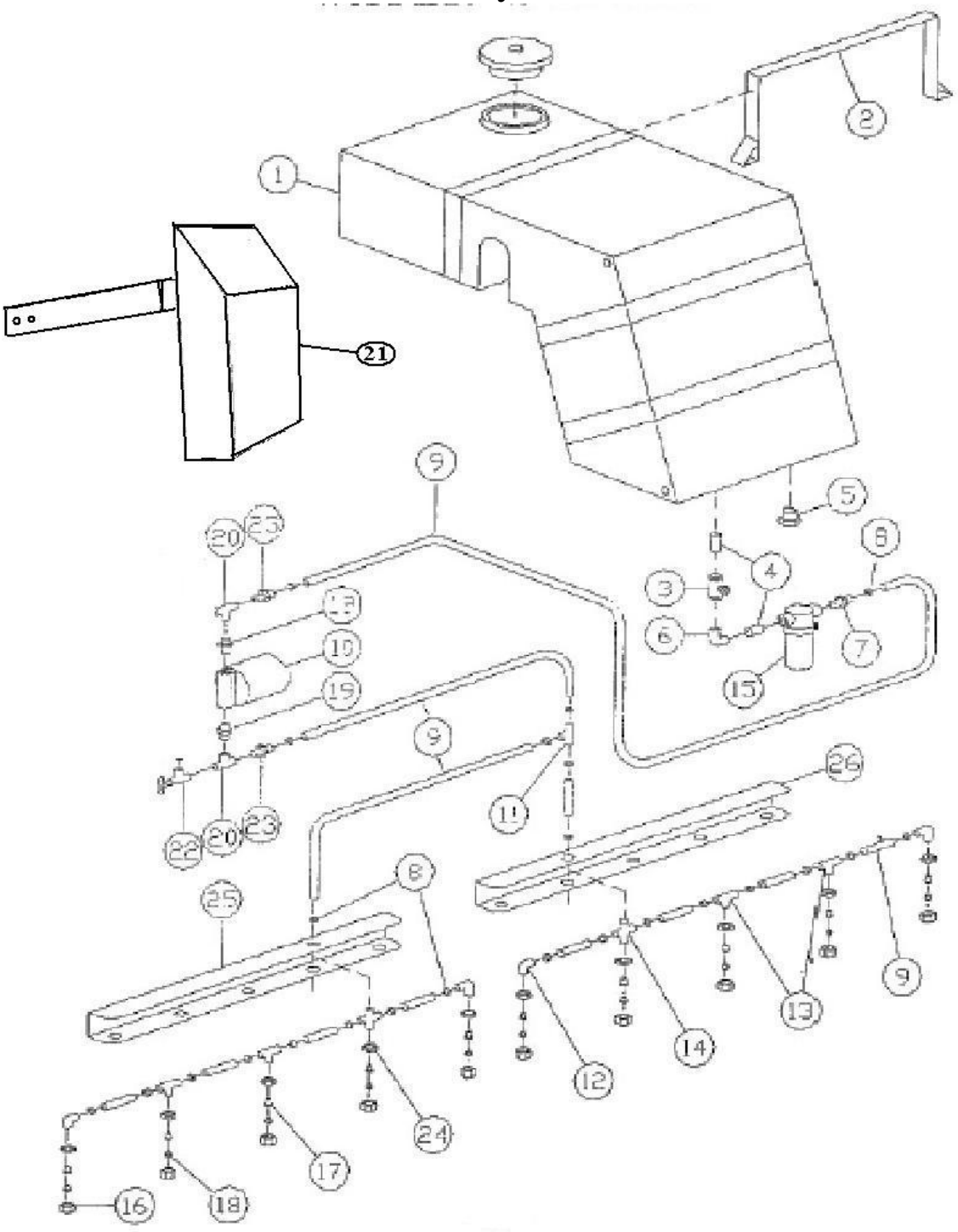
Air Conditioning



Air Conditioning System

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
3	B80988	Condenser	1	
8	B60577	Assy, Hose, AC, AC Unit to Compressor, #10	1	
9	B60578	Assy, Hose, AC, Compressor to Condensor, #8	1	
10	B60575	Assy, Hose, Ac, Condensor to Dryer, #6	1	
11	B60576	Assy, Hose, Ac, Dryer to AC Unit, #6	1	
	B80985	Moisture & Sight Glass	1	
	B80986	Switch, Binary, Low Pressure	1	
	B80987	Ac/Heater Unit	1	
	B80989	AC Dryer	1	
	B80990	AC Dryer Mount	1	
	B80992	Filter, Ac, Pre-Filter	1	Replacement
	B81904-1	Compressor	1	
	B81900-17	Compressor V-belt	1	
	B80987-4	Filter, AC, Foam, 3” Interior		Replacement
	B80987-1	Valve, Heater, Control		Replacement
	B80987-2	Cable, Heater Control		Replacement
	B80987-3	Switch, Fan Speed, Control		Replacement
	B80987-5	Core, Heater		Replacement
	B80987-6	Evaporator Core		Replacement
	B80987-7	Assy, Blower, Fan		Replacement
	B81926	Fitting, Elbow, 90 Degree, R-134a High port #8		

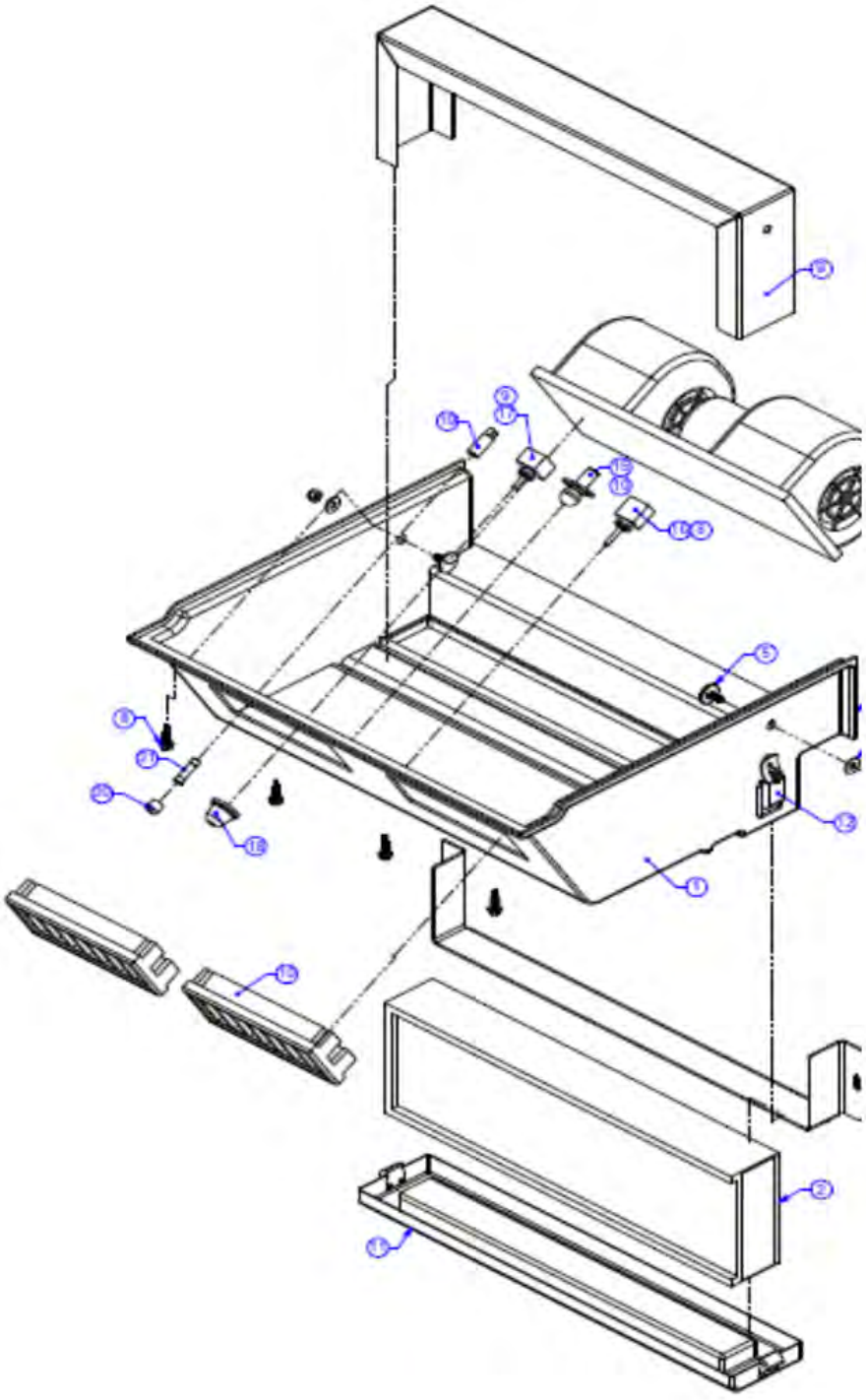
Water System



Water System

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
26	B51161	Spray Bracket	2	
2	B60456	Top Tank Holddown	1	
21	B60616-1	Assy, Box, Control, Water, Tanks Holddown	1	
10	B81104	Water Pump	1	
8	B81106	Clamp, Hose, 1/2”	29	
11	B81107	Fitting, TEE, Barb	1	
12	B81108	Fitting, Elbow, Nozzle, Spray	4	
13	B81109	Fitting, TEE, Nozzle, Spray	4	
14	B81110	Fitting, Cross, Nozzle, Spray	2	
15	B81111	Stainer, TEE, Line	1	
9	B81112	Cap, Nozzle, Spray	10	
17	B81113	Strainer, 100 Mesh, Spray, Tip	10	
18	B81114	Tip, Spray, Brass	10	
22	B81116	Adjustable Valve	1	
9	B81117	Tubing, Clear, 1/2”	30.72	Feet
21	B81118	Fitting, Elbow, ½” MPT x 1/2” Barbed	2	
4	B81119	Fitting, Nipple, Close, 3/4” NPT	2	
5	B81120	1 1/2" Male Pipe Plug	1	
6	B81121	Fitting, Elbow, Street, 3/4” NPT	1	
3	B81122	Valve, Union	1	
7	B81123	Fitting, ¾" NPT X 1/2” Barbed	4	
19	B81124	Fitting, Nipple,Reducing, 1/2” x 3/8” NPT	1	
1	B81125	Poly Tank 150 gallons	1	
24	B81195	Nylon Nut (Included with #12, 13 & 14)	10	
19	B81973	Coupler, 1/2” NPT	1	
20	B81975	Fitting, TEE, 3/4” NPT	1	
7	B81976	Fitting, 3/8" NPT X 1/2 Barbed	1	
	B81998	Fitting, Reducing, 3/4” x 1/2”	1	
	B81999	Valve, Boiler, 3/4”	1	
	B51207	Cushion, Tank, Rubber	2	

CAB PRESSURIZER



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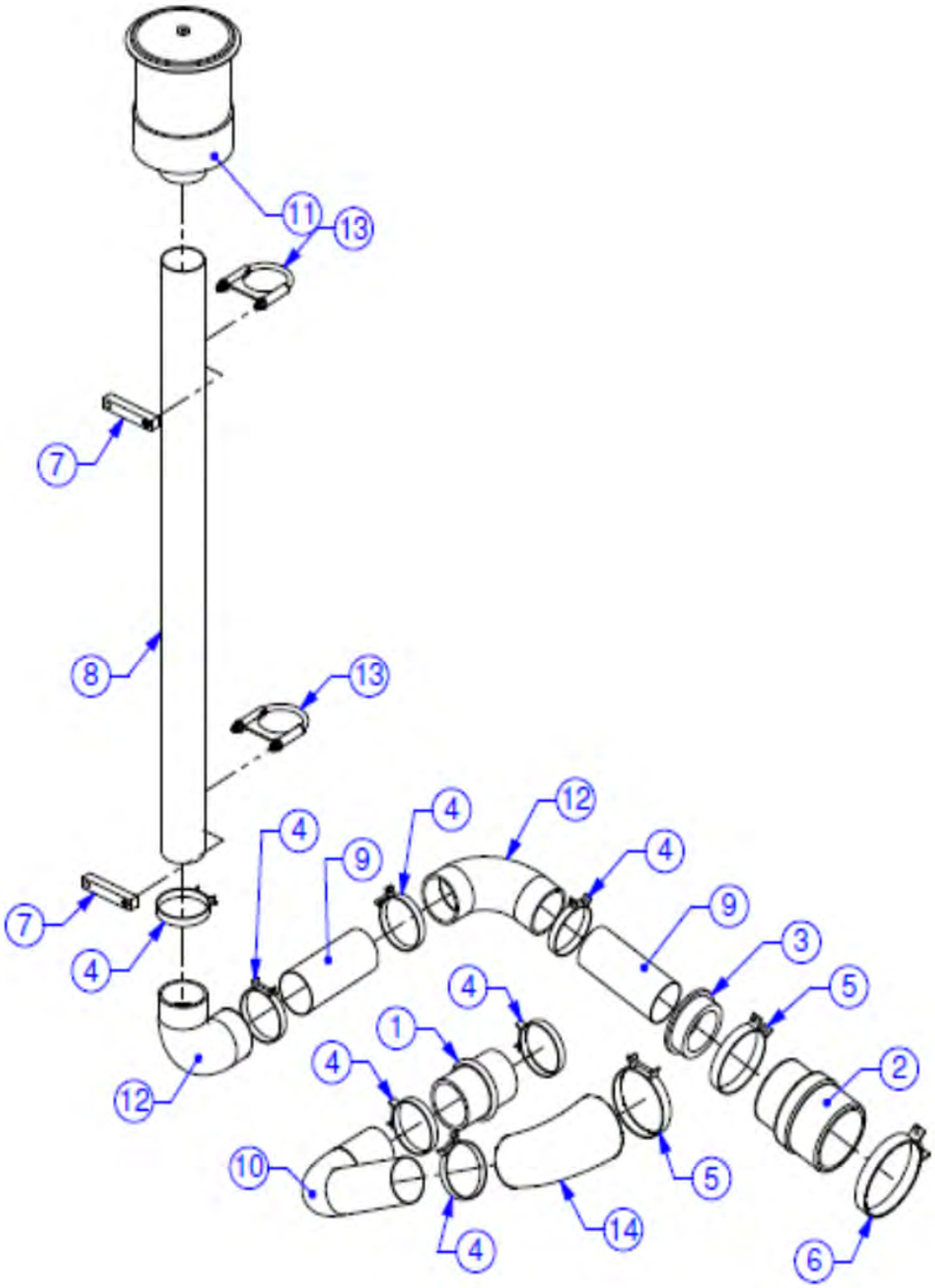
CAB PRESSURIZER

