MG622
Motor Grader

Operation, Service and Parts Manual

Begins with Serial No._____

Pavement Services, Inc.

IMPORTANT! 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.

Pavement Services, Inc.
23416 456th Ave.
Madison SD 57042
Phone: (605) 256-0795
Fax: (605) 256-0989

TABLE OF CONTENTS

PSI Warranty Policy ..... Page iv

PSI Product Registration ..... Page v

PSI Inspection Report ..... Page vii

PSI Delivery Report ..... Page ix

Section A - Safety ..... Page 1-6

Section B - Specifications ..... Page 1-4

Section C - Controls & Accessories ..... Page 1-8

Section D - Operations ..... Page 1-6

Section E - Fuels & Lubrication ..... Page 1-4

Section F - Transporting & Theft Deterrents ..... Page 1-4

Section G - Troubleshooting ..... Page 1-6

Section H - Service ..... Page 1-14

Section I - Storage ..... Page 1-4

Parts Manual

PAVEMENT SERVICES, INC.

WARRANTY POLICY

(Effective Date: 1/1/03)

STATEMENT OF WARRANTY Pavement Services warrants its products, when used correctly under normal operating conditions, will be free from defects in materials and workmanship. PSI makes no other warranty expressed or implied. This warranty shall be for a period of 18 months from the date the product is placed into service, providing that PSI is supplied with the in-service date. The first 12 months will be total machine warranty to include parts and labor. The last 6 months will be a parts-only warranty. The warranty shall not apply to any products which have been altered, changed, or repaired in any manner whatsoever, except by an authorized PSI repair facility, nor to any product which has been subject to misuse, negligence, or accident. The exclusive and sole remedy for breech of contract shall be limited to repair, modification or replacement at the sole discretion of PSI. PSI shall not, in any event, be liable for the cost of any special, direct or consequential damages to anyone. PSI reserves the right to make changes or improvements in the design or construction of any part without incurring the obligation to install such changes on any previously delivered units.

The WARRANTY period is established once the NEW MACHINE DELIVERY REPORT is completed, signed, and filed with Pavement Services, Inc. The NEW MACHINE DELIVERY REPORT must be submitted to Pavement Services, Inc., at the time the unit is placed into service.

The NEW MACHINE DELIVERY REPORT must be completed and signed by the selling dealer within ten (10) days of placing the equipment into service. **FAILURE TO DO SO WILL RESULT IN THE CANCELLATION OF WARRANTY AND DENIAL OF ANY WARRANTY CLAIMS SUBMITTED ON THE UNIT.**

No warranty claim will be processed until the NEW MACHINE DELIVERY REPORT and NEW MACHINE RECEIVING INSPECTION REPORT is filed with Pavement Services, Inc.

Pavement Services, Inc.
23416 456th Ave
Madison, SD 57042
Telephone (605)256-0795
Fax (605)256-0989

PRODUCT REGISTRATION

ISSUED TO:_____
Name of Owner

_____
Address

_____
City, State, Zip

FOR:_____
Machine & Model Number

_____
Serial Number

_____
Delivery Date

ISSUED BY:_____
Authorized PSI Dealer

_____
City, State, Zip

Mail To:
Pavement Services, Inc.
23416 456th Ave
Madison, SD 57042
Telephone (605)256-0795
Fax (605)256-0989

FILL OUT OTHER SIDE OF THIS PAGE AND MAIL TO PAVEMENT SERVICES, INC.

Pavement Services, Inc.
23416 456th Ave
Madison, SD 57042
Telephone (605)256-0795
Fax (605)256-0989

NEW MACHINE RECEIVING INSPECTION REPORT

Must be completed and returned within ten days after receipt of the machine from the factory.
Please mail to Pavement Services, Inc. at above address.

_____
Purchasing Distrubutor (Name of Dealer)

_____
Address

_____
City, State, Zip

_____
Model Number

_____
Serial Number

_____
Was machine **Sold** or placed in **Stock**

LITERATURE RECEIVED:
Inspection & Delivery Report: _____
Operation, Service & Parts Manual: _____

MACHINE INSPECTION:

1. Was there any damage during shipment to and from the factory? Yes/No _____
If yes, please explain:
_____
_____
_____

2. Were the engine and transmission mounting bolts securely tightened? Yes/No _____

3. Does the machine operate correctly? Yes/No _____
If no, please explain:
_____
_____
_____

4. Were there any shortages against the packing list? Yes/No _____
If yes, please list shortages:
_____
_____
_____

If the unit is **sold, leased, rented or being put in new inventory**, please complete the following checklist:

MACHINE READY CHECKLIST:
_____Check Anti-freeze
_____Check Oil Level:
_____Engine
_____Hyd. Tank
_____Grease per Lube Chart (Section E)
_____Check/Tighten Hyd. Oil Filter(s)
_____Check Tire Pressure (approx. 25 PSI)
_____Check/Tighten Wheel Lug Nuts
_____Install Rotating Beacon

If the unit is being put in **storage**, please complete the following checklist:

MACHINE STORAGE CHECKLIST:
_____Remove Battery
_____Heavy Grease
_____Drain Fuel Tanks
_____Drain or Run Dry Engines
_____Seal Exhaust System
_____Cover Operator's Pedestal
_____Drain Water Traps:
_____Valves
_____Pumps
_____Petcocks

FILL OUT OTHER SIDE OF THIS PAGE AND MAIL TO PAVEMENT SERVICES, INC.

Pavement Services, Inc.
23416 456th Ave
Madison, SD 57042
Telephone (605)256-0795
Fax (605)256-0989

NEW MACHINE DELIVERY REPORT

Mail to Pavement Services, Inc. at above address.

Model Number: _____ Date: _____

Serial Number: _____

Delivery Location: _____
(Exact Address)

Dealer Personnel Making Delivery: _____
(Name) (Title)

Hour Meter Operating? Yes/No _____

Comments: _____
_____
_____

DEALER

The above unit has been delivered on the date and according to the conditions as shown. The customer has been instructed in the operation and maintenance of the unit.

Sales _____ Lease _____ Rent _____

_____
Name of Dealer

_____
Location

_____
Salesperson

Title:_____ Date:_____

CUSTOMER

We acknowledge receipt of the above machine in the condition set forth and have been instructed the operation and maintenance of same. **This acknowledgement required to inaugurate the standard factory warranty.**

_____
Name of Company

_____
Address

_____
City, State, Zip

_____
Contact Title

Phone:_____ Date:_____

FILL OUT OTHER SIDE OF THIS PAGE AND MAIL TO PAVEMENT SERVICES, INC.

DANGER

"Danger" indicates an imminently hazardous situation which, if not avoided, **will** result in death or serious injury.

WARNING

"Warning" indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION

"Caution" indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury. May also alert against unsafe practices.

The above Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! It stresses an attitude of "Heads Up for Safety" and can be found throughout this Operator's Manual and on the machine itself.

BEFORE YOU ATTEMPT TO OPERATE THIS EQUIPMENT, READ AND STUDY THE FOLLOWING SAFETY INFORMATION. IN ADDITION, MAKE SURE THAT EVERY INDIVIDUAL WHO OPERATES OR WORKS WITH THIS EQUIPMENT, WHETHER FAMILY MEMBER OR EMPLOYEE, IS FAMILIAR WITH THESE SAFETY PRECAUTIONS.

Our Company ALWAYS takes the operator and his/her safety into consideration when designing our machinery and we guard exposed moving parts for the operator's protection. However, some areas can NOT be guarded or shielded in order to assure proper operation. Therefore, this Operator's Manual, and Decals on the machine, warn of further danger and should be read and observed closely.

ALWAYS keep this manual in a convenient place for instant reference and NEVER attempt to make repairs or adjustments that you do not fully understand. If you require additional information or service, contact you authorized PSI Dealer.

REMEMBER! It is the owner's responsibility to communicate information on the safe use and proper maintenance of this machine! This includes providing understandable interpretation of these instructions for operators who are not fluent in reading English.

MANDATORY SAFETY SHUTDOWN PROCEDURE

BEFORE cleaning, adjusting, lubricating, or servicing the unit:

1. Bring machine to full parking stop on level surface. Never park on a slope or hillside.
2. Fully retract and lower the Moldboard and the Attachment(s) to the ground.
3. Place controls in Neutral and set Park Brake.
4. Idle engine for gradual cooling.
5. Turn the Starter Key Switch to OFF position and remove key. Take the key with you for security reasons.

NOTE
When Engine is stopped and the Starter Key Switch is in the ON position, a Light will come on until the Key Switch is in the OFF position. Loss of Battery power will result if the switch is left in the ON position.

ONLY when you have taken these precautions can you be sure it is safe to proceed. Failure to follow the above procedure, could lead to death or serious bodily injury.

ADDITIONAL SAFETY REMINDERS

USER/OPERATOR SAFETY PRACTICES as established by applicable industry standards are included in this Operator's Manual and are intended to promote SAFE OPERATION of the machine.

These guidelines do not preclude the use of good judgment, care and common sense as may be indicated by the particular job site work conditions.

It is essential that operators be physically and mentally free of mind altering drugs and chemicals and thoroughly trained in the safe operation of the machine. Such training should be presented completely to all new operators and should not becondensed for those claiming previous experience. Information on operator training is available from several sources including the manufacturer.

Some photographs in this manual may show Doors, Guards and Shields open or removed for illustration purposes ONLY. BE SURE that all Doors, Guards, and Shields are in their proper operating positions BEFORE starting the Engine to operate the unit.

The operator MUST know the capabilities and work applications for the machine, and operate it at speeds slow enough to insure complete control at all times. When working on slopes or near drop offs, use good judgment. ONLY operators with sufficient experience should attempt such work.

Be alert and avoid loose or soft surface conditions that could cause sudden tipping or loss of control. Avoid side hill travel wherever possible by driving up or down the slope. In case of slippage on grade, turn the machine IMMEDIATELY down hill. Keep the blade crossways and lowered for extra stability when scarifying across slopes.

Operating in virgin terrain (called pioneering) is especially dangerous. Be sure you know how this is done. Avoid falling branches, trees, and up-turning roots, and do not drive onto brush piles, logs, or large rocks.

IF YOU ARE NOT CAREFUL WHILE OPERATING THIS MACHINE, ANY OF THE ABOVE FACTORS COULD CAUSE THE MACHINE TO TIP AND THROW YOU OUT OF THE OPERATOR'S STATION, WHICH MAY CAUSE SERIOUS BODILY INJURY OR DEATH!

ALWAYS wear your seat belt!

ALWAYS keep hands, feet, and arms inside of the Operator's Station when operating the machine!

ALWAYS wear appropriate personal safety gear as called for by the job or working conditions!

ALWAYS be aware of pinch point areas on the machine such as Wheels to Frame, Cylinders to Frame, Moldboard and Attachment to Frame!

ALWAYS maintain a safe distance from electric power lines or buried cables, and avoid contact with any electrically charged conductor! Contact can result in electrocution. Contact proper local authorities for utility line locations BEFORE starting a job!

ALWAYS check the job site for terrain hazards, obstructions and bystanders!

NEVER attempt to by-pass the Starter Key Switch when starting the Engine. ALWAYS use the jump-starting procedure detailed in the Service chapter!

NEVER use your hands to search for hydraulic fluid leaks. Hydraulic fluid is pressurized. Escaping fluid can be invisible and can penetrate the skin, causing a serious injury! If any fluid is injected into your skin, see a doctor familiar with this type of injury at once! Injected fluid MUST BE surgically removed by a doctor or gangrene may result!

Do NOT operate the machine where the weight, with all attachments installed, exceeds approved load limits!

Do NOT allow minors or any unqualified personnel to operate or be near the machine unless properly supervised. This is strictly a single Seat, NO passenger machine!

Do NOT start the Engine or operate any Controls unless properly seated in the Operator's Seat and ALWAYS wear your seat belt!

Do NOT operate the machine in an enclosed area without adequate ventilation! Internal combustion engines deplete the oxygen supply within enclosed spaces and may create a serious hazard unless the oxygen is replaced. This includes the atmosphere inside the cab, when the unit is equipped with an enclosed cab!

Do NOT leave the Operator's Station with the Moldboard or Attachment raised! ALWAYS lower the Attachment(s) to the ground, shut off the Engine and engage the Park Brake BEFORE leaving the Operator's Station!

Do NOT refill the Fuel Tank when the Engine is hot. Allow Engine to cool down BEFORE refilling. A hot Engine can ignite the fuel if it should spill or splash!

Do NOT smoke while filling the Fuel Tank or working on the fuel or hydraulic systems!

Do NOT drive too close to a ditch or excavation site. BE SURE that the surrounding ground has adequate strength to support the combined weight of the machine and Attachments!

ALWAYS be alert for immovable objects such as rocks, tree stumps or roots when blading!

Do NOT remove the Radiator Cap when the Engine has reached operating temperature or becomes overheated. The Engine Coolant is extremely HOT and is pressurized. Exploding Engine Coolant will cause serious injury. ALWAYS wait for the Engine to cool down BEFORE attempting to relieve pressure or removing the Radiator Cap!

Do NOT loosen or disconnect ANY Hydraulic Lines, Hoses or Fittings without first relieving hydraulic circuit pressure. Also, be careful NOT to touch any hydraulic components that have been in recent operation. They can be extremely HOT and can burn you!

Do NOT wear loose or baggy clothing while operating or servicing the machine!

NEVER allow any riders on this machine or use the machine as a lift for personnel!

MODIFICATIONS, NAMEPLATES, MARKINGS, AND CAPACITIES

Modifications and additions which affect the capacity or safe operation shall NOT be performed without the manufacturer's prior written approval. Where such authorization is granted, tags or decals shall be changed accordingly.

All attachments MUST be marked to identify the Attachment(s) and show the approximate weight of the machine and Attachment combination.

ALWAYS make sure all nameplates, danger, warning, caution and instruction markings are in place and legible. Local government regulations may require additional decals. It is the responsibility of the Owner to provide these!

SAFETY GUARDS AND WARNING DEVICES

The machine is fitted with a Roll Over Protective Structure (ROPS) in accordance with industry standards. It is intended to offer protection to the operator from roll over and falling objects, but cannot protect against every possible impact. Therefore, it should not be considered a substitute for good judgment and care in operating the machine.

The machine is equipped with a Horn, Backup Alarm, and Side Mirrors (with Cab Option). The operator/user shall determine if conditions require the machine to be equipped with additional sound-producing or visual devices (alarms, extra mirrors, blinking lights, etc.). The operator/user is responsible for providing and maintaining such devices.

P/N 108785
Located at front on both sides of Front Frame Ass'y
and on both sides of Rear Hood between Rear Wheels

P/N 065927
Located on both sides at front, middle and rear
of Front Frame Ass'y

P/N 622835
Located on both sides at front, middle and rear
of Front Frame Ass'y

P/N 108787
Located in Cab at Seat Deck

P/N 065924
Located on both sides of Radiator Shroud

P/N 072797
Located on top of Rear Hood at Diesel Tanks

NOTES:

SPECIFICATIONS

All Dimensions are in Inches Unless Otherwise Noted

Drive System:

Engine ..... 4-cylinder, Turbocharged
and after-cooled, liquid cooled diesel
Tier II Compliant
4.04 Liter displacement
Max. F.H.P. at 2,650 RPM - 133 (99.2 kw)

Final Drive ..... Tandem Drive, 4-Wheel Limited Slip Hydrostatic Drive
Electronic Traction Control
Planetary Reduction on each wheel
Power Steering

Operating Speed ..... Infinitely variable
Work Range 0-8 mph (0-13 kph)
Travel Range 0-22 mph (0-35 kph)

Brakes ..... Dynamic Hydrostatic Braking
Rear Wheel Park Brakes with Spring Apply/Hydraulic Release

Wheels and Tires ..... 15.5 x 25 Bias 12 Ply Tires
9 Lug 25 x 15 Wheel
30º Front Axle Oscillation

Hydraulic System:

Reservoir ..... 25 U.S. Gal. (95 Liter)
With High-Low Sight Level Gauge
100 Micron Suction Strainer

Drive Circuit Filtration ..... 7 Micron
High Pressure Filter

Accessory Pumps Filtration ..... 10 Micron
Low Pressure Filter

Fuel System:

Dual Reservoir ..... 40 U.S. Gal. (151 L)

Electrical System:

12 Volt Battery
45 Amp Alternator
Fuse Protected
Neutral Start Safety Switch

Safety Equipment:

Backup Alarm (noise level 84 dba w/cab)
Seat Belt
SAE ROPS Certified
Neutral Safety Start Switch

Other Standard Equipment:

- Front Windshield Wiper
- Tachometer Gauges
- Hour Meter
- Fuel Level Gauge
- Coolant Temperature Gauge
- Alternator Light
- Hydraulic System Oil Temperature Gauge
- Locking Vandalism Cover
- Hydraulic Filter Restriction Indicator

Optional Equipment:

- Topcon Machine Control System
- Enclosed All Weather Cab
- Heater/Defroster/Rear Windshield Wiper
- Air Conditioner
- Lighting package
- Front-Wheel-Assist

See your locally authorized PSI Dealer for other optional equipment and attachments.

Weights and Overall Dimensions (Without Options):

Operating Weight	22,840 lbs (10,360 kg)
Front Axle Weight	6,695 lbs (3,037 kg)
Rear Tandem Weight	16,145 lbs (7,324 kg)
Ground Pressure Per Tire @ 45 PSIG Inflation	
	23.2 PSIG (160 kpa) front
	31.4 PSIG (216 kpa) rear
Length (A)	328.50” (8.34m)
Width at Tires (B)	99.75” (2.53m)
Height (C)	116.00” (2.95m)
Wheelbase (D)	208.00” (5.28m)
Tandem Wheelbase (E)	57.00” (1.45m)
Blade Base (F)	93.00” (2.36m)
Scarifier Width (G)	46.00” (1.17m)

Moldboard Dimensions:

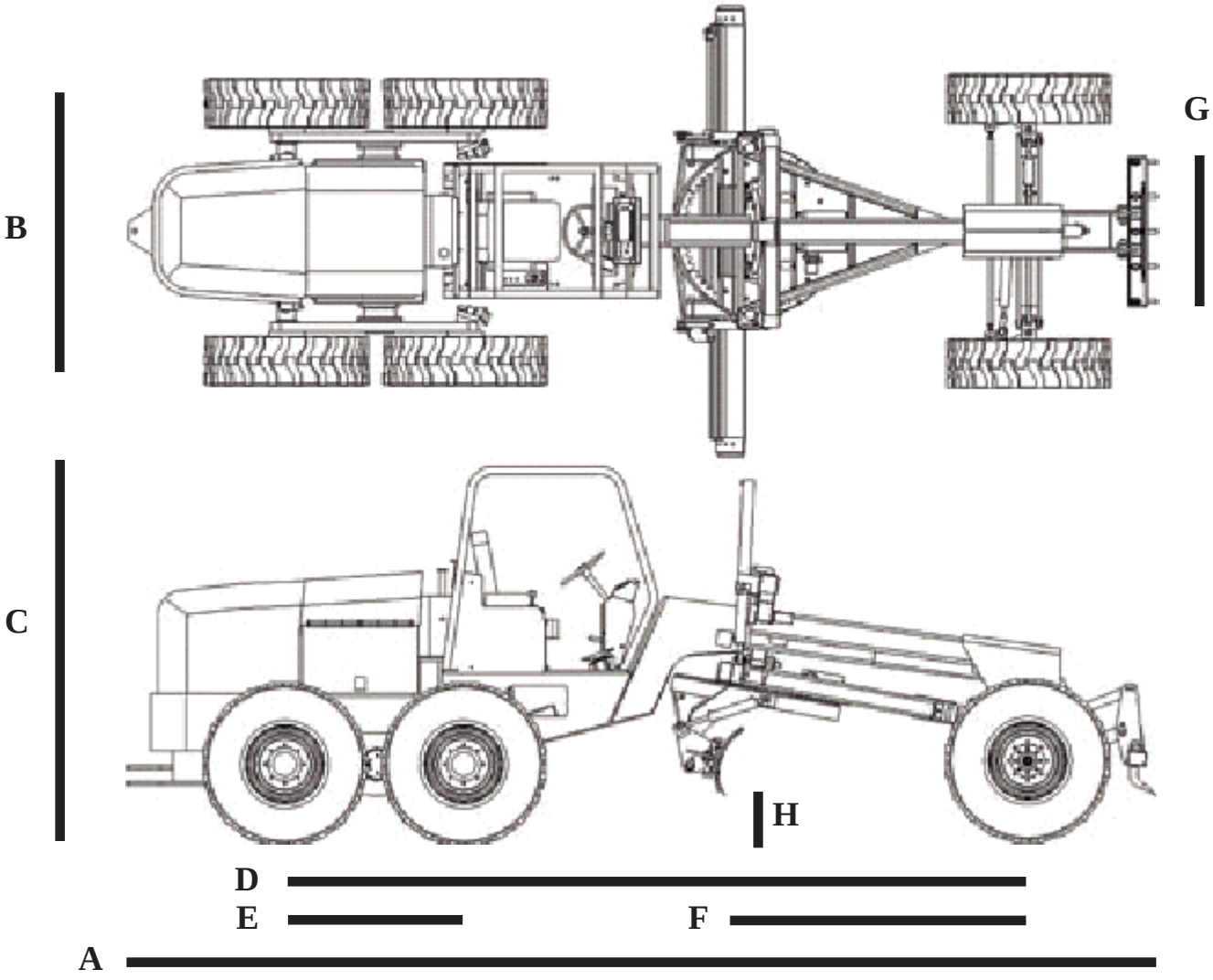
Length	144” (3.66m)
Height	22” (.56m)
Ground Clearance (H)	14.10” (.36m)
Ground Penetration	23.60” (.60m)
Side Shift	26.75” (.68m) right
	31.25” (.79m) left
Reach Outside Tires	71.50” (1.82m) right
	77.25” (1.96m) left
Angle	360º rotation
Tilt Positions	Infinitely variable through 45º
Blade Down Pressure	12,109 lbs (5,493 kg)

Scarifier:

Tool Bar/Scarifier Width	46” (1.17m)
Maximum Tool Bar Height	22” (.56m)
Down Pressure	8,100 lbs (3,674 kg)
Number of Shanks	5
Shank Penetration	9” (.23m)

Minimum Turning Radius:

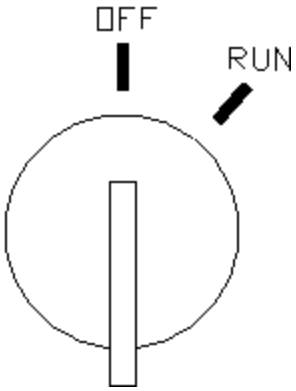
Inside Wheel	123” (3.12m)
Outside Wheel	246” (6.25m)
Front Wheel Lean	20º left or right
Wheel Steering Angle	45° left or right
Center Articulation	24º left or right



NOTES:

CAUTION
The operator must be familiar with all controls and instruments before operating the machine. All controls are within easy reach of the operator.

OPERATOR'S STATION INDICATORS AND SWITCHES



Ignition Key Switch and Start Button
When the key is straight up and down in the Key Switch, it is in the OFF position and all electrical functions are disconnected from the electrical circuit. Also, this is the only position in which the Key Switch can be inserted or removed.

Turn the key clockwise to the RUN position and electrical power is supplied to all functions.

NOTE
The Dash Gauges and Indicators should come ON when the key is turned to the RUN position. Use this Key Switch position as a "Bulb Check."

NOTE
The Engine will not start unless the Speed Control Foot Pedal **and** Forward/ Reverse Speed Control Hand Lever are **both** in neutral.

NOTE
If equipped, in cold weather conditions (40°F and below), push grid heater button and hold for 20 to 40 seconds, then start while holding button in.

Battery Charge Lamp
This Lamp indicates output performance of the Alternator. During normal operation, with the Engine running above idle speed, this Lamp should be OFF. During starting and when the Engine is NOT running, this Lamp should be ON.

NOTE
If this lamp comes ON during normal operation, a problem may exist in the charging system. Refer to Section G - Troubleshooting, in this manual.

Engine Oil Pressure Gauge
This Gauge indicates if sufficient Engine lubricating oil pressure is present. During normal operation, with the Engine running, this Gauge should read between 30 to 60 PSIG.

NOTE
If this reads toward the far left during normal operation with the Engine running, STOP the Engine immediately. After allowing the oil to drain down for a few minutes, check the Engine oil level. Maintain oil level at the FULL mark on the dipstick.

Water Temperature Gauge
This Gauge indicates whether the Engine coolant is at the proper temperature or NOT. During normal operation, a reading of 180°F to 200°F (82°C to 93°C) indicates that the Engine coolant is at the proper temperature.

NOTE
If the Gauge indication moves toward the HIGH number range during normal operation, it indicates a problem in the cooling system. STOP the Engine immediately and investigate the cause of the problem! Refer to Section H - Service, of this manual. Common causes are: (1) low coolant level, (2) dirty radiator fins, (3) improper fan belt tension, or (4) plugged radiator core.

WARNING
Do NOT remove the Radiator Cap when the Engine is HOT or overheated. Coolant is extremely HOT and under pressure and will severely burn the skin. Wait for the engine to cool BEFORE relieving the pressure and removing the Radiator Cap.

Hourmeter
The Hourmeter indicates the operating time of the machine and should be used to keep an accurate Maintenance Log. Refer to Section H - Service, of this manual.

Horn Pushbutton
Push this Button switch in to activate the Horn. The Key Switch MUST be at the “run” position for the Horn to operate.

Fuel Level Gauge
The Fuel Gauge has a color bar to represent the amount of fuel remaining in the Fuel Reservoir, as shown by the position of the needle. The red zone indicates low fuel level.

Hydraulic Filters Restriction Indicator
When elements become clogged, the light comes on, indicating the need to replace elements. When severely clogged, the hydraulic fluid system will bypass the Drive Motors and the machine will not move.

Travel/Work Mode Toggle Switch
With the switch in "Travel" position, the speed range is 0 to 22 mph (0 to 35 kph). This mode is used for travelling on road ways, in 2-wheel drive. With the switch in "Work" position, the speed range is 0 to 8 mph (0 to 13 kph). This mode is used for working applications, in 4-wheel drive, or optional 6-wheel drive.

Automatic/Manual Mode Toggle Switch
In "Automatic" the operator inputs speed and direction while the computer controls engine rpm. In "Manual" the operator inputs speed, direction and engine rpm.

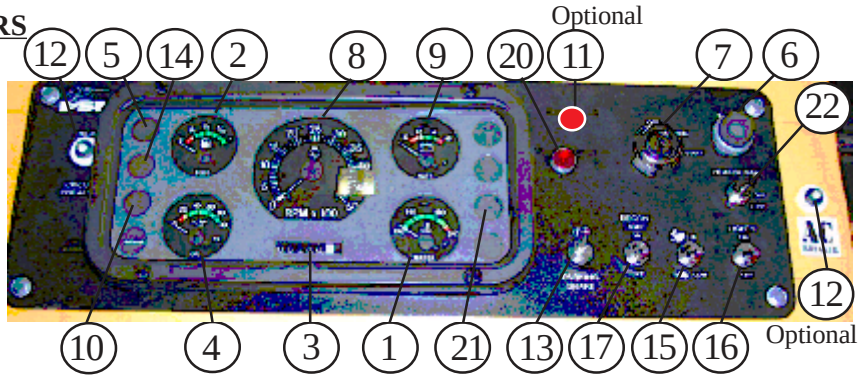
Lock Pins Toggle Switch
Used to retract/extend locking pins on saddle to rotate to or from the 45° or 90° bank/slope positions.

F & C Toggle Switch
When the "Fine" grade mode is used, the hydraulics operate at 50% of normal speed. When "Coarse" grade mode is used, the hydraulics respond at full speed.

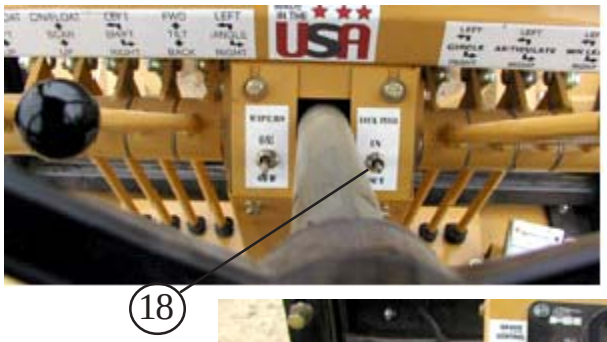
Optional Cab Environment Switches
When provided, these are used to operate the Rear Windshield Wiper, Heater and Air Conditioning.

Other Optional Dash Switches
When provided, these are used to operate lights and turn signals.

INSTRUMENT PANEL INDICATORS



1. Water Temperature
2. Fuel
3. Hour Meter
4. Engine Oil Pressure
5. Hydraulic Oil High Temp. Light
6. Horn Button
7. Starter Key switch
8. Tachometer
9. Ammeter
10. Engine Oil Pressure
11. Grid Heater Button (Option - Not Shown)
12. Circuit Breaker
13. Park Brake ON/OFF
14. Air Filter Indicator
15. High/Low Drive Switch (Option)
16. Lights
17. Strobe Light
18. Lock Pins for Saddle Rotation
19. Fine & Coarse Grade Mode Switch
20. Park Brake Engaged Light
21. Engine High Temperature
22. Windshield Heater Fan (Option)



FRAME/BODY INDICATORS

Hydraulic Reservoir Fluid Level (23)
Two Sight Gauges are located on the side of the Reservoir. The Reservoir is full when the fluid shows in the lower Sight Gauge. The upper Sight Gauge indicates overfilled fluid level.

Engine Oil Level
Refer to the Engine Manual for location. Pull out the Dipstick and wipe off. Re-insert and pull out to read engine oil level.

Radiator Level
The Fill Cap is located on the top rear of the Engine Hood. This Cap is pressurized.

Battery Fluid Level
The Battery is located inside the lower left side of the Engine compartment.

Articulation Indicator (24)
Located on left side of operator's seat.

DRIVE FUNCTION CONTROLS

Engine Throttle
In Manual Mode, the Foot Pedal controls engine's rpm from idle (1150 rpm) to max throttle (2650 rpm). In Automatic Mode, the engine rpm is set by the computer, depending on speed and direction inputs from the operator and blade load.

Dual Direction/Speed Foot Pedal
In Automatic Mode, press the Foot Pedal forward for forward travel. Reverse depression enables backward travel. Speed is determined by the distance the pedal is depressed. In Manual Mode, depressing the pedal will also increase engine's rpm.

Dual Direction/Speed Hand Lever
In Automatic Mode, shift Hand Lever forward for forward travel or shift the lever to reverse for backward travel. Speed is determined by how far the lever is from the neutral position. In this mode, engine's rpm will be controlled by the computer. Engine rpm is calculated by speed required and resistance at the blade's cutting edge. In Manual Mode, shift Hand Lever forward for forward travel or shift the lever to reverse for backward travel. Speed is determined by how far the lever is from the neutral position. To attain this speed, the Foot Pedal will need to be depressed to increase engine's rpm.

Inching/Brake Pedal
While grading or travelling, depressing this Brake Pedal will slow the machine's speed proportionally by how far the pedal is depressed. Depressing the Brake Pedal does not take torque away from machine, only ground speed. Fully depress the pedal to disengage the hydrostatic transmission and come to a stop. If machine is not on level ground, the Park Brake will need to be set to hold machine. Let up on the pedal slowly and the machine will resume speed being indicated by the Hand Lever or the Foot Pedal.

Steering
The Power Steering Motor is designed to give effortless steering with no shock reaction from the front wheels to the Steering Wheel.

Park Brake Valve
Flip the Park Brake "up" to set the brake system. Machine cannot be started unless the Park Brake is set. To operate the machine, you must have Park Brake off. Push the Park Brake "down" to allow the drive motors to operate.

MOLDBOARD AND ATTACHMENTS CONTROLS

The Left Bank & Right Bank Levers are used to activate selected Moldboard positions.

NOTE: Refer to the pictures for the appropriate valve action lever in the following descriptions.

WARNING

Unattended machine hazard. Set Brake, lower Moldboard and Attachments to ground BEFORE leaving the machine. An unattended machine could move or roll and cause death or serious injury to operator or bystanders.

Circle Side-Shift

The circle may be side-shifted for maximum reach outside the machine or for bank/slope applications. Move Lever (1) forward to move entire circle to the left. Pull Lever (1) back to move entire circle to the right.

Frame Articulation

Move Lever (2) FORWARD to articulate frame left. Pull Lever (2) BACK to articulate frame right.

Wheel Lean

Move Lever (3) FORWARD to lean the wheels left. Pull Lever (3) BACK to lean the wheels right.

Right/Left Blade Lift

Use the Left Bank Controls to hydraulically raise and lower the left and right sides of the Moldboard.

For the right side of the Moldboard, move Lever (4) FORWARD to lower/drop the Moldboard and move Lever (4) BACK to raise/lift the Moldboard.

For the left side of the Moldboard, move Lever (5) FORWARD to lower/drop the Moldboard and move Lever (5) BACK to raiselift the Moldboard.

Scarifier Lift

The Tool Bar is used with the Ripper and/or the Compactor attachment. Move Lever (6) on the Right Bank Controls FORWARD to lower the Tool Bar. Pull Lever (6) BACK to raise the Tool Bar.

Blade Side Shift

The Moldboard may be extended to the right or left up to 36” each way. Move lever (7) on the Left Bank controls FORWARD to shift the Blade to the right. Pull Lever (7) BACK to shift the Blade to the left.

Right Side Controls

1. Circle Side-Shift
2. Frame Articulation
3. Wheel Lean
4. Right Side Blade Lift

Left Side Controls

5. Left Side Blade Lift
6. Scarifier Up/Down
7. Moldboard Side-Shift
8. Moldboard Tilt
9. Moldboard Angle/Circle Rotate

Blade Tilt

The Moldboard may be tilted forward or backward up to 45°. Move Lever (8) on the Left Bank Controls FORWARD to tilt the Blade forward. Pull Lever (8) BACK to tilt the Blade backward.

Blade Angle

Move Lever (9) FORWARD on the Left Bank Controls to pivot the Moldboard counter-clockwise (left angle position). Pull Lever (9) BACK to extend the Moldboard clockwise (right angle position).

NOTES:

PRE-START

Check the machine daily to make sure all systems are in good operating condition. Perform the following before starting the machine the first time each day.

Perform at least two "walk-around" inspections each working day - - once before starting the day and once at day's end when parked for refueling and fluid checks. ***Interim "walk-arounds" when you dismount for a time, or leave the machine unattended, will help eliminate unnecessary down time.***

NOTE
Make sure the machine is parked on a level surface in order to check Engine Oil and Hydraulic Fluid levels accurately.

1. Check the engine oil and coolant, fuel and hydraulic oil levels. Drain water and sediment from the Fuel Filter.
2. Make sure daily lubrication has been done.
3. Check the Park Brake.
4. Turn the Key Switch to RUN position but do not start engine. Gauges should be activated and Key Switch ON buzzer should sound.
5. Visually inspect for leaks, worn, loose, broken or malfunctioning parts. Make sure all caps, covers and safety shields are in place.
6. Check tires for cuts, bulges, nails, correct pressure, loose wheel nuts, etc.
7. Inspect the work area. Make sure you know where you will be grading and making turns. Look over the terrain of the job site for holes, obstacles, slopes, slippery surfaces and soft or deep mud.

