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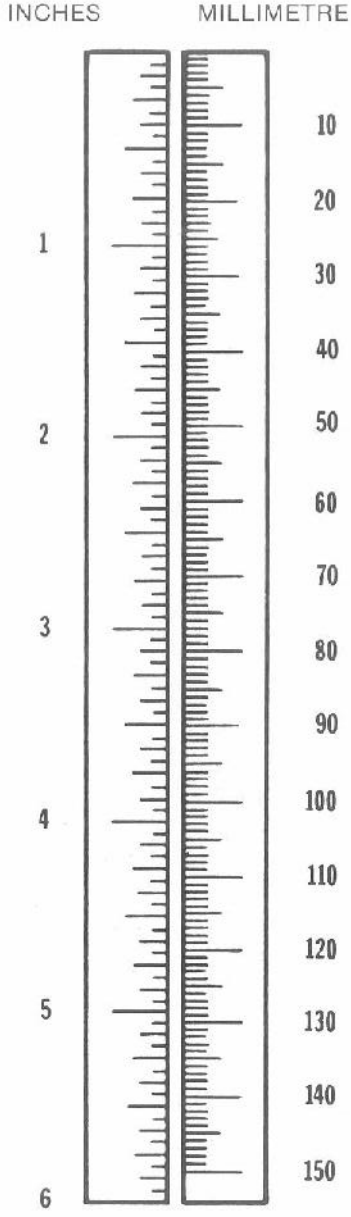
OPERATION & MAINTENANCE MANUAL

CA and CU Industrial Tractors

T.M.
STEIGER TRACTOR INC.
3101 1st Ave. N. Fargo, N. Dak. 58102

METRIC (SI) MEASUREMENTS



English Unit	Metric Equivalent (SI)
	Area
1 square inch	6.45 cm2 - square centimetre
I acre	0.405 ha - hectare
	Force
I pound (force)	4.45 N - newton
	Length
1 foot	304.8 mm - millimetre, 30.5 cm - centimetre, 0.305 m - metre
1 inch	25.4 mm - millimetre, 2.54 cm - centimetre
1 mile	1609 m - metre, 1.61 km - kilometre
1 pound	0.454 kg - kilogram
	Power
1 horsepower	0.746 kW - Kilowatt
	Pressure
1 psi	6.89 kPa - kilopascal, 0.00689 MPa - megapascal
	Temperature
1 degree Fahrenheit	(t - 32) °C - degree Celsius 1.8
	Torque
1 lb (force) - ft	1.356 N m
	Velocity
1 mile per hour	1.61 km/h - kilometre per hour
	Volume
1 bushel	0.035 m3 - cubic metre
1 gallon (US)	3.79 L-litre
1 quart (US)	0.946 L - litre

INTERNATIONAL SYMBOLS


FUEL PRESSURE


FUEL SHUTOFF


AIR PRESSURE


AIR FILTER


OUTSIDE AIR CIRCULATION


ON


OFF


COOLANT LEVEL


COOLANT PRESSURE


COOLANT TEMPERATURE


BRAKE


BRAKE – EMERGENCY


AMMETER OR ALTERNATOR


OIL PRESSURE


LEVER – MOVEMENT


STEERING


TURN – LEFT


TURN – RIGHT


TRACTOR – FORWARD


TRACTOR – REVERSE


ENGAGE


DISENGAGE

INTERNATIONAL SYMBOLS


TRANSMISSION OR CONVERTER


TRANSMISSION OR CONVERTER OIL


TRANSMISSION OR CONVERTER OIL FILTER


TRANSMISSION OR CONVERTER OIL LEVEL


TRANSMISSION OR CONVERTER OIL PRESSURE


TRANSMISSION OR CONVERTER OIL TEMPERATURE


TRANSMISSION DRIVE OIL LEVEL


TRANSMISSION DRIVE OIL TEMPERATURE


TRANSMISSION CONTROL OIL PRESSURE


HYDRAULIC OIL FILTER


HYDRAULIC OIL LEVEL

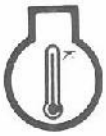

HYDRAULIC OIL TEMPERATURE


ENGINE OIL


ENGINE OIL FILTER


ENGINE OIL LEVEL


ENGINE OIL PRESSURE


ENGINE – HEAT


ENGINE – START OR RUNNING


ENGINE – STOP OR NOT RUNNING


FUEL TANK


FUEL FILTER


FUEL LEVEL

INTERNATIONAL SYMBOLS

HOURS

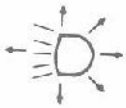
WINDSHIELD
WIPER CONTROL

WINDSHIELD
WASHER CONTROL

HORN CONTROL

COOLER CONTROL

HEATER CONTROL



LIGHT – ALL

LIGHT – BRIGHT

LIGHT – DIM

LIGHT – PARK

LIGHT – INSTRUMENT

FAST

SLOW

Contents

NOTICE:

Because of design changes that may occur in the product since this manual was published, it is possible that some pictures and/or illustrations found within this manual may be different from those found on the product; however, the technical information found within the manual was correct at the time this manual was approved for publication.

Foreword

This manual has been compiled to assist the owner and/or operator with the correct operation, service and routine preventive maintenance procedures of the Steiger Industrial Tractor.

In order to get the optimum performance and efficiency that has been designed into the tractor, read this manual thoroughly before operating or servicing the tractor. Become familiar with all decals and safety messages within the manual and on the tractor. Keep this manual in a convenient place for easy reference when problems arise. **Do Not** attempt to make repairs or adjustments you do not understand. If you require additional information or service, contact your dealer.

This manual has been designed into eight major sections: Foreword, Safety, Specifications, Instruments and Controls, Operating Instructions, Service and Maintenance, Troubleshooting and Index. A general contents page is located at the beginning of the manual for a quick reference to the major sections. For a specific item, there is an alphabetical index placed in the rear of the manual.

Throughout the manual references are made to left side and right side. These terms are used as viewed from the operators seat facing the front of the tractor.

The signal words **CAUTION, WARNING** or **DANGER** are used to indicate degree of hazards and to warn against unsafe practices that may cause personal injury and are used with appropriate safety instructions. These signal words are not to be ignored, your safety is involved.

CAUTION: denotes a general reminder of good safety practices or directs attention to unsafe practices.

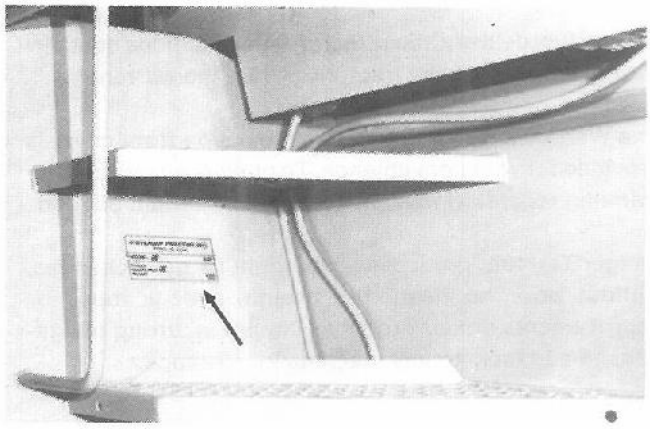
WARNING: denotes a hazard intermediate between **DANGER** and **CAUTION**.

DANGER: denotes the most serious hazard.

The word **NOTE,** is used to convey information that is out of context with the manual text. Special information such as specifications, techniques, reference information and other information of a supplementary nature.

The word **IMPORTANT**, is used in the text when immediate damage will occur to the machine due to improper technique or operation. **IMPORTANT** will apply to the same information as specified by **NOTE**, only of an immediate and urgent nature.

It is important to know the Product Identification Number (P.I.N.) and the tractor serial number. This information should be recorded in the space provided on the inside rear cover of this manual. Use the information in all correspondance when referring to the tractor. For your convenience there is a service and maintenance chart printed on this page also.



Product Identification Number Location

Foreword

It is the responsibility of the user to read the Operator's Manual and comply with the operating instructions and service and maintenance guidelines set forth in the manual.

The user is responsible for inspecting the machine daily, and for having parts replaced or repaired when continued use of the product would cause damage or excessive wear to other parts.

It is the users reponsibility to deliver the machine to the dealer for service or replacement of defective parts which may be covered by the warranty policy.

The user should notify the selling dealer in advance so arrangements can be made to have the 200-hour check or inspection performed. The user should not be charged for this inspection or adjustments, but is expected to pay for oil filters or any parts and/or labor which are not covered by warranty The user is responsible for bringing the machine to the selling dealers shop to have this inspection performed.

Steiger Tractor, Inc. does not allow credit for the cost of travel time, mileage or hauling as a warranty allowance.

If the user requests the dealer to perform warranty obligations or inspections at locations other than the dealers service shop, travel costs to such locations are usually paid by the owner/user. Arrangements for travel costs and service performed at locations other than the dealer shop should be agreed upon at the time of the service request.

Setting fuel delivery above factory specifications or otherwise overpowering the tractor will void the warranty.

The Warranty Policy printed on the inside front cover is provided for your convenience. To prevent any misunderstanding regarding warranty, this policy should be read.

Steiger Tractor, Inc. reserves the right to make changes, without prior notification,in design, specifications or improvements on our products without incurring obligations to add them to any machine in existence.

New Machine Maintenance Requirements

To gain the optimum life from the engine and the componants that make up the power train of your new tractor, it is required that the engine crankcase oil and filters be changed after the first 30 service hours of operation. In addition, it is required that the axle(s) lube oil be drained and new oil installed after the first 100 service hours of operation.

It is not necessary to change the hydraulic, transmission or transfer case oil. However, it is required that the oil filters for these systems be changed after the first 100 service hours.

These procedures are necessary in order to flush out any contamination or particles that may be present in these systems during the "wear-in" process, which cannot be done during the machining process.

NOTE: *Steiger Tractor, Inc. does not endorse specific brands of lubricants. We consider it the obligation of the supplier to assure that all lube oils meet the applicable specifications. See the "Specifications" section of this manual for fluid capacities and specifications.*

Towing

If a problem should arise requiring repairs that cannot be done in the field, it is required that this tractor be transported on another vehicle and not towed.

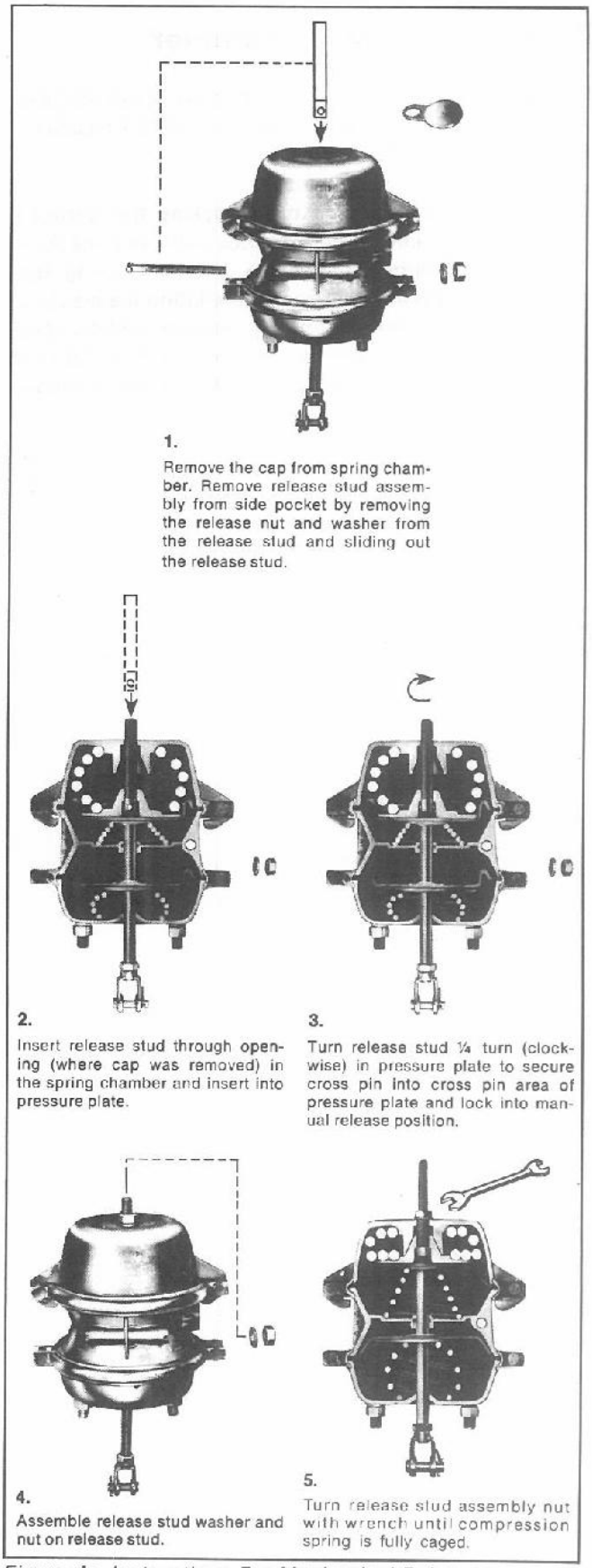
The tractor CANNOT be towed to start the engine. Even though the transmission output shaft would be turning, the transmission internal oil pump would not. In this situation the transmission could not be lubricated or pressurized and severe transmission damage will result.

Transporting

Park Brake Information

The park brake will automatically apply whenever the air supply is low or when the engine is disabled. If it should become necessary to move the tractor for transport loading on another vehicle and the engine is disabled, it will be necessary to release the park brake before the tractor can be moved. To release the park brake will require either the addition of air from an external source or "Mechanically" releasing the brake until the linings are free from the disc. (See Fig. A)

CAUTION: Block front and rear of at least two wheels before performing mechanical release operation. Use extreme caution if tractor and/or implement is on incline, provide addtional blocking as required. The brake MUST be brought back to proper adjustment before returning the tractor to service.



1. Remove the cap from spring chamber. Remove release stud assembly from side pocket by removing the release nut and washer from the release stud and sliding out the release stud.

2. Insert release stud through opening (where cap was removed) in the spring chamber and insert into pressure plate.

3. Turn release stud ¼ turn (clockwise) in pressure plate to secure cross pin into cross pin area of pressure plate and lock into manual release position.

4. Assemble release stud washer and nut on release stud.

5. Turn release stud assembly nut with wrench until compression spring is fully caged.

Figure A: Instructions For Mechanical Release

Frame Articulation Retainer

Whenever transporting of the tractor on another vehicle is required the frame articulation retainers MUST be installed

WARNING: Attach Locking Bar between frames before service work is done near center of machine. Attach Locking Bar between frames before lifting the machine or transporting on another vehicle. (See Fig. B) Before operating machine be sure Locking Bar is secured in storage position. (See Fig. C)

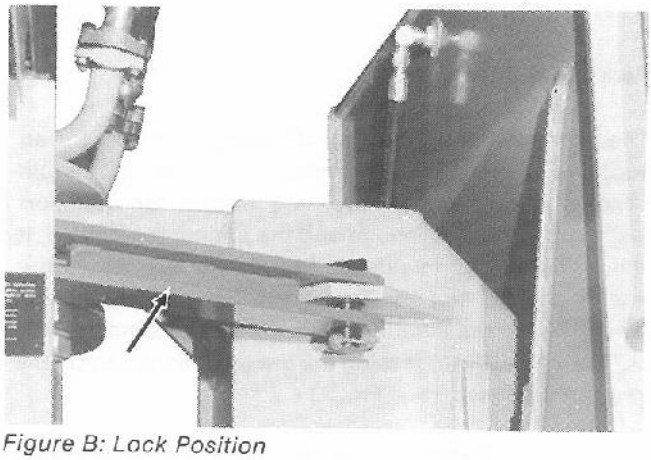


Figure B: Lock Position

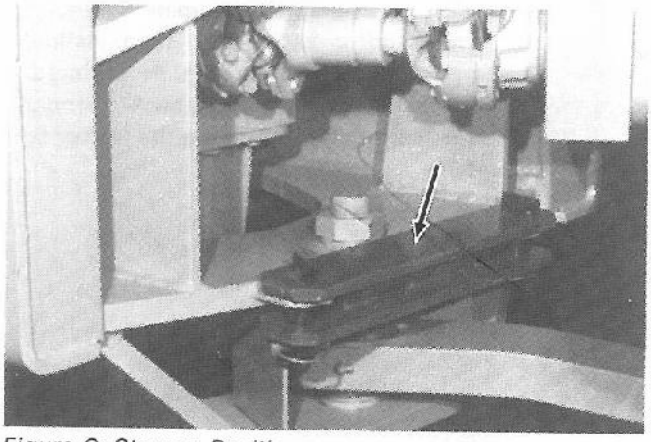
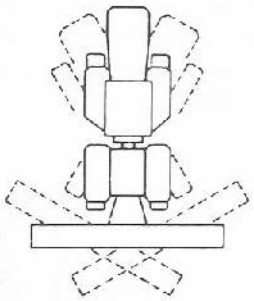


Figure C: Storage Position

Whenever you see this symbol, it means Attention! Become Alert! Your Safety is involved.

Operating instructions must be given to everyone before operating this tractor and at least once a year thereafter in accordance with OSHA regulations.

Safety



CAUTION: Do not move the steering wheel until everyone is clear of the equipment and the center hinge area. Moving the steering wheel can swing equipment as pictured.

Safety Suggestions

Before operation of this tractor, be sure ALL operators are familiar with all safety rules, controls and maintenance information throughout this book. Be sure that all operators read and understand them. **Do Not** let any unauthorized operator at the controls.

- **Do Not** operate the tractor from any position except seated in the operator's seat with the seat belt securely fastened. Be sure the area is clear of people before operating the tractor or equipment.
- **Do Not** leave equipment in the raised position when not in use. Always lower equipment before performing service or maintenance operations.
- **Do Not** dismount from the tractor while it is moving. **Always** use the hand rails when mounting or dismounting from the tractor.
- **Do Not** leave the engine running while the tractor is unattended. Shutdown the tractor before making any adjustments or when servicing the tractor or equipment. Allow rotating parts to come to complete stop before servicing.
- **Do Not** allow anyone to stand near the center hinge area while the engine is running.
- **Do Not** permit others to ride.
- **Do Not**operate the tractor in an enclosed area unless adequate ventilation is provided.
- **Do Not** pull from any point except the tractor drawbar, 3-Pt hitch or other designated pull points and properly fasten equipment.
- **Do Not** operate the tractor with a loose wheel, rim or hub.
- **Do Not** remove the radiator cap when the engine is hot. Add coolant to the radiator only when the engine is stopped and fully cooled. If the engine is hot, steam may spray outwards under high pressure which may cause severe burns.
- **Do Not** inflate tires beyond the maximum recommended inflation pressure. Use safety cage or chain, clip-on chuck, extension hose, wear eye protection and stand away from tires while inflating to prevent personal injury due to blowoffs.
- **Do Not** attempt to check the A/C R-12 compressor oil while the unit is charged or in operation, for it is pressurized. Refrigerant under pressure may cause severe injury or frostbite, particularly to the eyes. Contact your dealer when air conditioning service is required.
- **Do Not** attempt repairs you do not understand.

Safety

- **Do Not** attempt to mount a tire on a rim unless you have the proper equipment, know how and experience to perform the job safely. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious bodily injury. Tire repairs should be performed by qualified tire repair centers.

- **Do Not** use your hands to locate hydraulic oil leaks, use wood or cardboard. Escaping hydraulic fluid or oil under pressure has sufficient force to penetrate the skin which could cause serious personal injury. Ensure all pressure is relieved before disconnecting hydraulic lines. If hydraulic oil has penetrated the skin, get immediate medical attention.

- **Do Not** allow anyone to stand directly in front of or behind the tractor, in or around implements or equipment when backing up or driving forward. Always set engine governor to lowest idle rpm setting when approaching machines for hitching. Shut down the engine and apply the parking brake before hitching up. Failure to do so may result in personal injury.

- **Do** use the braking power of the engine; always downshift to lower gear before decending a steep grade. Brakes should always be properly maintained and adjusted.

- **Do** wear eye protection when charging, boosting or performing other service to or around batteries.

- **Do** keep all window glass and rear view mirrors clean at all times for maximum visability.

- **Do** keep people away from the front of the tractor when opening the hood for service. Keep feet and hands out of the hinge area of the hood. Always use hood latch retaining pins or bolts whenever the hood is raised for any reason.

- **Do** shut down the engine and set park brake before dismounting.

- **Do** use the hazard warning/flasher lights when traveling on public roads day or night, unless prohibited by law.

- **Do** watch where you are going and operate the tractor at a speed that ensures safety and complete control, especially over rough terrain, crossing or along side ditches and slopes.

- **Do** operate the tractor smoothly, avoid jerky turns, starts or stops.

- **Do** use the hand rails when mounting or dismounting from the tractor.

- **Do** refuel in a safe place away from open fires or sparks. Shut down the engine and do not smoke while refueling.

- **Do** read all cautionary information printed on ether starting fluid containers before using ether starting fluids. **Do Not** store ether or other flamable materials in the cab.

WARNING: The cab filters are not designed to filter out harmful chemicals, follow the instructions given in the equipment operators manual and those given by the chemical manufacturer.

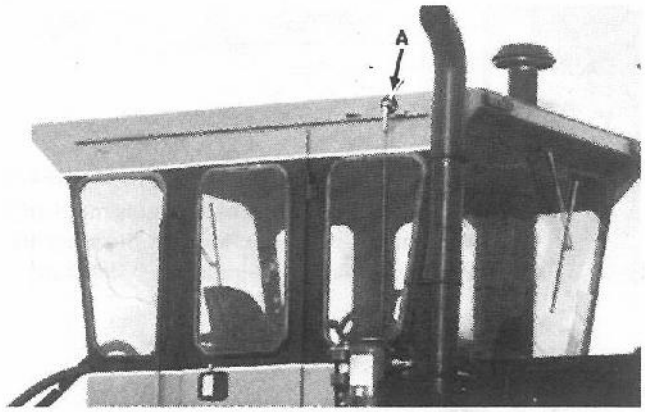
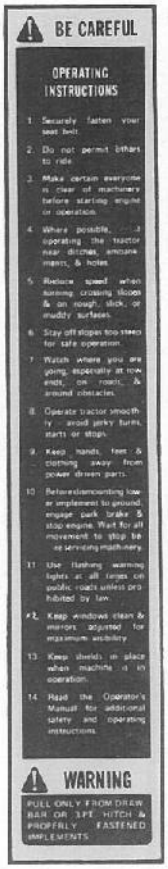


Figure A: Loosen screw "A" to turn antenna downward.

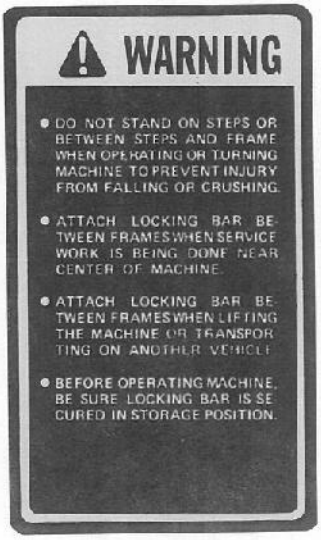
- **Do** use extreme caution if working near or under low clearance, high voltage power lines. As an additional precaution when working near power lines turn the radio antenna **downward.** (Fig. A)

Replace any decals that may become lost or damaged.

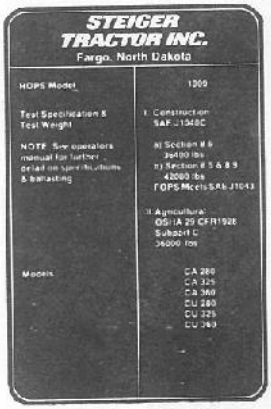


Location: Inside cab on right side directly above hydraulic control levers.

Location: Right side of front frame directly below hydraulic fill port near top step.

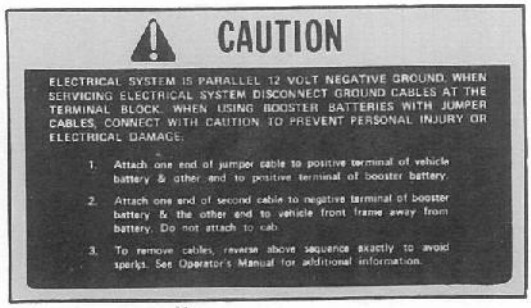


Location: Top left side of front frame adjacent to batteries.



Location: Inside cab on right side directly above hydraulic control levers.

Location: On right and left side of radiator shroud near front of engine.



Location: Top left side of front frame adjacent to batteries.

Location: Inside cab on left side near top of the door.

Location: Top left inside portion of rear frame near SMV emblem.

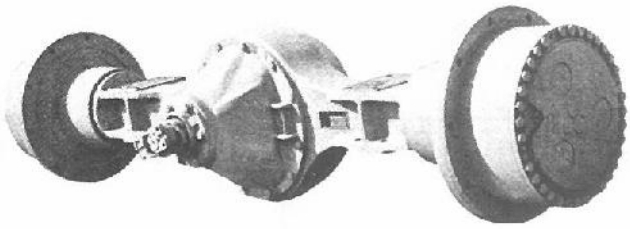
Location: On left and right of center hinge.

Location: On rear of fuel tank mounted on bracket facing rear of tractor.

Specifications

Axle

General Specifications



Model: S-40
Type: Planetary Final Drive in wheel Hubs, Spiral Bevel Ring Gear and Pinion
Ratio: 25.59:1 overall
Options: Controlled Traction Differential Front and Rear

Lubrication Specifications

Oil type: Steiger HD API-GL-5 85W-90 Gear Oil. Axle oils must meet the API Service Classification GL-5 and /or MIL-L-2105B Specification.

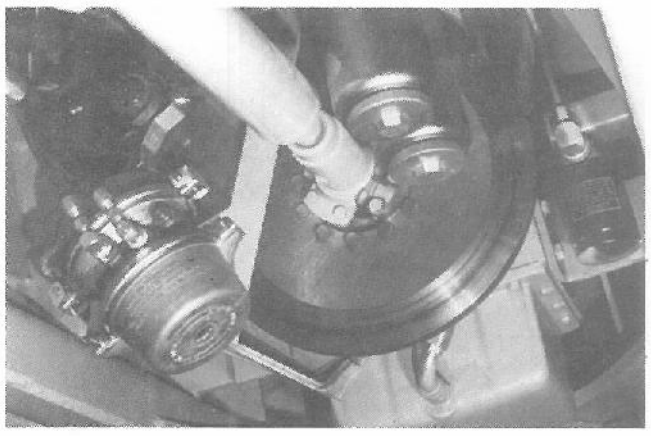
NOTE: *In general the 85W-90 is the recommended oil, however, SAE90 is acceptable as an alternative.*

Oil Capacity: Center Differential - 22 qts. (20.8 L) Wheel Hubs - 5 qts. (5.7 L) each.

NOTE: *Axle assembly is flow-through design, oil is allowed to flow between compartments. Always park tractor on level surface when checking fluid levels.*

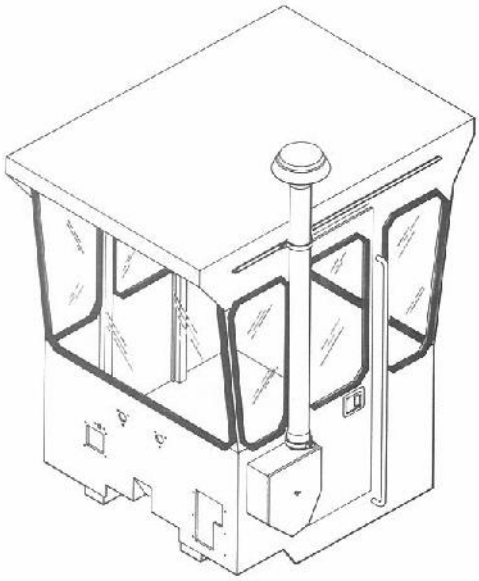
Brakes

General Specifications



Service Brake: Air actuated
Type: Power Screw Air Disc Brake, Spring applied Park Brake
Disc Size: 20 in (50.8 cm)).D. x 1.0 in (25.4 mm) thick
Mounting: Transfer Case Front Output Shaft
Compressor Capacity: 13.5 Cu.Ft/Min.(.38 m 3/min)

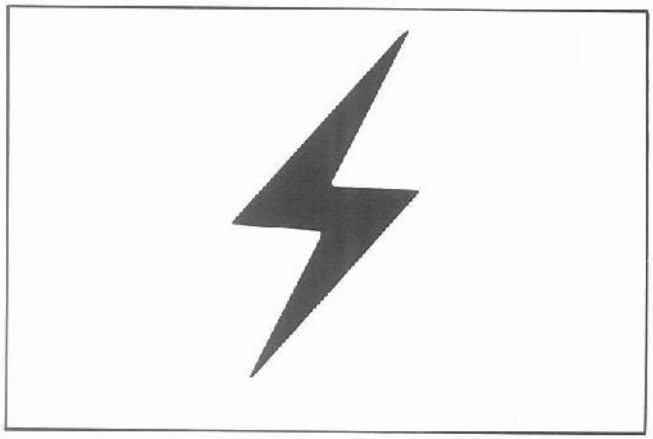
Specifications



Cab

General Specifications

ROPS Protection
Rubber Mounted
Pressurized, A/C & Heater Std.
Glass: Tinted - All
Doors: Right and Left sides
Seat: Deluxe, air supported and weight adjustable, fore and aft travel, cloth covered with right side armrest Hydraulic control console
Instruments: Speedometer, tachometer, voltmeter, air gauge, fuel gauge, engine oil pressure, engine coolant temperature, hour meter and indicator lights. All instruments back-lighted.
Radio: AM/FM Stereo
Steering Wheel: Tilt/Telescoping
Lexan Windows: (Optional) meets SAE specifications J1084



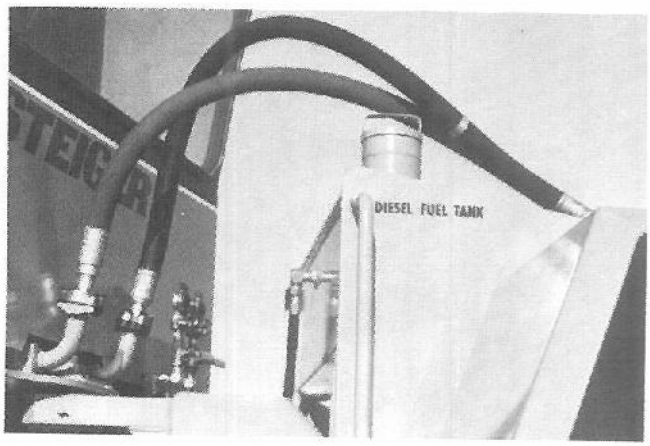
Electrical

General Specifications

Type: Parallel 12 Volt Negative Ground
Batteries: Four 12-Volt maintenance free 1900 CAA 0°F (-16°C)
Alternator: 90 AMP Negative Ground
Starter: 12 Volt Negative Ground, solenoid activated, positive engagement
Lights: Standard Rear Frame; 10 working lights (6 forward, 4 rear) Fifth Wheel Rear Frame; 8 working lights (6 forward, 2 rear). 2 Tail/Stop Lights, 2 Cab interior lights. All instruments back lighted.
Tractor Monitor System: Audio warning alarm and indicator lights for-low engine oil pressure, high engine coolant temperature, transmission oil temperature and pressure, low air supply and Park Brake apply.
Bulb Size: Hi-beam - No. 4001, Lo-beam - No. 4000, Flood Lights No. 4478, indicator Lamps No. 1893, Instrument panel gauges No. 57, Tail/Stop Lights No. 1157, Hazard Warning/Turn Lamps No. 1156, Hourmeter, tachometer, and speedometer No. 161.
Hour Meter: Engine Oil Pressure Activated
Circuit Breakers: Automatic Re-set Type

Fuel System

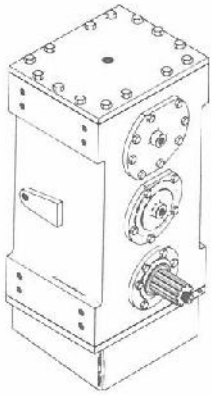
Capacity: 225 gal. (851.7L) - Std rear frame - 200 gal. (758.0 L) - Fifth-Wheel rear frame
Fuel Type: Use either Grade No. 1-D or Grade No. 2-D fuel, as defined by ASTM Designation D975 for Diesel Fuels.



Transfer Case

General Specifications

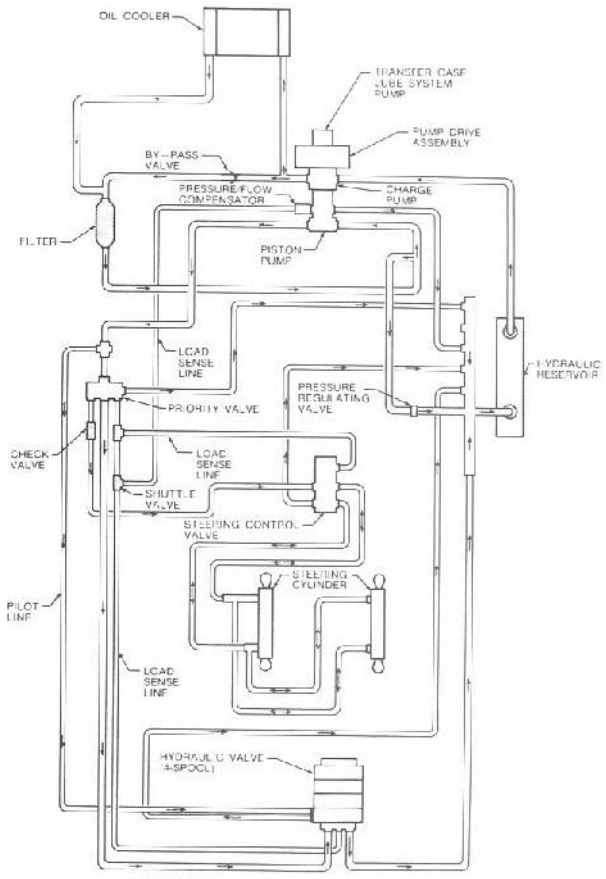
Model: F, 2-Speed
Type: Helical gearing with cable actuated sliding shifter clutch. Tapered roller bearings on ALL shafts. Pressure lubricated with filtered and air-cooled oil pumped from integral oil sump.
Oil Type: Steiger Hydraulic/Transmission Fluid, or equivalent other quality brands of Universal Hydraulic/Transmission Fluid.
Oil Capacity: 11qts. (10.4 L)



Hydraulic System

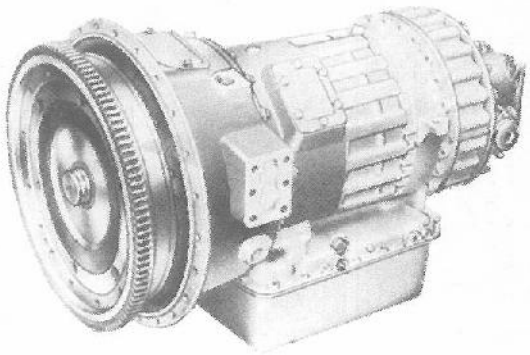
General Specifications

Type: Closed Center, Load Sensing
Reservoir Capacity: 25 gal. (94.75 L)
Steering System: Articulated, load sensing hydrostatic with two double acting hydraulic cylinders.
Remote Control Valve: Closed center, stack type construction, rear remote mounted (Front Frame Mounted Valve optional) and actuated by electro-hydraulic control.
System Operating Pressure: 2500 PSI (172.4 bar) maximum
Pump Capacity: 44 Gpm (166.8 Lpm) rated rpm
Filters: Steiger P/N 01-4988(2)
Oil type: Steiger Hydraulic/Transmission Fluid or equivalent other brands of universal Hydraulic/ Transmission fluid



HYDRAULIC SYSTEM SCHEMATIC

Specifications



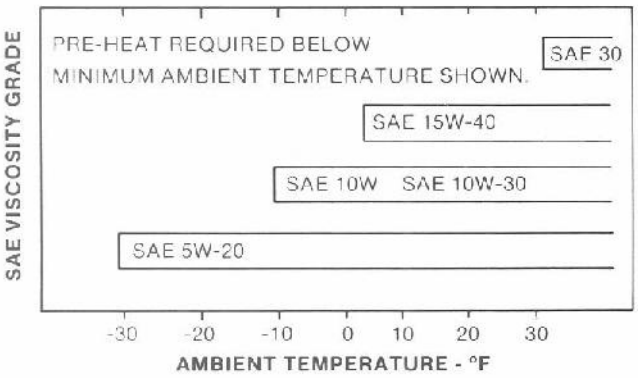
Transmission

General Specifications

Model: Allison HT754CRD
Type: Automatic w/converter "Lock-up" in all gears, second gear start-up
Speeds: 5-Forward, I reverse (10 forward, 2-reverse w/2-Speed Transfer Case)

IMPORTANT: *Check transmission fluid level "Hot", transmission in "Neutral" at engine idle. Fluid level should be at or near "full" mark on dipstick, NEVER overfill the transmission.*

CAUTION: BE SURE the parking brake is applied and the transmission is in neutral when leaving the operator seat with the engine running to check oil level. There is no "park" position in the transmission.



Lubrication Specifications

Oil Type: Steiger Hydraulic/Transmission Fluid or other equivalent oils meeting the Detroit Diesel Allison C-3 specification.
Oil Capacity: Approx. 35-39 qts (33-37L)
Filter Element: Steiger P/N 02-2038

The C-3 specification includes several multi-viscosity fluids. The chart opposite indicates the lowest usable temperature for the various multi-viscosity and straight grade C-3 fluids.

Steiger Tractor, Inc. does not endorse specific brands of lubricants. We consider it the obligation of the supplier to assure that all lube oils meet the applicable specifications.

Torque Specifications

	lb.ft.	(N.m)
Cab Mount (1/2" bolts)	75	(102.0)
Cab Mount (1" bolts)	130	176.0
Wheel Bolts	450	(610.0)
Dual Bolts	450	(610.0)
Axle to Frame Bolts	695	(942.0)
Upper Vertical Hinge Pin	1200	(1627.0)
Lower Vertical Hinge Pin	1500	(2034.0)
Front Horizontal Hinge Pin	1500	(2034.0)
Rear Horizontal Hinge Pin	1200	(1627.0)
Steering Cyl. Bolts	1200	(1627.0)
Drawbar Pivot Pin	1200	(1627.0)
Drawbar Clevis Bolts	1500	(2034.0)

Engine(s)

General Specifications

Make: Caterpillar
Model: 3406 DIT 280
Type: Direct Injection, Turbocharged, 4-Stroke Cycle, In-Line 6 cylinder
Power Rating: 280 bhp (209 Kw)
Governed RPM: 2100
Peak Torque: 945 lb ft (1281 N.m) @ 1200 rpm
Nominal Torque Rise: 35%
Bore & Stroke: 5.4 x 6.5 in (137 x 165 mm)
Piston Displacement: 893 cu in (14.5 L)
Compression Ratio: 14.5:1
Engine High Idle: 2260 rpm (no load) approx
Engine Low Idle: 600 rpm approx

Lubrication Specifications

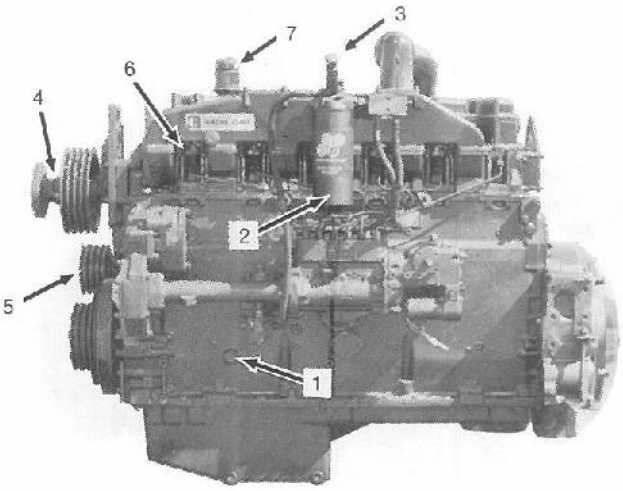
Oil Type: API Class CD or MIL-L-2104C
Oil Capacity: 33 qts (31.3 L) includes cooler and filter
Oil Filter: Spin-On Type (Steiger P/N 01-2335)
Cooling System Capacity: 23,8 gal (90.0 L)
Water Filter: Steiger P/N 28-031
Fuel Filter: Steiger P/N 01-2336

Oil viscosity: Temp Range

SAE Grade	Min. °F	Max °F
10W	-10	-70
*10W/30	-10	+100
*15W/40	+5	+120
30	+20	+100
40	+45	+120

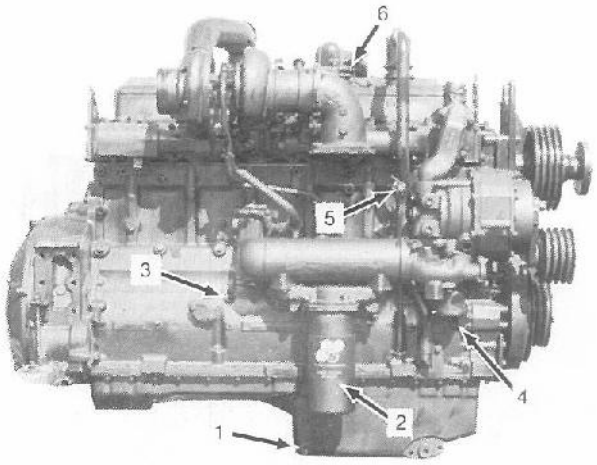
*CD qualified multi-viscosity oils are preferred.

NOTE: *Factory fill oil is 15W-40.*



Engine Left Side

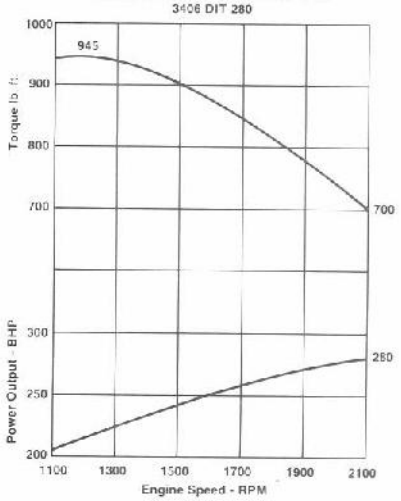
1- Coolant Drain Plug
2- Fuel Filter
3- Fuel Primer Pump
4- Fan Hub
5- Fan Idler Pulleys
6- Water Filter
7- Breather



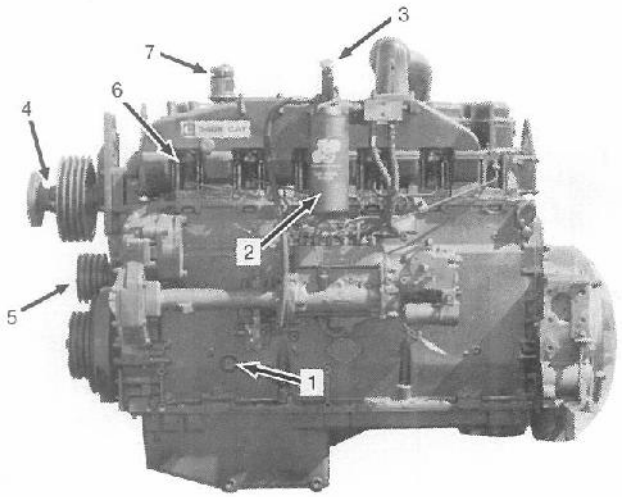
Engine Right Side

1- Oil Drain Plug
2- Oil Filter
3- Coolant Drain Plug
4- Coolant Drain Plug
5- Oil Level Dipstick
6- Oil Fill Port

Engine Performance Curve
3406 DIT 280



Specifications



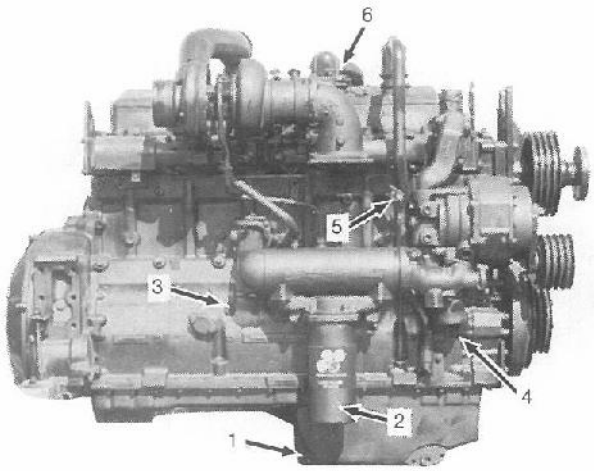
Engine Left Side

1- Coolant Drain Plug
2- Fuel Filter
3- Fuel Primer Pump
4- Fan Hub
5- Fan Idler Pulleys
6- Water Filter
7- Breather

Engine(s)

General Specifications

Make: Caterpillar
Model: 3406 DIT 325
Type: Direct Injection, Turbocharged, 4-Stroke Cycle, Inline 6 Cylinder
Power Rating: 325 bhp (242.5 Kw)
Governed RPM: 2100
Peak Torque: (1200 rpm) 1050 lb ft (1424 N.m)
Nominal Torque Rise: 29%
Bore and Stroke: 5.4 x 6.5 in (137 x 165 mm)
Piston Displacement: 892 cu in (14.6 L)
Compression Ratio: 14.5:1
Engine High Idle (No Load): 2260 rpm approx.
Engine Low Idle: 600 rpm approx.



Engine Right Side

1- Oil Drain Plug
2- Oil Filter
3- Coolant Drain Plug
4- Coolant Drain Plug
5- Oil Level Dipstick
6- Oil Fill Port

Lubrication Specifications

Oil Type: API Class CD or MIL-L-2104C
Oil Capacity: 33 qts (31.3 L) includes cooler and filter
Oil Filter: Spin-On Type (Steiger P/N 01-2335)
Cooling System Capacity: 23.8 gal (90.0 L)
Water Filter: Steiger P/N 28-031
Fuel Filter: Steiger P/N 01-2336

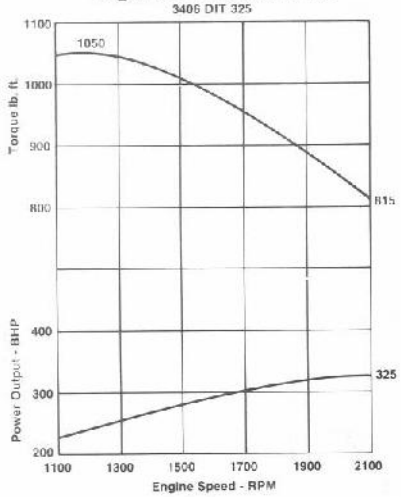
Oil Viscosity: Temp Range

SAE Grade	Min °F	Max °F
10W	-10	+70
*10W/30	-10	+100
*15W/40	+5	+120
30	+20	+100
40	+45	+120

*CD qualified multi-viscosity oils are preferred.

NOTE: *Factory fill oil is 15W-40.*

Engine Performance Curve
3406 DIT 325



Engine(s)

General Specifications

Make: Caterpillar
Model: 3406 DIT 360
Type: Direct Injection, Turbocharged, & Aftercooled, 4-Stroke Cycle, Inline 6 Cylinder
Power Rating: 360 bhp (268.5 Kw)
Governed RPM: 2100
Peak Torque: (1200 rpm) 1175 lb ft (1593 N.m)
Nominal Torque Rise: 30.5%
Bore and Stroke: 5.4 x 6.5 in (137 x 165 mm)
Piston Displacement: 893 cu in (14.6 L)
Compression Ratio: 14.5:1
Engine High Idle (No Load): 2260 rpm approx
Engine Low Idle: 600 rpm approx

Lubrication Specifications

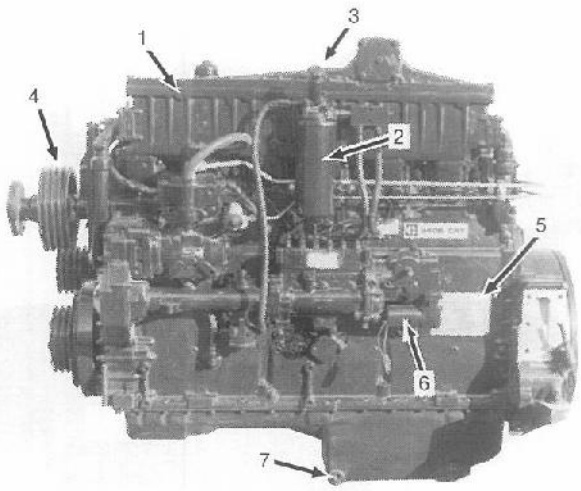
Oil Type: API Class CD or MIL-L-2104C
Oil Capacity: 36 qts (34.1 L) includes cooler and filter
Oil Filter: Spin-On Type (Steiger P/N 01-2335)
Cooling System Capacity: 24.25 gal (91.9 L)
Water Filter: Steiger P/N 28-031
Fuel Filter: Steiger P/N 01-2336

Oil Viscosity: Temp Range

SAE Grade	Min °F	Max °F
10W	-10	+70
*10W/30	-10	+100
*15W/40	+5	+120
30	+20	+100
40	+45	+120

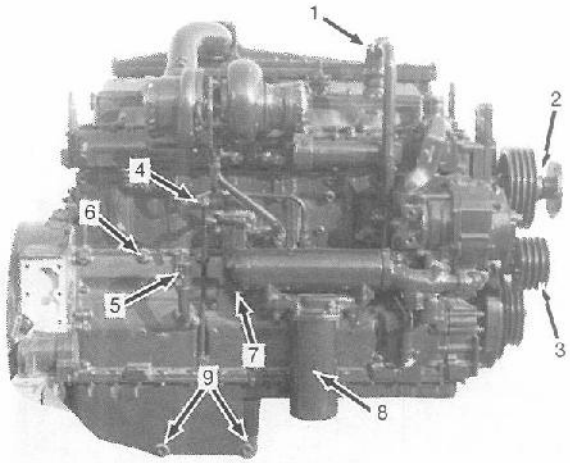
*CD qualified multi-viscosity oils are preferred.