ITEM NO.	PART NO.			REMARKS
0	B60506	Pressurizer, Cab	1	COMPLETE
1	15085	Nut, Hex, Nylock,1/4-20 GR 8 Y-Zn-PLD	2	
2	15149	Bolt, Elevator, 1/2-20 X ¾, PL-FNSH	2	
3	15165	Washer, Flat, ¼. GR 8, Y-Zn-PLD	2	
4	15278	Screw, Hex, WSH, TEK, ¼ X 1, ZN-PLD	4	
5	B51105	Bracket, Filter, Cab Pressurizer	1	
6	B51482	Seat, Filter, Cab Pressurizer	1	
7	B60502	Assy, Filter, Cab Pressurizer	1	
8	B60503	Assy, Wire, Switch to Fan	1	
9	B60504	Assy, Wire, Power	1	
10	B60505	Assy, Blower, Light, Cab	1	
11	B80963	Fuse, 20 AMP, IN-LINE	1	
12	81535	Switch, Toggle, SPST	1	
13	B80965	Louver, Pressurizer	2	
14	B80966	Switch, Rheostat	1	
15	B80967	Knob, Control	1	
16	B80968	Latch, Filter Pan	2	
17	B80969	Console, Sub, Assy	1	
18	B80978	Light, Dome, Small	1	
19	B80979	Assy, Blower, Pressurizer, Cab	1	
20	B80980	Assy, Holder, Fuse	1	
21	B81162	Pan, Filter	1	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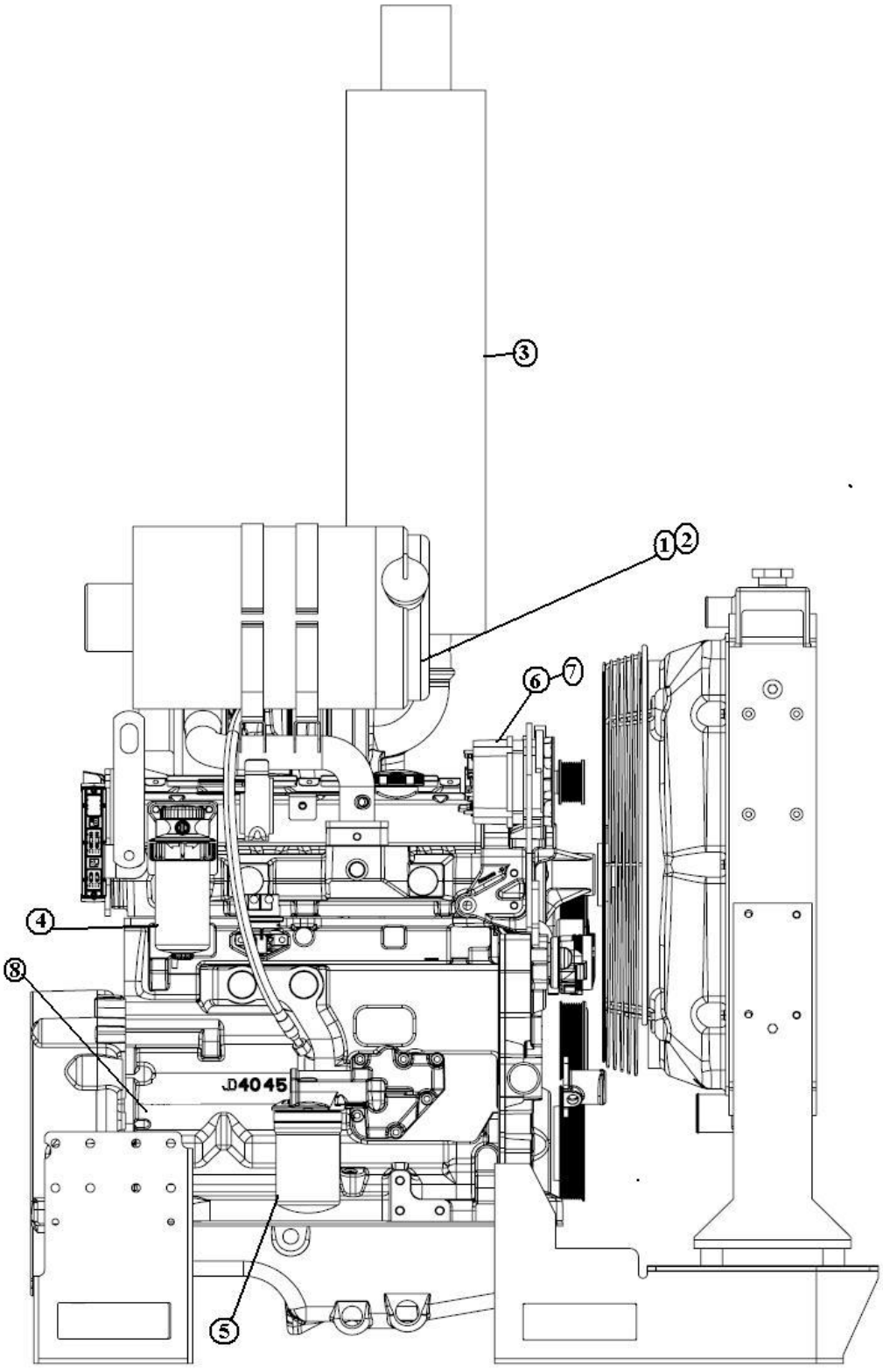
ENGINE

ITEM NO.	PART NO.			REMARKS
	B81900	Engine, John Deere 4045TF285, 85 HP	1	COMPLETE
1	81278	Hose, Hump, 3”	1	
2	82731	Hose, Hump, Reducing, 4-1/2” to 4”	1	
3	B81996	Elbow, Rubber, Reducing, 4”-3”	1	
4	82734	Clamp, T-bolt, 3”	7	
5	82735	Clamp, T-bolt, 4”	2	
6	82748	Clamp, T-bolt, 5”	1	
8	B51254	Tube, Exhaust, 3” X 44”	1	
9	B51753	Tube, Exhaust, 3” X 7”	2	
10	B80996	Elbow, Rubber, Intake, 3”	2	
10	B51759	Elbow, Exhaust, 3” with 12” Leg- Modifie	1	
11	B80902	Pre-Cleaner, Turbo II, With Clamp	1	
13	B81774	Clamp,TBG, U-bolt, 3”	2	
14	82732	Hose, Reducing, Insert, 4” to 3”	1	