If the machine is found to be in need of repair, or is unsafe or contributing to unsafe conditions, the matter shall be reported IMMEDIATELY to the user's designated authority. The machine shall not be operated until it has been restored to a safe operating condition.

CAUTION
Follow manufacturer recommendations regarding use of proper lubricants, oil or coolant.

To prevent a fire or explosion, allow engine to cool down BEFORE attempting to refill the Fuel Tank. A hot engine could ignite the fuel and burn you. Also, Do NOT smoke while refilling the Fuel Tank.

Over-inflated tires can explode and cause injury or death. Tire repairs must be made only by authorized personnel using proper tools and equipment.

NEVER operate the machine with safety guards or covers removed.

DANGER
Always maintain a safe distance from electric power lines and cables. Avoid contact with any electrically charged conductor or gas line! Electrocution or an explosion can occur. Contact the "DIGGER'S HOTLINE" or proper local authorities for utility line locations BEFORE starting to grade.

Before operating the machine on roads or highways, check local laws regarding the use of lights, flags, licensing, slow moving vehicle emblems (SMV), etc.

ENGINE BREAK-IN

Your new Engine does not require extensive break-in. However, for the first 100 hours of operation, keep the following in mind:

1. Allow the Engine to idle for a few minutes after every cold start.
2. Do NOT idle Engine for long periods of time.
3. Do NOT operate the Engine at maximum power for long periods of time.
4. Check the oil level frequently and replenish as necessary.

A special “break-in” oil is not used. The oil in the Engine crankcase is the same as is specified for regular oil changes. Change the oil and replace the oil filter at the intervals specified in Engine Oil and Filter in Section H - Service, of this manual. Do NOT add special additives or special “break-in” components to the crankcase.

STARTUP

Before mounting the operator’s station, walk completely around the machine to make sure no one is under, on or near the machine. Let others near the area know you are going to start up and wait until everyone is clear of the machine. Then proceed as follows:

CAUTION
Before starting the Engine and operating the machine, review and comply with ALL recommendations set forth in the Section A - Safety, of this manual. Know how to STOP the machine before starting it!

1. Make sure the floor of the operator’s station and the foot controls are free of debris and mud. Adjust the seat and ***fasten the seat belt securely***.

CAUTION
Exhaust fumes can kill. Insure proper ventilation when starting indoors or in enclosed areas. Use proper grab handles, not the Steering Wheel or Levers, as a hand hold when mounting or dismounting. Start and operate the machine only from the Operator’s Seat, and ONLY with the Seat Belt securely fastened.

2. Place all controls in neutral. The Engine will NOT start unless the Dual Direction/Speed Control Pedal **and** the Forward/Reverse Speed Control Hand Lever are **both** in NEUTRAL position. Make sure the Park Brake is ON. Turn the Key Switch to RUN and make sure that Indicator Lamps and Gauges are ON.

NOTE
Do not crank the starter for more than 30 seconds at a time or Starter motor damage could result. If prevailing temperature is 40°F or below, it may be necessary to use a cold weather starting aid to start the diesel Engine. For proper use of starting aids, check instructions in the OEM engine manual.

NOTE
If the engine fails to start on the first try or it dies after only running a short time, turn the Key Switch to OFF, wait at least two minutes and repeat above steps.

NOTE
If the Battery becomes discharged and fails to have sufficient power to start the Engine, jumper cables can be used to assist startup. Refer to As Required Service in Section H - Service, of this manual, for safe jump-start procedure.

After Start Checks
After the machine starts and BEFORE beginning operation, perform the following:

1. Run the Engine at idle speed for about five minutes to allow it to warm up.

NOTE
Avoid unnecessary idling. Prolonged idling can cause crankcase oil dilution and incomplete fuel combustion. This can lead to premature Engine failure from gum deposits on internal Engine parts.

2. Check that the Indicator Gauges are registering proper readings.

Normal Oil Pressure:	40-60 lbs./sq. in.
Normal Water Temperature:	180°F to 200°F (82°C to 93°C)
Normal Hydraulic Fluid Temperature:	100°F (38°C) plus ambient temperature.

3. Check that the color of the exhaust is normal. It should be light gray.
4. Check that there are NO fuel, oil, or Engine coolant leaks.
5. Check that there are NO abnormal noises or vibrations.
6. Raise all tools with the appropriate control levers. Lower tools to “Travel” or “Work” position.
7. Release the Park Brake.
8. Move the machine FORWARD by depressing either Direction/Speed Control Pedal to the forward position. REVERSE the machine by depressing the Pedal to the reverse position. Speed is determined by the distance the Pedals are depressed. Refer to Drive Function Controls in Section C - Controls and Accessories, of this manual.

CAUTION
Be certain you can control both speed and direction before moving. If any function, operation, or control of the machine does not respond correctly, shut down the machine and DO NOT use the machine until it has been made operational.

Cold Start Aid Kit (If Provided)
1. To fill the Valve, depress the Switch Button for 3 seconds.
2. While cranking the Engine Starter, release the switch to discharge a shot of starting aid. Allow 3 seconds for shot to discharge.
3. As the Engine starts, use additional shots if necessary to keep the Engine running.

Stopping Engine

When ready to stop operating the machine use the following procedure:

1. Bring the machine to full parking stop on a level surface. NEVER park on a slope or hill side.
2. With all personnel clear of the machine, slowly lower hydraulic equipment flat to the ground in a positive support position.
3. Place controls in neutral and set the Park Brake.
4. Idle the Engine for gradual cooling (Idle Throttle).
5. Turn the Key Switch to OFF and remove the key. Take the key with you for security reasons.

NOTE

When the engine is stopped, be sure the Key Switch is in the OFF position. Loss of battery power will result if key is left in the ON position.

NOTE

If working on any public road or shoulder, be sure the machine is the prescribed distance from the highway as designated by laws in your area. NEVER lower attachments from any position except when seated in the operator's seat.

WORKING APPLICATION TIPS

The type of terrain, grading or backfilling application should determine the best choice for using hydraulic equipment and attachments on the machine.

When finish-grading or leveling under good conditions, work the material from side to side.

Select Manual or Automatic mode depending on operator preference. Also select Work mode. Refer to Drive Function Controls in Section C - Controls and Accessories, of this manual.

NOTE

Grading, loading, and ripping should be done in Work mode. Travel mode should be used for moving the machine from place to place.

1. When ditching or sloping, you may find it necessary to raise and/or lower one or both ends of the moldboard, whichever prevails in your situation.

To set or maintain the desired cutting depth of the Moldboard, use the Right and Left BLADE LIFT Control Levers to lower or raise the Moldboard while SLOWLY driving the machine forward.

A sloping grade may be made by lowering the left or right end of the Moldboard from the horizontal plane as desired.

2. TILT the Moldboard forward for better use in grading imbedded gravel, soft soils, clay or sandy terrain. The center position is for general use. Tilting it all the way back is recommended for efficient cutting of hard surfaces.

For maximum cut, TILT the Moldboard to the extreme backward position. For leveling, begin with the top of the Moldboard slightly ahead of the bottom.

3. To assist in rolling of material to the desired area, on the right or left side, adjust the ANGLE of the Moldboard accordingly.
4. Set the Moldboard to cast material outside of the tires' path by using the BLADE SHIFT Control Lever. Side shifting the Moldboard also allows continued grading in a straight path while avoiding obstructions or obstacles at the end of the Moldboard.

Using the Scarifier

The Scarifier attachment may be used for loosening surfaces such as hard dirt, compact gravel, etc.

1. Lower the Scarifier using the Scarifier Control Level. Enter the material gradually while traveling forward in a straight line at slow speed.
2. Use all the Shanks in most conditions. Use fewer Shanks in more severe conditions.
3. Keep the Scarifier deep enough to fully utilize Engine power without slipping the tires.
4. On grades, rip downhill to use the weight of the machine.
5. Cross rip only when required for a special purpose.
6. To break up paved surfaces, dig under the surface and then raise the Ripper.

NOTE

To avoid damage, raise the Scarifier out of the ground BEFORE turning.

End of Work Session

1. Always check the hydraulic fluid level at operating temperature, preferably at the end of the work day. Park on a level surface and stop the Engine according to the Mandatory Safety Shutdown Procedures in Section A - Safety, of this manual. Lower the Moldboard and Scarifier completely.

NOTE

The Hydraulic Reservoir is full if fluid is visible in the Lower Sight Gauge. When adding fluid, fill ONLY until fluid can be seen in the Lower Sight Gauge. If fluid is visible in the Upper Sight Gauge, the Reservoir is OVERFILLED. Excess fluid may be piped overboard through the Pressure Relief Filler Cap.

2. Check the Air Cleaner Pre-Cleaner.
3. Check all Cylinders for signs of leaks.
4. Secure the machine.

NOTE

Always fill the Fuel Reservoir completely at the end of the working day to prevent moisture condensation from occurring overnight.

NOTES:

FUELS

NOTE

Due to chemical differences in petroleum products, see the Engine Manual for recommended fuels and lubricants. The following lubricants and fluids are factory recommendations. Any lubricants, fuels or fluids which are NOT recommended here are used at **your own risk**. The manufacturer assumes NO responsibility for the results due to the use of any lubricants, fuels or fluids which are NOT recommended.

NOTE

NEVER put additives in the fuel used in the machine unless specifically recommended by your Engine dealer.

Keep dirt, scale, water, etc. out of stored fuel. Do NOT store fuels for any extended periods of time. Fill the Fuel Tank after completing work at the end of each day. This will reduce the problem of condensation forming in the tank overnight, which will add water to the fuel.

WARNING

ALWAYS shut off the Engine when filling the Fuel Tank. ALWAYS ground the fuel nozzle against the filler neck to avoid sparks. NEVER fuel the machine while you are smoking or near a fire or open flame. Avoid spilling fuel. If a spill occurs, wipe it up immediately. NEVER add fuel when Engine is HOT!

LUBRICATION

Keep parts properly lubricated to prevent excessive parts wear and early failures.

WARNING

NEVER attempt to lubricate or service the machine while the Engine is running. ALWAYS follow the Mandatory Safety Shutdown Procedure in Section A - Safety, BEFORE lubricating or servicing the machine. When venting or filling the hydraulic system, loosen the Filler Cap SLOWLY and remove the cap gradually.

Lubricants

Recommended Lubrications can be found on decals on the side of hydraulic tank.

Engine Fuel and Oil

Refer to OEM Engine Manual.

Hydraulic System Filter Elements and Fluid

1. 10 Micron - Auxiliary Hydraulic Controls Circuit
2. 7 Micron High Pressure Hydraulic Filter
3. Hydraulic Suction Strainer
4. Fluid - Mobile 424 or equivalent

NOTE

Refer to Operators' Servicing Duties in Section H - Service, of this manual, for detailed information regarding periodic checking and replenishing of lubricants.

Torque Hub Gear
SAE 90 Weight Gear Oil.

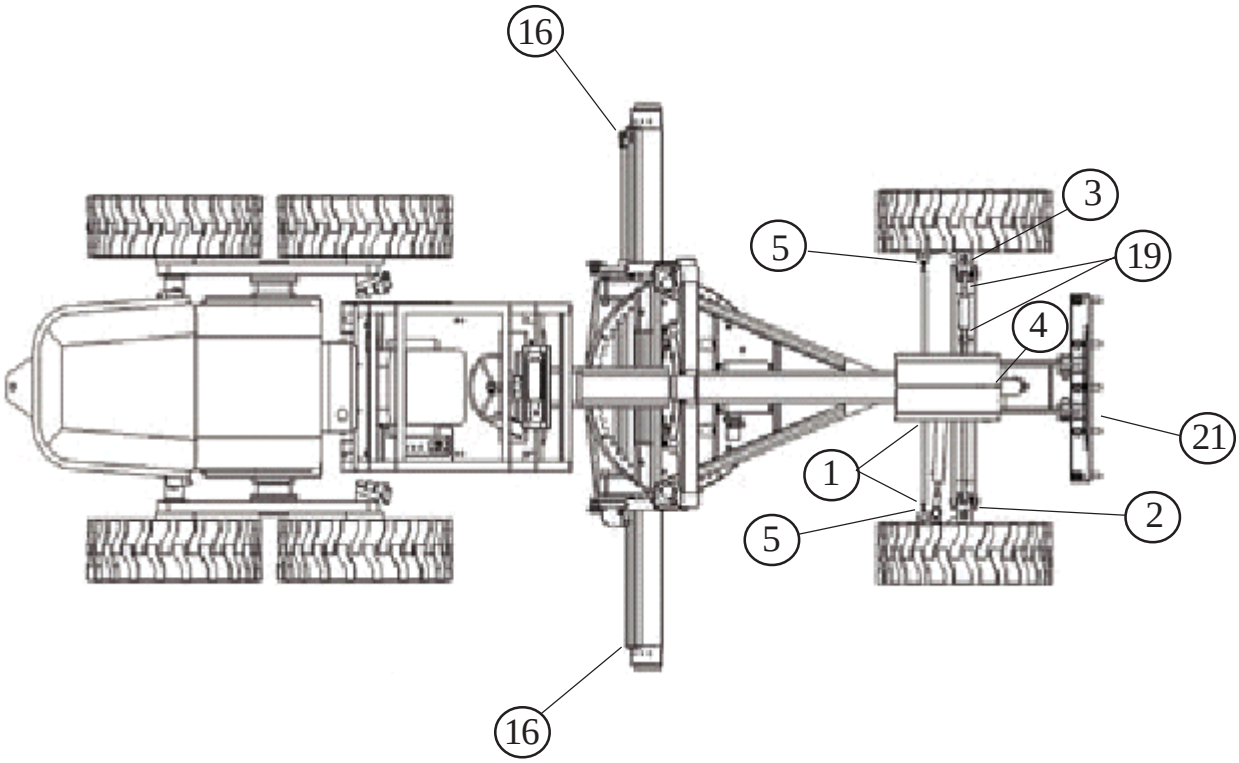
Greases
Multi-Lube Lithium Grease NLGI #2 or equivalent.

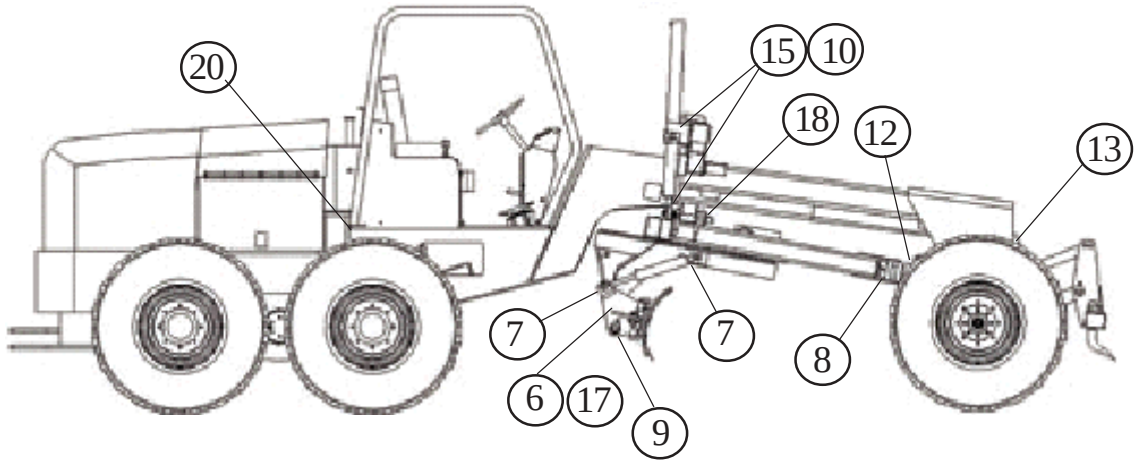
Greasing
Wipe dirt from the Fittings before greasing them to prevent the dirt from being forced into the Bearings of the pivot joints. Replace any missing or damaged fittings when necessary. To minimize dirt build-up, avoid excessive greasing.

The following illustration shows the location of all grease fittings.

Daily Grease Point Locations

1. Steering Cylinder - (2 Ftgs.)
2. Front Axle King Pins - Right (2 Ftgs.)
3. Front Axle King Pins - Left (2 Ftgs.)
4. Front Axle Pivot Pin - (1 Ftg.)
5. Steering Tie Rod - (2 Ftgs.)
6. Moldboard Tilt Hinge Pin - Right (1 Ftg.)
7. Moldboard Angle Cylinder - Right (2 Ftgs.)
8. Blade Angle King Pin - (1 Ftg.)
9. Blade Hanger Pivot Pin - (2 Ftgs.)
10. Moldboard Lift Cylinder - Left (2Ftgs.)
11. Push Block Arm - Right (4 Ftgs.)
12. Draw Bar Arm - Left (4 Ftgs.)
13. Tool Bar Lift Cylinder - (2 Ftgs.)
15. Moldboard Lift Cylinder - Right (2 Ftgs.)
16. Moldboard Shift Cylinder - (2 Ftgs.)
17. Moldboard Tilt Hinge Pin - Left (1 Ftg.)
18. Circle Shift Cylinder - (2 Ftgs.)
19. Wheel Lean Cylinder - (2 Ftgs.)
20. Articulate Pin - (2 Ftgs.)
21. Scarifier Lift Bar Pins - (4 Ftgs.)


16
3
5
19
4
21
1
2
5
16


20
15
10
18
12
13
7
7
8
6
17
9

NOTES:

TRANSPORTING

When loading or unloading in a congested area, be sure flagmen are used to insure the utmost SAFETY to the operator and other motorists and/or pedestrians in the area.

CAUTION
ALWAYS follow ALL state and local regulations regarding the operation of equipment on or across public highways! Also, whenever any appreciable distance exists between job sites, or if transporting on a public highway is prohibited, BE SURE to transport the machine using a vehicle of appropriate size and weight.

LOADING USING RAMPS

NOTE
A matched pair of ramps is required.

WARNING
ALWAYS abide by the following recommended procedures and guidelines when attempting to use ramps to load the machine onto (or unload it from) a truck or trailer. Failure to heed these guidlines can result in damage to equipment and serious personal injury or death!

1. The ramps MUST be of sufficient strength to support the machine. Whenever possible, the use of strong steel ramps is recommended as well as some type of center supporting block.
2. The ramps MUST be firmly attached to the truck or trailer bed with NO step between the bed and the ramps.
3. Incline of ramps MUST be less than 15° (ramp length MUST be at least 16 feet long.
4. Ramp width MUST be at least 1-1/2 times the tire width.

Refer to Figure F-1 below.

5. Block the front and rear of the tires on the truck or trailer. If so equipped, engage the parking brake also.
6. Making sure the machine is in Work Mode, slowly drive the machine up to the ramps.
7. Position the Scarifier and Blade in a position where they will not come into contact with the ramps, ground or trailer during the loading process.

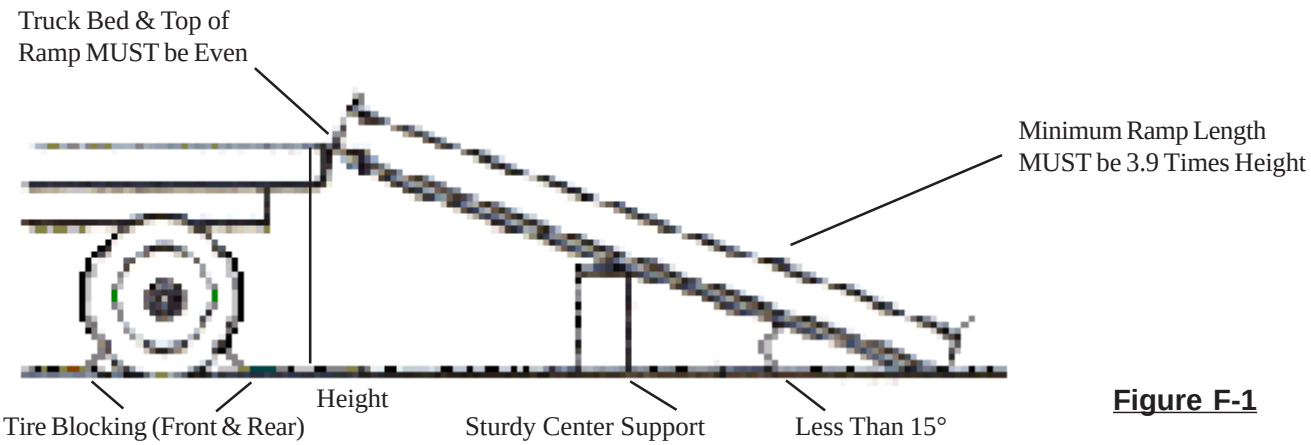


Figure F-1

8. Slowly (at the lowest Engine speed possible) and carefully drive the machine up the ramps to the forward bulkhead of the trailer.

CAUTION
NEVER attempt to adjust travel direction (even slightly) while travelling on the ramps. Instead, back down off the ramps and then re-align the machine with the ramps.

9. Engage the Park Brake on the machine.
10. Position the Moldboard using the BLADE SHIFT Control Valve Levers so that the Moldboard is centered on the trailer when it is in the full down position.
11. Lower the Scarifier and Blade to full down position.
12. Stop the Engine according to Mandatory Safety Shutdown Procedures in Section A - Safety, of this manual.
13. The forward tie down point is a Tie Down Loop on the bottom of the Main Frame at the back of the front axle.
14. The rear tie downs are located on the rear of the Push Block Assembly where the Attachment Draw Bar Arms pivot.

NOTE
ALWAYS use load binder. Do NOT lower tools to float position when loaded on transport vehicle. Tools in float position offer no stabilization when vehicle bounces.

IN TRANSIT

If in transit for a few days, follow these guidelines:

a. Raise air pressure in tires several pounds above normal operating pressure to prevent excessive bouncing.
b. Check cooling system for proper anti-freeze.
c. Disconnect the Battery.
d. Clean all bright surfaces and coat with heavy grease to prevent rusting.
e. Cover Exhaust Pipe to prevent entrance of water.

When transporting the machine, know the overall height to allow clearance of obstructions. Remove or tape over the slow moving vehicle emblem (SMV) if it will be visible to traffic.

WARNING
If tire pressure has been increased for transport, it MUST be lowered to operating pressure before the machine is placed back into service.

UNLOADING WITH RAMPS

NOTE
A matched pair of ramps is required.

Use ramps as described in Steps 1 thru 4 above and proceed as follows to unload the machine:

5. Remove the chains and chain binders.
6. Start the Engine according to Startup in Section D - Operations, of this manual.
7. Raise the Scarifier and Moldboard.
8. Clear all personnel from the ramp area.
9. Disengage the Parking Brake.
10. If necessary, adjust the machine so that the wheels are in line and centered with the ramps. Slowly (at the lowest Engine speed possible) and carefully drive the machine down the ramps.

NOTE
All loading and unloading should be done in Work Mode.

THEFT DETERRENTS

THE CERTAINTY OF APPREHENSION IS A STRONG DETERRENT TO THIEVERY OF CONSTRUCTION EQUIPMENT! PSI has recorded all Part Numbers and Serial Numbers. Users should take as many of the following actions as possible to discourage theft, to aid in the recovery in the event that the machine is stolen, or to reduce vandalism:

1. Remove keys from unattended machines.
2. Attach, secure, and lock all anti-vandalism and anti-theft devices on the machine.
3. Lock doors of cabs when NOT in use.
4. Inspect the gates and fences of the vehicle storage yard. If possible, keep machines in well lighted areas. Ask the law enforcement agency having jurisdiction to make frequent check around the storage or work sites, especially at night, during weekends, or on holidays.
5. Report the theft to the dealer and insurance company. Provide all the model and serial numbers.
6. Request that your dealer forward this same information to Pavement Services, Inc.

NOTES:

PROBLEM	CAUSE	REMEDY
	NOTE: This Troubleshooting guide presents problems, causes, and remedies beyond the extent of loose, worn, or missing parts and is developed in consideration of the machine being in otherwise good operating condition. Repairs to hydraulic components, electronic systems, engine or transmission should ONLY be done by your PSI Dealer or authorized Service Dealer.	
Engine Will Not Start (Refer to Engine Manual for complete list)	1. Air cleaners dirty or plugged.	Clean or replace.
	2. Battery weak or loose cable connections.	Tighten connections, charge or replace battery.
	3. Fuel tank empty. Tank valve closed. Cap clogged.	Add fuel. Open valve. Clean cap.
	4. Fuel contaminated, wrong fuel.	Replace.
	5. Fuel Filters dirty or plugged.	Replace.
	6. Engine too cold.	Refer to Engine Manual.
	7. Electric fuel shut-off.	Refer to Engine Manual.
Hard Starting (Refer to Engine Manual for complete list)	See Causes 1-6.	See Remedies for Causes 1-6.
	8. Lub oil too high. Wrong Lub oil.	Replace.
Engine Stops (Refer to Engine Manual for complete list)	See Causes 2-4, 7.	See Remedies for Causes 2-4, 7.
	9. Exhaust system restricted.	Refer to Engine Manual.
Engine Runs Erratic (Refer to Engine Manual for complete list)	See Causes 1, 4-6, 9.	See Remedies for Causes 1, 4-6, 9.
	10. Tank Filler Cap plugged.	Clean cap.
	11. Throttle linkage out of adjustment or sticking.	Consult an authorized Service Dealer.
Black Exhaust Smoke (Refer To Engine Manual for complete list)	See Causes 1, 4, 9.	See Remedies for Causes 1, 4, 9.
	12. Inoperative or missing thermostat.	Refer to Engine Manual.
	13. Engine overloaded, over speed.	Refer to Engine Manual.
Blue Exhaust Smoke (Refer to Engine Manual for complete list)	See Causes 1, 4, 8.	See Remedies for Causes 1, 4, 8.

PROBLEM	CAUSE	REMEDY
White Exhaust Smoke (Refer to Engine Manual for complete list)	See Causes 6, 12.	See Remedies for Causes 6, 12.
Low Power (Refer to Engine Manual for complete list)	See Causes 1, 4-6, 8, 9, 11-13. 14. Fan belt loose or slipping. Radiator fins or tubes dirty or restricted.	See Remedies for Causes 1, 4-6, 8, 9, 11-13. Adjust belt. Clean fins and repair radiator.
Engine Overheating (Refer to Engine Manual for Complete list)	See Causes 9, 12, 14.	See Remedies for Causes 9, 12, 14.
Engine Overcooling (Refer to Engine Manual for complete list)	Inoperative or missing thermostat.	Refer to Engine Manual.
Engine Knocks (Refer to Engine Manual for complete list)	Loss of Lub oil or internal damage.	Shut down. Refer to Engine Manual.
Low Oil Pressure (Refer to Engine Manual for complete list)	Lub oil level too low. Wrong Lub oil.	Fill to proper level. Replace.
Hydraulic Oil Temperature Too High (Hydraulic oil temp. NEVER to be more than 100°F over ambient temp. **Hydraulic oil temp. + ambient temp. NEVER to exceed 225°F.)**	Low on fluid or leaking. Cooler fins clogged. Cooler covered. Hydraulic filters clogged. Bad gauge.	Repair and add fluid. Clean. Remove covering. Replace if clogged. Replace.
Hydraulic Oil Temperature Low Or Not Indicating	Bad gauge. Extreme low ambient temperature.	Replace. Consult an authorized Service Dealer.
Blade Side Shift Sticks Or Stops	Dirt compacted in Blade Slide. Cylinder damage. Hydraulic leak. Check other accessories for operation before continuing work.	Clean slide. Repair or replace. Repair if minor. Consult an authorized Service Dealer if major.

PROBLEM	CAUSE	REMEDY
Jerky Operation Of Any Accessory	Control valve handle linkage.	Adjust.
	Damage or excessive wear on Cylinder attachment parts.	Repair or replace.
Unit Will Not Start (Engine Starter not operating)	Key switch inoperative.	Check for proper voltage (12 VDC).
	Push Button inoperative.	Check for proper voltage (12 VDC).
	Neutral Safety Switch inoperative.	Refer to Transmission Repair Guide.
	Engine Starter/Solenoid inoperative.	Refer to Engine Manual.
	Low battery voltage	Charge battery.
Unit Will Not Start (Engine Starter Operating)	No fuel in Tank.	Fill to proper level.
	Electric Fuel Shut-Off inoperative.	Refer to Engine Manual.
	Internal fuel pump malfunction.	Refer to Engine Manual.
	Internal engine problems.	Refer to Engine Manual.
Excessive Engine Coolant Temperature	Low coolant level.	Fill to proper level.
	Coolant/water ratio wrong.	Use engine coolant (anti-freeze).
	Radiator air flow obstructed.	Clean cooling fins.
	Engine fan v-belt loose.	Adjust.
	Engine thermostat inoperative.	Refer to Engine Manual.
	Water pump not working properly.	Refer to Engine Manual.
	Internal engine malfunctions.	Refer to Engine Manual.
Excessive Hydraulic Fluid Temperature	Low hydraulic fluid level.	Fill to proper level.
	Hydraulic cooler air flow obstructed.	Clean cooling fins.
	Contaminated hydraulic fluid.	Clean the system and replace fluid.

PROBLEM	CAUSE	REMEDY
Accessory Pump Noisy	Low hydraulic fluid level.	Fill to proper level.
	Suction hose/fittings leaking (pump cavitations).	Tighten connections, replace damaged hose.
Hydraulic Cylinders Operating Slow or Will Not Move	Low hydraulic fluid level.	Fill to proper level.
	Internal hydraulic cylinder leakage.	Repair or replace.
	Load check casting plugs loose.	Tighten.
	Accessory hydraulic pump worn excessively.	Repair or replace.
	Hydraulic control valves not fully engaged.	Adjust.
Hydraulic Cylinders Leaking Down or Will Not Hold Their Position	Cylinder leaking internally.	Repair or replace.
	Control valve leaking internally.	Repair or replace.
Hydraulic Control Valves Sticking	Lever/hinge mechanism binding.	Repair, adjust or replace.
	Control valve spool binding in body.	Repair or replace.
Hydraulic Cylinders/Control Valves Leaking Externally	Seals/O-Rings worn.	Replace.
Unit Runs But Will Not Move	Low hydraulic fluid.	Fill to proper level.
	Drive system filters restricted.	Change filter.
	Transmission pump filter restricted.	Change filter.
	Transmission external linkage loose.	Re-tighten.
	Parking brake engaged.	Release brake valve.
	Gear reducer locked.	Consult an authorized Service Dealer.
	Connecting transmission pump drive components broken.	Consult an authorized Service Dealer.
	Internal transmission problems.	Consult an authorized Service Dealer.

PROBLEM	CAUSE	REMEDY
Transmission Pump Noisy	Low hydraulic fluid level.	Fill to proper level.
	Transmission pump filter restricted.	Change filter.
	Drive plate/Drive link assembly loose.	Re-tighten.
	Internal pump problems.	Consult an authorized Service Dealer.
Hydraulic Fluid Coming From Filler Neck	Hydraulic system too full.	Drain off excess.
	Hydraulic system drawing air (aerated fluid).	Consult an authorized Service Dealer.
	Hydraulic fluid contaminated with water.	Replace fluid.
Hydraulic Steering Problems	Consult an authorized Service Dealer.	Consult an authorized Service Dealer.
Two-Speed Not Working Properly	Electric switch inoperative.	Consult an authorized Service Dealer.
	Electric solenoid in manifold inoperative.	Consult an authorized Service Dealer.
	Low or no voltage to switch (wiring short).	Consult an authorized Service Dealer.
	Electrically activated control valve inoperative.	Consult an authorized Service Dealer.
	Hydraulic directional control valve inoperative.	Consult an authorized Service Dealer.
Drive System Sluggish With Low Power	Low hydraulic fluid.	Fill to proper level.
	Restricted transmission pump suction filter.	Replace.
	Low transmission pump charge pressure.	Consult an authorized Service Dealer.
	Hydraulic motor failure.	Consult an authorized Service Dealer.

PROBLEM	CAUSE	REMEDY
Drive System Not Responsive When Changing Directions	Transmission pump problems.	Consult an authorized Service Dealer.
Brakes Engaging Prematurely or When Slowing Machine Down	Excessive worn drive motor causing loss of charge pressure.	Consult an authorized Service Dealer.
	Excessive worn drive pump.	Consult an authorized Service Dealer.
	Brake malfunction.	Consult an authorized Service Dealer.

GENERAL PRECAUTIONS

NOTE
Do NOT perform any maintenance or repair without prior authorization. Allow only trained personnel to service the machine. In addition, WARRANTY repairs can only be done by a PSI Dealer. They will know what portions of the machine are covered under the terms of the PSI warranty and what portions are covered by other vendor OEM warranties.

NOTE
Always dispose of waste lubricating oils, anti-freeze and hydraulic fluids according to local regulations or take them to a recycling center for disposal. Do NOT pour them onto the ground or into a drain.

WARNING
Do NOT smoke or allow any open flames in the area while checking and/or servicing hydraulic, battery or fuel systems. All contain highly flammable liquids or explosive gases which can cause an explosion or fire if ignited.

Keep feet, clothing, hands, and hair away from moving parts. Wear appropriate protective clothing, gloves, and shoes.

Wear a face shield when you disassemble spring loaded components or work with Battery acid. Wear a helmet or goggles with special lenses when you weld or cut with a torch.

When working beneath a raised machine, always use blocks, jack-stands, or other rigid and stable supports.

Always wear safety glasses or goggles to protect eyes from electric arcs from shorts, fluids under pressure, and flying debris or loose material when the Engine is running or when tools are used for grinding or pounding.

WORK AREA PRECAUTIONS

BEFORE starting inspection and repair, move the machine onto a clean, level surface. Make sure you have sufficient room, clearances, and adequate ventilation. Shut down Engine, and release all hydraulic pressure.

Clean the walking and working surfaces. Remove oil, grease, and water to eliminate slippery areas. Use sand or oil-absorbing compound, as necessary, while servicing the machine.

ALWAYS lower the Moldboard and Tool Bar to full ground contact. Place all controls in neutral. Block the Wheels.

Disconnect the Battery and remove the ignition key. Remove only those guards or covers that provide needed access. Wipe away excess grease & oil.

CAUTION
If repair welding is ever required, remove the Battery (+) positive terminal connection before proceeding to weld. In addition, BE SURE to attach the ground (-) cable from the welder as close as possible to the area to be repaired.

NEVER weld on support frame or overhead guards without the consent of the manufacturer. Special metals may have been used which require special welding techniques, or their design should NOT have welded repairs. NEVER cut or weld on fuel lines or tanks.

Rotating parts MUST be inspected during repair, and replaced if they are cracked or damaged. Excessively worn or damaged parts can fail and cause injury or death. BE SURE that all replacement parts are interchangeable with original parts and of equal quality.

Use care NOT to damage machined and polished surfaces. Clean or replace all damaged or painted over plates and decals that can NOT be read.

After servicing, check the work performed. BE SURE there are NO parts left over, etc. Install all guards and covers, and reconnect the Battery. Replace all tools and clean any spills.

NOTE
NEVER leave guards off or access doors open when the machine is unattended. Keep bystanders away if access doors are open.

OPERATORS' SERVICING DUTIES

NOTE
Some of the operator related services will require access to components located inside various superstructure hoods and covers.

Pump Pressures
ACCESSORY DRIVE PUMP PRESSURE:
Set at 2350 PSIG +/- 100 PSIG.