NOTE: *Factory fill oil is 15W-40.*



Engine Left Side

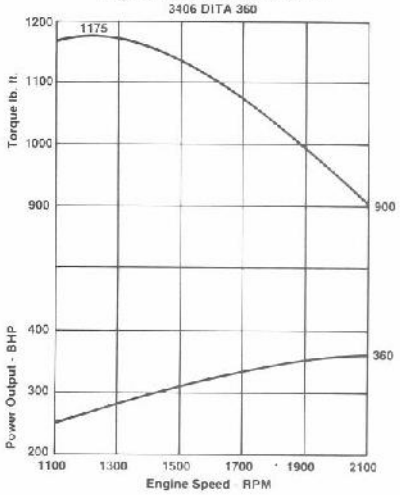
1- Water Filter
2- Fuel Filter
3- Fuel Primer Pump
4- Fan Hub
5- Engine Data Plate
6- Fuel Shut-Off Solenoid
7- Crankcase Drain



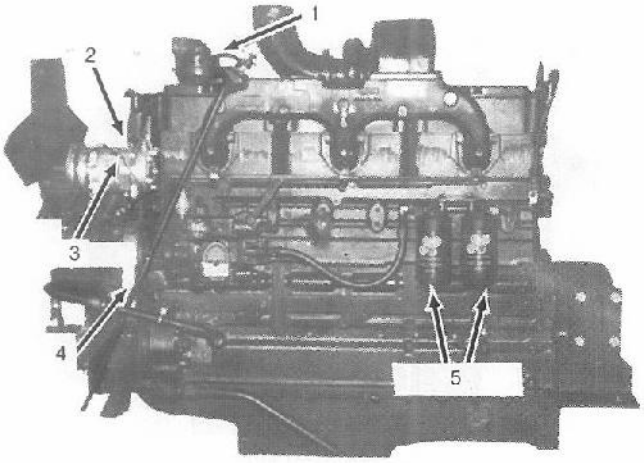
Engine Right Side

1- Crankcase Vent
2- Fan Hub
3- Idler Pulley
4- Oil Level Check
5- Oil Fill
6- Engine Block Drain
7- Oil Cooler Drain
8- Oil Filter
9- Crankcase Drain

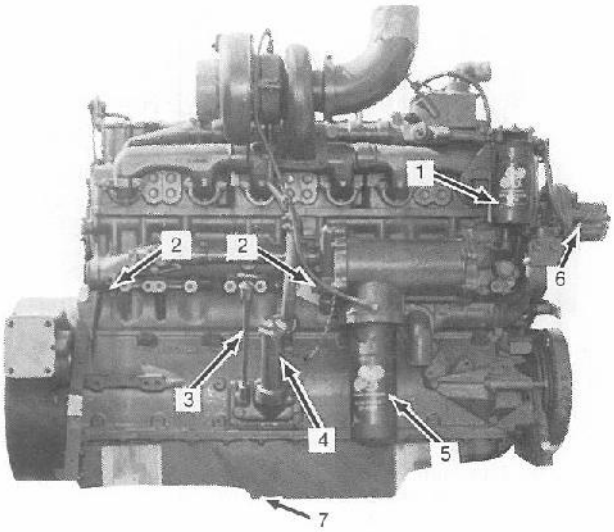
Engine Performance Curve
3406 DITA 360



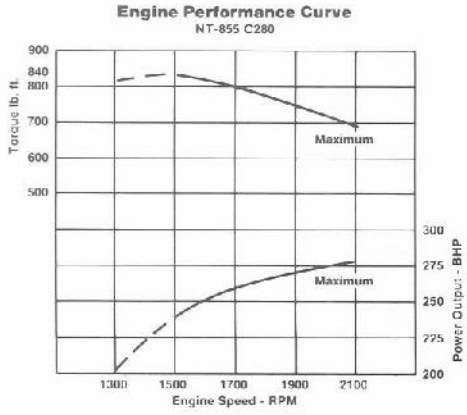
Specifications



1- Crankcase Breather
2- Fan Belt Tension Screw
3- Water Pump Belt Tension Screw
4- Data Plate
5- Fuel Filters



1- Water Filter
2- Coolant Drain
3- Oil Level Dipstick
4- Oil Fill Port
5- Oil Filter
6- Fan Hub Lube Points
7- Oil Drain Plug



Engine(s)

General Specifications

Make: Cummins
Model: NT 855-C280
Type: Turbocharged, 4-Stroke Cycle, Inline 6 Cylinder
Power Rating: 280 bhp (209 K.w)
Governed RPM: 2100
Peak Torque: (1500 rpm) 840 lb ft (1139 N.m)
Nominal Torque Rise: 20%
Bore & Stroke: 5.5 x 6.0 in (140 x 152 mm)
Piston Displacement: 855 cu in (14 L)
Engine High Idle (No Load): 2300 rpm
Engine Low Idle: 600 rpm approx

Lubrication Specifications

Oil Type: Heavy Duty API Class CD or CC/CD
Oil Viscosity:

SAE Viscosity Grade*	Ambient Temperature*
Recommended	
10W-30	-13°F to 95°F (-25°C to 35°C)
15W-40	14°F and above (-10°C & above)
20W-40	32°F and above (0°C & above)

*SAE-5W mineral oils should not be used.

***Oil Pressure:** Minimum at idle - 5/20 PSI (34/138 KPA)--Rated Speed - 40/70 PSI (276/483 KPA)

Engine oil pressure at 225°F (107°C) oil temperature.

Oil Capacity: 8.8 gal (33.3 liters) including filters
Oil Filters: Spin-On full flow on Engine Steiger P/N 01-2187 and Spin-On By-Pass External Mounted Steiger P/N 90-1158T1
Cooling System Capacity: 20.25 gal (76.8 L)
Water Filter: Service Element Steiger P/N 28-031
Fuel Filter: Steiger P/N 28-035

Factory fill oil is 15W-40.

Engine(s)

General Specifications

Make: Cummins
Model: NT 855-C325
Type: Turbocharged, 4-Stroke Cycle, Inline 6 Cylinder
Power Rating: 325 bhp (242.5 K.w)
Governed RPM: 2100
Peak Torque: (1500 rpm) 1005 lb ft (1363 N.m)
Nominal Torque Rise: 24%
Bore & Stroke: 5.5 x 6.0 in (140 x 152 mm)
Piston Displacement: 855 cu in (14 L)
Compression Ratio: 14.3:1
Engine High Idle (No Load): *2300 rpm approx*
Engine Low Idle: 600 rpm approx

Lubrication Specifications

Oil Type: Heavy Duty API Class CD or CC/CD
Oil Viscosity:

SAE Viscosity Grade*	Ambient Temperature*
Recommended	
10W-30	-13°F to 95°F (-25°C to 35°C)
15W-40	14°F and above (-10°C & above)
20W-40	32°F and above (0°C & above)

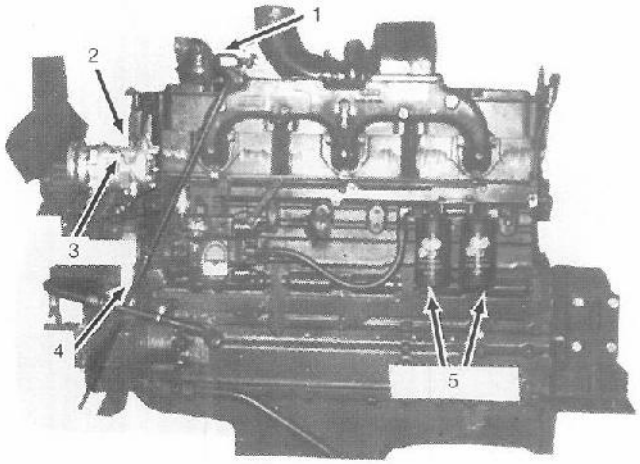
*SAE-5W mineral oils should not be used.

***Oil Pressure:** Minimum at idle - 5/20 PSI (34/138 KPA)--Rated Speed - 40/70 PSI (276/483 KPA)

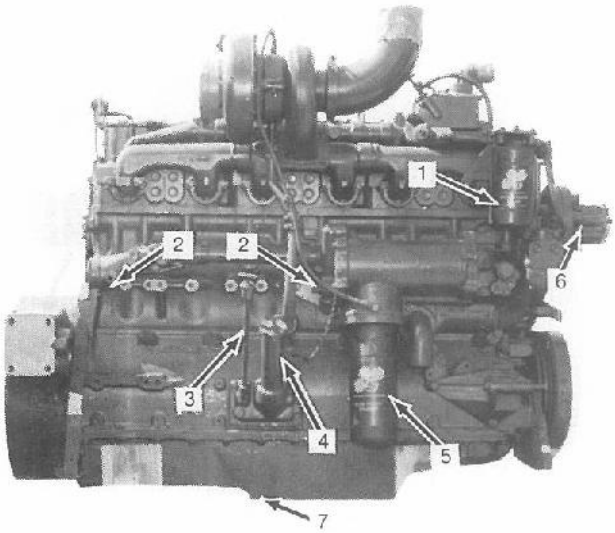
*Engine oil pressure at 225°F (107°C) oil temperature.

Oil Capacity: 8.8 gal (33.3 liters) including filters
Oil Filters: Spin-On full flow on Engine Steiger P/N 01-2187 and Spin-On By-Pass External Mounted Steiger P/N 90-1158T1
Cooling System Capacity: 20.25 gal (76.8 L)
Water Filter: Service Element Steiger P/N 28-031
Fuel Filter: Steiger P/N 28-035

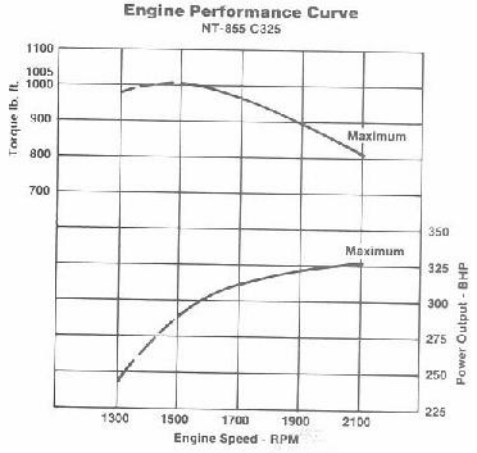
Factory fill oil is 15W-40.



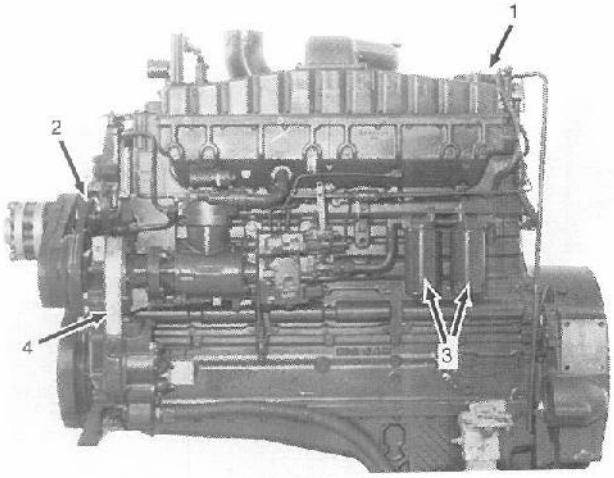
1- Crankcase Breather
2- Fan Belt Tension Screw
3- Water Pump Belt Tension Screw
4- Data Plate
5- Fuel Filters



1- Water Filter
2- Coolant Drain
3- Oil Level Dipstick
4- Oil Fill Port
5- Oil Filter
6- Fan Hub Lube Points
7- Oil Drain Plug

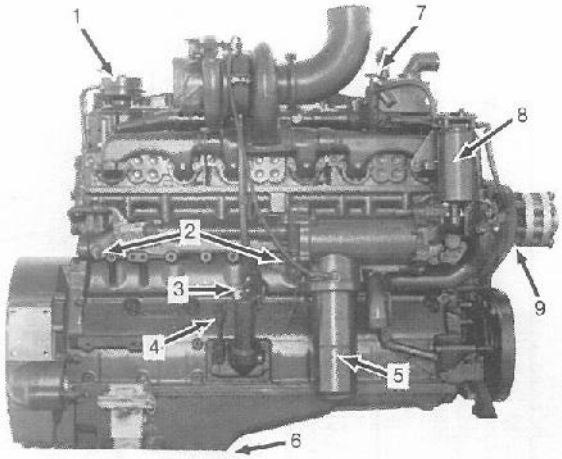


Specifications



Engine Left Side

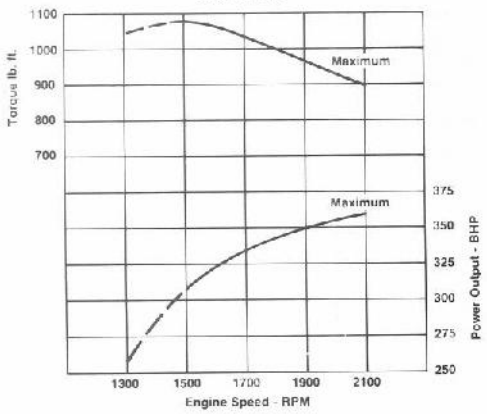
1- Crankcase Vent
2- Water Pump
3- Fuel Filters
4- Data Plate



Engine Right Side

1- Crankcase Vent
2- Coolant Drain
3- Oil Fill Port
4- Oil Level Dipstick
5- Oil Filter
6- Crankcase Drain
7- Water Filter Valve
8- Water Filter
9- Fan Hub

Engine Performance Curve
NTA-855 C360



Engine(s)

General Specifications

Make: Cummins
Model: NT 855-C360
Type: Turbocharged & Aftercooled, 4-Stroke Cycle, Inline 6 Cylinder
Power Rating: 360 bhp (268.5 K.w)
Governed RPM: 2100
Peak Torque: (1500 rpm) 1080 lb ft (1464.4 N.m)
Nominal Torque Rise: 20%
Bore & Stroke: 5.5 x 6.0 in (140 x 152 mm)
Piston Displacement: 855 cu in (14 L)
Compression Ratio: 14.3:1
Engine High Idle (No Load): 2300 rpm approx
Engine Low Idle: 600 rpm approx

Lubrication Specifications

Oil Type: Heavy Duty API Class CD or CC/CD
Oil Viscosity:

SAE Viscosity Grade*	Ambient Temperature*
Recommended	
10W-30	-13°F to 95°F (-25°C to 35°C)
15W-40	14°F and above (-10°C & above)
20W-40	32°F and above (0°C & above)

*SAE-5W mineral oils should not be used.

***Oil Pressure:** Minimum at idle - 5/20 PSI (34/138 KPA)--Rated Speed - 40/70 PSI (276/483 KPA)

*Engine oil pressure at 225°F (107°C) oil temperature.

Oil Capacity: 8.8 gal (33.3 liters) including filters
Oil Filters: Spin-On full flow on Engine Steiger P/N 01-2187 and Spin-On By-Pass External Mounted Steiger P/N 90-1158T1
Cooling System Capacity: 20.25 gal (76.8 L)
Water Filter: Service Element Steiger P/N 28-031
Fuel Filter: Steiger P/N 28-035

Factory fill oil is 15W-40.

ROPS Decal Explanation

1. **Construction Specification, SAE-J1040C**

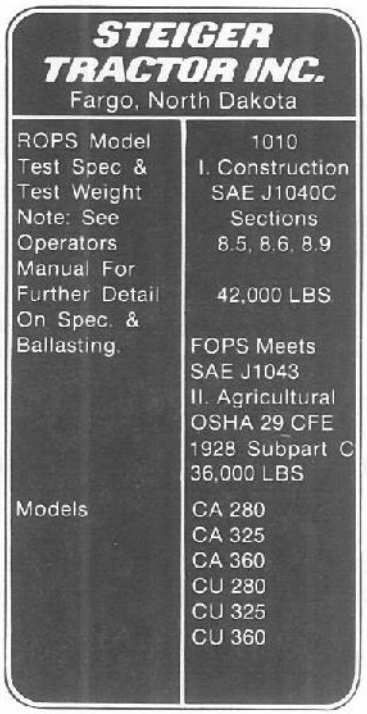
   Section 8.5
   Tractors used as the prime mover for semi-mounted and towed fifth wheel attachments. Test weight 42,000 lb (19068 Kg)

   Section 8.6
   Tractors used as the prime mover for semi-mounted and towed fifth wheel attachments. Test weight 36,400 lb (16526 Kg)

   Section 8.9
   Tractors equipped with utility blade. Test weight 42,000 (19068 Kg)

2. **Agricultural Specification, OSHA 29CFR1928, subpart C**

   Tractors used in Agricultural applications, test weight 36,000 lb (16344 Kg).



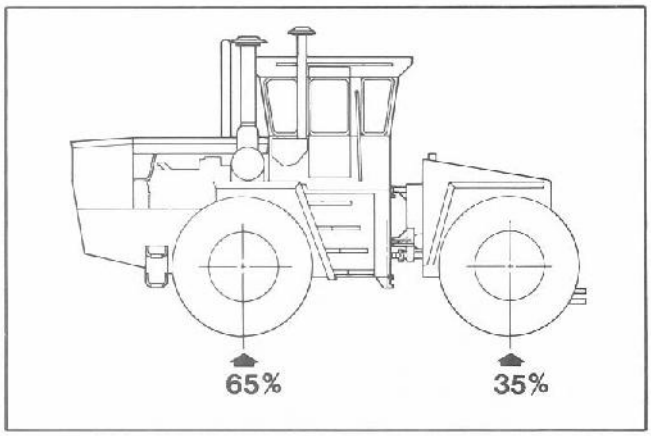
Maximum Warranted Weights

IMPORTANT: *To avoid the possibility of exceeding the maximum gross warranted weight, DO NOT mix applications or attachments where the possibility exists that the maximum vehicle gross weight will be exceeded. For example; If the tractor is equipped with a utility blade, the blade may have to be removed before using fifth wheel or semi-mounted attachments or when drawbar usage is required.*

Maximum Warranted Vehicle Gross Weight Models CA & CU 280-325-360

Application	Maximum Warranted Weight
Utility Blade (35.5 x 32 Single Tires Only)	42,000 lb (19068 Kg)
Industrial Rollers and Compactors (Single Wheels Only)	42,000 lb (19068 Kg)
*Semi-Mounted or Towed Fifth Wheel Attachments (35.5 x 32 Single Tires Only)	42,000 lb (19068 Kg)
Agricultural or Industrial Drawbar Usage	36,000 lb (16344 Kg)
*When tractor is used as the prime mover.	

Specifications



Agriculture or Industrial Drawbar Usage

There may be times when it is desirable to weight the tractor to decrease slippage and increase stability.

There are many factors that affect traction and balance that need to be considered before adding liquid ballast; such as soil conditions and/or topography, draft load of the implement or equipment being used etc.

Desirable tractor weight distribution is approximately 35 percent of the weight on the rear axle and 65 percent of the weight on the front axle. If it becomes necessary to add liquid ballast for better traction or stability, this ratio must be maintained in all drawbar applications. If dual wheels are used DO NOT add liquid ballast to the outside dual tires.

Desirable wheel slippage should be 10-15 percent in average conditions. This slippage rate is important in order to gain the optimum tire and power train life.

If liquid ballast is required, ballast to 65-35 percent, which will result in approximately 50 percent weight distribution under load. For example; if 4000 pounds of weight is to be added, the 65-35 percent static weight ratio must be maintained. Do not exceed the maximum warranted vehicle gross weight for Agriculture or continuous duty drawbar usage.

Ballast Information

Utility blades and other mounted options must be considered as ballast. Because of this, to maintain stability and balance, specific ballast instructions must be followed. Liquid ballast should always be removed when not required, if liquid ballast is required, it must always be used in the proper ratio for the intended application and should never be used in outside dual tires. Never exceed the maximum warranted vehicle gross weight listed for the various applications.

Front Ballast

When semi-mounted or fifth wheel attachments are used it may be desirable to add liquid ballast to the front tires to maintain stability and balance. Do not add ballast to the rear tires when using semi-mounted or fifth wheel attachements.

Use a solution of water and calcium chloride to prevent water from freezing. A mixture of 3.5 pounds (1.59 Kg) of calicium chloride per gallon (0.4 Kg per liter) will provide slush free protection to -12°F (-24°C).

Fill the front single tires to the required level to provide stability and balance.

Combined static weight of the tractor and front ballast must not exceed maximum vehicle gross warranted weight.

Rear Ballast

When using liquid ballast, use a solution of water and calcium chloride to prevent water from freezing. A mixture of 3.5 lbs (1.59 Kg) of calcium chloride per gallon (0.4 Kg per liter) will provide slush free protection to -12°F (-24°C).

When using front mounted utility blades or other attachments it will usually be required to add liquid ballast to the rear tires only to provide stability and balance. Fill the rear tires to the level required to achieve approximately 50 percent of the total static weight on each axle.

Combined static weight of front attachment and rear ballast must not exceed the maximum vehicle gross warranted weight.

Remove liquid ballast whenever it is not required. If the tractor is to be used in a drawbar or fifth wheel application, the tractor must be ballasted to the proper ratio for the application.

Tire Inflation

Tires should be inflated according to size, ground conditions, ballast and other variable conditions.

Check the tire pressures cold with an accurate tire gauge having 1 p.s.i. (0.07 bar) graduations. If tires contain liquid ballast, position the valve stem at the bottom and use a special air-water gauge.

Operate a new unit or newly-mounted tires for thirty (30) minutes under light loads to allow them to "seat" in on the rim.

RECOMMENDED TIRE LOADS AND INFLATIONS

Tire Load Limits at cold inflation pressure
at 20 mph (16.1 kph) Maximum speed

Tire Type (Ply)	Single -Duals	Tire Maximum Load Rated PSI (Kg)	Recommended *PSI (bar)	**Maximum PSI (bar)
30.5L-32 R-1,R-2 (10) 30.5LR32 R-1 (10)	Single	9,120# (4140)	18 (1.2)	18 (1.2)
30.5L-32 LS-2 (12)	Single	10,390# (4717)	20 (1.4)	20 (1.4)
35.5L-32 R-1, LS-2 (16)	Single	15,100# (6855)	20 (1.4)	22 (1.5)
*23.1-34 R-1, R-2 (8)	Duals	6,260# (2842)	14, 12 (0.96)(0.82)	16, 14 (1.1)(0.96)
24.5-32 R-1 (10) 24.5R32 R-1 (10)	Duals	7,660# (3478)	14, 12 (0.96)(0.82)	20, 18 (1.4)(1.2)
24.5-32 LS-2 (12)	Duals	8,520# (3868)	14, 12 (0.96)(0.82)	24, 22 (1.6)(1.5)

* When two numbers appear, they represent the inflation pressures of the inside and outside dual tires respectively.

CAUTION: Never exceed tire manufacturers maximum recommended inflation pressure.

NOTE: *When dual tires are used inflate outside dual tire 2 psi (0.14 bar) less than inside tire.* **Do Not** inflate tires less than 12 psi (0.83 bar).

WARNING: Use safety cage or chain, clip on chuck, extension hose, wear eye protection and stand away from the tire while inflating to prevent the possibility of personal injury due to blowoffs, etc.

IMPORTANT: *When 30.5 x 32 R1 10 ply tires are used as singles under normal operating conditions, never allow the tire to be operated below 16 PSI (1.1 bar). In severe applications or where any ballast is added, tire pressure should be maintained at 20 PSI (1.4 bar).*

WARNING: Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in personal injury. DO NOT attempt to mount a tire unless you have the proper equipment and experience to perform the job safely. Have it done by a qualified tire repair service.

WARNING: Never weld on a wheel or rim with an inflated tire.

GEAR	"A" TIRES			
	*Low		**High	
	MPH	KMH	MPH	KMH
1	1.6	2.9	4.2	6.7
2	3.4	5.5	7.7	12.4
3	4.3	6.9	9.8	15.8
4	5.4	8.7	12.4	19.9
5	6.7	10.8	15.5	24.9
R	2.3	3.7	5.2	8.4

"B" TIRES			
*Low		**High	
MPH	KPH	MPH	KPH
2.1	3.4	4.7	7.6
3.8	6.1	8.7	14.0
4.8	7.7	11.0	17.7
6.0	9.7	14.0	22.5
7.6	12.2	17.5	28.2
2.6	4.2	5.9	9.5

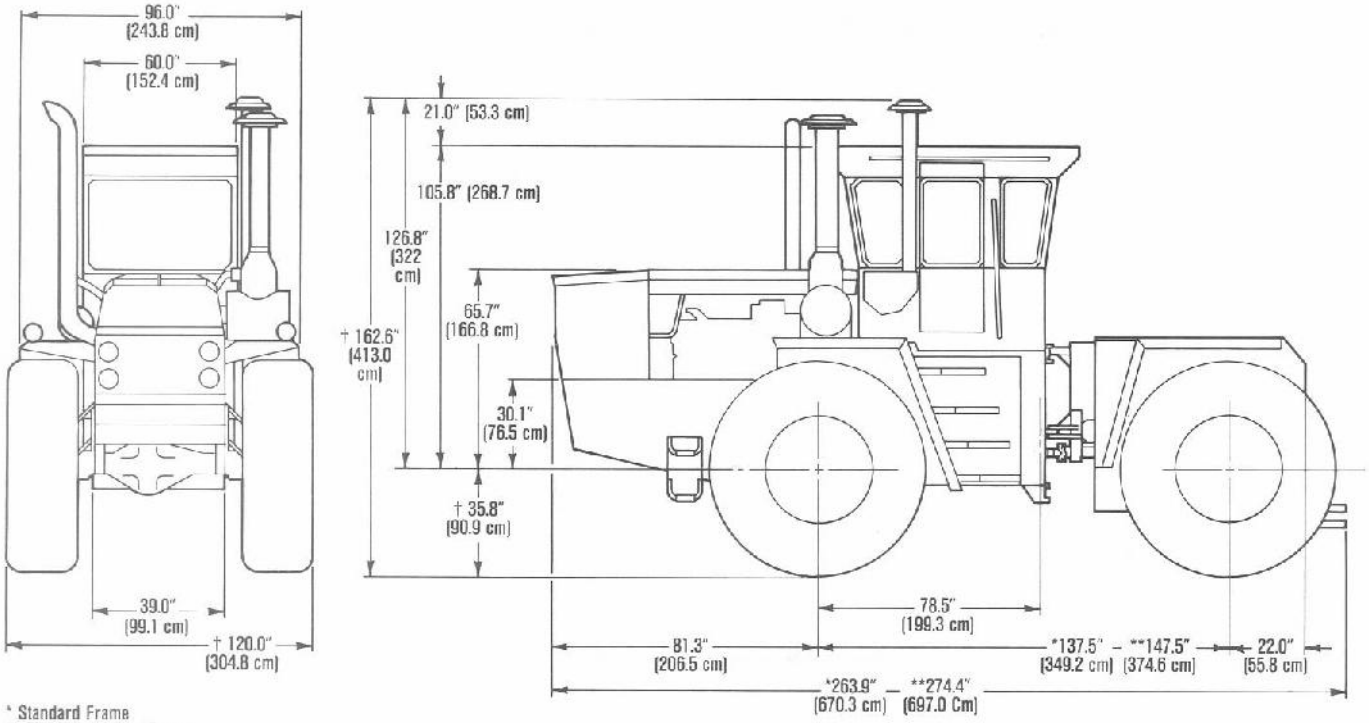
*Transfer Case Low Range
**Transfer Case High Range

TIRE AND GROUND SPEED DATA:
Engine RPM: 2100
Transmission: HT754CRD
Axle: S-40

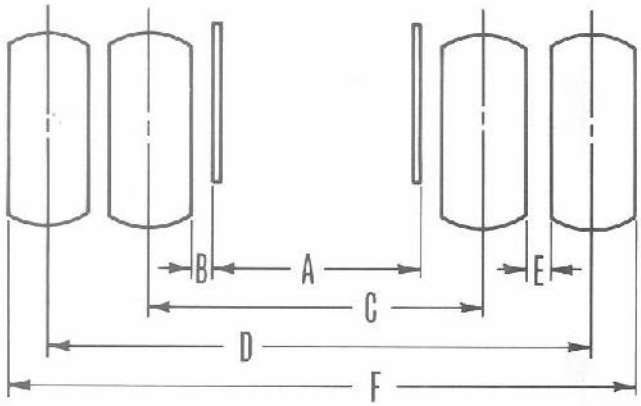
"A" TIRES
23.1 x 34R-1
24.5 x 32LST
30.5L x 32R-1

"B" TIRES
35.5L x 32R1
35.5L x 32LS-2

Specifications



* Standard Frame
** Fifth Wheel Rear Frame
† w/35.5 x 32 Singles



NOTE: *Specifications are subject to change without prior notification.*

Tire & Frame Dimensions General Specifications

(All dimensions taken with 35.5 x 32LS2 tires)

Wheelbase: 137.5 in (349.2 Cm) Std rear frame - 147.5 in (374.7 Cm) Fifth wheel rear frame
Ground Clearance: 25.2 in (64.0 Cm) axle to ground - 22.6 in (57.4 Cm) drawbar hanger to ground w/std rear frame
Height - Top of Cab: 141.6 in (359.7 Cm)
Height - Overall: 162.6 in (413.0 Cm)
Length: 263.9 in (670.3 Cm) w/std rear frame -274.4 in (697.0 Cm) w/fifth wheel rear frame
Width: 96.0 in (243.8 Cm) Outside of fenders -120.0 in (304.8 Cm) Outside of single tire -39.0 in (99.06 Cm) frame width
Turning Radius: 18.6 ft (567 Cm) w/std rear frame-drawbar center line to center of circle -19.8 ft (604 Cm) w/fifth wheel rear frame
Frame Articulation: 35° left/right
Frame Oscillation: ± 15°

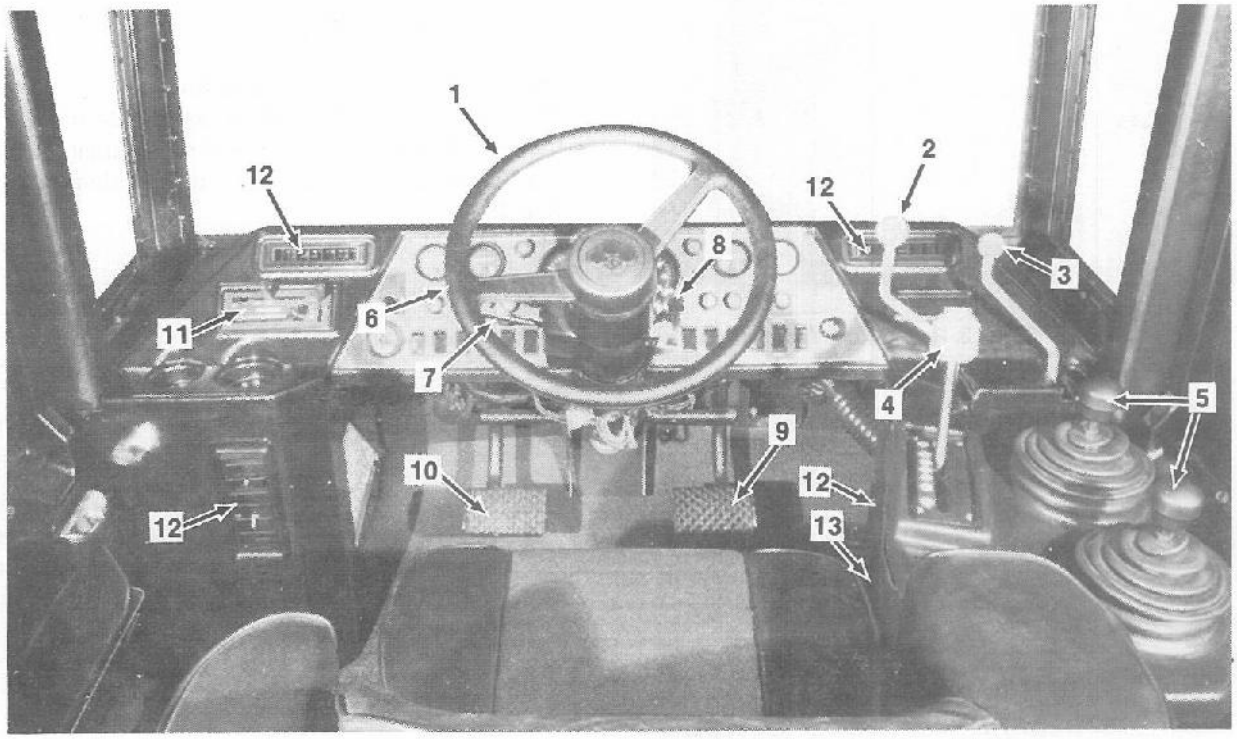
Tire and Frame Dimension Chart (w/35.5 x 32 singles)

	A		B		C		D		E		F	
Tire Size	**in.**	**cm.**	**in.**	**cm.**	**in.**	**cm.**	**in.**	**cm.**	**in.**	**cm.**	**in.**	**cm.**
23.1 x 34	39.00	99.0	8.45	21.4	79.00	200.7	136.36	346.3	5.58	14.2	159.46	405.0
24.5 x 32	39.00	99.0	8.26	21.0	80.00	203.2	139.36	354.0	5.18	13.1	163.86	416.2
30.5 x 32	39.00	99.0	9.50	24.1	88.50	224.8	x	x	x	x	x	x
35.5 x 32	39.00	99.0	5.0	12.7	84.5	214.6	x	x	x	x	x	x

Know the Tractor Controls and Instruments to Assure Safe Operation.

Instruments and Controls

Operators Station



1-Steering Wheel
2-Hand Throttle
3-2-Speed Transfer Case Hi-Lo Range
4-Transmission Shift & Control
5-Hydraulic Controller(s)
6-Turn Signal
7-Steering Wheel Tilt Lever
8-Master Key Switch
9-Tractor/Implement Brake
10-Implement Brake
11-A/C-Heat Control
12-Air Outlet Louvres
13-Accelerator Pedal

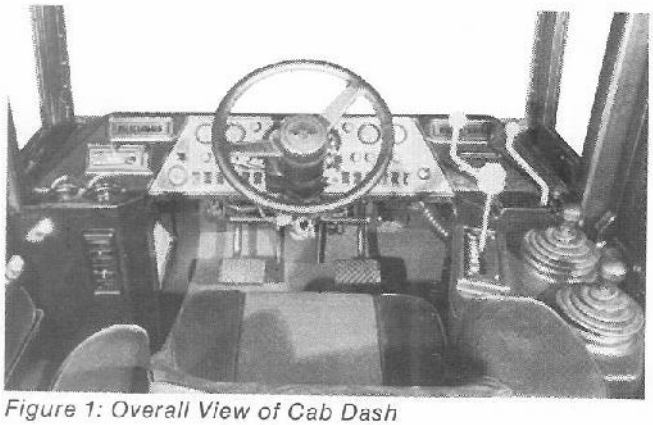


Figure 1: Overall View of Cab Dash

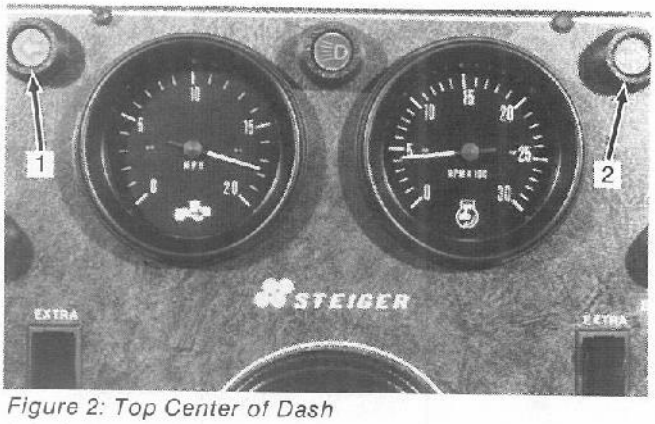


Figure 2: Top Center of Dash

1. Left turn indicator light 2. Right turn indicator light

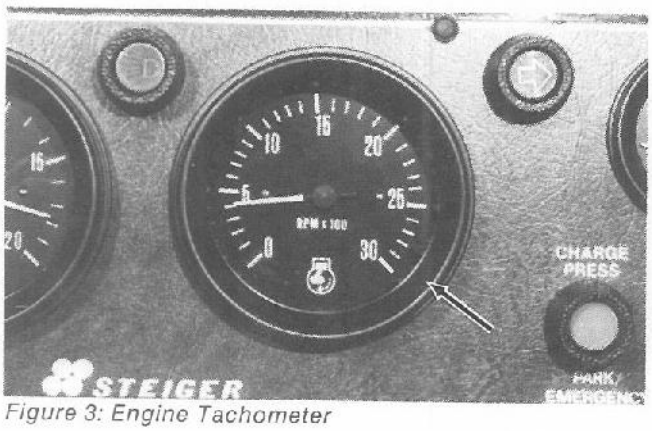


Figure 3: Engine Tachometer

Figure 4: Speedometer

Operators Station (Fig. 1)

Before operating the tractor for the first time, become familiar with all the controls and their functions. The following information will help you become familiar with instruments and controls in the operators station.

It is important to remember that the tractor is equipped with an audio alarm system, backed up by indicator lights, to indicate a fault in any of the following systems - Engine Cooling, Engine Oil Pressure, Air Supply, Transmission Pressure and Temperature and Park/Emergency Brake apply. Whenever the audio alarm sounds while in operation monitor the indicator lights and gauges, investigate the cause before continued operation.

Turn Signal Indicator: (Fig 2)

The turn signal indicator lights will flash on and off when the turn signal switch is activated. Both turn signal indicator lights will flash on and off simultaniously when the flasher switch is activated on the steering column. (Fig. 2)

Engine Tachometer (Fig. 3)

The tachometer indicates engine speed in revolutions per minute (rpm). The dial of the tachometer has graduations of 100 rpm. The recommended rpm for continous working loads is in the 1700 to 2100 rpm range. Low idle is approximately 600 rpm. (Fig. 3)

Speedometer (Fig. 4)

The speedometer has graduations of one (1) mph (1.61 Km/h) and will indicate the approximate ground speed of the tractor. Actual ground speed may vary somehwat because of load intensity, tire pressure and soil conditions.

Voltmeter (Fig. 5)

The voltmeter is designed to indicate four (4) conditions (A, B, C or D) within the electrical system.

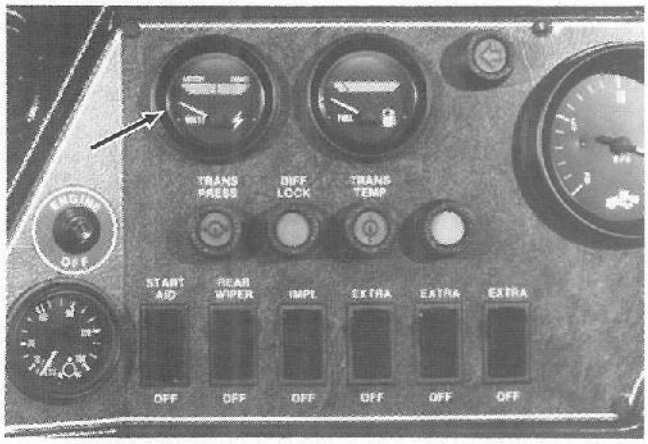


Figure 5: Left Side of Dash

A. Switch is ON engine not running (Fig. 6)

When the switch is turned on, the voltmeter should register in the green band if all cells of the battery are good. This means that the battery is producing 12 volts. The battery may be low and require charging but when the needle registers green, all cells are good.

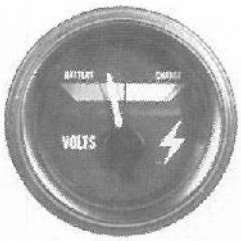


Figure 6: Left Hand Green Band (A)

B. Switch in ON engine not running (Fig. 7)

If the needle registers red on the left hand side of the meter, this means that the battery is not producing 12 volts and quite likely has one or more cells that are not producing current. A fault in the system is indicated by this reading or excessive current draw.

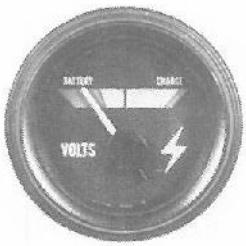


Figure 7: Left Hand Red Band (B)

C. Engine Running (Fig. 8)

When the engine is running, the needle should register in the second green area on the right side of the meter. This means that the alternator is producing the correct amount of voltage to charge the battery and supply current to accessories. If the needle should drop back into the left hand green band when the engine is running, this indicates that the alternator is not producing enough voltage to supply the applied load or is not charging at all.

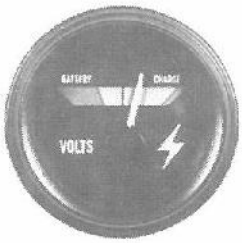


Figure 8: Right Hand Green Band (C)

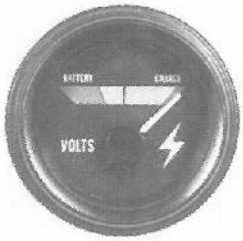


Figure 9: Right Hand Red Band (D)

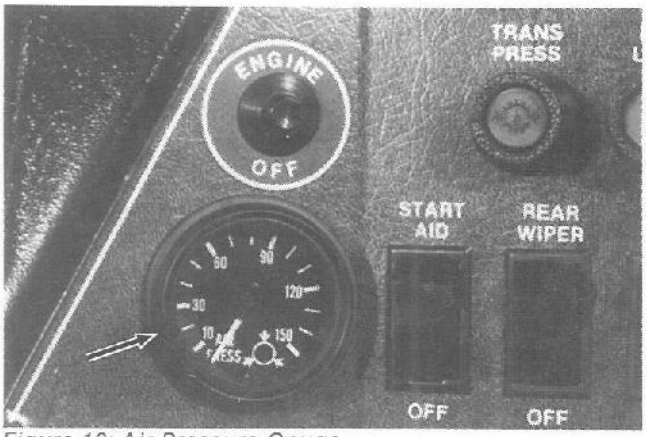


Figure 10: Air Pressure Gauge

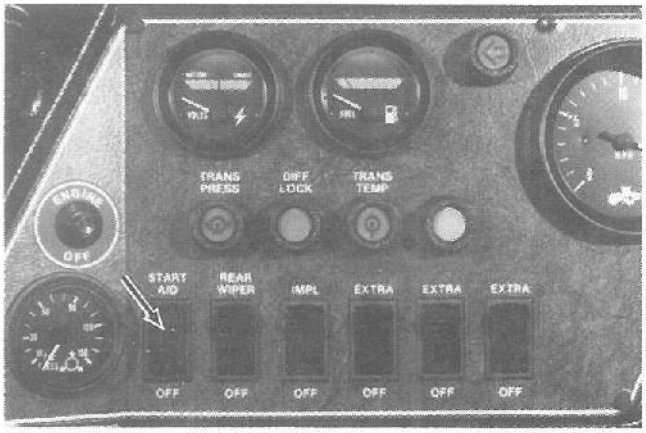


Figure 11: Start Aid Switch

D. Engine Running (Fig. 9)

If the needle registers in the right hand, red band of the meter, this indicates the alternator is overcharging, and not regulating properly. If either of the following conditions exists, contact your dealer for service.

1. Engine running needle registers in the left hand green band.
2. Engine running needle registers in either red band

Air Pressure Gauge

The air pressure gauge will indicate the available air supply in pounds per square inch. If gauge pressure reading should fall to 60 psi or less while in operation, shut down the tractor and investigate the cause before continued operation. If gauge reading falls to 60 ± 5 psi, the audio alarm will sound, and the Park/Emergency Brake will start to apply.

The air system governor is regulated to "cut-in" at approximately 90 psi and "cut-out" at approximately 105 psi. Maximum gauge readings should not exceed 105 ± 5 psi.

Ether Start Aid Switch (Fig. 11)

Press switch and release. The transmission must be in neutral and the key switch must be in the start position. Upon release of start aid switch 2 cc. of ether will be injected.

IMPORTANT: *Do not use excessive ether (See Cold Weather Starting Information)*

Stop Switch (Cat Engine Models Only)

Use this switch to stop the engine on all Caterpillar 3406 engine powered tractors. The engine will NOT stop by turning off the master key switch.

Depress "STOP" button to shut off fuel to the engine on the CA 280, 325 and 360 model tractors.

NOTE: *Cummins engine powered tractors will shutdown by turning the master key switch to the "off" position.*

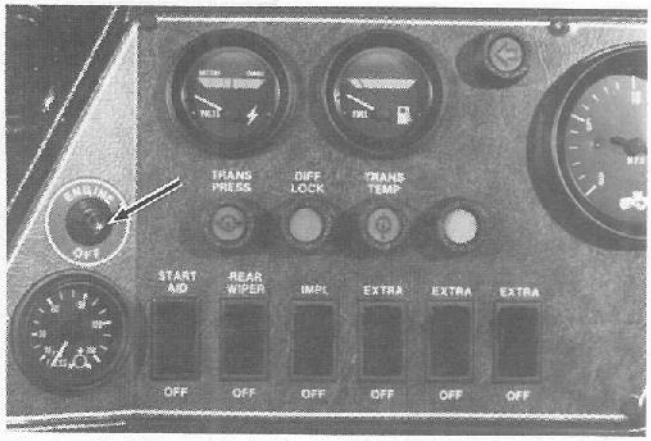


Figure 12: Stop Switch (Cat Models only)

Rear Windshield Wiper Switch (Fig. 13)

The wiper switch will activate the rear wiper motor at either high or low speed, whichever is desired.

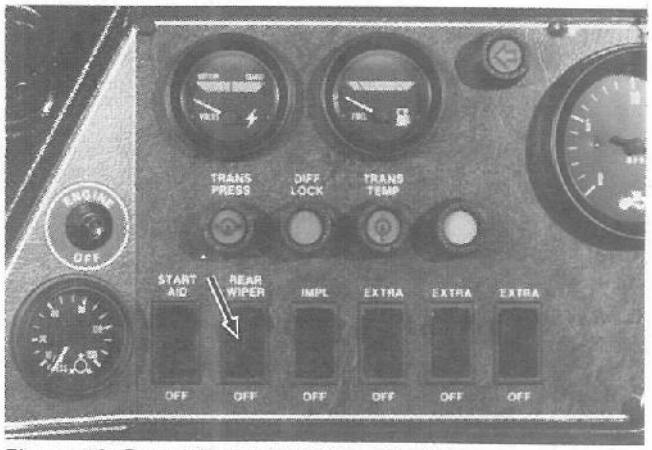


Figure 13: Rear Windshield Wiper Switch

Implement Switch (Fig. 14)

The implement switch is normally used to operate the electrical equipment mounted on remote equipment by means of a quick disconnect plug at the rear of the tractor.

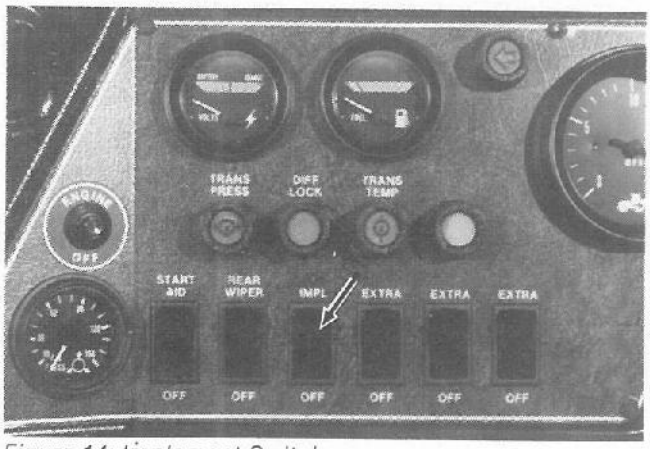


Figure 14: Implement Switch

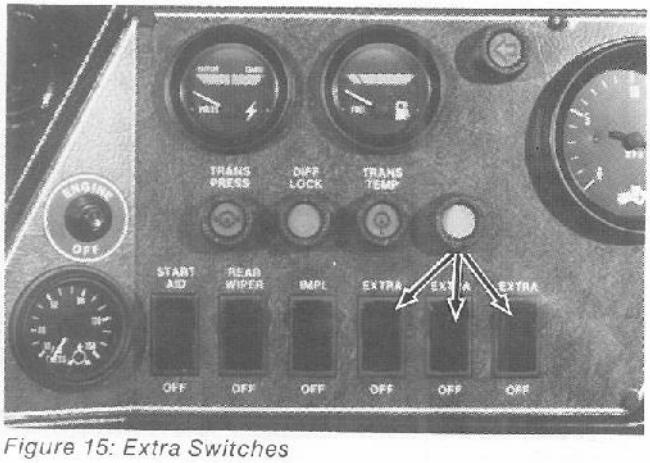


Figure 15: Extra Switches

Extra Switches (Fig. 15)

The extra electrical switches may be used to operate optional or add-on accessories.

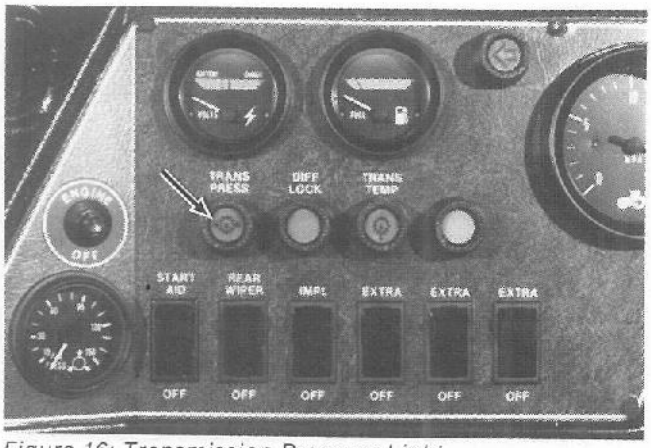


Figure 16: Transmission Pressure Light

Transmission Pressure Light (Fig. 16)

The transmission oil pressure light "off" during operation indicates normal oil pressure in the transmission. The transmission pressure light will illuminate whenever the transmission oil pressure is lower than normal, and the audio alarm will sound. The cause should be investigated immediately. (See your Steiger Dealer.)

IMPORTANT: *Under no circumstances should the tractor be operated if the light stays on during normal operating conditions.*

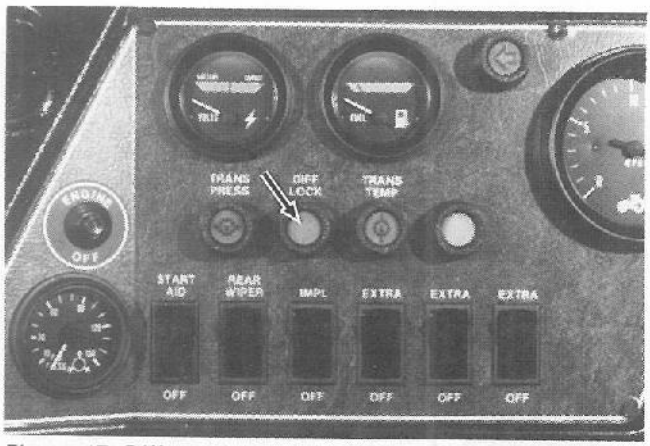


Figure 17: Differential Lock Indicator Light

Differential Lock Light (Fig. 17)

The differential lock light will illuminate to alert the operator that the controlled traction differential is engaged.

The controlled traction differential should only be engaged when maximum tractive effort is required. (See operating section of this manual for additional information.)

Trans. Temperature Warn. Light (Fig. 18)

The transmission temperature warning light will illuminate when the transmission oil temperature rises beyond safe limits. At this time an audible tone alarm will sound. This condition usually indicates the transmission should be downshifted to the next lower range or the transmission is operating in converter too long. Investigate the cause before continued operation.

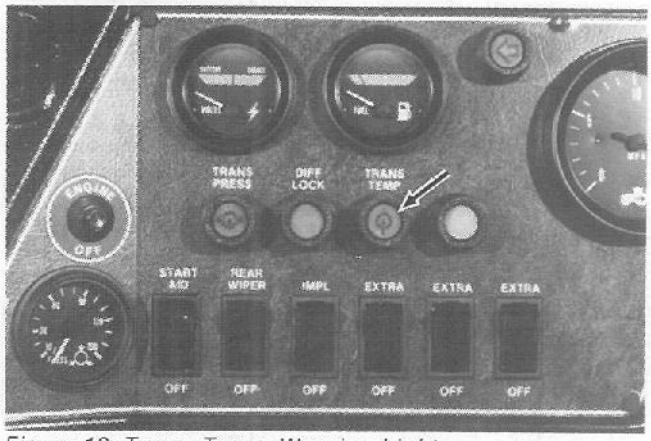


Figure 18: Trans. Temp. Warning Light

Fuel Level Gauge (Fig. 19)

This gauge will indicate the approximate volume of fuel in the tank. The fuel tank should be filled at the end of each day to prevent condensation from forming on the walls of the tank and mixing with the fuel.

When the gauge pointer is at or near the red band on the gauge, fuel should be added. Do not allow engine to run out of fuel.

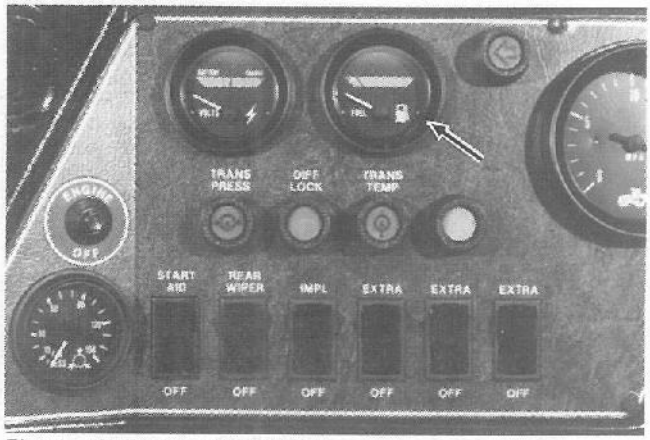


Figure 19: Fuel Level Gauge

Engine Water Temperature Gauge (Fig. 20)

The water temperature gauge indicates if the cooling system is operating properly. Normal operating temperature is maintained by the engine water temperature regulator(s). If the gauge hand should move into the right hand red band, shut down the engine and investigate the cause of overheating.