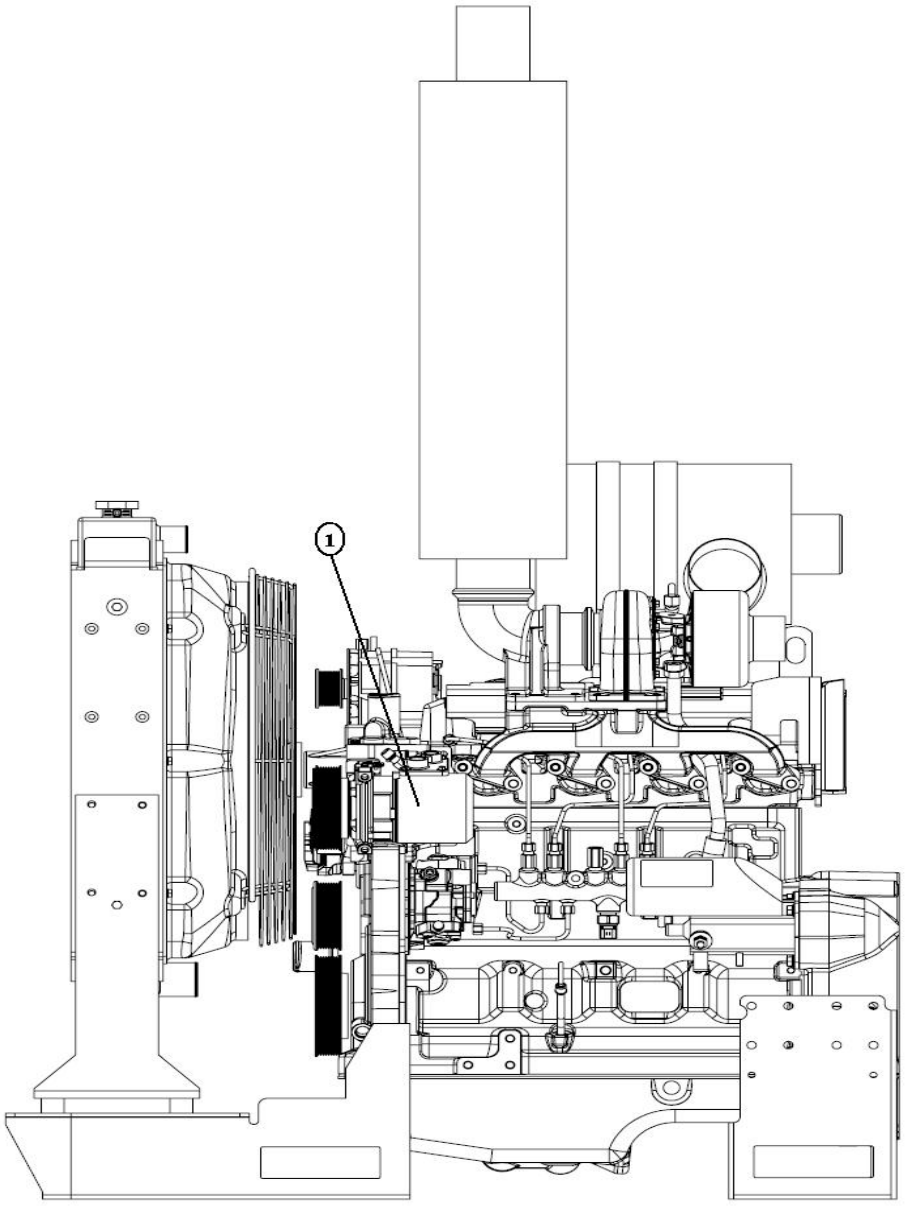
John Deere 4045TF 85 HP RIGHTSIDE



ENGINE RIGHTSIDE

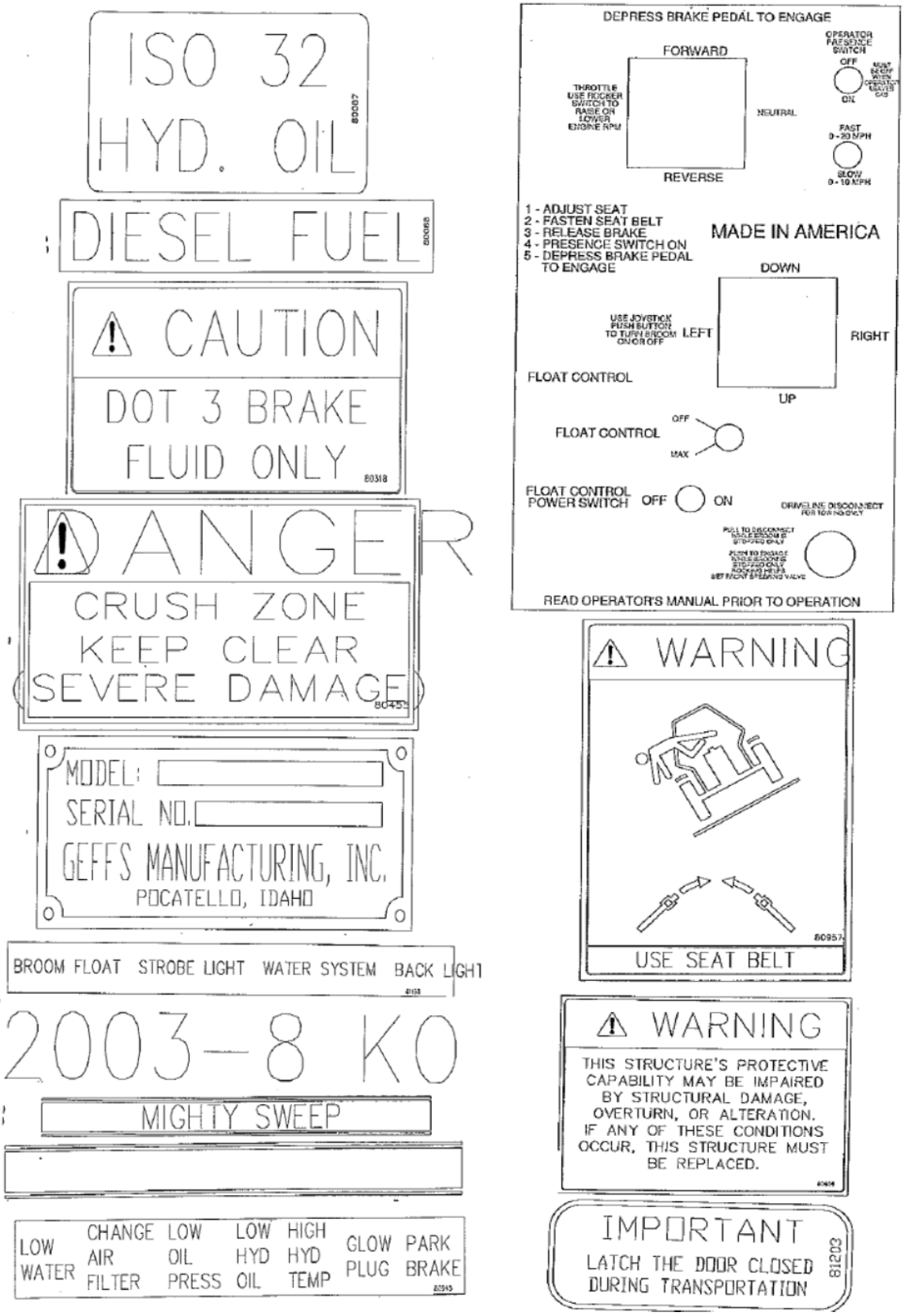
ITEM NO.	PART NO.			REMARKS
	B81900	Engine, John Deere 4045TF285, 85 HP	1	COMPLETE
1	B81900-15	Filter, Air, Secondary	1	
2	B81900-16	Filter, Air, Primary	1	
3	B81900-19	Muffler	1	
4	B81900-12	Filter, Fuel, Final, Fuel/Water Separator	1	
5	B81900-21	Filter, Oil	1	
6	B81900-75	Alternator, John Deere, 75 Amp	1	
7	B81900-17	Belt, Serpentine, 91.5” x 1.121”	1	
8	B81900-11	Starter, John Deere, 4045TF285, 85 HP	1	
	B81900-13	Filter, Fuel, Primary, Fuel/Water Separator	1	Not Shown
	B80824	Isolator, Rubber, Engine	4	Not Shown
	B81952	Hose, Heater, 5/8”	85”	Not Shown
	81223	Clamp, Hose, 5/8”	4	Not Shown
	80316	Clamp, Cushion, 1/2”	1	Not Shown
	81603	Clamp, Cushion, 1-1/2”, Fuel Hose	1	Not Shown
	B82008	Tube, Overflow, 5/16”	52”	Not Shown
	B81955	Filter, Hydraulic Transmission, Spin-on	1	Not Shown

ENGINE LEFTSIDE



ENGINE LEFTSIDE

ITEM NO.	PART NO.			REMARKS
	B81900	Engine, John Deere 4045TF285, 85 HP	1	COMPLETE
1	B81904-1	AC Compressor	1	

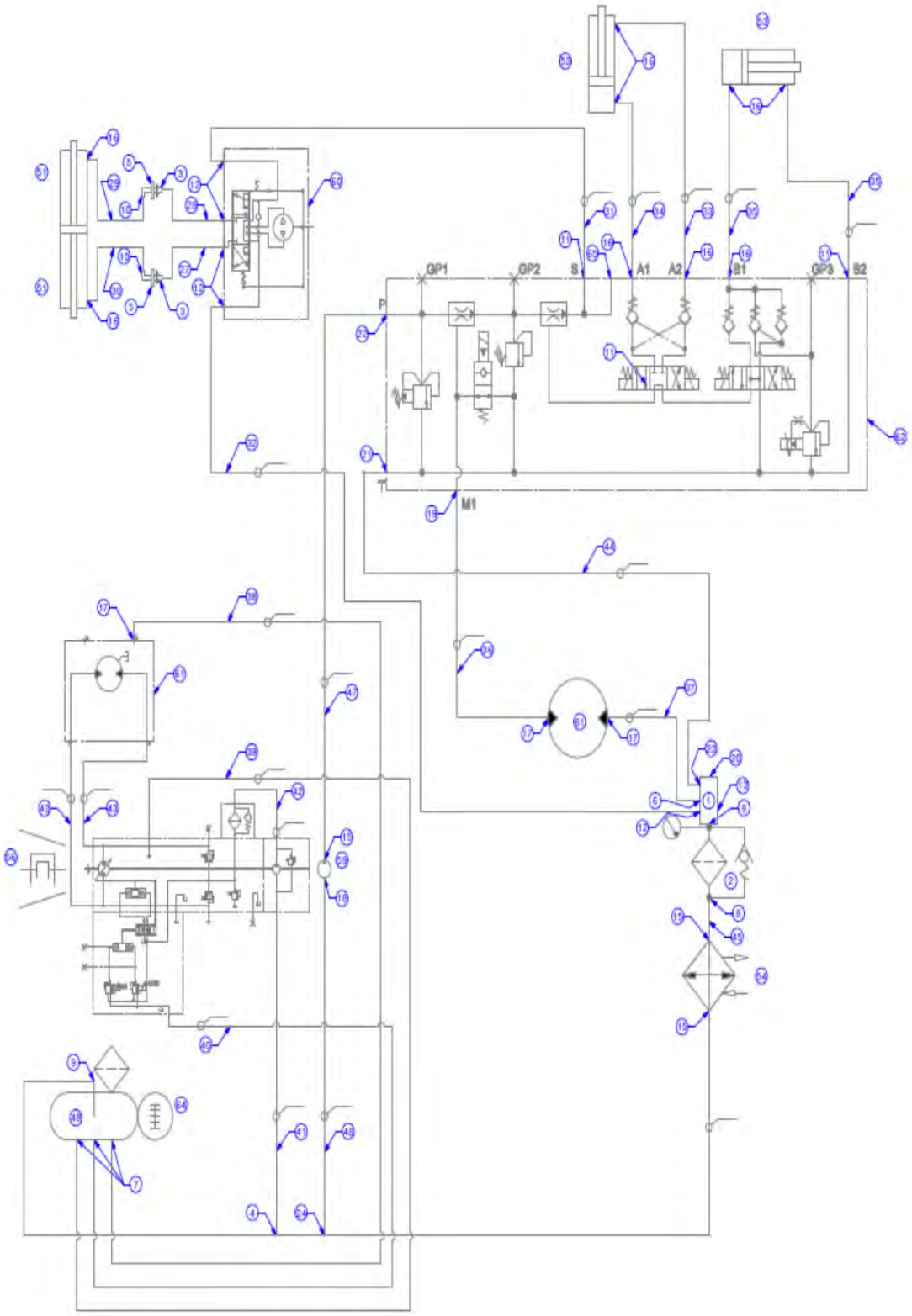

ISO 32
HYD. OIL
80007
DIESEL FUEL
80008
CAUTION
DOT 3 BRAKE
FLUID ONLY
80318
DANGER
CRUSH ZONE
KEEP CLEAR
SEVERE DAMAGE
80455
MODEL:
SERIAL NO.
GEFFS MANUFACTURING, INC.
POCATELLO, IDAHO
BROOM FLOAT STROBE LIGHT WATER SYSTEM BACK LIGHT
2003-8 KO
MIGHTY SWEEP
LOW WATER
CHANGE AIR FILTER
LOW OIL PRESS
LOW HYD OIL
HIGH HYD TEMP
GLOW PLUG
PARK BRAKE
80515
DEPRESS BRAKE PEDAL TO ENGAGE
FORWARD
REVERSE
NEUTRAL
THROTTLE USE ROCKER SWITCH TO RAISE OR LOWER ENGINE RPM
OPERATOR PRESENCE SWITCH
OFF
ON
FAST 0-20 MPH
SLOW 0-10 MPH
1 - ADJUST SEAT
2 - FASTEN SEAT BELT
3 - RELEASE BRAKE
4 - PRESENCE SWITCH ON
5 - DEPRESS BRAKE PEDAL TO ENGAGE
MADE IN AMERICA
DOWN
USE JOYSTICK PUSH BUTTON TO TURN BROOM ON/OR OFF
LEFT
RIGHT
UP
FLOAT CONTROL
FLOAT CONTROL
OFF
MAX
FLOAT CONTROL POWER SWITCH
OFF
ON
DRIVELINE DISCONNECT FOR TOW ONLY
READ OPERATOR'S MANUAL PRIOR TO OPERATION
WARNING
80957
USE SEAT BELT
WARNING
THIS STRUCTURE'S PROTECTIVE CAPABILITY MAY BE IMPAIRED BY STRUCTURAL DAMAGE, OVERTURN, OR ALTERATION. IF ANY OF THESE CONDITIONS OCCUR, THIS STRUCTURE MUST BE REPLACED.
IMPORTANT
LATCH THE DOOR CLOSED DURING TRANSPORTATION
81203

Decal KIT B60489-12

ITEM NO.	PART NO.			REMARKS
1	80087	Decal , ISO 32 HYD OIL	1	
2	80088	Decal, DIESEL FUEL	2	
3	80318	Decal, CAUTION BRAKE FLUID	1	
4	80455	Decal , CAUTION CRUSH ZONE	2	
5	80461	Template SERIAL NUMBER & MODEL	1	
6	80545	Decal , SMALL GEFFS LOGO	2	
7	B50029	Template, CONSOLE RIGHTHAND	1	
8	B80945	Decal, BROOM LIGHTS	1	
9	B80949	Decal, 2003-8KO	2	
10	B80950	Decal, MIGHTY SWEEP	2	
11	B80952	Decal, BROOM LARGE STRIPE	2	
12	B80956	Decal, WARNING STRUCTURES	2	
13	B80957	Decal, WARNING SEAT BELT	1	
14	B81198	Decal , BROOM SWITCH	1	
15	B81326	Decal , DOOR LATCH	2	
16	B81329	Decal FUEL GAUGE	1	

Section 12

Schematics


GP1
GP2
S
A1
A2
B1
GP3
B2
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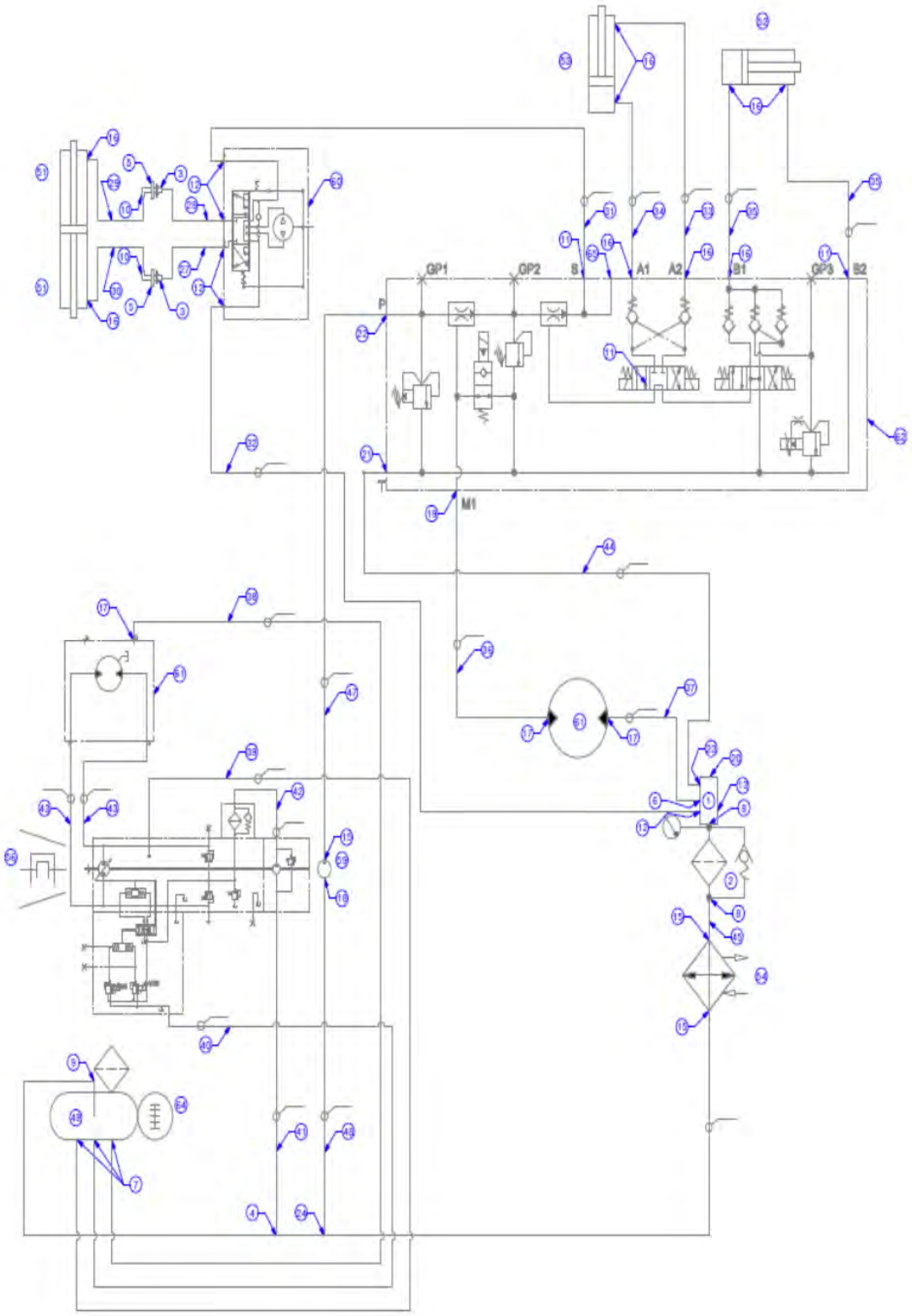
M1