TRANSMISSION PUMP PRESSURE:
Set at 5000 PSIG.

Fuse
The fuse provides ignition protection to the Engine's electrical system. If it is NOT "blown", the gauges and indicators will NOT work and the Engine will shut off.

Hydraulic Fluid Level (10 Hours or Daily)

CAUTION
Remove the pressure cap SLOWLY to relieve any pressure.

Always check the hydraulic fluid at operating temperature, preferably at the end of the working day. BE SURE the machine is parked on a level surface for fluid checks.

Stop the Engine according to the Mandatory Safety Shutdown Procedures in Section A - Safety, of this manual. Lower the Scarifier and Moldboard completely.

The hydraulic Reservoir is full if the fluid is visible in the Lower Sight Gauge. If fluid is visible in the Upper Sight Gauge, the Reservoir is OVERFILLED. Excess fluid may be piped overboard through the Pressure Relief Filler Cap.

NOTE
Hydraulic System Schematics are included in the Parts Manual.

Radiator Coolant Level (10 Hours or Daily)

NOTE
Be careful when removing the Reservoir Filler Cap so that NO dirt or other foreign matter enters the hydraulic system while the Cap is removed. DO NOT OVERFILL.

With the machine on level ground, remove the Radiator Cap. Add clean, soft water (summer) or 50/50 water and Anti-Freeze mixture (winter) if the coolant level is below the filler neck. Replace the Radiator Cap securely.

WARNING
Do NOT remove the Radiator Cap when the Engine is HOT or overheated. Coolant is extremely HOT and under pressure and it can burn your skin. Wait for the Engine to cool down BEFORE relieving the pressure and removing the Radiator Cap.

NOTE
If the Engine is operated with a loose Radiator Cap, the pressure bypass will not work and the Engine will run hot.

Battery (40 Hours or Weekly**)**

WARNING
Explosive gas is produced while a Battery is in use or being charged. Keep flames or sparks away from the Battery area. Make sure Battery is charged in a well ventilated area.

NEVER lay a metal object on top of a Battery. A short circuit can result.

Battery acid is harmful to skin and fabrics. If acid spills, follow these first aid tips:

1. Immediately remove any clothing on which acid spills.

2. If acid contacts the skin, rinse the affected area with running water for 10 to 15 minutes.

3. If acid comes in contact with the eyes, flood the eyes with running water for 10 to 15 minutes. See a doctor at once. NEVER use any medication or eye drops unless prescribed by the doctor.

Neutralize acid spilled on the floor, using one of the following mixtures:

a) 1 Pound (0.5 kg) of baking soda in 1 U.S. Gallon (4 Liters) of water.
b) 1 Pint (0.4 Liters) of household ammonia in 1 U.S. Gallon (4 Liters) of water.

Acid from the Battery can damage the paint and metal surfaces of the machine. Avoid overfilling the Battery cells.

Whenever Battery is removed from the unit, BE SURE to disconnect the negative (-) Battery terminal connection Cable first.

NOTE
The Battery in the machine is warranted by the supplier. See the punch tag on the top of the Battery for warranty information.

The top of the Battery MUST always be kept clean. Clean the Battery with a brush dipped in an alkaline solution (ammonia or baking soda and water). After the foaming has stopped, flush the top of the Battery with clean water. If the terminals and Cable connection clamps are corroded or have a build-up, disconnect the Cables and clean the terminals and clamps with the same alkaline solution.

After cleaning the top of the Battery, check the fluid level by removing the filler-vent caps. If the level is low, add clean, soft water or distilled water. Fluid level is correct when the liquid covers the rings in the filler wells, or is a minimum of 1/4" above the plates.

NOTE
Since water and electrolyte will NOT mix immediately, do NOT add water in freezing weather unless the Battery is warm. If water is added, the engine should be run for a minimum of two hours.

Air Cleaner (250 Hours)
Completely wipe the outside of the Air Cleaner body with a rag or cloth. Blow off excess dirt and dust with compressed air. Disassemble as follows.

1. Remove, empty, and wipe out the Air Intake Bowl Pre-cleaner.

2. Loosen the Clamp ring and remove the End Cap. Remove the Dust Cup. Wipe the End Cap and Cup completely clean. Reassemble the End Cap.

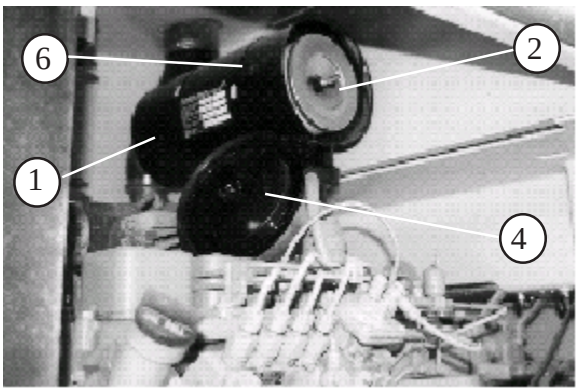
3. Remove the Element Wing Bolt, rotate the Element 180°, and remove it. Wipe the entire inside of the main Body.

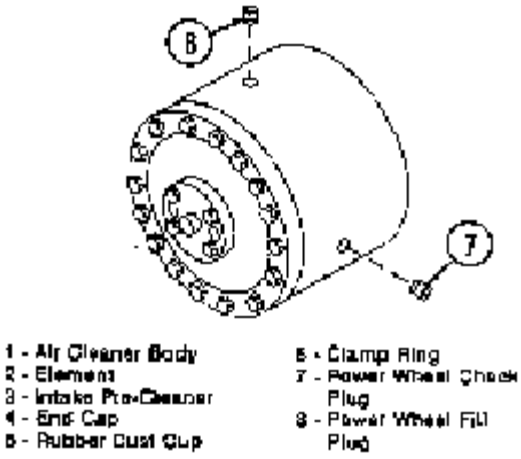
WARNING
NEVER use gasoline or solvent to clean the Air Cleaner or its subassemblies. These are flammable and could explode or ignite, causing death or serious injury.

Air Cleaner Element (250 Hours)
This Element, although re-cleanable periodically, should be replaced every season:

The Air Cleaner Element may be cleaned with LOW pressure compressed air or washed with water if extremely dirty.

NOTE
Do NOT blow air or water from the "outside to the inside" when cleaning the Element. This can clog the element and restrict proper air misture to the fuel system.





If contaminants in the Element contain soot or oily deposits, it may be necessary to wash the Element. Two ounces of detergent soap mixed with a gallon of water makes a good soak/wash solution. Soak for 15 minutes or more and rinse with clear water. Remove excess water with low air pressure. The Element must dry at 70°F (21°C) for a minimum of 48 hours before reusing.

NOTE
Keep spare Elements on hand to eliminate down time.

Make sure the clean Element has no holes or ruptures. Placing a bright light inside the Element and inspecting the outside will show any holes or tears. Discard the Element if holes or tears are evident.

Reassemble the Air Cleaner. Make sure the large O-Ring is in place between the End Cap and the Body.

Cylinder Attachment Bolts and Pin Setscrews (250 Hours)
Check and re-tighten if loose.

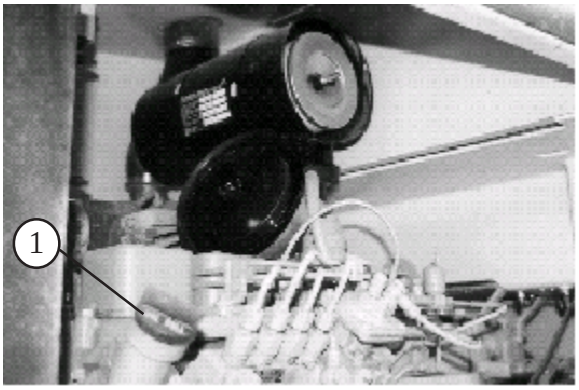
Power Wheel Hubs (250 Hours)
Rotate the Wheel until one Plug is straight up, and the other Plug 90° to the side. Remove the side Plug. Visually inspect the fluid level. Fluid should be at the bottom of the Plug opening. Add fluid through the top Plug. Approximately 1/2 pint of fluid is sufficient.

CAUTION
NEVER use an Element that is damaged. Severe Engine wear and eventual failure can result if dirt gets through a hole in the Element.

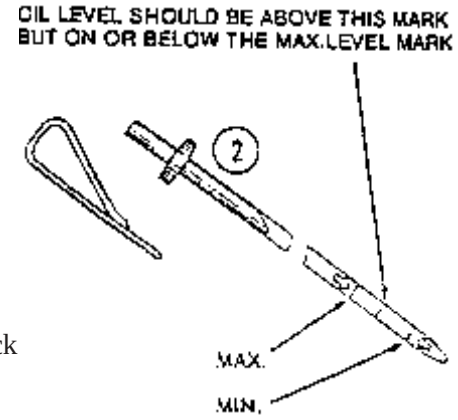
Engine Oil and Filter (500 Hours)

NOTE
The Engine oil and Filter should be changed after the first 50 hours of Engine break-in, and every 500 hours thereafter. Use the following procedure:

1. With the Engine warm, remove the crankcase Drain Plug. Some plugs are equipped with a magnet to gather metal particles. Completely clean and flush away all metallic filings from the Plug, and re-install it.



1. Oil Fill
2. Engine Oil Dipstick



2. The Engine Oil Filter should be changed at every oil change interval. Remove and discard the throw away Filter canister. Wipe the Gasket sealing area of the block with a clean cloth.

NOTE
Your Engine Oil Filters have special by-pass valves built-in. Use ONLY quality Engine replacement Filters.

3. Apply a thin coat of clean oil to the new oil filter gasket. Spin tighten. Refill the crankcase with new oil. Follow specifications for type and viscosity of the replacement oil. See Section E - Fuels and Lubrication, in this manual.

4. After new oil has been added, run the Engine at idle speed until the oil pressure gauge indicates oil pressure. Check for leaks at the Filter and Drain Plug. Re-tighten only as much as necessary to eliminate leakage.

If the Engine still will NOT start, consult your nearest authorized Engine dealer.

NOTE
Only an authorized Engine dealer can perform WARRANTY Service on the Engine.

Fuel Filter (250 Hours)
The Fuel Filters (primary and secondary) will require occasional replacement to maintain a clean and adequate fuel flow for maximum Engine horsepower. The frequency of Filter replacement will be determined by the cleanliness of available fuel, the care used in storing fuel supplies, and the conditions in which the machine is operated. Refer to the Engine manual.

WARNING
Do NOT service the fuel system while you are smoking, near a flame or fire, with the Engine running or while the engine is still hot.

Fuel Bleeding Procedures (250 Hours)
When the Fuel Filter is removed and replaced, or the Engine runs out of fuel, air MUST be bled from the system. Refer to the Engine manual for instructions in proper bleeding procedures.

Hydraulic Fluid Filters (500 Hours or Every Season)
These Filter Elements should be replaced at or before the first 25 hours on a new machine. Thereafter, replacement should be done whenever the Dash Indicator Lamp comes on, OR 500 hours AND every season.

CAUTION
Escaping diesel fuel under pressure can have sufficient force to penetrate the skin. Before applying pressure to the fuel system, BE SURE all connections are tight and lines and hoses are NOT damaged. Use a piece of wood or cardboard to search for suspected leaks. If injured by escaping fuel, see a doctor familiar with this type of injury at once.

WARNING
NEVER service the fuel system while you are smoking, near an open flame, with the Engine running or while the engine is hot.

Hydraulic Fluid Replacement (500 Hours or Every Season)
The hydraulic fluid should be replaced every 500 hours, every season or sooner if fluid becomes contaminated.

Stop the Engine and lower all attachments.

Drain the Reservoir (1-1/4” Drain Plug on bottom rear of Reservoir) and replace the Plug. Fill the Reservoir with approved hydraulic fluid ONLY to level of Lower Sight Gauge.

Start the Engine and operate all Cylinders. Raise the Moldboard and Scarifier. Run the Wheels and stop the Wheels.

Stop the Engine and lower the Moldboard and Scarifier to the ground. Fill the reservoir, if needed, only to level of Lower Sight Gauge.

NOTE
Hydraulic System Schematics are included in the Parts Manual.

Cutting Edges and Ripper Points (As Required)
Check periodically for damage and wear. End tips are replaceable as needed.

Exterior Cleaning (As Required)
The machine should be washed (or steam cleaned) whenever excess dirt buildup occurs. Be sure to lubricate all grease fittings after steam cleaning.

Fuel Injectors (As Required)
Whenever faulty or plugged injectors are indicated, see your nearest authorized Engine dealer.

Injection Pump Timing (As Required)
Whenever Injection Pump timing, or other pump service is indicated by abnormal Engine operation, contact your nearest Engine dealer.

Jump Starting

CAUTION
The ONLY safe method for jump starting a discharged Battery is for TWO PEOPLE to carry out the following process. The second person is needed for removing the jumper cables so that the operator does NOT have to leave the Operator's Seat while the Engine is running.

WARNING
Do NOT attempt to jump start the Battery if it is frozen. This can cause the battery to rupture or explode.

WARNING
BATTERIES PRODUCE EXPLOSIVE GASES! ALWAYS keep sparks, flames, and cigarettes away from Batteries. Also, wear safety glasses to protect your eyes and avoid leaning over batteries while jump starting.

NOTE
BE SURE that the jumper battery is also a 12 volt D.C. Battery.

ALWAYS use the following procedure to jump start the machine. Follow these procedures in the order listed to avoid personal injury.

1. Turn the Key switches on both vehicles to OFF. Make sure that both vehicles are in "Neutral" and NOT touching.

2. Remove the Battery Filler Caps and make sure that electrolyte solution is up to the proper level. In addition, place a clean cloth over the uncapped filler holes to prevent the electrolyte solution from boiling over.

CAUTION
If acid comes in contact with your skin, eyes, or clothing, flush the area IMMEDIATELY with running water.

WARNING
NEVER attempt to make the jumper cable connections directly to the Starter Solenoid of the Engine. Make sure all Controls are in "neutral".

3. Connect one end of the positive (+) Jumper Cable to the positive (+) Battery Terminal on the disabled vehicle first. Do NOT allow the jumper's positive (+) cable clamps to touch any metal other than the positive (+) Battery terminals. Connect the other end of the positive Jumper Cable to the jumper Battery positive (+) terminal.

WARNING
When jump starting, NEVER connect the negative (-) Jumper Cable to the frame or Loader Boom. Doing so could present a high resistance current path resulting in poor jumper performance.

4. Connect one end of the negative (-) Jumper Cable to the jumper Battery negative (-) terminal.

5. Make final connection of the other end of the negative (-) jumper cable to the disabled vehicle's Engine Block, NOT to the Battery Negative Post. When making the connection to the Engine, keep the clamp away from the Battery, Fuel Lines, Tubing, or Moving Parts.

NOTE
Twist the Jumper Cable clamps a couple of times on the Battery terminals to insure a good electrical path for conducting current.

6. Start the Motor Grader. If it does NOT start immediately, start the jumper vehicle Engine to avoid excessive drain on the jumper Battery.

7. After the machine is started and running smoothly, have the second person shut the jumper vehicle OFF first. Next, that person should remove the Jumper Cables from the jumper vehicle Battery, and then from the machine while making sure NOT to short the two cables together.

Allow sufficient time for the Alternator to build up a charge in the Battery before attempting to operate the machine or before shutting the Engine off. BE SURE to discard the cloths and re-install the Vent Caps.

NOTE
If the Battery frequently becomes discharged, have the Battery checked for possible dead cell(s) or troubleshoot the entire electrical system for possible short circuits or damaged wire insulation.

MAINTENANCE LOG

SERVICE EVERY 10 HOURS or DAILY

COMPONENT & SERVICE REQUIRED	PROCEDURE, SECTION, TOPIC REFERENCE
1. Check Fuel Tank Level	Refer to Section E - Fuels & Lubrication or Engine Manual for fuel types
2. Check Engine Oil Level	Refer to Section H - Service
3. Check Radiator Cooling System	Refer to Section H - Service
4. Check Hydraulic Oil Tank Level	Refer to Section H - Service
5. Check Hydraulic System for leaks	Refer to Section H - Service
6. Check Fuel Filter, Drain Water Accumulation	Refer to Section H - Service
7. Lube Grease Fittings	Refer to Section E - Fuels & Lubrication for Fitting Locations
8. Check Backup Alarm	Refer to Section H - Service
9. Check/Clean Air Pre-Cleaner	Refer to Section H - Service
10. Check All Decals	Refer to Section A - Safety for Decal Locations

DATE SERVICE IS COMPLETED

MAINTENANCE LOG

SERVICE EVERY 40 HOURS or WEEKLY

COMPONENT & SERVICE REQUIRED	PROCEDURE, SECTION, TOPIC REFERENCE
1. Check Battery Fluid Level and Connections	Refer to Section H - Service
2. Check Fan Belt Tension & Wear	Refer to Section H - Service
3. Check Tire pressure	Refer to Section H - Service
4. Check Wheel Nuts	Refer to Section H - Service

DATE SERVICE IS COMPLETED

MAINTENANCE LOG

SERVICE EVERY 250 HOURS

COMPONENT & SERVICE REQUIRED	PROCEDURE, SECTION, TOPIC REFERENCE
1. Change Engine Oil and Filter	Refer to Section H - Service
2. Inspect & Clean Air Cleaner Element	Refer to Section H - Service
3. Replace Fuel Filters	Refer to Section H - Service
4. Check Fluid in Power Wheel Hubs	Refer to Section H - Service
5. Check Cylinder Attach Bolts/Pin Setscrews	Refer to Section H - Service

DATE SERVICE IS COMPLETED

MAINTENANCE LOG

SERVICE EVERY 500 HOURS or EVERY SEASON

COMPONENT & SERVICE REQUIRED	PROCEDURE, SECTION, TOPIC REFERENCE
1. Change Hydraulic System Filters & Fluid	Refer to Section H - Service
2. Change Air Cleaner Element	Refer to Section H - Service

DATE SERVICE IS COMPLETED

MAINTENANCE LOG

SERVICE AS REQUIRED

COMPONENT & SERVICE REQUIRED	PROCEDURE, SECTION, TOPIC REFERENCE
1. Change Hydraulic Fluid	Refer to Section H - Service
2. Adjust Fuel Injectors & Injection Pump Timing	Refer to Section H - Service and OEM Engine Manual
3. Check/Replace Cutting Edges or Ripper Points	Refer to Section H - Service
4. Clean (Wash or Steam) Exterior Surfaces	Refer to Section H - Service

DATE SERVICE IS COMPLETED

NOTES:

NOTES:

If the machine will NOT be operated for a long period of time, prepare and store it using the procedures as follows.

BEFORE STORAGE

Perform the following prior to placing the machine in storage:

1. Wash off the entire machine.

2. Lubricate ALL grease fittings as described in Section C - Fuels and Lubrication, in this manual.

3. Change Engine oil as outlined in Section H - Service, in this manual.

4. Apply grease to all exposed hydraulic Cylinder Rod areas.

5. Disconnect the Battery Cable Clamps and cover the Battery or remove the Battery from the machine and store it separately.

6. If the ambient temperature (at ANY time during the storage period) is expected to drop below freezing, make sure the Engine coolant is either completely drained from the Radiator and Engine block or that the amount of anti-freeze in it is adequate to keep the coolant from freezing. Refer to the separate Engine manual provided for anti-freeze recommendations and quantities.

7. Preferably, store the machine inside where it will remain dry. If it MUST be stored outside, park it on lumber laid on flat, level ground or on a concrete slab and cover it with a tarp.

DURING STORAGE

1. About once each month, connect the Battery and check ALL fluid levels to make sure they are at the proper level BEFORE starting the Engine.

NOTE
If the Hydraulic Cylinders are operated at this time, BE SURE to wipe the protective grease (and any adhering dirt) from the Cylinder Rods BEFORE starting the Engine. After operating, BE SURE to recoat the Cylinder Rods with Grease if the machine is going to be returned to storage.

2. Start the Engine and allow it to run until it warms up and then move the machine a short distance to help re-lubricate the internal parts. Run the Engine until the Battery has a chance to recharge and then shut it off.

AFTER STORAGE

After removing the machine from storage and BEFORE operating it, perform the following:

1. Change Engine oil and Filter to remove condensation or other residuals.

2. Wipe off grease from Cylinder rods.

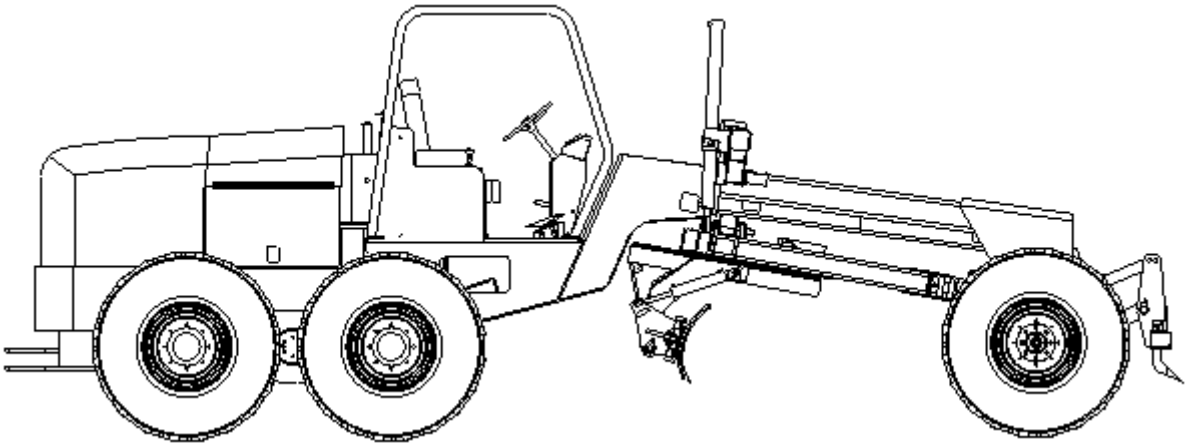
3. Lubricate ALL grease fittings.

4. Review and re-familiarize yourself with all safety precautions as outlined in Section A - Safety, in this manual.

5. Follow the starting and warm-up procedures as outlined in Section D - Operation, in this manual.

NOTES:

MG622 Parts Manual

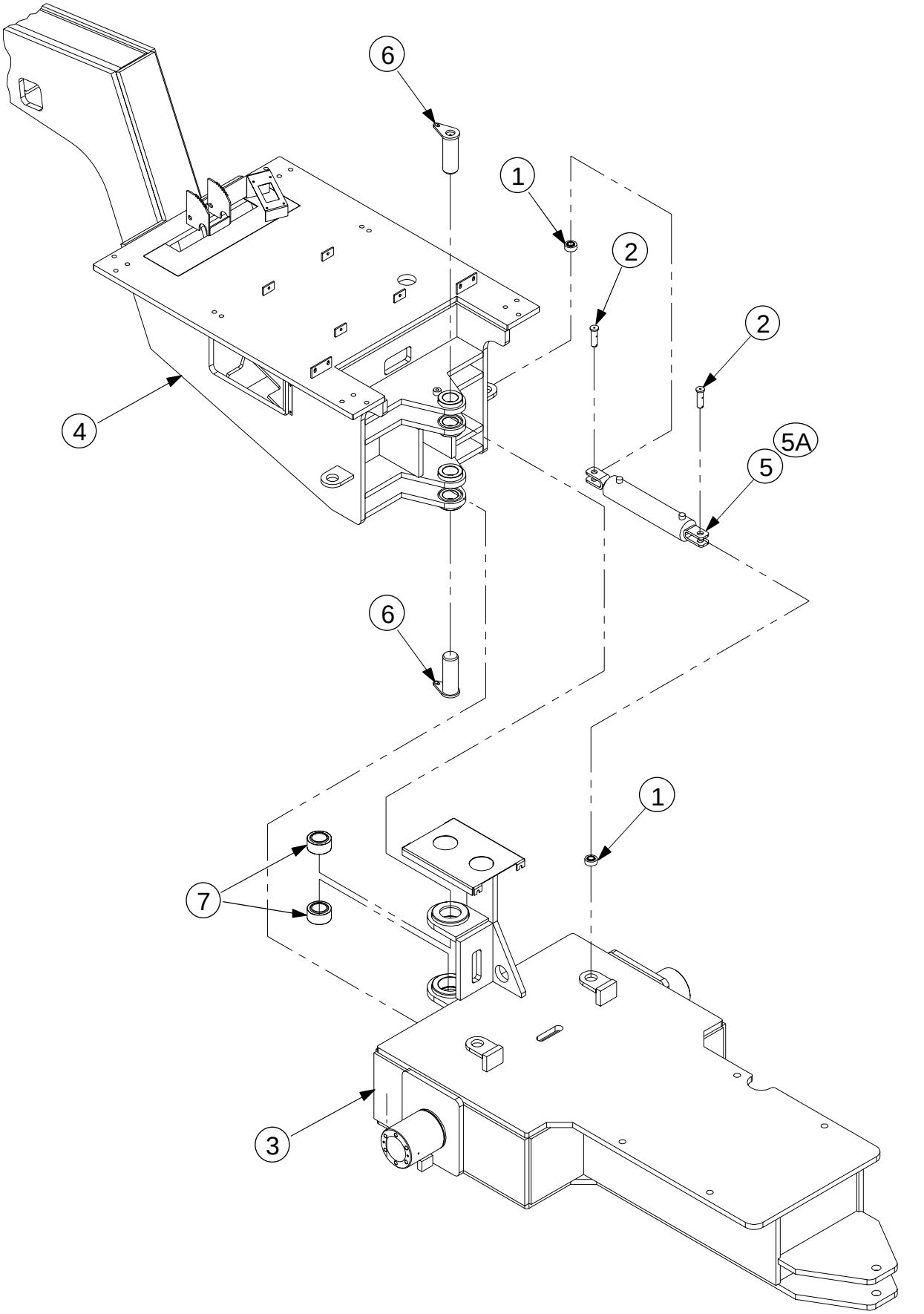


Pavement Services, Inc.

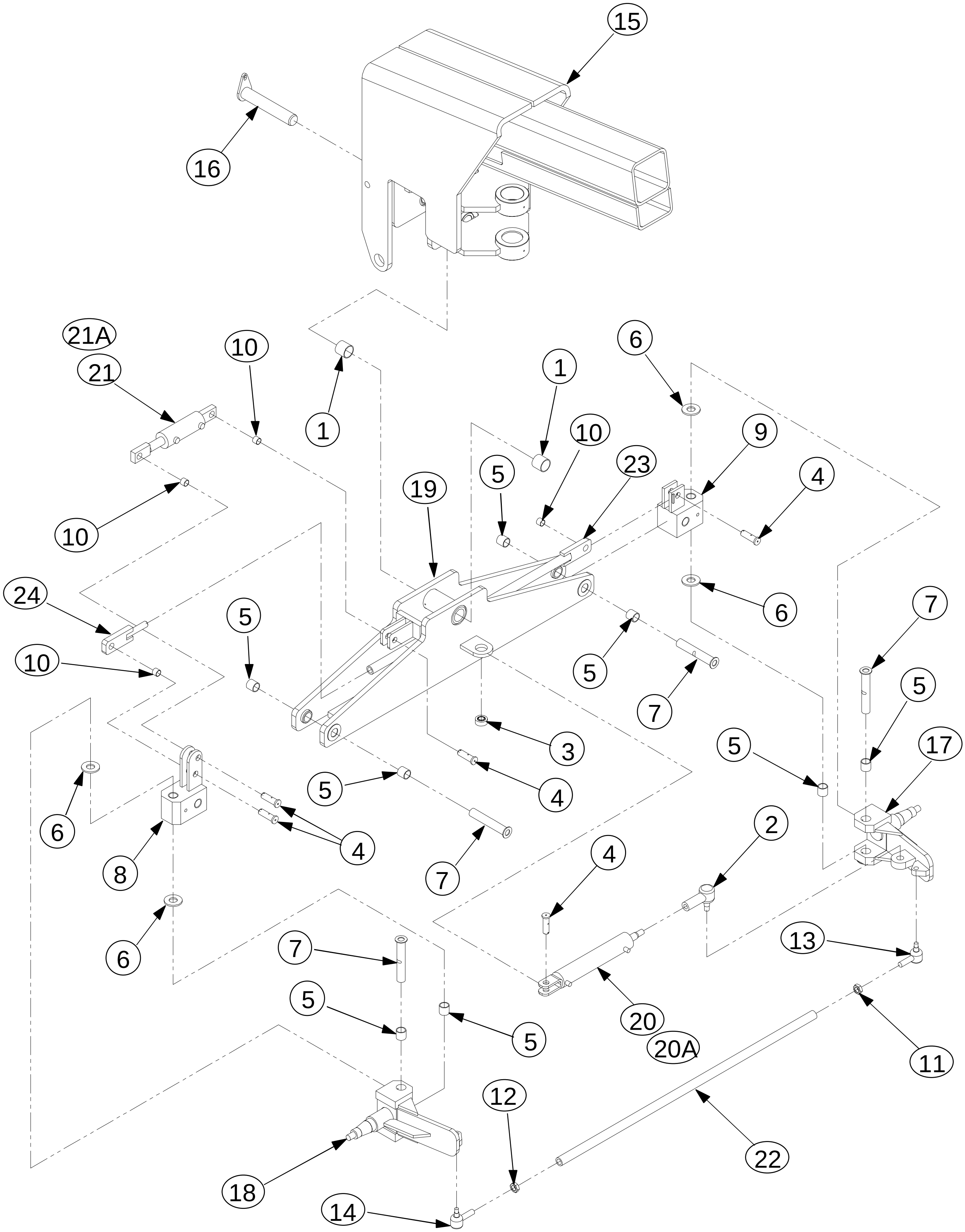
TABLE OF CONTENTS

Frame Assembly 2
Front Axle Assembly 4
Front Hub Assembly 6
Front Axle Assembly - Front Wheel Assist 8
Rear Drive Assembly 10
A-Frame Assembly 12
Front Yoke Assembly 14
Lift Cylinder Assembly 16
Moldboard Assembly 18
Scarifier Assembly 20
Operator Station Assembly 22
Instrument Assembly 24
Travel Control Assembly 26
Valve Lever Assembly 28
Cab and Enclosure Panels Assembly 30
Decals ..... 32 - 35
Engine Assembly 36
Radiator Assembly 38
Engine Intake Assembly 40
Engine Exhaust Assembly 42
Fuel and Hydraulic Tanks Assembly 44
Open Loop Hydraulics 46
Hydraulic Valve - Moldboard Circuit 48
Hydraulic Valve Circuits 50
Hydraulic Valve Assembly ..... 52 - 63
Drive System Hydraulics ..... 64 - 67
Electrical Schematics ..... 68 - 71

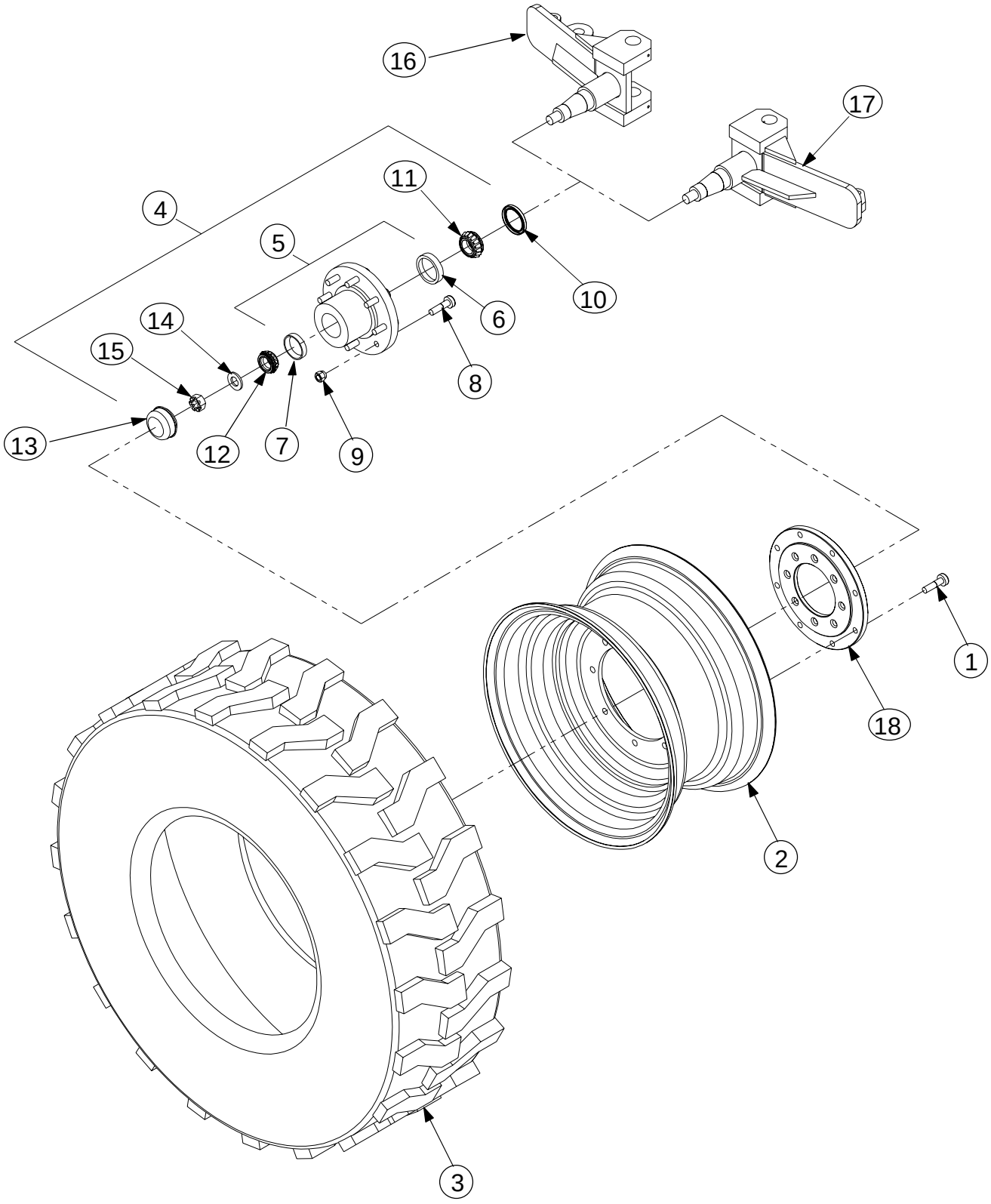
NOTES:


6
1
2
2
4
5A
5
6
1
7
3

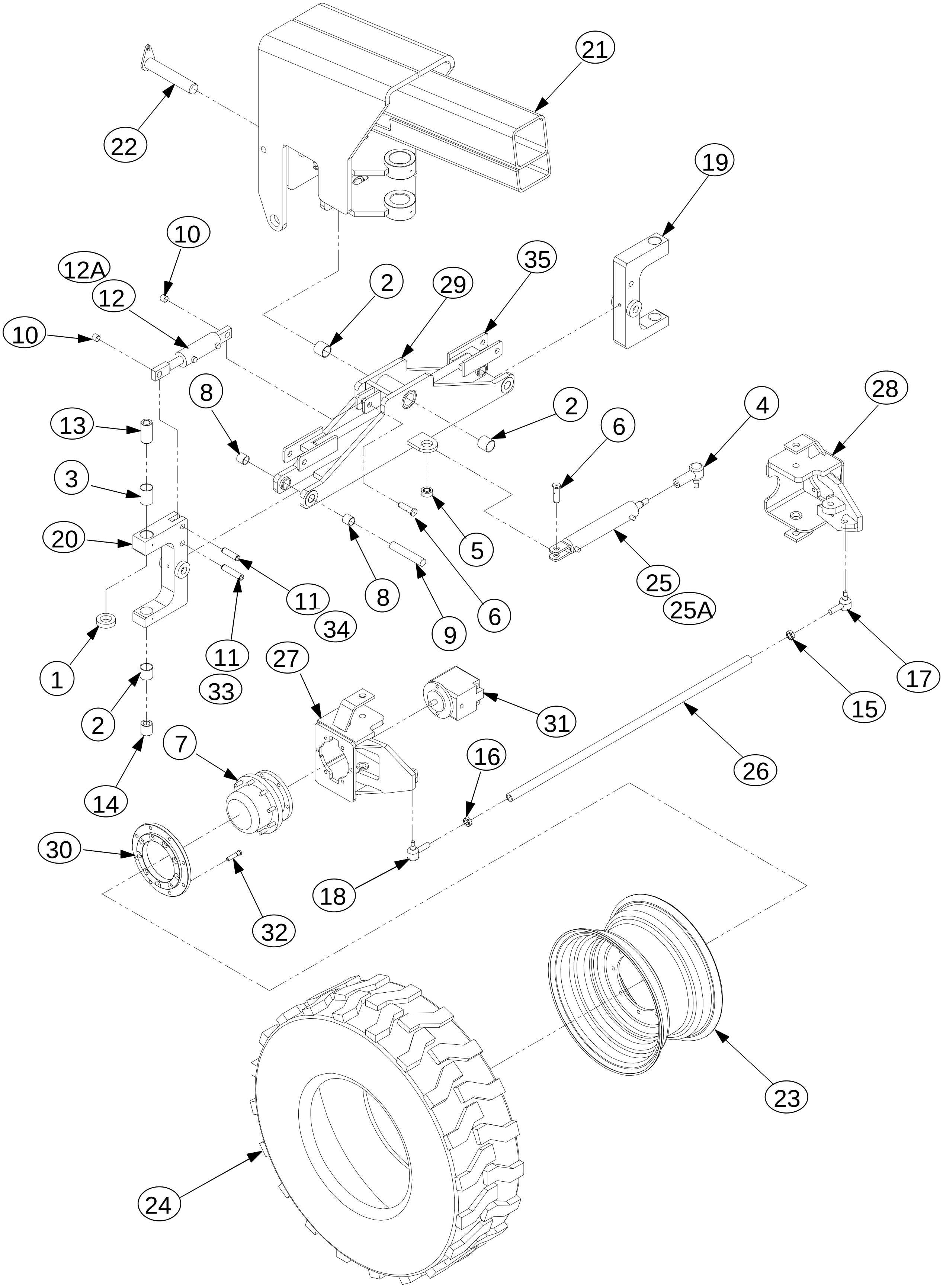
Item	Part No.	Description	Qty. Req.
1	104876	BEARING, SPHERICAL, 1.00 ID X 2.00 0D	4.00
2	108955	PIN, 1.00 X 3.50	4.00
3	622101	REAR FRAME W/M	1.00
4	622102	FRONT FRAME W/M	1.00
5	622103	CYLINDER ARTICULATION	2.00
5A	622103-1	CYLINDER SEAL KIT	1.00
6	622104-1	PIN W/M, 2.50 X 7.00	2.00
7	622105	BEARING, SPHERICAL, 2.50 ID X 3.94 0D	2.00


15
16
21A
21
10
1
6
1
10
9
23
5
19
4
10
24
5
6
7
10
5
7
5
5
17
3
4
6
5
4
7
2
8
4
6
7
13
5
5
20
20A
11
12
22
18
14

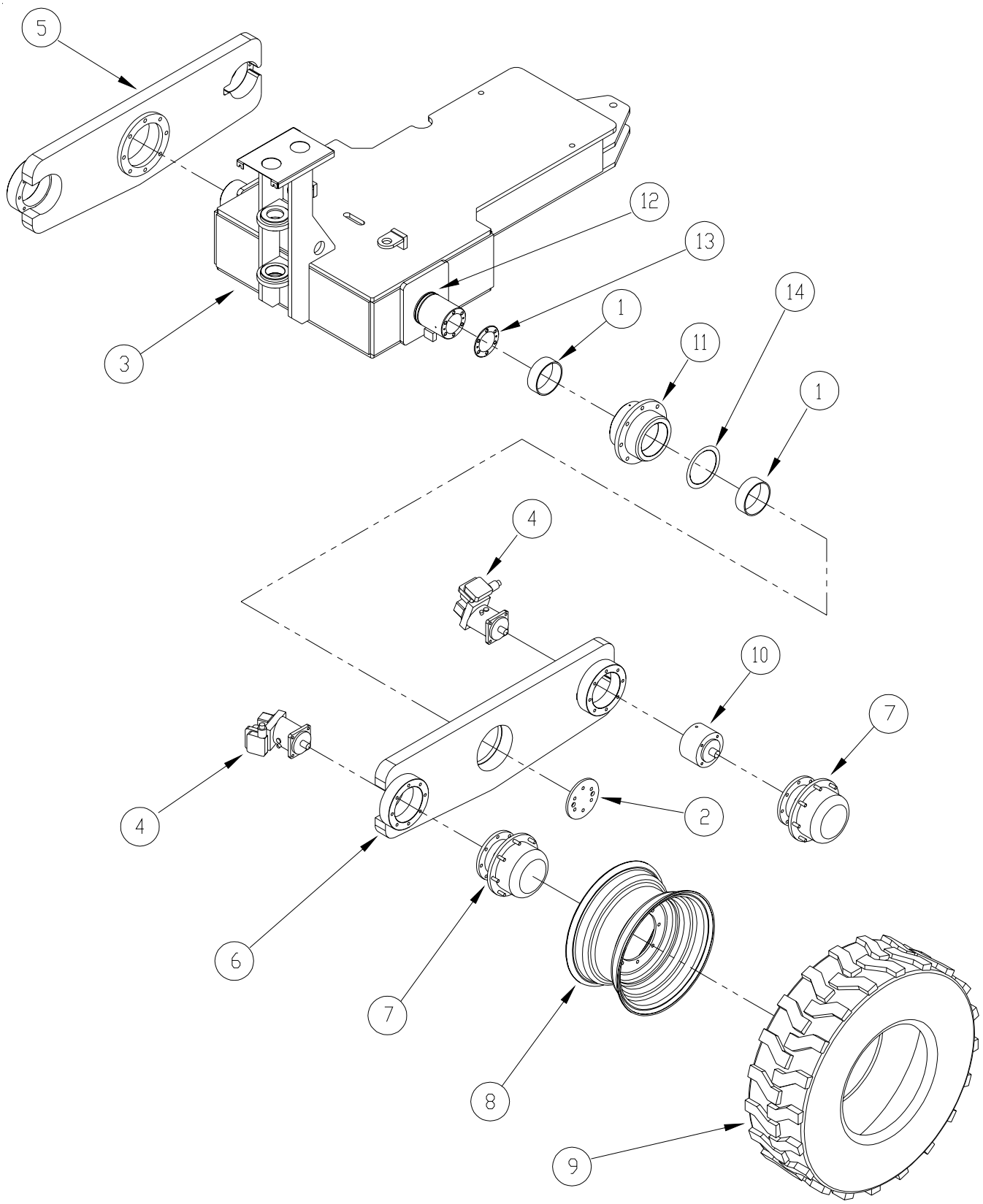
Item	Part No.	Description	Qty. Req.
1	047000	BUSHING, BRNZ, 2.00 ID X 2.25 OD X 2.00	2.00
2	080562	BALL JOINT, STEERING	1.00
3	104876	BEARING, SPHERICAL, 1.00 ID X 2.00 0D	1.00
4	108955	PIN, 1.00 X 3.50	5.00
5	259998	BUSHING, BRNZ, 1.38 ID X 1.62 OD X 1.50	8.00
6	272220	WASHER, KING PIN THRUST	4.00
7	272230	KING PIN WELDMENT	4.00
8	272290	SPINDLE BLOCK W/M, LH	1.00
9	272300	SPINDLE BLOCK W/M, RH	1.00
10	276521	BUSHING, BRNZ, 1.00 ID X 1.12 OD X 0.88	4.00
11	302000	NUT, JAM, 1.00-16 UNEF, RH	1.00
12	302001	NUT, JAM, 1.00-16 UNEF, LH	1.00
13	389600	TIE ROD END, 1.00-16 UNEF, RH	1.00
14	389601	TIE ROD END, 1.00-16 UNEF, LH	1.00
15	622102	FRONT FRAME W/M	1.00
16	622108-1	PIN W/M, 2.00 X 11.25	1.00
17	622502	SPINDLE W/M, RH	1.00
18	622503	SPINDLE W/M, LH	1.00
19	622505	FRONT AXLE W/M	1.00
20	622506	CYLINDER, STEERING	1.00
20A	622506-1	CYLINDER SEAL KIT	1.00
21	622508	CYLINDER, WHEEL LEAN	1.00
21A	622508-1	CYLINDER SEAL KIT	1.00
22	622517	TIE ROD TUBE	1.00
23	622544	TIE ROD W/M, WHEEL LEAN	1.00
24	622545	TIE ROD END W/M, WHEEL LEAN	1.00


16
17
11
4
5
10
6
14
15
8
13
12
7
9
1
18
2
3

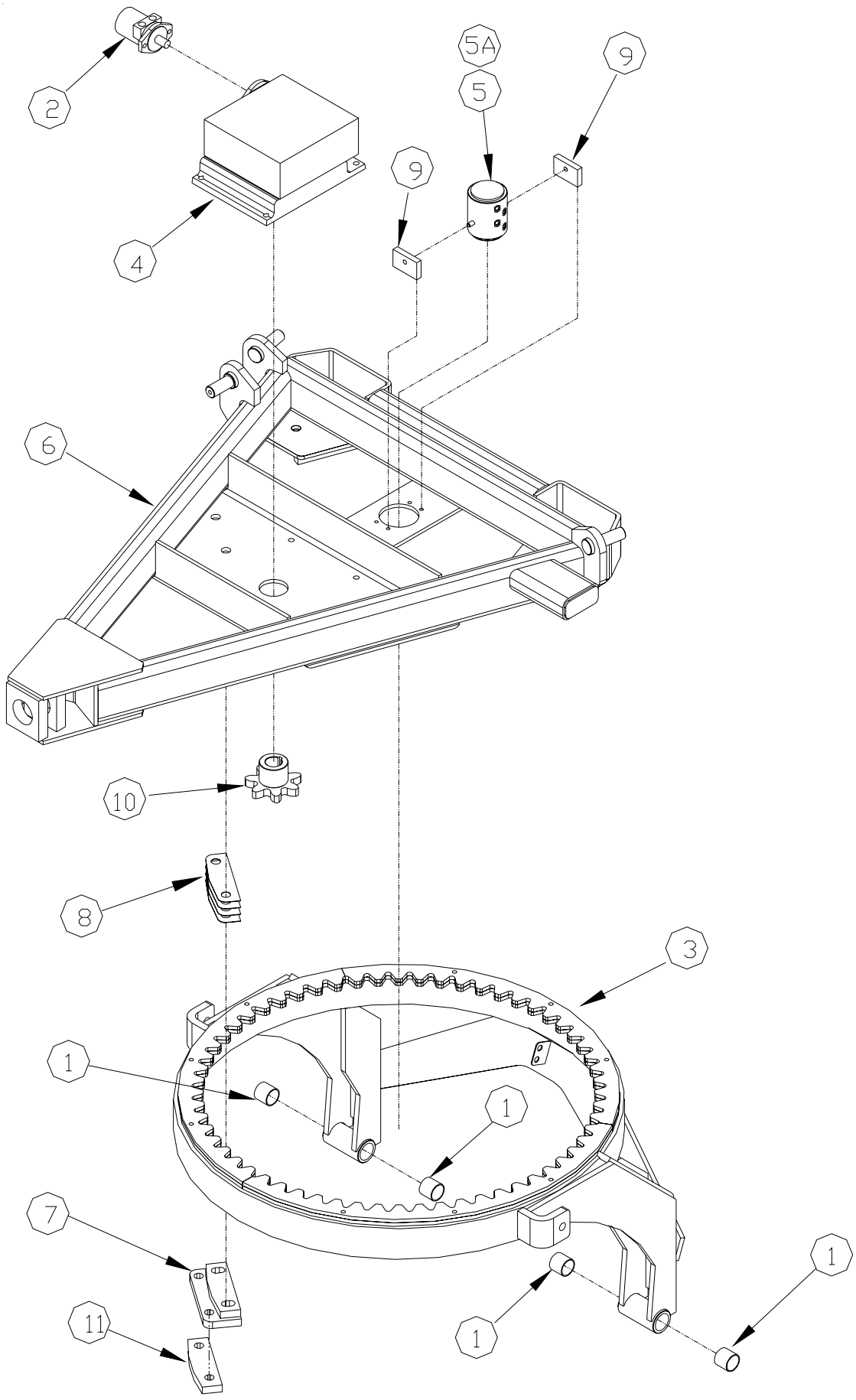
Item	Part No.	Description	Qty. Req.
1	618527	WHEEL STUD, .625 X 2.50	16.00
2	622305-1	WHEEL, 25 X 13.00	2.00
3	622305-2	TIRE, 12 PLY, 15.5-25	2.00
4	622501	COMPLETE HUB—INCLUDES ITEMS 5 TO 13	2.00
5	622501-1	HUB ASSY—INCLUDES ITEMS 6 TO 9	1.00
6	622501-2	BEARING CUP, INNER	1.00
7	622501-3	BEARING CUP, OUTER	1.00
8	622501-4	HUB STUD	8.00
9	622501-5	LUG NUT	8.00
10	622501-6	GREASE SEAL	1.00.
11	622501-7	BEARING CONE, INNER	1.00
12	622501-8	BEARING CONE, OUTER	1.00
13	622501-9	GREASE CAP	1.00
14	622501-10	WASHER	1.00
15	622501-11	SPINDLE NUT	1.00
16	622502	SPINDLE W/M, RH	1.00
17	622503	SPINDLE W/M, LH	1.00
18	622504	WHEEL ADAPTER PLATE	2.00


21
22
19
10
35
12A
2
29
12
10
8
2
28
13
6
4
3
20
5
25
11
8
6
25A
34
9
1
11
27
17
33
31
15
2
7
16
26
14
30
18
32
23
24

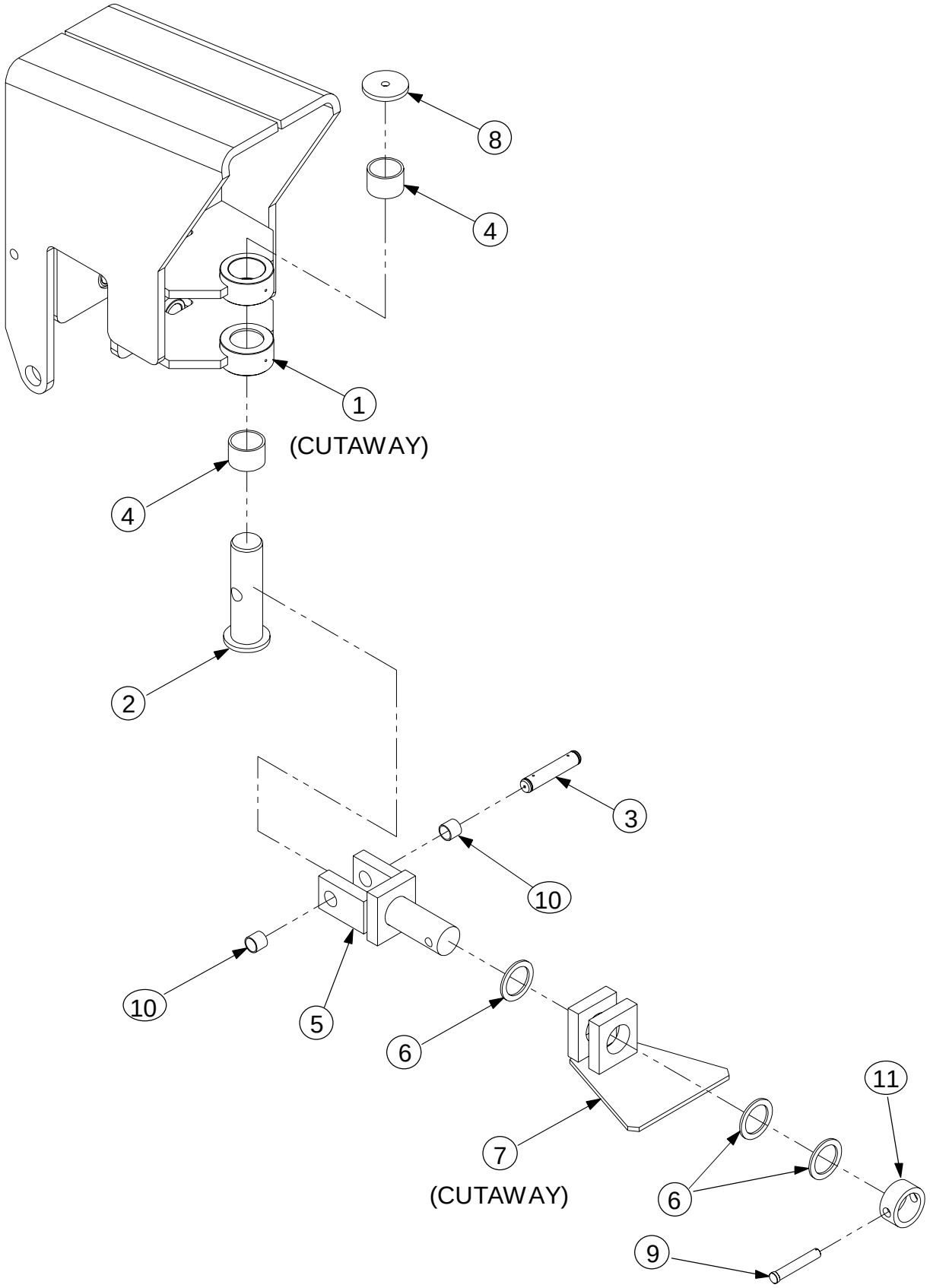
Item	Part No.	Description	Qty. Req.
1	028000	THRUST BEARING, KING PIN	2.00
2	047000	BUSHING, BRNZ, 2.00 ID X 2.25 OD X 2.00	4.00
3	047200	BUSHING, BRNZ, 2.00 ID X 2.25 OD X 3.00	2.00
4	080562	BALL JOINT, STEERING	1.00
5	104876	BEARING, SPHERICAL, 1.00 ID X 2.00 0D	1.00
6	108955	PIN, 1.00 X 3.50	2.00
7	108992	TORQUE HUB	2.00
8	259998	BUSHING, BRNZ, 1.38 ID X 1.62 OD X 1.50	4.00
9	272200	WHEEL LEAN PIN	2.00
10	276521	BUSHING, BRNZ, 1.00 ID X 1.12 OD X 0.88	2.00
11	276632	RETAINER RING	6.00
12	276849	WHEEL LEAN CYLINDER	1.00
12A	276849-1	CYLINDER SEAL KIT	1.00
13	298440	AXLE BUSHING, TOP	2.00
14	298460	AXLE BUSHING, BOTTOM	2.00
15	302000	NUT, JAM, 1.00-16 UNEF, RH	1.00
16	302001	NUT, JAM, 1.00-16 UNEF, LH	1.00
17	389600	TIE ROD END, 1.00-16 UNEF, RH	1.00
18	389601	TIE ROD END, 1.00-16 UNEF, LH	1.00
19	618533	SPINDLE ASSY, RH	1.00
20	618533-1	SPINDLE ASSY, LH	1.00
21	622102	FRONT FRAME W/M	1.00
22	622108-1	PIN W/M, 2.00 X 11.25	1.00
23	622305-1	WHEEL, 25 X 13.00	2.00
24	622305-2	TIRE, 12 PLY, 15.5-25	2.00
25	622506	CYLINDER, STEERING	1.00
25A	622506-1	CYLINDER SEAL KIT	1.00
26	622517-1	TIE ROD TUBE	1.00
27	622524	AXLE BOX, LH	1.00
28	622525	AXLE BOX, RH	1.00
29	622526	FRONT AXLE W/M	1.00
30	622533	WHEEL ADAPTOR PLATE	2.00
31	622534	HYDRAULIC DRIVE MOTOR	2.00
32	622535	WHEEL STUD	18.00
33	622536	PIN, 1.00 X 4.75	2.00
34	622537	PIN, 1.00 X 3.75	1.00
35	622540	TIE ROD W/M, WHEEL LEAN	1.00


5
12
13
14
1
11
1
3
4
10
7
4
2
6
7
8
9

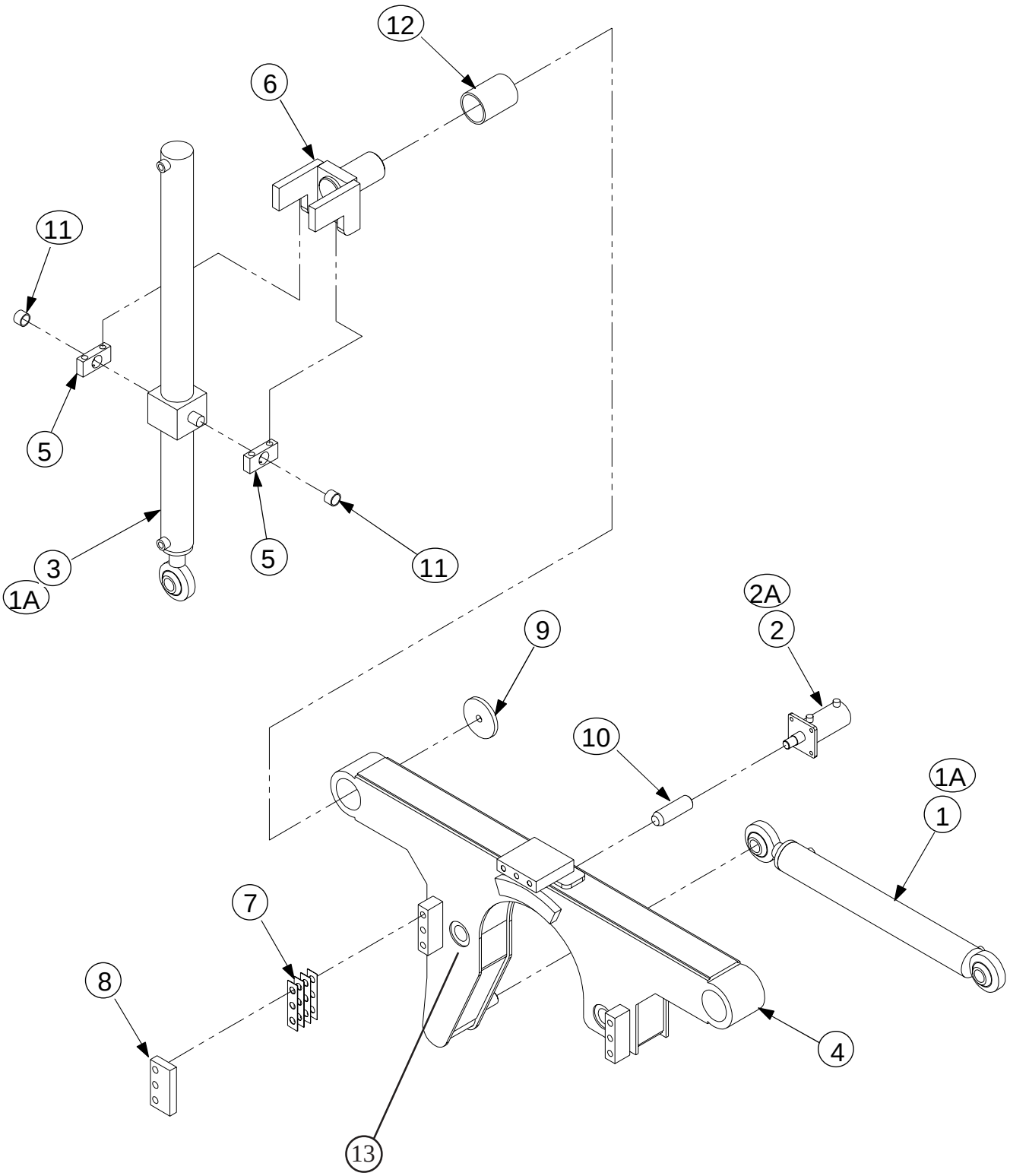
Item	Part No.	Description	Qty. Req.
1	275840	BUSHING, BRNZ, 7.50 OD X 7.00 ID X 2.50	4.00
2	618308	RETAINER PLATE	2.00
3	622101	REAR FRAME W/M	1.00
4	622202	HYDRAULIC DRIVE MOTOR	4.00
5	622301	PIVOT BEAM W/M, RH	1.00
6	622302	PIVOT BEAM W/M, LH	1.00
7	622304	TORQUE HUB	4.00
8	622305-1	WHEEL, 25 X 13.00	4.00
9	622305-2	TIRE, 12 PLY, 15.5-25	4.00
10	622307	BRAKE ASSY	2.00
11	622322	PIVOT HOUSING	2.00
12	276700	O-RING	1.00
13	618309-1	SPACERS	As Required
14	618327	SPACERS	As Required


2
5A
5
9
9
4
6
10
8
3
1
1
7
1
1
11

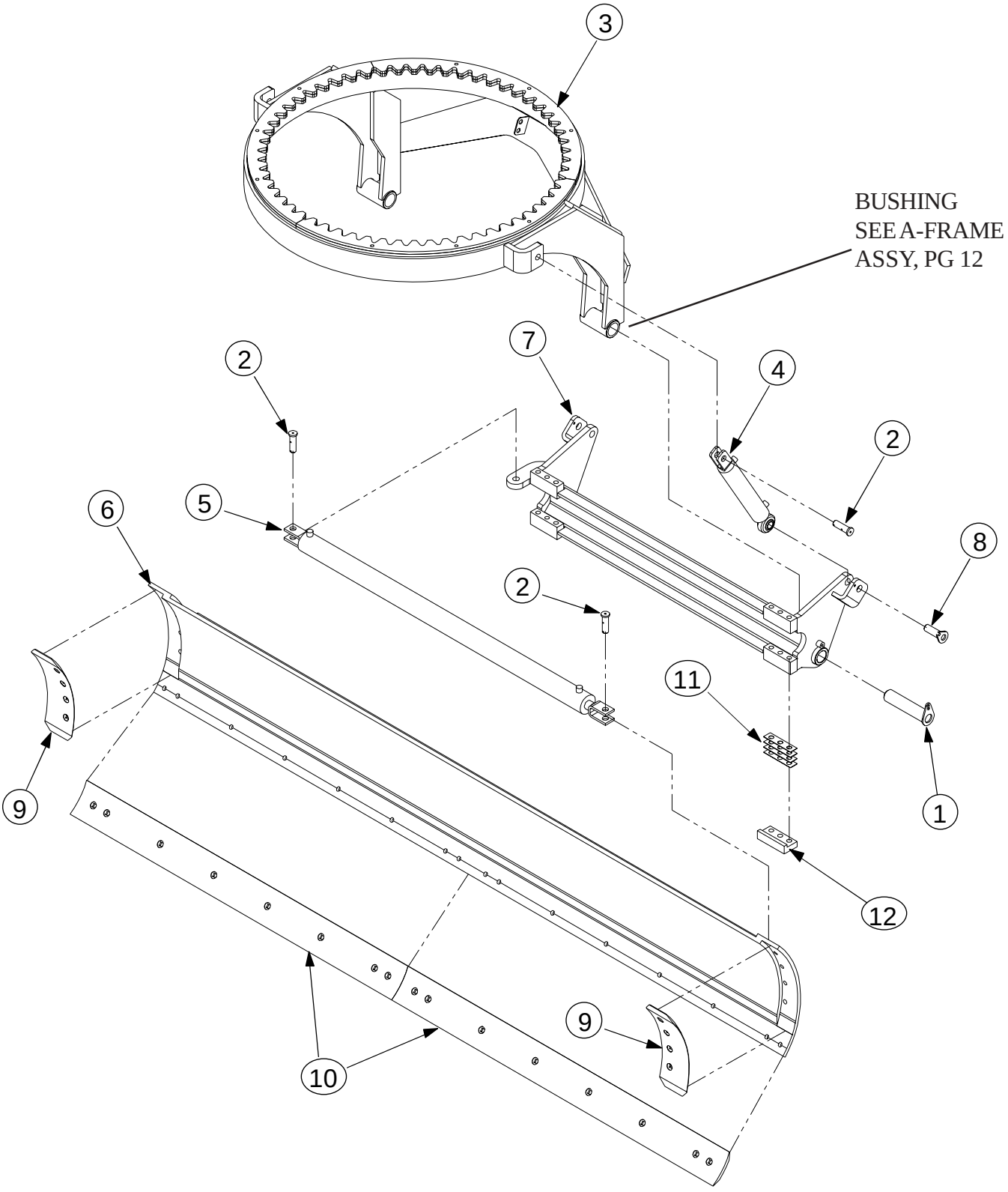
Item	Part No.	Description	Qty. Req.
1	047000	BUSHING, BRNZ, 2.00 ID X 2.50 OD X 2.50	4.00
2	622209	HYDRAULIC MOTOR	1.00
3	622602	BLADE HANGER W/M	1.00
4	622613	GEAR BOX, WORM DRIVE	1.00
5	622614	COUPLING, ROTARY HYDRAULIC	1.00
5A	622614-1	SEAL KIT, ROTARY COUPLING	1.00
6	622617	A-FRAME W/M	1.00
7	622623	ADJUSTING BAR W/M	4.00
8	622626	SHIM, ADJUSTING BAR	16.00
9	622631	BRACKET, COUPLING	2.00
10	622642	PINION GEAR W/M	1.00
11	623624	WEAR PLATE	4.00


8
4
1
(CUTAWAY)
4
2
3
10
10
5
6
7
(CUTAWAY)
6
11
9

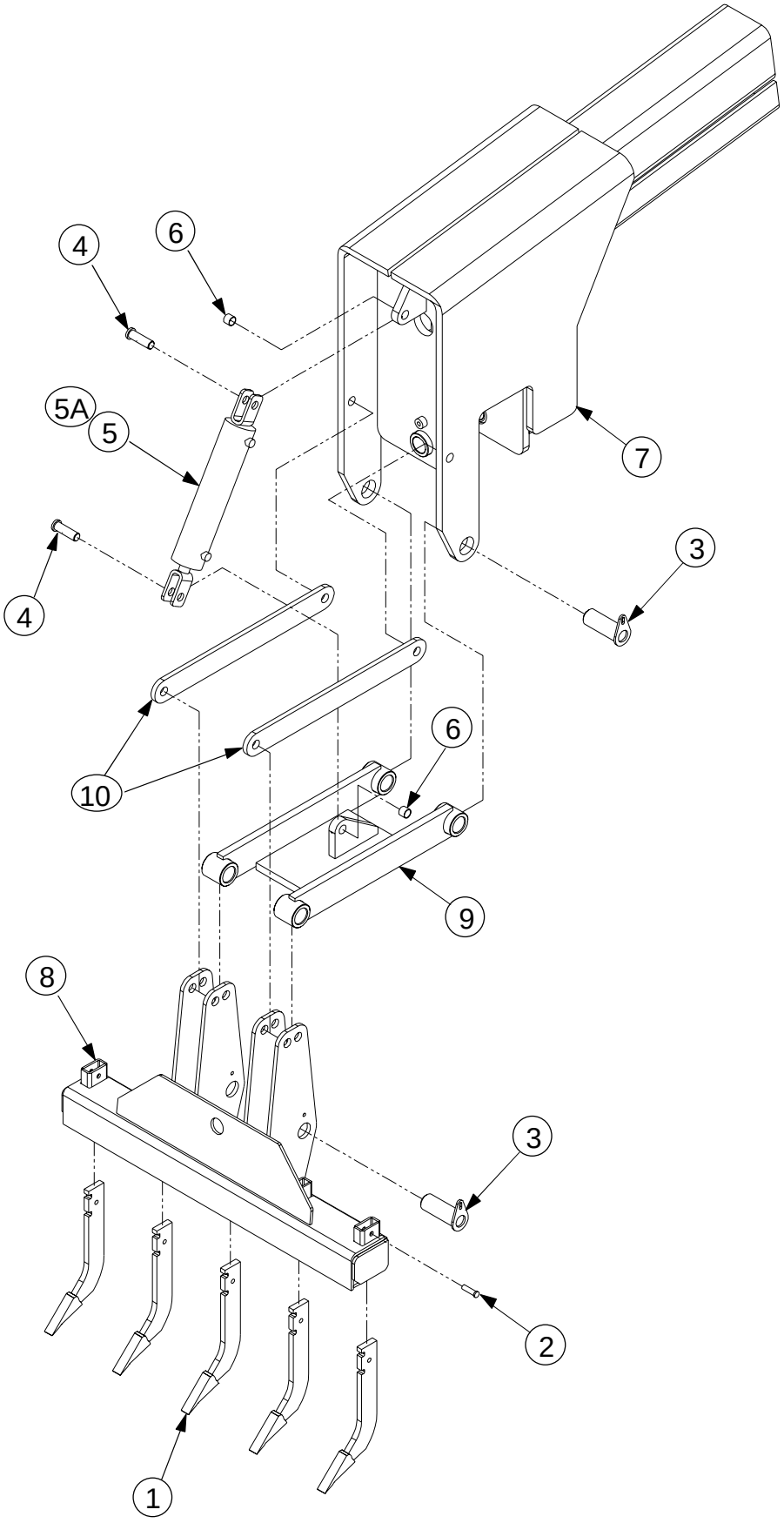
Item	Part No.	Description	Qty. Req.
1	622102	FRONT FRAME W/M	1.00
2	622106-1	PIN W/M, 3.25 X 11.75	1.00
3	622107	PIN, 1.50 X 7.50	1.00
4	622152	BUSHING, BRNZ, 3.25 X 3.75 X 2.50	2.00
5	622611	YOKE SHAFT W/M	1.00
6	623616	THRUST WASHER	3.00
7	622617	A-FRAME W/M	1.00
8	622677	YOKE WASHER	1.00
9	622696	PIN, 1.00 X 6.00	1.00
10	623615	BUSHING, BRNZ, 1.50 X 1.75 X 1.50	2.00
11	623617	COLLAR, YOKE SHAFT	1.00