IMPORTANT: *When coolant temperature rises beyond normal, an audible tone alarm will sound. Investigate the cause of overheating before continued operation.*

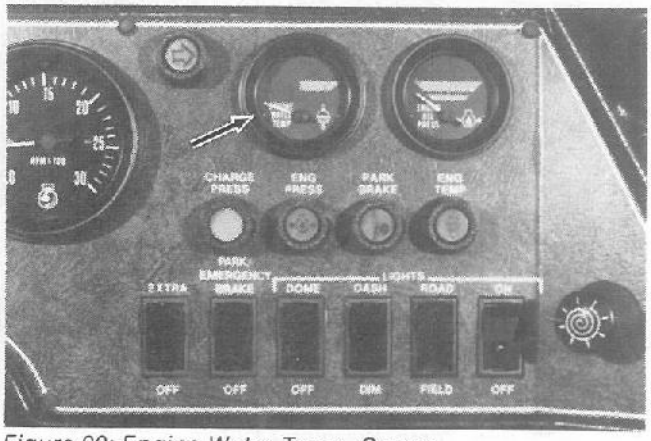


Figure 20: Engine Water Temp. Gauge

Instruments and Controls

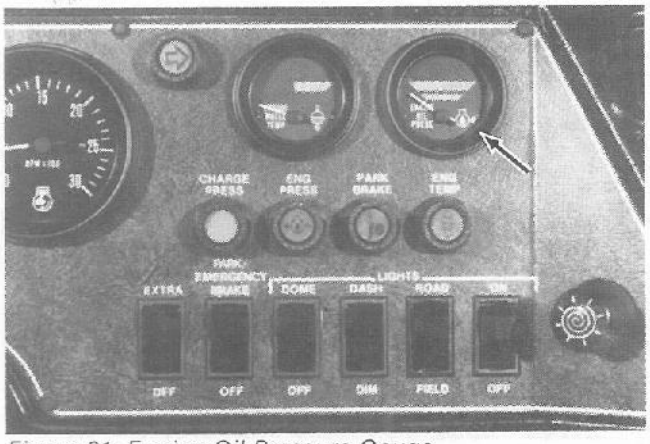


Figure 21: Engine Oil Pressure Gauge

Engine Oil Pressure (Fig. 21)

Oil pressure is normally greatest after starting a cold engine. As the oil warms the pressure drops. Oil pressure is greater at operating speeds than at low idle.

The engine oil pressure gauge should register within the green operating pressure range at normal operating temperatures. WHEN LOW OR NO OIL PRESSURE IS INDICATED ON THE GAUGE, AN AUDIBLE TONE ALARM WILL SOUND. STOP THE ENGINE AND DETERMINE THE CAUSE.

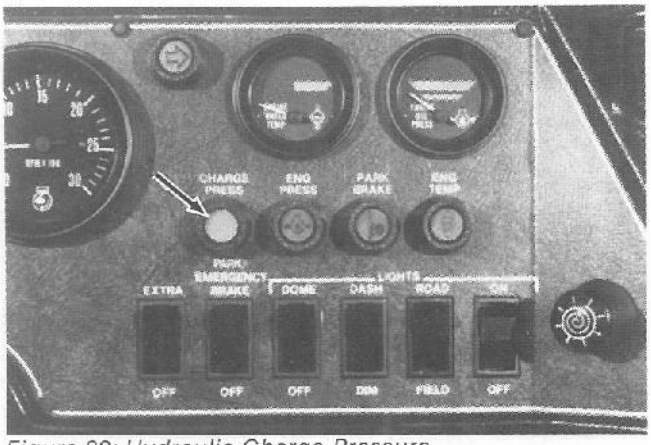


Figure 22: Hydraulic Charge Pressure

Hydraulic Charge Pressure Light (Fig. 22)

Whenever this light illuminates it will indicate insufficient charge pressure to operate the hydraulic system.

Shut down the tractor and investigate the cause immediately if this light should illuminate.

CAUTION: Operating with insufficient hydraulic charge pressure will severely affect steering performance.

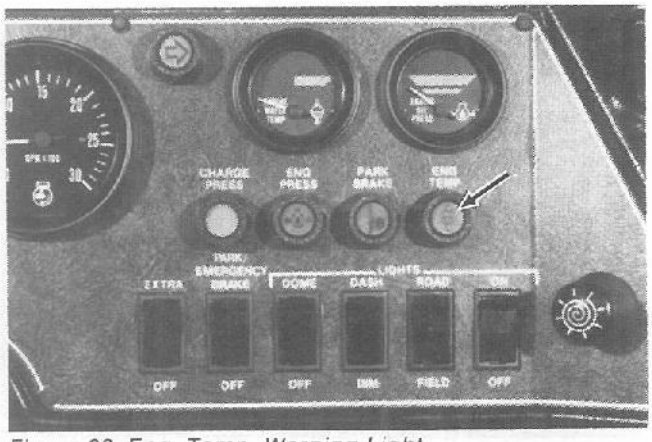


Figure 23: Eng. Temp. Warning Light

Engine Temperature Warning Light (Fig. 21)

The engine temperature warning light will illuminate due to excessive coolant temperatures. If this light illuminates, investigate the cause of overheating.

The audio alarm system will also sound if this light illuminates.

Park/Emergency Warning Light (Fig. 24)

The park/emergency brake warning light will illuminate whenever the park brake is activated and the key switch is in the "on" position. There will also be an audible tone alarm to alert the operator that the brake is applied.

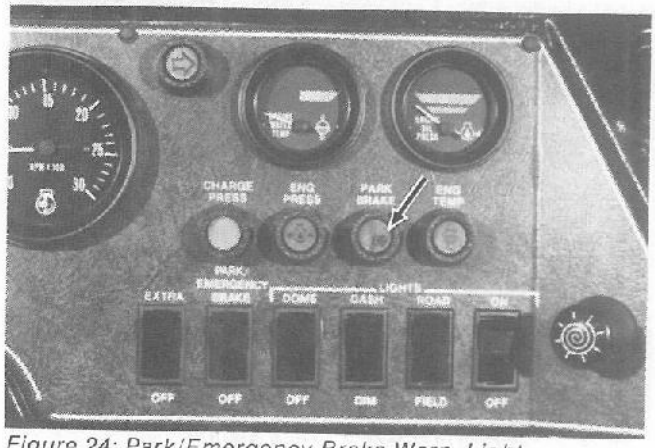


Figure 24: Park/Emergency Brake Warn. Light

Engine Oil Pressure Warning Light (Fig. 25)

The engine oil pressure warning light will illuminate when the key switch is on and with the engine stopped, or if the engine is running and has less than normal oil pressure. At this time the audible tone alarm will sound. Stop the engine and determine the cause.

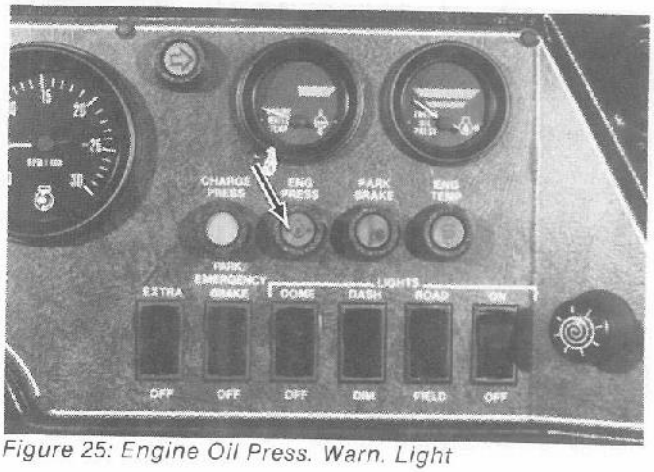


Figure 25: Engine Oil Press. Warn. Light

Lighter (Fig. 26)

Push in on the lighter knob to energize lighter. After a few seconds the lighter will automatically pop out.

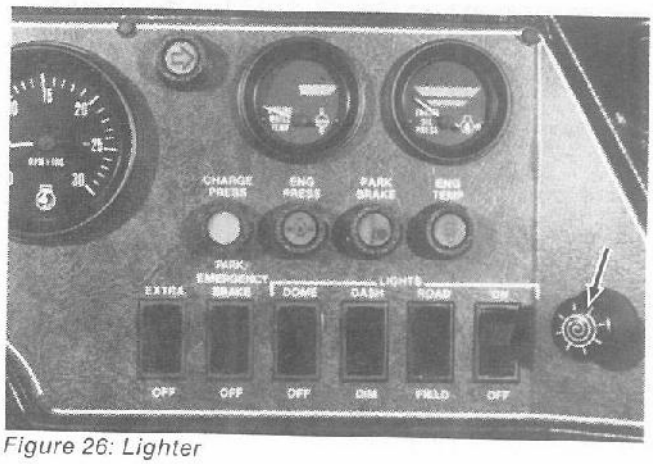


Figure 26: Lighter

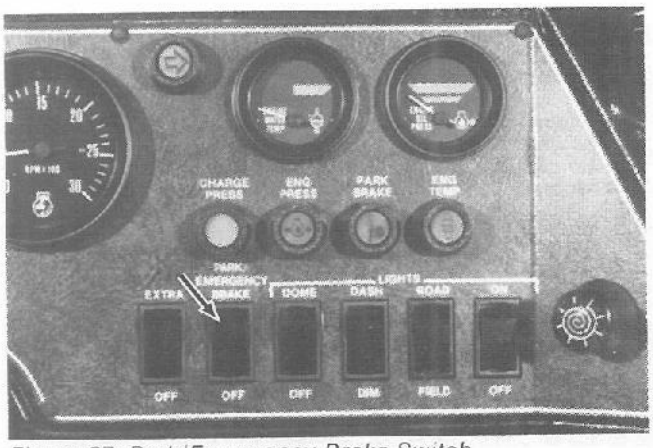


Figure 27: Park/Emergency Brake Switch

Park/Emergency Brake Switch (Fig. 27)

The park/emergency brake switch is used to apply the park brake. When the air supply is low the park brake is automatically applied. This switch must be turned "off" before tractor operation.

CAUTION: There is no "Park" position in the transmission. The park brake MUST be applied whenever the tractor is stopped.

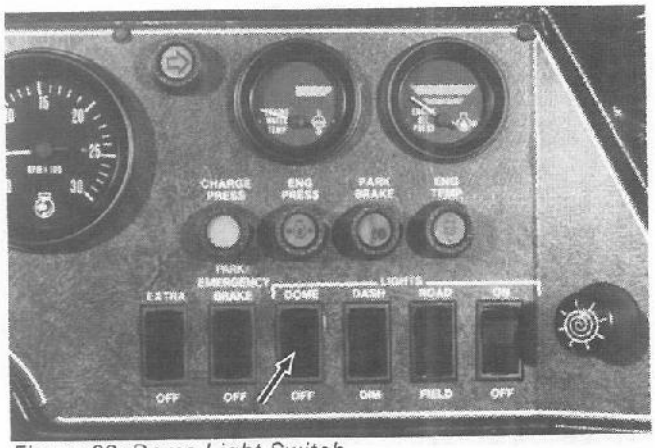


Figure 28: Dome Light Switch

Dome Light Switch (Fig. 28)

The dome light switch activates the two dome lights which are mounted in the upper console.

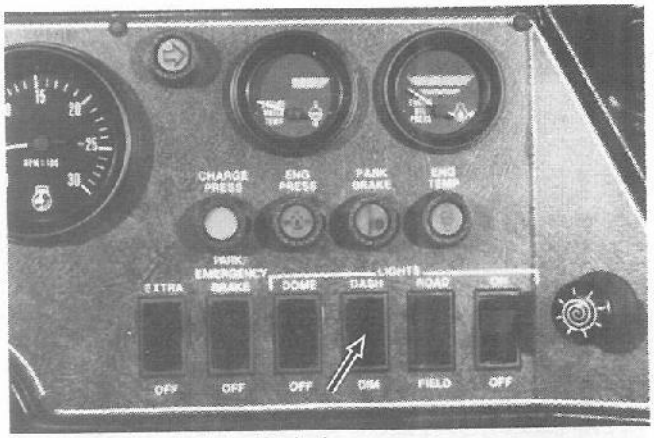


Figure 29: Dash Light Switch

Dash Light Switch (Fig. 29)

The dash light switch illuminates the lamps within the dash instruments. This is a two-position switch for bright or dim illumination.

Road and Field Light Switch (Fig. 30)

The road and field light switch can be used to select either road lights (front) or field and road lights (front and rear).

CAUTION: DO NOT use field lights when driving on public highways. Use road lights only. Towed implements or other equipment should be equipped with stop/tail and clearance lights. check local and state laws regulating day or night operation.

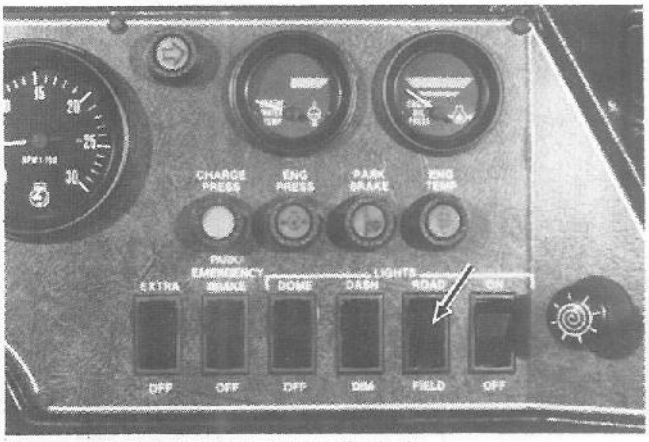


Figure 30: Road & Field Light Switch

Master Light Switch (Fig. 31)

The master light switch can be used to shut off all lights that are switched on without disturbing the individual switch settings.

Headlight Indicator Light

The headlight indicator light indicates the headlights are on "High Beam".

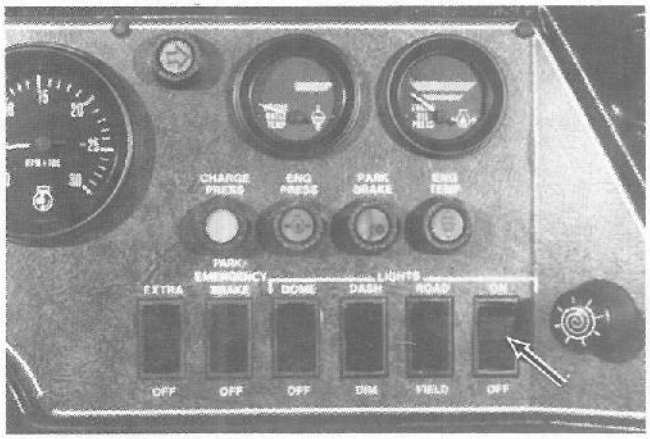


Figure 31: Master Light Switch

Turn Signal Switch (Fig. 32)

The signal switch will activate the right or left turn signal lamps unless the hazard flashers are being operated. Move the lever up to signal for a right turn, and down to signal for a left turn.

Figure 32: Turn Signal, Front Wiper & Washer Switch

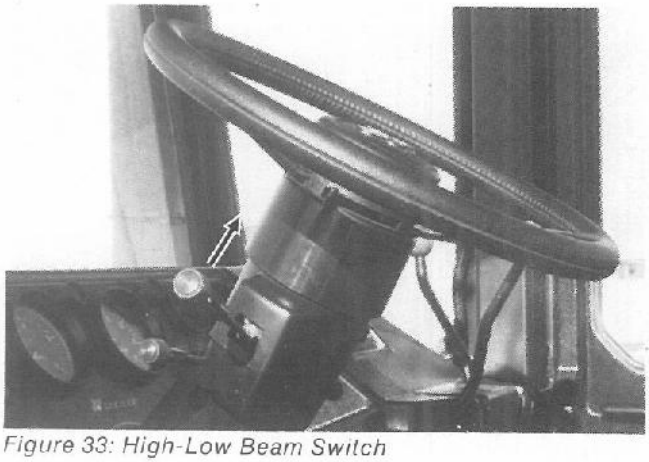


Figure 33: High-Low Beam Switch

High-Low Beam Light Switch (Fig. 33)

The high-low beam light switch regulates the intensity of the headlamps in the grill cavity of the tractor. Lift the signal lever upward toward the wheel to operate this switch. When lights are on high-beam, the blue indicator light located on the top center of the dash will illuminate.

Figure 34: Wiper/Washer Switch

Front Wiper Switch and Washer Switch (Fig. 34)

The front wiper switch and washer switch are integral with the signal switch lever. Rotating the lever clockwise controls the wiper speeds. Depressing the lever inward toward the steering column controls the window washer. (optional)

Steering Wheel

Tilt Release Lever (Fig. 35)

The steering column and wheel may be tilted to suit the operator by lifting the lever end upward toward the wheel. The lever is spring loaded and will return to lock as it is released.

Figure 35: Tilt Release Lever

Telescoping Adjusting Lever (Fig. 36)

Rotate the lever (1) counter-clockwise to allow the steering column to slide to the desired height, then retighten by turning clockwise.

Horn (Fig. 36)

To activate the horn press the center button (2) of the steering wheel.

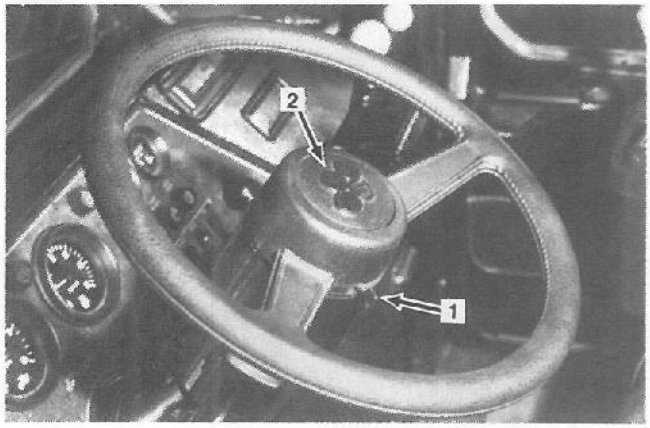


Figure 36:

Hazard Flasher Switch (Fig. 37)

Push inward to activate the hazard/warning lights. Pull out to deactivate the hazard lights.

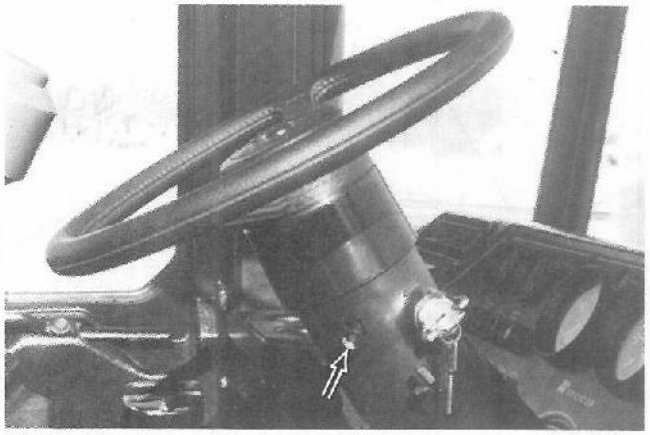


Figure 37: Hazard Flasher Switch

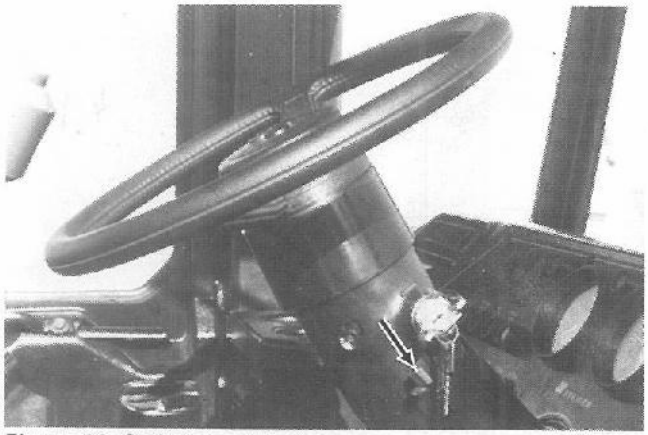


Figure 38: Switch Lock Lever

Master Key Switch Lock Lever (Fig. 38)

Push down on the lock lever to turn the key to the "lock" or "ACC" position and for key removal.

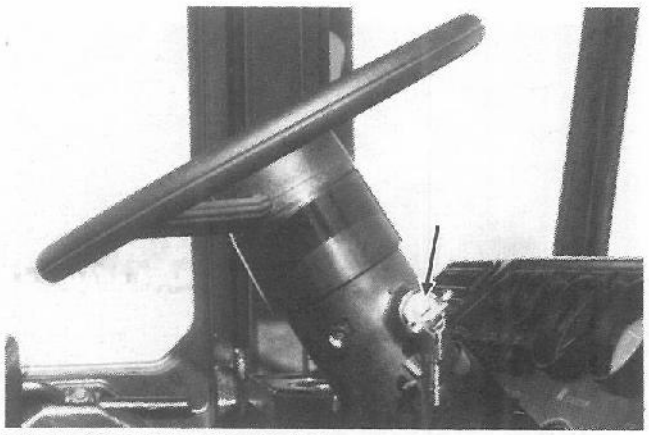


Figure 39: Master Key Switch

Master Switch/Key (Fig. 39)

The Master switch has 5 positions, "Accessory", "Lock", "Off", "On", "Start".

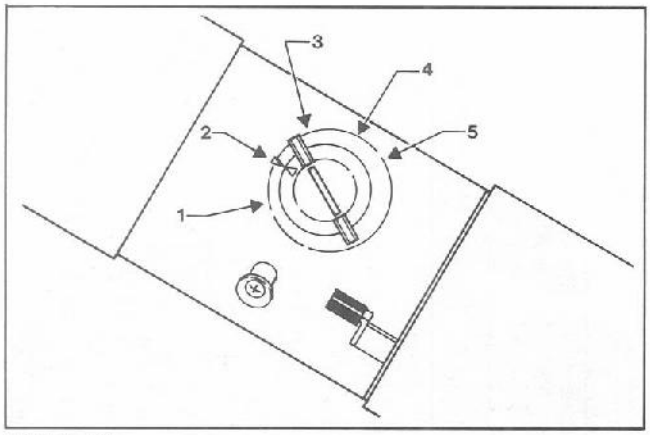


Figure 40:

1- Accessory Position
2- Lock Position
3- Off Position
4- On Position
5- Start Position

Accessory Position (Fig. 40)

In the "ACCESSORY" position (1) only accessories (radio, fan, tape, lights, etc.) may be operated.

Lock Position (Fig. 40)

In the "LOCK" position, (2) all current is shut off and the steering wheel is locked.

Off Position (Fig. 40)

In the "OFF" position, (3) all current is shut off.

On Position (Fig. 40)

In the "ON" position, (4) the fuel system remains activated and all current for the electrical system is activated.

Start Position (Fig. 40)

In the "START" position, (5) the starter system is energized and the fuel system is activated. Hold the key switch in the full clockwise direction to energize the starter. The switch will return to the "ON" position when released.

IMPORTANT: *The transmission shift selector* **MUST** *be in neutral to engage the starter.*

Air Conditioner/Heater

General Information

The Climate-Control system in your Steiger is a sealed refrigeration system designed to transfer heat from the cab air to the outside air in hot weather. The heater is designed to transfer heat from the engine coolant to the cab air in cold weather.

In either case the heat transfer is accomplished by blowing a blend of cab air and outside air over the fins of the evaporator (in the case of cooling) and the fins of the heater core (in the case of heating) and circulate the air throughout the cab. The air outlet louvers are located in the dash panel and the lower right and left side plenum chambers. All air outlet louvers are adjustable to gain the most comfortable air flow.

TO GET THE BEST HEAT TRANSFER (HEATING OR COOLING) IT IS IMPORTANT TO KEEP THE CAB INTERIOR CLEAN. DIRT IN THE COIL FINS ACTS AS AN INSULATOR WHICH LOWERS THE EFFICIENCY OF THE SYSTEM.

Fan Control (Fig. 42)

The fan control switches the fan motor to one of three speed variations or off. The fan draws outside air from the cab air intake stack through a filter, and recirculates inner cab air. All fan air passes through the air conditioning evaporator and through the heater coil. (By doing so air can either be cooled and dried or heated or a combination of heating and cooling may occur to provide the most desirable cab temperature at the most desirable air velocity which is controlled by the fan.)

Vent Position (Fig. 43)

When the lever is placed in the Vent position, the blended air is being circulated by the fan. It is in this position that the cab may be pressurized by the operation of the fan only, the air conditioning will be off and the heater will be off (see Heat section). This position will provide a temperature close to that of the prevailing ambient air.

Figure 41:

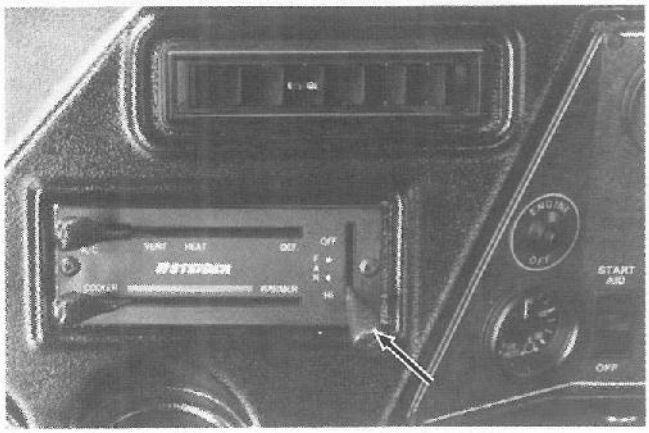


Figure 42: Fan Control Lever

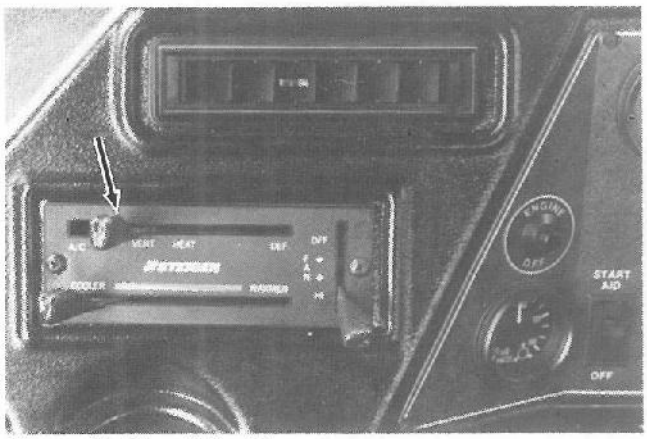


Figure 43: "Vent" Position

Figure 44: "A/C" Position

A/C Position (Fig. 44)

The air conditioner will operate only when the upper lever is in full A/C position. When the lever is moved away from that position, the air conditioner compressor is disengaged and the fan is only circulating a blend of outside and inside air.

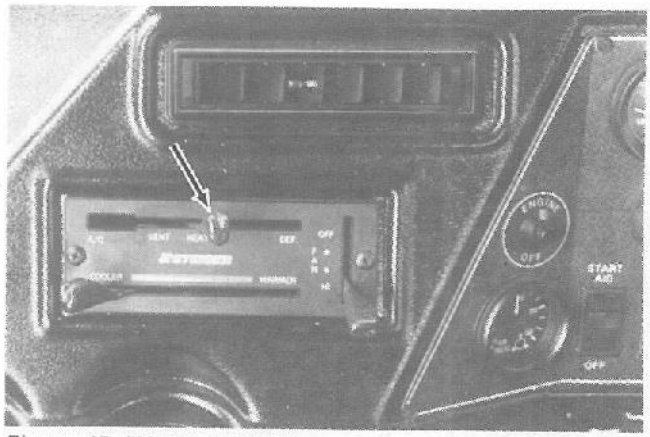


Figure 45: "Heat" Position

Heat Position (Fig. 45)

In the heat position the blended air is heated by the heater coil and circulated through the louvers in the console. The desired temperature of the air is controlled by the Cool-Warm lever.

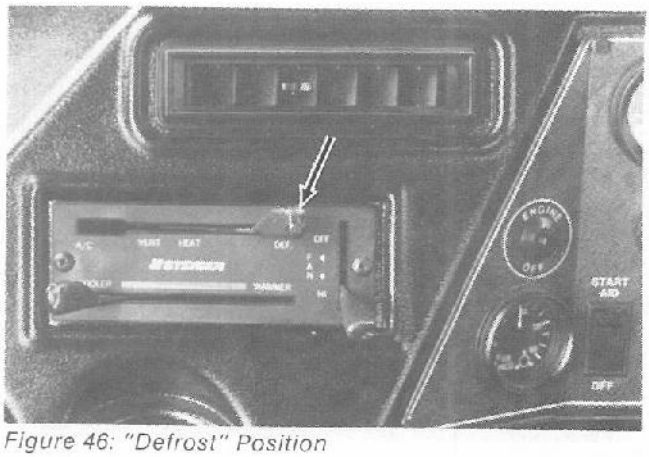


Figure 46: "Defrost" Position

Defrost Position (Fig. 46)

In this position the blended air is passed through the louver at the base of the windshield. The desired temperature of the air is then controlled by the Cool-Warm lever.

Cool-Warm Lever (Fig. 47)

This lever controls the amount of engine coolant through the heater coil. When the lever is in the cool position, all engine coolant is STOPPED from flowing through the coils and no heating is taking place. For maximum air conditioning, the lever should be in this position.

When the lever is moved farther toward the warm setting, more hot engine coolant is passed through the heater coil, providing a warmer cab climate.

Be sure to keep the doors closed at all times during tractor operation to keep the cab area free of dust. Turn the unit on for a few minutes each week during the off season to lubricate the air conditioning system.

Figure 47: Cool-Warm Lever

Throttle Control Lever (Fig. 48)

Push the hand operated lever forward to increase engine rpm and pull the lever to the rear to reduce engine rpm.

The hand operated throttle lever may be used when consistant engine speed is required. Engine governed speed will be determined and maintained by the throttle lever position.

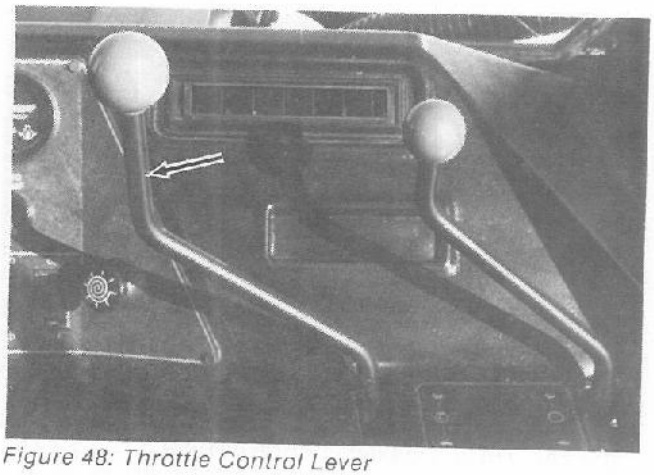


Figure 48: Throttle Control Lever

Hi-Lo Range Selector Lever, Transfer Case (Fig. 49)

To engage the 2-Speed Transfer Case in high range, push the lever forward. Low range in the tranfer case is obtained with the lever in the rear position.

IMPORTANT: *Tractor must be stopped when shifting from one transfer case range to another.*

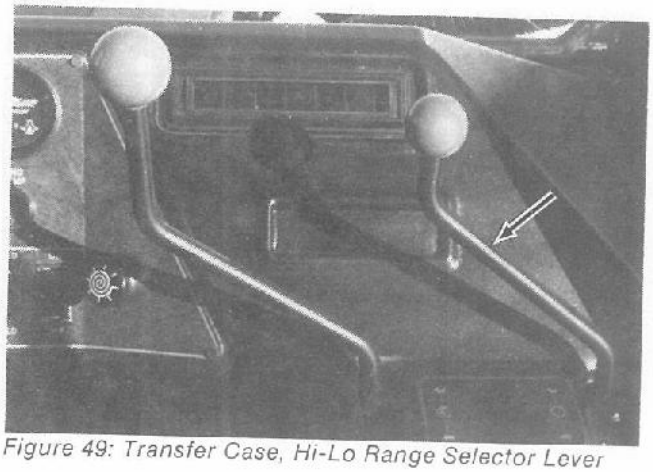


Figure 49: Transfer Case, Hi-Lo Range Selector Lever

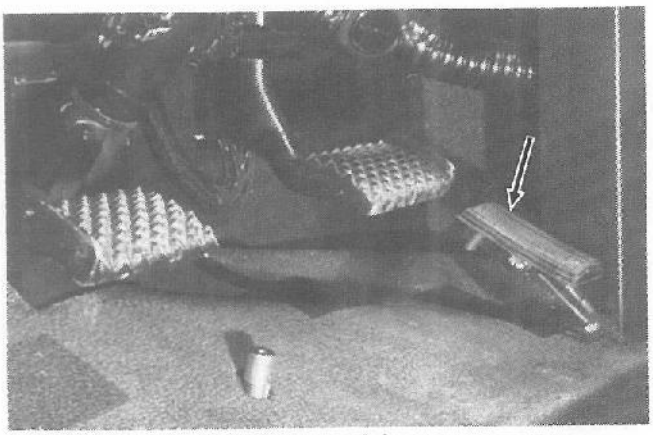


Figure 50: Accelerator Foot Pedal

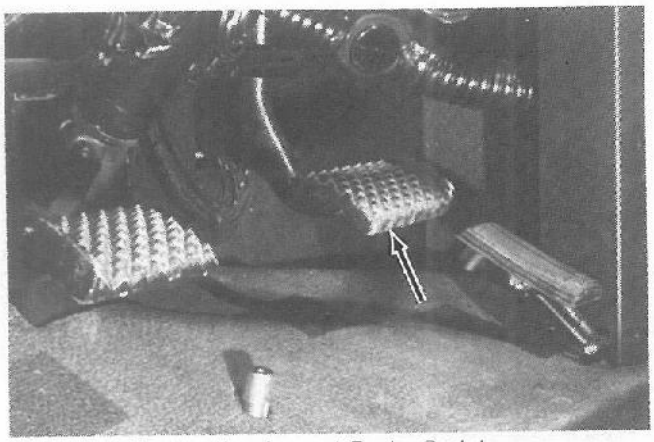


Figure 51: Tractor/Implement Brake Pedal

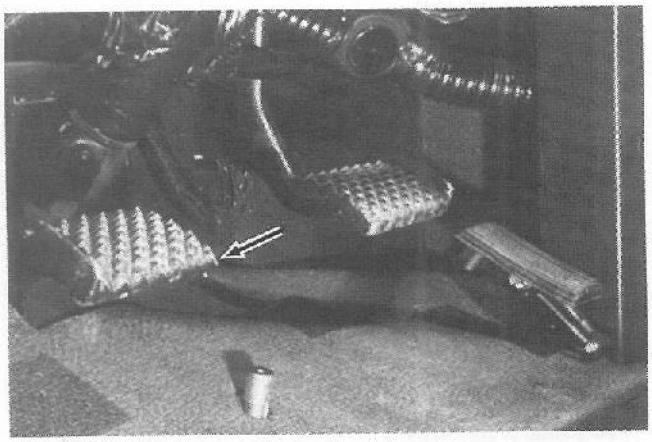


Figure 52: Implement Brake Pedal

Accelerator Foot Pedal (Fig. 50)

The accelerator foot pedal may be used to control engine speed in situations where variable speeds are required. When the foot operated pedal is used, the hand operated throttle must be pulled back (reduced) to low idle or to the minimum engine rpm requirement.

This pedal may also be used to increase engine rpm when the hand operated throttle is set below rated engine rpm.

CAUTION: Releasing the accelerator foot pedal will only reduce engine speed to the lowest speed set by the hand operated throttle lever.

Tractor/Implement Brake (Fig. 51)

The main service brake is applied by depressing the right brake pedal. This is a dual brake valve to provide simultaneous braking for both the tractor and/or towed remote equipment.

THIS PEDAL MUST ALWAYS BE USED WHENEVER TRACTOR BRAKING IS REQUIRED, AND/OR REMOTE EQUIPMENT IS NOT EQUIPPED WITH BRAKES.

WARNING: Whenever pulling equipment weighing in excess of the tractor shipping weight and at speeds in excess of 5 mph, the equipment or implement being pulled must be equipped with brakes. This is to avoid the possibility of exceeding the tractors braking capability and to maintain adequate tractor control. If towed equipment does not have brakes, drive slowly and avoid hills.

Implement Brake Pedal (Fig. 52)

THE LEFT BRAKE PEDAL IS USED FOR BRAKING THE PULLED IMPLEMENT ONLY. There may be situations when it may be desirable to brake only the implement for better control.

Differential Lock Switch

This switch is located on the cab floor. Depressing this switch with the foot will either "engage" or "disengage" the controlled traction differentials. When the controlled traction differential is engaged, the dash indicator light will also be illuminated.

Engage the controlled traction differentials only when maximum tractive effort is required or poor tractive conditions exist.

CAUTION: Disengage differential lock when traveling on public roadways and/or at high speeds.

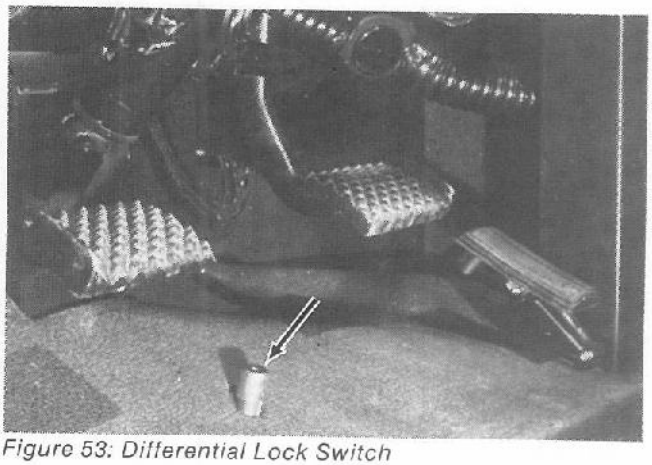


Figure 53: Differential Lock Switch

Upper Console

Radio - AM-FM Stereo (Fig. 54)

Dual radio speakers are mounted in the rear upper console behind the operator. Refer to radio manufacturer's Operational information furnished with the tractor.

Cab Interior Lights (Fig. 54)

There are two cab interior lights located in the upper console. The lights are activated by a switch on the instrument panel.

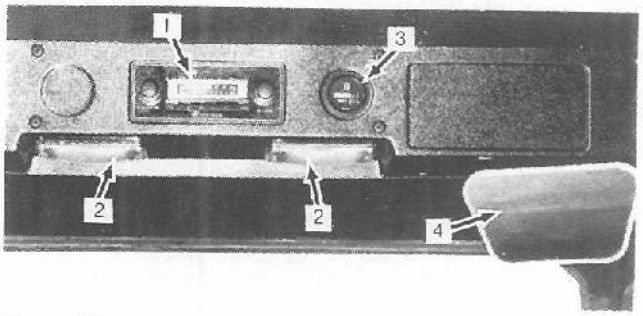


Figure 54:
1-Radio 2-Cab Interior Lights

Hourmeter (Fig. 55)

The hourmeter indicates the actual hours that the engine has run. It is the most reliable method of determining service intervals because the hourmeter is activated by engine oil pressure.

Rear View Mirror (Fig. 55)

The rear view mirror(s) should be adjusted to enable the operator to have the best possible view to the rear of the tractor. Always check to the rear before backing up the tractor. For better visibility keep mirrors and all window glass clean.

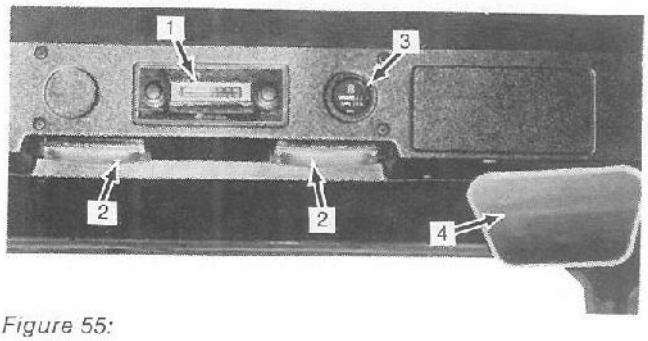


Figure 55:
3-Hourmeter 4-Rear View Mirror

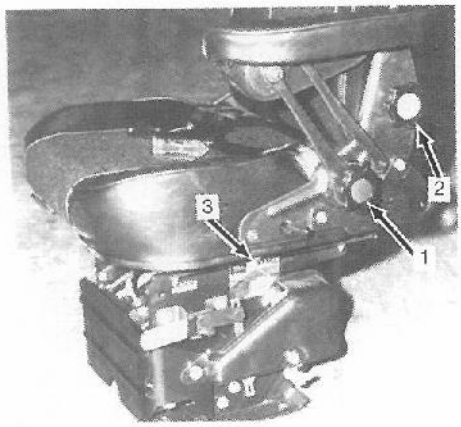


Figure 56:
1. Armrest Control
2. Backrest Tilt Control
3. Seat Swivel Release

Figure 57:
4. Backrest Vertical Adj. Knob
5. Vertical Adj. Knob
6. Fore/Aft Adj. Handle
7. Seat Tilt Adj. Handle

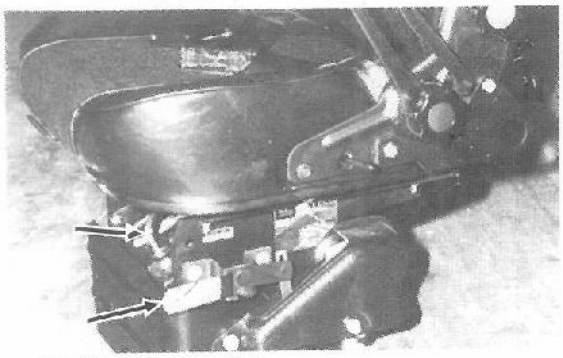


Figure 58: Seat Suspension

Seat and Suspension

Left Side Armrest (Fig. 56 (1))

The left arm reat is infinitely adjustable by turning knob "1" from flush with seat cushion to full-up position. Armrest may also be flipped up for quick storage from any position.

Backrest Tilt (Fig. 56 (2))

The backrest is infinitely adjustable within a 28° range by turning knob "2".

Seat Swivel (Fig. 56 (3))

The seat will swivel 25° right, 15° right, 15° left, with lock positions at 0° and 15° left and right. To swivel seat, release lever "3".

Backrest Vertical Height (Fig. 57 (4))

Infinitely adjustable up or down within a 3" (76.2 mm) range.

Lumbar Support (Fig. 57 (5))

Four (4) position Lumbar adjustment independent of backrest vertical height or tilt adjustments.

Fore and Aft (Fig. 57 (6))

2.5 in (63.5 mm) fore and aft adjustment is available from mid-position. (5" (127 mm) total adjustment)

Seat Tilt (Fig. 57 (7))

The seat tilt angle is infinitely adjustable between the minimum and maximum positions.

Seat Suspension (Fig. 58)

The seat features a pneumatic suspension system which include automatic adjustment for weight, self leveling air valve and variable damping - adjustable while the tractor is in motion. The seat suspension requires no lubrication.

Seat Belt Hook-Up (Fig. 59)

The seat buckle and strap are located on each side of the seat. Pull the strap from the left hand side and secure into the buckle on the right hand side.

CAUTION: Do not operate tractor from any position except seated in the operator's seat with seat belt securely fastened. DO NOT permit others to ride.

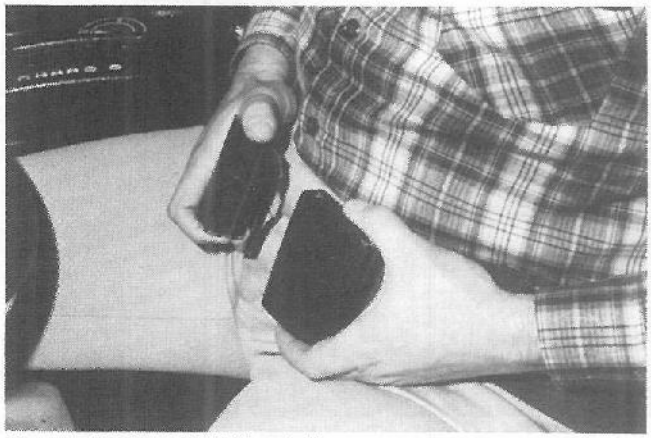


Figure 59: Seat Belt Hook-Up

Seat Belt Release (Fig. 60)

To release the belt pull-up on the front side of buckle outer shell and retract the strap.

Figure 60: Seat Belt Release

Hydraulic Valve Controller(s) (Fig. 61)

The tractor is equipped with one or two Hydraulic Controllers, depending on the options ordered. Each controller will control two remote valve sections.

Provided the hose couplers are connected correctly, moving the controller lever "out-board" or "forward" will normally be the "down" position for each of the respective remote valves.

The controller is electric over hydraulic and is spring centered to neutral. There is no detent or lock position for the controller lever out of neutral.

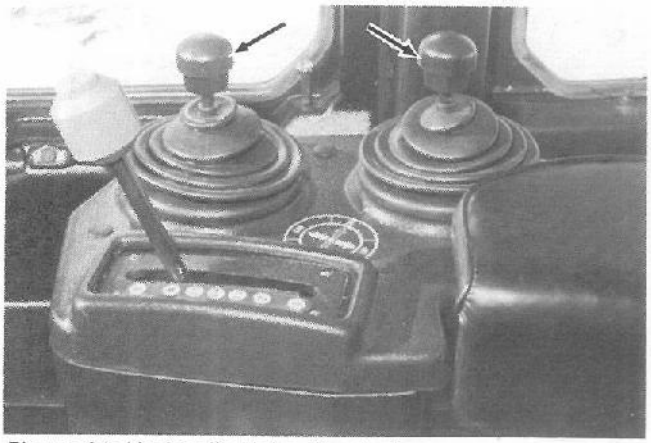


Figure 61: Hydraulic Valve Controller

Figure 62: Transmission Shift Lever

Transmission Shift Lever (Fig. 62)

The transmission shift lever is located in the right side armrest console and is used to change transmission gears into 1 of 7 positions. (See Transmission Operation section of this manual for additional operating information.)

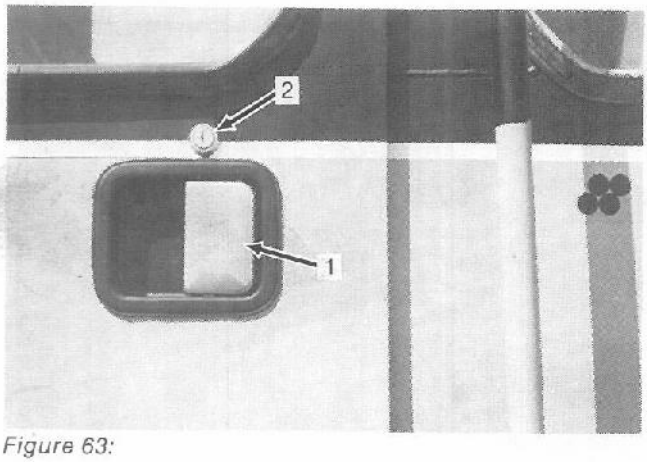


Figure 63:
1-Outside Door Handle 2-Door Lock

Door Controls

Control Handles - Outside (Fig. 63)

Pull the latch handle outward to open the cab doors.

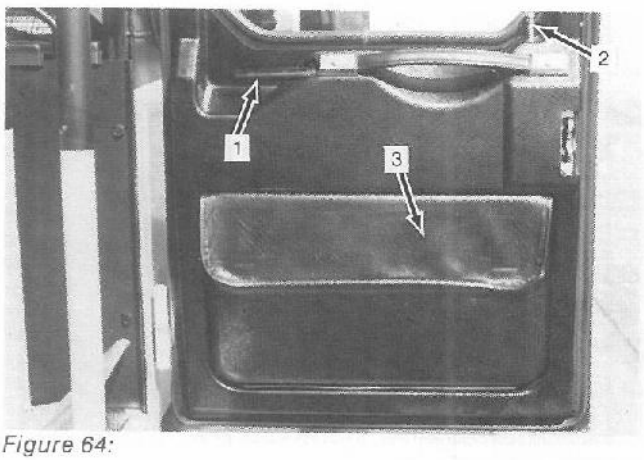


Figure 64:
1-Inside Door Handle 2-Lock Plunger 3-Storage Pocket

Control Handle - Inside (Fig. 64)

Pull the inside handle rearward to unlatch the cab doors.

Lock Mechanisms

The cab doors can be locked with a key from the outside by depressing the lock plunger on the inside. The door locks require the same key as the master switch.

Lubricate and check latch adjustments every 100 hours.

NOTE: *If keys are lost or duplicate keys must be made, the key code number is an American Motors code.*

Storage Pockets (Fig. 64)

Use this pocket to store such items as maintenance records and machine operator manual.

IMPORTANT: *Be sure that the manufacturers operation and maintenance manual remains with the tractor at all times for reference.*

Study This Manual Before Operating or Servicing the Tractor.

Operating instructions must be given to everyone before operating this tractor and at least once a year thereafter in accordance with OSHA regulations.

Operating Information

Engine

Break-In Period

The engine is assembled and tested at the factory to insure that it is ready to work, however, the engine must be properly run-in to obtain the peak performance and long life that is built into it. Proper break-in will increase the power and prolong engine life.

To properly break-in an engine merely means the engine should be operated at reduced loads for a period of time (approximately 100 hours), long enough for the piston rings to seat-in with the cylinders and form a lapped fit which would make a perfect seal between pistons and cylinders before the engine is used on continuous heavy load operations.

The operator has an opportunity to establish conditions for optimum engine and power train service life during the initial 100 hours of service by:

1. Operating as much as possible at reduced load range.
2. Avoiding operation for long periods at engine idle speeds, or at the maximum horsepower levels in excess of five minutes.
3. Developing the habit of watching the engine instruments closely during operation and reducing throttle and/or load if the coolant temperature exceeds 200°F (93°C).
4. Operating with a power requirement that allows acceleration to governed speed when conditions require more power.
5. Checking the oil level every 8 to 10 hours during the break-in period.

IMPORTANT: *After the first 30 hours of engine operation, drain the engine crankcase oil and replace with new oil of the specified type. Replace all engine oil filters.*

NOTE: *Factory Fill Oil is 15W-40.*

Before Starting

CAUTION: Before starting the tractor, adjust seat for accessibility to all controls.

Perform the required daily or 10 hr. service maintenance. Make a "walk-around" inspection of the tractor. It only takes a few minutes to correct minor discrepancies. This can prevent major repairs at a later date.

IMPORTANT: *See Service and Maintenance section of this manual for required service requirements prior to starting.*

CAUTION: Be sure area is clear of people, brakes are applied and all controls are in the neutral position before starting the engine.

Figure 1: Shift Selector Neutral

Engine Starting Procedure

1. Place the transmission shift selector in the neutral position to activate the neutral start switch. Place the throttle control lever one-fourth (1/4) open.

CAUTION: If the starting motor will not operate in neutral, or will operate in any range other than neutral, service is required. Starter engagement in any position out of neutral is potentially dangerous to the operator and others.

Figure 2: Switch Key "Start" Position

2. Turn and hold the master key switch fully clockwise to the "Start" position to crank the engine.

IMPORTANT: *Do not use the starting motor longer than 30 seconds without interruption. Allow the starter motor to cool 2 minutes before reattempting to start.*

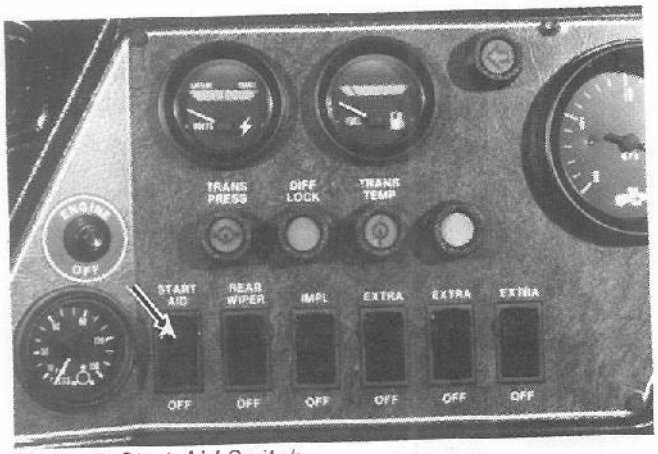


Figure 3: Start-Aid Switch

3. If the engine fails to start within 15 seconds depress and release the ether start-aid switch while the engine is cranking (Fig. 3).

IMPORTANT: *Do not use excessive ether per start.*

NOTE: *The tractor cannot be towed to start the engine. See towing information in the Foreword section of this manual.*

Engine Starting Procedure

4. As soon as the engine starts, allow the engine to idle for 3 to 5 minutes, or until the water temperature gauge begins to rise.