Hydraulic Schematic Components

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
1	B81898	Hydraulic Pump	1	
2	B81899	Motor, Orbital, Motor	1	
3	B80816	Steering Cylinder	1	
4	B80818	Swing Cylinder	1	
5	B80817	Lift Cylinder	1	
6	B81907	Manifold Valve Assembly Complete	1	See Page 10
	B81907-1	Manifold	1	Sub Item 1
	B81907-2	Plug, SAE-02	12	Sub Item 21
	B81907-3	Valve, Cartridge	1	Sub Item 9
	B81907-4	Plug, Expansion	7	Sub Item 22
	B81907-5	Valve, Piston, Dual	1	Sub Item 13
	B81907-6	Valve, Relief, 250-3000 psi	1	Sub Item 2
	B81907-7	Valve, Priority	1	Sub Item 3
	B81907-8	Valve, Solenoid, Poppet	1	Sub Item 4
	B81907-9	Valve, Relief, 250-1800 psi	1	Sub Item 5
	B81907-10	Valve, Flow Control, 2.5 GPM	1	Sub Item 6
	B81907-11	Valve, Solenoid, 3 Position, 4 way	1	Sub Item 7
	B81907-12	Valve, check, 30 psi	3	Sub Item 8
	B81907-13	Plug, SAE-06	3	Sub Item 10
	B81907-14	Coil, 12VDC, Duetsch, Up/Dn & Swing	4	Sub Item 14
	B81907-15	Coil, 12 VDC, Duetsch, Broom On/Off	2	Sub Item 11
	B81907-16	Valve, Check, 5 psi	2	Sub Item 15
	B81907-18	Valve, Flow Control,Pressure Compensated	1	Sub Item 17
	B81907-20	Valve, Proportional, Relief, Float	1	Sub Item 12
	B81907-21	Piston, Single Pilot	1	Sub Item 16
	B81907-22	Spacer, Coil, Size 8	2	Sub Item 18
	B81907-23	Plug, SAE-08	3	Sub Item 19
	B81907-24	Plug, SAE-04	1	Sub Item 20
7	B81903	Motor, Broom Hydraulic Motor	1	
8	B80805	Filter Assembly	1	
9	B80819	Oil Cooler	1	
10	50344	Return Manifold	1	
11	B81896	Hydrostatic Transmission	1	
12	B81898	Pump, Hydr, Auxiliary	1	
13	82837	Strainer, Suction, 100 Mesh, O ring	2	
14	82838	Diffuser, Hydr, Return	1	
15	B81962-4	Sensor, Temperature	1	
16	B81962-1	Transducer, Pressure, 580 PSI	2	
17	B81962-2	Transducer, Pressure, 7250 PSI	1	
18	B81962-3	Transducer, Pressure, 3626 PSI	1	


GP1
GP2
S
A1
A2
B1
GP3
B2
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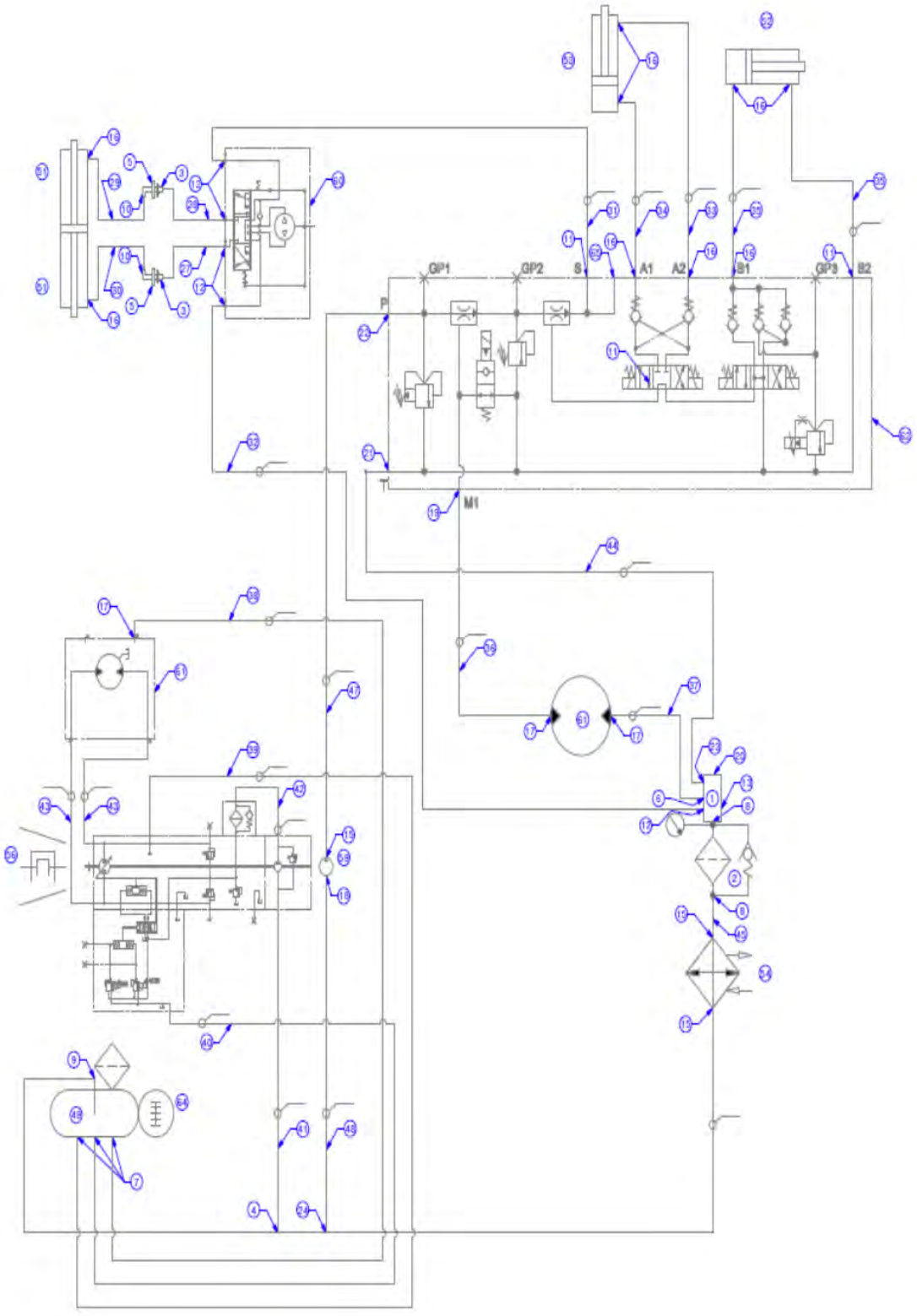
Hydraulic Schematic Hoses

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
1	B60014	HOSE, ASSY, LEFT ORBITAL TO BULKHEAD	1	
2	B60015	HOSE, ASSY, RIGHT ORBITAL TO BULKHEAD	1	
3	B60016	HOSE, ASSY, RIGHT BULKHEAD TO STEER CYL	1	
4	B60017	HOSE, ASSY, LEFT BULKHEAD TO STEER CYL	1	
5	B60018	HOSE, ASSY, MAN. PORT S TO ORBIT PRESSURE	1	
6	B60019	HOSE, ASSY, ORBITAL TANK TO RETURN MAN.	1	
7	B60020	HOSE, ASSY, SWING CYLINDER TO A2 PORT	1	
8	B60021	HOSE, ASSY, SWING CYLINDER TO PORT A1	1	
9	B60022	HOSE, ASSY, LIFT CYLINDER TO PORT B1 & B2	2	
10	B60023	HOSE, ASSY, PORT M1 VALVE MAN. TO MOTOR	1	
11	B60024	HOSE, ASSY, BROOM DRIVE MOTOR TO RETURN	1	
12	B60025	HOSE, ASSY, CASE DRAIN DRIVE MOTOR TO TK	1	
13	B60026	HOSE, ASSY, CASE DRAIN PORT L DRIVE PUMP	1	
14	B60027	HOSE, ASSY, CASE DRAIN PORT T DRIVE PUMP	1	
15	B60028	HOSE, ASSY, HYDR TANK TO PORT B DRIVE PUMP	1	
16	B60029	HOSE, ASSY, PORT A TO PORT F ON DRIVE PUMP	1	
17	B60031	HOSE, ASSY, BROOM DRIVE MOTOR TO RETURN	1	
18	B60032	HOSE, ASSY, BROOM FILTER TO HEATEXCHANGER	1	
19	B60033	HOSE, ASSY, HEAT EXCHANGER- HYDR TANK	1	
20	B60034	AUXILIARY PUMP TO VALVE MANIFOLD	1	


GP1
GP2
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A1
A2
B1
GP3
B2
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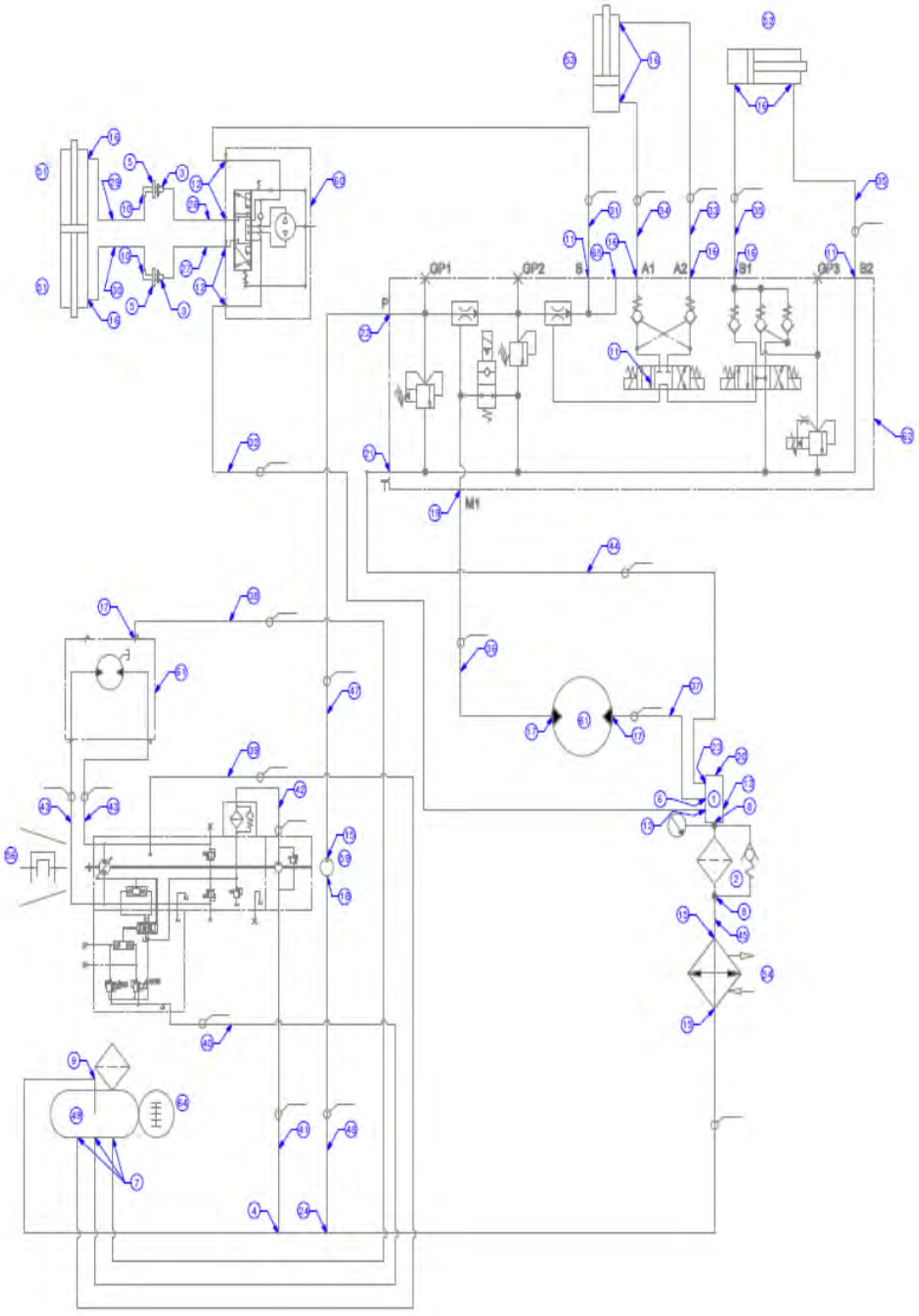
Hydraulic Schematic Hoses Cont'

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
21	B60035	HDYR TANK TO AUXILIARY PUMP SUCTION	1	
22	B81942	HOSE,HYDR TRANS TO DRIVE PUMP	2	
23	B60012	HOSE, ASSY, STEERING BYPASS TOWING OPTION	1	
24	B60013	HOSE, ASSY, STEERING BYPASS TOWING OPTION	1	


GP1
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A2
B1
GP3
B2
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T
M1