12
6
11
5
3
1A
5
11
2A
2
9
10
1A
1
7
8
4
13

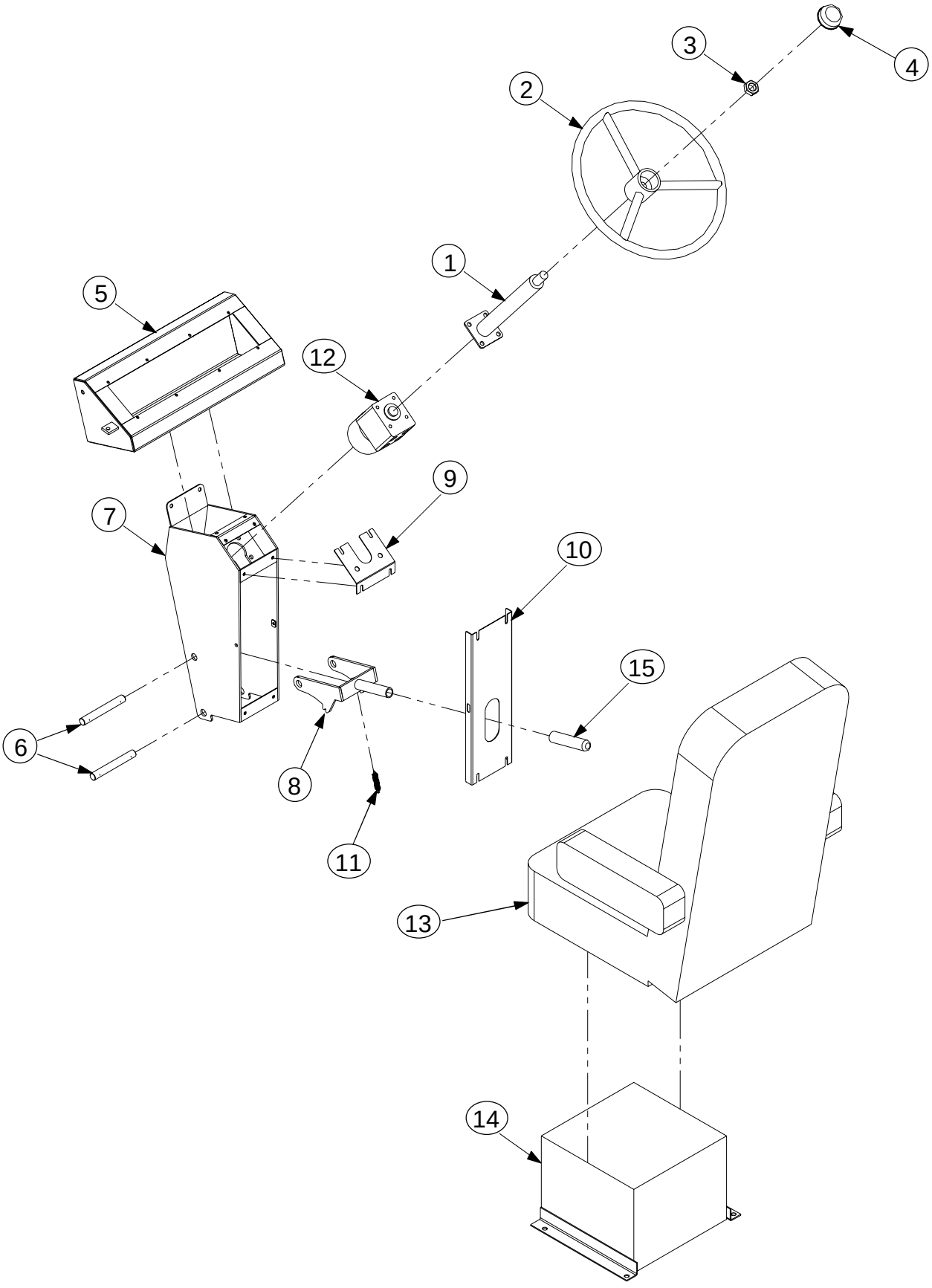
Item	Part No.	Description	Qty. Req.
1	622606	CIRCLE SHIFT CYLINDER	1.00
1A	622606-1	CYLINDER SEAL KIT	1.00
2	622609	LOCK PIN CYLINDER	2.00
2A	622609-1	CYLINDER SEAL KIT	1.00
3	622610	BLADE LIFT CYLINDER	2.00
4	622618	LIFT CYLINDER FRAME W/M	1.00
5	622651	BUSHING BLOCK	4.00
6	622652	LIFT CYLINDER YOKE W/M	2.00
7	622675	RETAINER SHIM	12.00
8	622676	RETAINER BLOCK	3.00
9	622677	YOKE WASHER	2.00
10	622678	LOCK PIN	2.00
11	622681	BUSHING, BRNZ, 1.25 ID X 1.50 OD X 1.00	4.00
12	622682	BUSHING, BRNZ, 3.25 ID X 3.75 OD X 5.00	2.00
13	622685	BUSHING, BRNZ, 1.62 ID X 1.88 OD X 1.50	1.00


3
BUSHING
SEE A-FRAME
ASSY, PG 12
7
2
4
2
5
6
8
2
11
9
1
12
9
10

Item	Part No.	Description	Qty. Req.
1	108857	PIN W/M, 2.00 X 9.00	2.00
2	108955	PIN, 1.00 X 3.50	4.00
3	622602	BLADE HANGER W/M	1.00
4	622607	CYLINDER, BLADE TILT	2.00
5	622608	CYLINDER, SIDE SHIFT	1.00
6	622615	MOLDBOARD W/M	1.00
7	622616	BLADE SLIDE W/M	1.00
8	622619-1	PIN W/M, 1.12 X 3.62	2.00
9	622621	END BIT, .62 X 18.56	2.00
10	622622	CUTTING EDGE, .62 X 6.00 X 72.00	2.00
11	622675	RETAINER SHIM	16.00
12	622692	SLIDE BLOCK	4.00

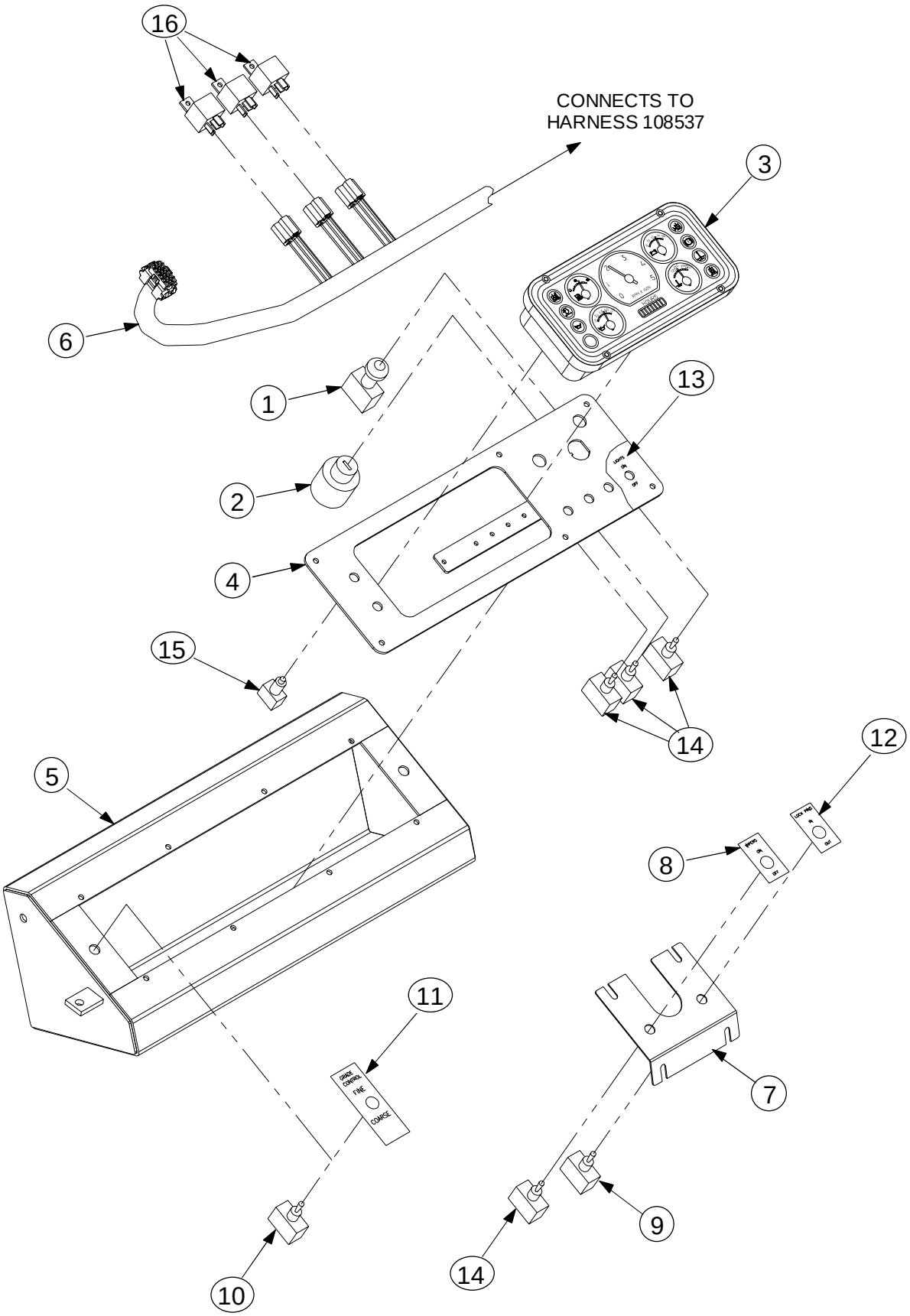

4
6
5A
5
7
3
4
10
6
9
8
3
2
1

Item	Part No.	Description	Qty. Req.
1	104988	SCARIFIER SHANK	5.00
2	108348	SHANK PIN	5.00
3	108572	PIN, 2.00 OD X 5.50	4.00
4	108955	PIN, 1.00 OD X 3.50	2.00
5	274700	HYDRAULIC CYLINDER, SCARIFIER	1.00
5A	274700-1	CYLINDER SEAL KIT	1.00
6	276521	BUSHING, BRNZ, 1.13 OD X 1.00 ID X 1.00	2.00
7	622102	FRONT FRAME W/M	1.00
8	622901	SCARIFIER FRAME W/M	1.00
9	622902	PUSH FRAME W/M	1.00
10	622903	TOP LINK	2.00

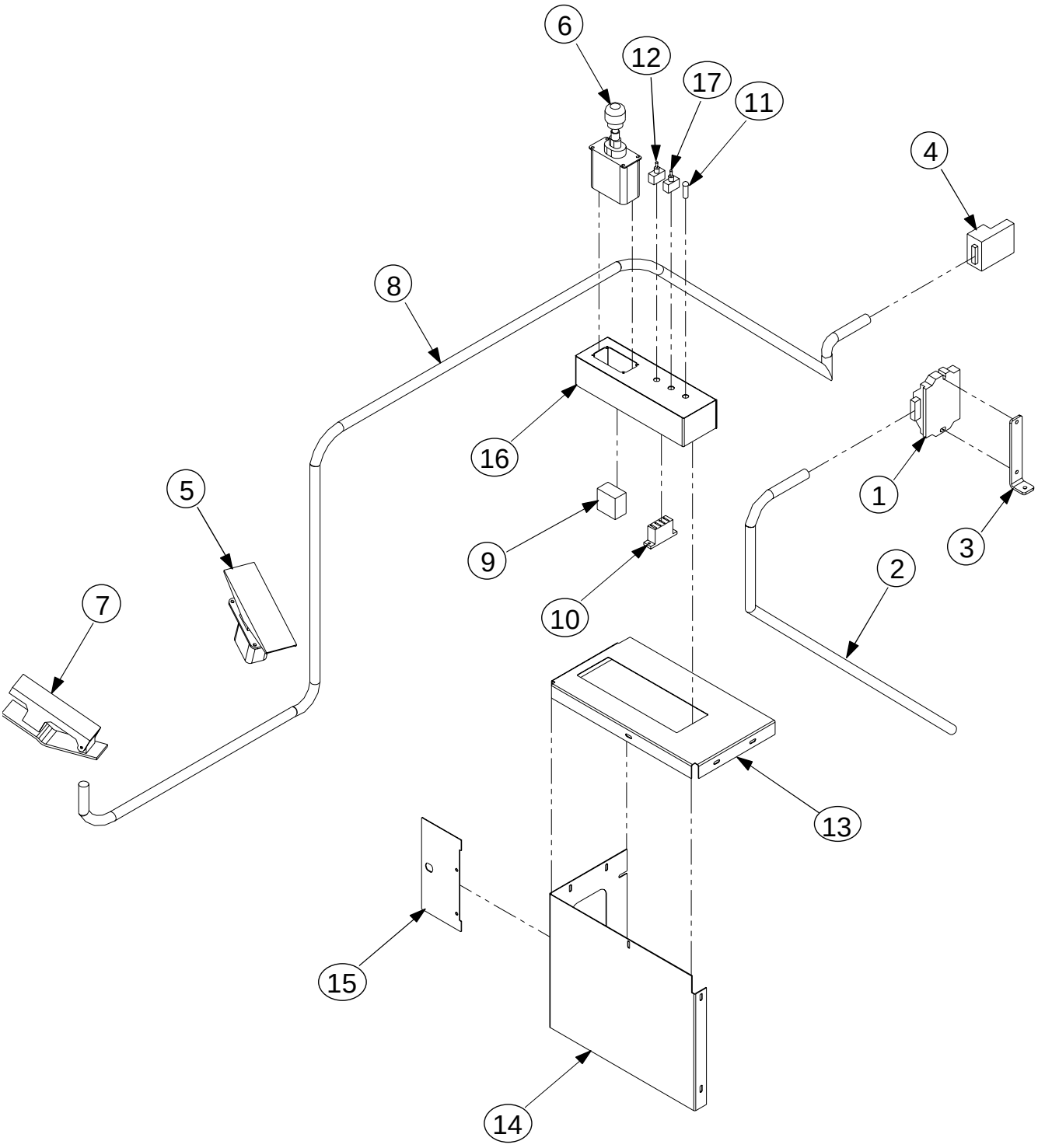

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Item	Part No.	Description	Qty. Req.
1	108152	STEERING COLUMN, 12 INCH	1.00
2	108153	STEERING WHEEL	1.00
3	108154	NUT, STEERING WHEEL	1.00
4	108155	CAP, STEERING WHEEL	1.00
5	108390	DASH PANEL BOX	1.00
6	108749	PIVOT SHAFT	2.00
7	108750	STEERING CONSOLE	1.00
8	108758	CONSOLE TILT LATCH	1.00
9	108761	TOP COVER	1.00
10	108762	FRONT COVER	1.00
11	561004	EXTENSION SPRING	1.00
12	622218	STEERING ORBITRAL	1.00
13	622703	SUSPENSION SEAT, VINYL	1.00**
13	622703-1	SUSPENSION SEAT, CLOTH	1.00*
14	622704	SEAT MOUNT	1.00
15	Z0329	HANDLE GRIP	1.00

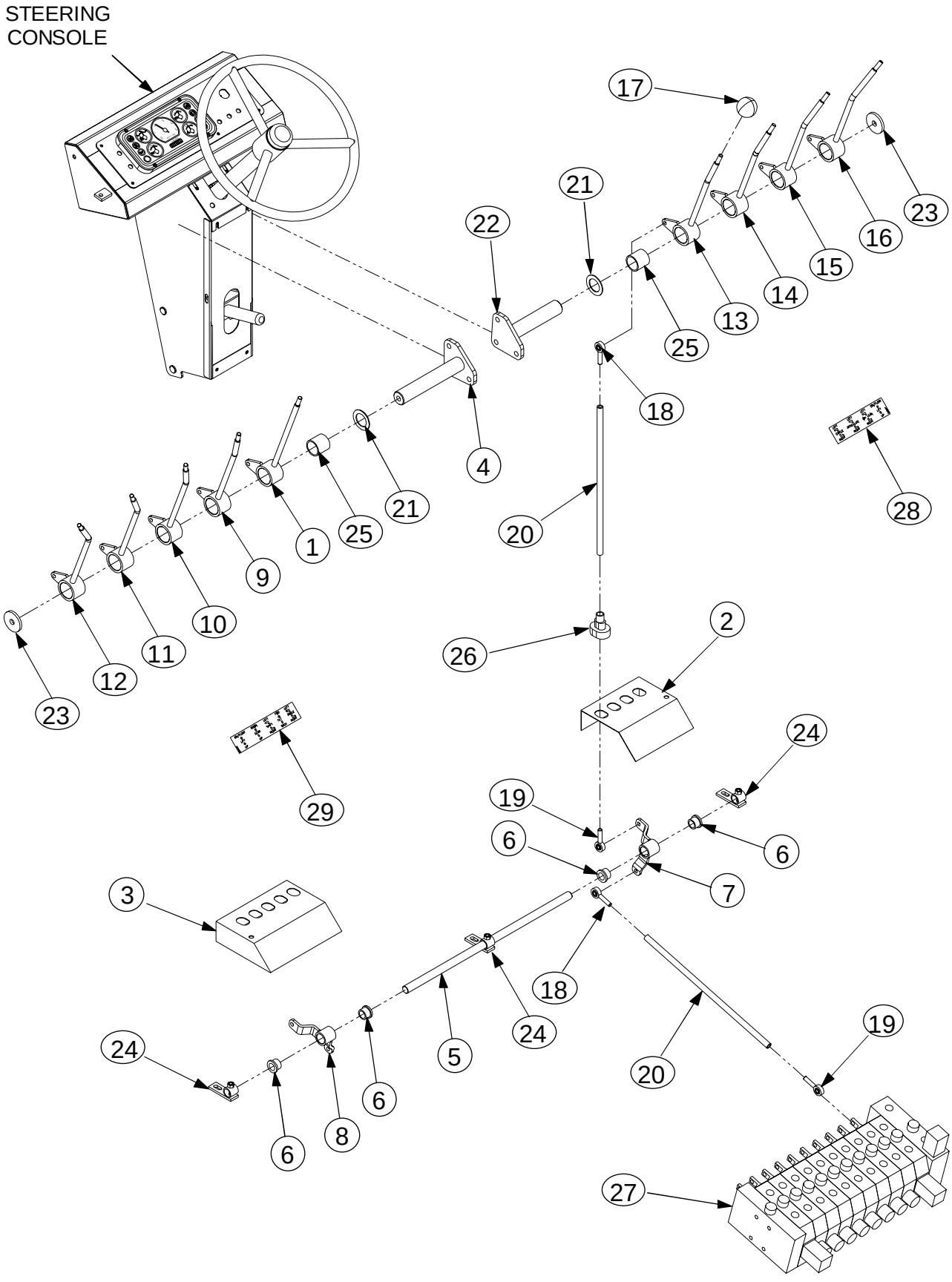
*CLOTH SEAT STANDARD ON UNITS WITH CAB ENCLOSURE
**VINYL SEAT STANDARD ON UNITS WITHOUT CAB ENCLOSURE


16
CONNECTS TO
HARNESS 108537
3
6
1
13
2
4
15
14
12
5
8
11
7
9
14
10

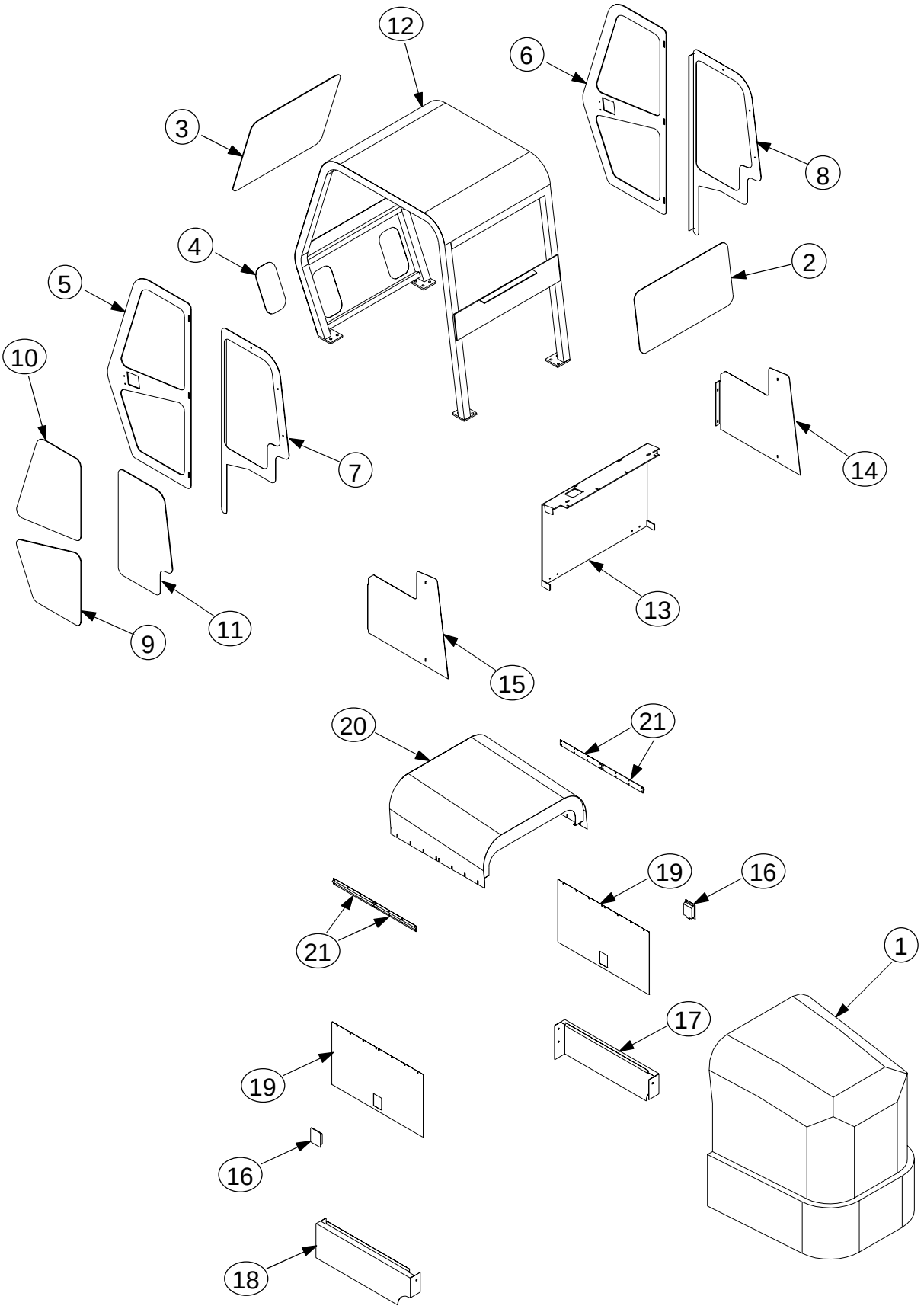
Item	Part No.	Description	Qty. Req.
1	041848	SWITCH, PUSHBUTTON	1.00
2	103062	SWITCH, IGNITION	1.00
3	103068	DASH, MODULAR	1.00
4	104663	DASH PANEL	1.00
5	108390	DASH PANEL BOX	1.00
6	108538	WIRE HARNESS, DASH	1.00
7	108761	TOP COVER	1.00
8	108784	DECAL, WIPER	1.00
9	281-0033	SWITCH, TOGGLE SPST ON-OFF-ON	1.00
10	281-0071	SWITCH, TOGGLE DPDT ON– NONE– ON	1.00
11	618825	DECAL, GRADE CONTROL	1.00
12	622830	DECAL, LOCK PINS	1.00
13	D0340	DECAL, INSTRUMENT PANEL	1.00
14	E0006	SWITCH, ON / OFF	4.00
15	E0128-1	CIRCUIT BREAKER, 15 AMP	1.00
16	E0141	RELAY, SPDT	3.00


6
12
17
11
4
8
16
5
1
9
3
2
10
7
13
15
14

Item	Part No.	Description	Qty. Req.
1	618318	MICROCONTROLLER, S1X	1.00
2	618321	WIRE HARNESS, TRAC CONTROL	1.00
3	618328	COMPUTER MOUNTING BRACKET	1.00
4	622211	MICROCONTROLLER, DVC10	1.00
5	622213	FOOT PEDAL CONTROL	1.00
6	622214	SHIFT LEVER	1.00
7	622215	INCHING BRAKE CONTROL	1.00
8	622711	WIRE HARNESS, TRAVEL CONTROL	1.00
9	622712	POWER SUPPLY, 5VDC	1.00
10	622730	FUSE BLOCK	1.00
11	622731	FAULT LIGHT	1.00
12	622732	SWITCH, AUTO/MANUAL	1.00
13	622817	COVER, RH CONSOLE	1.00
14	622820	SIDE PLATE, RH CONSOLE	1.00
15	622843	DOOR, CONSOLE	1.00
16	622847	SHIFT LEVER PANEL W/M	1.00
17	E0006	SWITCH, TRAVEL/WORK	1.00


STEERING
CONSOLE
17
21
22
23
16
15
14
13
25
18
4
21
25
1
9
10
11
12
23
20
28
26
2
29
24
19
6
6
7
3
18
24
5
24
6
8
6
20
19
27

Item	Part No.	Description	Qty. Req.
1	107218	VALVE LEVER, STRAIGHT	1.00
2	107222	COVER, RH	1.00
3	107223	COVER, LH	1.00
4	108713	LEVER MOUNTING BRACKET	1.00
5	108715	SHAFT, .75 OD X 22.00	1.00
6	277444	BUSHING, FLANGE, POLY, .75 ID X 1.00 OD	18.00
7	618746	BELLCRANK, RH	4.00
8	618747	BELLCRANK, LH	5.00
9	618751	VALVE LEVER, LH #1	1.00
10	618752	VALVE LEVER, LH #2	1.00
11	618753	VALVE LEVER, LH #3	1.00
12	618754	VALVE LEVER, LH #4	1.00
13	618755	VALVE LEVER, RH #1	1.00
14	618756	VALVE LEVER, RH #2	1.00
15	618757	VALVE LEVER, RH #3	1.00
16	618758	VALVE LEVER, RH #4	1.00
17	618765	KNOB, BLACK PLASTIC, .38 NC	9.00
18	618766	ROD END, BALL JOINT, .38 X .38 UNF-RH	18.00
19	618766-1	ROD END, BALL JOINT, .38 X .38 UNF-LH	18.00
20	618769	LINKAGE ROD, .56 OD X 17.00	18.00
21	618770	WASHER, 2.12 OD X 1.38 ID X .075	11.00
22	618771	LEVER MOUNTING BRACKET	1.00
23	618772	WASHER, 2.12 OD X .56 ID X .25	2.00
24	618778	MOUNTING BRACKET, CENTER	3.00
25	618782	BUSHING, OIL LITE, 1.38 ID X 1.62 OD X 1.50	9.00
26	618783	BOOT, .38 X 2.25	9.00
27	622208	HYDRAULIC VALVE ASSEMBLY	1.00
28	622837	DECAL, RIGHT VALVE BANK	1.00
29	622838	DECAL, LEFT VALVE BANK	1.00


12
6
3
8
4
2
5
10
7
14
13
11
9
15
20
21
21
19
16
1
17
19
16
18

Item	Part No.	Description	Qty. Req.
1	108130	REAR ENGINE PANEL	1.00
2	108546	REAR GLASS	1.00
3	108547	WINDSHIELD GLASS	1.00
4	108548	FRONT GLASS	2.00
5	108549	LEFT DOOR FRAME	1.00
6	108550	RIGHT DOOR FRAME	1.00
7	108551	LEFT REAR PANEL	1.00
8	108552	RIGHT REAR PANEL	1.00
9	108553	LOWER DOOR GLASS	2.00
10	108554	UPPER DOOR GLASS	2.00
11	252301	REAR SIDE GLASS	2.00
12	622803	ROPS W/M	1.00
13	622804	ROPS PANEL, REAR	1.00
14	622805	ROPS PANEL, RH	1.00
15	622805-1	ROPS PANEL, LH	1.00
16	622826	LATCH, PANEL	2.00
17	622827	LOWER ENGINE PANEL, RH	1.00
18	622827-1	LOWER ENGINE PANEL, LH	1.00
19	622828	ENGINE ACCESS PANEL	2.00
20	622847	TOP ENGINE PANEL W/M	1.00
21	622851	HINGE, ENGINE PANEL	4.00

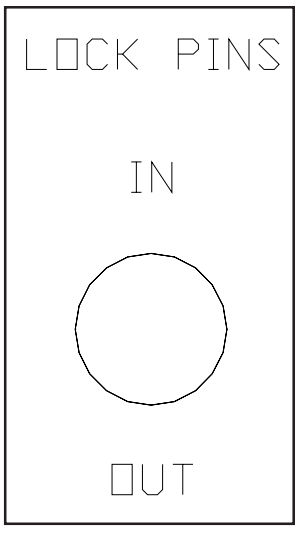
Item 1
Located mid-way on both sides of Front Frame Ass'y

Item 2
Located mid-way on both sides of Front Frame Ass'y and top of Rear Hood

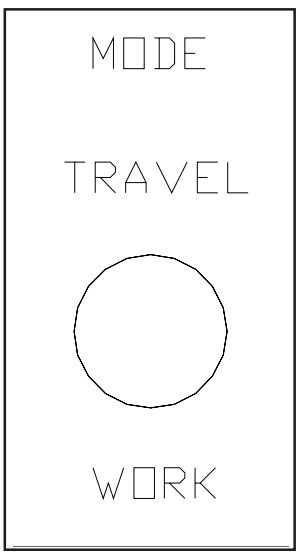
Item 3
Located on top of Rear Hood

Item 4
Located on top of Rear Hood

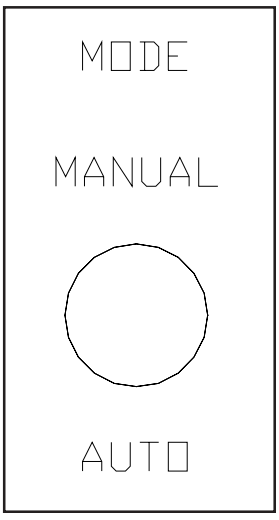
Item 5
Both sides of Rear Hood



Item 6
Inside Cab



Item 7
Inside Cab



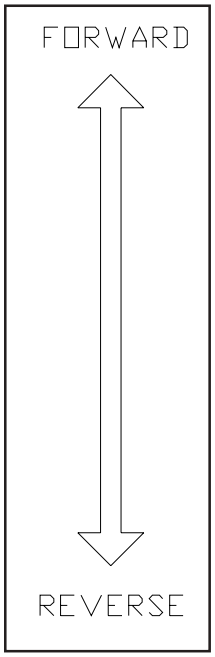
Item 8
Inside Cab

Item	Part No.	Description	Qty. Req.
1	622861	MG622 DECAL	2.00
2	D0345	ALLIGATOR DECAL, MEDIUM	3.00
3	622862	4 x 6 DECAL	2.00*
4	622863	6 x 6 DECAL	2.00*
5	D0347	STRIPE DECAL	4.00
6	622830	LOCK PINS DECAL	1.00
7	622834	TRAVEL/WORK DECAL	1.00
8	622832	MANUAL/AUTO DECAL	1.00
9	622833	FWD/REV DECAL	1.00
10	622859	CONTROL LEVERS DECAL, RH	1.00
11	622860	CONTROL LEVERS DECAL, LH	1.00
12	622836	ARTICULATION DECAL	1.00
13	622839	ARROW DECAL	6.00
14	622840	PIN CENTER DECAL	1.00

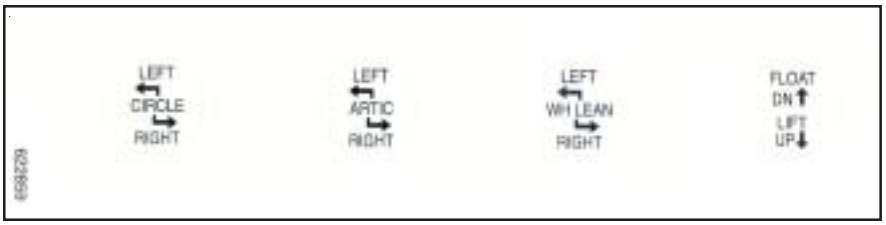
* Item 3 is used on units **without** Front Wheel Assist. Item 4 is used on units **with** Front Wheel Assist.