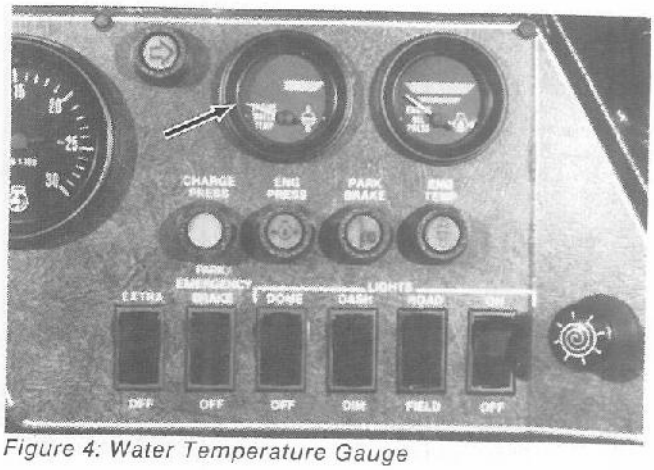


Figure 4: Water Temperature Gauge

5. Do not apply a load to the engine or increase engine speed, until the oil pressure gauge indicates normal. (Oil pressure should raise within 15 seconds after the engine starts.)

6. Operate the engine at low load until all systems reach operating temperatures. Check all gauges during the warm-up period. This is particularly important during extreme cold weather operation to protect both the engine and hydraulic systems.

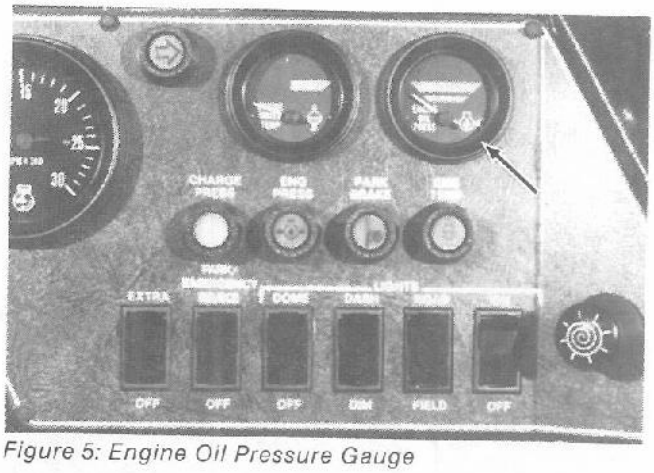


Figure 5: Engine Oil Pressure Gauge

Cold Weather Starting

If the tractor is to be operated in extreme cold weather, use the correct grade and/or viscosity engine oil for the prevailing ambient temperature.

To maintain proper fuel delivery during cold weather operation, use Grade No. 1-D diesel fuel with a pour point at least 10°F (5.6°C) below the lowest expected ambient air temperature. The Cetane number should be 40 minimum. Low ambient air temperature may require use of fuel with a higher Cetane number.

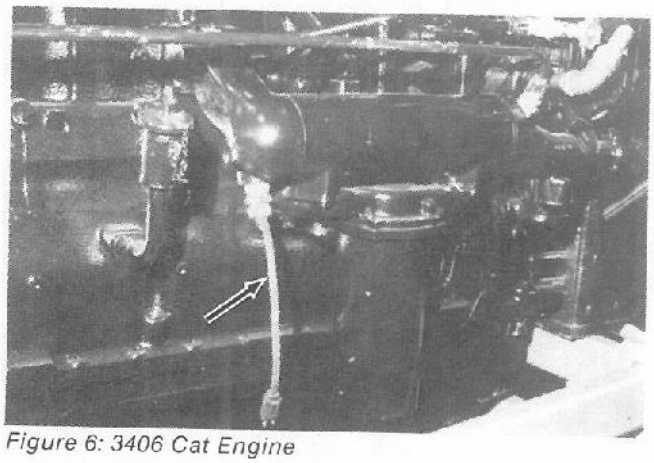


Figure 6: 3406 Cat Engine

Electric Engine Coolant Heater

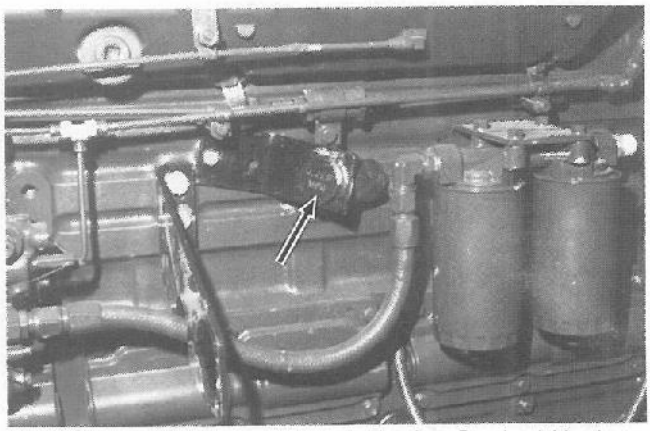


Figure 7: 855 Cummins Electric Engine Coolant Heater

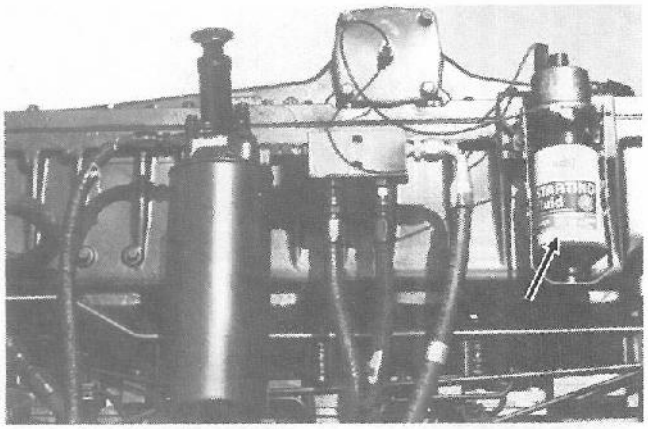


Figure 8: Ether Start-Aid

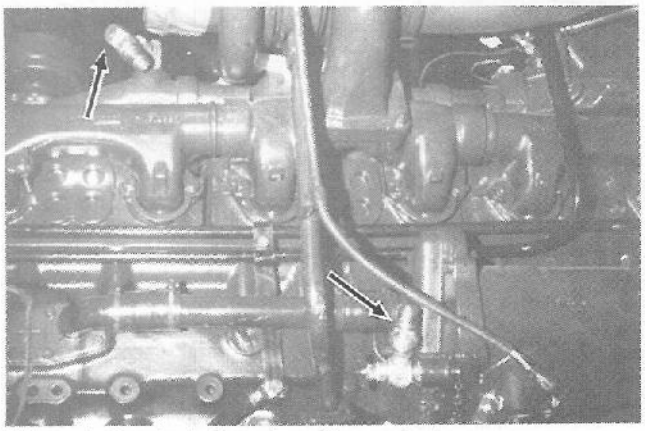


Figure 9: Coolant Couplers (Cummins)

Cold Weather Starting

Electric Engine Coolant Heater (Fig. 7)

The 1500-watt, 115-volt engine water jacket heater is installed as standard equipment. By warming the engine in extreme cold conditions, the heater reduces oil drag, eases starting and shortens warm-up time.

The length of time required to warm the engine will depend largely on the prevailing ambient air temperature. At 0°F (17.5°C) warm-up time will generally require 2-3 hours.

CAUTION: To avoid shock or hazardous operation, always use a three-wire heavy duty electrical cord equipped with three-wire connectors. If a two-to-three contact adaptor is used at the wall receptacle, always connect green wire to a good ground.

Ether Starting Aid (Fig. 8)

To install a new can, remove the safety cap and plastic spray button from the can. Loosen thumb wheel enough to change cans, then tighten securely.

IMPORTANT: *To avoid drawing dust into the engine, always keep starting fluid can in position.*

To avoid engine damage, inject fluid only in small amounts and only while the engine is turning.

CAUTION: Ether starting fluid is highly flammable. Do not use near fire, sparks or flames. Read the cautionary information on the container.

Engine Coolant Couplers (Fig. 9)

The tractor is shipped from the factory with coolant couplers installed on the engine. It is important to note that standard hydraulic couplers will not mate properly with the brass couplers installed on the tractor, which may result in loss of coolant and/or hot spray on the operator. The fittings installed on the tractor are brass steam fittings, not steel hydraulic fittings.

Engine Coolant Couplers (Fig. 10)

The purpose of these couplers is to aid cold weather starting when access to electric power is not available for the electric water jacket heater. The engine couplers used with warm-up Kit P/N 35-1298T91, allow warm coolant to be transfered and circulated through the engine from a slave unit, such as another tractor or service truck that is already running and warmed up. Kit P/N 35-1298T91 includes the connecting hoses and male tips to be attached to the "warm-up" vehicle, and may be ordered through your Steiger Dealer.

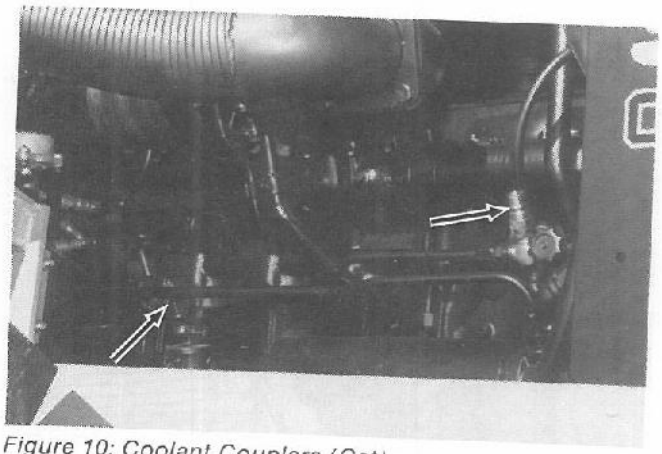


Figure 10: Coolant Couplers (Cat)

Operation and Use of the Water Transfer System:

1. Drive the warm-up vehicle close enough to the dead (cold) engine so that the two (2) water transfer (jumper) hoses can be easily connected.

2. Shut off the running vehicle engine.

3. Relieve the pressure in the radiator system of the hot engine by carefully and slowly cracking open the radiator pressure cap until pressure escapes. When pressure is completely released, re-tighten the radiator cap to its original position.

4. Connect the transfer hoses to the hot engine. Be careful to route hoses so there is no interference with moving parts or the hot engine manifolds.

5. Connecting the transfer hoses remaining end to the matching couplers of the dead engine.

6. Re-start the hot engine and let run at low idle rpm. Check for leaks. To determine if water flow is occuring properly, touch the inlet coupler of the cold engine, it should quickly become warm. The outlet coupler of the dead engine should remain cold to the touch for several minutes and then slowly start to warm up as the cold engine warms. Allow the running engine to circulate water until the cold engine is sufficiently warm. The time required will be variable depending on size of engine, transfer hose size, ambient temperature etc.

7. Shut off running (hot) engine.

8. Disconnect both couplers from the cold engine. Check radiator water level and add a 50-50 water/anti-freeze mixture to the cold engine prior to starting.

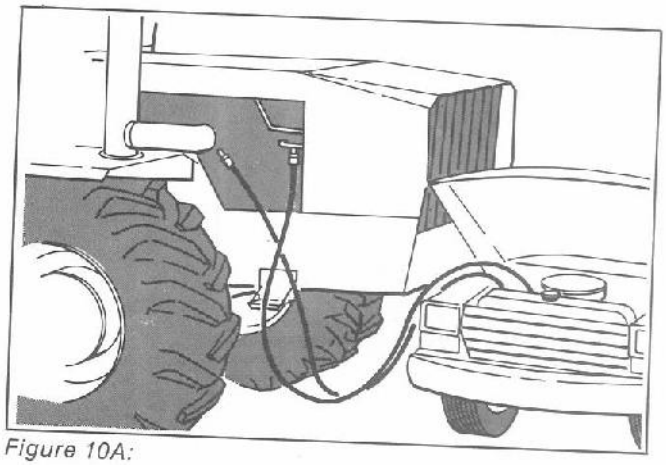


Figure 10A:

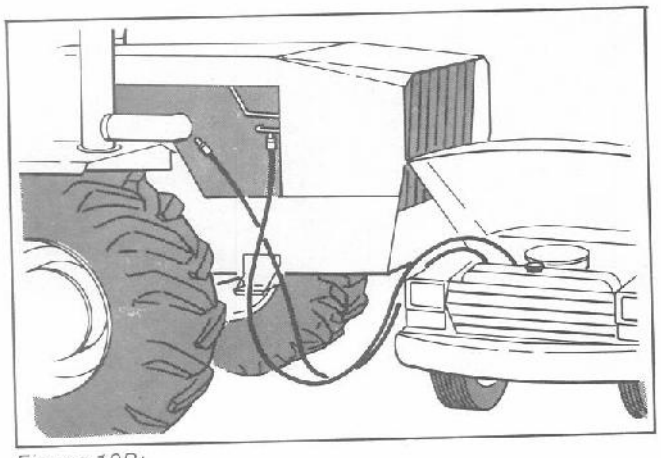


Figure 10B:

CAUTION:

1. **Be careful of hot engine and/or rotating parts, male nipples, female couplers and hoses.**

2. **Use gloves and proper care when handling hot couplers and when releasing radiator pressure. When disconnecting couplers, a few drops of hot coolant will drip from the couplers.**

3. **Do not connect and disconnect couplers with either engine running.**

4. **Carefully release radiator pressure on hot engine BEFORE connecting hoses. Radiator pressure can vary from different vehicles.**

5. **Check anti-freeze solution ratios to be sure they are acceptable for prevailing climate.**

6. **Be sure radiator solutions of the hot and cold engines are compatible and are acceptable to be mixed. Some full-fill coolants are made that should not be mixed with a water/anti-freeze solution. This water transfer system will mix the solutions of the cold and hot engines.**

Figure 11: Switch Key "Off"

Engine Stopping Procedure (Cummins) (Fig. 11)

Turn the master switch key to the "off" position, this will shut off the flow of fuel to the engine and the engine will stop (see Fig. 11).

Engine Stopping Procedure (Cat) (Fig. 12)

Depress and hold in stop button located on left side of dash until engine stops. Turn master switch key to "off" position to turn off all other accessories that may be turned on.

IMPORTANT: *Never shut down an engine working under load immediately. Before shutting down an engine that has been working under load, let it idle for a few minutes so the engine parts will cool evenly and provide protection to the turbo-charger.*

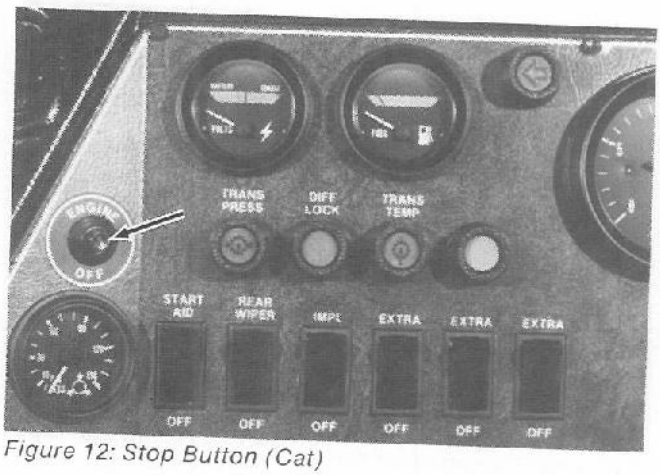


Figure 12: Stop Button (Cat)

Steering Information

When negotiating a turn with the tractor, be sure to maintain adequate engine speed to ensure an adequate volume of oil needed for steering.

CAUTION: Steering turning rate varies with engine rpm. while negotiating a turn, maintain an engine rpm which will provide the desired turning rate.

Transmission

General

The HT754 (5-speed) Allison transmissions are fully automatic transmissions featuring automatic torque converter "lock-up" in each gear range. The lock-up clutch is an automatic function that provides direct drive from the engine to the transmission gearing. It is designed to engage hydraulically at predetermined tractor speeds. During upshifting and downshifting, the lock-up clutch automatically disengages for a moment, bringing the torque converter back into use as a fluid coupling to absorb the shock of the gear ratio change. With the lock-up clutch disengaged the torque converter is free to act as a torque multiplier or as a fluid coupling.

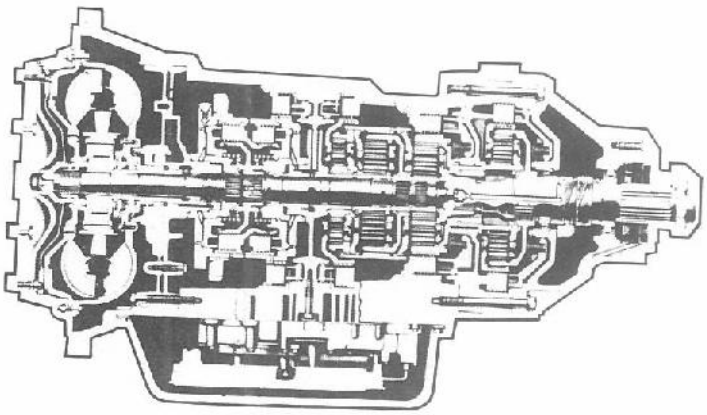


Figure 13: HT754 CRD Transmission

Operating Information

Figure 14: Transmission Range Selector

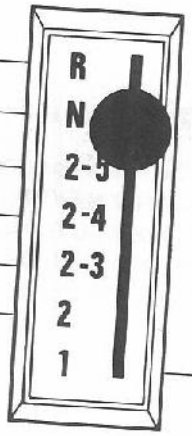
Because these transmissions are fully automatic means that the transmission will automatically shift up through its lowest range to the highest range selected by the command lever position. It also means that if the loads are great enough to "lug" the engine down to less than 1450-1670 ±30 rpm, the transmission will automatically release from lock-up momentarily and/or downshift to the next lower range depending on the load conditions and/or command lever position.

The HT754 features a faster reverse speed, and in up-shifting in the 2-3, 2-4 or 2-5 range position, the transmission will automatically upshift "lock-up" to "lock-up" to the highest gear range selected on the command lever (provided the load is not too great).

If the command lever is placed in the "first" or "second" range position the transmission **will not** upshift to second, nor will it downshift to first. Rather, if the load is great enough to "lug" the engine down, it will change from the converter "lock-up" mode to converter in each of the respective "first" or "second" gear ranges.

It is important to refer to the ground speed chart to determine the maximum ground speed you desire to travel and select the proper command lever position, so that the transmission does not shift beyond the speed range you have selected.

IMPORTANT: *DO NOT attempt to stall the torque convertor, (tractor stopped and transmission in operating range and engine at full throttle) such as trying to start a load in too high a range, or brakes applied. Operation of this type will cause rapid and excessively high transmission oil temperatures and/or severe drive train damage.*



Important Transmission Operating Information

HT754 CRD (5 Sp.)

(R) Use this position for backing the tractor. The tractor must be completely stopped, brake applied and the engine throttle at the low idle before shifting from a forward gear to reverse or from reverse to forward.

(N) Use this position when you start the engine. If the engine starts in any other position, the neutral start switch is malfunctioning and must be repaired. Use neutral when the tractor is parked or left unattended.

WARNING: There is no "Park" position in this transmission. WHENEVER THE RANGE SELECTOR IS IN NEUTRAL, THE PARK/EMERGENCY BRAKE MUST BE APPLIED TO PREVENT TRACTOR MOVEMENT.

(2-5) Use this one for the highest ground speed attainable. The tractor will start in 2nd gear converter, and provided the load is not too great and depending on throttle setting, the transmission will upshift to 3rd gear, 4th gear and 5th gear automatically. As the tractor is pulled down to approximately 1450-1670 rpm, the transmission will downshift, within the operating range, to the correct gear automatically.

(2-4) The load or speed requirements may require a lower range. When the range selector is in this position the transmission will upshift automatically, depending on load and throttle setting, to the highest speed attainable in 4th gear. Refer to your speed chart for the maximum speed attainable in 4th gear.

(2-3) If load and/or speed requirements make it desirable to restrict automatic shifting to a lower range this position may be used. Refer to your speed chart for the maximum speed attainable in 3rd gear.

(2) *Use this position when loads are great enough to prevent automatic upshifting and/or speed requirements are no faster* than that indicated on the speed chart for 2nd gear. In this position the transmission will not upshift to 3rd nor will it downshift to 1st. Rather, if loads are great enough to pull the engine rpm down to 1450-1670 rpm, the transmission will automatically go from the converter "lock-up" mode to the "converter" mode until engine rpm increases to the point that the transmission will again go into the converter "lock-up" mode.

(1) If loads are great enough to lug the engine and/or the transmission remains in the "converter" mode in the 2nd gear position use this position. No upshift will occur when the range selector is in this position. This gear provides the slowest speed and greatest tractive effort.

NOTE: *In the lower gear range (2,2-3 and 2-4), the transmission will not upshift above the highest gear selected unless maximum no-load engine high-idle speed for that gear is exceeded.*

If a manual downshift is made into the next lower gear range when the tractor is above the maximum speed attainable in the next lower gear, the transmission hydraulic system automatically prevents the shift from taking place. If the tractor is exceeding the maximum speed for a lower gear, use the service brakes or throttle to slow the tractor to an acceptable speed to allow the downshift to take place.

CAUTION: NEVER select a gear range higher than the ground speed that can be safely negotiated in the event of an automatic up-shift. If the load is reduced, such as lifting the implement out of the ground, the transmission will automatically upshift to the highest gear selected.

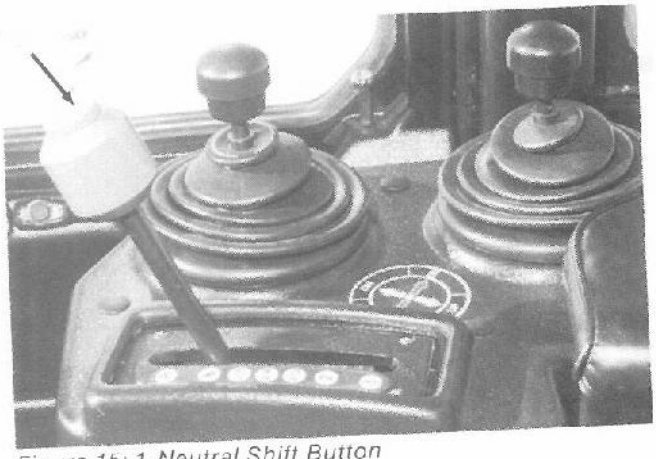


Figure 15: 1-Neutral Shift Button

Transmission Shifting Procedure

WARNING: There is no "Park" position in this transmission. WHENEVER THE RANGE SELECTOR IS IN NEUTRAL, THE PARK/EMERGENCY BRAKE MUST BE APPLIED TO PREVENT TRACTOR MOVEMENT.

1. Depress the brake pedal.
2. Place Throttle Control Lever to "Low" idle position.
3. Push down the button in center of transmission shift selector lever and select the desired direction or speed range on the range selector.

CAUTION: Be sure area is clear of people.

4. Release the brakes and increase the engine speed to move the load.

IMPORTANT: *When the tractor is moving in either the forward or reverse direction, before shifting to the opposite direction, bring the tractor to a complete stop and reduce the engine speed to low idle. DO NOT shuttle between the "Forward" and "Reverse" range.*

NOTE: *See Service and Maintenance section of this manual for oil checking procedures.*

CAUTION: Do not operate tractor from any position except seated in the operator's seat with seat belt securely fastened. DO NOT permit others to ride.

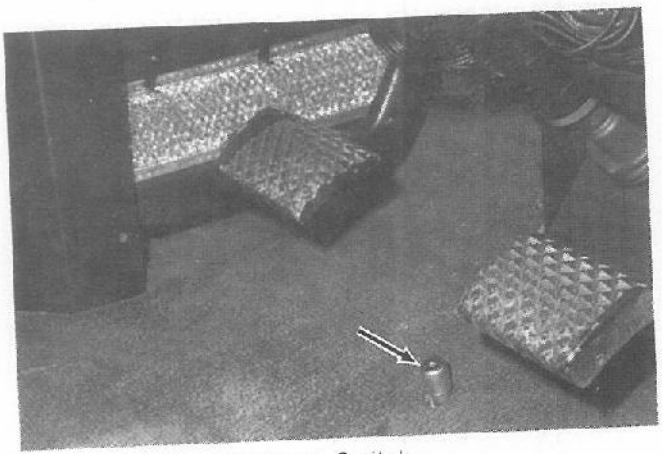


Figure 16: Differential Lock Switch

Differential Locks (Optional)

Both the front and rear axles are equipped with controlled traction differentials. When maximum tractive effort is required, stepping on the differential lock switch will engage the differential locks. The differential locks may be engaged or disengaged by the switch at any time during operation. When the differential locks are engaged, the dash indicator light will be on.

Hydraulic System

General

The hydraulic system in the tractor is a pressure/flow load sensing system. Oil is supplied under pressure to a variable displacement piston pump by a charge pump.

The tractor may be equipped with either 2-Spool or 4-Spool remote valves which are controlled by an electronic controller. One of the remote valves will have float capabilities, however; the float capability of the valve **is not** adjusted into the controller at the factory.

NOTE: *If equipment such as a 3-point hitch or other equipment requiring "float" position is being used, you must contact your selling dealer to have the electronic valve controller calibrated for the float valve section. The controller is electric over hydraulic and is spring centered to neutral. There is no detent or lock position for the controller out of neutral.*

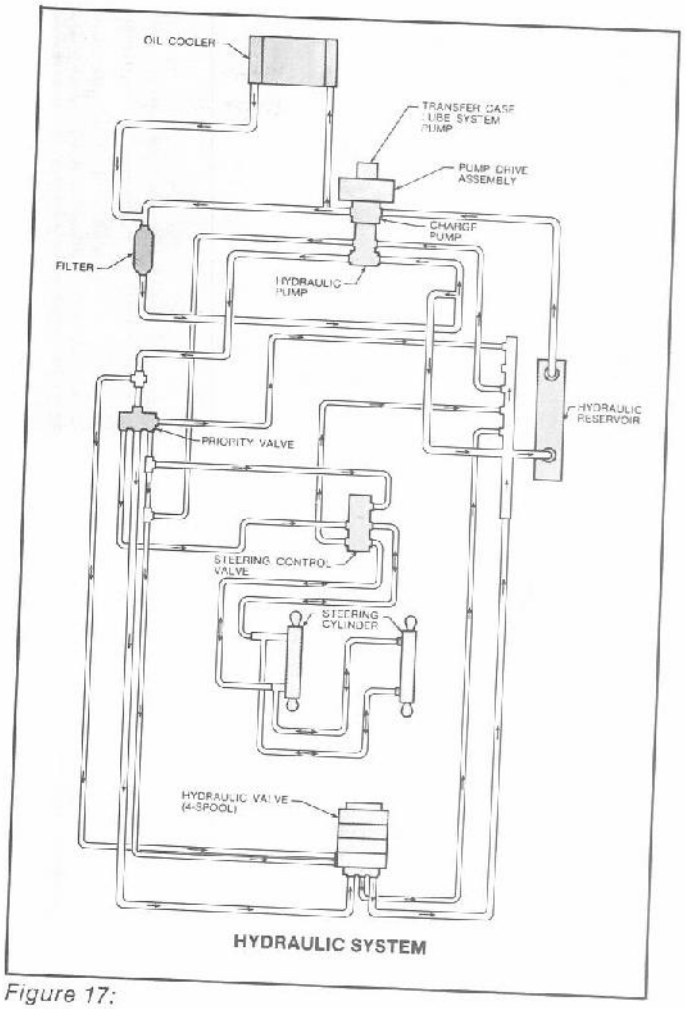


Figure 17:

Coupler Operation

The couplers are divided in sequence from Left to Right. The Left side coupler(s) will normally be the "up" side and the coupler(s) directly across on the right side will normally be the "down" side.

When connecting the hydraulic couplers, **the engine must be shutdown** for at least two minutes to allow the pressure within the hydraulic system to stabilize as low as possible.

To connect the couplers will require pushing the male end straight into the female coupler.

NOTE: *It will take considerable manual effort to connect the male end into the female end because of the size of the coupler and the fact that there will be between 200-300 psi pressure in the system to overcome.*

To disconnect the coupler, **shutdown the engine** and push rearward on the female outer sleeve while grasping the hose with the opposite hand.

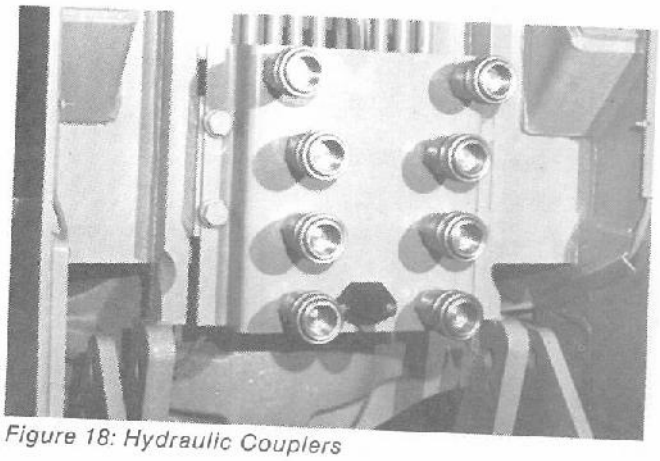


Figure 18: Hydraulic Couplers

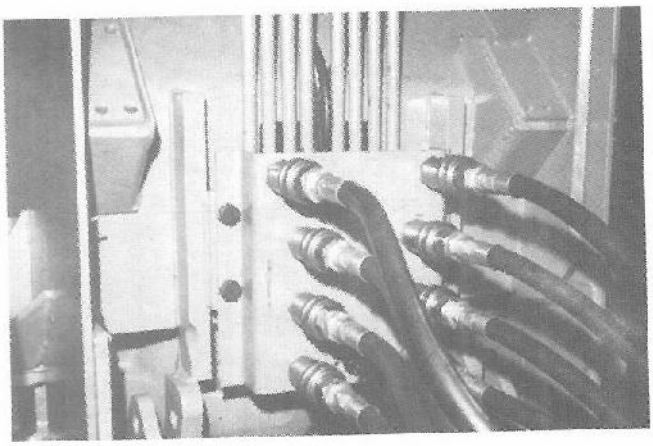


Figure 19:

Hydraulic Coupler Operation

IMPORTANT: *Whenever possible, use the same size couplers and lines to remote equipment as those supplied with the tractor. Reducing to a smaller coupler size may cause the coupler(s) to "check" (block). If the hydraulic system does not function correctly, DO NOT condemn the hydraulic pump before assuring that the couplers or lines are not the cause for malfunctioning.*

Escaping hydraulic fluid or oil under pressure has sufficient force to penetrate the skin which could cause serious personal injury. Before disconnecting any hydraulic lines, ensure that pressure is relieved. Use wood or cardboard to locate leaks, never use the hands. If hydraulic oil has penetrated the skin, get immediate medical attention.

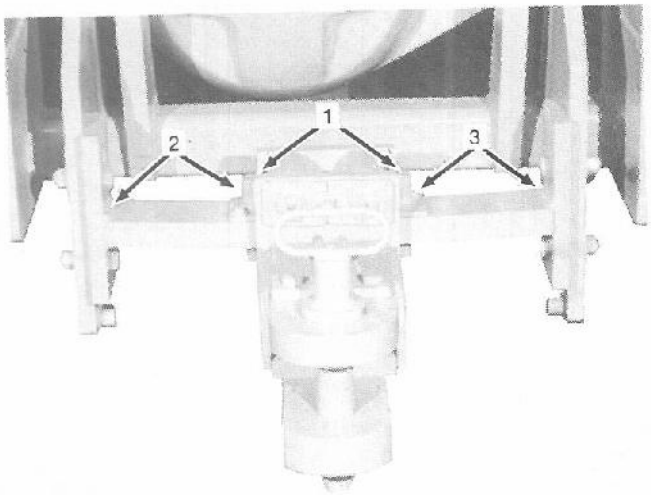
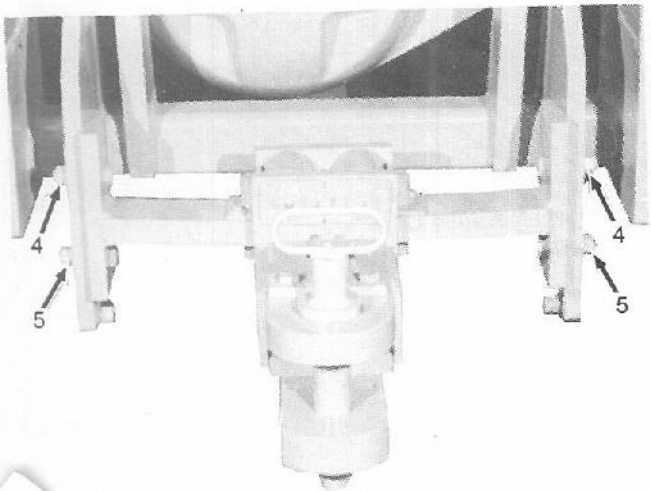


Figure 20: Drawbar Positions



re 20A: Drawbar Raise/Lower

Attaching the Implement

The standard drawbar can be pinned in one of three positions as shown or by removing stop pins, the drawbar can swing across entire drawbar rail.

CAUTION: When towing implements on public roadways, the drawbar is to be bolted in a stationary position.

WARNING: DO NOT allow any people to stand directly in front of or behind the tractor, in or around implements when backing up or driving forward. Set engine throttle to lowest idle rpm setting when approaching machine for hitching up. Shut down the tractor and apply the parking brake before hitching up. Failure to do so may result in personal injury.

If required, the standard drawbar may be raised or lowered from the mid-position approximately 2 in (50.8 mm). This is accomplished by removing bolts "4" and "5" on each side of the drawbar hanger and repositioning the drawbar up or down. (Fig. 20A)

IMPORTANT: *When attaching implements, always use the drawbar pin supplied with the tractor. Be sure the drawpin is secured by the latch.*

3-Point Hitch (Optional)

The three-point hitch provides a fast and convenient means of attaching rear mounted equipment conforming to ASAE and SAE specifications and will enable you to mount most three-point equipment of other manufacturers. The three-point on your tractor is a Category III hitch. No special pins or bushings are necessary when using Category III equipment.

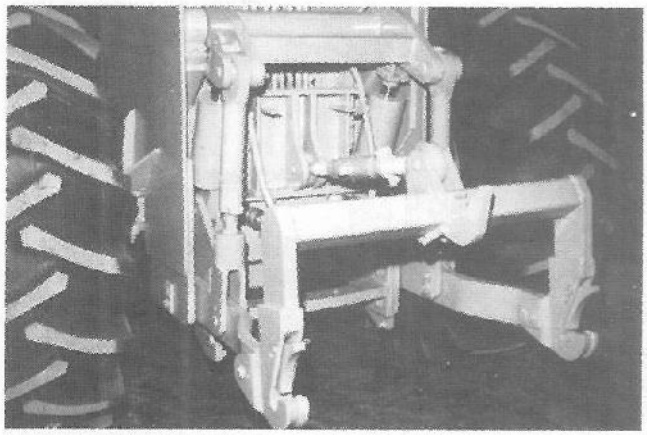
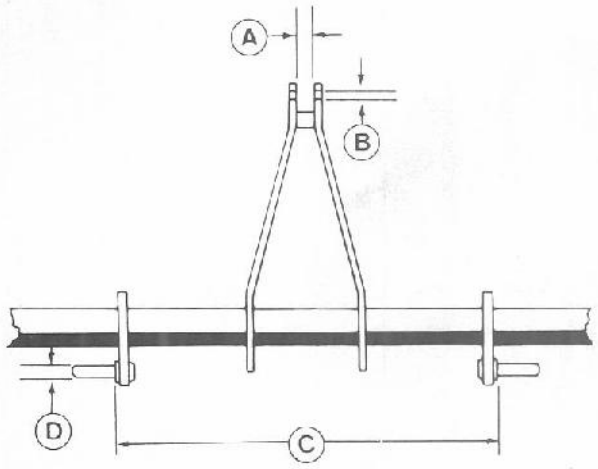


Figure 21: 3-Point Hitch

The category designation means that the space at the top of the mast is "A" and the Uni-ball on the hitch upper link is sized to fit the "B" hitching pin on the equipment mast. The uni-balls in the ends of the lower link are sized to fit the "C" diameter equipment hitching pins. The hitch lower links are spaced to fit equipment hitching pins spaced "D" between the shoulders.

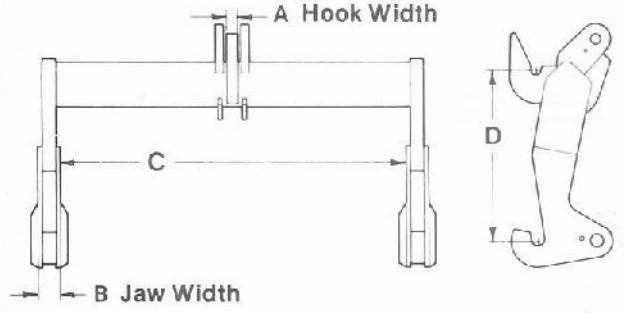


Category III Dimensions for Implement

(A) 2" (51 mm)	(C) 38" (966 mm)
(B) 1-1/4" (32 mm)	(D) 1-7/16" (37 mm)

Figure 22:

Included with the three-point hitch is a quick-hitch attachment. If needed, the quick-hitch attachment can be removed and the implement coupled directly to the three-point links. Both configurations conform to ASAE and SAE Category III Specifications.



Quick-Hitch Dimensions

(A) 1.25" (31.75 mm)	(C) 38.25" (97.1 cm)
(B) 2.50" (63.5 mm)	(D) 18.88" (47.9 cm)

Figure 23:

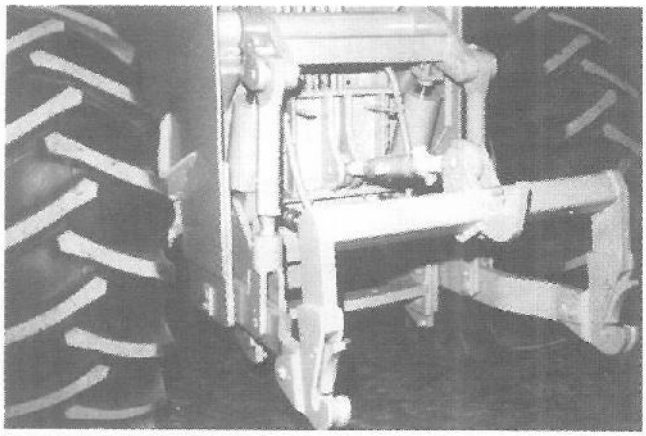


Figure 24: 3-Point Hitch

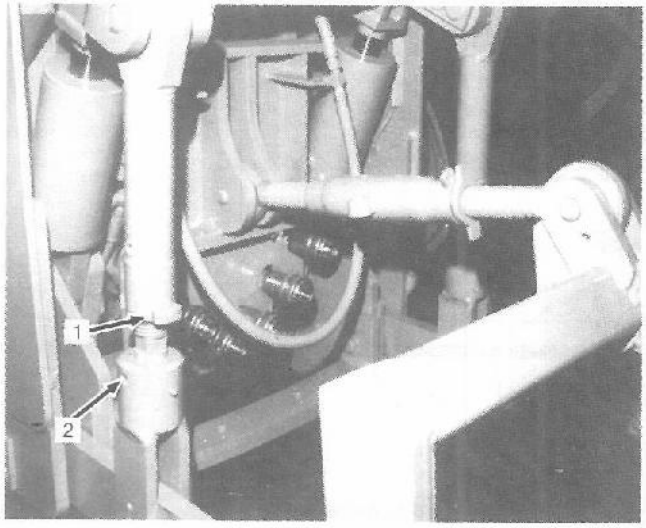


Figure 25: Lift Link Adjustment

1- Lift Link Adjustment 2- Float Pins

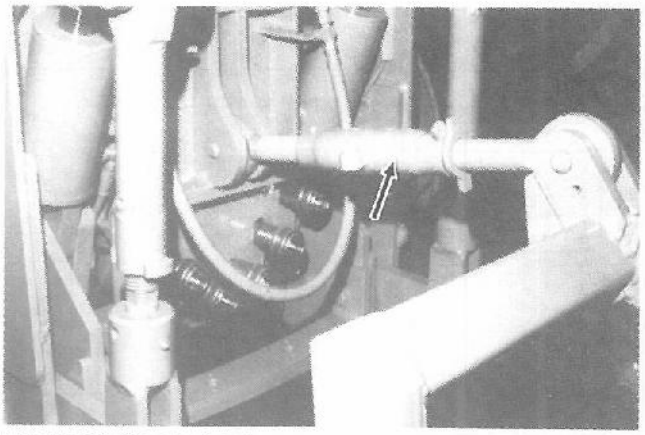


Figure 26: Center Link

3-Point Operations

When operating the three-point, the swinging drawbar must be locked in the center position on the drawbar support with the stop pins to prevent damage and assure proper operation of the hitch.

Adjustments

The height of the implement may be adjusted by turning the leveling screws on the lift links, loosen the lock nuts, remove the float pins and use a large wrench to turn leveling screws in or out.

After making the desired adjustment, replace the float pins and tighten the lock nuts. You may obtain approximately 2 in. of free travel (float at each lift link) by removing the float pins. This may be desirable when using disc-harrows or equipment with widely spaced gauge wheels. The lift links are used in the "rigid" position for implements such as plows. The float pins should be removed whenever possible.

If you are hooking to equipment that does not require the use of the quick-attach weldment, it may be desirable to remove one or both float pins in order to individually raise the lower links to provide easier hitching.

Upper Link Angle Adjustment

The length of the upper link can be shortened or lengthened by loosening the lock nut. Adjust the link to the desired length, then retighten the lock nut. The upper link must be pinned in the upper hole of the bracket when using Category III equipment.

Sway Plates: (Wear Plates)

The lateral movement of the hitch is controlled by the use of wear plates and shims bolted to the rear frame weldment and drawbar support.

IMPORTANT: *We have designed more adjustment into the three-point linkage to allow for the various tire sizes in use. All adjustments should be made so that lift arms and lift links do not strike side frames. Operate the three-point slowly several times after hook-up to be sure all adjustments are correct.*

Lights

The standard tractor is equipped with 10 sealed beam lights, four flasher lights and two tail lights. The lights are designed to give the maximum amount of visibility and convenience when operating at night.

Road & Field Lights

There are four headlights mounted in the front grille, one field light on each front fender and two on each rear fender. (One rear light on optional fifth wheel rear frame.)

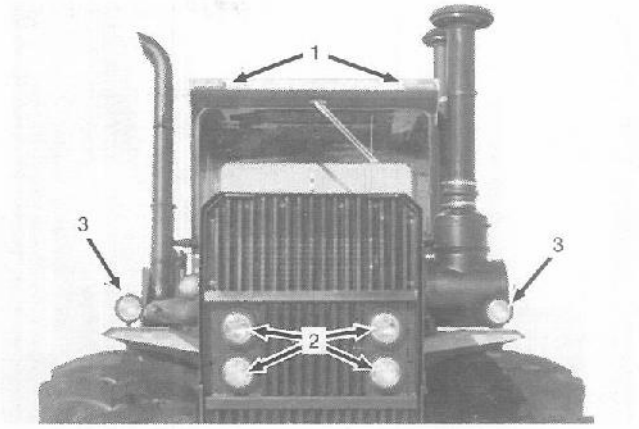


Figure 27: Front Lights

1-Signal/Flasher Lights 2-Head Lights 3-Field Lights

Head Light Adjustment (Fig. 28)

If it should become necessary to re-focus the headlights in the grille cavity, this can very easily be done by removing the lamp assembly from the grille and adding P/N 19-195 shim as required to one or more of the three retaining screws between the lamp assembly and the grille until the desired focus is achieved.

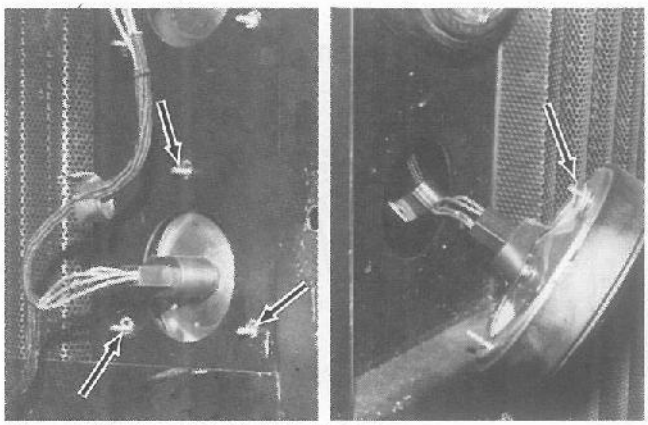


Figure 28: Head Light Adjustment

Tail/Stop Lights

The tail lights are mounted on the rear fender. The light glows red for night highway driving. Stop lamps are integral with the lights, and are illuminated whenever the brake is applied.

Signal/Flasher Lights

The four flashing warning lights are located at the top front and top rear of the cab. The flashers glow amber to the front and rear.

Back-Up Alarm

The back-up alarm is mounted on the right rear fender directly behind the lights. The alarm will sound any time the tractor is shifted into reverse with the engine running.

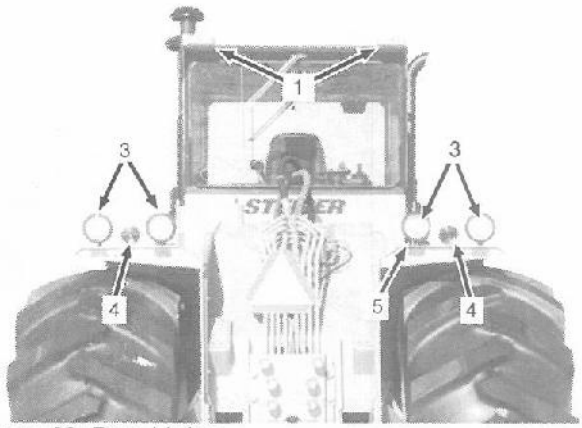


Figure 29: Rear Lights

3-Field Lights 4-Tail Lights 5-Back-Up Alarm

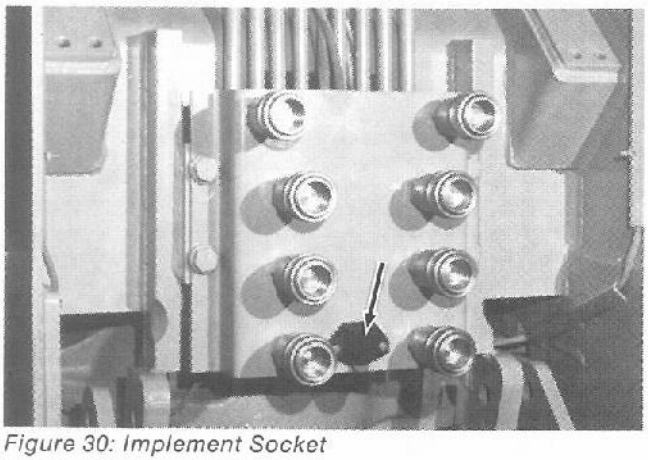


Figure 30: Implement Socket

Mating plug P/N 22-1143 is optional.

Highway Driving

Use flasher/turn lights when traveling on public roads day or night unless prohibited by law.

CAUTION: DO NOT use field lights when driving on public highways. Use road lights only. Towed implements or other equipment should be equipped with stop/tail and clearance lights. Check local state laws regulating day or night operation.

NOTE: *Implement mating plug P/N 22-1143 may be ordered through your local dealer. Refer to electrical schematics in Troubleshooting section for pin numbers.*

Optional Equipment

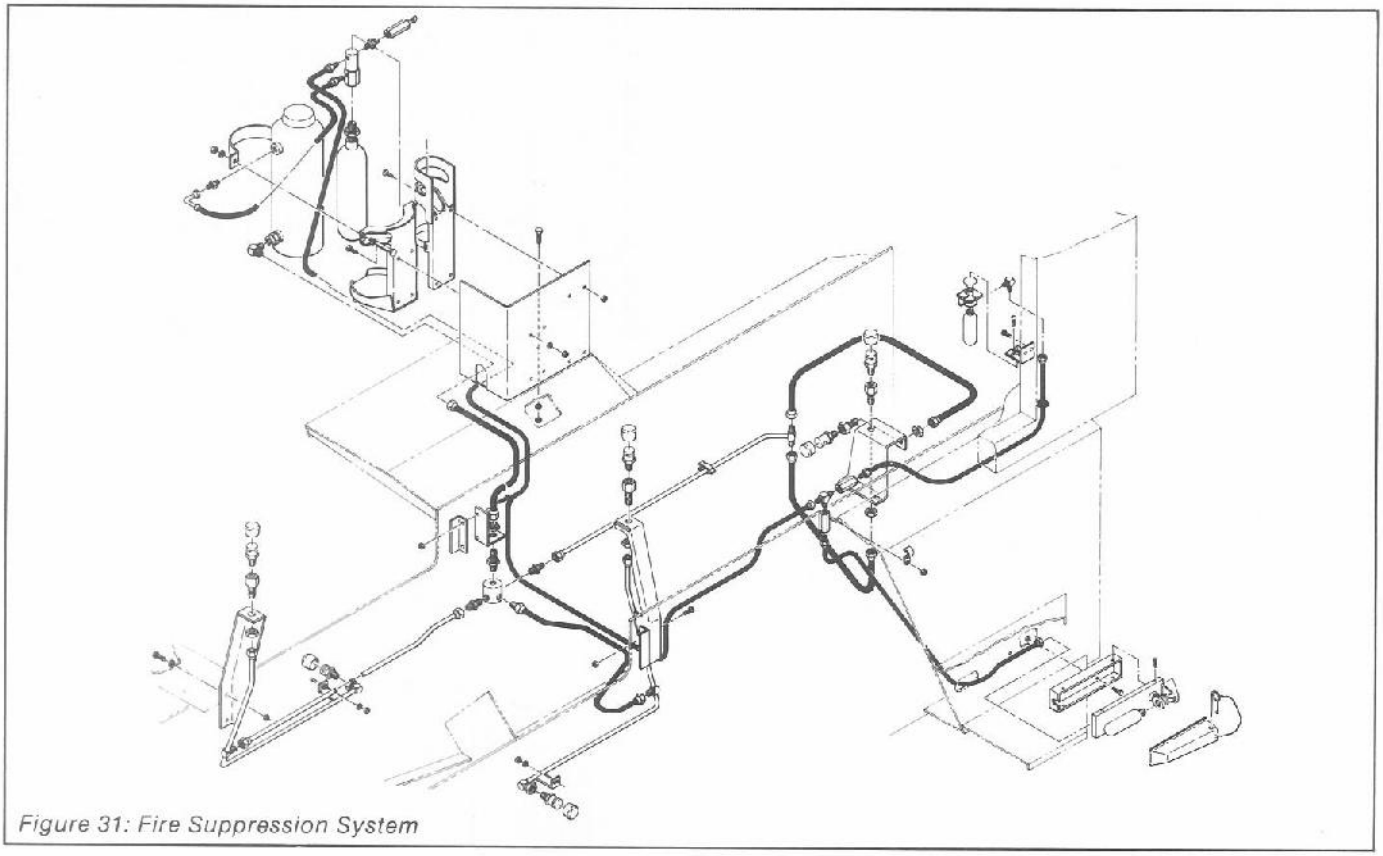


Figure 31: Fire Suppression System

Fire Suppression System (Fig. 31)

General

The ANSUL A-101 system consists of three major components: a container to store the dry chemical extinquishing agent; an actuation device to trigger the system; and a delivery system to carry the dry chemical from the storage container to the fire.

The basic agent storage system is a tank filled with Ansul Foray (monoammonium phosphate base) dry chemical which is effective on Class A, B and C fires. A gas expellant cartridge provides pressurization of the dry chemical upon actuation.

The tractor has six discharge nozzles located in key areas of the tractor. (Four nozzles are located in the engine area and two nozzles are located in the transmission area.)