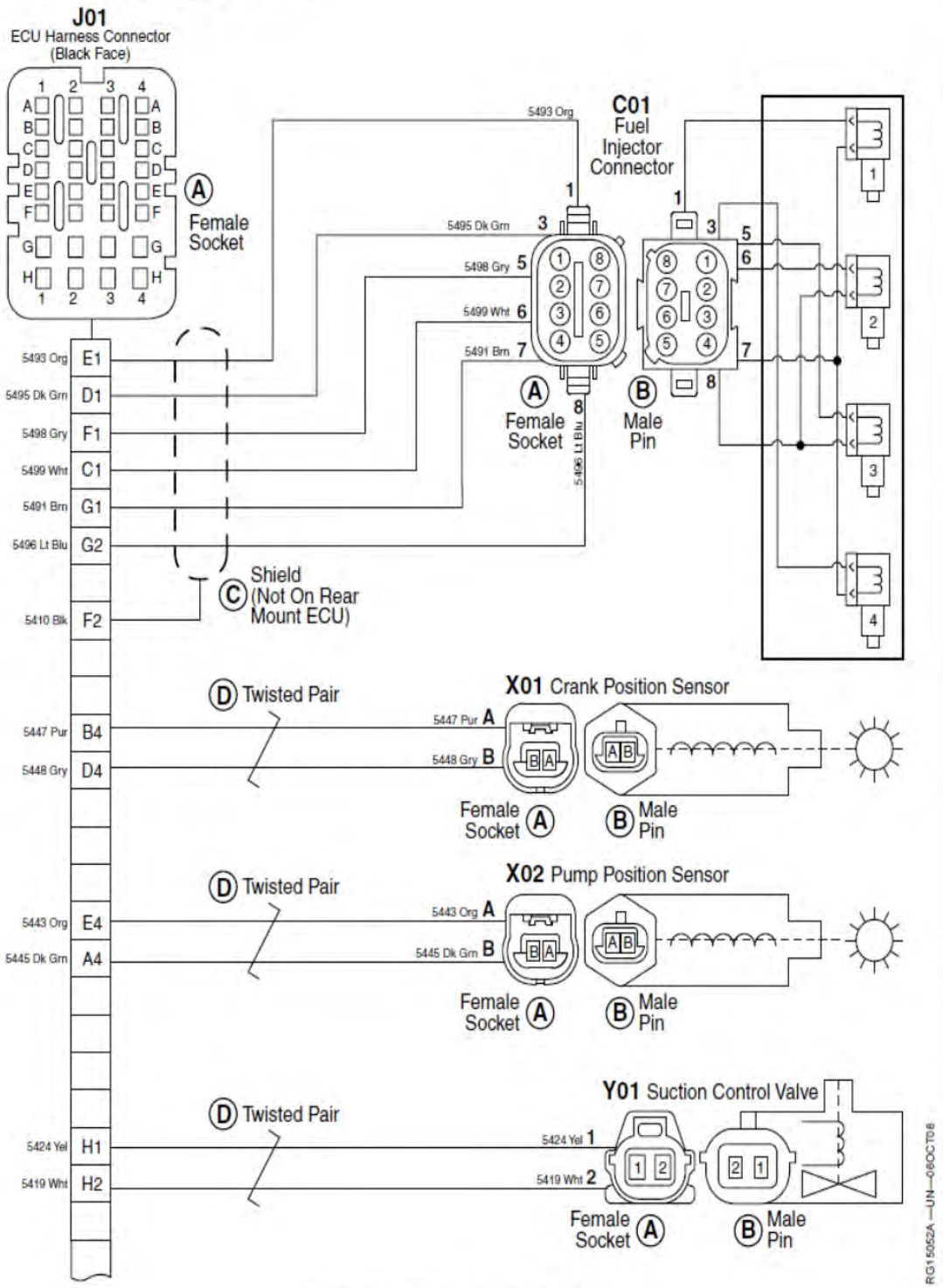
Hydraulic Schematic Fittings

ITEM NO.	PART NO.	DESCRIPTION	NO. REQ.	REMARKS
1	80526	Hydraulic Fitting Straight JIC/NPT	2	2404-6-6
2	80686	Hydraulic Fitting 90° Elbow JIC/NPT	2	2501-6-6
3	80706	Hydraulic Fitting O-ring 90° Elbow	7	6801-6-6
4	80603	Hydraulic Fitting, Bulkhead	2	WI-7709
5	80694	Hydraulic Fitting O-Ring Straight JIC	6	6400-6-8
6	80693	Hydraulic Fitting O-Ring Straight JIC	2	6801-16-20
7	81614	Hydraulic Fitting O-ring 90° Elbow	1	6801-16-12
8	81482	Hydraulic Fitting O-ring 45° Elbow	1	6802-16-12
9	81315	Hydraulic Fitting O-ring 45° Elbow	1	6802-12-12
10	81301	Hydraulic Fitting O-Ring Straight JIC	3	6400-12-10
11	80705	Hydraulic Fitting O-ring 90° Elbow	3	6801-16-16
12	81303	Hydraulic Fitting O-ring 90° Elbow	1	6801-20-20
13	81615	Hydraulic Fitting O-ring Swivel Female JIC	1	6402-12-16
14	81334	Hydraulic Fitting O-Ring Straight JIC	2	6400-16-20
15	B81950	Hydraulic Fitting Split Flange SAE 62	4	SFK-62-12
16	B81951	Hydraulic Fitting 90° Elbow SAE 62	4	1704-62-12-12
17	B81995	Hydraulic Fitting O-ring 90° Elbow	1	6801-12-20
18	80639	Hydraulic Fitting O-ring 90° Elbow	1	6801-16-20
19	80621	Hydraulic Fitting O-ring 45° Elbow	1	6802-20-20
20	81248	Hydraulic Fitting O-ring 90° Elbow	3	6801-12-12
23	80701	Hydraulic Fitting Branching TEE – Tow Opt	1	6602-6-6
24	80722	Hydraulic Fitting 90° Elbow JIC/NPT – Tow Opt	1	2501-6-8
25	80628	Hydraulic Fitting 90° Elbow Swivel JIC- Tow Opt	1	6500-06
26	81331	Hydraulic Fitting Straight JIC/NPT – Tow Opt	2	2404-6-8
27	80742	Hydraulic Fitting Plug, Hex – Tow Opt	1	3152-6
28	B81979	Hydraulic Fitting, Adapter, Transducer, Return	1	6410-12-06
29	B81978	Hydraulic Fitting, Adapter, Transducer, Pump	2	M-FB-6410-14x1.5-06WO
30	81493	Hydraulic Fitting O-ring 45° Elbow	2	6802-06-06
31				
32				
33				

JOHN DEERE ENGINE SCHEMATIC

13 PAGES

4.5L 12V ECU Wiring Diagram 1



4.5 Liter 12 Volt ECU Wiring Diagram 1 (PTE)

Continued on next page

A—Female Socket
B—Male Pin
C—Shield (Not On Rear Mount ECU)
D—Twisted Pair
C01— Fuel Injector Connector
J01— ECU Harness Connector (Black Face)
J1-A4—[5445 Dark Green] Pump Position Pulse
J1-B4—[5447 Purple] Crank Position Pulse
J1-C1—[5499 White] Injector #2 Inject Pulse
J1-D1—[5495 Dark Green] Injector #4 Inject Pulse
J1-D4—[5448 Gray] Crank Position Return
J1-E1—[5493 Orange] Injector #1 Inject Pulse
J1-E4—[5443 Orange] Pump Position Return
J1-F1—[5498 Gray] Injector #3 Inject Pulse
J1-F2—[5410A Black] Wiring Shield
J1-G1—[5491 Brown] Injector #1 & #4 Power
J1-G2—[5496 Light Blue] Injector #2 & #3 Power
J1-H1—[5424 Yellow] HP Pump Suction Control Valve High Drive
J1-H2—[5419 White] HP Pump Suction Control Valve Low Drive
X01— Crank Position Sensor
X02— Pump Position Sensor
Y01— Suction Control Valve

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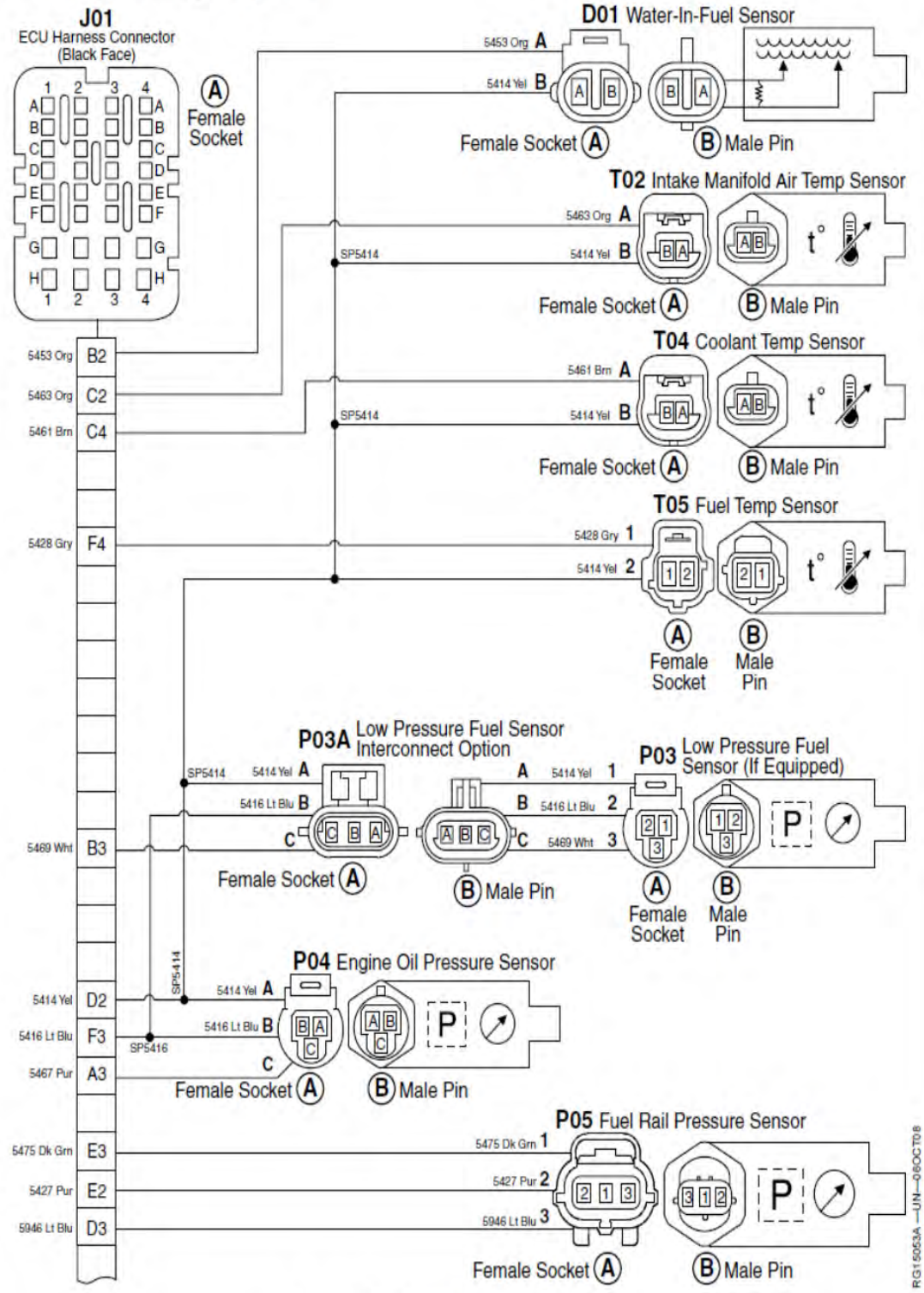
4.5L 12V ECU Wiring Diagram 2