ADDITIONAL SAFETY DECALS SHOWN IN SECTION A, SAFETY:

NS	622835	WELDING CAUTION DECAL	6.00
NS	065927	PINCH POINT WARNING DECAL	6.00
NS	072797	DIESEL FUEL CAUTION DECAL	2.00
NS	108785	LUG NUT CAUTION DECAL	4.00
NS	065924	ROTATING COMPONENTS WARNING DECAL	2.00
NS	108787	OPERATORS' INSTRUCTION DECAL GROUP	1.00

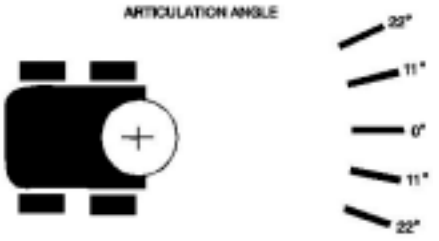


Item 9
Inside Cab



Item 10
Inside Cab on Lever Heads

Item 11
Inside Cab on Lever Heads



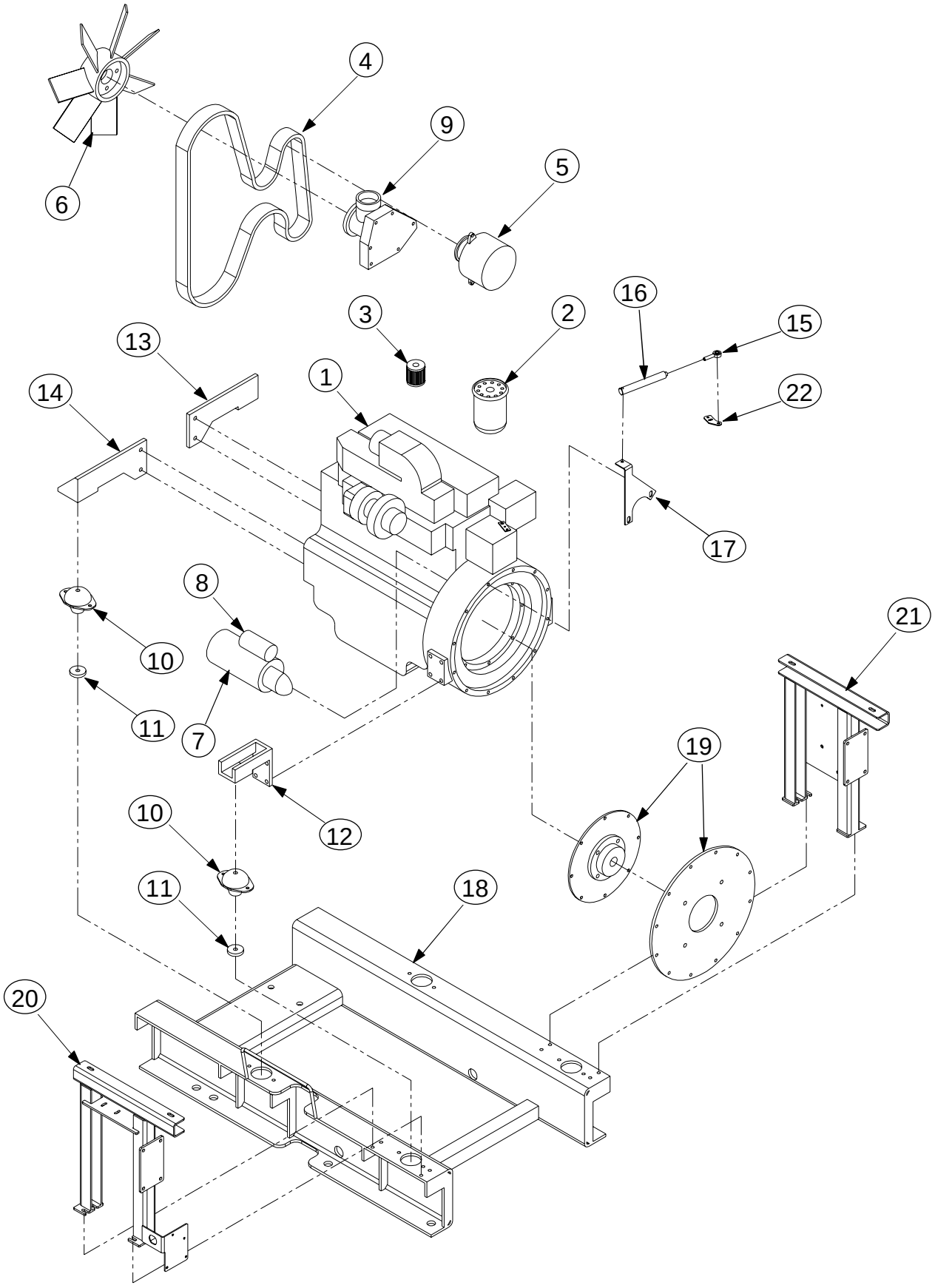
Item 12
Inside Cab on Left Side

Item 13
Located on Blade Hanger of
Frame Ass'y

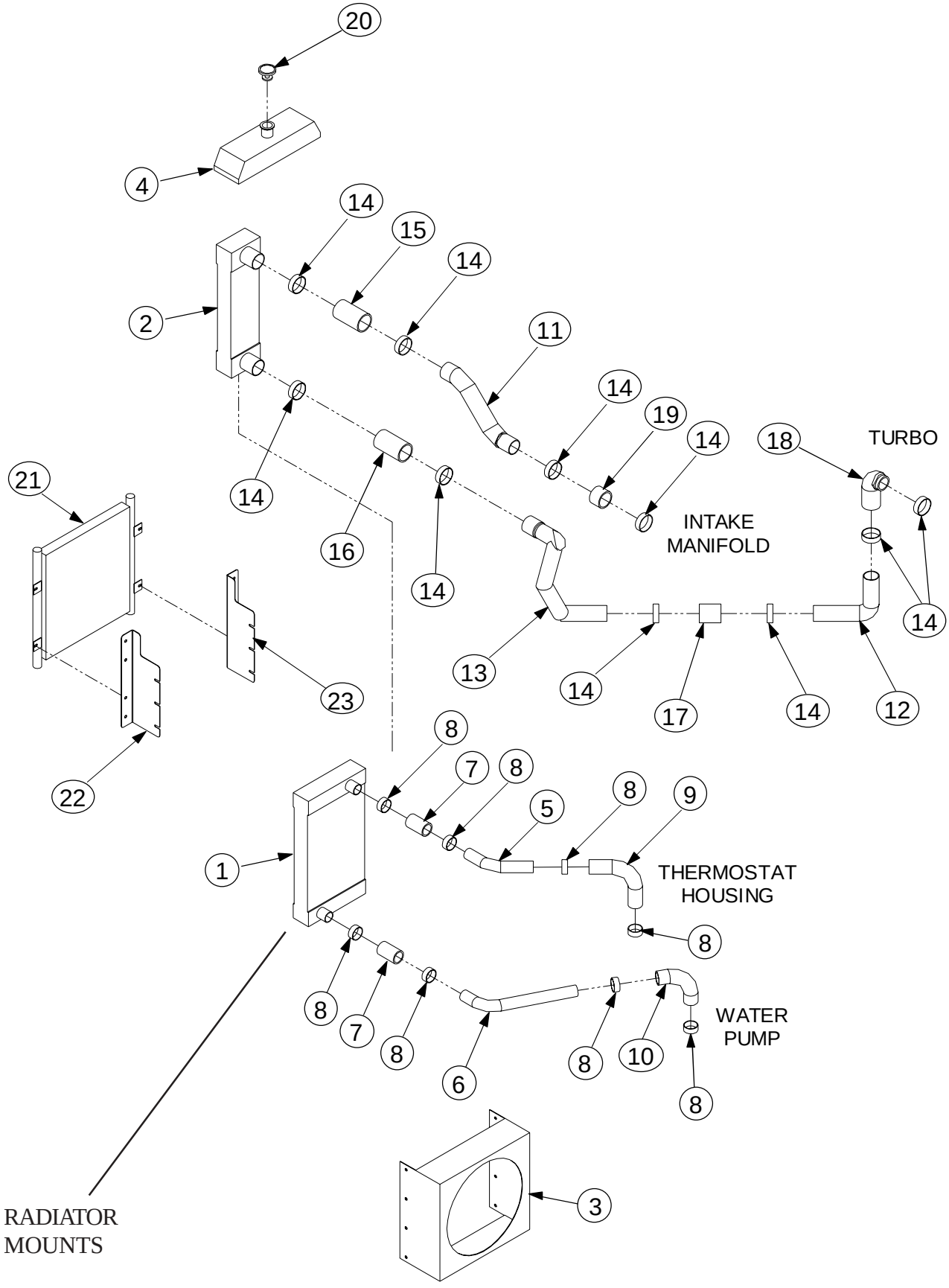
Item 14
Located on Blade
Hanger of Frame Ass'y

Item	Part No.	Description	Qty. Req.
1	622861	MG622 DECAL	2.00
2	D0345	ALLIGATOR DECAL, MEDIUM	3.00
3	622862	4 x 6 DECAL	2.00*
4	622863	6 x 6 DECAL	2.00*
5	D0347	STRIPE DECAL	4.00
6	622830	LOCK PINS DECAL	1.00
7	622834	TRAVEL/WORK DECAL	1.00
8	622832	MANUAL/AUTO DECAL	1.00
9	622833	FWD/REV DECAL	1.00
10	622859	CONTROL LEVER DECALS, RH	1.00
11	622860	CONTROL LEVER DECALS, LH	1.00
12	622836	ARTICULATION DECAL	1.00
13	622839	ARROW DECAL	6.00
14	622840	PIN CENTER DECAL	1.00

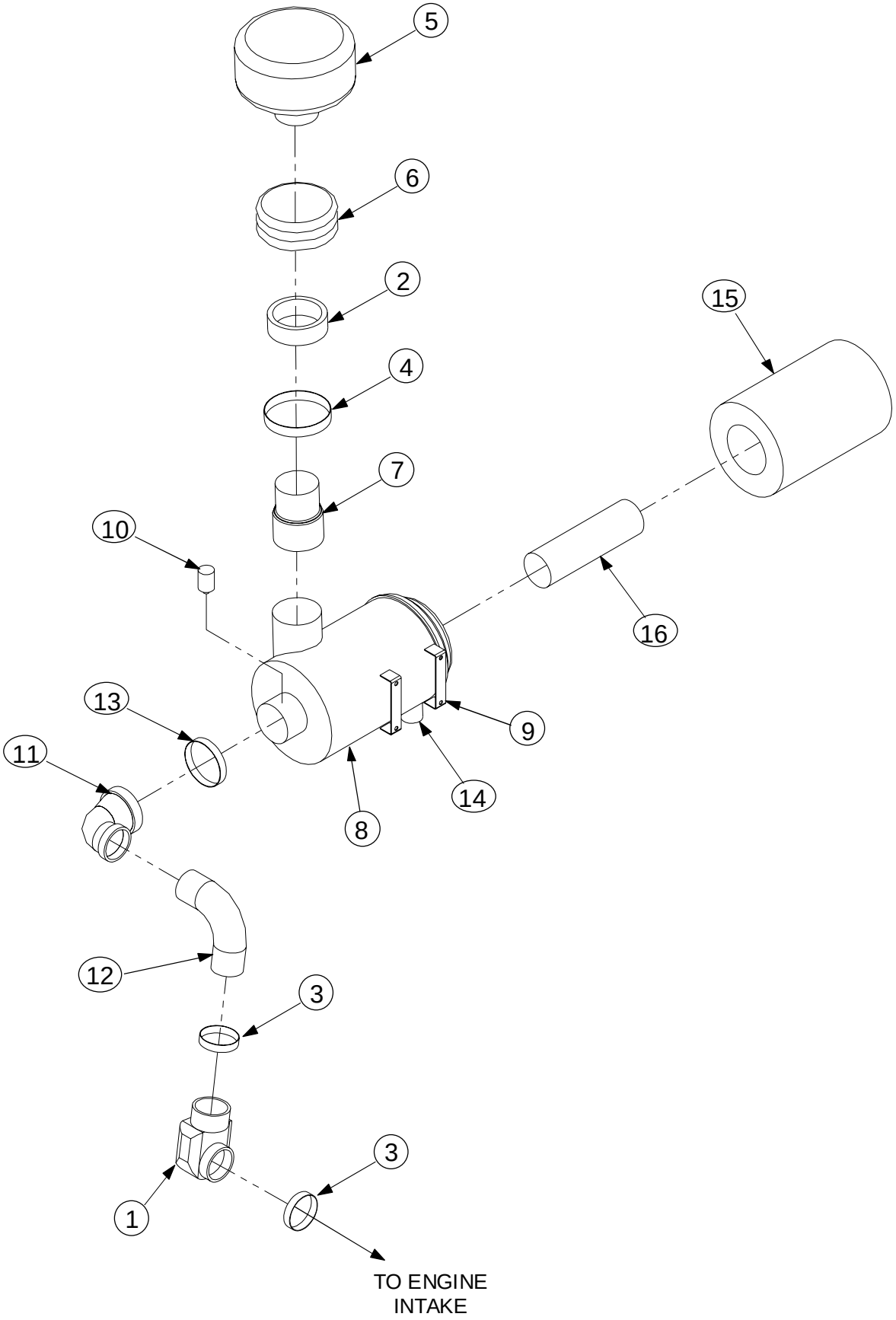
* Item 3 is used on units **without** Front Wheel Assist. Item 4 is used on units **with** Front Wheel Assist.


4
9
5
6
16
3
2
15
13
1
22
14
17
8
21
10
11
7
19
12
10
11
18
20

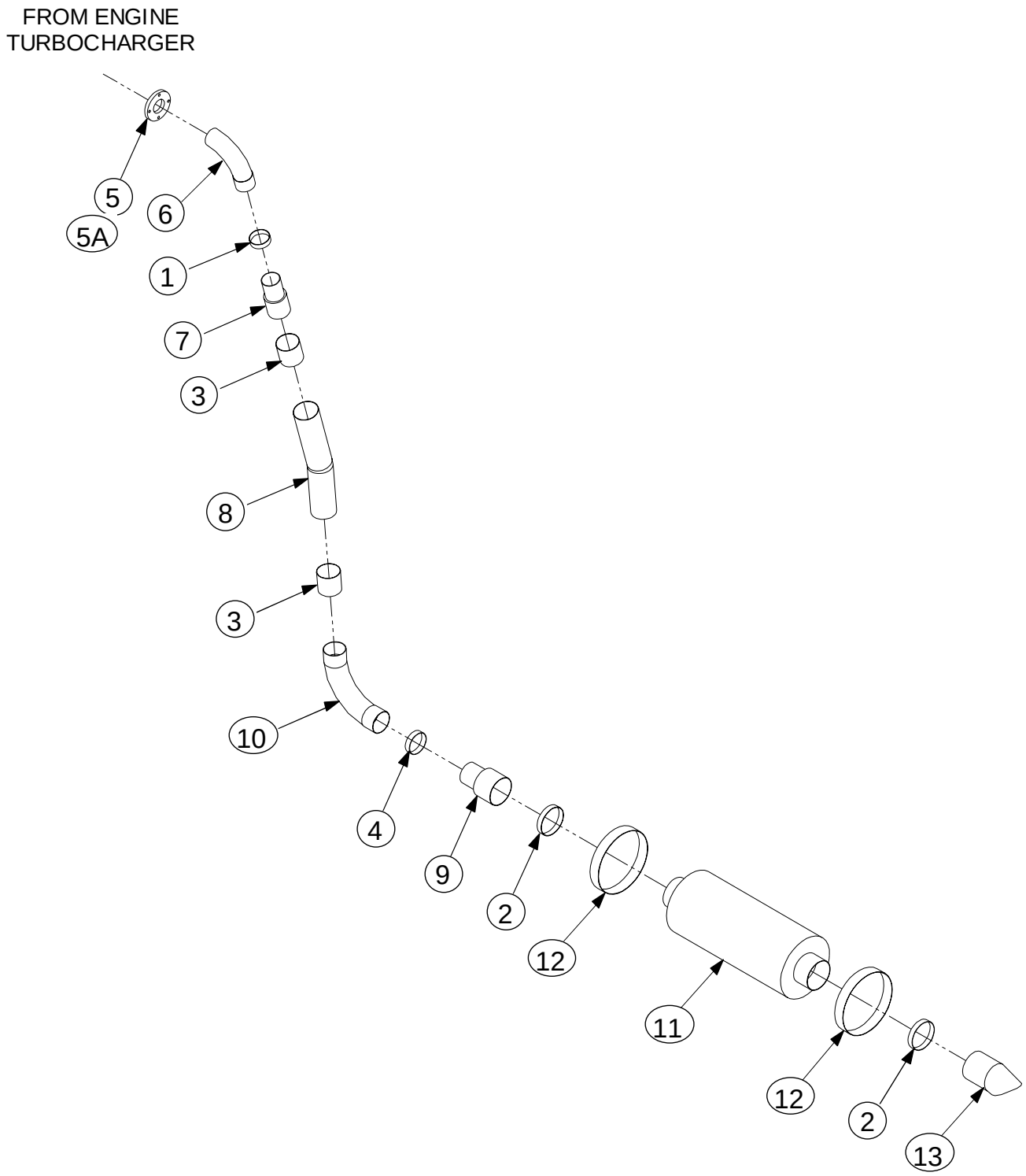
Item	Part No.	Description	Qty. Req.
1	107402	ENGINE, DEUTZ, 130HP	1.00
2	107411	OIL FILTER ELEMENT	1.00
3	107415	FUEL FILTER ELEMENT	1.00
4	107416	FAN BELT	1.00
5	107417	ALTERNATOR	1.00
6	107418	FAN BLADE	1.00
7	107419	STARTER	1.00
8	107420	STARTER SOLENOID	1.00
9	107421	WATER PUMP	1.00
10	107423	ENGINE ISOLATOR MOUNT	4.00
11	107424	ISOLATOR MOUNT WASHER	4.00
12	107425	ENGINE MOUNT, REAR	2.00
13	107426	ENGINE MOUNT, RIGHT FRONT	1.00
14	107427	ENGINE MOUNT, LEFT FRONT	1.00
15	618766	BALL JOINT	1.00
16	622402	THROTTLE CYLINDER	1.00
17	622412	THROTTLE CYLINDER BRACKET	1.00
18	622419	ENGINE SKID W/M	1.00
19	622420	FLYWHEEL COUPLING ASSEMBLY	1.00
20	622421	HYDRAULIC TANK BRACKET, RH	1.00
21	622421-1	HYDRAULIC TANK BRACKET, LH	1.00
22	622425	THROTTLE LEVER	1.00
NS	107438	RACOR FILTER, PRIMER	1.00
NS	107438-1	FILTER ELEMENT	1.00


20
4
14
15
14
2
11
14
19
14
18
TURBO
21
14
16
14
INTAKE
MANIFOLD
13
14
17
14
12
14
23
22
8
7
8
5
8
9
1
THERMOSTAT
HOUSING
8
8
7
8
6
8
10
8
WATER
PUMP
RADIATOR
MOUNTS
3

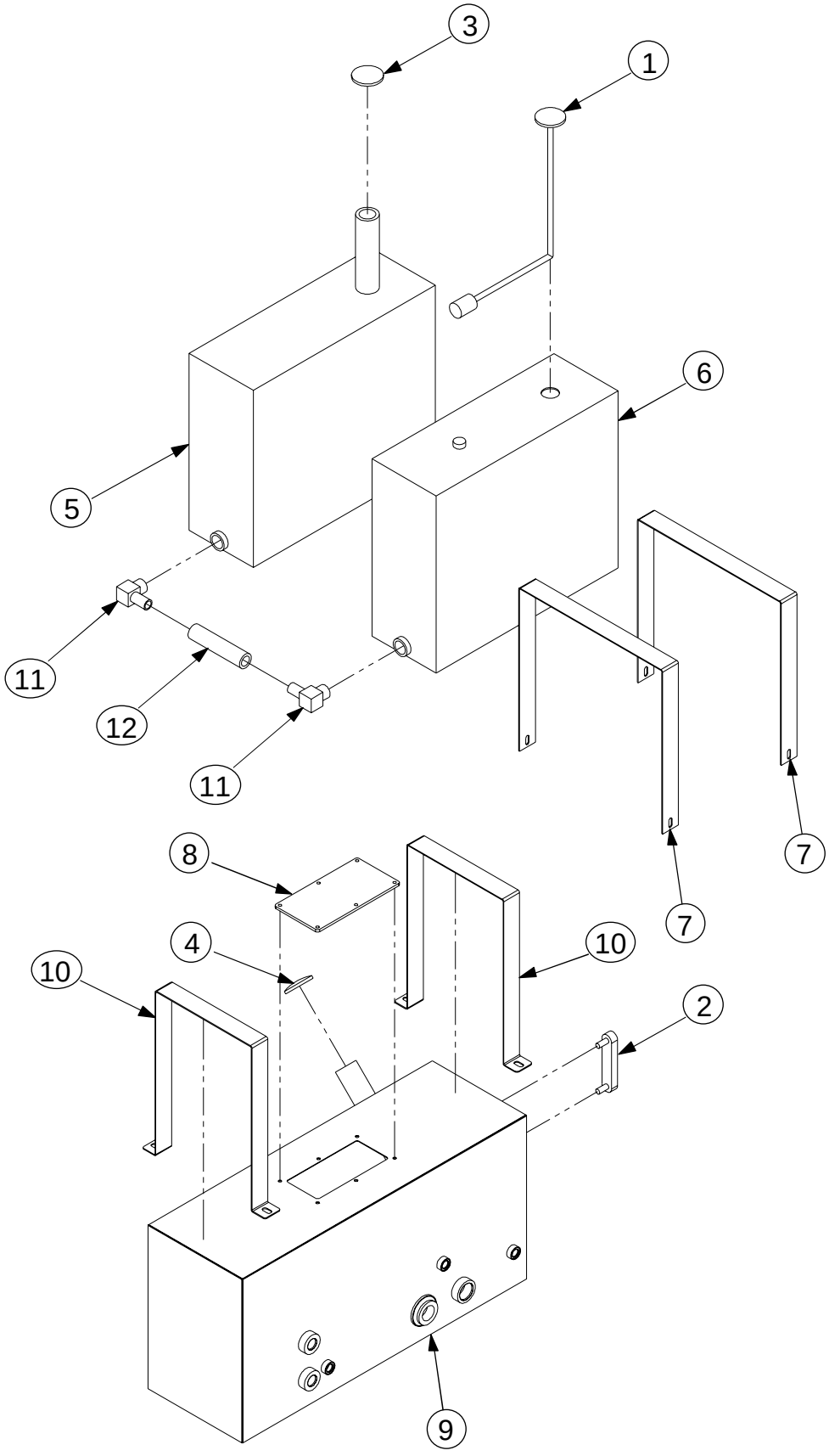
Item	Part No.	Description	Qty. Req.
1	622405-01	RADIATOR COOLANT CORE	1.00
2	622405-02	RADIATOR CAC CORE	1.00
3	622405-03	RADIATOR SHROUD	1.00
4	622405-04	RADIATOR TOP TANK	1.00
5	622405-05	TUBE, 2.00 X 10.00, 45°	1.00
6	622405-06	TUBE, 2.00 X 18.00, 60°	1.00
7	622405-07	HOSE, 2.00 X 4.00	2.00
8	622405-08	HOSE CLAMP, 1.75-2.62	8.00
9	622405-09	HOSE, 2.00 X 8.00, 90°	1.00
10	622405-10	HOSE, 2.00 X 6.00, 90°	1.00
11	622405-11	UPPER TUBE, CAC	1.00
12	622405-12	TUBE, 2.75 X 18.00, 90°	1.00
13	622405-13	LOWER TUBE, CAC	1.00
14	622405-14	HOSE CLAMP, 2.75-3.62	8.00
15	622405-15	HOSE, 3.00 X 6.00, BLUE	1.00
16	622405-16	HOSE, 3.00 X 6.00, ORANGE	1.00
17	622405-17	HOSE, 2.75 X 3.75, ORANGE	1.00
18	622405-18	HOSE, TURBO, 90°	1.00
19	622405-19	HOSE, INTAKE MANIFOLD	1.00
20	622405-20	RADIATOR CAP	1.00
21	108973	OIL COOLER	1.00
22	622231	OIL COOLER BRACKET, RH	1.00
23	622231-1	OIL COOLER BRACKET, LH	1.00
NS	107423-1	RADIATOR ISOLATOR MOUNT	4.00


5
6
2
15
4
7
10
16
13
9
11
14
8
12
3
3
1
TO ENGINE
INTAKE

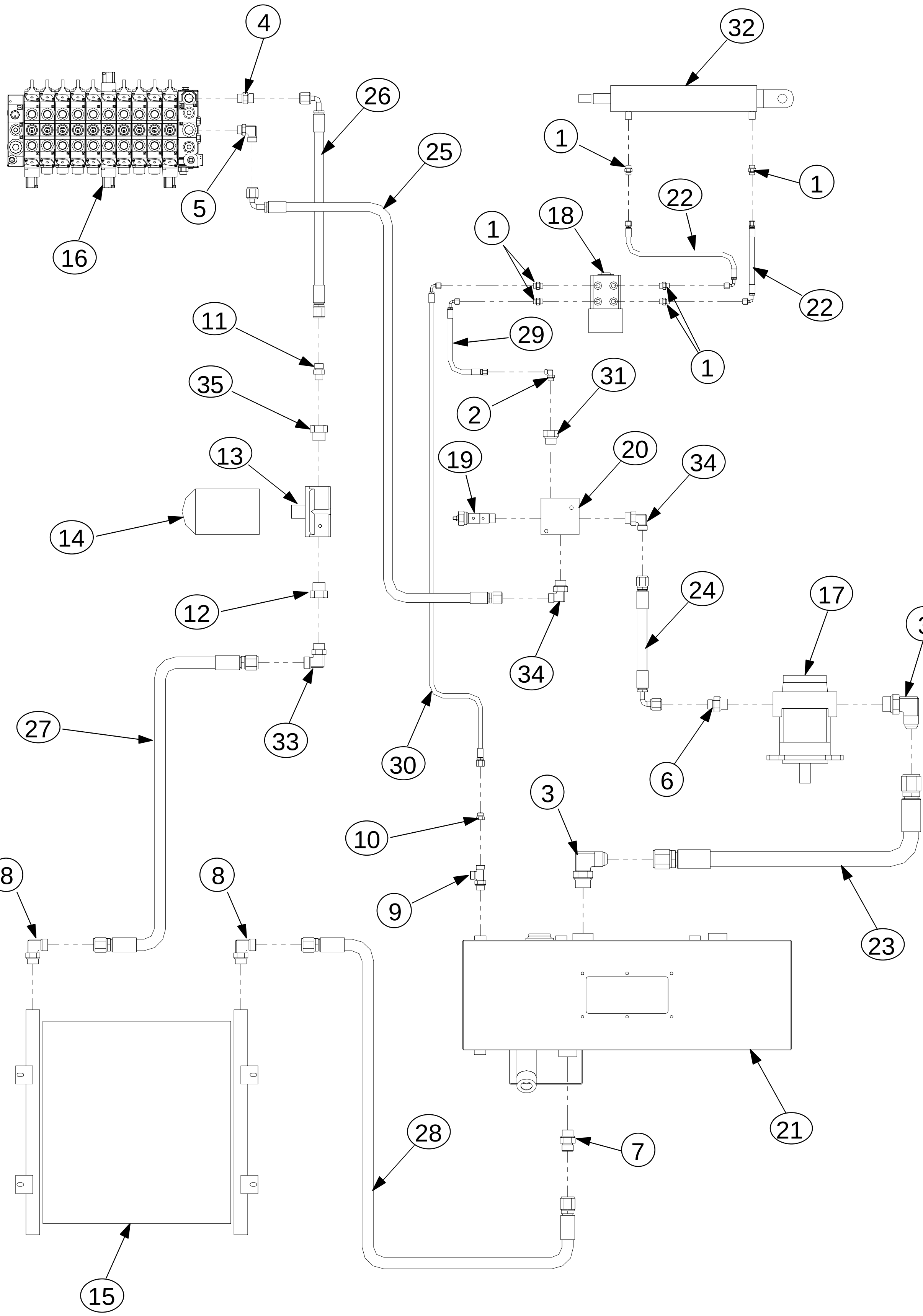
Item	Part No.	Description	Qty. Req.
1	108358	COBRA HEAD ADAPTER	1.00
2	622404-11	INSERT, 5.50 X 4.50	1.00
3	108638	T-BOLT CLAMP, 3.00	2.00
4	108639	T-BOLT CLAMP, 6.00	1.00
5	622404-1	PRECLEANER	1.00
6	622404-2	BELLOWS, 5.50	1.00
7	622404-3	REDUCER, 4.50 X 4.00	1.00
8	622404-4	AIR CLEANER W/ELEMENTS	1.00
9	622404-5	MOUNTING BAND	1.00
10	622404-6	RESTRICTION INDICATOR	1.00
11	622404-7	RUBBER ELBOW, 4.00 X 3.00	1.00
12	622404-8	ELBOW, 90°, 3.00	1.00
13	622404-9	T-BOLT CLAMP, 4.00	1.00
14	622404-10	VACUATOR	1.00
15	107412	AIR FILTER ELEMENT, PRIMARY	1.00
16	107413	AIR FILTER ELEMENT, SECONDARY	1.00


FROM ENGINE
TURBOCHARGER
5
5A
6
1
7
3
8
3
10
4
9
2
12
11
12
2
13

Item	Part No.	Description	Qty. Req.
1	055100	CLAMP, 2.50 DIA	1.00
2	055410	CLAMP, 4.00 DIA	2.00
3	104614	BAND CLAMP, 3.00 DIA	2.00
4	104652	CLAMP, 3.00 DIA	1.00
5	622403-1	TURBO FLANGE	1.00
5A	622403-10	TURBO FLANGE GASKET	1.00
6	622403-2	ELBOW, 90°, 2.50 DIA	1.00
7	622403-3	REDUCER, 2.50 X 3.00	1.00
8	622403-4	FLEX PIPE, 3.00 X 18.00	1.00
9	622403-5	REDUCER, 3.00 X 4.00	1.00
10	622403-6	ELBOW, 90°, 3.00 DIA	1.00
11	622403-7	MUFFLER	1.00
12	622403-8	MOUNTING BAND	2.00
13	622403-9	ELBOW, 45°, 4.00 DIA	1.00

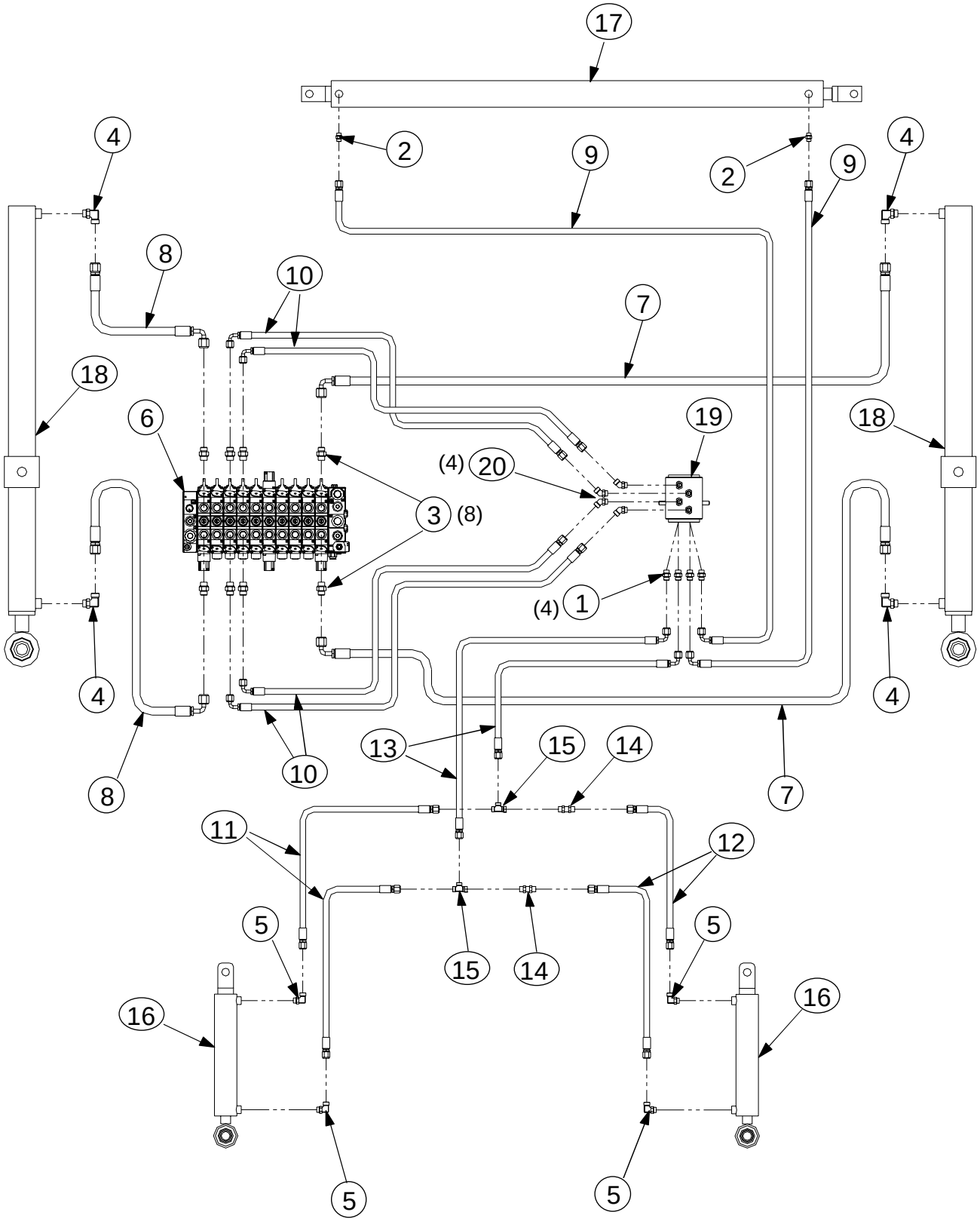

3
1
6
5
11
12
11
7
7
8
4
10
10
2
9

Item	Part No.	Description	Qty. Req.
1	104665	FUEL SENDING UNIT	1.00
2	108570	SIGHT GAUGE	1.00
3	108579	FUEL TANK CAP	1.00
4	108852	HYDRAULIC TANK CAP	1.00
5	108952	FUEL TANK, RH	1.00
6	108953	FUEL TANK, LH	1.00
7	622852	FUEL TANK STRAP	2.00
8	108986	HYDRAULIC TANK COVER	1.00
9	622230	HYDRAULIC TANK W/M	1.00
10	622234	HYDRAULIC TANK STRAP	2.00
11	F1259-1	FITTING, 1.00 HOSE X 1.00 NPT, 90°	2.00
12	N/A	FUEL HOSE, 1.00 ID X 6.00 IN	1.00

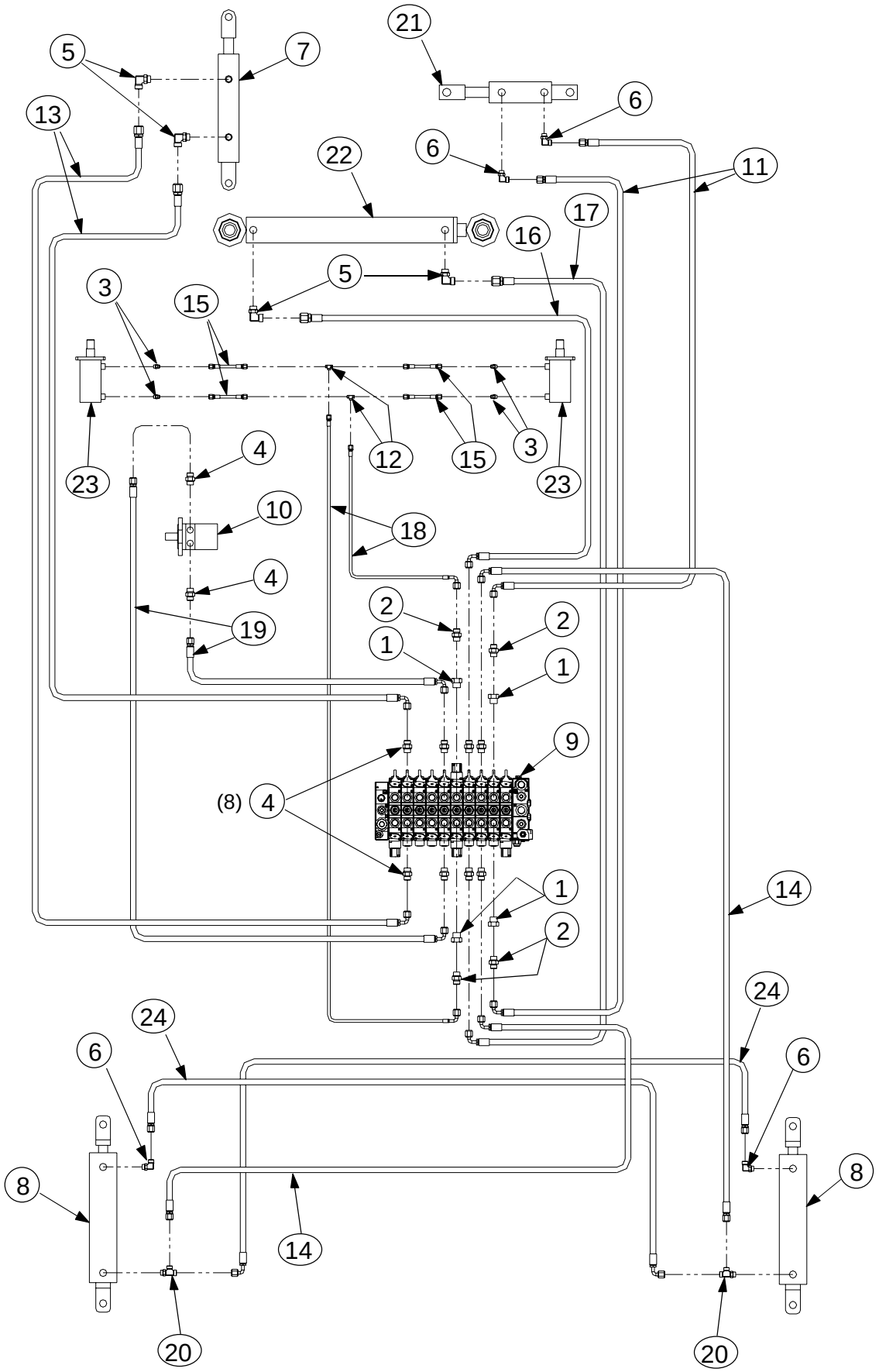

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35

Item	Part No.	Description	Qty. Req.
1	108394	FITTING, FF-1231-6-8	6.00
2	108395	FITTING, FF-1238-6-8	1.00
3	108401	FITTING, FF-1238-20-20	2.00
4	108402	FITTING, FF-1231-12-12	1.00
5	108411	FITTING, FF-1238-12-12	1.00
6	108412	FITTING, FF-1231-12-16	1.00
7	108415	FITTING, FF-1231-16-16	1.00
8	108430	FITTING, FF-1238-16-16	2.00
9	108434	TEE, FF-1266-8-8-8	1.00
10	108435	FITTING, FF-3018-6-8	1.00
11	108439	FITTING, FF-1202-12-12	1.00
12	108440	FITTING, 1250-20-16	1.00
13	108700	RETURN FILTER HEAD, SHORT	1.00
13a	107215	RETURN FILTER HEAD, LONG	1.00
14	108701	RETURN FILTER ELEMENT, SHORT	1.00
14a	107216	RETURN FILTER ELEMENT, LONG	1.00
15	108973	OIL COOLER	1.00
16	622208	HYDRAULIC VALVE ASSEMBLY	1.00
17	622217	HYDRAULIC GEAR PUMP	1.00
18	622218	STEERING ORBITROL	1.00
19	622222	PRIORITY FLOW CARTRIDGE.	1.00
20	622223	CARTRIDGE VALVE BODY	1.00
21	622230	HYDRAULIC TANK	1.00
22	622235	HOSE, 06 X 186.00	2.00
23	622250	HOSE, 20 X 38.50	1.00
24	622251	HOSE, 12 X 16.25	1.00
25	622252	HOSE, 12 X 71.00	1.00
26	622253	HOSE, 12 X 72.00	1.00
27	622254	HOSE, 16 X 58.00	1.00
28	622255	HOSE, 16 X 41.50	1.00
29	622257	HOSE, 06 X 136.00	1.00
30	622258	HOSE, 06 X 143.00	1.00
31	622294	FITTING, 1270-16-8	1.00
32	622506	STEERING CYLINDER	1.00
33	F1343	FITTING, FF-1208-16-16	1.00
34	F1501	FITTING, FF-1238-12-16	2.00
35	Z0532	FITTING, 1250-20-12	1.00
NS	622203-1	FILTER ELEMENT, HYSTAT PUMPS	2.00