The tractor has two actuators, one located inside the cab on the lower left rear door post and one located outside the cab on the lower left frame. (Fig. 32)

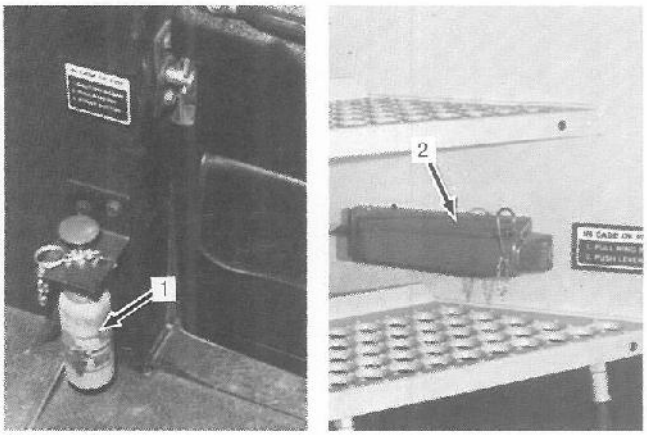


Figure 32:
1- Inside Actuator 2- Outside Actuator

Fire Suppression System

How the System Operates (Fig. 33)

Discharge of the system is initiated from a remote actuator (1). Depressing the actuator plunger punctures the seal on the cartridge. The released pressure is transmitted to the pneumatic actuator/cartridge receiver (2). A safety relief valve (3) at this point prevents too large an actuation pressure build-up. The pressure causes a seal in the expellant gas cartridge (4) to be pierced. This releases the expellant gas which is then transmitted to the dry chemical tank(s) where it fluidizes the dry chemical before carrying it to the fire hazard. A bursting disc in the union assembly (6) prevents the flow of dry chemical until sufficient pressure is built up within the dry chemical tank. When the proper pressure is reached, the disc breaks allowing the gas/dry chemical mixture to flow to the discharge nozzles (7). The pressure at the nozzles cause the nozzle cap to pop off and the dry chemical to be discharged.

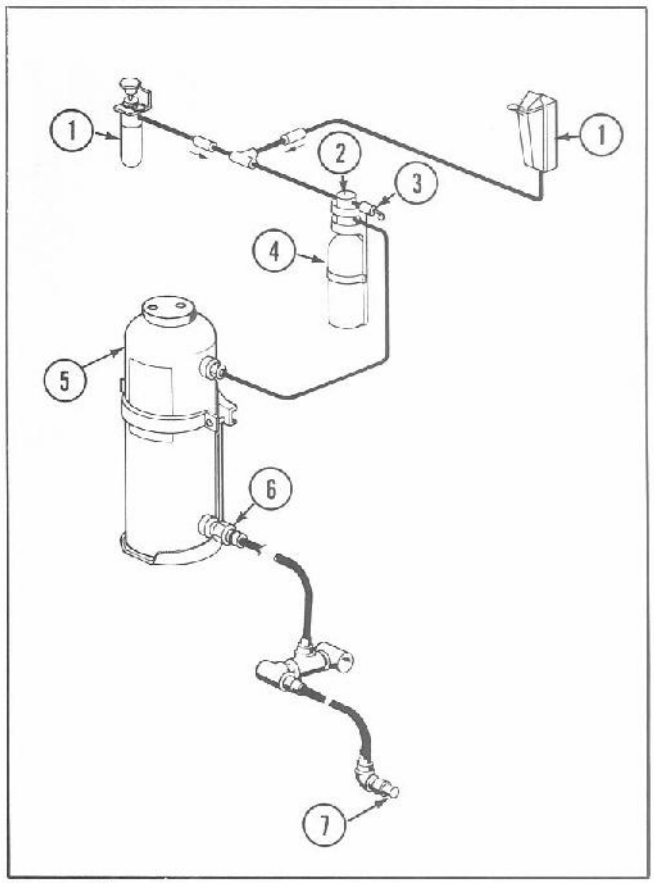


Figure 33:

In Case Of Fire

When a fire starts, the way you react is very important. As soon as you become aware of a fire, do the following four things:

1. Turn the machine off.
2. Quickly actuate the system by pulling the safety ring pin and pushing down the plunger on one of the actuators.
3. Get away from your machine. Take a hand portable extinguisher along if you can.
4. Stand by with hand portable extinguisher.

Explanation

If you leave the machine running, it may add fuel to the fire or restart the fire with sparks.

React quickly so the fire is caught before it grows too large.

By leaving the immediate fire area, you protect yourself from windblown flames, explosions or other dangers created by the fire.

Heat remaining from the fire **could** cause re-ignition after the system has discharged. Because of this, it is important that someone stand by, at a safe distance, with a hand portable extinquisher. This standby should be maintained until all possibility of re-ignition is past.

Operating Information

What To Expect

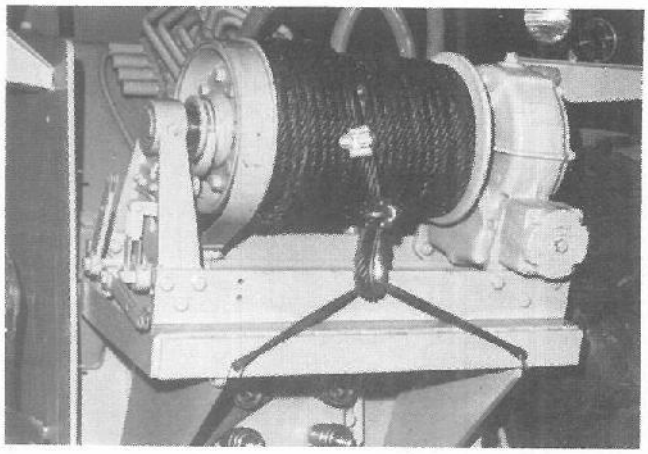
When the system discharges, there is considerable noise accompanied by clouds of dry chemical. While breathing foreign particles is not pleasant, the agent FORAY is non-toxic and exposure during a fire will not harm you.

After the Fire is Out

Machinery should not be restarted until it has been serviced and cleaned (water may be used to remove the dry chemical). **Immediately** recharge the fire suppression system. You needed it once, you may need it again.

Service Information

See Service and Maintenance section of this manual for recharging procedure, monthly and semi-annual system examination.



Winch (Optional)

General

The winch is hydraulic driven and controlled by the remote valve controller in the operators station.

Models of this winch have been tested in compliance with SAE specification J706a.

Specifications:
Model: Braden AMS10-18

RATED **LINE PULL** (IN POUNDS) AND **LINE SPEED** (FEET PER MINUTE) @ 300 R.P.M.

	1st Layer		2nd Layer		3rd Layer		4th Layer		5th Layer		6th Layer		7th Layer	
Cable Size	Line Pull	FPM @ Max. RPM	Line Pull	FPM @ Max. RPM	Line Pull	FPM @ Max. RPM	Line Pull	FMP @ Max. RPM	Line Pull	FPM @ Max. RPM	Line Pull	FPM @ Max. RPM	Line Pull	FPM @ Max. RPM
3/4 *	30,000	16	24,600	20	21,000	23	18,000	27	16,000	30	—	—	—	—
5/8 **	30,000	16	25,000	19	22,000	22	19,000	25	17,000	27	15,000	31	—	—
9/16	30,000	16	25,600	18	22,000	21	20,000	24	18,000	25	16,000	29	15,000	32

* Recommended wire rope size.
** Recommend extra improved plow steel rope.

CABLE **CAPACITY** (IN FEET) PER LAYER OF CABLE

Cable Size	1st Layer	2nd Layer	3rd Layer	4th Layer	5th Layer	6th Layer	7th Layer
3/4	37	85	140	205	280	—	—
5/8	45	100	160	230	310	400	—
9/16	50	110	175	250	335	425	525

LOAD-SAFETY FACTOR RATIOS

Safe Working Load ..... 30,000 #
Breaking Strength ..... 60,000 #
Safety Factor 2.0
Worm Gear Ratio 33:1
Drum Shaft Diameter ..... 2-1/2"
Drum Barrel Diameter ..... 6"
Continuous Duty Rating ft-lbs/min 36,000
Maximum Input R.P.M. @Rated Load 300
Starting Input Torque (Static) lb-in 8,070
Input Torque To Operate
Winch (Dynamic) lb-in 6,150
Weight-Winch Only,
Model AMS10-18B ..... 520#

Winch Operation (Fig. 35)

CAUTION: Before performing any of the following operations the tractor must be shutdown and the Park/Emergency brake applied.

1. Cable may be reeled out to the load by releasing drum clutch lever (1).

2. If assisted by second person, during the reeling out process, drum speed may be controlled by the drag brake lever (2-Fig. 36). This will help prevent cable from becoming entangled if reeled out too fast.

3. After cable is secured to the load, re-engage drum clutch using lever (1-Fig. 35).

WARNING: Before starting the winching process be sure there are no persons behind the tractor or anywhere near the cable area.

4. Re-start the tractor, leave Park/Emergency brake applied and use the hydraulic controller to activate the winch and pull the load.

CAUTION: Use extreme caution during all winching. DO NOT attempt to winch loads exceeding the rated capacity of the winch. DO NOT attempt to use the tractor as the prime mover when the winch cable is attached to a load.

WARNING: The winch is not designed for use in the lifting or moving of persons! The winch(s) described herein are neither designed nor intended for use or application to equipment used in the lifting or moving of persons.

The cable clamps alone on winches are not designed to hold rated loads. Therefore, a minimum of 5 wraps of cable must be left on the drum barrel to achieve rated load.

WARNING: If winch(s) are field installed, the cab must be provided with operator protection per SAE 1084.

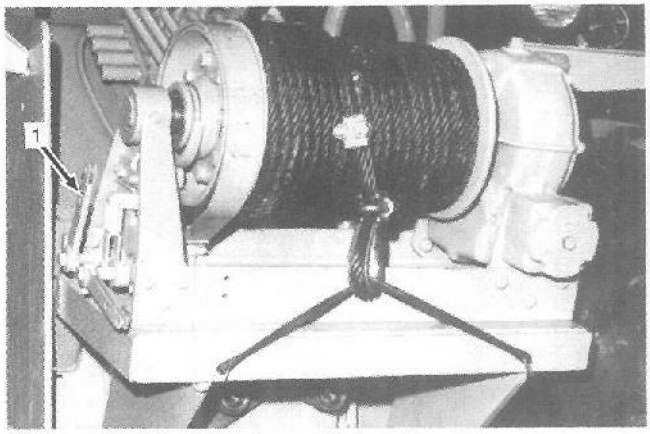


Figure 35: 1–Drum Release Clutch Lever

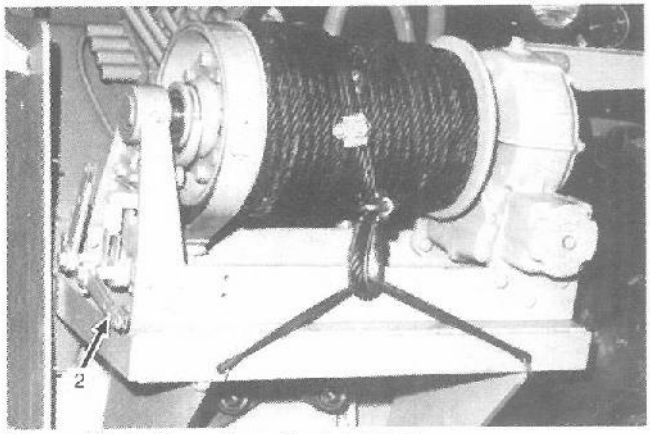


Figure 36: 2–Drum Drag Brake Lever

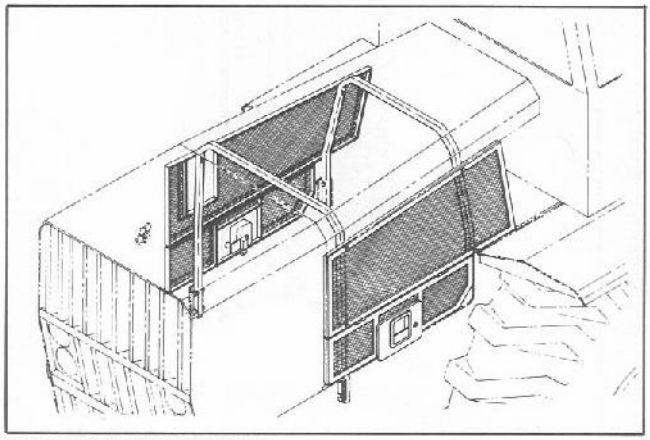


Figure 37: Side Guards

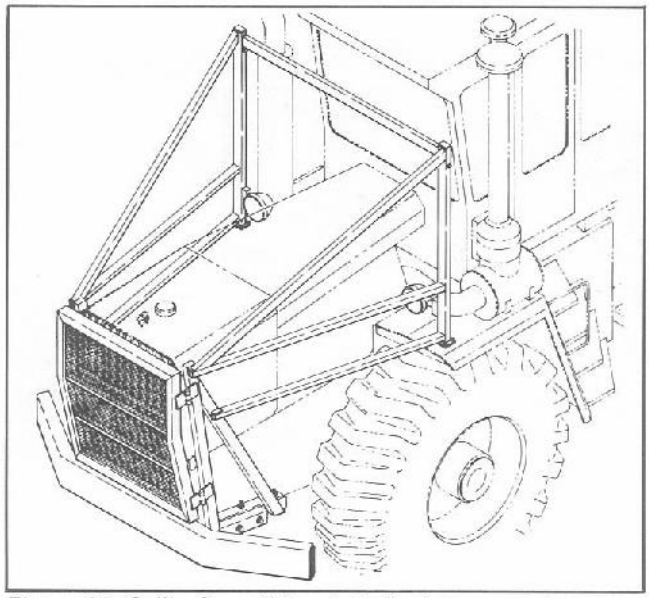


Figure 38: Grille Guard/Brush Deflector

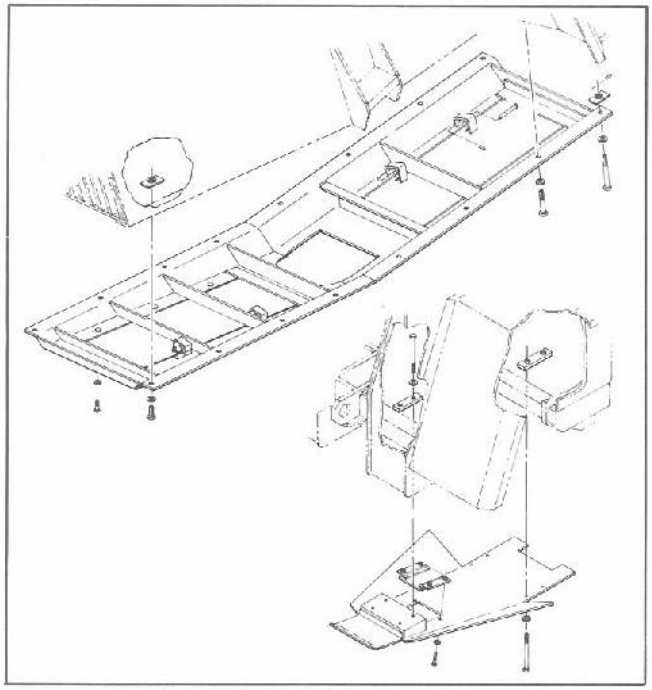


Figure 39: Front & Rear Frame Pan

Available Options

Side Guard (Fig. 37)

To prevent brush and debri from getting into the engine compartment there is an optional hood side guard available. The side guard has access doors on the lower portion for engine service areas. The side guard group may be ordered through your dealership under Steiger P/N 70-2467T91.

NOTE: *When the side guard is used on tractors equipped with 35.5 x 32 tires, if tires are postioned wrong the tire lug bars may prevent the lower access doors from opening. If this happens it may be necessary to reposition the tractor.*

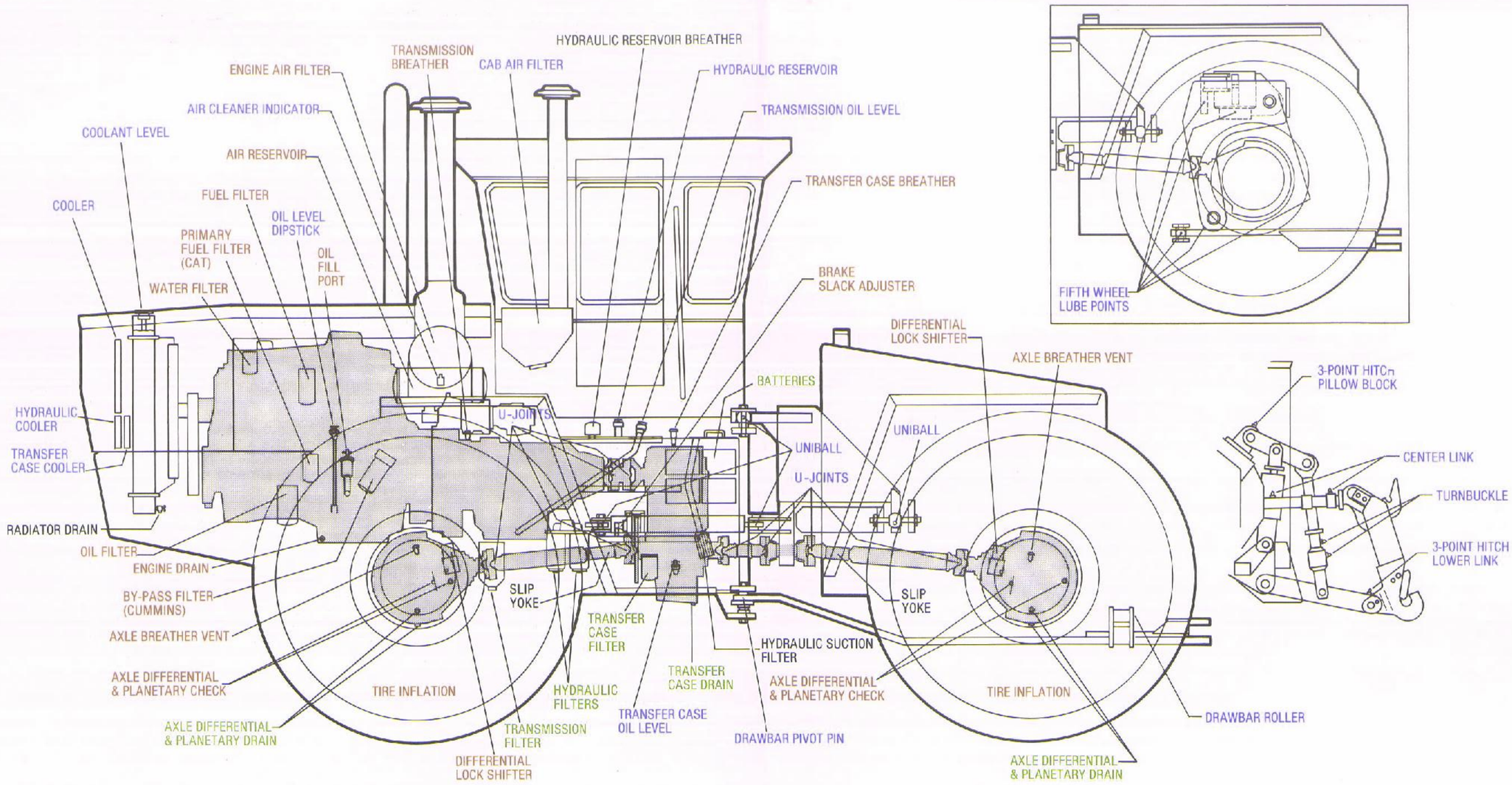
Grille Guard/Brush Deflector (Fig. 38)

If working in heavy brush or land clearing operations the Grille Guard/Brush deflector group option is available under Steiger P/N 02-4969T91.

Front & rear Frame Pan (Fig. 39)

Steiger P/N 02-4735T91 Front Frame Pan Group and P/N 02-5118T91 Rear Frame Pan Group options are available when working in rocks, or other debri that under carriage protection is desirable.

The under carriage pans have access doors available to service areas.



Lubricating Grease Specifications

N.G.L.I. Consistency #2 High Temperature anti-friction bearing lubricating grease.

Minimum Physical Requirements:
Dropping Point °F-350° min.
Penetration, ASTM worked at 77°F-265-295

Grease meeting the above specifications is available through Steiger Tractor Parts Department, Part Number 01-2390 (14 oz. tube), or 01-4644 (35 lb. pail).

- 10 Hours
- 100 Hours
- 250 Hours
- 500 Hours
- 1000 & 2000 Hours

NOTE: *See Tractor Service Guide on the following page for specific service requirements.*

Service & Maintenance

TRACTOR SERVICE GUIDE

The hour meter is the most reliable method of determining service intervals. The following figures are based on a ten hour day. If operations differ from these figures, base service intervals on actual running time. Keep an accurate record of operating time.

10 hours ..... One Day
50 hours ..... One Week
100 hours ..... Two Weeks
200 hours ..... One Month

Check and monitor all instruments and indicator lights during start-up and operation.		**During Operations**
Main Hinge and Pivot Linkage	Grease	**Every 10 Hours**
Drive Shaft Hanger Bearing	Grease	
Hydraulic Reservoir	Check Oil Level	
Engine Fan, Alternator & Compressor Belts	Check Condition and Tension	
Cab Air Filter	Clean	
Engine Crankcase	Check Oil Level	
Cooling System	Check Coolant Level	
Wheel Lug Nuts (First 50 Hrs)	Torque per Specification	
Transmission	Check Oil Level	
Transfer Case	Check Oil Level	
Engine Air Cleaner	Check Indicator, Clean Outer Element A/R	
Radiator and Coolers	Check for Debris - Clean A/R	
Engine	Check for Fluid Leaks, Noise or Damage	
Tractor	Inspect for Damage, Loose Bolts Etc.	
U-Joints	Grease	
Tires	Check Pressure - Inspect for Damage	**Every 100 Hours**
Brakes	Visually Inspect and/or Adjust	
Differentials and Final Drives	Check Oil Level	
Slip Yokes	Grease	
Fuel Tank	Drain Sediment	
Fuel Filter(s)	Clean or Replace A/R	
Water Filter (First 100 Hrs)	Replace w/Service Element	
Axle, Transfer Case and Transmission Vents	Inspect & Clean A/R	
Door Locks and Latches	Lubricate - Check Adjustment	
Engine Crankcase	Change Oil and Filters	**250 Hours** (OR 6 MO.)
Water Element	Replace w/Service Element	
Differential Lock Shifter	Check Oil Level	
Engine Air Cleaner	Check, Clean and/or Replace A/R	**500 Hours** (OR 6 MO.)
Differential & Final Drives	Drain and Refill (100 Hrs New Machine)	
Hydraulic Oil Filter(s)	Replace (100 Hrs New Machine)	
Hinge Bolts	Torque per Spec's	
Transmission Filter	Replace (100 Hrs New Machine)	
Transfer Case Filter	Replace (100 Hrs New Machine)	
Batteries	Clean Terminals - Inspect Cables	
Hydraulic Hoses	Inspect for Damage - Replace A/R	
Engine Clean Air Tubing	Inspect for Leaks or Damage	
Engine Fan Hub & Idler (Cat)	Lubricate	
Hydraulic Oil	Change Oil and Filter(s), Clean Suction Screen	**Every 1000 Hours** (OR 12 MO.)
Hydraulic Vent Filter Cartridge	Replace & Clean Valve	
Transmission Oil	Change Oil and Filters	
Engine Fan Hubs	Inspect, Repack or Rebuild	
Engine Idler Pulleys	Inspect, Repack Bearings or Rebuild	
Radiator & Coolant	Drain, Chemically Flush - Refer to Manual	
Engine Air Cleaner	Replace Inner and Outer Elements	
Differential Lock Shifter	Drain & Refill w/New Oil	
Engine Valves and/or Injectors	Adjust (see your Steiger Dealer)	**2000 Hours**
Engine Water Pump	Insepct and/or Rebuild	

Properly Maintained Equipment is Safe Equipment

It is the operator's reponsibility to make daily inspections of the machine for loose bolts, fluid leaks, debris or chaff accumulations or anything that could cause a potential service, fire or safety problem.

Cab Air Filters

Cab Air Filter Removal

Remove wing nut, cover and filters. After removing the filters, clean by directing clean dry compressed air up and down the inside of the element. Continue this until the element is clean. Clean any dirt and debris from the filter cavity in the cab. A vacuum cleaner will serve this purpose very well.

NOTE: *The element must be handled with care. It will not withstand the abuse of rapping on a tire or hard surface.*

An element cleaning tool for use with compressed air should be used to prevent damage to the element when removing dust rather than a conventional air gun or nozzle.

It is important to keep this filter clean because the air conditioning evaporator receives air through this filter. An evaporator **must** be clean to function properly.

NOTE: *Whenever servicing the cab air filter, check the rubber evaculator valve to be sure it is free and not plugged.*

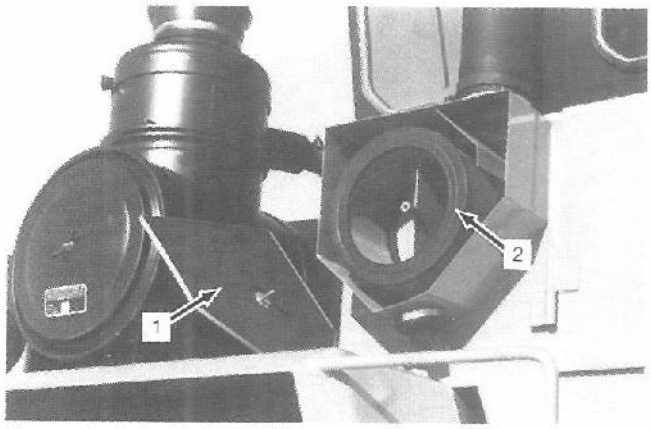


Figure 1: Cab Air Filter Element
1-Dust Cover 2-Cab Air Filter

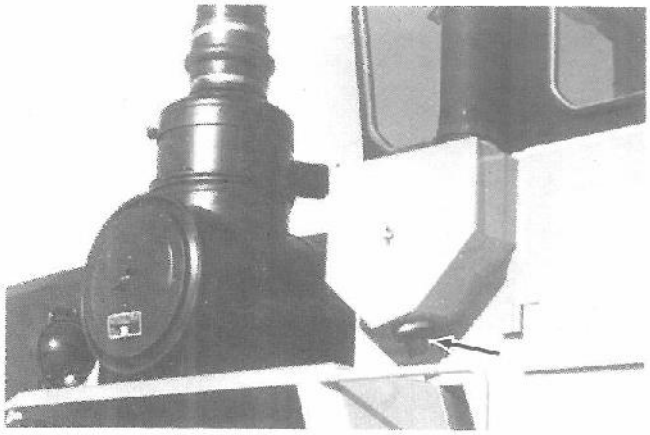


Figure 2: Evacuator Valve

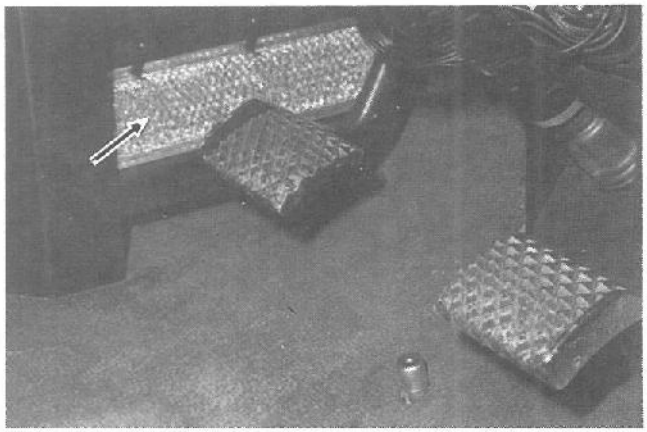


Figure 3: Recirculation Filter

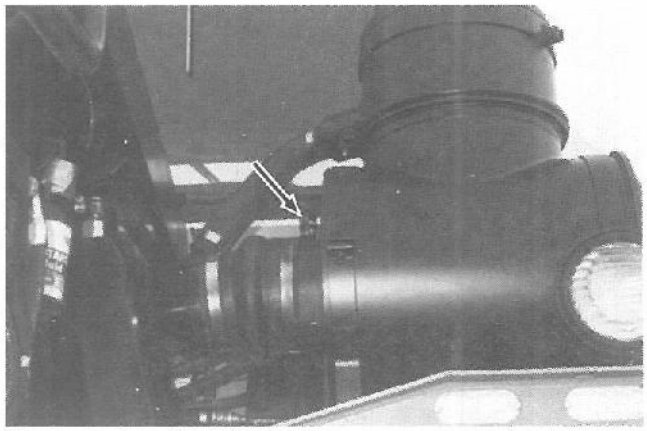


Figure 4: Condition Indicator

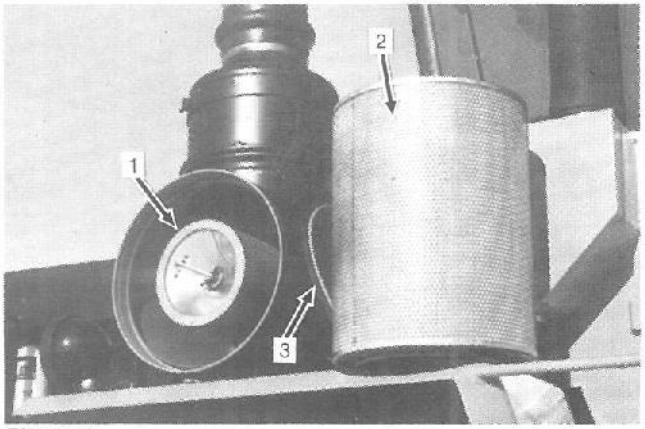


Figure 5:
1-Safety Element 2-Outer Element 3-Dust Cover

Recirculation Filter

Recirculation filter - the cab air inside filter assembly must be removed and cleaned in water and a detergent whenever it appears dirty. After cleaning, it should be sprayed with a filter treatment, Steiger Part No. 01-1701, then reinstalled.

IMPORTANT: *Do not use filter treatment on any other filters.*

CAUTION: The cab air filters are not designed to filter out harmful chemicals. When using chemicals, follow the instructions given in the implement operators manual and those given by the chemical manufacturer.

Engine Air Cleaner Service

General

The dry air cleaner elements should be serviced only when the maximum allowable restriction has been reached. The elements should not be serviced on the basis of visual observation, because this will lead to overservice, which may cause element damage, improper installation of element and increased service time and cost. Service the outer element only after the service indicator locks in the red position. The outer element can be cleaned with air by directing air from the inside of the filter element. Use an element cleaning tool to prevent damage to element.

Removal:

1. Remove cover wing nut and remove cover.
2. Remove second wing nut retaining the outer filter element.
3. Carefully remove the outer element from the canister.
4. If necessary remove the inner element in the same manner.

IMPORTANT: *The inner safety element should only be removed if it is to be replaced.*

Cleaning

IMPORTANT: *The filter element(s) must be handled with care. They will not withstand the abuse of rapping on a tire or other hard surface. To remove dust from the element, tap the element gently with the heel of your hand, and rotate the element while tapping.*

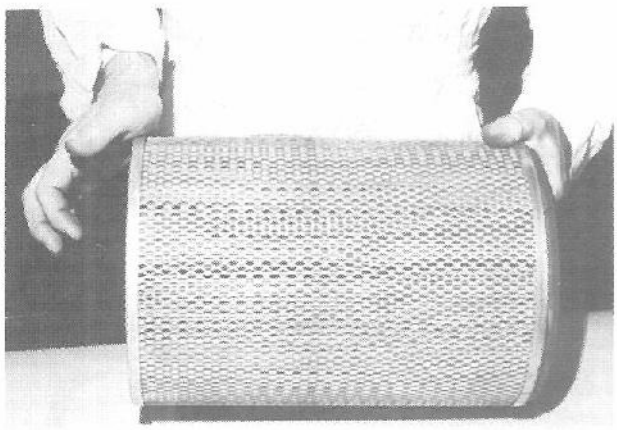


Figure 6:

If tapping does not remove the dust from the element, an element cleaning tool for use with compressed air should be used. To prevent element damage, a regular air gun or nozzle should not be used. Air pressure must not exceed 30 psi (2.76 bars) or damage to element could occur. To further avoid element damage, air pressure should be dispersed throughout the element. Concentrated air pressure directed on any area of the element could cause element damage.

CAUTION: Wear adequate eye protection when using compressed air.

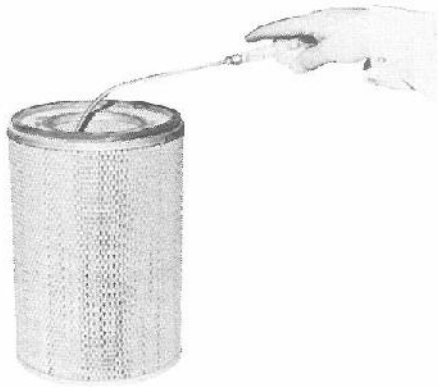


Figure 7:

After cleaning the element, direct a strong light from inside the filter element and while rotating the filter element around the light, inspect all the element pleats for cracks or holes. If any cracks or holes are found, replace the element. Inspect the filter element gaskets for damage. If the gaskets are damaged or missing, replace the element.

NOTE: *The outer element should be replaced after six cleanings or once a year.* ***We do not recommend washing air filters.***

Figure 8:

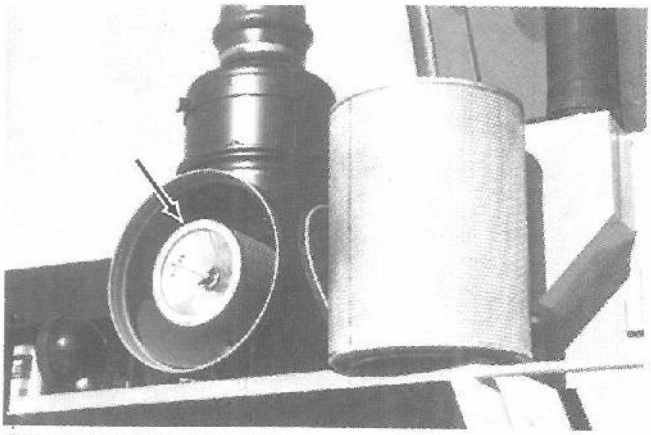


Figure 9: Safety Element

Engine Air Cleaner

The inner or safety element protects the engine against dust in case of damage to outer element. It also guards the engine against dust while cleaning the outer element. The inner or safety element should be removed and replaced only when it bcomes clogged or once a year.

IMPORTANT: *Do not attempt to clean the inner element -if dirty, clogged or damaged it is to be replaced.*

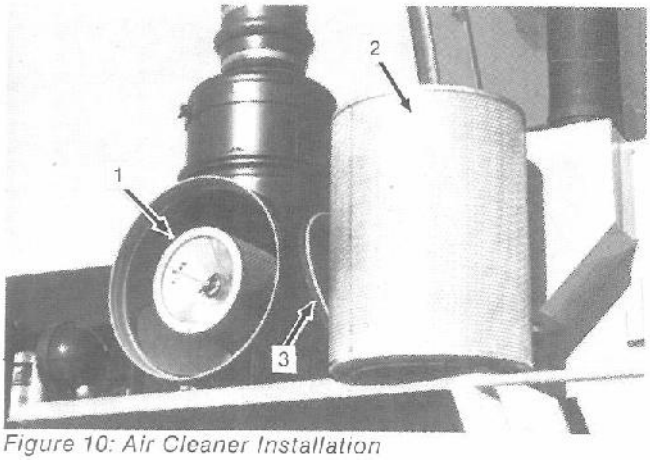


Figure 10: Air Cleaner Installation
1-Safety Element 2-Outer Element 3-Dust Cover

Installation:

1. Before installing element(s) clean the element canister. A vacuum cleaner will work very well.
2. Position and install safety element and retaining wing nut, tighten nut securely by hand. Do not overtighten.
3. Position and install outer element in the same manner, reinstall cover and retaining wing nut.

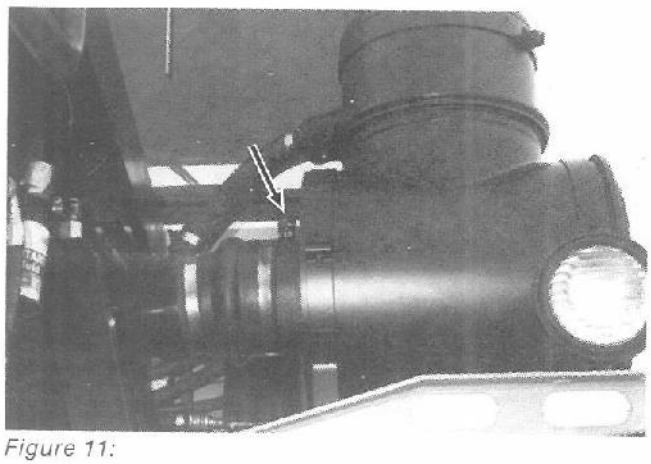


Figure 11:

4. Reset condition indicator.

IMPORTANT: *Make certain all filters are in line and sealed when reinstalling. Inspect engine clean air tubing and connections for wear, leakage or misalignment. Be sure all clamps are tight.*

Battery Care

General

The starting of a diesel engine depends heavily upon a fast cranking speed. It is very important that the batteries be fully charged and in good condition.

When you examine this battery, you will note that major differences exist between this type of battery and the usual serviceable type. Among the more important of these differences are: Water never needs to be added; there are no filler caps or cell covers and it is not tested in the usual manner since it has a built-in hydrometer. Small vent holes allow gas generated to escape. Gasing is reduced by a special chemical inside the battery. The vents will allow electrolyte to run out when the battery is tipped beyond 45 degrees in any direction.

Battery Charge Indicator

The battery has a built-in hydrometer to indicate the state of charge. The hydrometer has a green ball within a cage which is attached to a clear plastic rod. The green ball will float at about 65 percent, or above, state of charge. When the green ball floats, it rises within the cage and positions itself under the rod. A green dot shows in the center of the hydrometer. A dark hydrometer indicates a state of charge of less than 65 percent and indicates the battery should be charged until the green again rises and floats. A clear, or light yellow, hydrometer means the electrolyte is below the level of the plastic rod or cage. This condition can result from overcharging, a broken case, excessive tipping beyond 45 degrees or a worn out battery. A battery indicating a clear or light yellow hydrometer should be replaced.

CAUTION: A battery indicating a clear or light yellow hydrometer should be replaced. DO NOT attempt to charge, test or slave (boost) this battery.

CAUTION: Always wear eye protection when charging, boosting or performing other service to or around batteries.

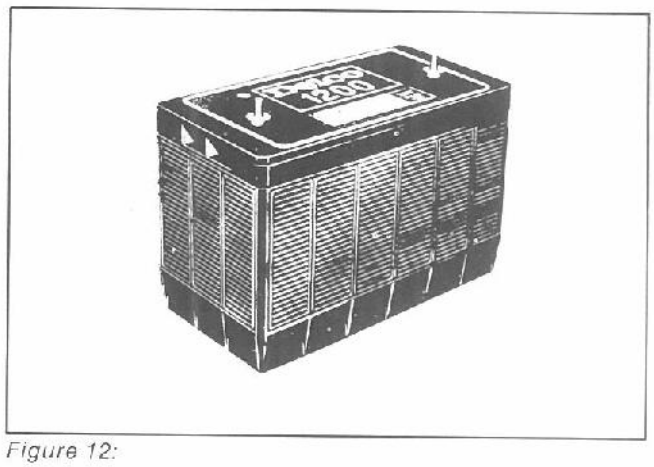
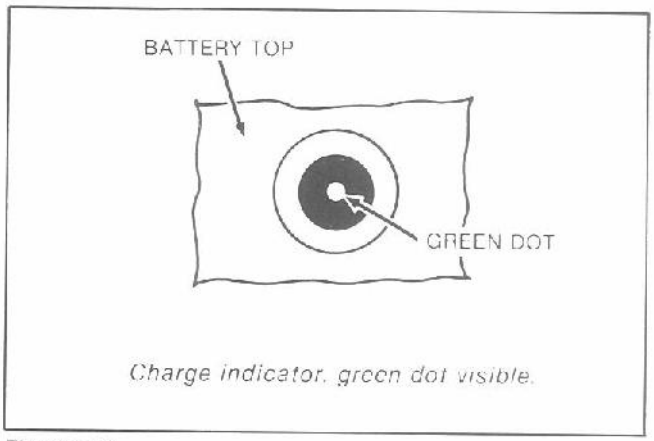
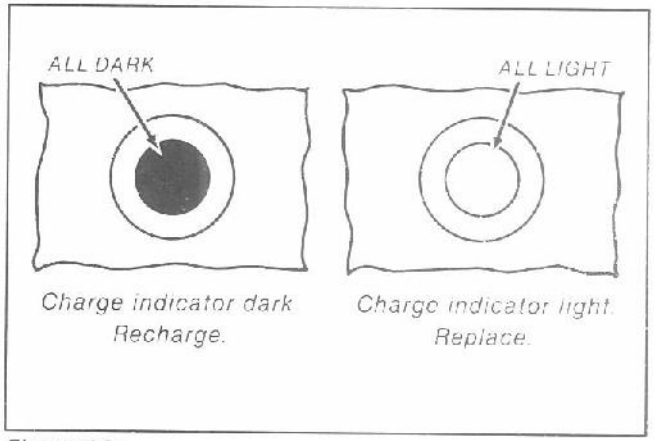


Figure 12:



Charge indicator, green dot visible.

Figure 13:



Charge indicator dark. Recharge.

Charge indicator light. Replace.

Figure 14:

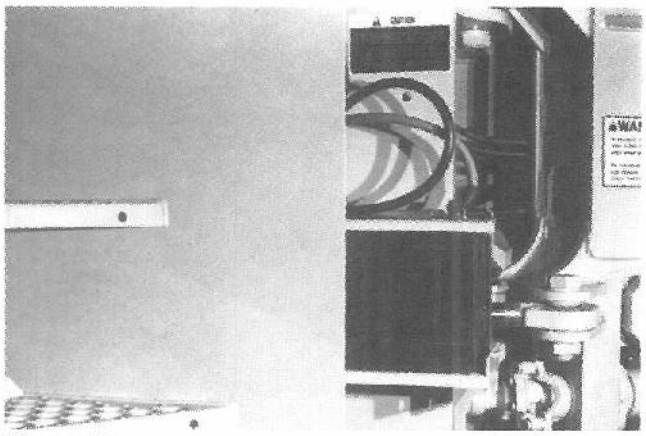


Figure 15:

Battery Care

Four 12-volt maintenance-free batteries, connected in parallel, supply current of 12-volts to the electrical system. The battery boxes are loated on the left side front frame.

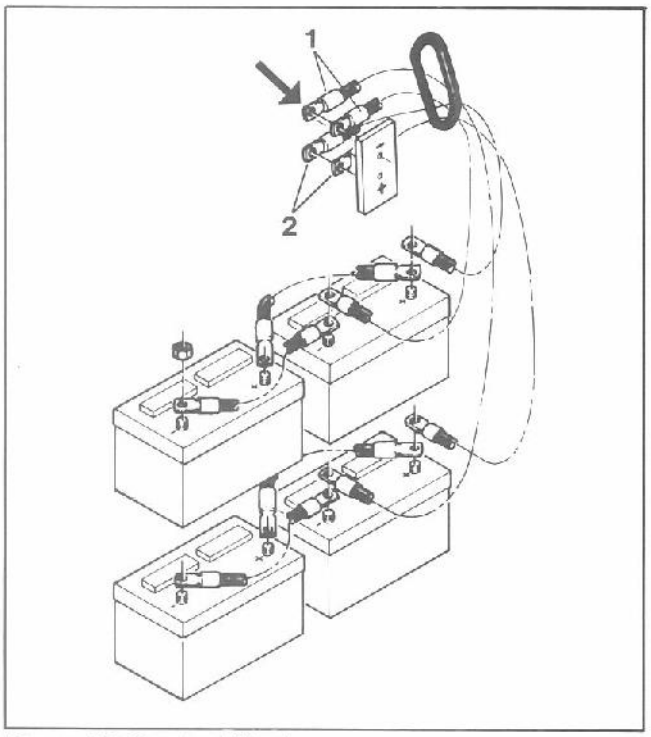


Figure 16: Terminal Block
1-Ground (-) Terminal 2-Positive (+) Terminal

CAUTION: Always disconnect ground (-negative) cables from terminal block located on the inside rear of the left front frame before attempting to service or remove the batteries (Fig. 16 No. 1)

Battery Removal

1. Remove ground (-) cables from terminal block. (Fig. 16)
2. Remove 2 capscrews on the lower end of battery tray bases. (Fig. 17)
3. Pull batteries toward the rear for access to terminals, and/or removal. (Fig. 17)
4. Loosen and remove the battery hold down bolt retaining nuts on each end of the battery box, remove the cover(s).

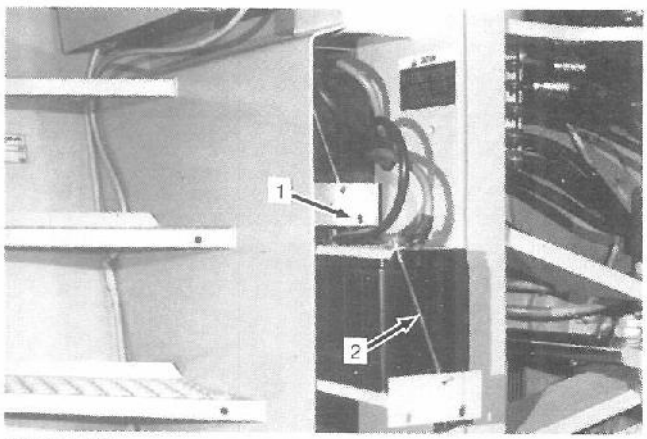


Figure 17:
1-Battery Tray Retaining Bolts 2-Battery Hold Down Bolt

CAUTION: Always disconnect the battery ground (neg.) cables before performing any welding on the tractor or implement, or before performing any work on the electrical system to avoid possible damage to the system and/or causing personal injury.

WARNING: Shut off the battery charger before disconnecting the battery terminals. While the battery is charging, hydrogen gas is being given off through each vent. When hydrogen gas is mixed with air, the mixture is highly explosive and will explode in the presence of a spark or small flame and could cause severe personal injury. Never smoke or allow flame or sparks near the area where batteries are being charged. Always wear eye protection.

CAUTION: To prevent personal injury or electrical system damage, connect cables carefully and NEVER reverse polarity when connecting cables. Only use a setting of 12 volts on the charger when charging batteries.

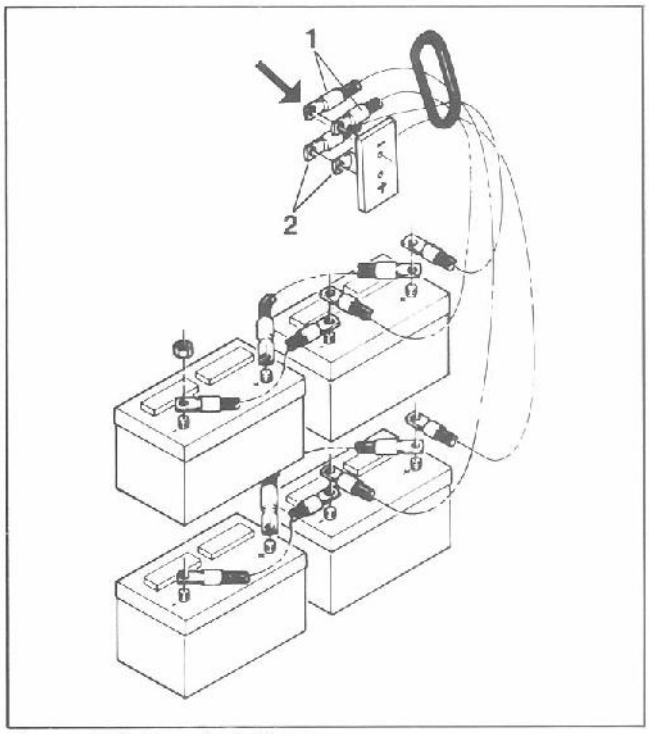


Figure 17A: Terminal Block
1-Ground (-) Terminal 2-Positive (+) Terminal

Battery Installation Procedure

1. Be sure the box is free of objects which may puncture the battery case when the batteries are installed.
2. Be sure terminal posts and cable clamps are clean.
3. Place and secure the battery(ies) in the box.
4. Connect the battery "hot" (positive or +) terminal first. (see Note)
5. Connect the battery "ground" (negative or -) terminal last.

IMPORTANT: *Recommended torque for battery cable connection is 10-15 ft. lbs.*

6. Push the battery tray(s) back into position and secure them with retaining screws.
7. Reconnect ground (-) cables to the terminal block located on the inside of the left front frame.

NOTE: *When the "positive (+)" terminal is connected first, no arcing can occur if the wrench accidently contacts both the terminal and the frame or box. The part that is contacted will take the same polarity as the battery terminal.*

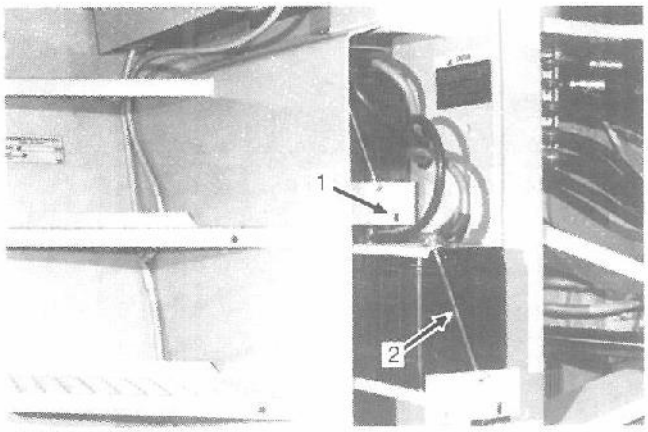


Figure 17B:
1-Battery Tray Retaining Bolts 2-Battery Hold Down Bolt

Figure 18:

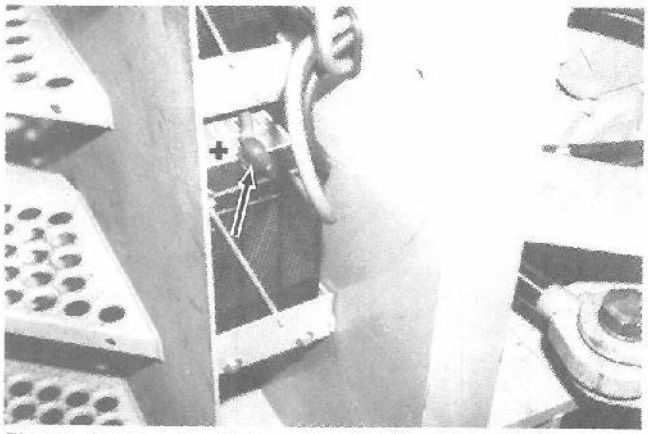


Figure 18A: Lower Battery Set Positive Terminal

If the ground (- negative) terminal, is connected first, the frame or box is connected to the ground. Then, if the wrench accidently contacts the frame while connecting the "positive (+)" terminal, a circuit is completed through the wrench. A hot spark may occur which could burn the person holding the wrench or possibly explode the battery if an excess of hydrogen gas is present at any one of the vent holes.

To Charge Individual Batteries

1. Follow Battery Removal procedure.
2. Connect the red positive (+) charger cable to the positive (+) battery terminal.
3. Connect the black negative (-) cable to the negative (-) battery terminal. Use only the 12 volt setting on the charger.
4. Charge at a rate of 25 amperes for 2-3 hours.

NOTE: *On maintenance-free batteries the charger cables must be clamped against the lead pads, not on the bolt.*

Boost Starting:

If a 12-volt system is used for boost starting, the connection must be made at the positive (+) terminal of the lower rear battery.

1. Attach one end (red) of the jumper cable to the positive (+) terminal of the tractor battery. Attach the other (red) end of cable to positive (+) terminal of booster system.

2. Attach one end (black) of second cable to negative (-) terminal of the booster system and the other end (black) to the tractor front frame away from the battery(s). **Do Not attach to the tractor cab.**

3. To remove cables, reverse above sequence exactly to avoid sparks.

WARNING: Never attempt to boost start using a single 12 volt battery from another source. The amperage draw can be great enough to damage the battery and may cause personal injury. Wear adequate eye protection when working around batteries.

Battery Storage

If the tractor is to be stored for any length of time, remove the batteries.

Periodically charge the battery(s) while in storage.

To minimize self-discharge, store the battery is as cool a place as possible without letting electrolyte freeze.

Torque Values

Cab Mount Torque

Every 500 service hours:
Torque Bolts A to 75 lb. ft. (102 N.m)
Torque Bolts B to 130 lb ft (176 N.m)

CAUTION: If the ROPS cab must ever be removed or replaced, make certain that the proper hardware is used and also that the proper torque values are applied to the attaching bolts. The eight 1/2 x 1-1/2 grade 5 bolts used to hold isolators in place must be tightened to 75 lb ft (102 N.m). The four 1" x 4" grade 8 bolts used to attach the cab to the tractor must be tightened to 130 lb ft (176 N.m).

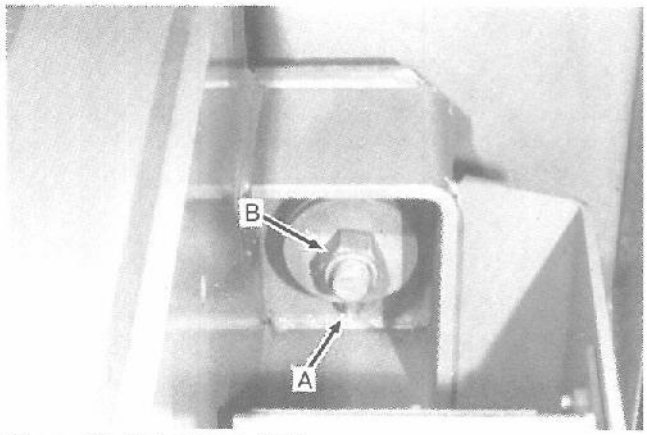


Figure 19: Cab Mount Bolts

Steering Cylinder Bolt Torque

Steering Cylinder Bolt Torque: 1200 ± 100 lb. ft. (1627 N.m)

The steering cylinder bolts at each end of the cylinder should be retorqued every 500 service hours.

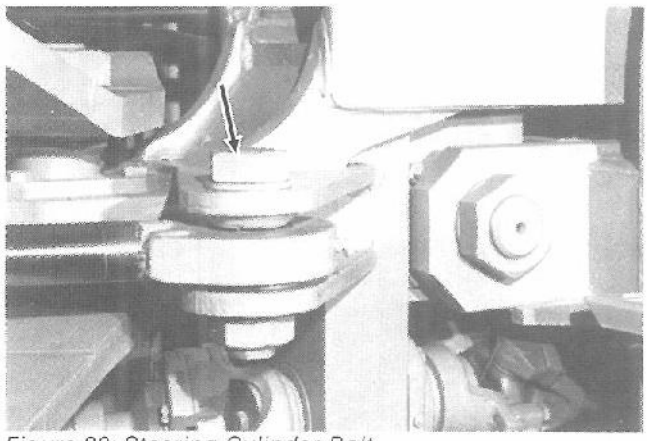


Figure 20: Steering Cylinder Bolt

Wheel Bolt Torque

Torque the wheel lug bolts to 450 lb. ft. (610 N.m) every 10 hours for the first 50 hours. Repeat whenever the wheels are removed and remounted.

CAUTION: Never operate a tractor with a loose wheel, rim or hub.

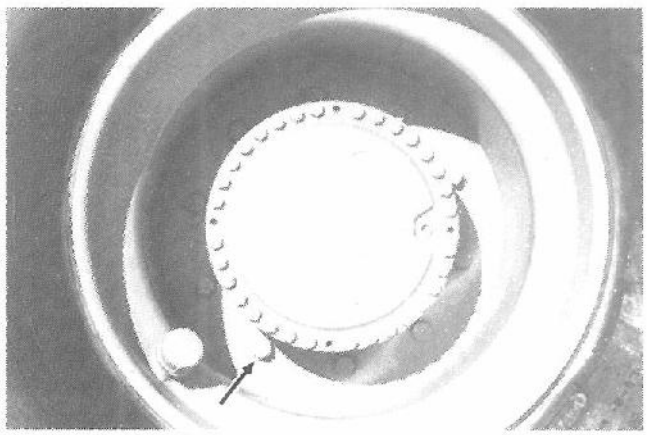


Figure 21: Lug Bolts

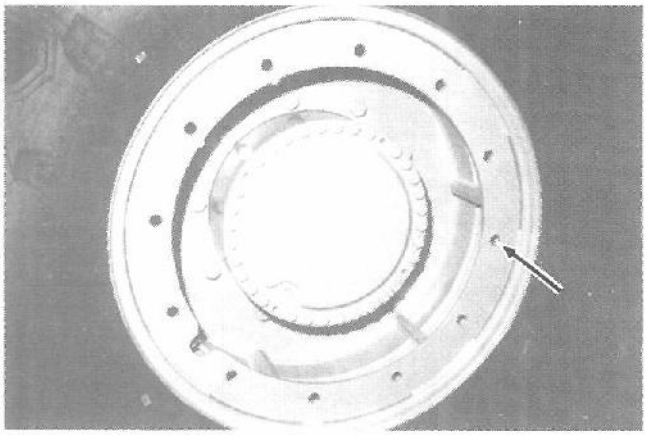


Figure 22: Dual Bolts

Dual Bolt Torque

Torque the dual bolts to 450 lb. ft. (610 N.m) every 10 hours for the first 50 hours. Repeat whenever the wheels are removed and remounted.

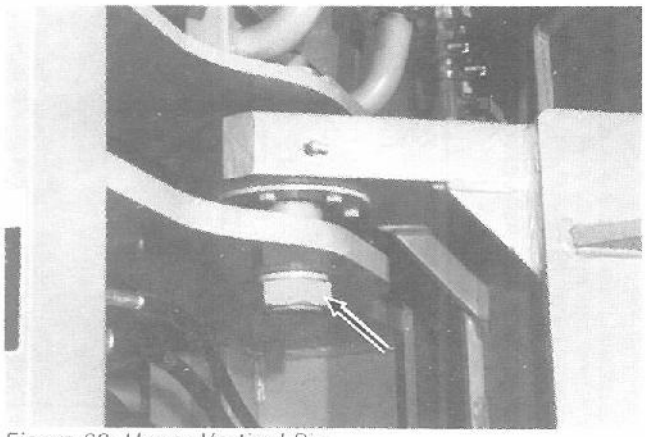


Figure 23: Upper Vertical Pin

Hinge Pin Torque

All hinge pins should be retorqued every 500 hours. Torque values are published to correspond with the correct location on the hinge yoke.

Upper Vertical Hinge Pin

Upper vertical hinge pin - torque to 1200 lb. ft. (1627 N.m) every 500 hours.

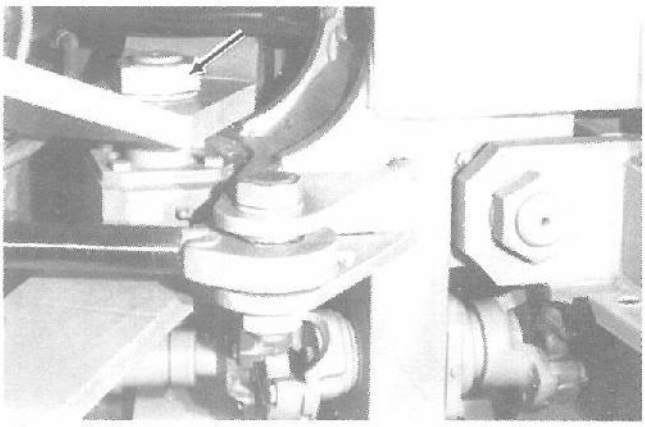


Figure 24: Lower Vertical Pin

Lower Vertical Hinge Pin

Lower vertical hinge pin - torque to 1500 lb. ft. (2034 N.m) every 500 hours.

Front Horizontal Hinge Pin

Front horizontal hinge pin - torque to 1500 lb. ft. (2034 N.m) every 500 hours.

Rear Horizontal Hinge Pin

Rear horizontal hinge pin - torque to 1200 lb. ft. (1627 N.m) every 500 hours.

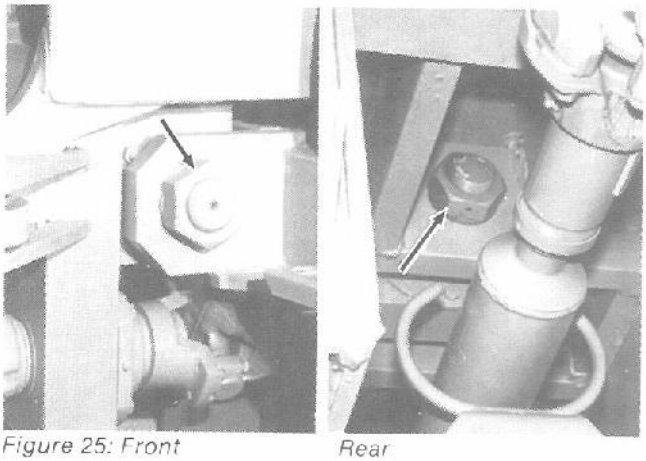


Figure 25: Front *Rear*

Drawbar Pivot Pin Torque

The drawbar pivot pin should be retorqued to 1200 lb. ft. (1627 N.m) every 500 hours.

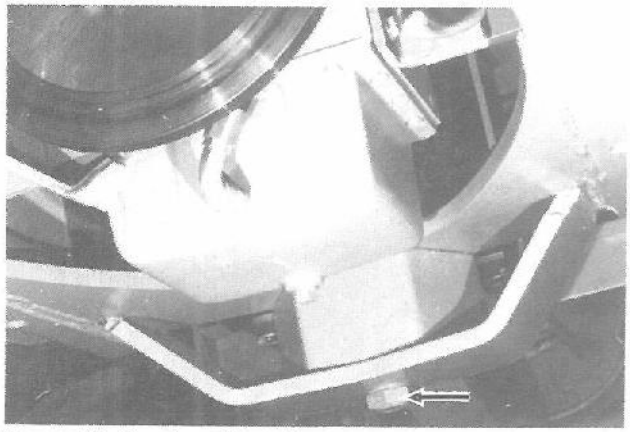


Figure 26: Drawbar Pivot Pin

Axle To Frame Bolt Torque

The front and rear axle mounting bolts should be retorqued to 695 lb. ft. (942 N.m) every 500 hours.

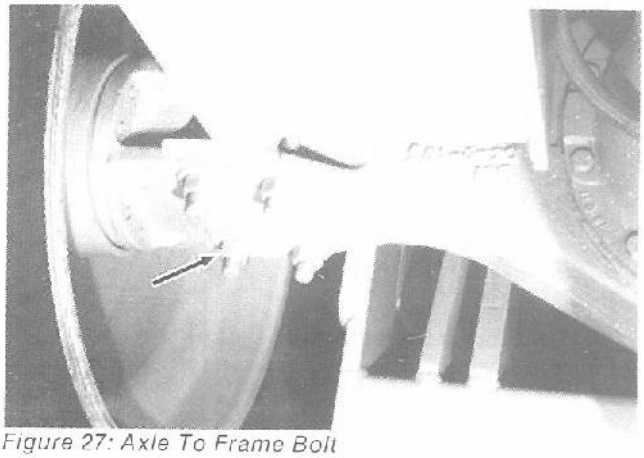


Figure 27: Axle To Frame Bolt

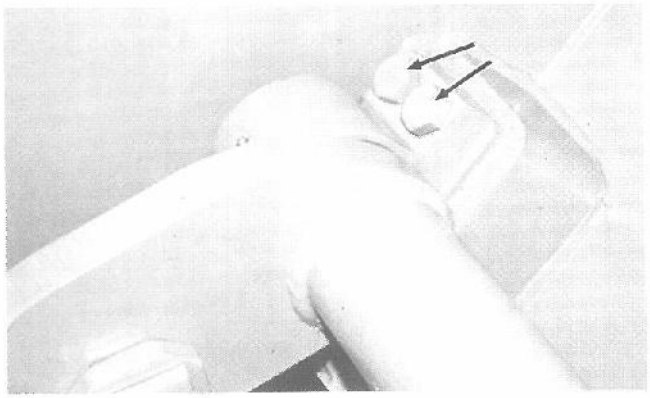
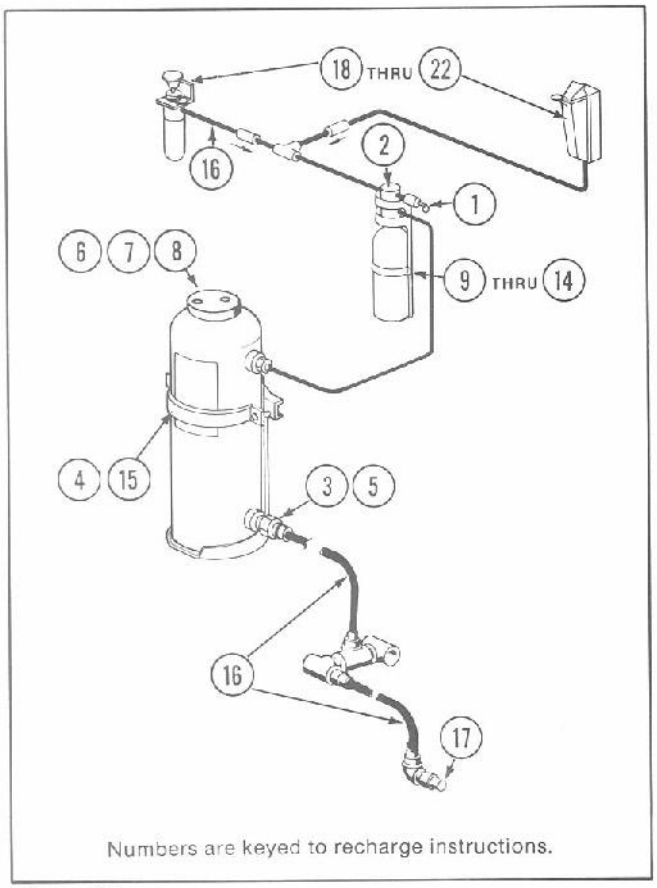


Figure 28



Numbers are keyed to recharge instructions.

Figure 29:

Three-Point Hitch - Option

Rockshaft Pillow Block Bolt Torque

Retorque the rockshaft pillow block bolts to 460 lb. ft. (63.62 Kg/M) every 500 hours.

Fire Suppression System: (Fig. 29)

Recharge

1. Pull ring on safety relief valve to relieve actuation pressure.
2. Disconnect actuation system hose at cartridge receiver/actuator assembly.
3. Open bursting disc union assembly.
4. Remove dry chemical tank from its bracket.
5. Replace ruptured bursting disc with new disc. FLAT SIDE OF DISC MUST FACE TANK. Assemble bursting disc union, wrench tighten.
6. Fill tank to rated capacity with Ansul FORAY dry chemical as specified on nameplate.
7. Clean the fill opening threads and gasket, and the fill cap threads. Coat the gasket lightly with a good grade of high heat resistant grease.
8. Secure the fill cap, hand tighten.
9. Loosen the bolt(s) on the expellant gas cartridge bracket or remove cartridge guard.
10. Unscrew and remove the empty expellant gas cartridge.
11. Make certain that the puncture pin on the pneumatic actuator/cartridge receiver is fully retracted.
12. Obtain a new expellant gas cartridge and verify the proper part number. Weigh the new cartridge. The weight must be within 1/2 ounce of the weight stamped on the cartridge.
13. Screw the fully charged expellant gas cartridge into the pneumatic actuator/cartridge receiver, hand tighten.
14. Secure the expellant gas cartridge assembly in its proper position in the bracket with the cartridge retaining bolt(s) or return cartridge guard.
15. Return the tank to its bracket and secure it.
16. Check all hose and fittings for mechanical damage. Replace any hose that has been exposed to fire.
17. Check the nozzles for mechanical damage. Clean them and install blow-off caps or silicone grease.
18. Pull up the button on the dashboard actuator(s) or lever on the remote actuator(s) and insert the ring pin.
19. Remove the spent cartridge.
20. Obtain a new actuation gas cartridge and verify the proper part number. Weigh new cartridge. The weight must be within 1/4 ounce of the weight stamped on the cartridge.

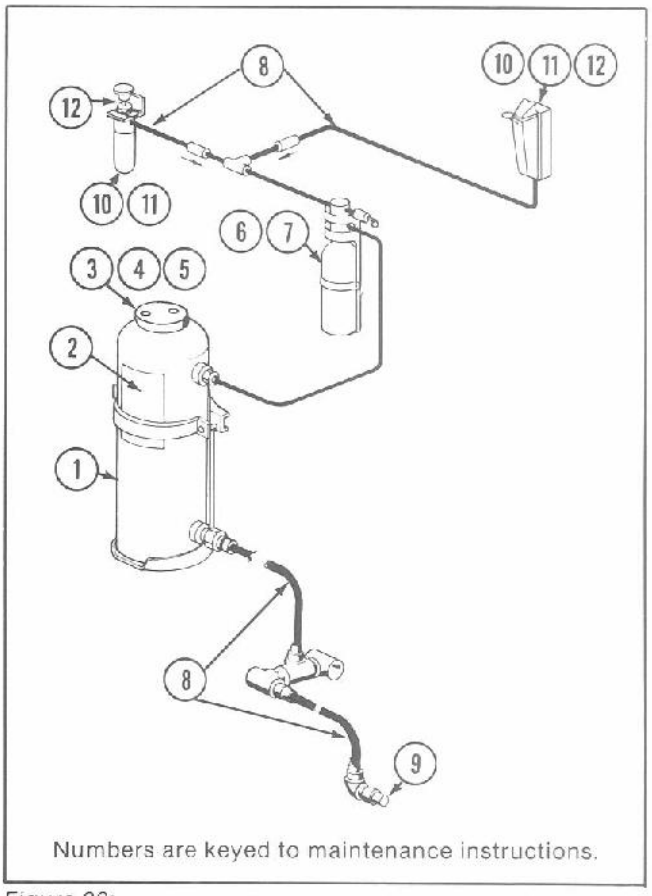
Recharge

21. Connect actuation system hose at cartridge receiver/ actuator assembly, wrench tighten.
22. Attach a lead and wire seal to the ring pin and actuation button or lever.
23. Notify operating personnel suppression system is back in service and record date of recharge.

Inspection - Monthly Examination

To provide reasonable assurance that your Ansul system is charged and operable:

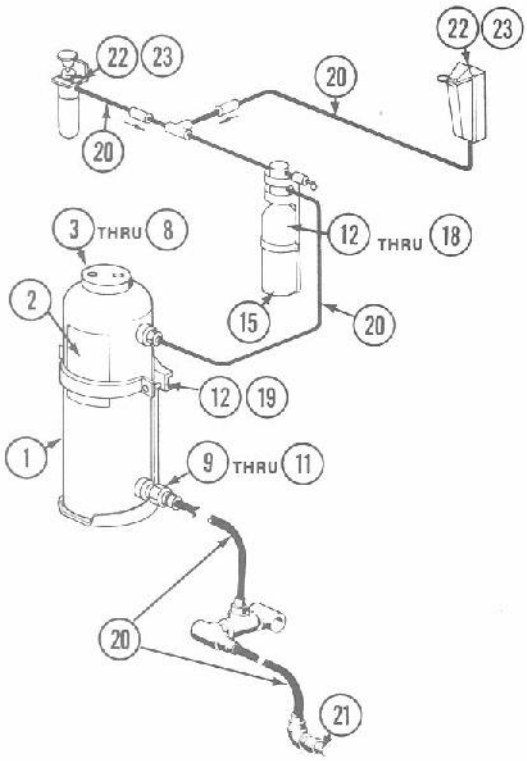
1. Note general appearance of system components for mechanical damage or corrosion.
2. Check nameplate(s) for readability.
3. Remove fill cap.
4. Make certain tank is filled with free-flowing Ansul FORAY dry chemical to a level of not more than 3 inches from the bottom of the fill opening.
5. Secure fill cap, hand tighten.
6. Remove expellant gas cartridge and examine disc -seal should be unruptured.
7. Return cartridge to pneumatic actuator/cartridge receiver, hand tighten and secure in bracket.
8. Check hose, fittings and nozzles for mechanical damage and cuts.
9. Check nozzle openings - slot on F-1/2 nozzle should be closed (capped) with silicone grease or covered with plastic blow-off cap.
10. Remove cartridge from manual actuator(s), and examine disc - seal should be unruptured.
11. Return catridge to manual actuator(s) assembly, hand tighten.
12. Replace any broken or missing lead and wire seals and record date of inspection.



Numbers are keyed to maintenance instructions.

Figure 30:

Service & Maintenance



Numbers are keyed to maintenance instructions.

Figure 31:

Maintenance - Semi-Annual Examination (Fig. 31)

To provide maximum assurance that your Ansul system will operate effectively and safely:

1. Note the general appearance of the dry chemical tank for mechanical damage or corrosion.
2. Check nameplate for readability, corrosion or looseness.
3. Remove fill cap.
4. Examine fill cap gaskets for elasticity - clean and coat lightly with a good grade of high heat resistant grease.
5. Inspect threads on fill cap and in fill opening for nicks, burrs, cross-threading, rough or feathered edges.
6. Check pressure relief vent in fill opening threads for obstruction.
7. Make certain tank is filled with free-flowing Ansul FORAY dry chemical to a level of not more than 3 inches from bottom of fill opening.
8. Secure fill cap, hand tighten.
9. Disengage bursting disc union.
10. Examine the bursting disc. If necessary, move the tank slightly to view disc. The bursting disc should be properly seated with the washer side facing out (smooth side in) and should be undamaged (smooth, not scored or ruptured)
11. Engage bursting disc union (wrench tighten).

IMPORTANT: *Overtightening can damage bursting disc.*

12. Loosen the bolt(s) which restrain the cartridge or remove extinguisher cartridge guard assembly.
13. Inspect the expellant gas cartridge assembly for evidence of mechanical damage or corrosion.
14. Unscrew the cartridge from the pneumatic actuator/cartridge receiver and weigh it. Replace if its weight is not within 1/2 ounce of the weight stamped on the cartridge.
15. Inspect threads on cartridge and in pneumatic actuator/cartridge receiver for nicks, burrs, cross-threading, rough or feathered edges.
16. Check pressure vent in pneumatic actuator/cartridge receiver for obstruction.
17. Examine cartridge receiver gasket for elasticity. Clean and coat lightly with a good grade of high heat resistant grease. Return cartridge pneumatic actuator/cartridge receiver, hand tighten.
18. Tighten the bracket bolt(s) uniformly or return cartridge guard assembly.
19. Be sure the dry chemical tank is firmly mounted in its bracket.
20. Check hose, fittings and nozzles for mechanical damage.

21. Check nozzle openings - slot should be closed (capped) with silicone grease or covered with plastic blow-off cap.
22. Check remote actuator - Remove cartridge and weigh (replace if weight is 1/4 ounce less than stamped on cartridge). Inspect threads on cartridge and in actuator for nicks, burrs, cross-threading, rough or feathered edges. Check pressure safety vent in actuator body for obstruction. Examine actuator cartridge gasket for elasticity - clean and coat lightly with a good grade of high heat resistant grease. Pull ring pin and operate actuator button several times to check for free movement.
23. Seal ring pin to puncture lever with lead and wire seal. Return cartridge to remote actuator, hand tighten.
24. Record date of maintenance.

Swing-Out Grille (Fig. 32)

The grille is hinged at the top and can be opened by removing the two capscrews located in the lower headlight cavity area.

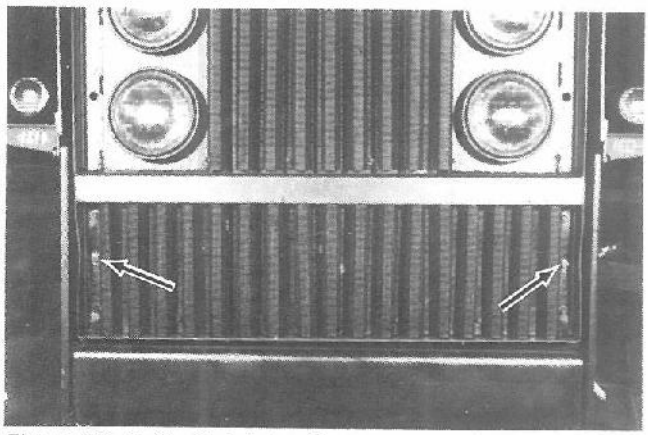


Figure 32: Grille Retaining Screws

To support the grille, remove the support rod from its retainer in front of the A/C condenser and swing out the support rod to fit into the hole provided at the rear of the grille.

The grille must be opened to tilt-up the hood.

CAUTION: Keep people away from the front of the tractor when opening or closing the grille assembly. When closing the grille keep hands clear of the hinge area.

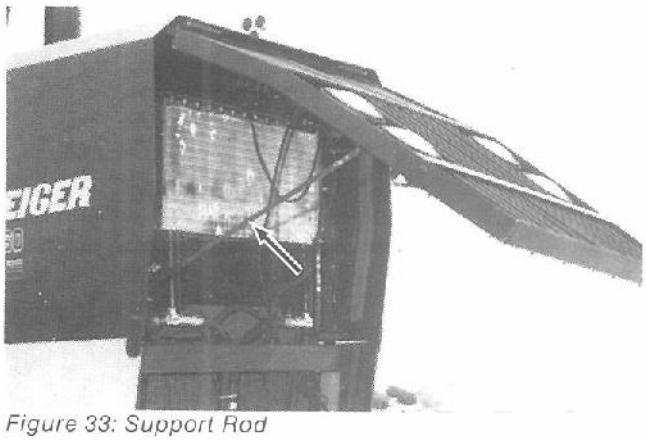


Figure 33: Support Rod

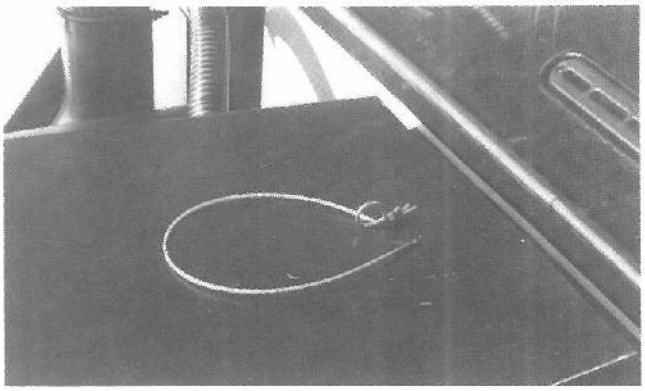


Figure 34: Hood Retainer

Tilt-Up Hood (Fig. 34)

For ease in certain service operations, the tractor has a forward tilt hood with a position lock at approximately 45° position. To open the hood, remove the retainer pin that is positioned at the rear of the hood (Fig. 34).

NOTE: *The grille must be opened to tilt up the hood.*

Figure 35:

Tilt-Up Position (Fig. 35)

After removing the hood top retainer clip, while standing on the front step and tire, lift the hood slowly to the lock position of approximately 45°. Be sure the hood support is latched.

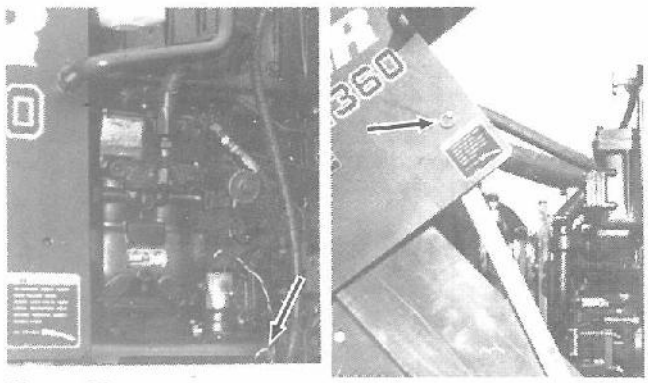


Figure 36:
Retainer Pin Storage Retainer Pin Installed

Hood Support Retainer (Fig. 36)

After the hood is lifted and latched on the support; remove hood retainer pin from the storage postion and install into the side of the hood to prevent hood support from unlatching.

CAUTION: The hood is heavy and should be moved slowly under control of the operator. Keep people away from the front of the tractor when opening or closing the hood. Stand to the side of the hood, on the steps, fender or side frame area behind the hood closing area when closing the hood. Keep hands and feet out of the hinge area!

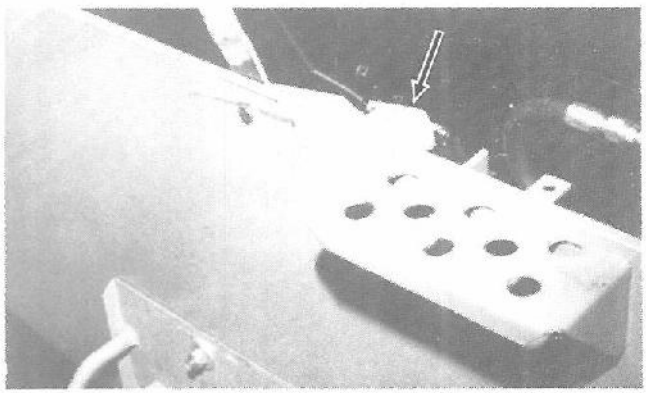


Figure 36A: Hood Support Pedal

Hood Closing: (Fig. 36A)

1. Remove latch retainer pin.
2. Lift hood to the upper limit of travel, at the same time step on hood support pedal to unlatch support. Carefully lower hood to closed position.
3. After hood is in the closed position, insert hood top rear retainer pin.
4. Replace support retainer pin into the storage postion.

Cooling System

Radiator And Condenser Cleaning

The radiator and coolers should be inspected and/or cleaned daily in adverse conditions.

1. To clean radiator and coolers - swing out grille screen and install grille support.

2. Open and secure hood.

Figure 37: Radiator Cleaning

Condenser and Oil Cooler

To make the radiator and cooler cleaning operation easier the condenser and hydraulic oil cooler may be tilted forward.

Loosen the two thumb screws located at the top of the condensor/oil cooler bracket assembly (Fig. 38) and tilt the assembly forward (Fig. 39).

Use pressure water or compressed air to clean radiators and coolers.

CAUTION: Wear adequate eye protection when using compressed air.

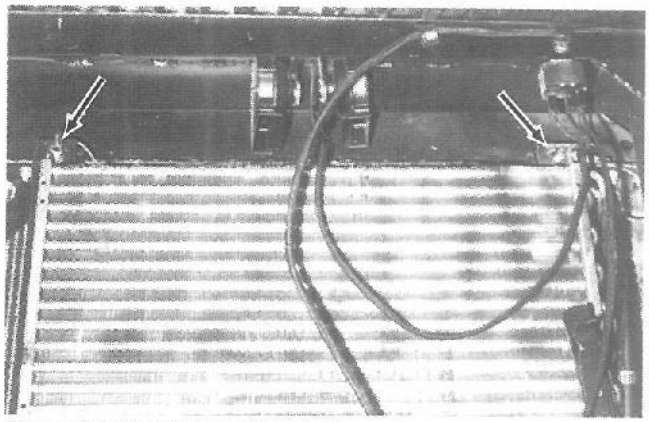


Figure 38: Retaining Thumb Screws

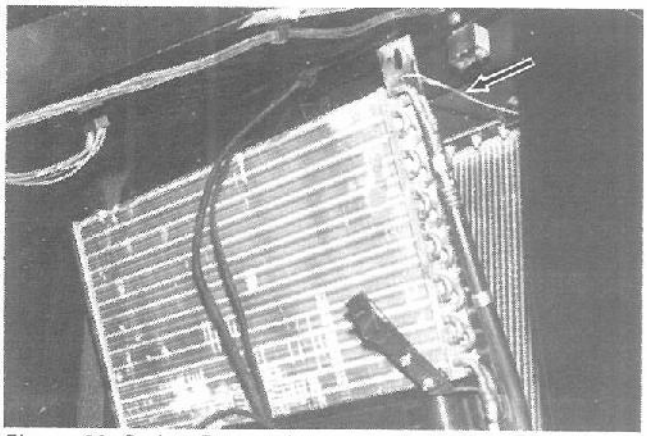


Figure 39: Swing Forward

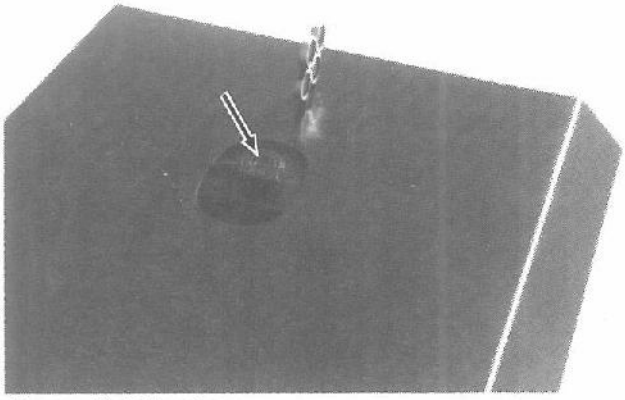


Figure 40: Filler Cap

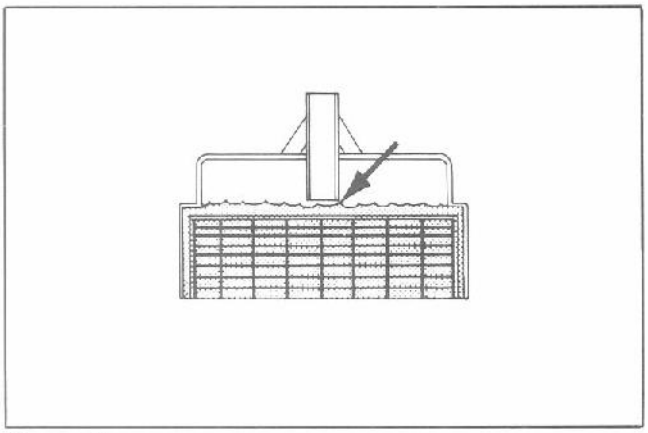


Figure 41:

Figure 42: Corrosion Resistor (Cat)

Cooling System Maintenance

Filling Cooling System

COOLANT LEVEL: Check the engine coolant level daily (with engine stopped). Carefully release cooling system pressure before checking. Fill to proper level with permanent-type antifreeze and water. Use water which is free as possible from scale forming minerals (not softened water).

WARNING: If engine is warm, steam may spray outward under high pressure, and could cause severe burns.

Checking coolant level with engine stopped and cool.

1. Slowly turn the filler cap to the first stop and release pressure.
2. Push the cap down, turn until the cap is released.
3. Maintain level to base of fill pipe (Fig. 41). The coolant requires expansion space as it is heated. Do not overfill.

IMPORTANT: *Inspect all cooling system hoses at least annually for damage and/or deterioration.*

Cooling System

Corrosion Resistor Filter

Cummins and Caterpillar

The initial life of a corrosion resistor filter element on a new or rebuilt engine, or after complete change of coolant supply, is 100 hours. Maintenance periods thereafter should be done every 250-300 hours.

When a cooling system is first filled with new coolant or water, an element with more than normal amount of inhibitor (precharge) is used. At the first change interval, the precharge element is removed and an element with a normal amount of inhibitor (maintenance) is then installed to keep the corrosion protection at an acceptable level. After the first change period, only maintenance elements are installed to give protection to the cooling system.

The precharge elements will give the correct charge of 1.5 to 3 ounces per gallon in the cooling system when it is filled. The maintenance elements, and the correct change periods, will keep the corrosion inhibitor in the cooling system between a maximum charge of 3.4 ounces per gallon and a minimum charge of .8 ounce per gallon for a 2,000 hour maintenance period.

The cooling system should be drained, chemically flushed and properly pre-charged after 2,000 operating hours or every 12 months, whichever happens first. The system may be precharged with a precharge element or a service element and DCA chemical. This will prevent salt deposits in the cooling system caused by the evaporation and addition of water to the system.

Flushing Cooling System

To clean the cooling system any good commercial radiator cleaning solution can be used. Follow the instructions included with the cleaner. Remove thermostats when flushing system.

NOTE: *Whenever coolant supply is changed (spring or fall), the system must be drained and flushed.*

To ensure adequate corrosion protection, the coolant should be tested at each third element change, annually or more often. The level of the chemical can be adjusted by adding DCA as required. Your Steiger Dealer has access to a DCA Test Kit. Have him test your cooling system at regular intervals.

For location of engine drain points refer to Engine Specification section of this manual.

Changing the Corrosion Resistor Element

Before a new element is installed, make sure it is the correct element for the application (pre-charge or maintenance). The elements have the part number on them for easy identification.

To Change the Spin-On Element:

1. Relieve system pressure by loosening the cap to the first notch.
2. Close filter inlet and outlet valve.
3. Unscrew element and discard.
4. Wipe filter base clean; lubricate the rubber seal ring with a light even coat of oil; screw filter onto the filter head by hand until the seal ring contacts the base. Tighten an additional 1/2 to 3/4 turn.

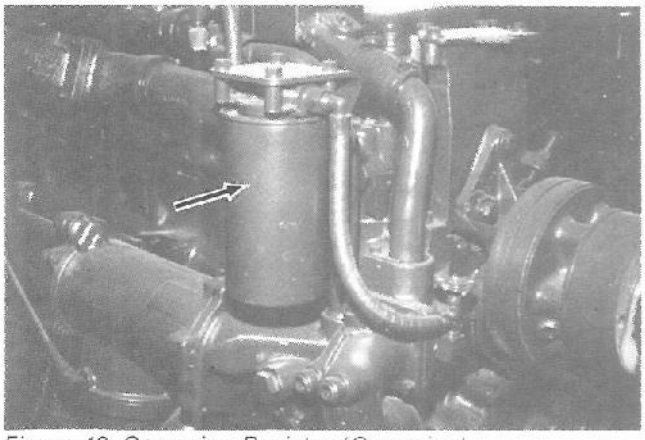


Figure 43: Corrosion Resistor (Cummins)

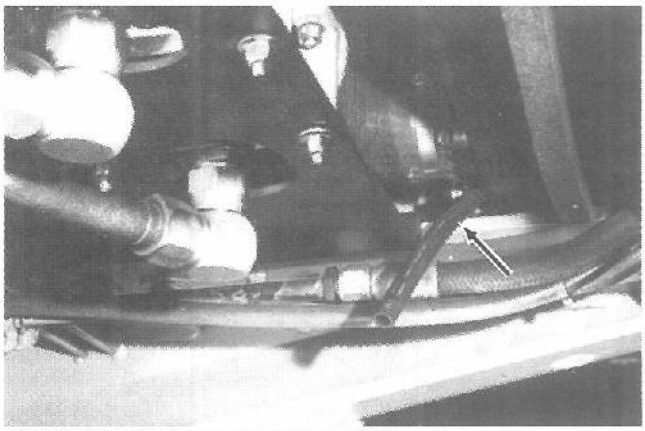


Figure 44: Radiator Drain Location

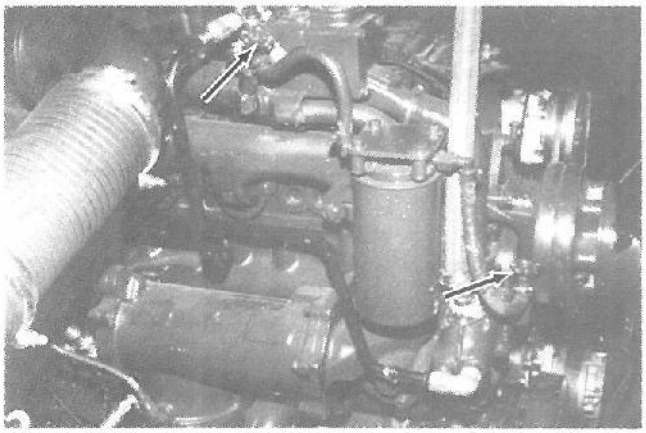


Figure 45: Corrosion Resistor (Cummins) Inlet and Outlet Valves

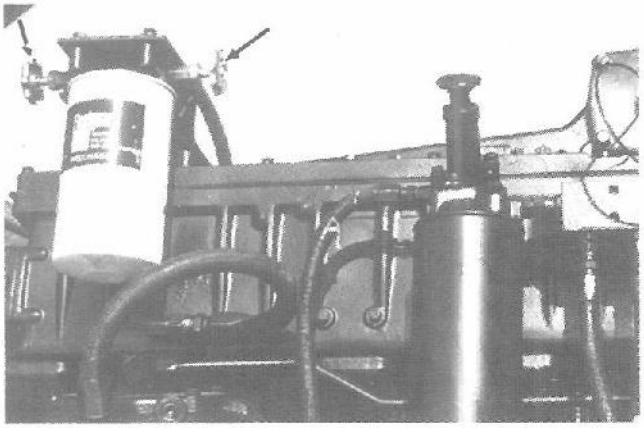
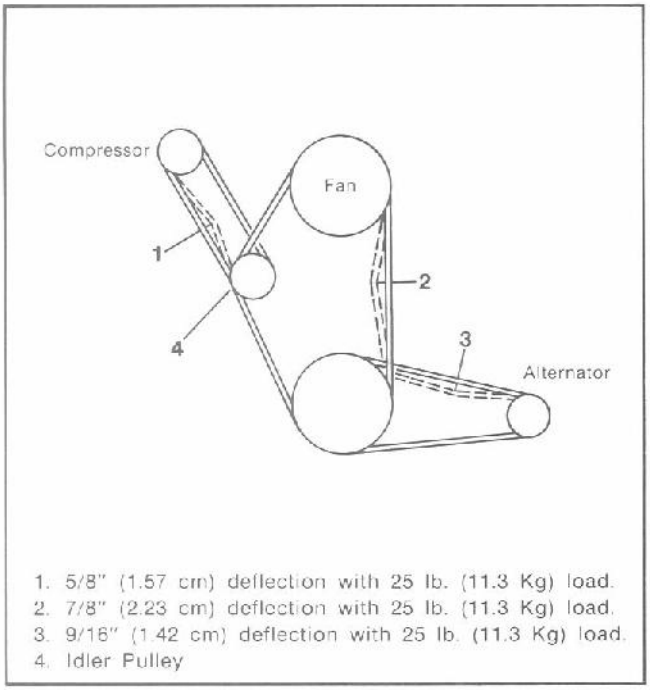


Figure 46: Corrosion resistor Inlet & Outlet Valves (Cat)



1. 5/8" (1.57 cm) deflection with 25 lb. (11.3 Kg) load.
2. 7/8" (2.23 cm) deflection with 25 lb. (11.3 Kg) load.
3. 9/16" (1.42 cm) deflection with 25 lb. (11.3 Kg) load.
4. Idler Pulley

Figure 47:

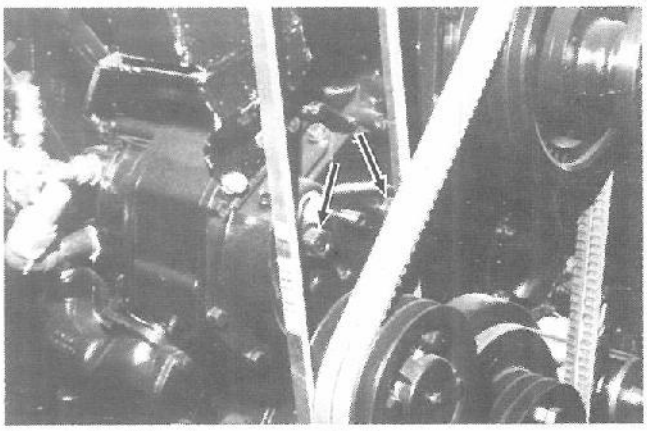


Figure 48: Idler Capscrews. (Cat)

IMPORTANT: *Mechanical tightening will break or distort the filter head.*

5. **Open** filter inlet and outlet valves.

NOTE: *Make-up coolant should be permanent anti-freeze and a water solution, and must not contain anti-leak additives.*

IMPORTANT: *"Anti-Leak" antifreezes are NOT recommended. The "anti-leak" agents may clog the coolant filters and render them ineffective.*

Belt Tensions (Fig. 47)

Cat

1. Check belts for excess wear, fraying and cracking every 100 service hours.
2. Apply a 25 lb. (10 Kg) force perpendicular to the belt, midway between the driver and driven pulleys. Belt deflection should be as shown (Fig. 47).
3. Adjust belt tension as required.

WARNING: Always shutdown the engine before adjusting belts. To disregard this warning may result in personal injury.

Fan Belt Adjustment (Fig. 48)

Cat

1. Adjust fan belt tension on idler pulley bracket - loosen bracket capscrews; with the use of pry bar - adjust idler to proper belt tension as indicated in Fig. 48).
2. Retighten capscrews.

NOTE: *Fan Drive Belts should not be adjusted at the fan hub bracket or fan tip to shroud, interference may result.*

IMPORTANT: *All driven assemblies must be secured in operating position before reading or judging belt tension.*

3. Adjust alternator and compressor belt as indicated in Fig. 47.

Fan Hub

If fan tip to shroud adjustment is required -

1. Loosen the mounting bolts 1 and adjust with the adjusting bolt 2.

2. When properly adjusted, tighten the mounting bolts 1, loosen adjusting bolt one-half turn to prevent breakage.

NOTE: *Fan tip to shroud clearance must be adjusted to provide 1/4 in. (6.35 mm) minimum clearance.*

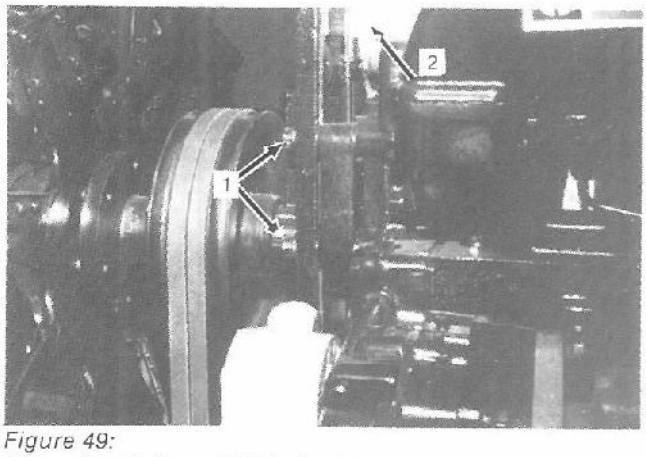


Figure 49:
1-Mounting Bolts 2-Adjusting Bolt

New Belt Replacement

Cat and Cummins

1. Always shorten distance between pulley centers so belt can be installed without force. Never roll belt over the pulley and never pry it with a tool such as a screwdriver. Either will damage belts and cause early failure.

2. Replace belts in complete sets. Belt riding depth should not vary over 1/16 inch (1.59 mm) on matched belt sets.

3. Pulley misalignment must not exceed 1/16 inch (1.59 mm) for each foot (0.3 m) of distance between pulley centers.

4. Belts should not bottom on pulley grooves nor should they protrude over 3/32 inch (2.38 mm) above top edge of groove.

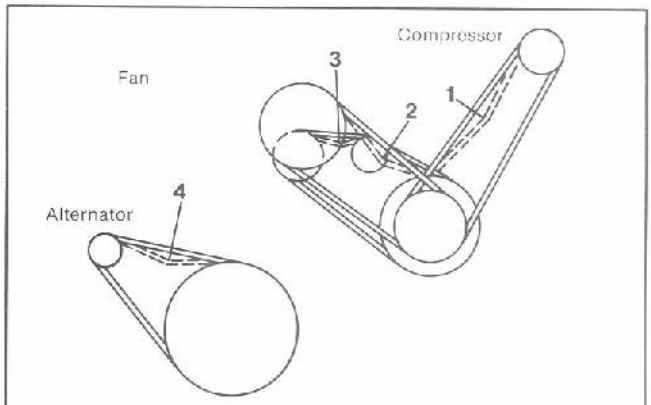
5. Do not allow belts to rub any adjacent parts.

NOTE: *When belt replacement is necessary, belts must be replaced in complete matched sets. Never replace a single belt as the new belt will carry all of the load and fail rapidly.*

Readjusting New Belts

All new belts will loosen after running a short period of time and must be readjusted to installation tension. After initial installation and retensioning, belts should then be set at running tension.

WARNING: Always shutdown the engine before adjusting belts. To disregard this warning may result in personal injury.



1. 5/8" (1.57 cm) deflection with 25 lb. (11.3 Kg) load
2. 5/8" (1.57 cm) deflection with 25 lb. (11.3 Kg) load.
3. 9/16" (1.42 cm) deflection with 25 lb. (11.3 Kg) load.
4. 9/16" (1.42 cm) deflection with 25 lb. (11.3 Kg) load.

Figure 50:

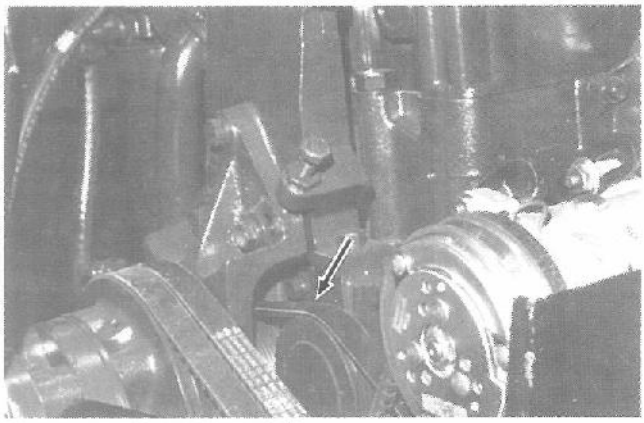


Figure 51: Water Pump Idler

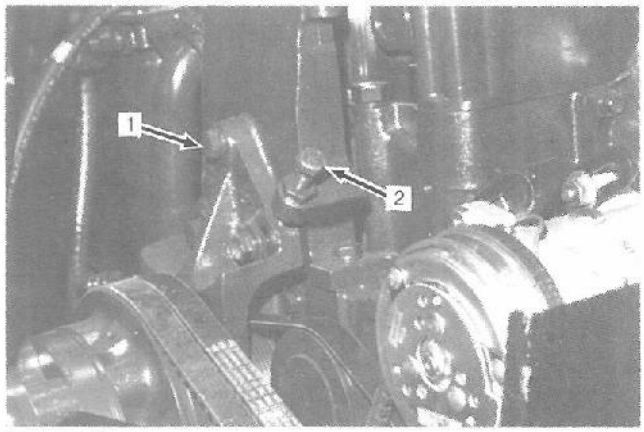


Figure 52:
1. Mounting Capscrews 2. Adjusting Screw

Belt Tension Adjustments - Cummins

Engine Water Pump Belts (Fig. 51)

1. Loosen the capscrews and lockwashers or locknut securing the idler pulley to the bracket or water pump (Fig. 51).

2. Using the adjusting screw adjust the idler pulley until the proper belt tension is indicated on the gauge. (Fig. 52)

3. Secure the idler pulley or bracket in position by tightening the locknut or capscrews and lockwashers to 45 to 55 ft-lbs (61 to 75 N.m) torque.

4. Recheck belt tension.

Fan Drive Belts

1. Loosen the capscrews securing the fan hub shaft to the mounting bracket. The fan hub will fall out of line when this is done.

2. Turn the adjusting screw to increase the belt tension.

3. Tighten the capscrews until the fan hub is straight. Snug the nut to maintain the hub in proper alignment with the fan hub bracket.

IMPORTANT: *Do not adjust to full tension with the adjusting screw, as this would result in overtightening.*

4. Belt tension should read as indicated in Fig 52 on applicable gauge.

5. Tighten the four 1/2 inch capscrews, to 75 to 85 ft-lbs (101 to 115 N.m).

6. Recheck the belt tension.

7. Back out the adjusting screw one-half turn to prevent breakage.

WARNING: Always shutdown the engine before adjusting belts. To disregard this warning may result in personal injury.

Filling Fuel Tank

Fill the fuel tank at the end of each working day. This will prevent the accumulation of moisture on the walls of the tank as the tank cools. **Use only recommended fuels.**

CAUTION: Refuel in a safe place away from open fire or sparks with the engine stopped. Do not smoke while refueling.

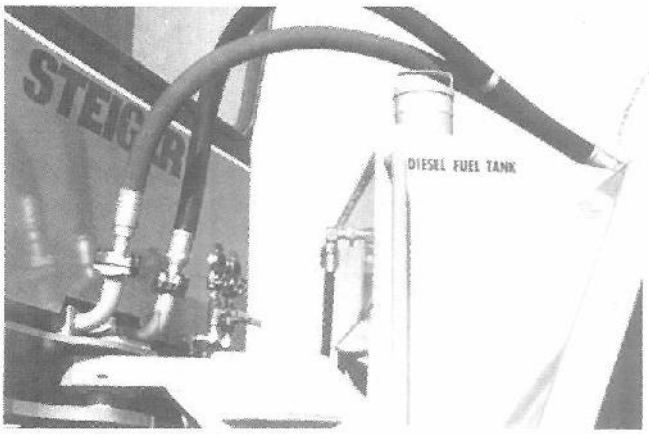


Figure 53: Fuel Tank Location

Fill tank only to the level of the vent holes located on the inside of the filler tube. The vent hole allows for fuel expansion. Fill beyond the vent hole may cause expansion spillage.

IMPORTANT: *Use clean fuel, use clean fuel storage tanks, clean service tanks and clean fill equipment.*

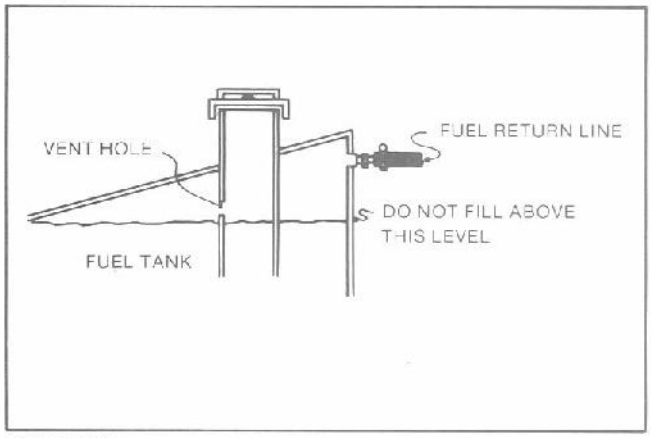


Figure 54:

Fuel Drain

Drain sediment from fuel tank as required. Loosen gate valve at bottom of fuel tank and drain out any accumulated water and sediment. Tighten gate valve.

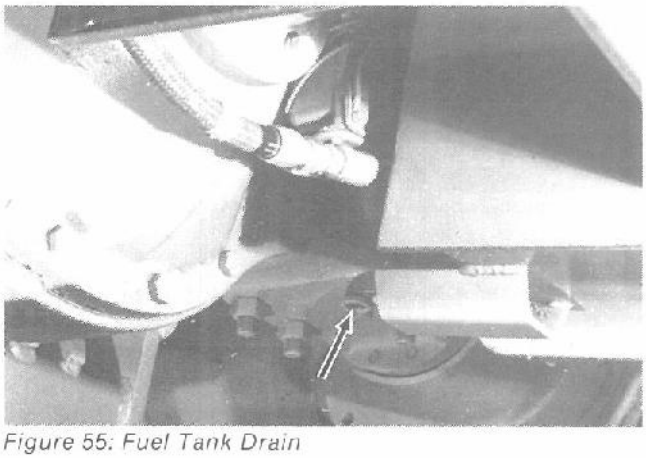


Figure 55: Fuel Tank Drain

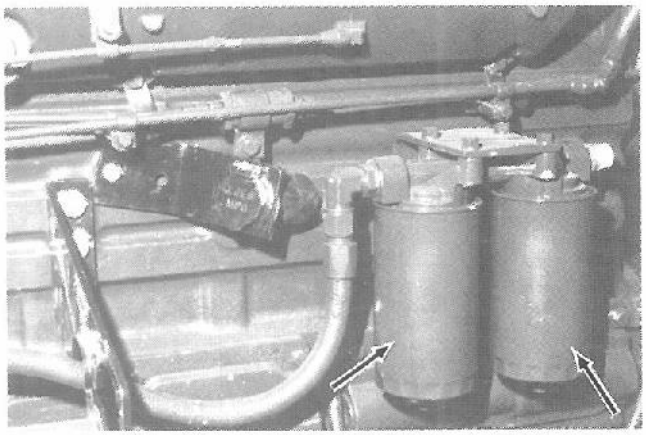


Figure 56: Cummins Fuel Filter Location

Fuel Filter Service (Cummins) (Fig. 56)

Procedure:

1. Stop engine.
2. Close fuel supply line valve.
3. Wipe top of filter element and base.
4. Unscrew and remove filter(s).
5. Wipe filter base clean, besure old filter gasket is removed.
6. Fill new filter with clean fuel and lubricate new filter gasket with fuel.
7. Install new filter(s), hand tighten until seal contacts filter base, tighten an additional 1/2 to 3/4 turn.

IMPORTANT: *Mechanical tightening will distort or crack filter head.*

8. Open fuel supply line valve.

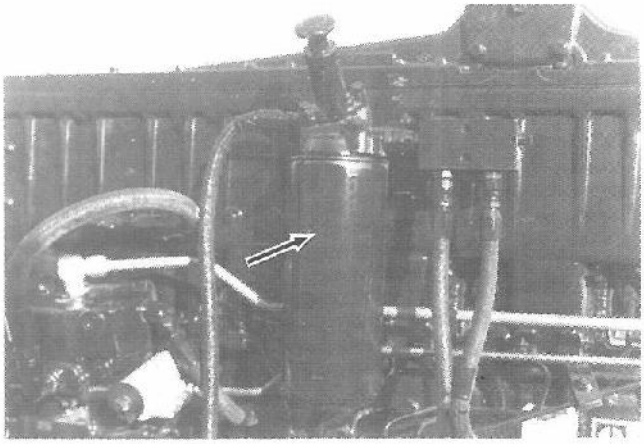


Figure 57: Fuel Filter Location Caterpillar

Fuel Filter Service (Caterpillar) (Fig. 57)

Procedure:

1. Stop the engine.
2. Close the diesel fuel supply valve.
3. Wipe the top of the filter element and filter base.
4. Unscrew and remove the filter.
5. Be certain the filter gasket did not remain attached to the filter base: Leaking between the new and old filter baskets would result. Be sure old filter gasket is removed.
6. Clean the gasket sealing surface of the filter base.
7. Lubricate the new filter gasket with clean diesel fuel.
8. Install the new filter: Hand tighten the filter until gasket contacts base, and then give an additional 1/2 to 2/3 more turn.
9. Open the fuel supply line valve.

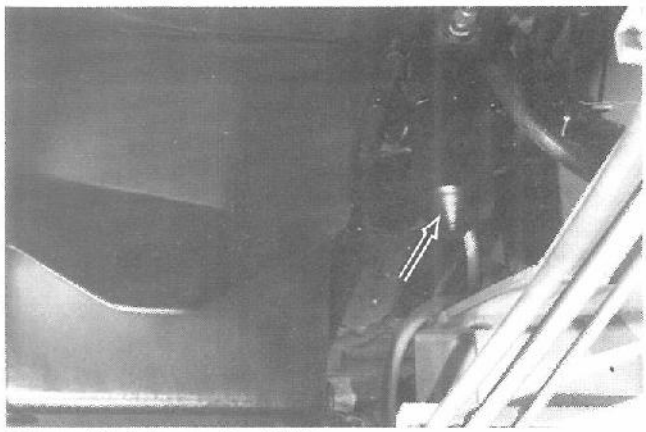


Figure 58: Primary Fuel Filter

Cleaning Primary Fuel Filter (Cat) (Fig. 58)

The primary fuel filter is located on the inside left front frame. This filter should be serviced every 100 hours or more often if necessary.

Procedure:

1. Stop the engine and shut off the fuel supply valve from the fuel tank.
2. Loosen the retaining nut (1) on the filter cover.
3. Lower the filter case (3) and element (2).
4. Remove the filter element from the case. Clean the element and case in nonflammable solvent.
5. Reinstall the element in the case.
6. Inspect the seal (4). Use a new seal if the used one is damaged.
7. Install the element and case on the housing. Install the retaining nut.
8. Open the fuel supply valve.

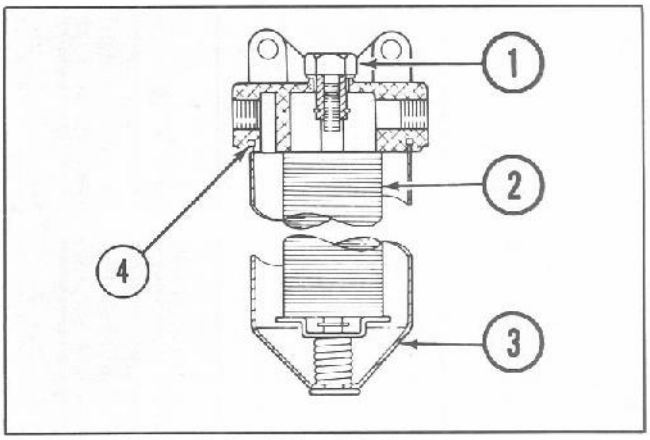


Figure 59: Primary Fuel Filter (Cat)

Priming the Fuel System (Fig. 60)

Cat

If air is trapped in the fuel system, the diesel engine will either not start, or will misfire.

1. Move the governor control lever to the shut-off position.
2. Turn the pump counterclockwise from the locked position. (Fig. 60)
3. Operate the fuel priming pump with rapid strokes until resistance is felt.
4. Push in on the pump and turn clockwise to lock the pump in the locked position.
5. Start the engine.

If the engine misfires or smokes:

6. Loosen a fuel injection line nut. Allow the fuel to flow until free of air bubbles.
7. Tighten the line nut; open the next line nut.
8. Vent each fuel line in similar manner until the engine is running smoothly.

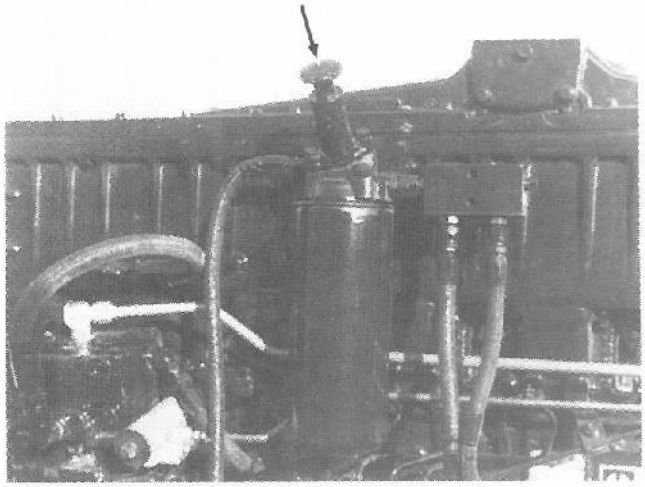


Figure 60: Fuel Priming Pump (Cat)

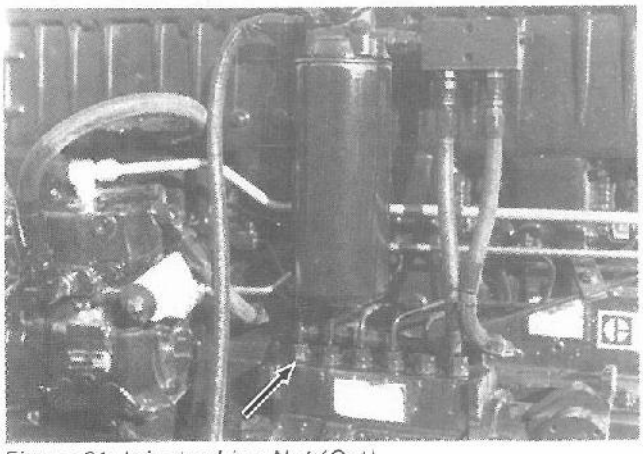


Figure 61: Injector Line Nut (Cat)

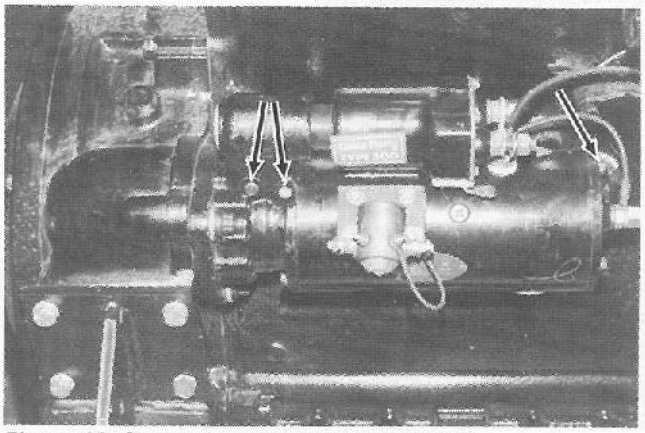


Figure 62: Starter Lubrication Lube Points

Starter Lubrication

Remove the allen plugs on the starter end frames and apply SAE 10 engine oil every 1000 hours.

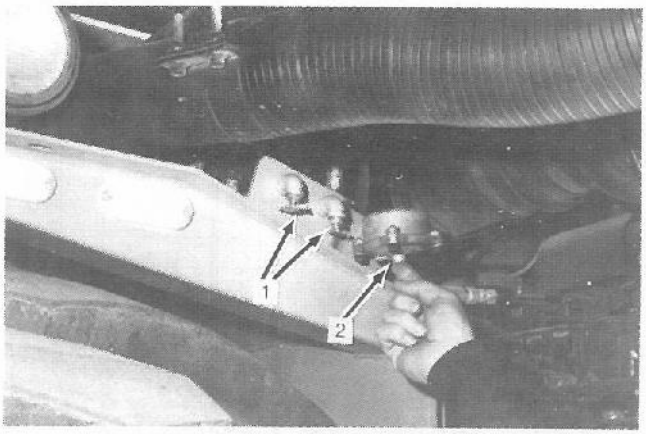


Figure 63:

1. Drain Cocks 2. Automatic Drain Valve Plunger

Brake System

Every 100 hours open drain cocks on air supply tank and drain off any water accumulation. Check automatic drain valve, push up on plunger in the bottom center of the valve to drain off water accumulation.

NOTE: *In adverse climatic conditions air supply tank may require daily draining.*

Every 500 service hours lubricate adjuster and visually inspect slack adjuster and control arm strap for damage. Check that the control arm strap is tight and that the control arm is in the "Full Release" position.

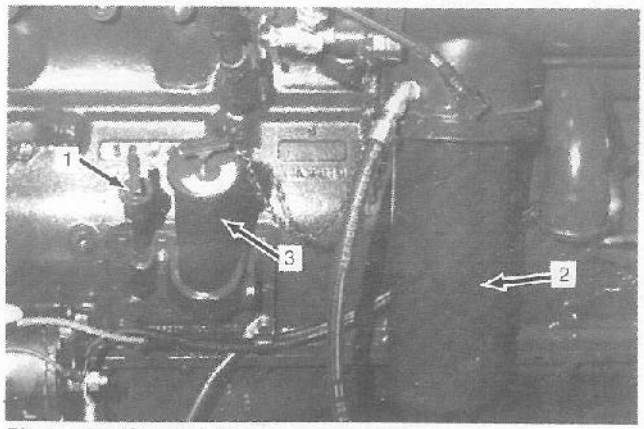


Figure 64: Cummins

1. Dipstick 2. Oil Filter 3. Oil Fill

Engine Oil Level (Fig. 64)

Cummins Engine

1. Check the oil level daily with the dipstick oil gauge located on the engine. For accurate readings, **the oil level should not be checked for approximately 15 minutes after the engine is shut-down** . Keep the dipstick with the oil pan with which it was originally shipped. Keep the oil level as near the "H" (high) mark as possible.

IMPORTANT: *Never operate the engine with the oil level below the "L" (low) mark or above the "H" (high) mark.*

2. If necessary, add oil of the same quality and brand as already in the engine.

Engine Oil Level (Fig. 65)

Cat

Check oil level daily. The dipstick is marked on both sides; one side has markings for engine stopped and cold oil -use this side for pre-start oil level check, oil level should be in the safe range. *(Fig. 65A)*

The opposite side of the dipstick is marked for engine running and hot oil. Measure the oil level with the engine running at low idle. The oil level must be between the ADD and the FULL marks on the dipstick. *(Fig. 65A)*

Figure 65A: Engine Stopped Engine Running

Changing Engine Oil and Filters

General

The 250 hour oil and filter change interval can be considered under normal conditions and type CC/CD or CD oils are used. Type CC/CD or CD oils are required to meet Engine Service Classification CD, or MIL-L2104C specifications.

The above recommended oil change interval applies when the fuel sulphur is 0.4% or less. When the sulphur content is 0.4% to 1.0% then reduce the change interval one-half (1/2). When the sulphur content is above 1.0% then reduce the interval to one-fourth (1/4) the normal interval.

Steiger Tractor strongly recommends the use of oil sampling. Oil sampling is a very valuable aid in determining correct oil change intervals and engine condition.

NOTE: *For more information regarding oil sampling programs contact your Steiger dealer.*

Drain the engine oil when the engine is warm. This will help flush most of the contaminants from the engine sump. Use a suitable container which will hold total engine oil capacity. Replace the drain plug and torque to 60-70 lb. ft. (8.3 to 9.6 Kg/M). (See engine specifications for drain plug location.)

Use a filter wrench to remove the spin-on, throw-away type filters from the engine. Wipe the filter bases clean, be certain that the old filter gaskets are removed from the filter bases. Fill the new filter elements with new oil (oil the rubber seal ring also), and screw the filter on until the seal contacts the base, then hand tighen an additional 1/2 to 3/4 turn.

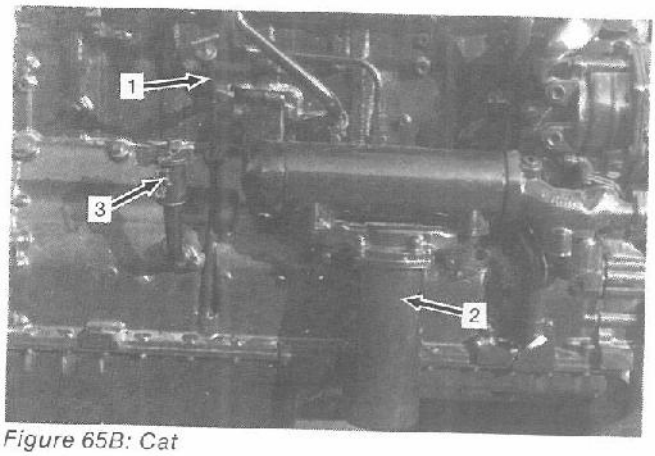


Figure 65B: Cat

1. Dipstick 2. Oil Filter 3. Oil Fill

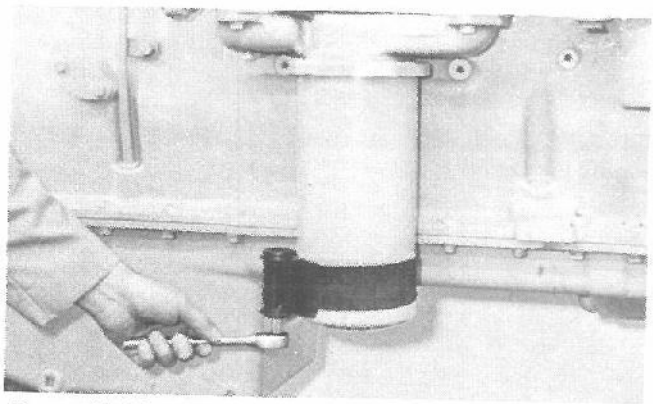


Figure 66: Use Filter Wrench To Remove Spin-On Filters

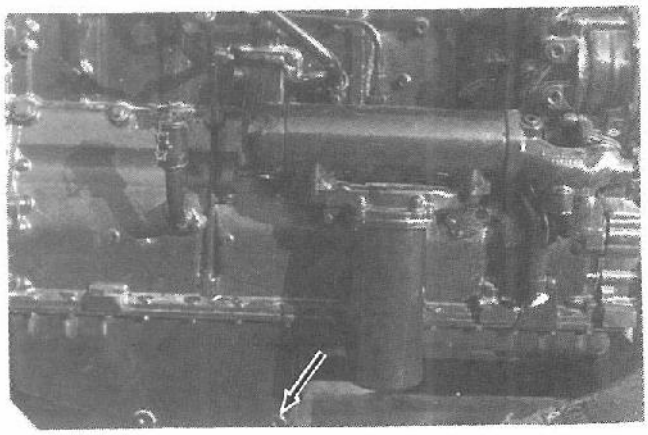


Figure 67: Remove the crankcase oil drain plug(s) and allow the oil to drain. Wash plug(s) in solvent before installing.

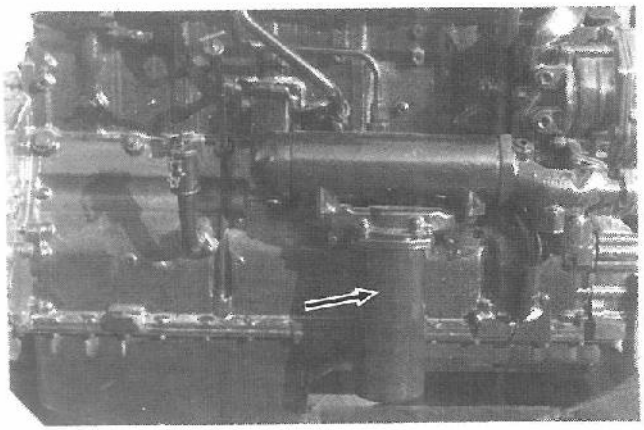


Figure 68: Oil Filter (Caterpillar)

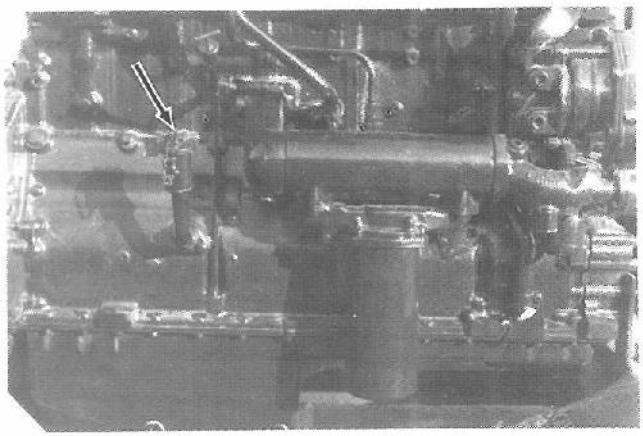


Figure 69: Oil Fill Port

Oil & Filter Change, Caterpillar

The engine oil and filters should be changed every 250 hours (or 6 months). Use engine oils which meet API classification CD or CC/CD. See the specification section of this manual for recommended oil viscosity.

Drain the engine oil when the engine is at operating temperature. This will help flush most of the contaminants from the engine sump. Use a suitable container which will hold the total engine oil capacity. Replace the drain plug and torque it to 60-70 lb. ft. (8.3 to 9.6 Kg/M).

Use a filter wrench to remove the spin-on, throw-away type filters from the engine. Wipe the filter bases clean and be certain that old filter gaskets are removed from the filter bases. Fill the new filter elements with oil (oil the rubber seal ring also). Spin the filter on until the seal contacts the base, then tighten it an additional 1/2 to 3/4 turn.

Fill the crankcase to the full level. Observe the dipstick. Start the engine and run at low idle while checking for oil leaks.

NOTE: *It is very important to visually check for oil leaks after each oil change and/or filter change. Check while running at low idle.*

Check oil level with engine running at idle. Check the oil level and add as required to bring oil to the full mark on the dipstick. **Do Not Overfill.**

CAUTION: Use caution when draining oil or changing filters. Hot oil or components can cause burns if they contact skin.

IMPORTANT:
Spin-On Filter Information
Always inspect or shake out all new spin-on type filters prior to installation to be sure that there are no machining filings or debris in the filter.

Oil & Filter Change, Cummins

The engine oil and filters should be changed every 250 hours (or 6 months). Use engine oils which meet API Classification CD or CC/CD. See the specification section of this manual for recommended oil viscosity. Drain the engine oil when the engine is warm. This will help flush most of the contaminants from the engine sump. Use a suitable container which will hold the total engine oil capacity.

1. Bring engine to operating temperature, shut down engine, remove drain plug from bottom of oil pan, and drain oil.
2. Install drain plug in oil pan. Torque to 60 to 70 ft-lbs (81 to 95 N.m)
3. Unscrew combination case and elements, discard elements.
4. Change engine spin-on oil filter elements.

NOTE: *At each filter change check torque of adapter mounting capscrew; it should be 25 to 35 ft-lbs (34 to 47 N.m). If the capscrew is not within torque range, the adapter may rotate when the spin-on filter is removed.*

IMPORTANT: *Replace the adapter to the filter head gaskets each 1000 service hours, or annually.*

5. Fill the filter with lubricating oil. Apply a light even coat of lubricating oil to the gasket sealing surface prior to installing the filter.
6. With filter wrench, tighten filter 3/4 to 1 full turn after the seal contacts the case.

Lubricating Oil By-Pass Filter Frame Mounted (Spin-On Type) (Fig. 72)

6. Unscrew the old filter from the base with a filter wrench and discard the filter. Wipe the filter base clean (make sure that the old filter sealing ring did not remain on the base). Fill the new filter element with new clean oil, lubricate the sealing ring, and screw the new filter onto the base until the seal ring contacts the base, **then tighten an additional one (1) full turn** with filter wrench.

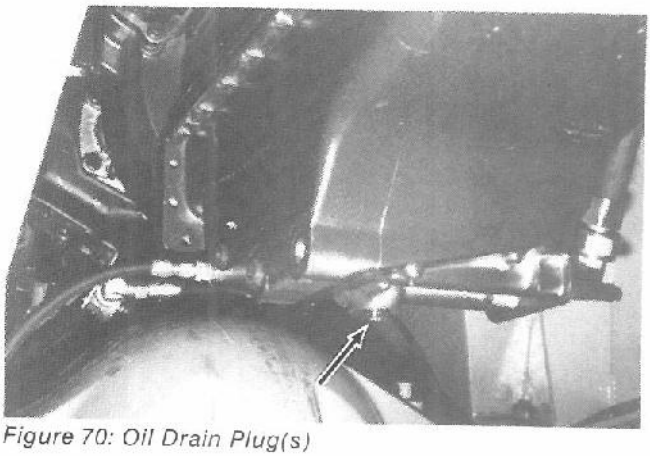


Figure 70: Oil Drain Plug(s)

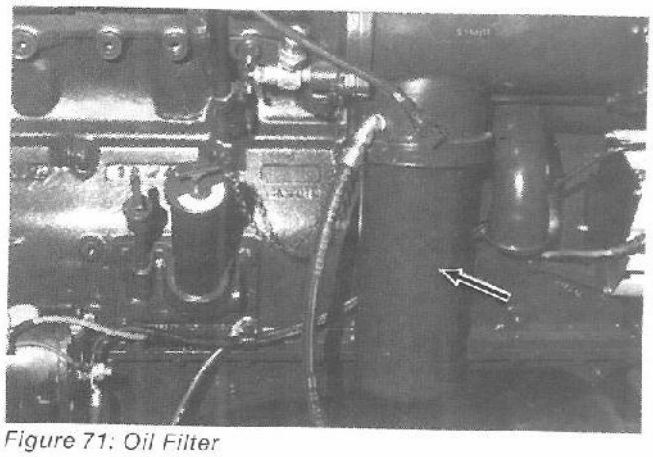


Figure 71: Oil Filter

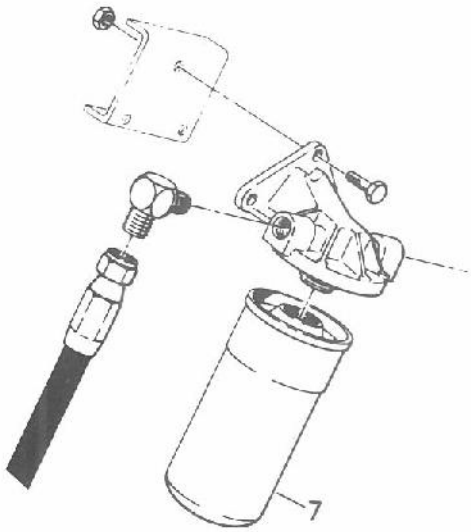


Figure 72: Remote By-Pass Spin-On Filter

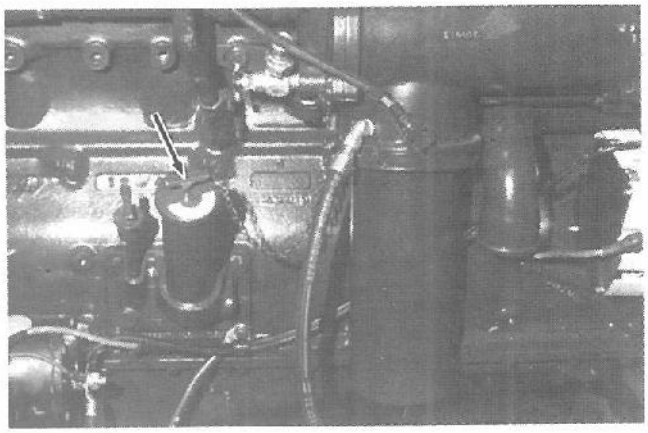


Figure 73:

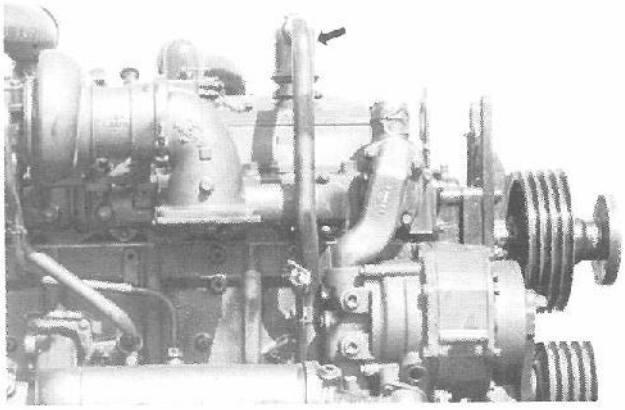


Figure 74: Crankcase Breather

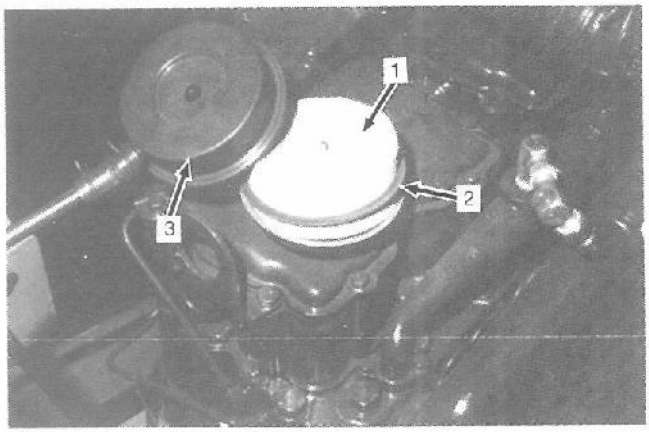


Figure 75: Crankcase Breather

1 Element 2. Gasket 3. Breather Cover

7. Fill the crankcase to "H" (high level) mark on the dipstick.

8. Start engine and visually check for oil leaks.

9. Shut down the engine; allow 15 minutes for oil to drain back into the pan; recheck the oil level with the dipstick. Add oil, as required.

NOTE: *Use lubricating oil meeting specifications listed in specifications section.*

CAUTION: Use caution when draining oil or changing filters. Hot oil or components can cause burns if they contact skin.

Crankcase Breather Assembly (Caterpillar)

The crankcase breather assembly should be cleaned at each oil change.

1. Loosen hose clamp and remove hose from breather cap.
2. Loosen retaining nut and remove cap.
3. Wash element in clean diesel fuel and dry with compressed air.
4. Wipe inside of breather housing with a lint-free cloth.
5. Reinstall and connect the vent tube.

Crankcase Breather Assembly (Cummins)

The crankcase breather assembly should be cleaned at each oil change.

1. Remove wing nut, flat washer and rubber washer securing cover, breather element and vapor element to breather body.
2. Lift off cover and lift out breather element, vapor element and gasket.

Cleaning and Inspections

1. Clean all metal and rubber parts in approved cleaning solvent.
2. Dry thoroughly with compressed air.
3. Inspect rubber gasket, replace if necessary.
4. Inspect elements; make sure screens are not ruptured.
5. Inspect body and cover for cracks, dents or breaks, discard all unserviceable parts. Replace as needed.

Assembly Procedure

1. Install cleaned or new breather element and cleaned vapor element to breather body.
2. Install rubber gasket in cover. Position cover assembly to body.
3. Install rubber washer, flat washer and ring nut. Tighten securely.

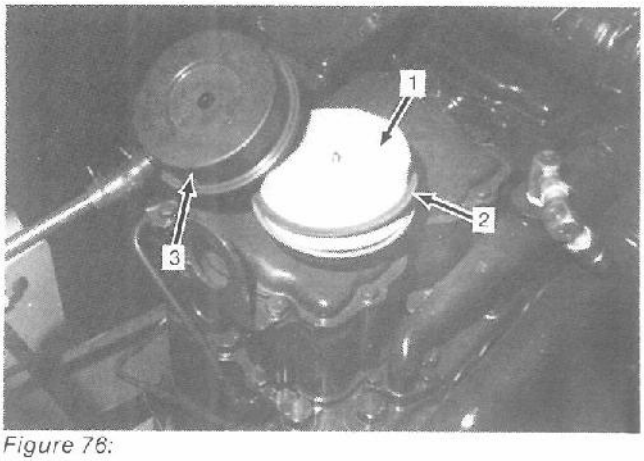


Figure 76:
1. Element 2. Gasket 3. Breather Cover

Fan Hub Lubrication (Fig. 77)

Caterpillar

Lubricate the fan hub every 500 hours of operation. Clean the grease fitting and apply two strokes of grease. Every 2 years or 2000 service hours, remove, inspect and rebuild fan hub.

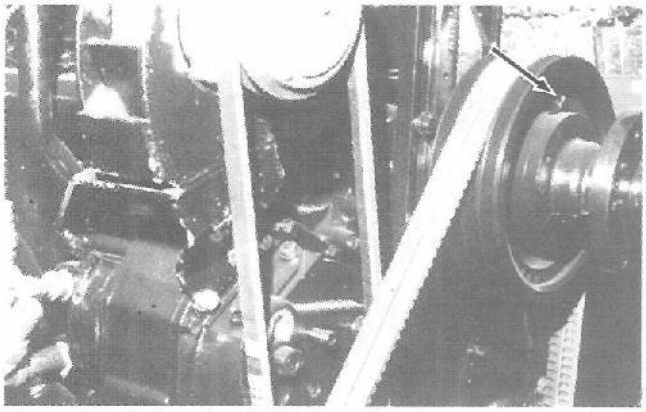


Figure 77: Caterpillar 3406 Fan Hub Grease Fitting

Idler Pulley Lubrication (Fig. 78)

Caterpillar

Lubricate the idler pulley every 500 hours of operation. Clean the grease fitting and apply two strokes of grease. Every 2 years or 2000 service hours, remove, inspect and rebuild idler pulley.

WARNING: Always shut down engine before greasing fan hub or idler pulley.

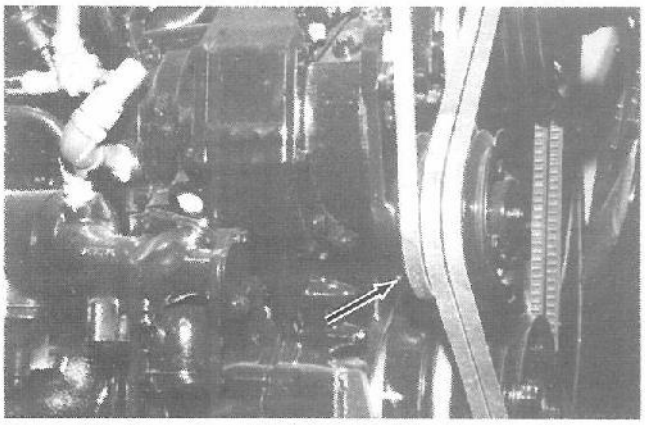


Figure 78: Caterpillar 3406 Idler Pulley Grease Fitting

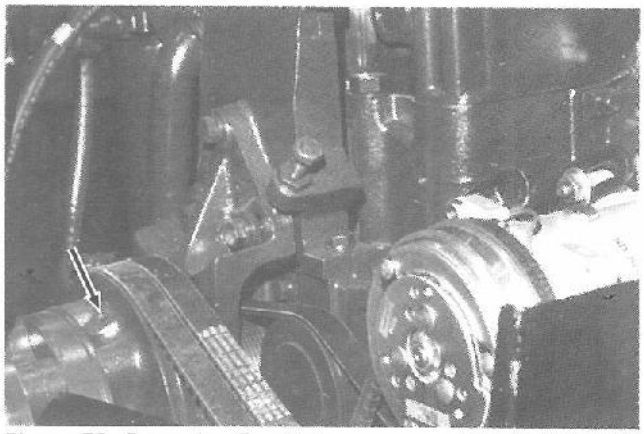


Figure 79: Cummins Fan Hub

Fan Hub (Fig 79)

Cummins

Every two years or 4000 hours the fan hub should be removed and rebuilt.

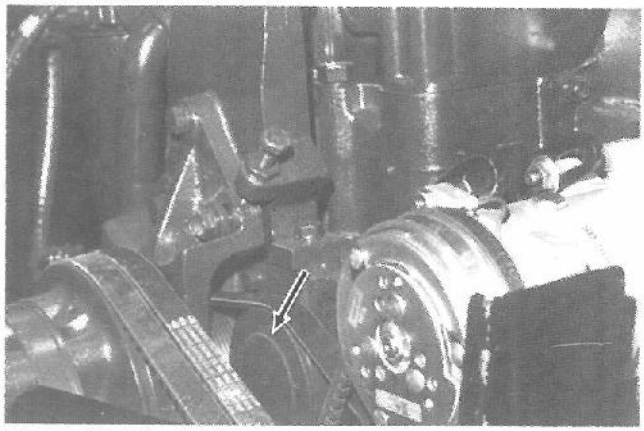


Figure 80: Idler Pulley

Idler Pulley (Fig. 80)

Cummins

Every two years or 4000 hours the idler pulley should be removed and rebuilt or replaced.

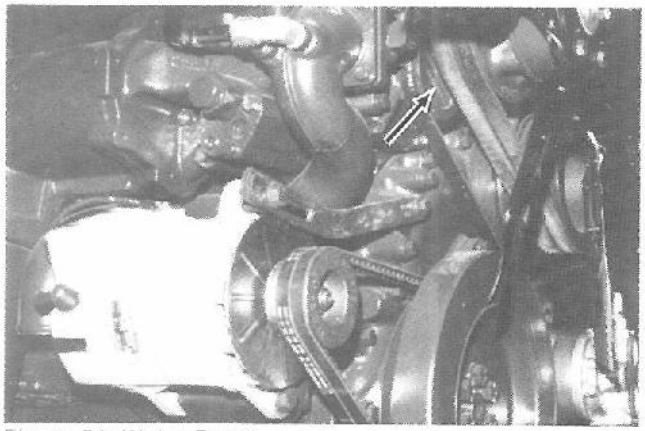


Figure 81: Water Pump

Water Pump (Cummins)

Every two years or 4000 hours the water pump should be rebuilt or replaced.

Transmission Maintenance

Oil Level Check - Cold

1. Tractor must be parked on level surface.
2. Check transmission fluid level before starting engine. if oil shows on dipstick **Do Not** add oil at this time.
3. See Oil Level Check - Hot.

NOTE: *The transmission fluid level should be checked every ten (10) hours or daily.*

Oil Level Check - Hot

(Operating Temperature)

The transmission oil level must be rechecked with the engine idling at 600 rpm. The tractor must be on level ground. The oil level should be at or slightly below the full mark on the gauge.

1. Place the transmission in neutral.
2. Apply the parking brake.
3. Adjust the engine idle speed to 600 rpm.

CAUTION: There is no "park" position in the transmission. The park/emergency brake MUST be applied whenever the tractor is stopped.

4. Check the gauge. Fluid level should be at or slightly below the full mark on the gauge.

IMPORTANT: *Do not overfill.*

Overfilling the transmission will cause excessive heat to be generated.

Changing Transmission Oil Filter

Change filter every 500 service hours (or 6 mo.) and transmission fluid every 1000 service hours (or 12 mo.) (Fig. 84).

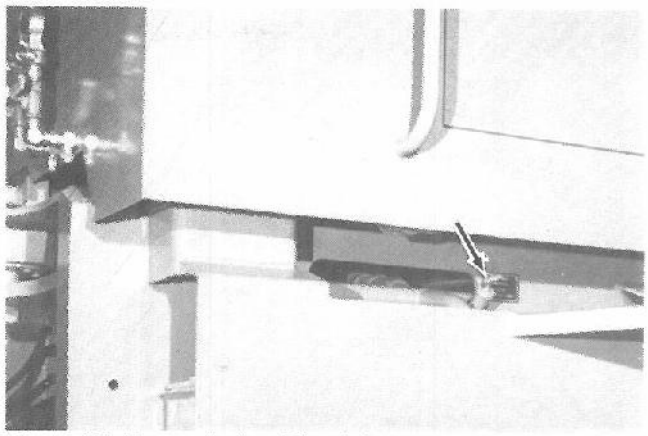


Figure 82: Transmission Dipstick

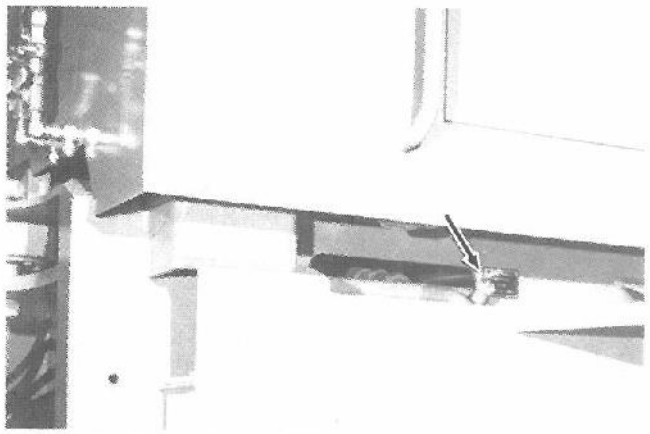


Figure 83: Transmission Fill

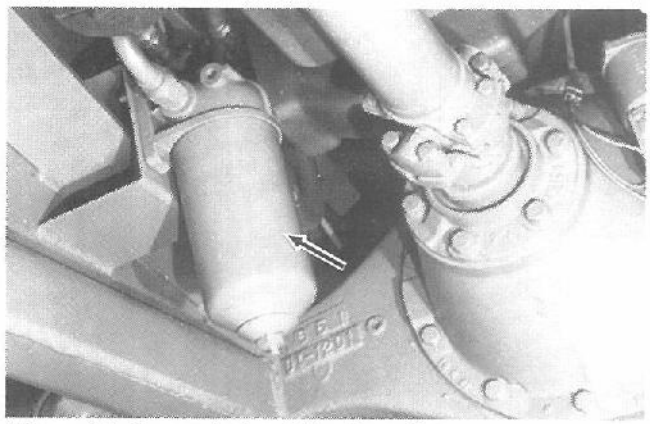


Figure 84: Transmission Filter Location

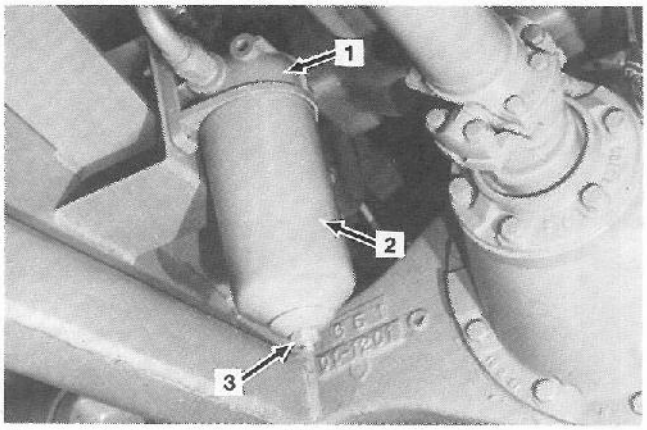


Figure 85: Transmission Filter

1. Filter Base 2. Cannister 3. Center Bolt

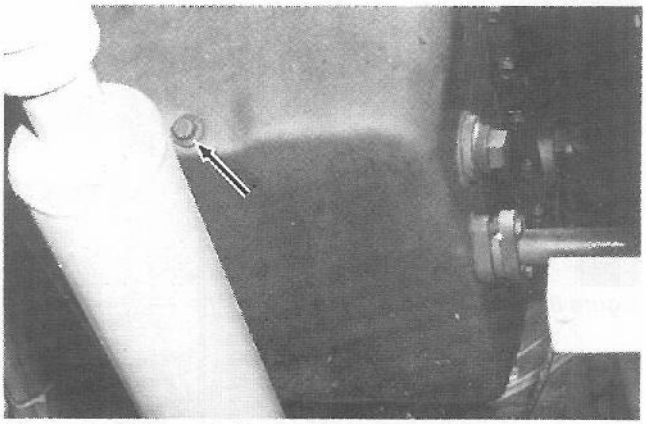


Figure 86: Transmission Drain

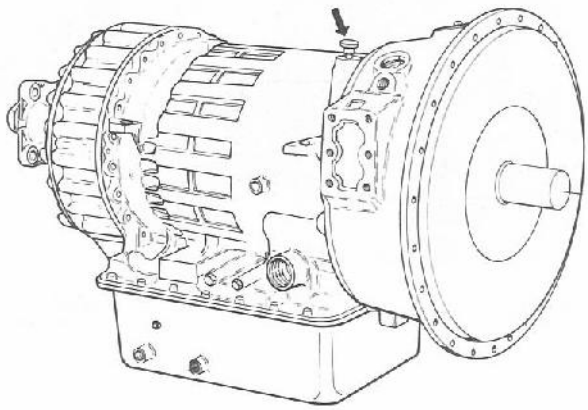


Figure 87: Transmission Breather Vent

Transmission Filter

The filter element is housed inside a steel canister assembly (Fig. 85). To service, unscrew the center bolt and remove the canister. Gentle tapping may be needed to loosen it from the base. Withdraw the used element from the canister, then clean the canister in solvent to remove all sediment and oil. Use an O-Ring pick to remove the used seal ring from the seal groove in the filter base. Place the new seal ring into the groove. A small amount of grease may be applied to hold the ring in place. Install the new filter element into the canister and reinstall onto the filter base. Be sure that the canister starts into the seal ring grooves squarely before tightening. Tighten the center bolt to compress the seal ring. Start the engine and check for leaks at the canister seal ring and center bolt gasket. Correct any cause of leakage and check the transmission oil level as previously specified.

DO NOT OVERFILL TRANSMISSION

Oil Changing Procedure

The transmission oil should be changed at least every 1000 hours, or 12 mos. at which time the filters should also be changed. Remove the transmission drain plug and let the oil drain into a suitable container. The transmission assembly alone contains approximately 35-39 qts (33-37 L) when filled to the high level. Drain oil when the transmission is warm.

Replace the oil drain plug and refill the transmission to the cold level on the gauge. Start the engine and recheck the oil level hot as previously instructed. Add oil as required to bring the oil level at or near the full mark. **Use only approved oil.**

Breather Vent

The transmission breather must be kept clean at all times. Clean the breather as frequently as necessary to avoid pressure buildup. A badly clogged breather can cause excessive accumulation of condensation and subsequent oil deterioration.

When removing the breather for cleaning, do not allow dirt to enter the transmission. Use a brush to remove loose dirt from the breather area before removing. Clean the breather assembly in solvent and blow dry with compressed air, then reinstall on the transmission.

Transfer Case

The oil level must be checked daily. The tractor must be parked on a level surface and the engine stopped when checking oil level.

IMPORTANT: *Do not overfill the reservoir.*

The oil level should be maintained near the full mark on the dipstick.

CAUTION: There is no "park" position in the transmission. The park/emergency brake MUST be applied whenever the tractor is stopped.

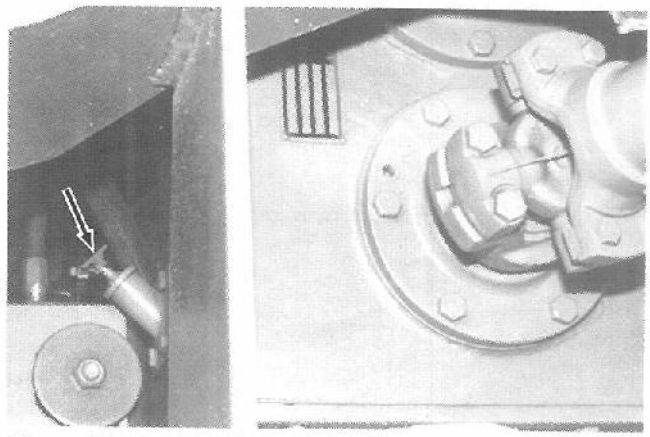


Figure 88: Transfer Case Oil Level Check and Fill Port

Changing Oil Filter

The transfer case oil filter must be changed every 500 service hours.

1. Unscrew the old filter element from the base.
2. Wipe the filter base clean, be sure that the old gasket did not remain on the base.
3. Lubricate the new filter gasket with clean oil.
4. Screw the new filter onto the base by hand until the gasket contacts the filter base, then tighten 1/2 to 3/4 turn more

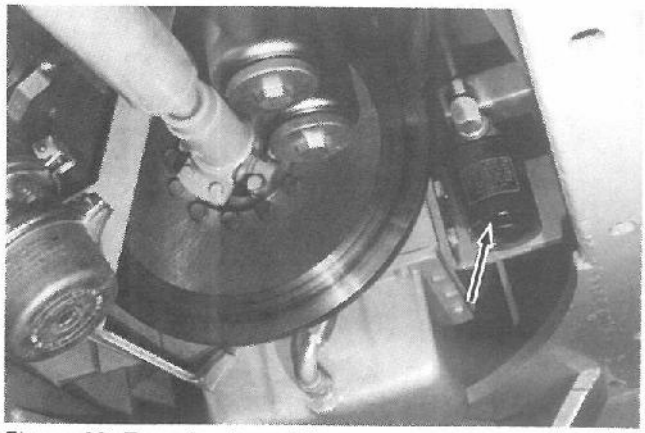


Figure 89: Transfer Case Filter

Transfer Case Drain

The transfer case oil must be drained every 1000 service hours and new oil installed.

When draining the transfer case, be sure engine is stopped, park brake applied and oil is warm. Remove drain plug, and allow ample time for oil to drain completely out. Refer to refilling procedure to refill the transfer case. Inspect and clean the magnetic drain plugs.

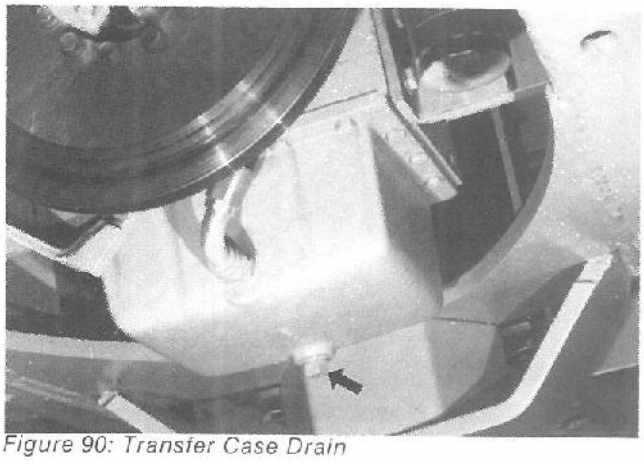


Figure 90: Transfer Case Drain

Refilling System

Be sure all drain plugs are tight. Fill the transfer case reservoir with specified oil. With transmission in neutral, start engine and allow it to idle for 5-10 minutes. Shut down the engine and recheck the oil level of the reservoir. **Do Not overfill.**

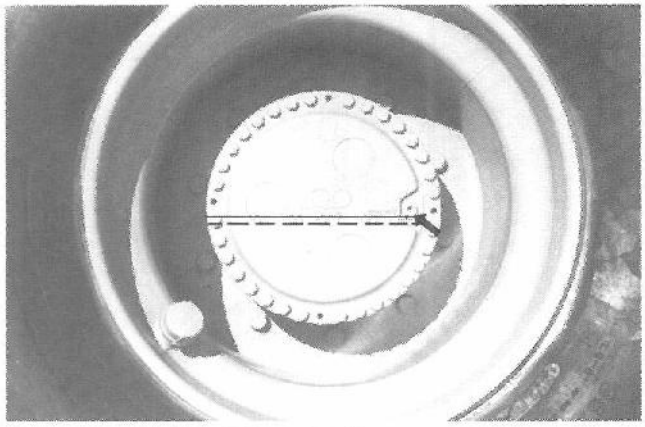


Figure 91: Oil Check Plug Position

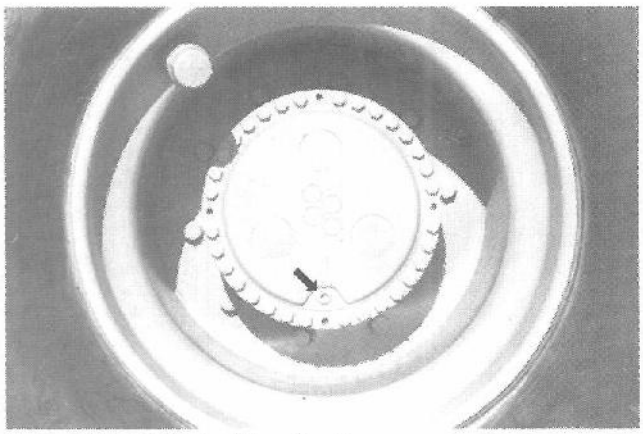


Figure 92: Oil Drain Plug Position

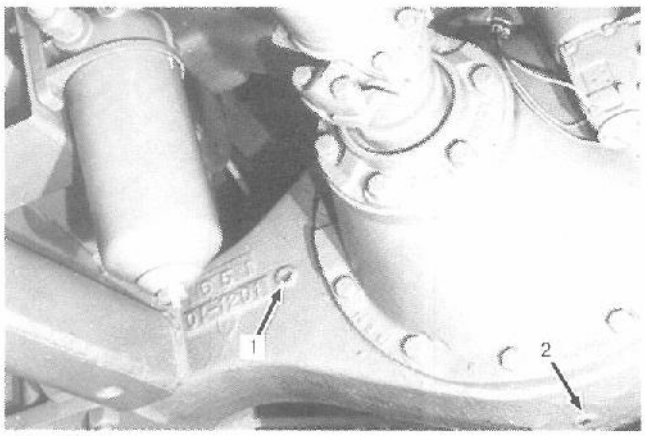


Figure 93:

1. Check Plug 2. Drain Plug

Axle Assembly

Wheel Hub
Oil Level Check/Fill or Drain

Check the axle wheel hub oil levels every 100 hours with the tractor parked on a level surface. Place the check/fill plug in the 3:00 o'clock position as shown (Fig. 91). Remove the plug, the oil level should be within 1/4 to 1/2 inch (6.4-12.7 mm) of the lower level of the plug opening. To drain the wheel hub lube oil will require that the drain plug be placed in the 6:00 o'clock position as shown (Fig. 92).