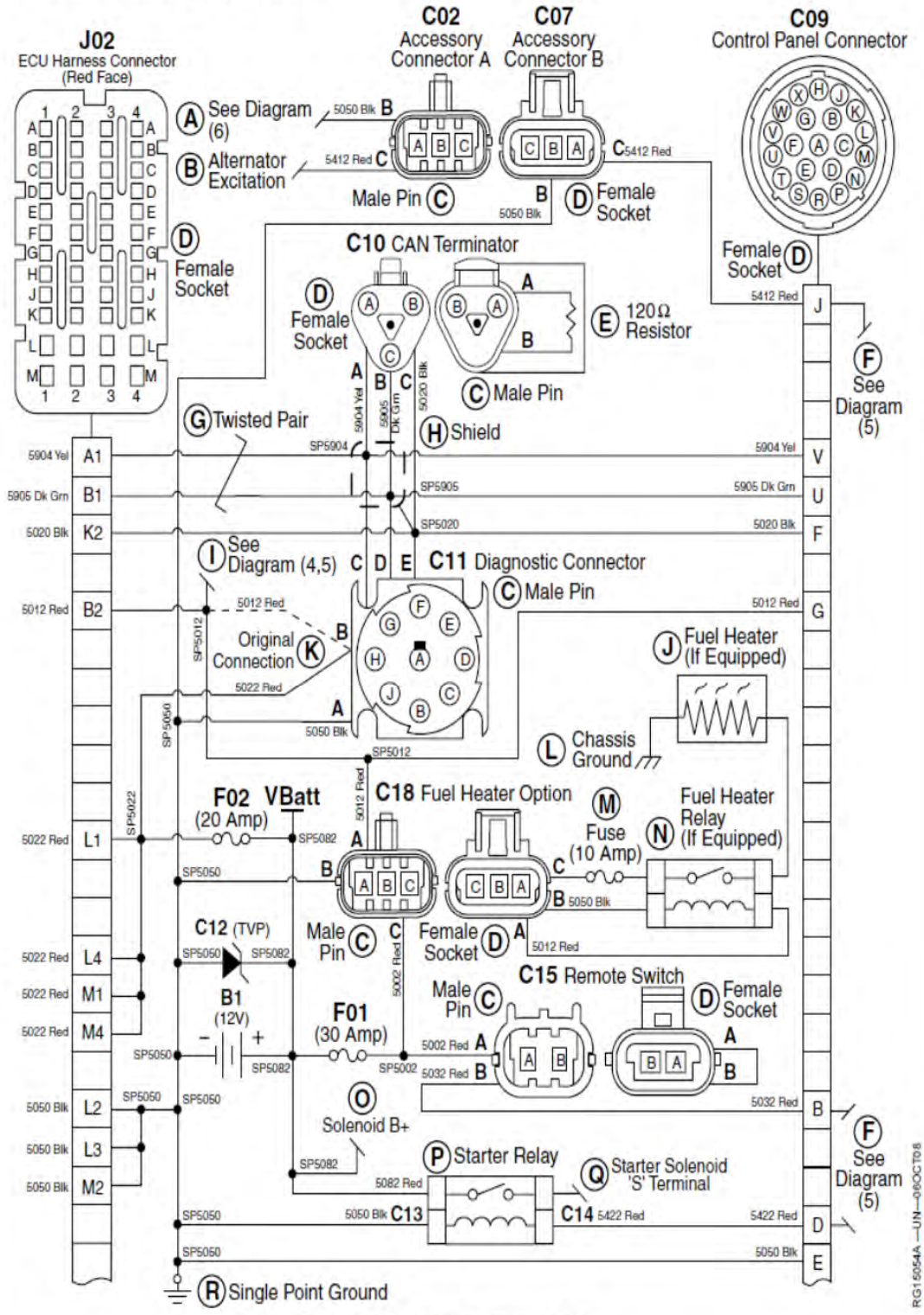


4.5 Liter 12 Volt ECU Wiring Diagram 2 (PTE)

Continued on next page

A—Female Socket
B—Male Pin
D01—Water In Fuel Sensor
J01—ECU Harness Connector (Black Face)
J1-A3—[5467 Purple] Engine Oil Pressure Signal
J1-B2—[5453 Orange] Water In Fuel Signal
J1-B3—[5469 White] Fuel Pressure Signal
J1-C2—[5463 Orange] Intake Manifold Air Temperature Signal
J1-C4—[5461 Brown] Coolant Temperature Signal
J1-D2—[5414A Yellow] 5 Volt Power Supply #2B Return
J1-D3—[5946 Lt Blue] 5 Volt Power Supply #1 Positive
J1-E2—[5427 Orange] 5 Volt Power Supply #1 Return
J1-E3—[5475 Dark Green] Fuel Rail Pressure Signal
J1-F3—[5416A Light Blue] 5 Volt Power Supply #2B Positive
J1-F4—[5428 Gray] Fuel Temperature Signal
P03—Low Pressure Fuel Sensor (If Equipped)
P03A—Low Pressure Fuel Sensor Interconnect Option
P04—Engine Oil Pressure Sensor
P05—Fuel Rail Pressure Sensor
T02—Intake Manifold Air Temperature Sensor
T04—Coolant Temperature Sensor
T05—Fuel Temperature Sensor

4.5L 12V ECU Wiring Diagram 3



4.5 Liter 12 Volt ECU Wiring Diagram 3 (PTE)

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A—See Diagram (6)
B—Alternator Excitation
C—Male Pin
D—Female Socket
E—120 Ω Resister
F—See Diagram (5)
G—Twisted Pair
H—Shield
I— See Diagram (4,5)
J—Fuel Heater (If Equipped)
K—Original Connection. See Instruction for Update
L—Chassis Ground
M—Fuse (10 Amp)
N—Fuel Heater Relay (If Equipped)
O—Solenoid B+
P—Starter Relay
Q—Starter Solenoid 'S' Terminal
R—Single Point Ground
B1—12 Volt
C02— Accessory Connector A
C07— Accessory Connector B
C09— Control Panel Connector
C10— CAN Terminator
C11— Diagnostic Connector
C12— Transient Voltage Protection (TVP)
C13— Starter Relay Coil Return
C14— Starter Relay Coil Control
C15— Remote Switch
C18— Fuel Heater Option
F01— 30 Amp
F02— 20 Amp
J02— ECU Harness Connector (Red Face)
J2-A1—[5904A Yellow] CAN High
J2-B1—[5905A Dark Green] CAN Low
J2-B2—[5012A Red] Ignition Key Start/Run Switch
J2-K2—[5020A Black] CAN Shield
J2-L1—[5022A Red] Battery Positive
J2-L2—[5050A Black] Battery Negative
J2-L3—[5050B Black] Battery Negative
J2-L4—[5022B Red] Battery Positive
J2-M1—[5022C Red] Battery Positive
J2-M2—[5050C Black] Battery Negative
J2-M4—[5022D Red] Battery Positive
VBatt—Battery Positive

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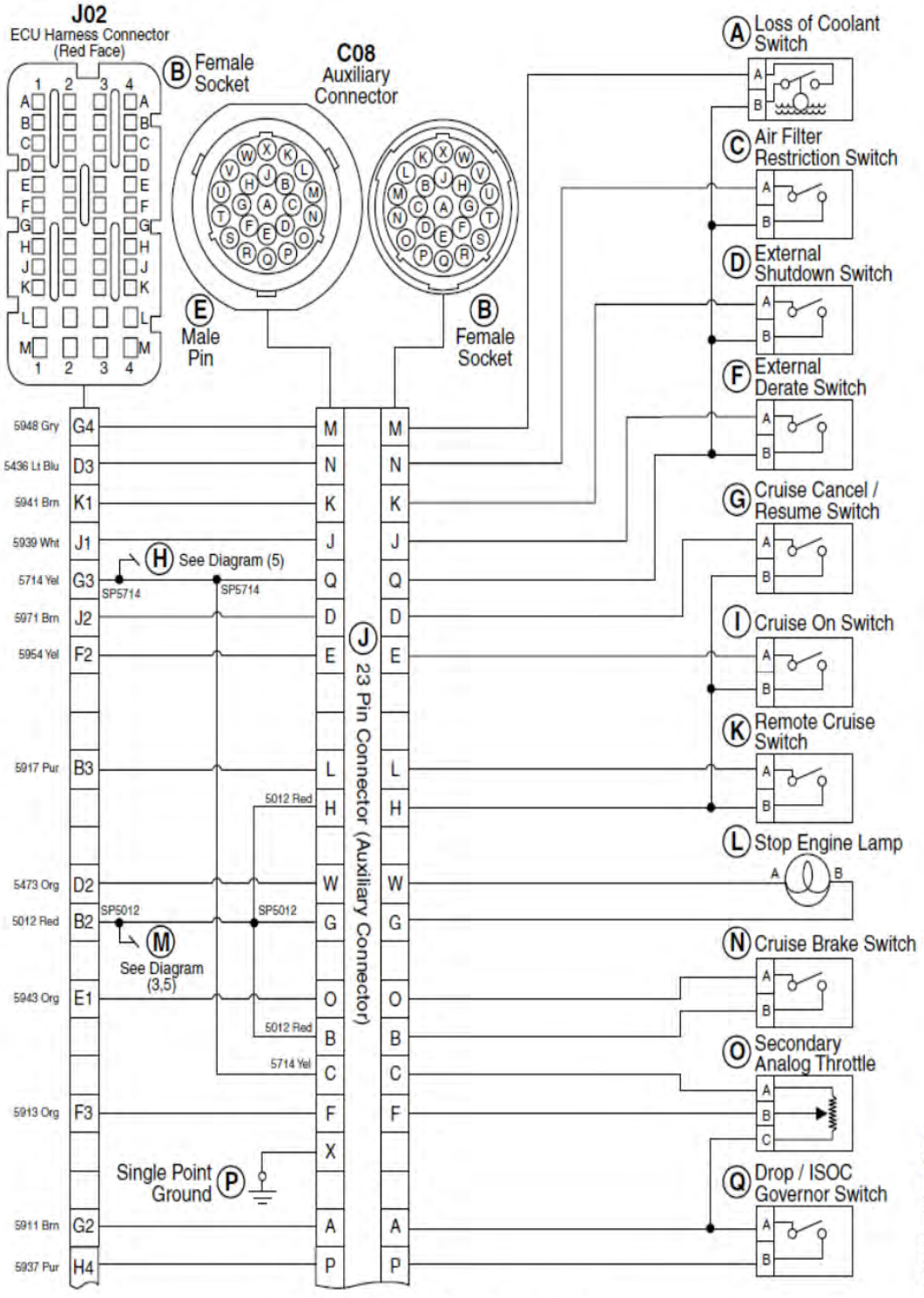
4.5L 12V ECU Wiring Diagram 4



4.5 Liter 12 Volt ECU Wiring Diagram 4 (PTE)

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A—Loss of Coolant Switch
B—Female Socket
C—Air Filter Restriction Switch
D—External Shutdown Switch
E—Male Pin
F—External Derate Switch
G—Cruise Cancel/Resume Switch
H—See Diagram (5)
I— Cruise On Switch
J—23 Pin Connector (Auxiliary Connector)
K—Remote Cruise Switch
L—Stop Engine Lamp
M—See Diagram (3,5)
N—Cruise Brake Switch
O—Secondary Analog Throttle
P—Single Point Ground
Q—Drop/Isoc (Isochronous) Governor Switch
C08— Auxiliary Connector
J02— ECU Harness Connector (Red Face)
J2-B2—[5012A Red] Ignition Key Start/Run Switch
J2-B3—[5917 Purple] Remote Cruise On/Off Switch
J2-D2—[5473 Orange] Stop Engine Lamp Return
J2-D3—[5436 Light Blue] Air Filter Restriction Switch
J2-E1—[5943 Orange] Cruise Brake Switch
J2-F2—[5954 Yellow] Cruise On/Off Switch
J2-F3—[5913 Orange] Secondary Analog Throttle Signal
J2-G2—[5911 Brown] 5 Volt Power Supply #2A Positive
J2-G3—[5714A Yellow] 5 Volt Power Supply #2A Negative
J2-G4—[5948 Gray] Low Coolant Level Switch
J2-H4—[5937 Purple] Droop/Isochronous Governor Switch
J2-J1—[5939 White] External Derate Switch
J2-J2—[5971 Brown] Cruise Cancel/Resume Switch
J2-K1—[5941 Brown] External Shutdown Switch

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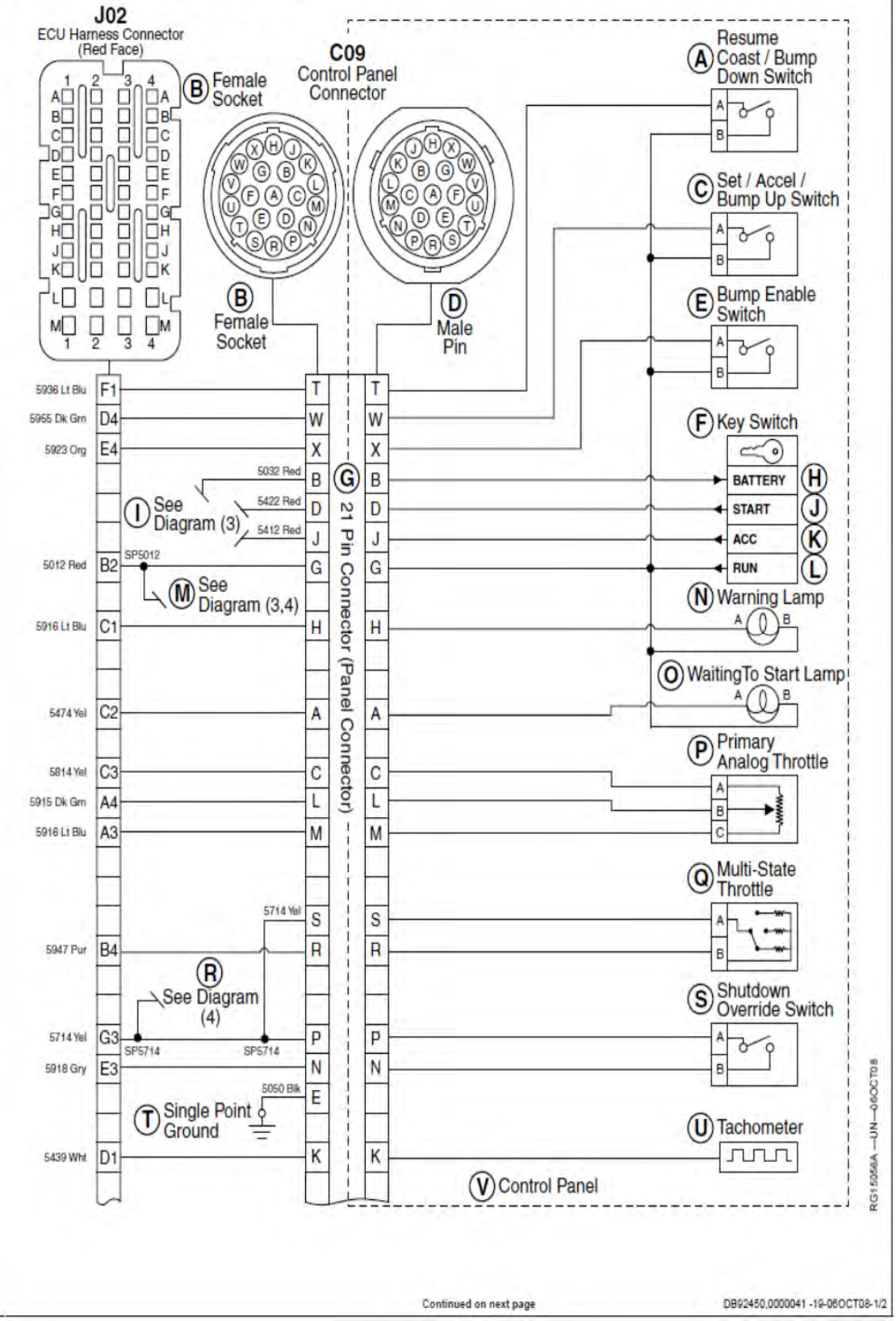
4.5L 12V ECU Wiring Diagram 5