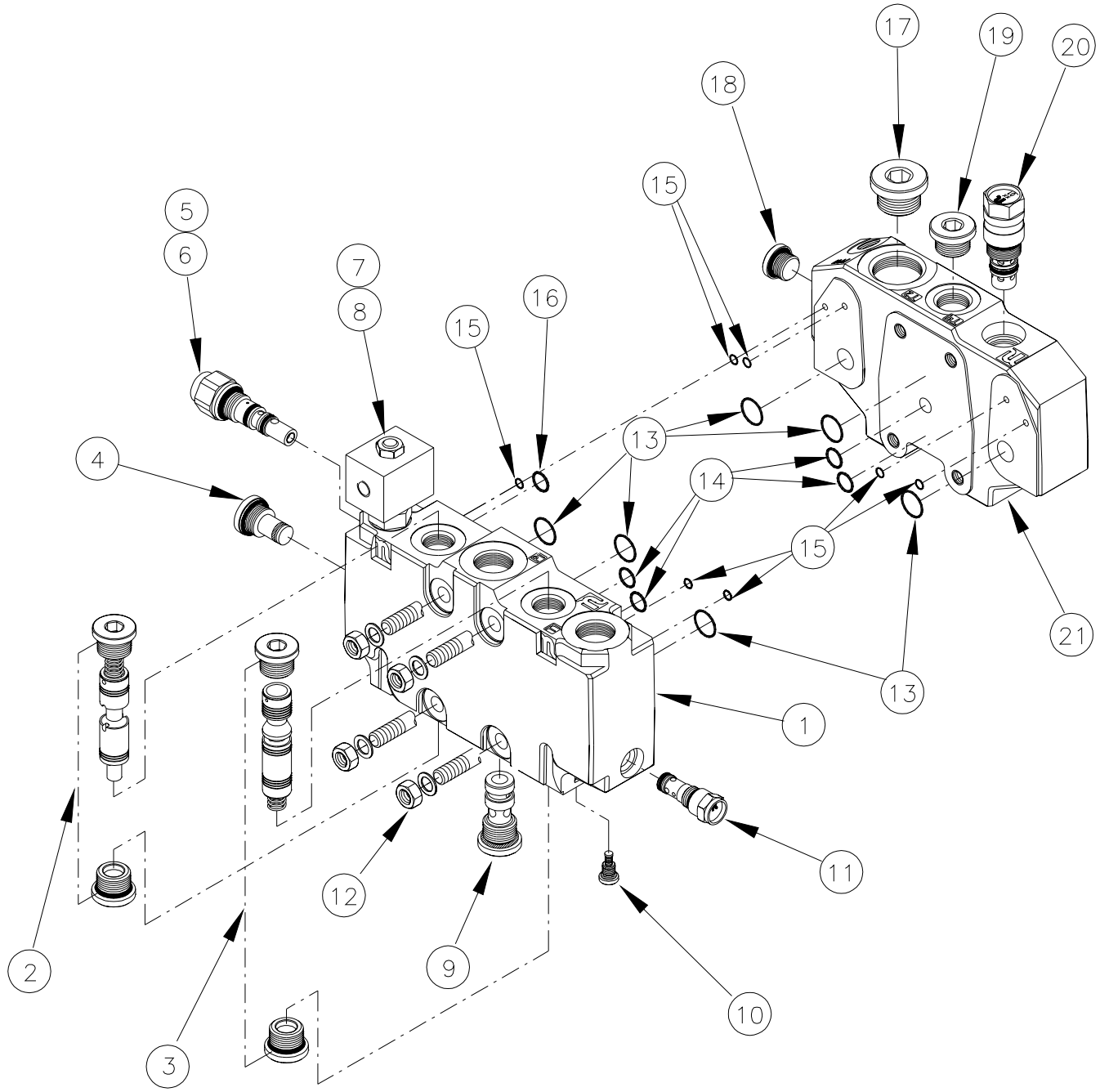
SEE DRIVE SYSTEM HYDRAULICS, PG 67


17
2
2
9
9
4
4
8
10
7
18
18
6
19
(4) 20
3 (8)
(4) 1
4
4
8
10
13
15
14
7
11
12
5
5
15
14
16
16
5
5

Item	Part No.	Description	Qty. Req.
1	108394	FITTING, FF-1231-6-8	4.00
2	108403	FITTING, FF-1231-6-6	2.00
3	108416	FITTING, FF-1231-8-10	8.00
4	108443	FITTING, FF-1238-8-8	4.00
5	108794	FITTING, FF-1238-6-6	4.00
6	622208	HYDRAULIC VALVE ASSEMBLY	1.00
7	622271	HOSE, 08 X 145.00	2.00
8	622272	HOSE, 08 X 122.00	2.00
9	622278	HOSE, 06 X 76.00	2.00
10	622281	HOSE, 08 X 250.00	4.00
11	622283	HOSE, 06 X 50.00	2.00
12	622284	HOSE, 06 X 39.00	2.00
13	622285	HOSE, 06 X 27.00	2.00
14	622293	BULKHEAD FITTING, FF-1260-LN-6-6	2.00
15	622297	TEE, FF-1248-6-6-6	2.00
16	622607	HYDRAULIC CYL., MOLDBOARD TILT	2.00
17	622608	HYDRAULIC CYL., MOLDBOARD SHIFT	1.00
18	622610	HYDRAULIC CYL., MOLDBOARD LIFT	2.00
19	622614	HYDRAULIC SWIVEL COUPLING, 4-PORT	1.00
20	F1505	FITTING, FF-1240-8-8	4.00

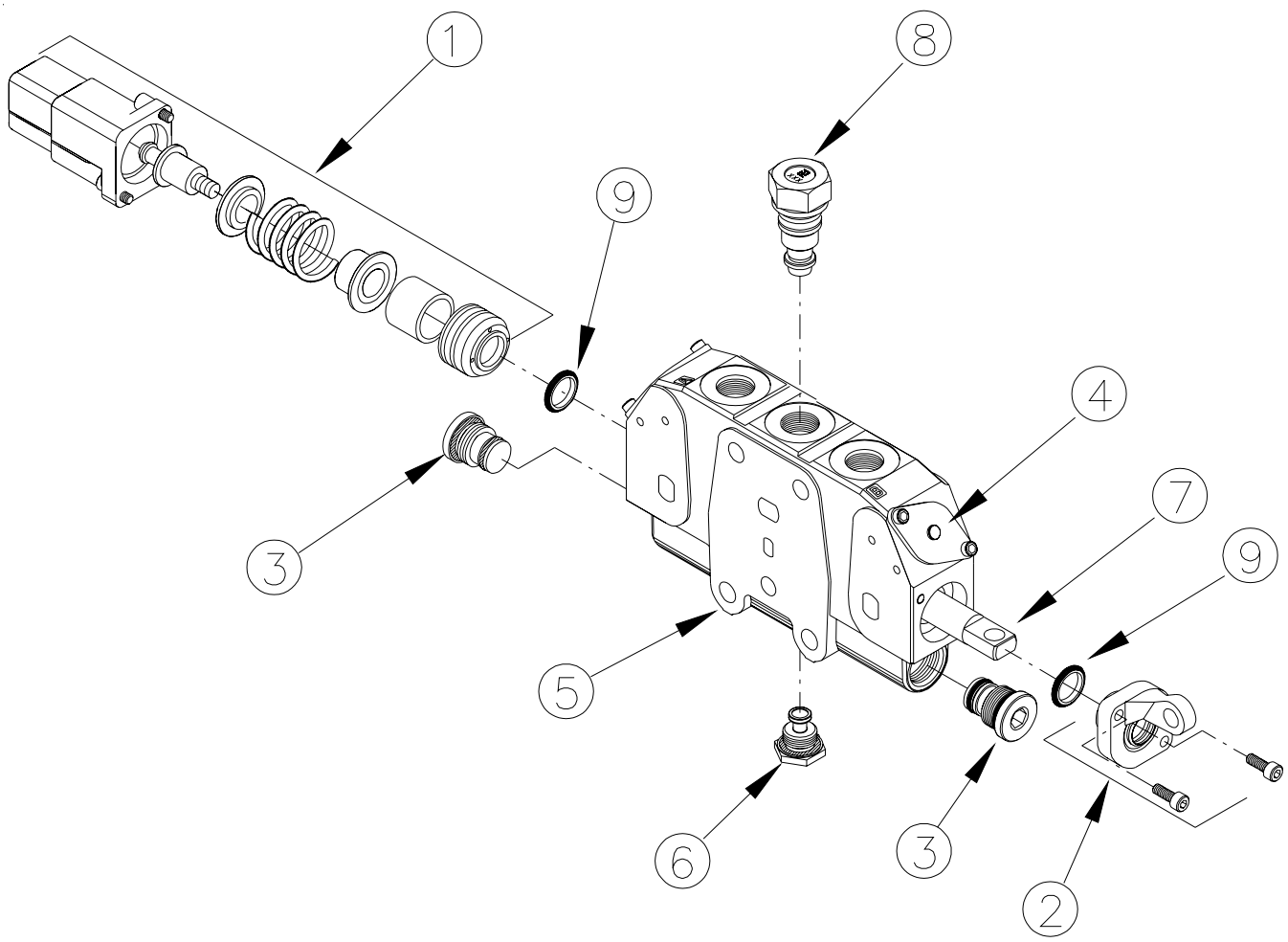

21
5
7
6
13
6
22
11
17
16
5
3
15
12
15
3
23
23
4
10
18
4
19
2
2
1
1
9
(8) 4
1
2
14
24
24
6
6
8
8
14
20
20

Item	Part No.	Description	Qty. Req.
1	108336	FITTING, 1270-10-8	4.00
2	108394	FITTING, FF-1231-6-8	4.00
3	108409	FITTING, FF-1231-4-4	4.00
4	108416	FITTING, FF-1231-8-10	10.00
5	108443	FITTING, FF-1238-8-8	4.00
6	108794	FITTING, FF-1238-6-6	4.00
7	274700	HYDRAULIC CYLINDER, SCARIFIER	1.00
8	622103	HYDRAULIC CYLINDER, ARTICULATION	2.00
9	622208	HYDRAULIC VALVE ASSEMBLY	1.00
10	622209	HYDRAULIC MOTOR, BLADE ANGLE	1.00
11	622235	HOSE, 06 X 186.00	2.00
12	622238	TEE, FF-1220-4-4-4	2.00
13	622273	HOSE, 08 X 209.00	2.00
14	622279	HOSE, 06 X 56.00	2.00
15	622282	HOSE, 04 X 40.00	4.00
16	622286	HOSE, 08 X 252.00	1.00
17	622287	HOSE, 08 X 245.00	1.00
18	622288	HOSE, 04 X 99.00	2.00
19	622289	HOSE, 08 X 222.00	2.00
20	622295	TEE, FF-1266-6-6-6	2.00
21	622508	HYDRAULIC CYLINDER, WHEEL LEAN	1.00
22	622606	HYDRAULIC CYLINDER, CIRCLE SHIFT	1.00
23	622609	HYDRAULIC CYLINDER, LOCK PIN	2.00
24	623212	HOSE, 06 X 38.00	2.00



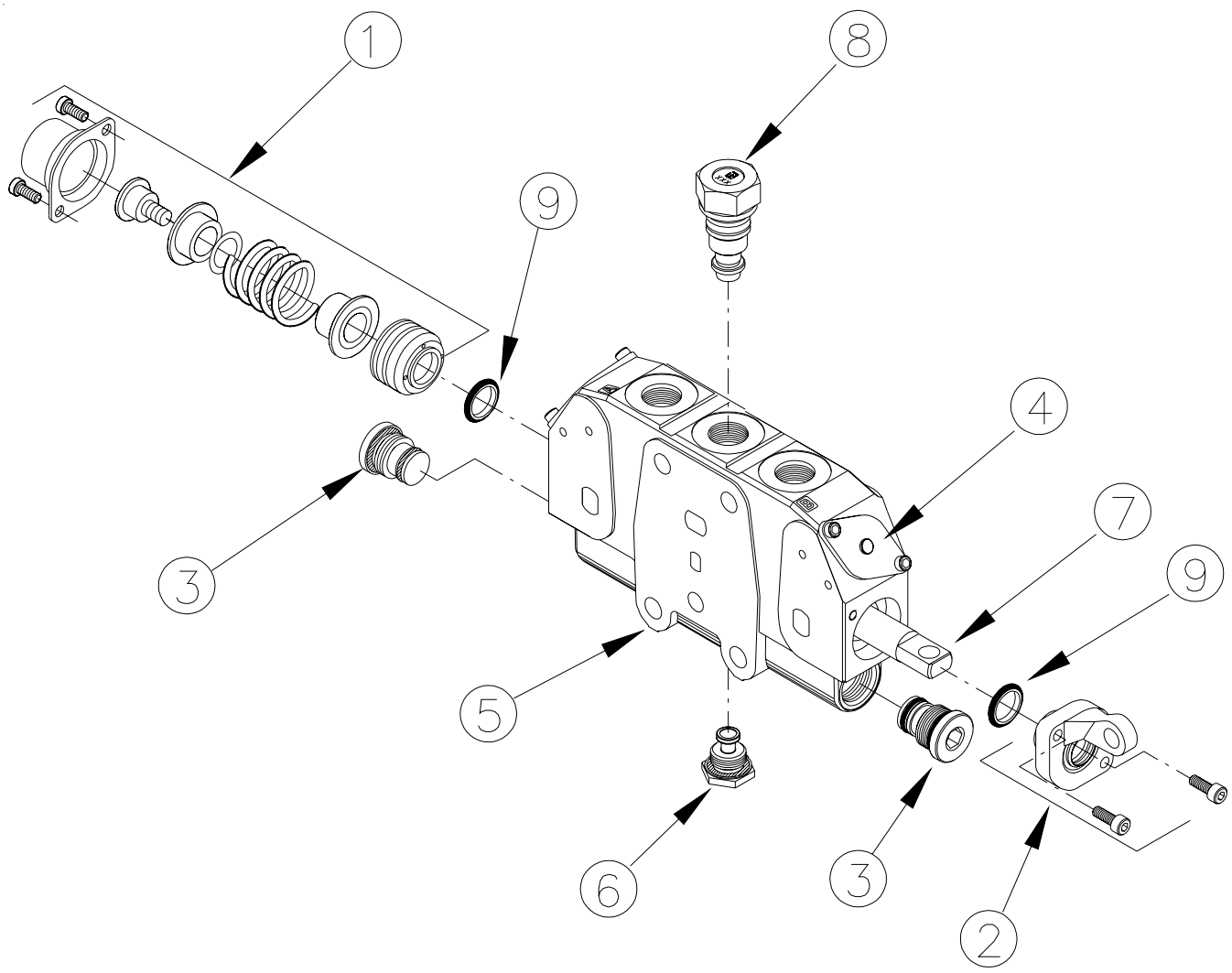
INLET & OUTLET SECTIONS

Item	Part No.	Description	Qty. Req.
1	622208-01	INLET BODY	1.00
2	622208-02	LS-PUMP UNIT	1.00
3	622208-03	HIGH/LOW FLOW UNIT	1.00
4	622208-04	CAVITY PLUG	1.00
5	622208-05	PRESSURE REDUCING VALVE	1.00
6	622208-06	SPRING	1.00
7	622208-07	HIGH/LOW FLOW CARTRIDGE	1.00
8	622208-08	COIL, HIGH/LOW CARTRIDGE	1.00
9	622208-09	METERING ORIFICE CARTRIDGE	1.00
10	622208-10	DAMP/CHECK CARTRIDGE	1.00
11	622208-11	RELIEF VALVE	1.00
12	622208-12	TIE ROD KIT	1.00
13	622208-13	O-RING	33.00
14	622208-14	O-RING	22.00
15	622208-15	O-RING	43.00
16	622208-16	O-RING	1.00
17	622208-36	PLUG	1.00
18	622208-37	PLUG	1.00
19	622208-38	PLUG	1.00
20	622208-39	PRESSURE BACKUP VALVE	1.00
21	622208-40	OUTLET SECTION	1.00



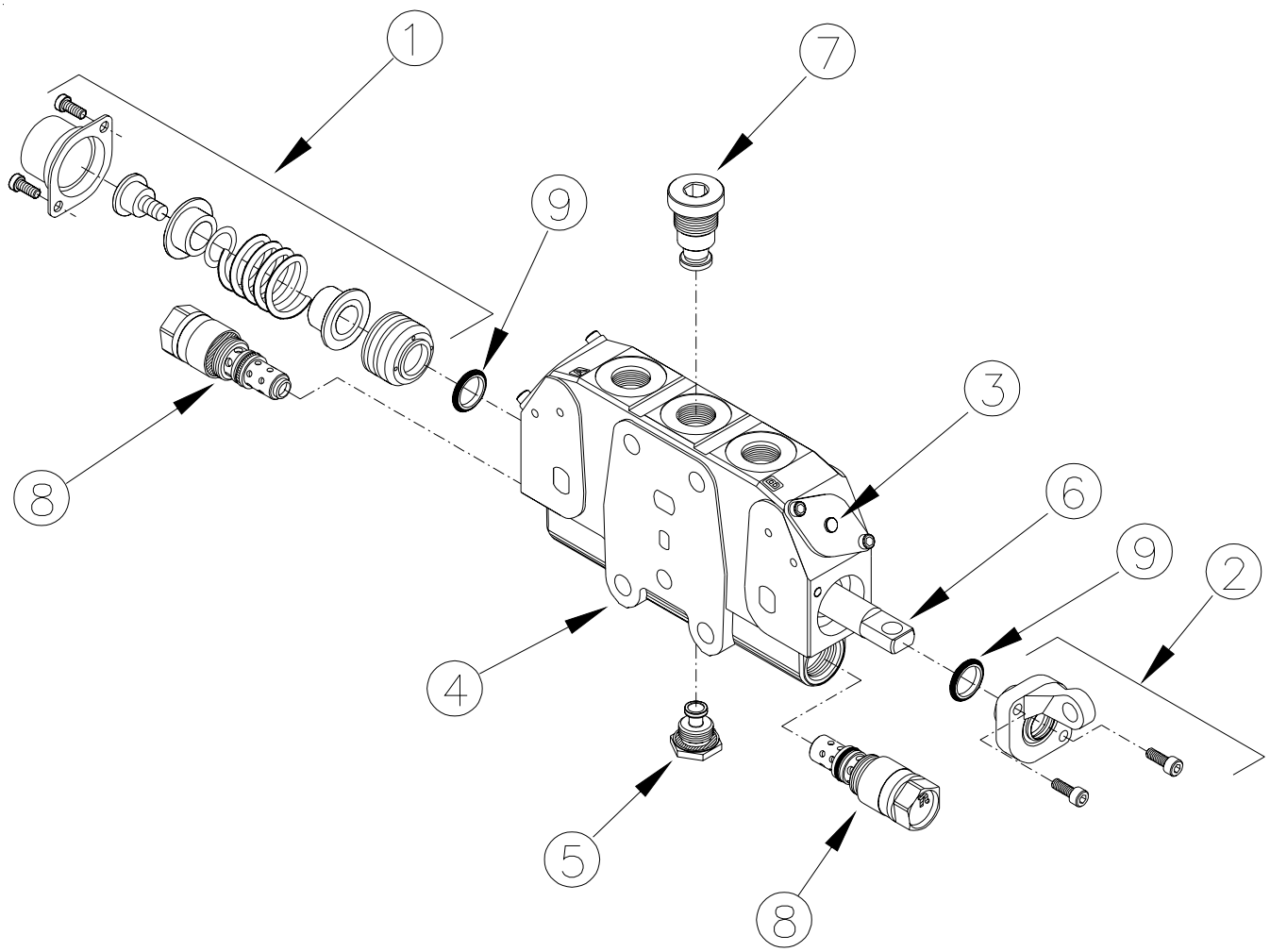
FLOAT SECTIONS - SECTIONS 1 & 10 FROM INLET SECTION
BLADE LIFT RH & LH

Item	Part No.	Description	Qty. Req.
1	622208-17	FLOAT MANUAL ACTUATOR	2.00
2	622208-19	LEVER BRACKET	2.00
3	622208-20	CAVITY PLUG	2.00
4	622208-21	CAVITY PLUG	2.00
5	622208-22	WORKING SECTION BODY	2.00
6	622208-23	FIXED LOAD-CHECK, LOW FLOW	2.00
7	622208-24	FLOAT SPOOL, 7 GPM	2.00
8	622208-28	ADJ LOAD-CHECK, HIGH FLOW	2.00
9	622208-35	SPOOL SEAL	4.00



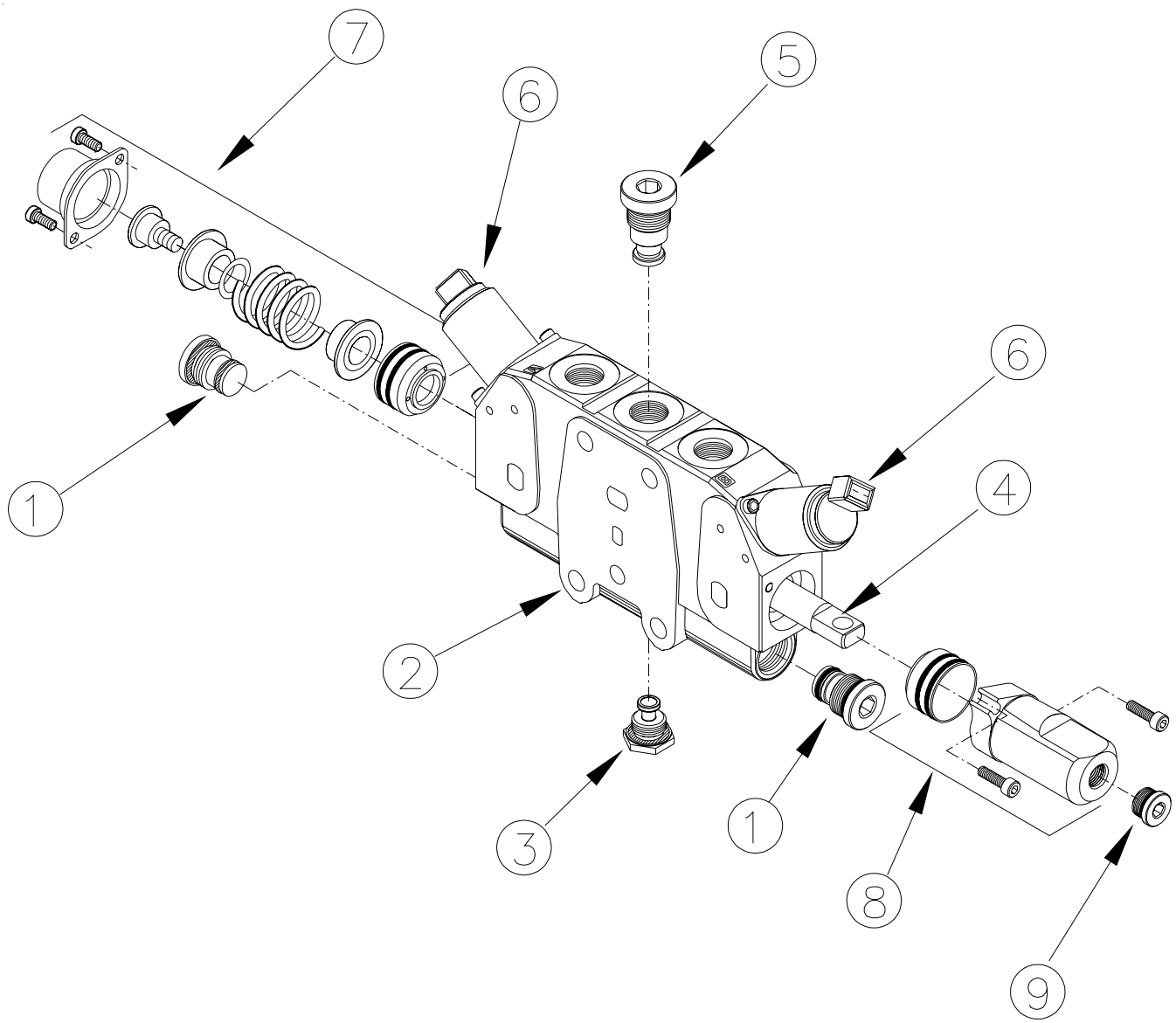
CYLINDER SECTIONS - SECTIONS 2, 3, 7, 8 & 9 FROM INLET SECTION
WHEEL LEAN, ARTICULATION, BLADE TILT, SIDE SHIFT, SCARIFIER

Item	Part No.	Description	Qty. Req.
1	622208-18	SPRING CENTER MANUAL ACTUATOR	5.00
2	622208-19	LEVER BRACKET	5.00
3	622208-20	CAVITY PLUG	10.00
4	622208-21	CAVITY PLUG	10.00
5	622208-22	WORKING SECTION BODY	5.00
6	622208-23	FIXED LOAD-CHECK, LOW FLOW	5.00
7	622208-25	CYLINDER SPOOL, 7 GPM	5.00
8	622208-28	ADJ LOAD-CHECK, HIGH FLOW	5.00
9	622208-35	SPOOL SEAL	10.00



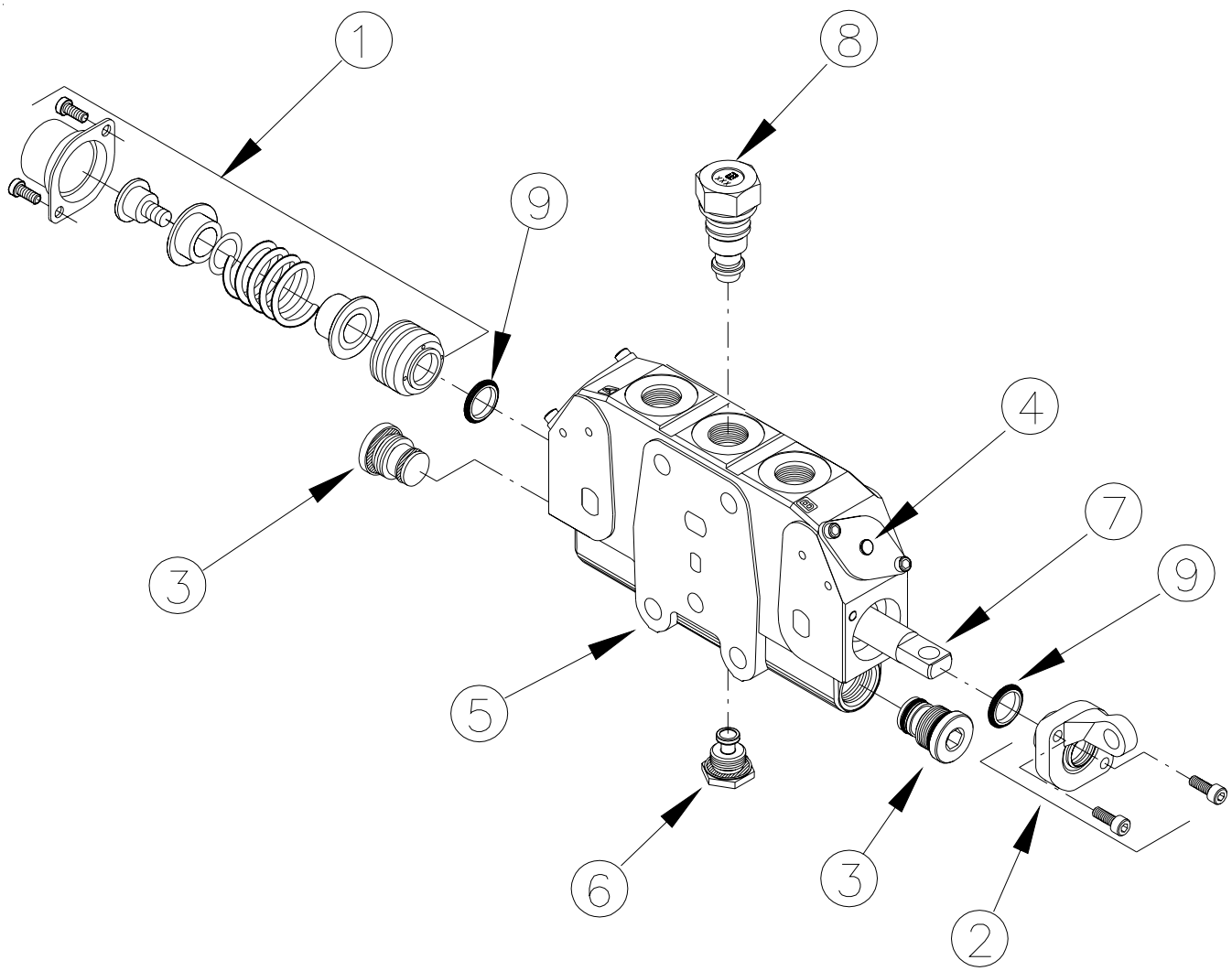
CYLINDER SECTION - SECTION 4 FROM INLET SECTION
CIRCLE SHIFT

Item	Part No.	Description	Qty. Req.
1	622208-18	SPRING CENTER MANUAL ACTUATOR	1.00
2	622208-19	LEVER BRACKET	1.00
3	622208-21	CAVITY PLUG	2.00
4	622208-22	WORKING SECTION BODY	1.00
5	622208-23	FIXED LOAD-CHECK, LOW FLOW	1.00
6	622208-26	CYLINDER SPOOL, 23 GPM	1.00
7	622208-29	FIXED LOAD-CHECK, HIGH FLOW	1.00
8	622208-30	PORT RELIEF VALVE	2.00
9	622208-35	SPOOL SEAL	2.00



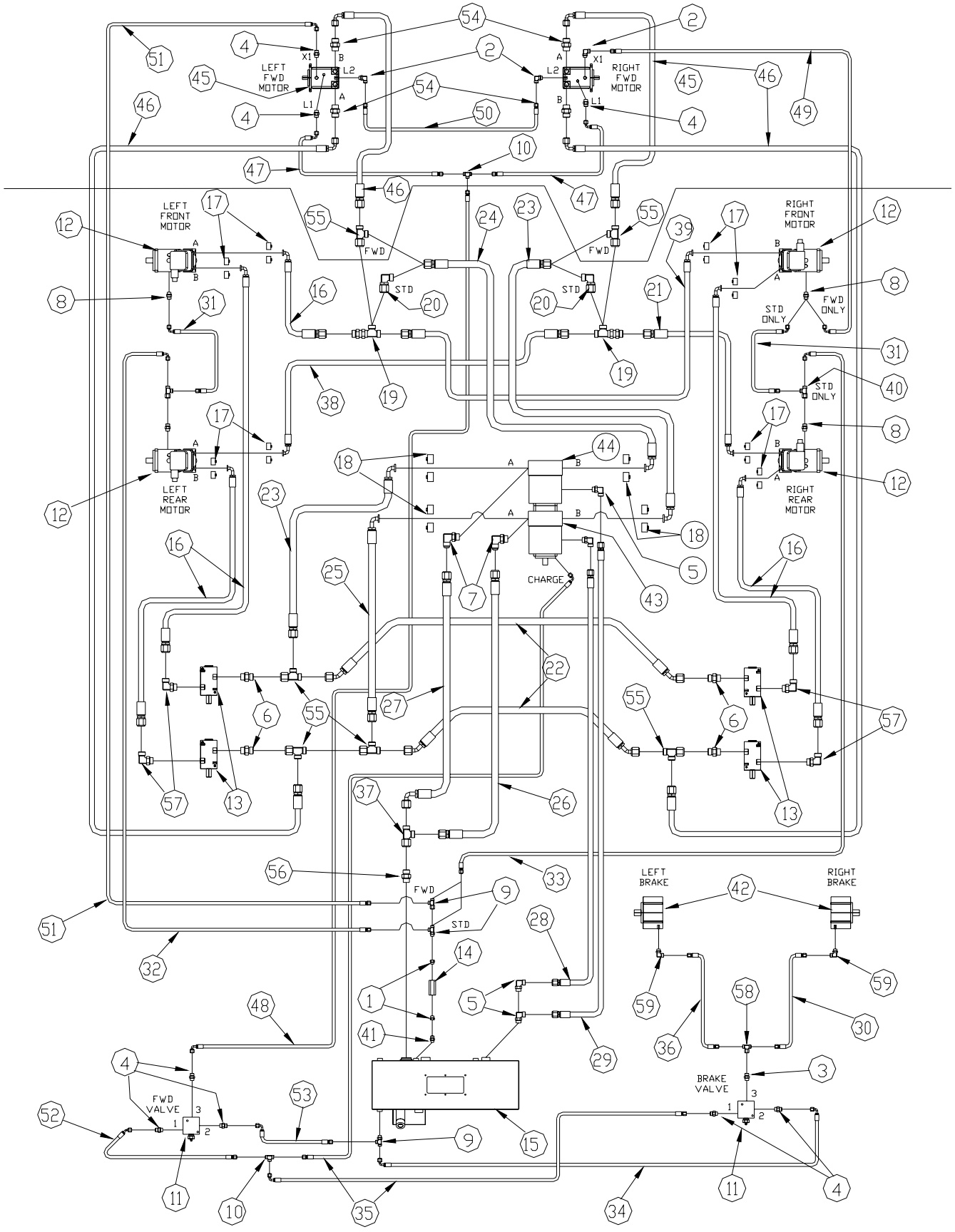
SOLENOID SECTION - SECTION 5 FROM INLET SECTION
LOCK PINS

Item	Part No.	Description	Qty. Req.
1	622208-20	CAVITY PLUG	2.00
2	622208-22	WORKING SECTION BODY	1.00
3	622208-23	FIXED LOAD-CHECK, LOW FLOW	1.00
4	622208-26	CYLINDER SPOOL, 23 GPM	1.00
5	622208-29	FIXED LOAD-CHECK, HIGH FLOW	1.00
6	622208-31	SOLENOID, 12 VDC	2.00
7	622208-32	ELEC-HYD PROPORTIONAL ACTUATOR	1.00
8	622208-33	HYD PROPORTIONAL ACTUATOR	1.00
9	622208-34	PLUG, SAE #4	1.00