NOTE: *Axles should be drained when lubricant is warm.*

Drain and refill axles with new oil after the first 100 hours on a new machine.

CAUTION: Be sure oil is not too hot before you attempt to drain oil or work on the system.

Differential Oil Check/Fill or Drain

Check the center differential every 100 hours. To check the center differential oil level, remove the check plug shown. The oil level should be within 1/4 to 1/2 inch (6.4-12.7 mm) of the lower level of the plug opening.

To drain the center differential remove the drain plug from the location shown.

NOTE: *When refilling an axle assembly after a complete drain, fill the wheel hubs to the proper level first, and fill the center differential housing last.*

IMPORTANT: *Axle gear oil must meet or exceed the API service calssification GL-5 and/or MIL-L-2105B specifications.*

Axle Breather Vent

Remove the breather vent assembly at least every 100 hours and wash out in petroleum solvent and blow dry with compressed air. Reinstall the vent assembly.

NOTE: *If axle hub seals or pinion seals should suddenly show signs of leakage, suspect that the axle housing may be pressurized due to a plugged vent.*

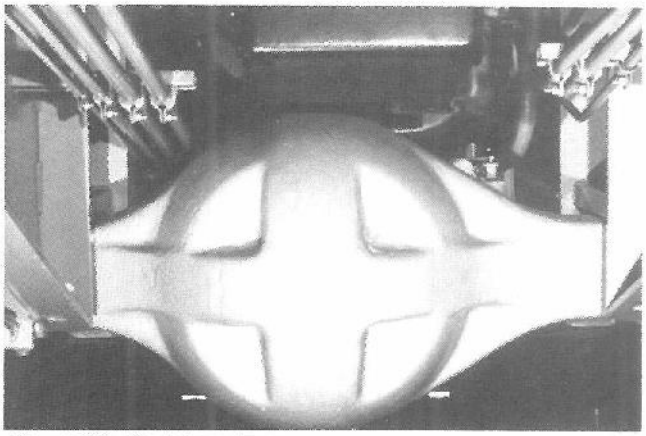


Figure 94: Vent Location

Hydraulic System Maintenance

Reservoir Oil Level Check

Check the hydraulic oil reservoir level every 10 hours. Handle oil with perfectly clean containers only. The oil level should reach the "Full" mark on the dipstick with warm oil and the engine stopped.

CAUTION: Remove the dipstick/cap assembly slowly to relieve pressure.

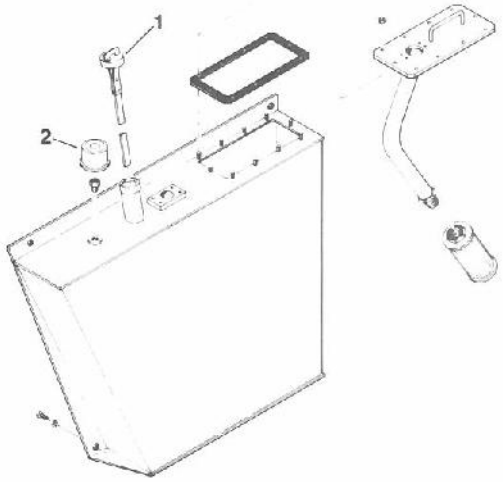


Figure 95:

1. Hydraulic Fill Cap and Dipstick Assembly
2. Filter and Vent Asembly

Return Filter

Recommended filter change is 100 hours on a new machine and every 500 hours thereafter; however, this is under the most favorable conditions. If the tractor operates under adverse dust conditions, the filter must be changed more often. Also, if various implements from other tractors are attached into the Steiger system they may contain contaminated oil. If this is suspected, change the filters at a more frequent interval. Also verify that water or other contaminations are not contained in the hydraulic oil.

NOTE: *Relieve reservoir pressure before removing the filter. After changing the filter, start the engine and check for oil leaks.*

CAUTION: Be sure oil is not too hot before you attempt to drain oil or work on the system.

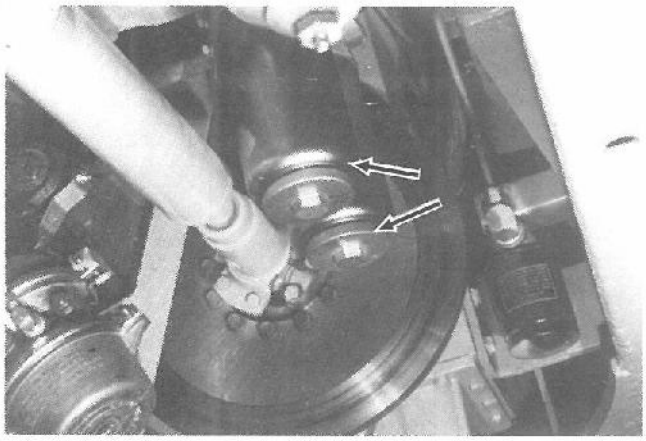


Figure 96: Hydraulic Filter

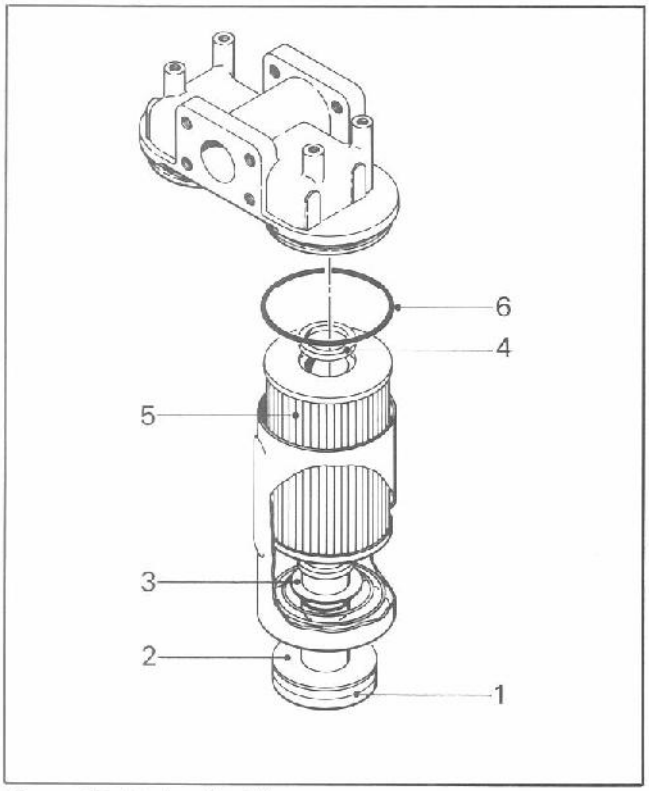


Figure 97: Hydraulic Filter

1. Center Post
2. Center Post Gasket
3. Cartridge Seal
4. Upper Cartridge Seal
5. Element
6. Cannister Seal

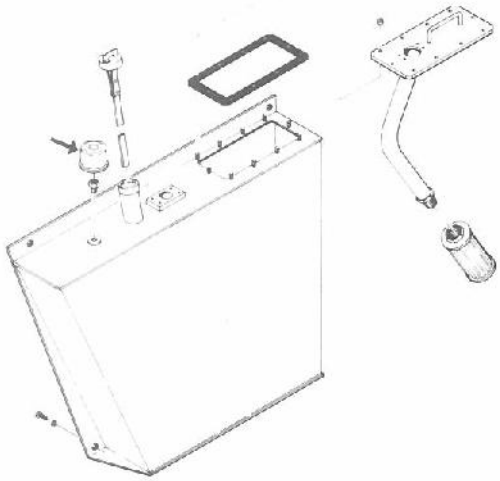


Figure 98.

Hydraulic Filter Change (Fig. 97)

Hydraulic filters must be changed every 500 hours, more often in severe conditions. Change oil every 1000 hours.

Procedure:

1. Relieve tank pressure.
2. Loosen but do not remove center post (1) to allow oil in cannisters to drain.
3. After oil has drained, loosen center post (1) enough to allow cannister removal.
4. Remove and discard upper element seal (4), element(s) and lower element seal (3).
5. Wash out cannister in clean non-flamable solvent. Be careful not to lose any internal parts.
6. Install new lower seal (3), element(s) and upper seal (4) into cannister center post.

NOTE: *Inspect and replace if damaged - center post gasket (2) and cannister seal (6).*

7. Place cannister(s) in position and tighten the cannister center post. Do not exceed 20 ft. lb. torque
8. Apply Park Brake, start engine and run at low idle for one-two minutes. Shutdown engine.
9. Check filters for leakage, correct if necessary and check fluid level in tank.

CAUTION: Remove the dipstick/cap assembly slowly to relieve pressure.

Breather Vent And Filter

Replace the breather filter element at least every 1000 hours. The breather valve should be inspected and cleaned in solvent. Replace if it is corroded.

Suction Screen (Fig. 99)

The screen arrangement in this system provides for filtration of the oil. The suction line has a spin-on, wire mesh type screen located inside the tank and can be reached by removing the cover of the hydraulic tank.

If internal system damage has occured, or the system has insufficient charge pressure, the suction screen should be checked.

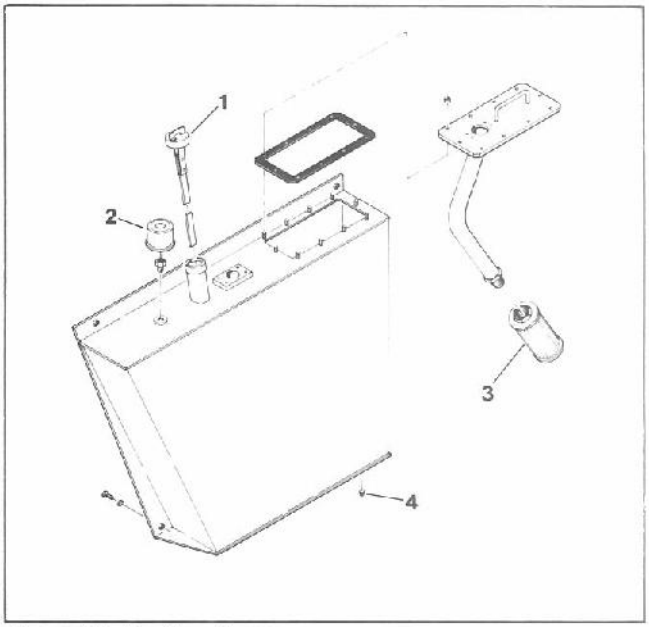


Figure 99: Suction Screen

1- Check/Fill 3- Suction Screen
2- Vent Filter 4- Drain Plug

Hydraulic System Maintenance

General Information

To gain the longest life from a hydraulic system, practice the following suggestions. Remember a few minutes of preventive maintenance daily will rarely equal the man hours of downtime required for major repairs.

1. Keep the system clean! Change filter after the first 100 hours of operation. Change filter every 500 hours. Change oil every 1000 hours.
2. REMEMBER THE IMPLEMENT OIL. DO NOT use implements with dirty oil or of a different type than you have in your tractor.

3. Thoroughly clean couplers before connecting.

NOTE: *Any dirt in coupler goes directly into control valve and system. Place clean rubber plugs into couplers when unhitching.*

4. DO NOT increase relief valve pressures. The system is designed to handle the pressure set at the factory. Increasing pressure will result in over stress on components and eventual failure.

5. Remote cylinders and other equipment are operated by oil from the tractor hydraulic system. Always check the hydraulic system oil level after cycling the equipment several times to assure an adequate hydraulic system oil level.

CAUTION: Hydraulic fluid under pressure will pierce the skin and is dangerous. Never use the hands to locate hydraulic leaks. Also provide eye protection. If hydraulic oil has pierced the skin, get immediate medical attention.

Operating Remote Cylinders

CAUTION: Whenever you operate remote cylinders or other accessory equipment, adhere to the following rules for safe, satisfactory operation, of both tractor and equipment.

- Never work under equipment supported by a hydraulic device because it may lower. Always use a secure support for equipment which must be serviced while raised off the ground.

- Hydraulic oil escaping under pressure may be nearly invisible and have enough pressure to penetrate skin. Always use cardboard, etc. to locate leaks; never use your hand. If hydraulic oil has penetrated the skin get immediate medical attention.

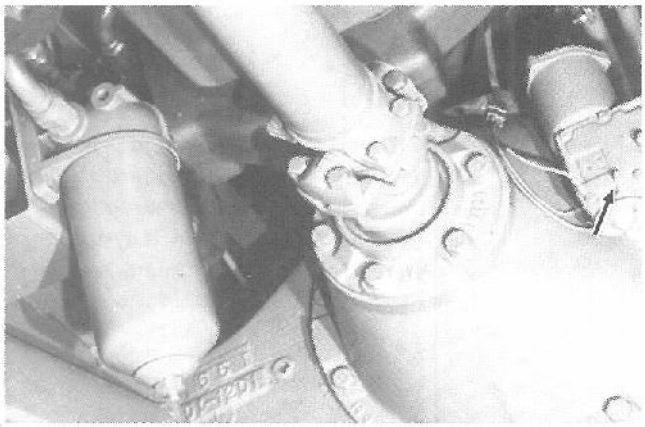


Figure 100: Diff. Lock Shifter Lube Plug

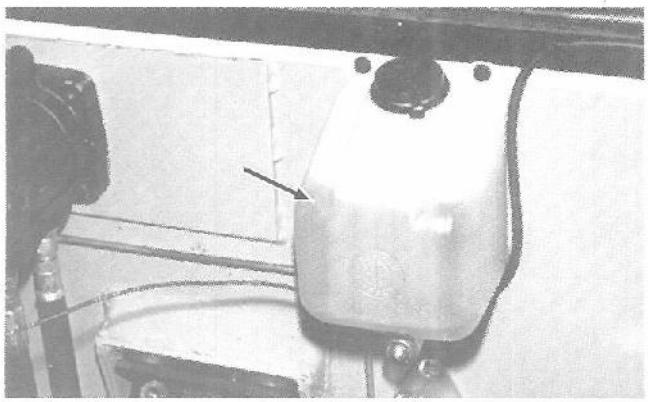


Figure 101: Window Washer Reservoir

General Chassis Maintenance

See "Tractor Service Guide" section of the manual for service interval and location of grease fittings. Use the specified grease at all grease fitting locations including driveline u-joints and slip yokes.

Differential Lock Shifter: Fig. 100 (optional)
Remove plug and fill with #30 engine oil to plug level every 1000 hours.

Window Washer Reservoir (optional)
Keep the reservoir filled with windshield washing fluid. Many types are commercially available, some may be diluted with water. In freezing weather keep the solution at full strength to prevent freezing.

Windshield Wiper Blades
Inspect the wiper blades regularly, check for streaking or damaged rubbers and replace as required.

Operator Seat
Inspect the seat mountings occasionally for damage.

Paint Care
Deterioration of the paint can be prevented by regular washing with pressurized water and a detergent. Even further measures can be used to preserve the finish quality with the use of commercial automotive type cleaners and waxes.

Chips and scratches can be touched up with matching paint colors available at your Steiger Dealer.

Tractor Preparation For Storage

If the tractor is to be put in storage for several months, the suggestions on this page for storing it and removing it from storage will help to prevent excessive deterioration.

Used engine crankcase oil will not protect bearing and other surfaces from rusting or corroding during a storage period. Therefore, change the engine crankcase oil before storing the tractor. With the engine warm, drain the engine crankcase, replace the filter elements and fill the crankcase with new oil of the proper viscosity and service rating. Restart the engine and warm to operating temperature to circulate the new oil.

Service the air cleaner.

Drain, flush and fill the cooling system. Use clean soft water. Add enough antifreeze to protect the cooling system from freezing.

Seal all openings in the engine, fuel tanks, electrical system and hydraulic system with plastic bags and tape. Remove, clean, charge and store the batteries.

Loosen radiator and fuel caps to protect gaskets.

Loosen the drive belts on the fan, compressor and alternator.

Coat the exposed piston rods of hydraulic cylinders with a grease or corrosion preventative.

Raise the tires so they do not touch the ground and protect them from heat, sunlight and moisture.

Clean the exterior of the tractor, removing all mud, dirt, grease and other foreign material. To prevent rust, touch up the painted surfaces where they may have been scratched or chipped.

If possible, store the tractor in a dry protected place. If it is necessary to store the tractor outside, cover it with waterproof canvas or other suitable protective material.

Preparing The Transmission For Storage 1 Year Period

1. Drain the oil. Remove the transmission oil filter element(s).
2. Install the drain plugs and new filter element(s).
3. Fill the transmission to operating level with a mixture of 30 parts tranmsission fluid to 1 part Motorstor, or equivalent.
4. Operate the unit for approximately 5 minutes at a minimum of 1000 rpm. Shift the transmission slowly through all selector positions to thoroughly distribute the oil.
5. As soon as the unit is cool enough to touch, seal all openings and breathers with moisture-proof tape.
6. Coat all exposed, unpainted surfaces with a good grade of preservative grease.
7. If additional storage time is required, (3) through (6), above, should be repeated at yearly intervals, except it is not necessary to drain the transmission each year - just add the Motorstor, or equivalent.
8. Store with selector lever in "reverse".

Preparation For Operation

Use the following procedure to remove the tractor from storage and place it in service.

Remove all protective coverings from the tractor and unseal all openings. Check tire inflation and remove the blocking from the tractor.

Remove batteries from storage, install them on the tractor and connect the cables. Adjust the alternator belt, fan belt and compressor belt tension.

Check the engine and transmission-hydraulic system oil level. Add oil if necessary. Check radiator coolant level. Fill the tank.

1. If Motorstor, or equivalent, was used in preparing the transmission for storage, use the following procedures to restore the unit to service.
2. Remove the tape from openings and breather.
3. Wash off all the external grease with solvent.
4. Add hydraulic transmission fluid to proper level.

NOTE: *It is not necessary to drain oil and Motorstor mixture fom the transmission.*

Preparing The Transmission For Storage 6 Week Period

When the transmissions are to be stored or remain inactive for extended periods of time, specific preservative methods are recommended to prevent rust and corrosion damage. The length of storage will usually determine the preservative method to be used. Various methods are described below.

1. The following procedures will prepare a transmission for a month to 6 weeks storage, depending on the environment.

2. Drain the oil. Remove the trasmission oil filter element(s).

3. Install the drain plugs and new filter element(s).

4. Fill the unit to operating level with any commercial preservative oil which meets the U.S. Military Specification MIL-L-21260, Grade 1.

5. Operate the unit for at least 5 minutes at a minimum of 1000 rpm.

Shift the transmission slowly through all selector positions to thoroughly distribute the oil, then stall the converter to raise the oil temperature.

IMPORTANT: *Do not stall for more than 30 seconds.*

6. As soon as the unit is cool enough to touch, seal all openings and breathers with moisture-proof tape.

7. Coat all exposed, unpainted surfaces with a good grade of preservative grease, such as petrolatum that meets U.S. Military Specification (MIL-C-11796), Class 2.

8. Repeat the above procedures (5) through (7) at monthly intervals for indefinite storage.

9. Store with selector lever in "reverse".

Preparation For Operation

Use the following procedure to remove the tractor from storage and place it in service.

Remove all protective coverings from the tractor and unseal all openings. Check tire inflation and remove the blocking from the tractor.

Remove batteries from storage, install them on the tractor and connect the cables. Adjust the alternator belt tension and compressor belt tension.

Check the engine and transmission-hydraulic system oil level. Add oil if necessary. Check radiator coolant level. Fill the fuel tank.

1. If Motorstor, or equivalent, was used in preparing the transmission for storage, use the following procedures to restore the unit to service.

2. Remove the tape from openings and breather.

3. Wash off all the external grease with solvent.

4. Add hydraulic transmission fluid to proper level.

NOTE: *It is not necessary to drain oil and Motorstor mixture from the transmission.*

5. If Motorstor, or equivalent, was not used in preparing the transmission for storage, use the following procedures to restore the unit to service.

6. Remove the tape from openings and breathers.

7. Wash off all the external grease with solvent.

8. Drain the oil.

9. Install new oil filter element(s).

10. Refill transmission with hydraulic transmission fluid to proper level.

Troubleshooting

Troubleshooting is an organized study of the problem and a planned method or procedure for investigation and correction of the difficulty. The following pages include some of the problems that an operator may encounter during the service life of the tractor.

The following pages do not give all the answers for correction of problems listed, but are meant to stimulate a train of thought and indicate a work procedure directed toward the source of the trouble.

Think Before Acting

Study the problem thoroughly and ask yourself these questions:

1. What were the warning signs preceding the trouble?
2. What previous repair and maintenance work has been done?
3. Has similar trouble occurred before?
4. If engine still runs, is it safe to continue running it to make further checks?

Do Easiest Things First

Most problems are simple and easily corrected. Examples are "low power" complaints caused by loose throttle linkage or dirty fuel filters, "excessive oil consumption" caused by leaking gaskets or connections, etc.

Always check the easiest and obvious things first. Following this simple rule will save time and trouble.

Double-Check Before Beginning Disassembly Operations

The source of most engine problems can be traced not to one part alone but to the relationship of one part with another. For instance, excessive fuel consumption may not be due to an incorrectly adjusted fuel pump, but instead to a clogged air cleaner or possible a restricted exhaust passage causing excessive back pressure. Too often, engines are completely disassembled in search of the cause of a certain complaint and all evidence is destroyed during disassembly operations. Check again to be sure an easy solution to the problem has not been overlooked.

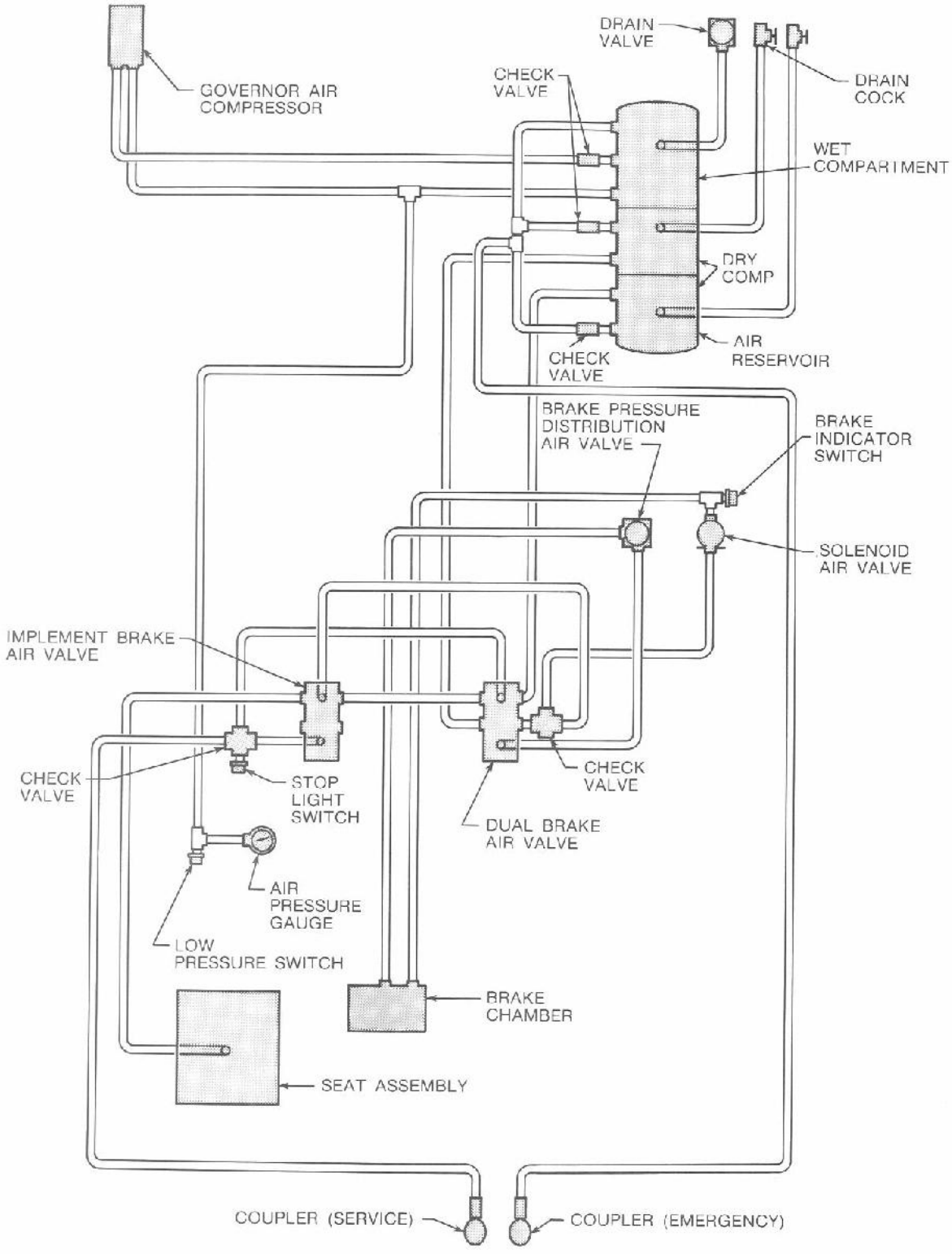
If the hints in this manual do not correct a problem, see your Steiger Dealer.

Find And Correct Basic Cause Of Trouble

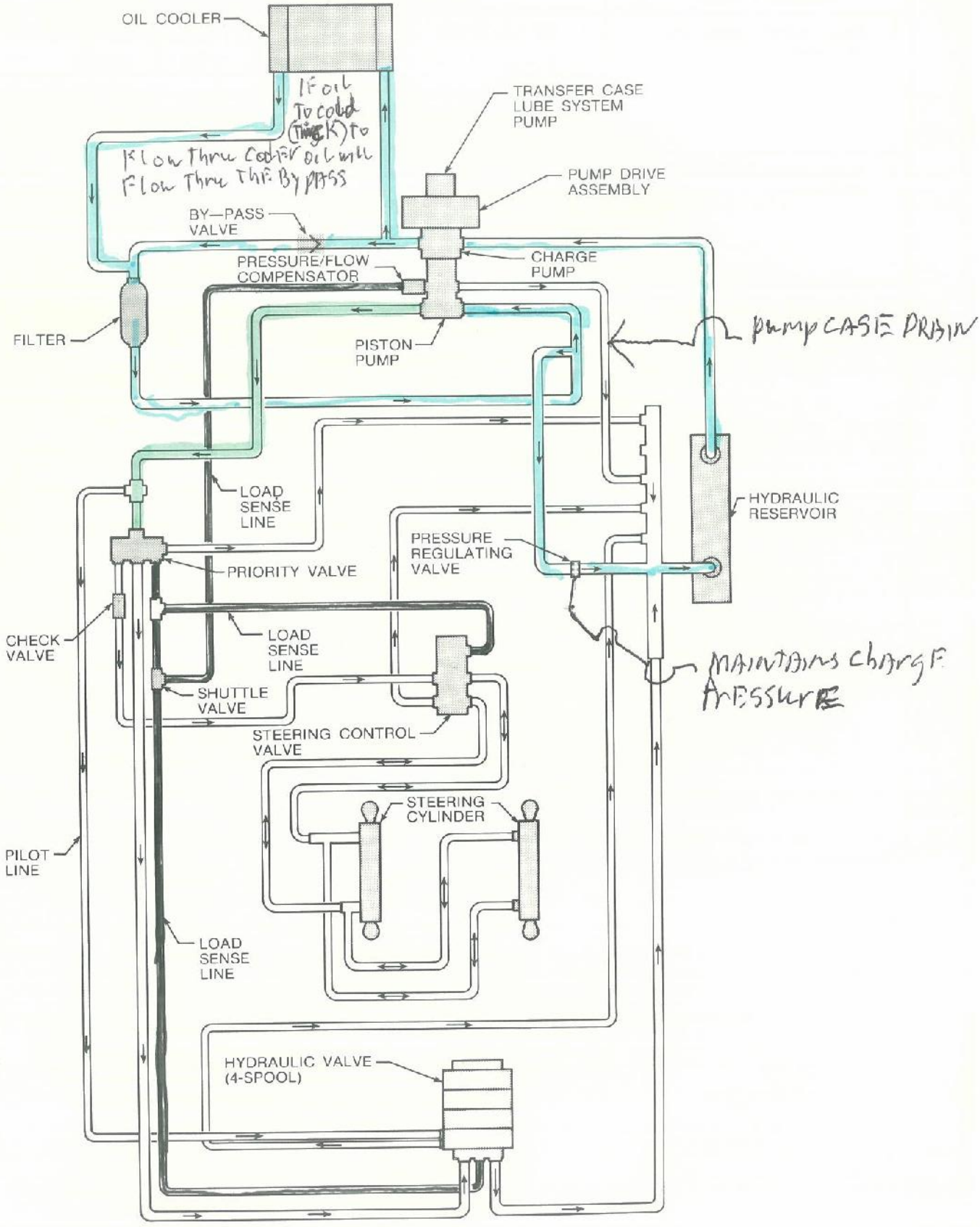
After a mechanical failure has been corrected, be sure to locate and correct the cause of the problem so the same failure will not be repeated. A complaint of "sticking injector plungers" is corrected by replacing the faulty injectors, but something caused those plungers to stick. The cause may be improper injector adjustment or more often water in the fuel.

The following pages list some of the complaints and causes the operator can study to become aware of what might cause the problem when it does arise.

AIR SYSTEM SCHEMATIC



HYDRAULIC SYSTEM SCHEMATIC



Troubleshooting

Hydraulic System Troubleshooting

Possible Trouble	Causes	Remedies
1. Noisy pump caused by cavitation.	A. Oil too heavy. B. Suction strainer or filter plugged. C. Suction line plugged, too small, or too long.	A. Change to proper viscosity. B. Clean or replace. C. Clean line and check for proper size and length.
2. Noisy pump caused by aeration.	A. Oil supply low. B. Air leaking into suction line. C. Foaming oil.	A. Fill reservoir. B. Tighten fittings. C. Drain reservoir and fill with non-foaming type oil.
3. Hydraulic system overheating.	A. Oil supply low. B. Oil in system too light. C. Excessive internal leakage.	A. Fill reservoir. B. Drain reservoir and refill with proper viscosity oil. C. Disconnect case, drain line, measure leakage volume while pressurizing hydraulic system. Case drain flow should not exceed 6.0 G.P.M. If excessive, remove pump, disassemble and repair.
4. System not developing adequate pressure.	A. Excessive internal leakage. B. Either compensator spool stuck open. C. Either compensator spring, weak or broken.	A. Refer to 3-C. B. Disassemble compensator, inspect for stuck spool, clean or replace compensator assembly. C. Disassemble compensator, inspect for weak or broken spring. Replace spring if necessary.
5. Restricted or no flow through couplers.	A. Faulty couplers. B. Wrong coupler male tip. C. Reduced coupler and/or line size. D. Faulty controller and/or remote valve solenoids.	A. Replace couplers. B. Use correct male tip C. Use correct size coupler and line. D. Check Controller and/or remote valve electrical circuitry.

Automatic Transmission Section

Complaint	Possible Cause
Overheating	1. High oil level 2. Clutch failed 3. Vehicle overloaded (operating in convertor) 4. Engine water overheated 5. Cooler oil or water line kinked or clogged
Aerated (foaming) oil	1. Incorrect type oil used 2. High oil level 3. Low oil level 4. Air entering suction side of oil pump
Tractor vehicle will not travel	1. Shift selector linkage disconnected 2. Internal mechanical failure
Vehicle travels in neutral when engine is accelerated	1. Selector linkage out of adjustment 2. Clutch failed (won't release)
Tractor lacks power and acceleration at low speed	1. Engine malfunction 2. Aerated oil
Tractor shift points incorrect	1. Modulator adjustment incorrect 2. Throttle Linkage not correct

Troubleshooting

Engine Section

Complaint	Cause
Coolant Temperature Too High	Clogged Grill Screen High Exhaust Back Pressure Crankcase Low or Out of Oil Oil Level Too High Insufficient Coolant Damaged Water Hose Radiator Core Openings Dirty Air in Cooling System Exterior Water Leaks Engine Overloaded Engine Exterior Caked with Dirt High Transmission Oil Temperature
Lube Oil Too Hot	Crankcase Low or Out of Oil Oil Level Too High Insufficient Coolant Worn Water Pump Damaged Water Hose Loose Fan Belts Clogged Oil Cooler Radiator Core Openings Dirty Air in Cooling System Exterior Water Leaks Engine Overloaded Engine Exterior Caked with Dirt
Fuel Knocks	Improper Use of Starter Aid/Air Temperature Poor Quality Fuel Air Leaks in Suction Lines Coolant Temperature Low Engine Overloaded
Mechanical Knocks	Engine Overloaded Engine Due for Overhaul Loose Mounting Bolts
Surging at Governed RPM	Air Leaks in Suction Lines Throttle Linkage or Adjustment
Excessive Lube Oil Consumption	External and Internal Oil Leaks Wrong Grade Oil for Weather Conditions Oil Level Too High Engine Due for Overhaul

Engine Section (Continued)

Complaint	Cause
Dilution	External or Internal Fuel Leaks External and Internal Oil Leaks Coolant Temperature Low Long Idle Periods
Low Lubricating Oil Pressure	External or Internal Fuel Leaks Dirty Oil Filter Oil Suction Line Restriction Crankcase Low or Out of Oil Wrong Grade Oil for Weather Conditions Insufficient Coolant Damaged Water Hose Loose Fan Belts Clogged Oil Cooler Radiator Core Openings Dirty Air in Cooling System Exterior Water Leaks Engine Overloaded Engine Exterior Caked with Dirt Engine Due for Overhaul
Low Power or Loss of Power	Restricted Air Intake High Exhaust Back Pressure Thin Air in Hot Weather or High Alt. Poor Quality Fuel Air Leaks in Suction Lines Restricted Fuel Lines External or Internal Fuel Leaks Throttle Linkage or Adjustment Oil Level Too High Dirty Filters and Screens Long Idle Periods Engine Due for Overhaul
Cannot Reach Governed RPM	Restricted Fuel Lines: Stuck Drain Valve Throttle Linkage or Adjustment High-Speed Governor Set Too Low Water in Fuel
Excessive Fuel Consumption	Restricted Air Intake High Exhaust Back Pressure Poor Quality Fuel Restricted Fuel Lines External or Internal Fuel Leaks Oil Level Too High Engine Overloaded Engine Due for Overhaul

Troubleshooting

Engine Section (Continued)

Complaint	Cause
Poor Acceleration	Air Leaks in Suction Lines Restricted Fuel Lines Throttle Linkage or Adjustment
Erratic Idle Speeds	Air Leaks in Suction Lines Throttle Linkage or Adjustment
Engine Dies	Out of Fuel or Fuel Shut-Off Closed Poor Quality Fuel Air Leaks in Suction Lines External or Internal Fuel Leaks Throttle Linkage or Adjustment Water in Fuel
Hard Starting or Failure to Start	Restricted Air Intake Out of Fuel or Fuel Shut-Off Closed Poor Quality Fuel Air Leaks in Suction Lines or Holes Restricted Fuel Line Worn Fuel Pump Water in Fuel - Clogged Filters Long Idle Periods Engine Due for Overhaul - Poor Compression
Engine Misfires	Poor Quality Fuel Air Leaks in Suction Lines Restricted Fuel Lines Water in Fuel Long Idle Periods
Excessive Smoking at Idling	Restricted Fuel Lines Long Idle Periods Engine Due for Overhaul
Excessive Smoke Under Load	Restricted Air Intake High Exhaust Back Pressure Thin Air in Hot Weather or High Alt. Poor Quality Fuel Restricted Fuel Lines Long Idle Periods Engine Overloaded Engine Due for Overhaul
Crankcase Sludge	Dirty Oil Filters Coolant Temperature Low Long Idle Periods Dirty Filters and Screens Oil Needs Changing

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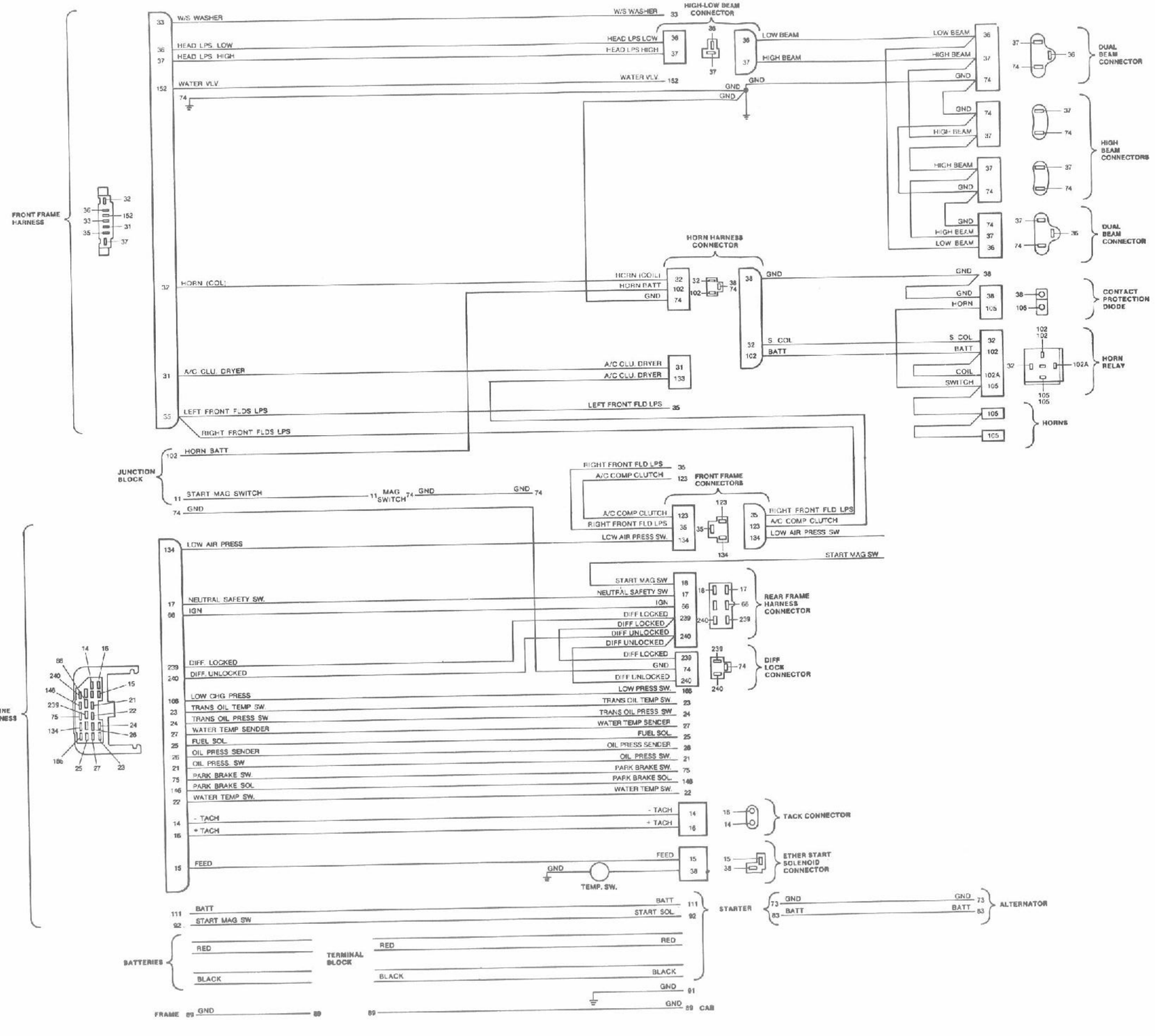
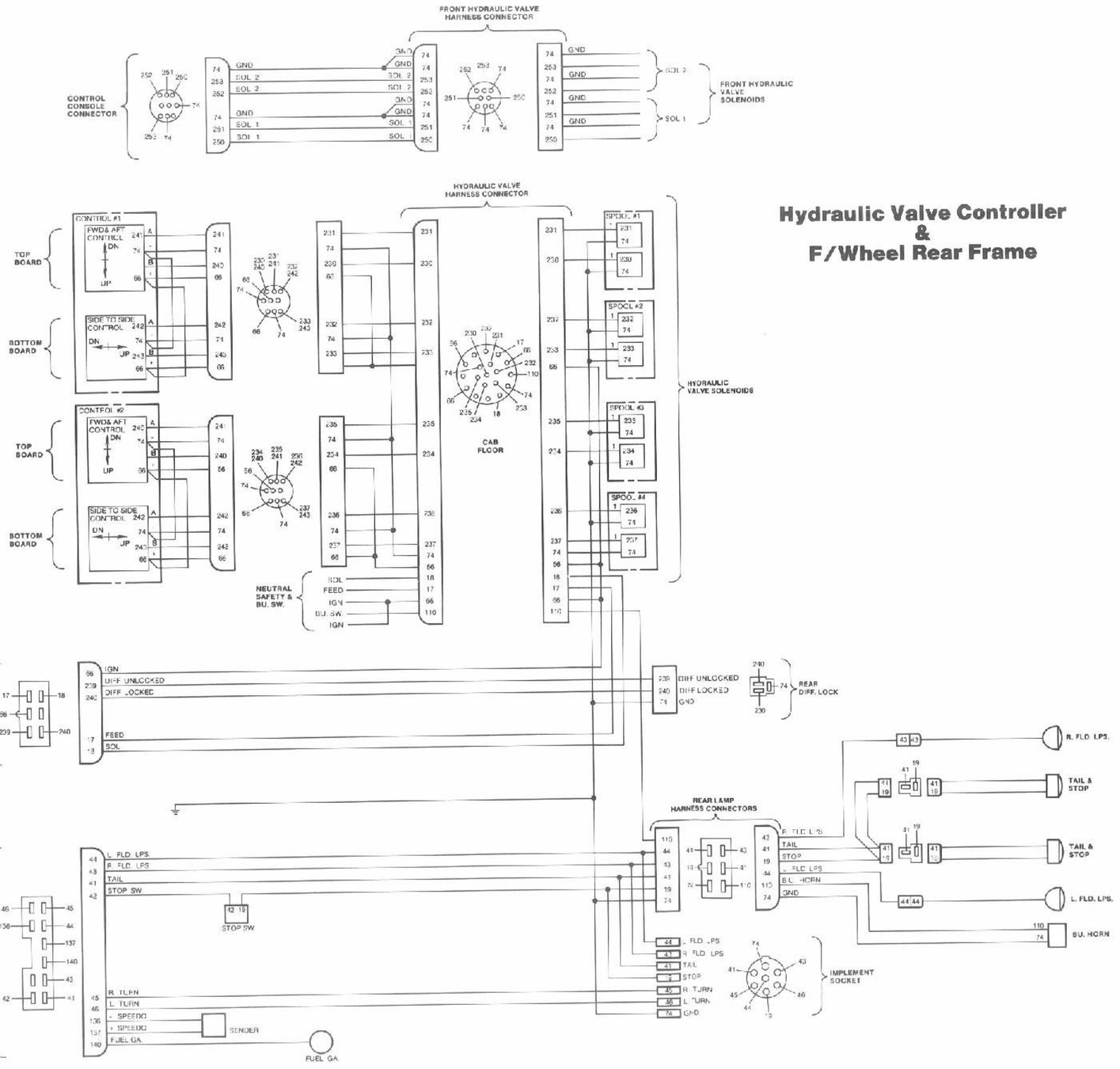
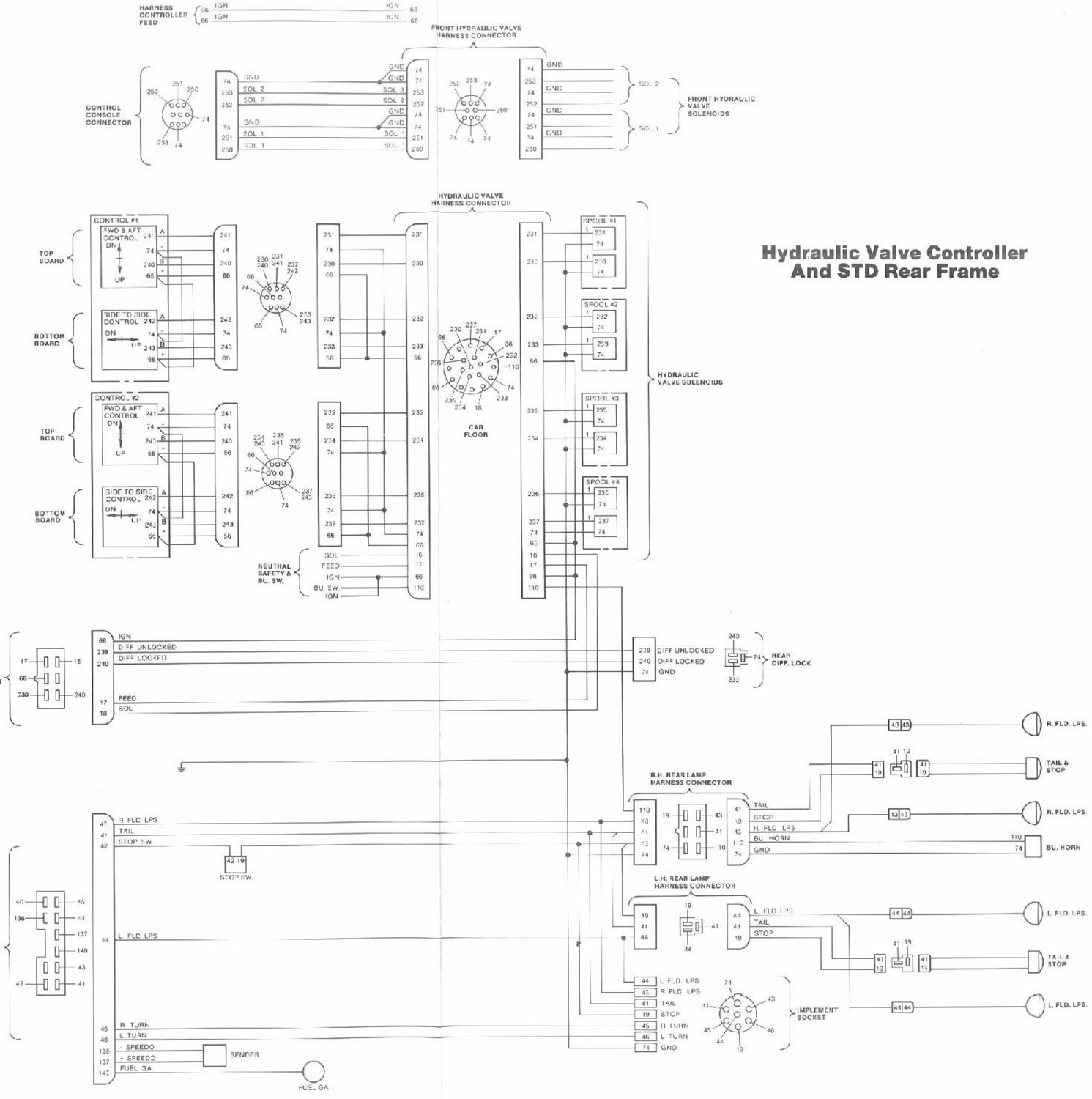
Front Frame And Engine Electrical



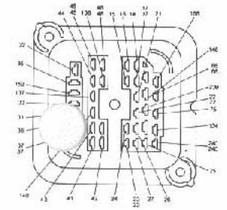
Hydraulic Valve Controller & F/Wheel Rear Frame

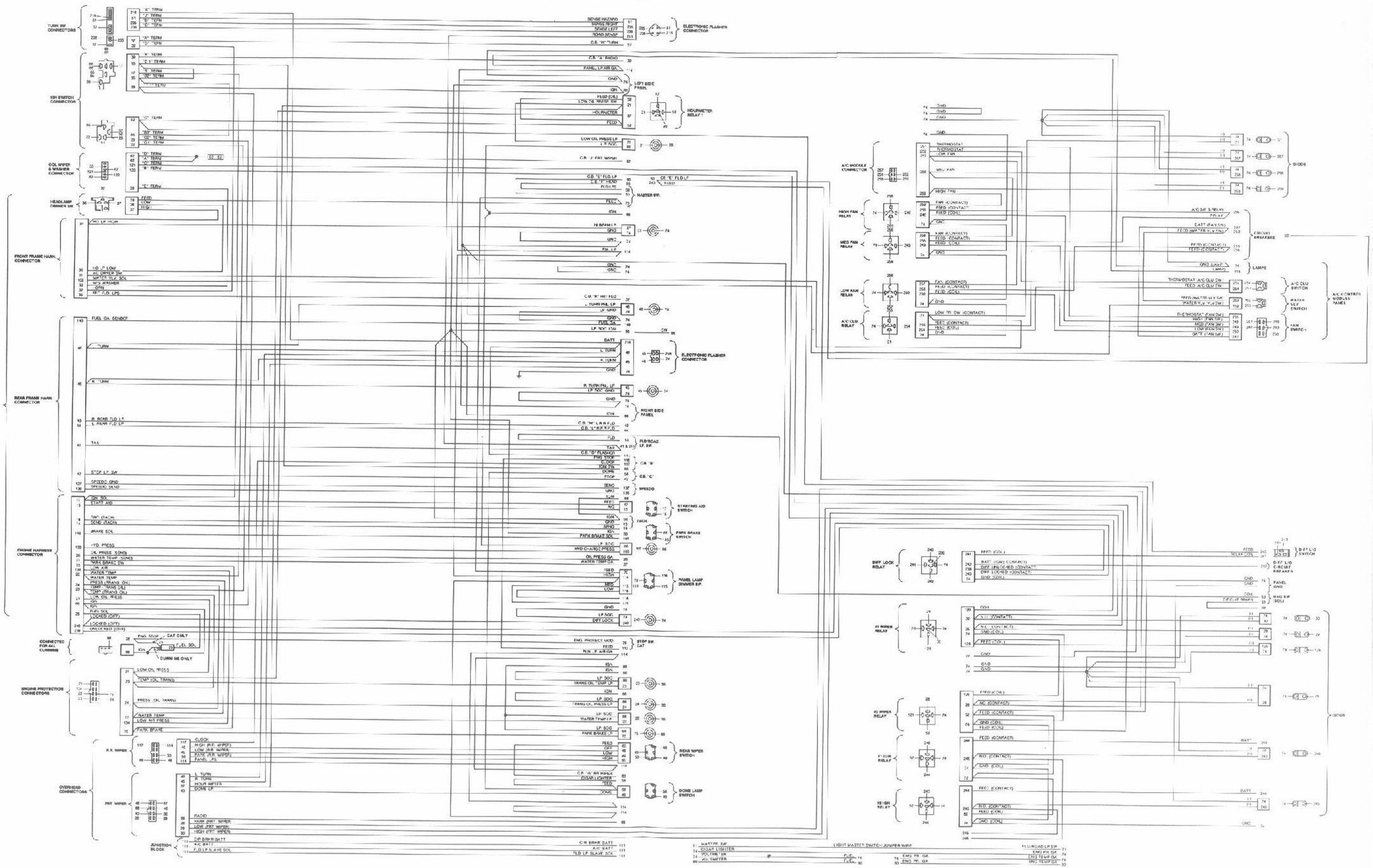


Hydraulic Valve Controller And STD Rear Frame



Dash Electrical





Cab Overhead