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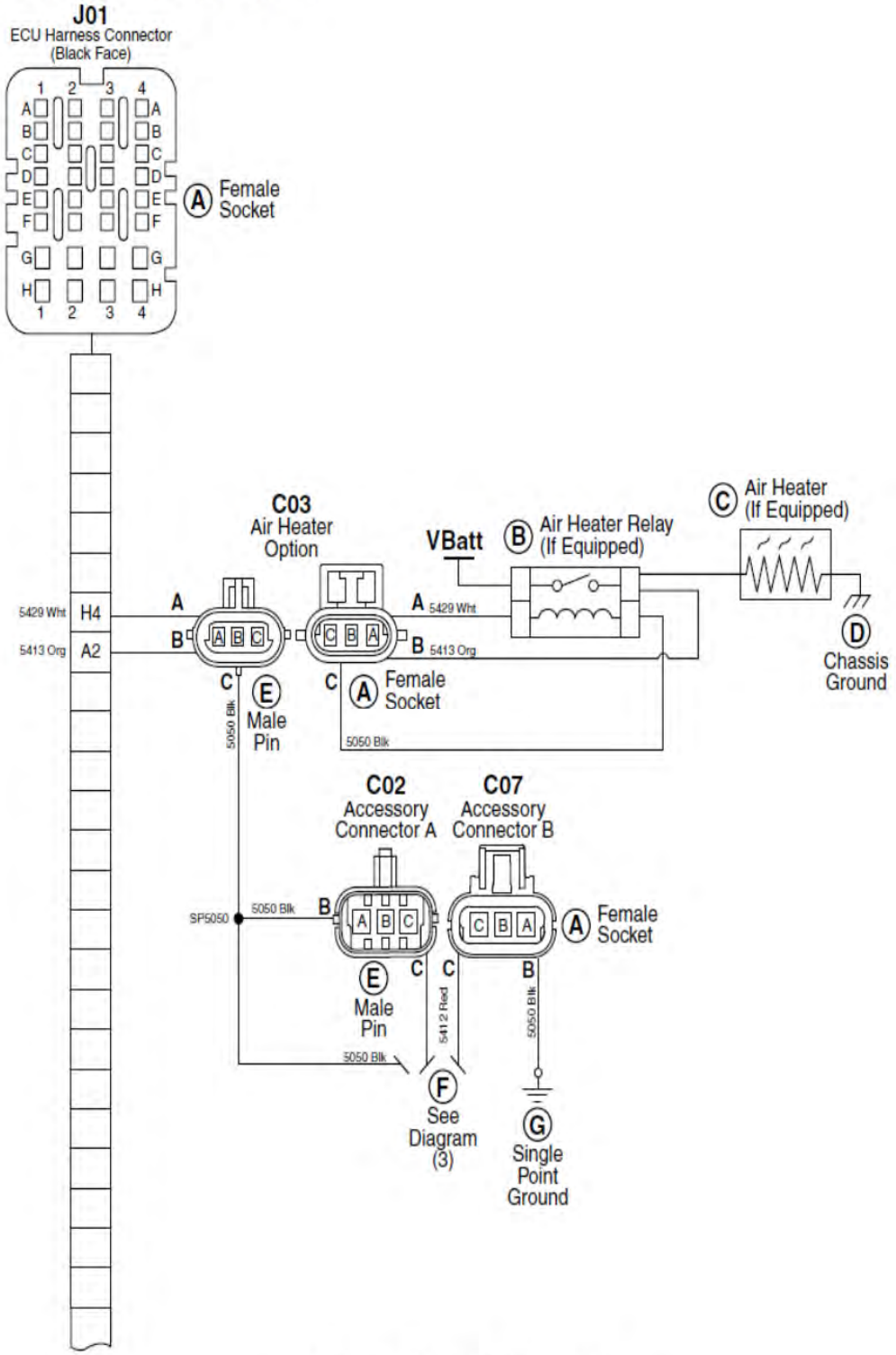
A—Resume Coast/Bump Down Switch
B—Female Socket
C—Set Accel/Bump Up Switch
D—Male Pin
E—Bump Enable Switch
F—Key Switch
G—21 Pin Connector (Panel Connector)
H—Battery
I— See Diagram (3)
J—Start
K—Accessory
L—Run
M—See Diagram (3,4)
N—Warning Lamp
O—Wait to Start Lamp
P—Primary Analog Throttle
Q—Multi-State Throttle
R—See Diagram (4)
S—Shutdown Override Switch
T—Single Point Ground
U—Tachometer
V—Control Panel
C09— Control Panel Connector
J02— ECU Harness Connector (Red Face)
J2-A3—[5616 Light Blue] 5 Volt Power Supply #3 Positive
J2-A4—[5915 Dark Green] Primary Analog Throttle Signal
J2-B2—[5012A Red] Ignition Key Start/Run Switch
J2-B4—[5947 Purple] Mulitstate Throttle Signal
J2-C1—[5916 Light Blue] Warning Lamp Drive Return
J2-C2—[5474 Yellow] Wait To Start Lamp Drive Return
J2-C3—[5814 Yellow] 5 Volt Power Supply #3 Negative
J2-D1—[5439 White] Tachometer Pulse Output
J2-D4—[5955 Dark Green] Set/Accel/Bump Up Switch
J2-E3—[5913 Orange] Secondary Analog Throttle Signal
J2-E4—[5923 Orange] Bump Enable Switch
J2-F1—[5936 Light Blue] Resume Coast/Bump Down Switch
J2-G3—[5714A Yellow] 5 Volt Power Supply #2A Negative

4.5L 12V ECU Wiring Diagram 6



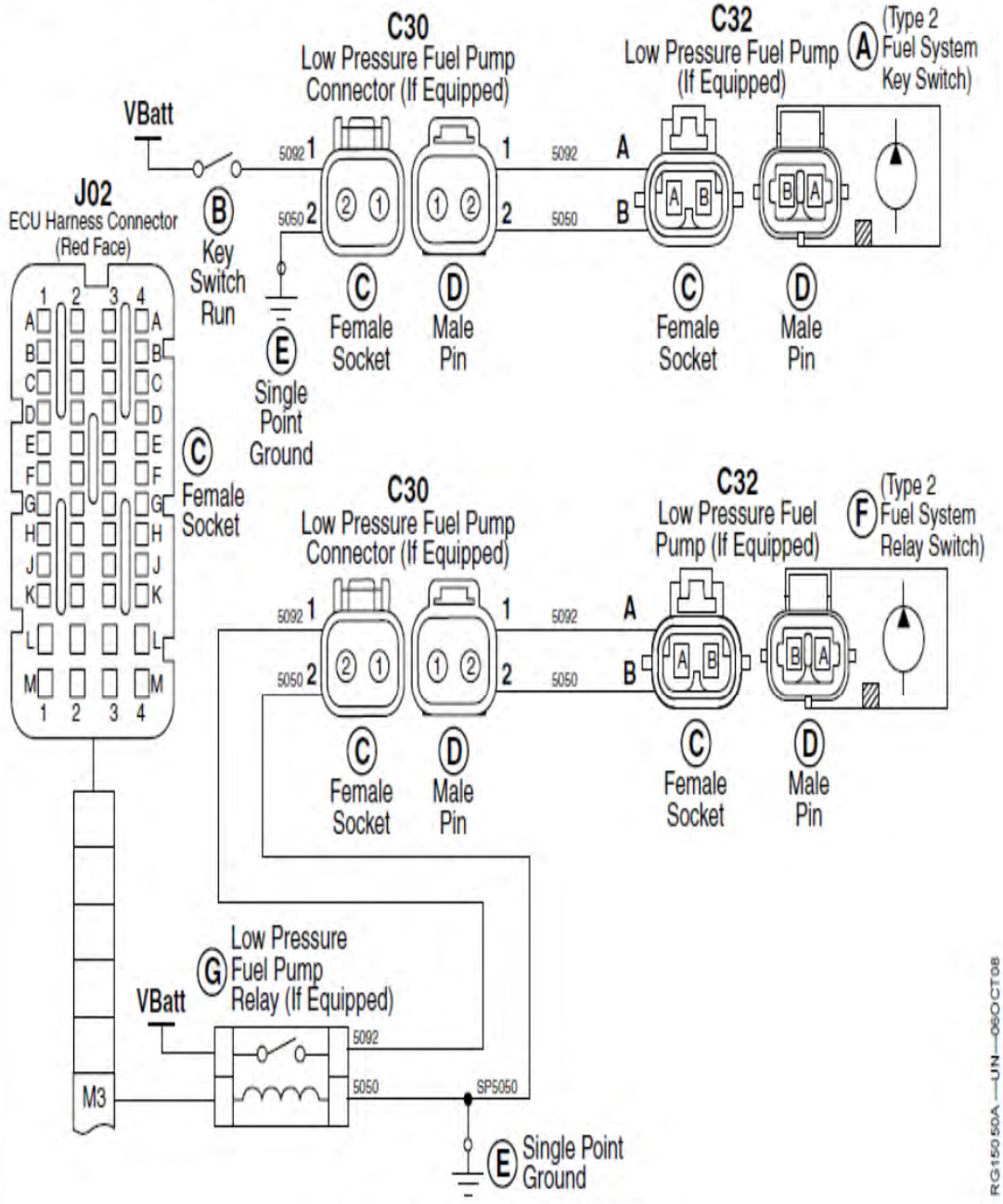
4.5 Liter 12 Volt ECU Wiring Diagram 6 (PTE)

Continued on next page

A—Female Socket
B—Air Heater Relay (If Equipped)
C—Air Heater (If Equipped)
D—Chassis Ground
E—Male Pin
F—See Diagram (3)
G—Single Point Ground
C02—Accessory Connector A
C03—Air Heater Option
C07—Accessory Connector B
J01—ECU Harness Connector (Black Face)
J1-A2—[5413 Orange] Air Heater Relay Status
J1-H4—[5429 White] Air Heater Relay Control
VBatt—Battery Positive

DB02450,0000036 -19-08OCT08-2/2

4.5L 12V ECU Wiring Diagram 7



4.5 Liter 12 Volt ECU Wiring Diagram 7 (PTE)

A—(Type 2 Fuel System, Key Switch)
B—Key Switch Run
C—Female Socket
D—Male Pin
E—Single Point Ground
F—(Type 2 Fuel System, Relay Switch)
G—Low Pressure Fuel Pump Relay (If Equipped)
C30— Low Pressure Fuel Pump Connector (If Equipped)
C32— Low Pressure Fuel Pump (If Equipped)
J02— ECU Harness Connector (Red Face)
J2-M3—Low Pressure Fuel Pump Relay Drive
VBatt—Battery Positive

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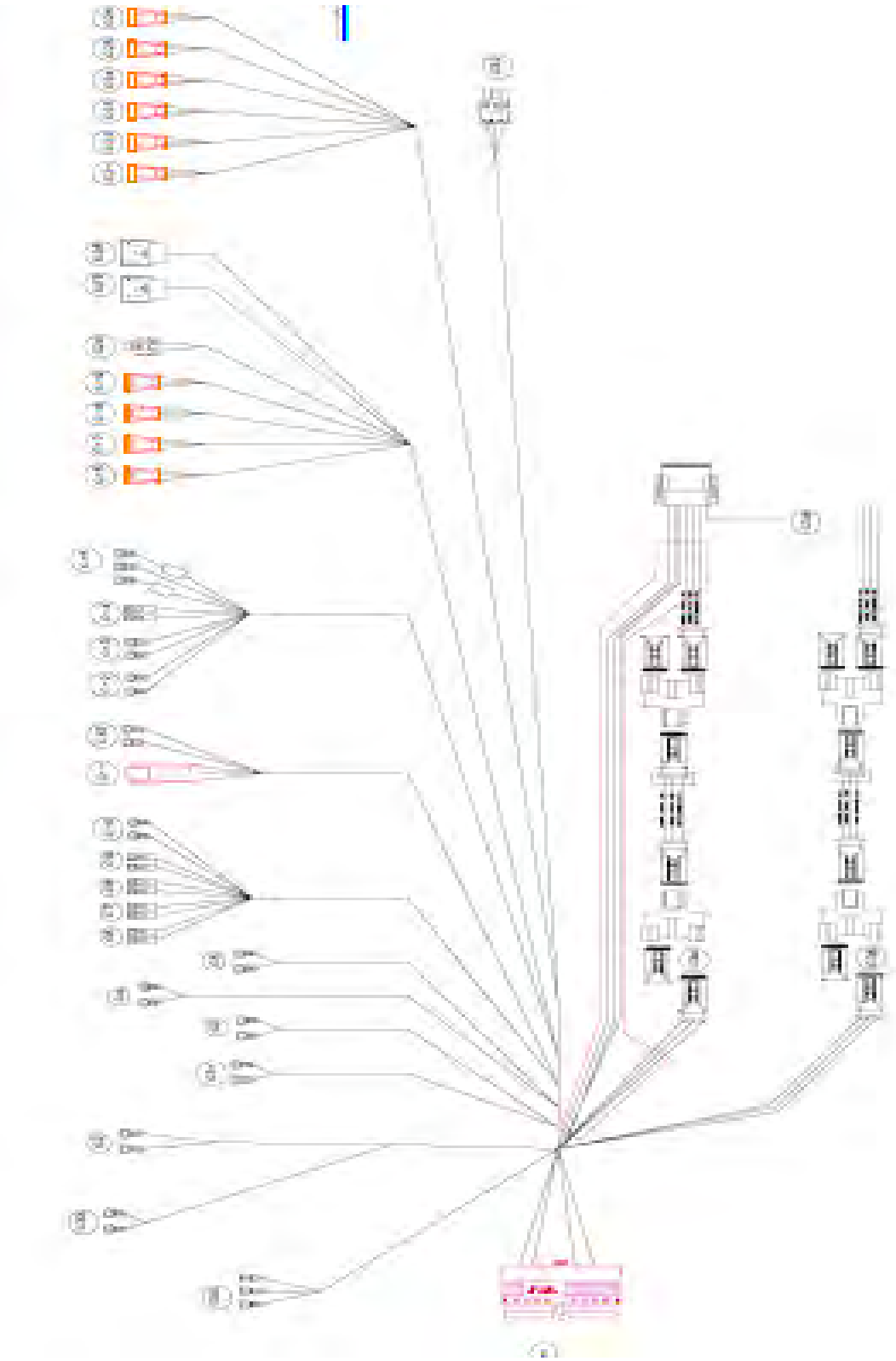
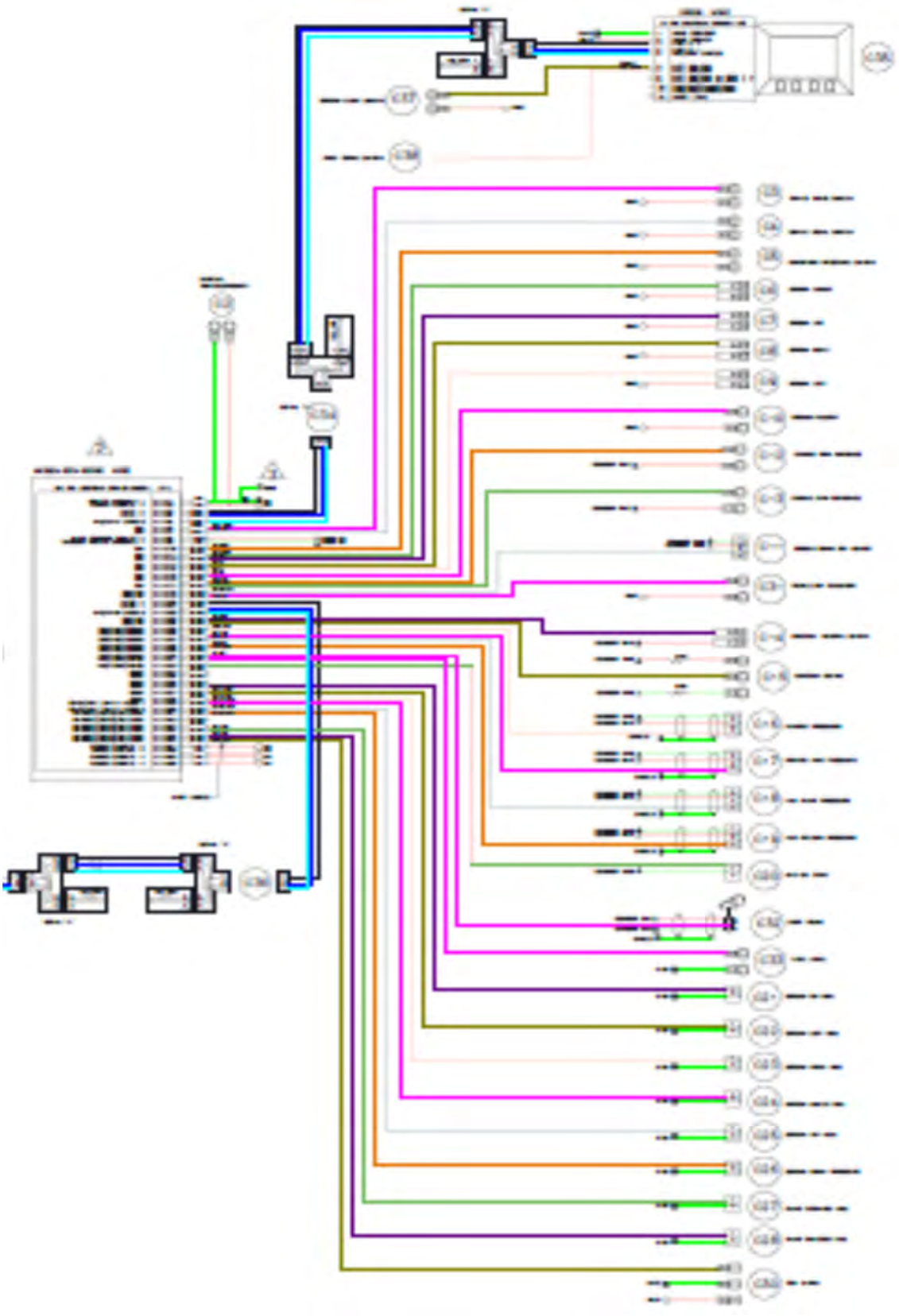
CONTROLLER HARNESS SCHEMATICS

2 PAGES





BROOM HARNESS SCHEMATIC

2 PAGES

BROOM WIRING

AIR CONDITIONER/HEATER
A/C compressor to Binary switch
Binary Switch to A/C Unit Black # 902
Fuse Panel Black/white # 904 to A/C Power in
Ground to Common Ground
Brown Wire on A/C Not Used

FUSE BLOCK FLASHERS
Jump together

12 VOLT POWER OUTLET
Fuse Panel Orange # 959 wire to Center Post
Ground to common ground

DOME LIGHT
Fuse Panel White # 945 wire to Positive on Light
Use Dome Ground to connect all door switches and light to toggle on pressurizer

HEAD LIGHTS
Fuse panel Red/Black # 928 wire to Switch Power IN
Switch to Tail Lights Brown # 929 wire
Switch to Head Lights Tan # 909 wire

IGNITION SWITCH
Fuse panel Pink # 931 wire To Ignition
Fuse Panel Brown # 932 wire To ACC
Fuse Panel Orange # 933 wire To Ignition
Fuse Panel Red # 934 wire to B+
Purple # 919 wire Starter Solenoid to Start on ignition switch
Positive Lead from Pressurizer to Ignition
Positive Lead from Controller to Ignition

RADIO
Fuse Panel Red # 940 wire to Radio White wire Memory
Fuse Panel Red/Black # 941 wire to Radio Red Ignition wire
Black to Common Ground

DEFROST FAN
Fuse Panel Orange/Black #955 wire to Positive Defrost fan wire
Black to common Ground

EMERGENCY PARK BRAKE SWITCH
Red + with White Park Brake wire from display harness to console indicator light wire
Indicator light to brown # 951 wire on Water Spray pump toggle
Black to common ground

WORK LIGHT/ STROBE LIGHT

Fuse Panel Purple # 952 wire to Center of Work light and Strobe toggle switches
Strobe toggle switch to red wire
Work Light toggle switch to Light Green # 956 wire to Work Light
Black to common ground

WIPER SWITCHES

Tie together Yellow wire and White wire (High/Low) to Red on wiper harness
Blue wire to Yellow wire on wiper harness
Black to common ground
Red Wire to fuse panel Blue # 905 wire
Brown wire to washer motors (Brown/Black front, Brown/White Rear)
Green Wire on Wiper Motor Park

C09 ENGINE HARNESS

Red # 915 wire to “B” on plug Battery
Purple # 919 wire to “D” on plug Starter solenoid
Pink # 920 wire to “G” on plug Run
Red 12 volt wire from fuse block ACC to “J” on plug Accessory on engine harness

BATTERY

Red #915 wire to Positive terminal on starter

SPRAY BAR PUMP

Spray bar toggle switch Red wire to Spray bar pump
Ignition red wire to toggle switch
Black to common ground

HORN

Fuse panel Green # 924 Wire to Positive on Horn
Black to Common Ground

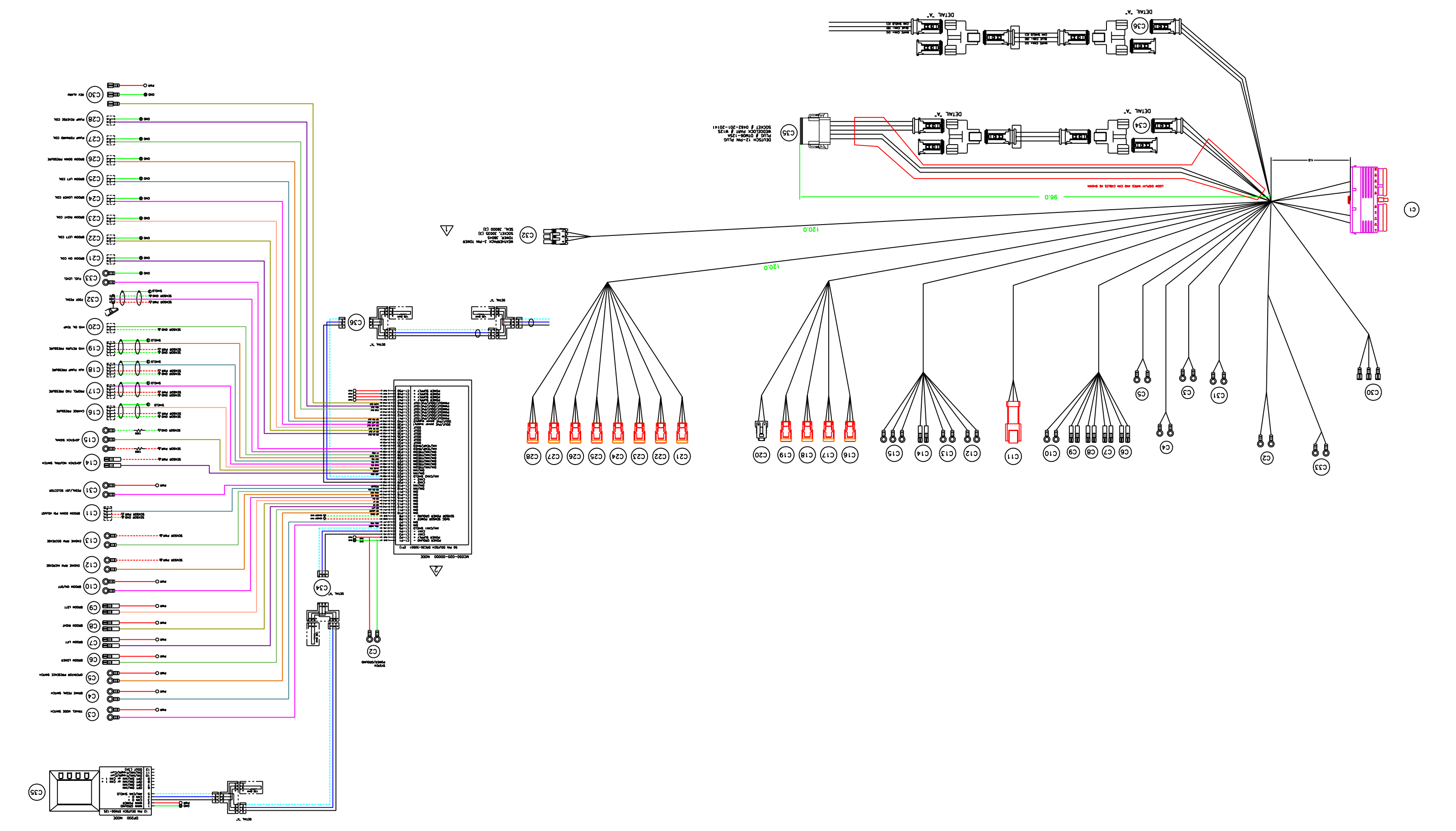
BRAKE SWITCH

C4 on Controller Harness power to one brake switch terminal
Turn Signal Switch White # 918 Wire/C4 Brake Pedal to Diode to Other Brake Switch
Diode power flows from switch

TURN SIGNAL SWITCH

Switch Yellow wire to L on Flasher
Switch Blue wire to P on Flasher
Black Jumper from fuse block to X on Flasher
Switch White wire to common ground
Switch Gray/Black wire to white # 918 wire
Switch Gray wire to Yellow # 949 wire to Left rear turn signal light
Switch Black wire to Green # 948 wire to Right rear turn signal light
Switch Green wire to Light Blue # 926 wire to Left front turn signal light
Switch Red wire to Blue # 925 wire to Right front turn signal light

Notes


C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C30
C31
C32
C33
C34
C35
C36
120.0
96.0
DETAIL "A"
LOOM DISPLAY SHEET AND CAN CABLES AS SHOWN