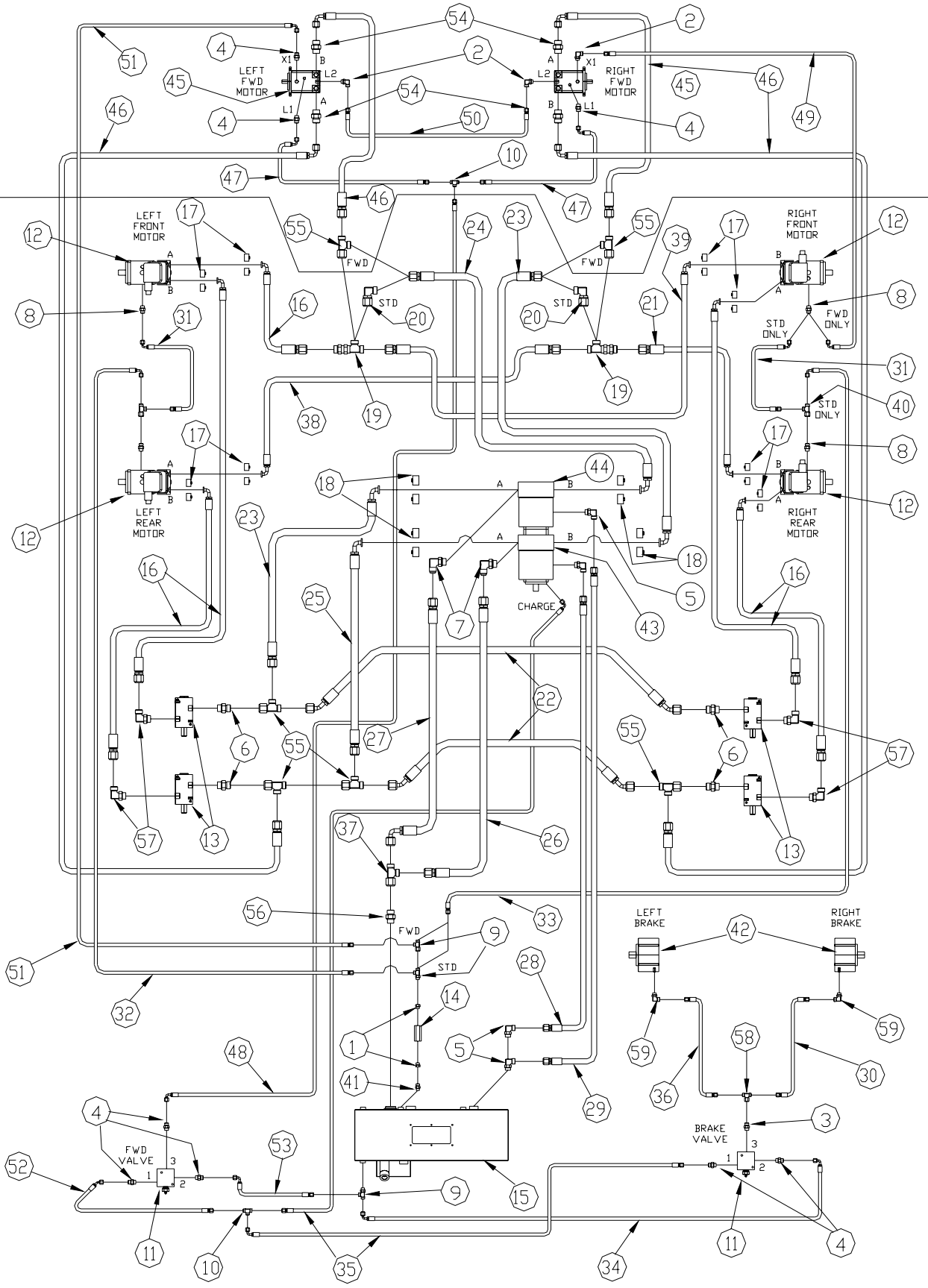
MOTOR SECTION - SECTION 6 FROM INLET SECTION
BLADE ANGLE

Item	Part No.	Description	Qty. Req.
1	622208-18	SPRING CENTER MANUAL ACTUATOR	1.00
2	622208-19	LEVER BRACKET	1.00
3	622208-20	CAVITY PLUG	2.00
4	622208-21	CAVITY PLUG	2.00
5	622208-22	WORKING SECTION BODY	1.00
6	622208-23	FIXED LOAD-CHECK, LOW FLOW	1.00
7	622208-27	MOTOR SPOOL, 23 GPM	1.00
8	622208-28	ADJ LOAD-CHECK, HIGH FLOW	1.00
9	622208-35	SPOOL SEAL	2.00


LEFT FWD MOTOR
RIGHT FWD MOTOR
LEFT FRONT MOTOR
RIGHT FRONT MOTOR
LEFT REAR MOTOR
RIGHT REAR MOTOR
FWD
STD
STD ONLY
FWD ONLY
CHARGE
LEFT BRAKE
RIGHT BRAKE
BRAKE VALVE
FWD VALVE

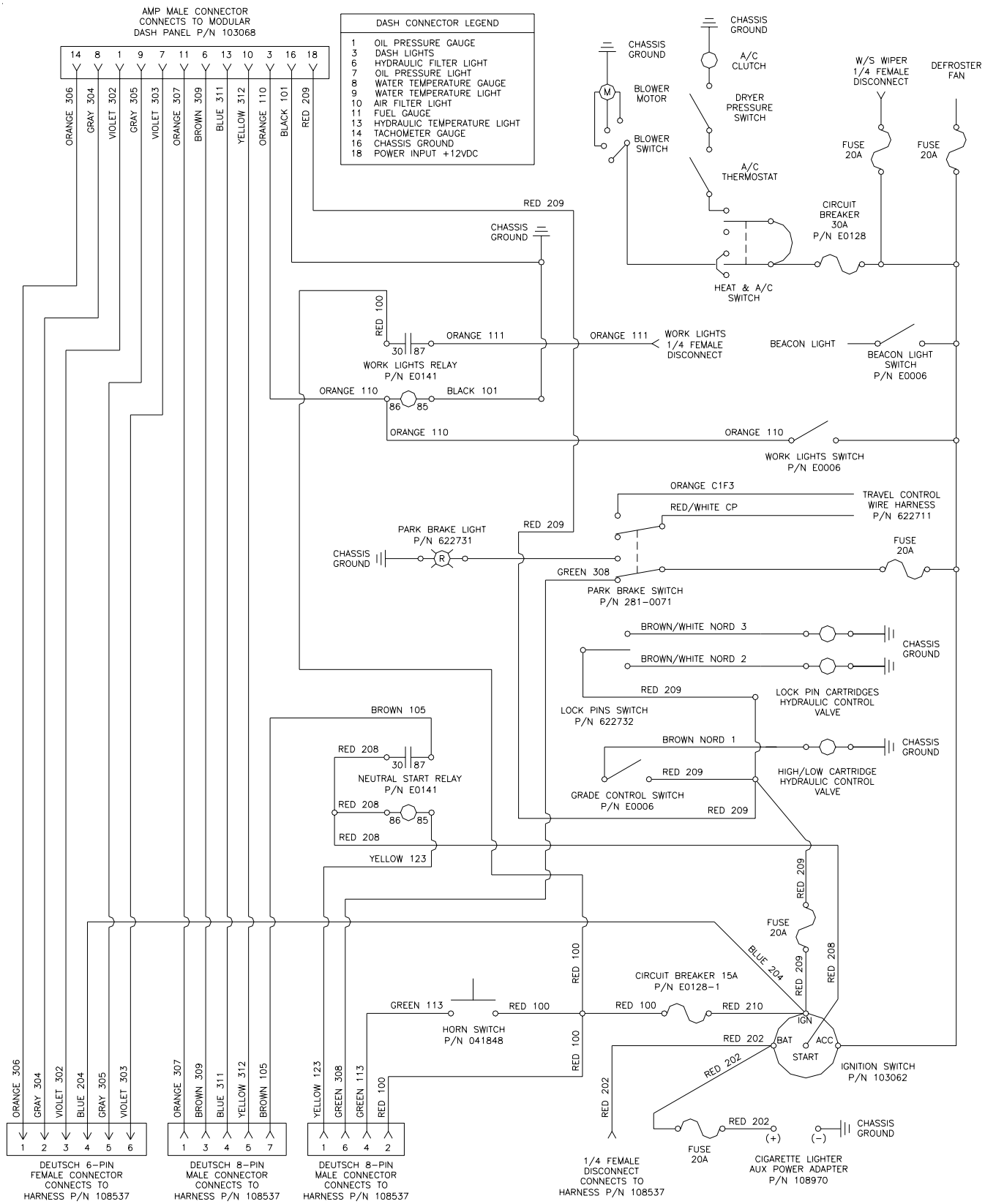
Item	Part No.	Description	Qty. Req.
1	108336	FITTING, 1270-10-8	2.00
2	108394	FITTING, FF-1231-6-8	3.00
3	108403	FITTING, FF-1231-6-6	1.00
4	108410	FITTING, FF-1231-4-6	8.00
5	108411	FITTING, FF-1238-12-12	4.00
6	108412	FITTING, FF-1231-12-16	4.00
7	108430	FITTING, FF-1238-16-16	2.00
8	108431	FITTING, FF-1231-12-8	4.00
9	108434	TEE, FF-1266-8-8-8	3.00
10	108448	TEE, FF-1220-4-4-4	2.00
11	108974	SOLENOID VALVE	2.00
12	622202	HYDR DRIVE MOTOR	4.00
13	622206	TRACTION VALVE BLOCK	4.00
14	622226	CHECK VALVE	1.00
15	622230	HYDRAULIC TANK	1.00
16	622240	HOSE, 12 X 57	5.00
17	622241	FLANGE KIT, 12PH	8.00
18	622242	FLANGE KIT, 16PH	4.00
19	622243	TEE, BH, FF-1284-LN-12-12	2.00
20	622244	FITTING, FF-1236-12-12	2.00
21	622245	HOSE, 12 X 66	1.00
22	622246	HOSE, 12 X 21	2.00
23	622248	HOSE, 12 X 24	2.00
24	622249	HOSE, 12 X 30	1.00
25	622259	HOSE, 12 X 26	1.00
26	622267	HOSE, 16 X 26	1.00
27	622268	HOSE, 16 X 31	1.00
28	622269	HOSE, 12 X 26	1.00
29	622270	HOSE, 12 X 27	1.00
30	622274	HOSE, 04 X 122	1.00

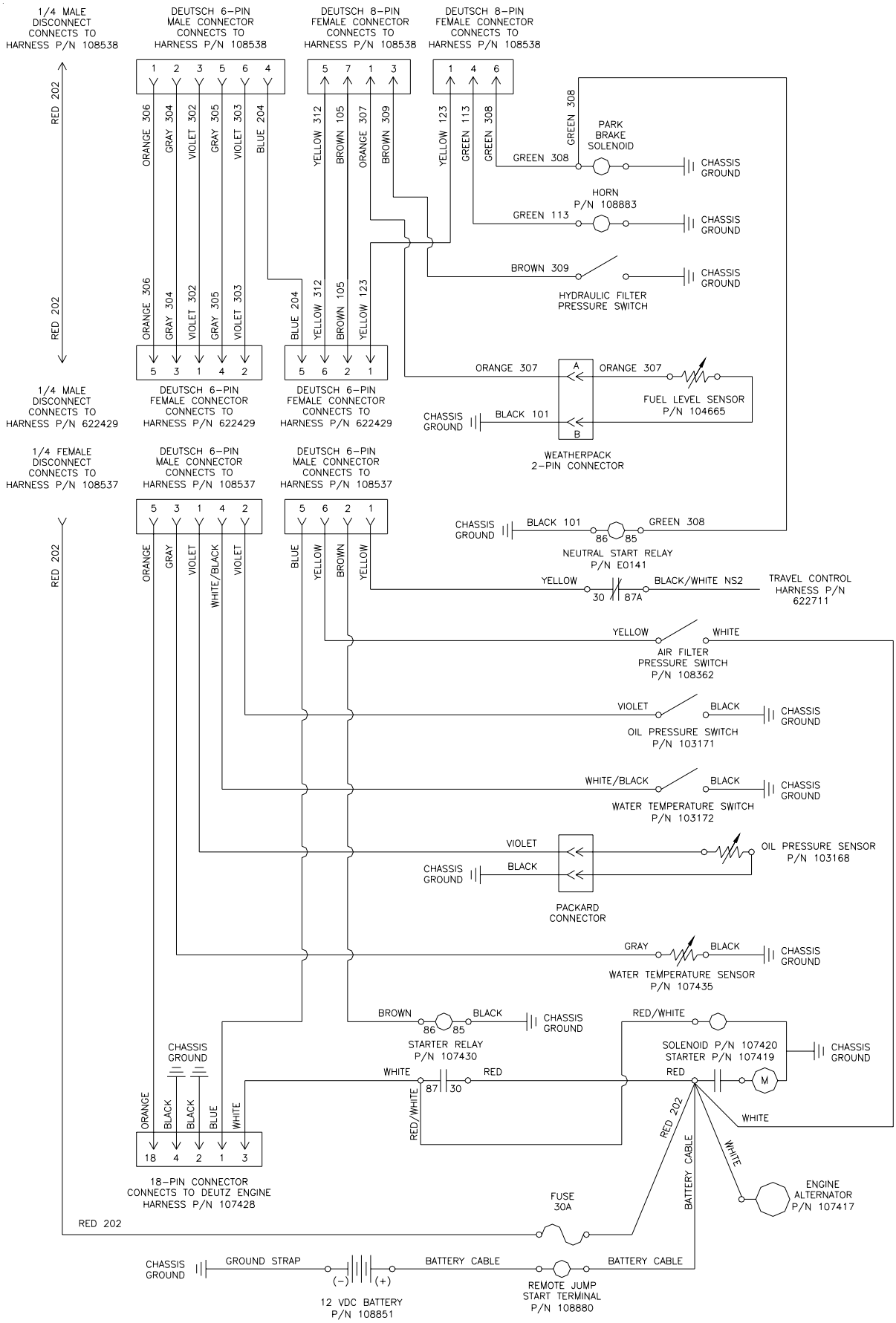
Components shown on top portion of drawing (above the line) are used only on units with optional 6-wheel drive.

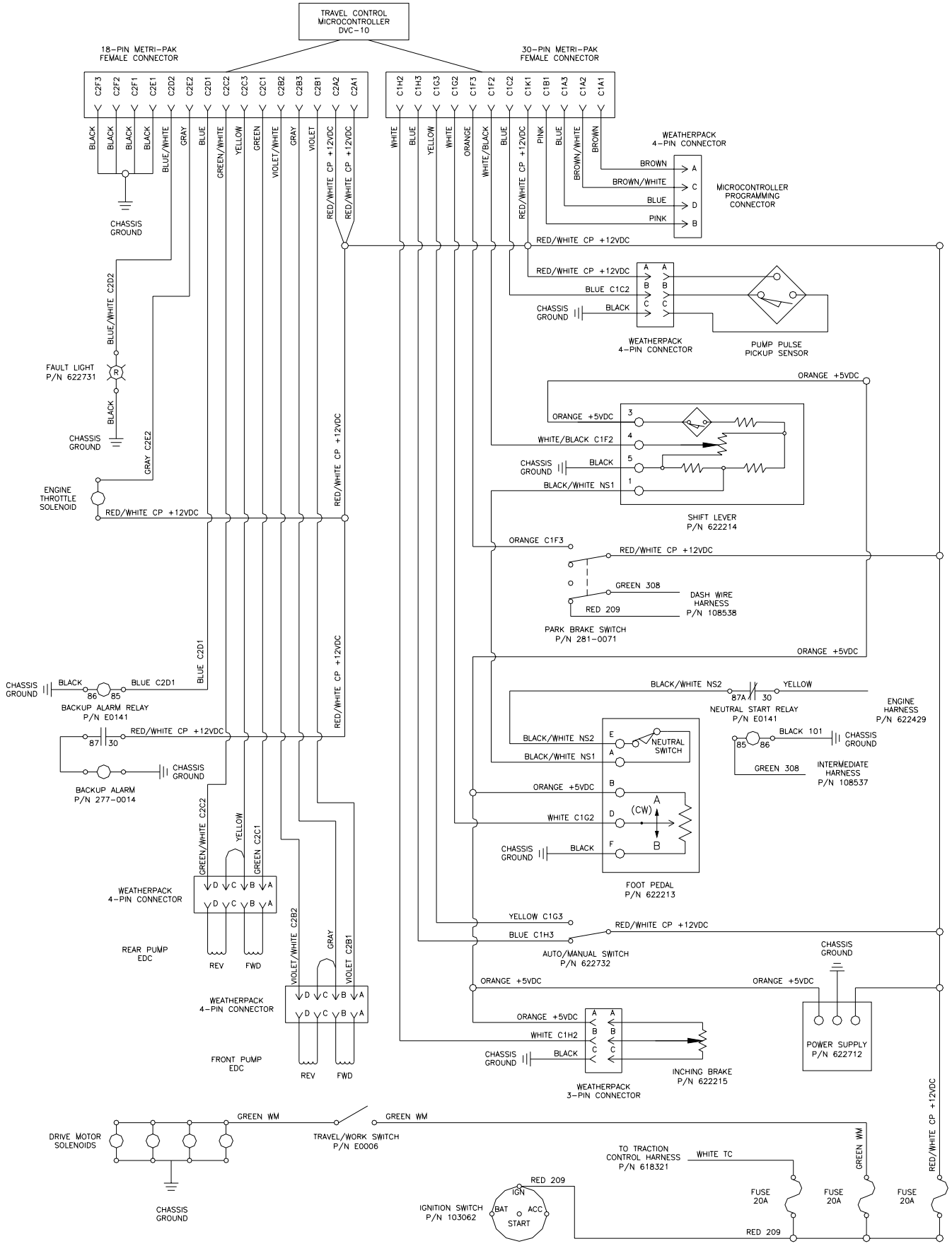

LEFT FWD MOTOR
RIGHT FWD MOTOR
LEFT FRONT MOTOR
RIGHT FRONT MOTOR
LEFT REAR MOTOR
RIGHT REAR MOTOR
FWD
STD
STD ONLY
FWD ONLY
CHARGE
LEFT BRAKE
RIGHT BRAKE
BRAKE VALVE
FWD VALVE

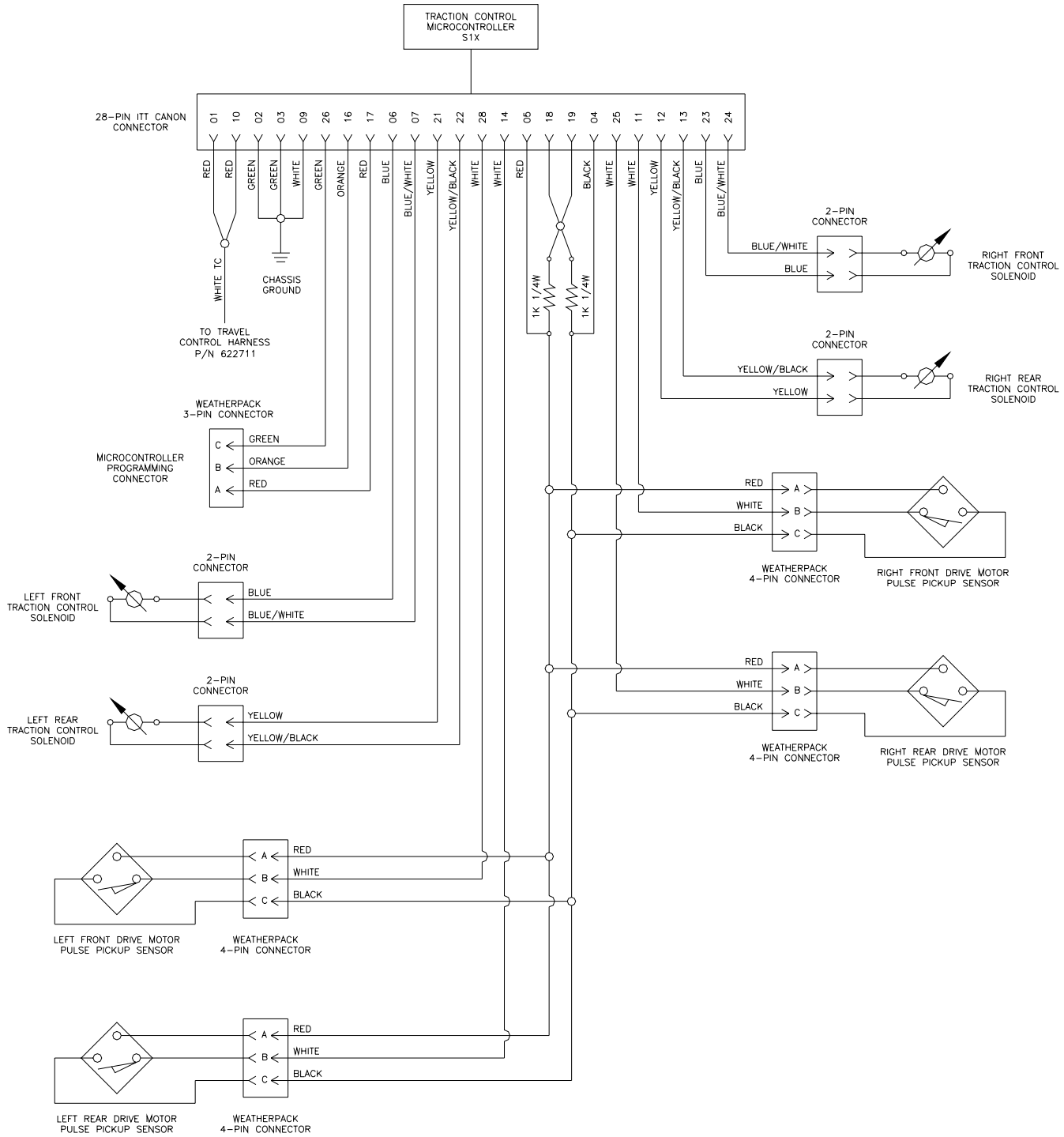
Item	Part No.	Description	Qty. Req.
31	622275	HOSE, 08 X 68	2.00
32	622276	HOSE, 08 X 108	1.00
33	622277	HOSE, 08 X 98	1.00
34	622290	HOSE, 04 X 27	1.00
35	622291	HOSE, 04 X 44	2.00
36	622292	HOSE, 04 X 56	1.00
37	622296	TEE, FF-1248-16-16-16	1.00
38	622298	HOSE, 12 X 100	1.00
39	622298-1	HOSE, 12 X 76	1.00
40	622299	TEE, FF-1248-8-8-8	2.00
41	622300	FITTING, 1286-8-8	1.00
42	622307	HYDRAULIC BRAKE	2.00
43	622411	PUMP, HYDR, FRONT	1.00
44	622411-1	PUMP, HYDR, REAR	1.00
45	622534	HYDR DRIVE MOTOR	2.00
46	622551	HOSE, 08 X 282	4.00
47	622552	HOSE, 04 X 55	2.00
48	622553	HOSE, 04 X 234	1.00
49	622554	HOSE, 06 X 320	1.00
50	622555	HOSE, 06 X 110	1.00
51	622556	HOSE, 06 X 296	1.00
52	622557	HOSE, 04 X 26	1.00
53	622558	HOSE, 04 X 30	1.00
54	623221	FITTING, FF-1231-8-12	4.00
55	F1264	TEE, FF-1248-12-12-12	6.00
56	F1343	FITTING, FF-1202-16-16	1.00
57	F1501	FITTING, FF-1238-12-16	4.00
58	F1506	TEE, FF-1227-6-6-6	1.00
59	Z0548	FITTING, FF-1238-4-4	2.00

Components shown on top portion of drawing (above the line) are used only on units with optional 6-wheel drive.


AMP MALE CONNECTOR
CONNECTS TO MODULAR
DASH PANEL P/N 103068
14 8 1 9 7 11 6 13 10 3 16 18
ORANGE 306
GRAY 304
VIOLET 302
GRAY 305
VIOLET 303
ORANGE 307
BROWN 309
BLUE 311
YELLOW 312
ORANGE 110
BLACK 101
RED 209
DASH CONNECTOR LEGEND
1 OIL PRESSURE GAUGE
3 DASH LIGHTS
6 HYDRAULIC FILTER LIGHT
7 OIL PRESSURE LIGHT
8 WATER TEMPERATURE GAUGE
9 WATER TEMPERATURE LIGHT
10 AIR FILTER LIGHT
11 FUEL GAUGE
13 HYDRAULIC TEMPERATURE LIGHT
14 TACHOMETER GAUGE
16 CHASSIS GROUND
18 POWER INPUT +12VDC
CHASSIS GROUND
BLOWER MOTOR
BLOWER SWITCH
A/C CLUTCH
DRYER PRESSURE SWITCH
A/C THERMOSTAT
HEAT & A/C SWITCH
W/S WIPER 1/4 FEMALE DISCONNECT
DEFROSTER FAN
FUSE 20A
FUSE 20A
CIRCUIT BREAKER 30A P/N E0128
RED 100
ORANGE 111
WORK LIGHTS RELAY P/N E0141
WORK LIGHTS 1/4 FEMALE DISCONNECT
BEACON LIGHT
BEACON LIGHT SWITCH P/N E0006
ORANGE 110
BLACK 101
WORK LIGHTS SWITCH P/N E0006
ORANGE C1F3
RED/WHITE CP
TRAVEL CONTROL WIRE HARNESS P/N 622711
PARK BRAKE LIGHT P/N 622731
GREEN 308
PARK BRAKE SWITCH P/N 281-0071
BROWN/WHITE NORD 3
BROWN/WHITE NORD 2
LOCK PINS SWITCH P/N 622732
LOCK PIN CARTRIDGES HYDRAULIC CONTROL VALVE
BROWN NORD 1
HIGH/LOW CARTRIDGE HYDRAULIC CONTROL VALVE
GRADE CONTROL SWITCH P/N E0006
BROWN 105
RED 208
NEUTRAL START RELAY P/N E0141
YELLOW 123
BLUE 204
CIRCUIT BREAKER 15A P/N E0128-1
GREEN 113
HORN SWITCH P/N 041848
RED 210
IGN
BAT
ACC
START
IGNITION SWITCH P/N 103062
RED 202
GREEN 308
GREEN 113
BROWN 105
DEUTSCH 6-PIN FEMALE CONNECTOR CONNECTS TO HARNESS P/N 108537
DEUTSCH 8-PIN MALE CONNECTOR CONNECTS TO HARNESS P/N 108537
DEUTSCH 8-PIN MALE CONNECTOR CONNECTS TO HARNESS P/N 108537
1/4 FEMALE DISCONNECT CONNECTS TO HARNESS P/N 108537
CIGARETTE LIGHTER AUX POWER ADAPTER P/N 108970


1/4 MALE DISCONNECT CONNECTS TO HARNESS P/N 108538
DEUTSCH 6-PIN MALE CONNECTOR CONNECTS TO HARNESS P/N 108538
DEUTSCH 8-PIN FEMALE CONNECTOR CONNECTS TO HARNESS P/N 108538
DEUTSCH 8-PIN FEMALE CONNECTOR CONNECTS TO HARNESS P/N 108538
RED 202
ORANGE 306
GRAY 304
VIOLET 302
GRAY 305
VIOLET 303
BLUE 204
YELLOW 312
BROWN 105
ORANGE 307
BROWN 309
YELLOW 123
GREEN 113
GREEN 308
PARK BRAKE SOLENOID
CHASSIS GROUND
HORN P/N 108883
BROWN 309
HYDRAULIC FILTER PRESSURE SWITCH
1/4 MALE DISCONNECT CONNECTS TO HARNESS P/N 622429
DEUTSCH 6-PIN FEMALE CONNECTOR CONNECTS TO HARNESS P/N 622429
DEUTSCH 6-PIN FEMALE CONNECTOR CONNECTS TO HARNESS P/N 622429
ORANGE 307
FUEL LEVEL SENSOR P/N 104665
BLACK 101
WEATHERPACK 2-PIN CONNECTOR
1/4 FEMALE DISCONNECT CONNECTS TO HARNESS P/N 108537
DEUTSCH 6-PIN MALE CONNECTOR CONNECTS TO HARNESS P/N 108537
DEUTSCH 6-PIN MALE CONNECTOR CONNECTS TO HARNESS P/N 108537
ORANGE
GRAY
VIOLET
WHITE/BLACK
BLUE
YELLOW
BROWN
NEUTRAL START RELAY P/N E0141
BLACK/WHITE NS2
TRAVEL CONTROL HARNESS P/N 622711
AIR FILTER PRESSURE SWITCH P/N 108362
OIL PRESSURE SWITCH P/N 103171
WATER TEMPERATURE SWITCH P/N 103172
OIL PRESSURE SENSOR P/N 103168
PACKARD CONNECTOR
WATER TEMPERATURE SENSOR P/N 107435
STARTER RELAY P/N 107430
SOLENOID P/N 107420 STARTER P/N 107419
RED/WHITE
WHITE
RED
BLACK
18-PIN CONNECTOR CONNECTS TO DEUTZ ENGINE HARNESS P/N 107428
FUSE 30A
BATTERY CABLE
ENGINE ALTERNATOR P/N 107417
GROUND STRAP
12 VDC BATTERY P/N 108851
REMOTE JUMP START TERMINAL P/N 108880


TRAVEL CONTROL MICROCONTROLLER DVC-10
18-PIN METRI-PAK FEMALE CONNECTOR
30-PIN METRI-PAK FEMALE CONNECTOR
C2F3 C2F2 C2F1 C2E1 C2D2 C2E2 C2D1 C2C2 C2C3 C2C1 C2B2 C2B3 C2B1 C2A2 C2A1
C1H2 C1H3 C1G3 C1G2 C1F3 C1F2 C1C2 C1K1 C1B1 C1A3 C1A2 C1A1
BLACK BLACK BLACK BLACK BLUE/WHITE GRAY BLUE GREEN/WHITE YELLOW GREEN VIOLET/WHITE GRAY VIOLET RED/WHITE CP +12VDC RED/WHITE CP +12VDC
WHITE BLUE YELLOW WHITE ORANGE WHITE/BLACK BLUE RED/WHITE CP +12VDC PINK BLUE BROWN/WHITE BROWN
WEATHERPACK 4-PIN CONNECTOR
BROWN A
BROWN/WHITE C
BLUE D
PINK B
MICROCONTROLLER PROGRAMMING CONNECTOR
CHASSIS GROUND
RED/WHITE CP +12VDC
BLUE/WHITE C2D2
FAULT LIGHT P/N 622731
BLACK
GRAY C2E2
ENGINE THROTTLE SOLENOID
RED/WHITE CP +12VDC
BLUE C1C2
BLACK
WEATHERPACK 4-PIN CONNECTOR
PUMP PULSE PICKUP SENSOR
ORANGE +5VDC
WHITE/BLACK C1F2
BLACK/WHITE NS1
SHIFT LEVER P/N 622214
ORANGE C1F3
GREEN 308
RED 209
DASH WIRE HARNESS P/N 108538
PARK BRAKE SWITCH P/N 281-0071
BLUE C2D1
BACKUP ALARM RELAY P/N E0141
BACKUP ALARM P/N 277-0014
BLACK/WHITE NS2
YELLOW
NEUTRAL START RELAY P/N E0141
ENGINE HARNESS P/N 622429
BLACK 101
INTERMEDIATE HARNESS P/N 108537
NEUTRAL SWITCH
FOOT PEDAL P/N 622213
GREEN/WHITE C2C2
YELLOW
GREEN C2C1
WEATHERPACK 4-PIN CONNECTOR
REAR PUMP EDC
REV FWD
VIOLET/WHITE C2B2
GRAY
VIOLET C2B1
FRONT PUMP EDC
YELLOW C1G3
BLUE C1H3
AUTO/MANUAL SWITCH P/N 622732
WHITE C1H2
WEATHERPACK 3-PIN CONNECTOR
INCHING BRAKE P/N 622215
POWER SUPPLY P/N 622712
DRIVE MOTOR SOLENOIDS
GREEN WM
TRAVEL/WORK SWITCH P/N E0006
TO TRACTION CONTROL HARNESS P/N 618321
WHITE TC
IGNITION SWITCH P/N 103062
IGN BAT ACC START
FUSE 20A
FUSE 20A
FUSE 20A


TRACTION CONTROL MICROCONTROLLER S1X
28-PIN ITT CANON CONNECTOR
01 10 02 03 09 26 16 17 06 07 21 22 28 14 05 18 19 04 25 11 12 13 23 24
RED RED GREEN GREEN WHITE GREEN ORANGE RED BLUE BLUE/WHITE YELLOW YELLOW/BLACK WHITE WHITE RED BLACK WHITE WHITE YELLOW YELLOW/BLACK BLUE BLUE/WHITE
WHITE TC
CHASSIS GROUND
TO TRAVEL CONTROL HARNESS P/N 622711
1K 1/4W
1K 1/4W
2-PIN CONNECTOR
BLUE/WHITE
BLUE
RIGHT FRONT TRACTION CONTROL SOLENOID
2-PIN CONNECTOR
YELLOW/BLACK
YELLOW
RIGHT REAR TRACTION CONTROL SOLENOID
WEATHERPACK 3-PIN CONNECTOR
MICROCONTROLLER PROGRAMMING CONNECTOR
C GREEN
B ORANGE
A RED
RED
WHITE
BLACK
A
B
C
WEATHERPACK 4-PIN CONNECTOR
RIGHT FRONT DRIVE MOTOR PULSE PICKUP SENSOR
2-PIN CONNECTOR
LEFT FRONT TRACTION CONTROL SOLENOID
BLUE
BLUE/WHITE
2-PIN CONNECTOR
LEFT REAR TRACTION CONTROL SOLENOID
YELLOW
YELLOW/BLACK
RED
WHITE
BLACK
A
B
C
WEATHERPACK 4-PIN CONNECTOR
RIGHT REAR DRIVE MOTOR PULSE PICKUP SENSOR
RED
WHITE
BLACK
A
B
C
LEFT FRONT DRIVE MOTOR PULSE PICKUP SENSOR
WEATHERPACK 4-PIN CONNECTOR
RED
WHITE
BLACK
A
B
C
LEFT REAR DRIVE MOTOR PULSE PICKUP SENSOR
WEATHERPACK 4-PIN CONNECTOR

NOTES: