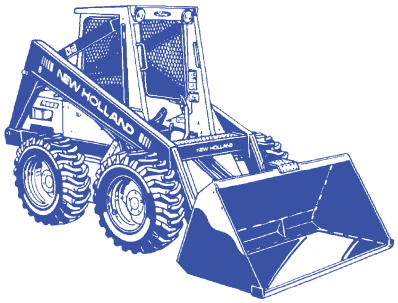

New Holland Skid Steers, Loader-Backhoes

SERVICING SPECIFICATIONS

NEW HOLLAND

SERVICE

L250
SPECIFICATIONS
ONAN B43G

ENGINE

Manufacturer	Onan
Model	B43G
Engine Specification No.	GA018/4166C
Gasoline or Diesel	Gasoline
Cylinders	2
Displacement	47.7 in. ^{3} (782 cm^3)
RPM	
High idle	3500-3600
Low idle	1100-1200
Horsepower	18 @ 3600
Valve clearance	
Intake (cold)	0.008″
Exhaust (hot)	0.013″
Firing order	1-2
Spark advance (static setting)	16° BTC
Spark plug gap (Champion RS12YC)	0.25″ (.64 mm)
Breaker point gap	0.16″ (.41 mm)
Ignition type	Spark
Timing	16° BTC (static setting)
Fuel consumption at full load	1.2 gph (4.5 lph)
Fuel filter (see chart)	Replaceable in-line
Air filter (see chart)	Dry type
Oil filter (see chart)	Replaceable cartridge

ELECTRICAL SYSTEM

Battery	SAE Group 71, 12 volt, 390 amps @ 0° F (-18° C)
Alternator	15 amps

ENGINE OILS

Lubricating oils meeting the requirements of the U.S.	
Ordnance specifications	MIL-L-46152 are recommended
Engine crankcase	API services SF-CC MIL-L-46152
Temperature range	
80° (27° C) and above	SAE 20W-40, 20W-50, 30, 40, 50
80° F to 40° F (27° C to 4.4° C)	SAE 10W-30, 10W-40, 20W-40, 20W-50, 30
40° to 15° F (4.4° C to -10° C)	SAE 5W-30, 10W-30, 10W-40
15° to 0° F (-10° C to -18° C)	SAE 5W-30, 10W, 10W-30, 10W-40
Below 0° F (-18° C)	SAE 5W-20, 5W-30

CAPACITIES

Engine crankcase with filter	1.7 qts. (1.6L)
Cooling System	Air
Fuel tank	6 gal. (22.7 L)
Gradeability - Intermittent duty	
Front down	15°
Rear down	25°
Left side down	25°
Right side down	25°

HYDRAULIC SYSTEM

Pump make or model	Parker - gear type
Output	8 gpm (30.2 lpm) @ 3600
Hydraulic Fluid	Ford New Holland 134C, 134D, or Universal Tractor Fluid meeting the Ford New Holland spec. ESN-M2C-134C
Replaceable spin-on cartridge	No bypass replaceable cartridge
Pump suction screen	100 mesh
Main system pressure	1600 PSI (110.2 bar)
Hydraulic reservoir capacity	9 gal. (34.1 L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Pump, Sundstrand, Motor, Nichols
Pump	Variable displacement pump
Motor	Nichols fixed displacement motor
Filter (charge)	No bypass 10 micron replaceable
Charge pressure	80 PSI (5.51 bar)
Charge pressure warning light setting	None used
Transmission relief pressure	None used
Case Pressure (Hydrostatic Pump)	Max. 15 PSI (1.02 bar)
Bucket cycle time	
Curl	1.9 seconds
Dump	0.9 seconds
Boom cycle time	
Raise	5.5 seconds
Lower	3.4 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-5.8 MPH (0-.93 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 12	50 PSI
23 x 8.50-12	35 PSI
Basic weight	L250 - 1946 lbs. (882.7 kg)

OPERATING CAPACITY

SAE operating load per J818	
L250 W/B43G	575 lbs. (261 kg)

L250
SPECIFICATIONS
ONAN P-218

ENGINE

Manufacturer	Onan
Model	P-218
Engine Specification No.	#10641B
Gasoline or Diesel	Gasoline
Cylinders	2
Displacement	47.7 cu. in. (782 cm^3)
RPM	
High idle	3500-3600
Low idle	1100-1200
Horsepower	18 @ 3600
Valve clearance	
Intake (cold)	0.005″ (0.13 mm)
Exhaust (cold)	0.013″ (0.33 mm)
Firing order	1-2
Spark plug gap (Champion RS 12YC AC R42CLT3)	0.025″ (0.64 mm)
Ignition Type	Spark
Timing (static setting)	20 BTC
Fuel Consumption at full load	1.2 gal./hr. (4.5L/hr.)
Fuel filter (see chart)	Replaceable in-line
Air filter (see chart)	Dry type
Oil filter (see chart)	Replaceable Cartridge

ELECTRICAL SYSTEM

Battery	SAE Group 71, 12 volt, 390 amps @ 0° F (-18° C)
Alternator	15 amps

ENGINE LUBRICATION

Lubricating oils meeting the requirements of the U.S.	
Engine crankcase	API services SH/CG-4
Temperature range	
80° F (27° C) and above	SAE 20W-40, 20W-50, 30, 40, 50
80° F to 40° F (27° C to 4.4° C)	SAE 10W-30, 10W-40, 20W-40, 20W-50, 30
40° F to 15° F (4.4° C to -10° C)	SAE 5W-30, 10W-30, 10W-40
15° F to 0° F (-10° C to -18° C)	SAE 5W-30, 10W, 10W-30, 10W-40
Below 0° F (-18° C)	SAE 5W-20, 5W-30

CAPACITIES

Engine crankcase with filter	1.7 qts. (1.6L)
Cooling System	Air
Fuel tank	6 gal. (22.7 L)
Gradeability - Intermittent duty	
Front down	15°
Rear down	25°
Left side down	25°
Right side down	25°

HYDRAULIC SYSTEM

Pump make or model	Parker - gear type
Output	8 gpm (30.2 lpm) @ 3600
Hydraulic Fluid	API Service SH/CG-4-10W-30 NOTE: Early units used New Holland 134D hydraulic oil
Replaceable spin-on cartridge	No bypass replaceable cartridge
Pump suction screen	100 mesh
Main system pressure	1600 PSI (110.2 bar)
Hydraulic reservoir capacity	9 gal. (34.1 L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Pump, Sundstrand, Motor, Nichols
Pump	Variable displacement pump
Motor	Nichols fixed displacement motor
Filter (charge)	No bypass 10 micron replaceable
Charge pressure	80 PSI (5.51 bar)
Charge pressure warning light setting	None used
Transmission relief pressure	None used
Case Pressure (Hydrostatic Pump)	Max. 15 PSI (1.02 bar)
Bucket cycle time	
Curl	1.9 seconds
Dump	0.9 seconds
Boom cycle time	
Raise	5.5 seconds
Lower	3.4 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-5.8 MPH (0-9.3 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 12	50 PSI
23 x 8.50-12	35 PSI
Basic weight	L250 - 1946 lbs. (882.7 kg)

OPERATING CAPACITY

SAE operating load per J818	
L250 W/P218	600 lbs. (272 kg)

LS120
SPECIFICATIONS
ONAN P-218

ENGINE

Manufacturer	Onan
Model	P-218
Engine Specification No.	#10641B
Gasoline or Diesel	Gasoline
Cylinders	2
Displacement	47.7 cu. in. (782 cm^3)
RPM	
High idle	3500-3600
Low idle	1100-1200
Horsepower	18 @ 3600
Valve clearance	
Intake (cold)	0.005″ (0.13 mm)
Exhaust (cold)	0.013″ (0.33 mm)
Firing order	1-2
Spark plug gap (Champion RS 12YC AC R42CLT3)	0.025″ (0.64 mm)
Ignition Type	Spark
Timing (static setting)	20° BTC
Fuel Consumption at full load	1.2 gal./hr. (1.9L/hr.)
Fuel filter (see chart)	Replaceable in-line
Air filter (see chart)	Dry type
Oil filter (see chart)	Replaceable Cartridge

ELECTRICAL SYSTEM

Battery	SAE Group 70, 12 volt, 390 amps @ 0° F (-18° C)
Alternator	20 amps

ENGINE LUBRICATION

Lubricating oils meeting the requirements of the U.S.	
Engine crankcase	API services SH/CG-4
Temperature range	
80° F (27° C) and above	SAE 20W-40, 20W-50, 30, 40, 50
80° F to 40° F (27° C to 4.4° C)	SAE 10W-30, 10W-40, 20W-40, 20W-50, 30
40° F to 15° F (4.4° C to -10° C)	SAE 5W-30, 10W-30, 10W-40
15° F to 0° F (-10° C to -18° C)	SAE 5W-30, 10W, 10W-30, 10W-40
Below 0° F (-18° C)	SAE 5W-20, 5W-30

CAPACITIES

Engine crankcase with filter	1.8 qts. (1.7L)
Cooling System	Air
Fuel tank	6 gal. (22.7 L)
Gradeability - Intermittent duty	
Front down	15°
Rear down	25°
Left side down	25°
Right side down	25°

HYDRAULIC SYSTEM

Pump make or model	Parker - gear type
Output	8 gpm (30.2 lpm) @ 3600
Hydraulic Fluid	API Service SH/CG-4-10W-30
Replaceable spin-on cartridge	No bypass replaceable cartridge
Pump suction screen	100 mesh
Main system pressure	1600 PSI (110.2 bar)
Hydraulic reservoir capacity	9 gal. (34.1 L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Pump, Sundstrand, Motor, Nichols
Pump	Variable displacement pump
Motor	Nichols fixed displacement motor
Filter (charge)	No bypass 10 micron replaceable
Charge pressure	80 PSI (5.51 bar)
Charge pressure warning light setting	None used
Transmission relief pressure	None used
Case Pressure (Hydrostatic Pump)	Max. 15 PSI (1.02 bar)
Bucket cycle time	
Curl	1.9 seconds
Dump	0.9 seconds
Boom cycle time	
Raise	5.5 seconds
Lower	3.4 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-5.8 MPH (0-9.3 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 12	50 PSI
23 x 8.50-12	35 PSI
Basic weight	LS120 - 1946 lbs. (882.7 kg)

OPERATING CAPACITY

SAE operating load per J818	
LS120 W/P218	600 lbs. (272 kg)

L255
SPECIFICATIONS
NH E673

ENGINE

Manufacturer	NH
Model	E673
Gasoline or Diesel	Diesel
Cylinders	3
Displacement	41.2 cu. in. (675 cm^3)
RPM	
High idle	3550-3650
Low idle	1100-1200
Horsepower	16.5 @ 3600
Valve clearance	
Intake (cold)	0.008″ (0.20mm)
Exhaust (cold)	0.010″ (0.25 mm)
Firing order	1-2-3
Fuel consumption at full load	1.2 gal./hr. (4.5 L/hr.)
Fuel filter (see chart)	Replaceable in-line
Air filter (see chart)	Dry type
Oil filter (see chart)	Replacement cartridge

ELECTRICAL SYSTEM

Battery	SAE Group 71, 12 volt, 390 amps @0 F (-18 C)
Alternator	20 amps

ENGINE LUBRICATION

Lubricating oils meeting the requirements of the U.S.	
Engine crankcase	API Services, SH/CG-4
Temperature range	
Above 77° F (24° C)	SAE 30
32° (0° C) to 77° F (24° C)	SAE 20-20W
Below 32° F (0° C)	SAE 10W

CAPACITIES

Engine crankcase with filter	3.2 qts. (3.3L)
Cooling System	1.5 gal. (5.6L)
Fuel tank	6 gal. (22.7L)
Gradeability - Intermittent duty	
Front down	22°
Rear down	25°
Left side down	25°
Right side down	25°

HYDRAULIC SYSTEM

Pump make or model	Parker - gear type
Output	8 gpm (30.2 lpm) @ 3600
Hydraulic Fluid	API Service SH/CG4
Replaceable spin-on cartridge	No bypass replaceable cartridge
Pump suction screen	100 mesh
Main system pressure	1600 PSI (110.2 bar)
Hydraulic reservoir capacity	9 gal. (34.1 L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Pump, Sundstrand, Motor, Nichols
Pump	Variable displacement pump
Motor	Nichols fixed displacement motor
Filter (charge)	No bypass 10 micron replaceable
Charge pressure	80 PSI (5.51 bar)
Charge pressure warning light setting	None used
Transmission relief pressure	None used
Case Pressure (Hydrostatic Pump)	Max. 15 PSI (1.02 bar)
Bucket cycle time	
Curl	1.9 seconds
Dump	0.9 seconds
Boom cycle time	
Raise	5.5 seconds
Lower	3.4 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-5.8 MPH (0-9.3 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 12	50 PSI
23 x 8.50-12	35 PSI
Basic weight	L255 - 2120 lbs. (962 kg)

OPERATING CAPACITY

SAE operating load per J818	
L255 W/E673	700 lbs. (317 kg)

LS125
SPECIFICATIONS
NH E673

ENGINE

Manufacturer	NH
Model	E673
Gasoline or Diesel	Diesel
Cylinders	3
Displacement	41.2 cu. in. (675 cm^3)
RPM	
High idle	3550-3650
Low idle	1100-1200
Horsepower	16.5 @ 3600
Valve clearance	
Intake (cold)	0.008″ (0.20mm)
Exhaust (cold)	0.010″ (0.25 mm)
Firing order	1-2-3
Fuel consumption at full load	1/2 gal./hr. (1.9 L/hr.)
Fuel filter (see chart)	Replaceable in-line
Air filter (see chart)	Dry type
Oil filter (see chart)	Replacement cartridge

ELECTRICAL SYSTEM

Battery	SAE Group 70, 12 volt, 390 amps @0 F (-18 C)
Alternator	20 amps

ENGINE LUBRICATION

Lubricating oils meeting the requirements of the U.S.	
Engine crankcase	API Services, SH/CG-4
Temperature range	
Above 77° F (24° C)	SAE 30
32° (0° C) to 77° F (24° C)	SAE 20-20W
Below 32° F (0° C)	SAE 10W

CAPACITIES

Engine crankcase with filter	3.2 qts. (3.0L)
Cooling System	1.2 gal. (4.5L)
Fuel tank	6 gal. (22.7L)
Gradeability - Intermittent duty	
Front down	22°
Rear down	25°
Left side down	25°
Right side down	25°

HYDRAULIC SYSTEM

Pump make or model	Parker - gear type
Output	8 gpm (30.2 lpm) @ 3600
Hydraulic Fluid	API Service SH/CG4
Replaceable spin-on cartridge	No bypass replaceable cartridge
Pump suction screen	100 mesh
Main system pressure	1600 PSI (110.2 bar)
Hydraulic reservoir capacity	9 gal. (34.1 L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Pump, Sundstrand, Motor, Nichols
Pump	Variable displacement pump
Motor	Nichols fixed displacement motor
Filter (charge)	No bypass 10 micron replaceable
Charge pressure	80 PSI (5.51 bar)
Charge pressure warning light setting	None used
Transmission relief pressure	None used
Case Pressure (Hydrostatic Pump)	Max. 15 PSI (1.02 bar)
Bucket cycle time	
Curl	1.9 seconds
Dump	0.9 seconds
Boom cycle time	
Raise	5.5 seconds
Lower	3.4 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-5.8 MPH (0-9.3 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 12	50 PSI
23 x 8.50-12	35 PSI
Basic weight	LS125 - 2120 lbs. (962 kg)

OPERATING CAPACITY

SAE operating load per J818	
LS125 W/E673	700 lbs. (317 kg)

HYDRAULIC SYSTEM PRESSURE

The hydraulic system pressures are factory set. Changes to the setting should not be necessary. If, however, there is some reason to suspect incorrect pressures, check the pressures as follows:

WARNING: GAUGES, GAUGE FITTINGS, AND HOSES MUST HAVE OPERATING PRESSURE RATINGS OF AT LEAST 25 PERCENT HIGHER THAN HIGHEST PRESSURES OF THE SYSTEM.

WARNING: ALWAYS PROTECT THE SKIN AND EYES FROM ESCAPING FLUID UNDER PRESSURE. FLUID UNDER PRESSURE CAN HAVE SUFFICIENT FORCE TO PENETRATE THE SKIN, CAUSING SERIOUS PERSONAL INJURY.

BEFORE DISCONNECTING LINES OR FITTINGS, BE SURE TO RELIEVE ALL PRESSURE. BEFORE APPLYING PRESSURE TO THE SYSTEM, BE SURE ALL CONNECTIONS ARE TIGHT AND LINES, PIPES, AND HOSES ARE NOT DAMAGED.

IF INJURED BY ESCAPING FLUID, OBTAIN MEDICAL ASSISTANCE AT ONCE, SERIOUS INFECTION, OR REACTION CAN DEVELOP IF MEDICAL TREATMENT IS NOT ADMINISTERED IMMEDIATELY.

DANGER: THE BOOM LOCK SHOULD ALWAYS BE ACTUATED BEFORE LEAVING A MACHINE WITH THE BOOM UP AND/OR WHEN SERVICING, OR REPAIRING THE UNIT WITH THE BOOM UP. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

DANGER: NEVER WORK BENEATH A LOADER OR BOOM WHEN IT IS HELD UP ONLY BY THE HYDRAULIC SYSTEM. A BROKEN HYDRAULIC LINE COULD CAUSE THE BOOM TO DESCEND RAPIDLY.

PROCEDURE:

1. **CAUTION: RAISE THE BOOM, EXTEND THE BOOM LOCK PINS, AND LOWER THE BOOM ON THE BOOM LOCK PINS.**
2. **AFTER STOPPING THE ENGINE AND BEFORE DISMOUNTING FROM THE LOADER, TURN ON THE IGNITION SWITCH.**
3. **PUSH BOTH THE BOOM AND BUCKET PEDALS IN BOTH DIRECTIONS TO RELIEVE ALL HYDRAULIC PRESSURE IN BOTH CIRCUITS.**
4. **TURN OFF THE IGNITION SWITCH.**

5. Install a 3000 PSI (207 bar) capacity gauge in the bucket line at 1, Figure 1.
6. Start the engine and run it at full throttle.
7. If the gauge is installed as shown in Figure 1, dump the bucket by depressing the toe end of the bucket pedal until the system bypasses.
8. The pressure should be from 1600-1700 PSI (110-117 bar) when the hydraulic oil temperature is 120° F (48.9° C).

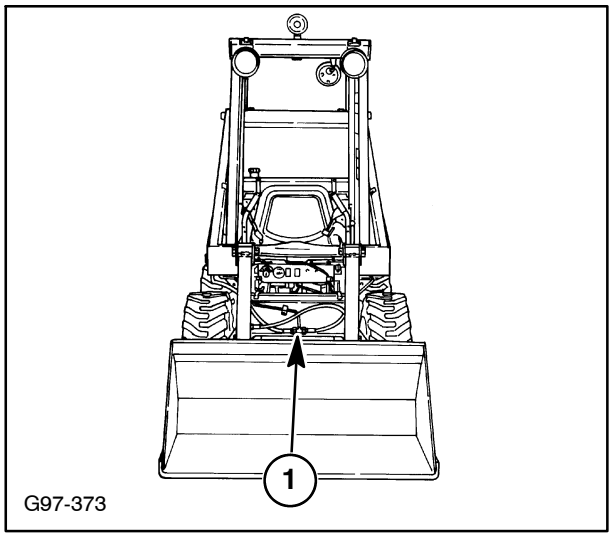

Figure 1

9. The relief valve is the cartridge type and is not adjustable. The relief valve cartridge, 1, Figure 2, should be replaced if it is not functioning correctly. The new cartridge should be marked 1600 PSI (110 bar).

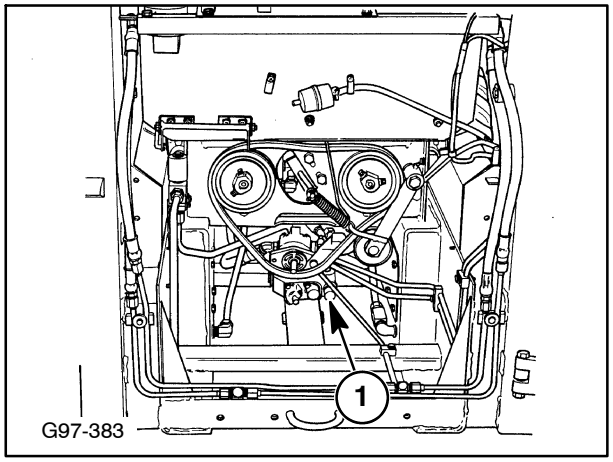

Figure 2

TRANSMISSION CHARGE PRESSURE

1. The charge pressure or the hydrostatic transmission pumps can be checked by removing the 1/8″ pipe plug at 1, Figure 3, and installing a 300 PSI (2066 kPa) pressure gauge. Normal charge pressure is 80-120 PSI (551-827 kPa).

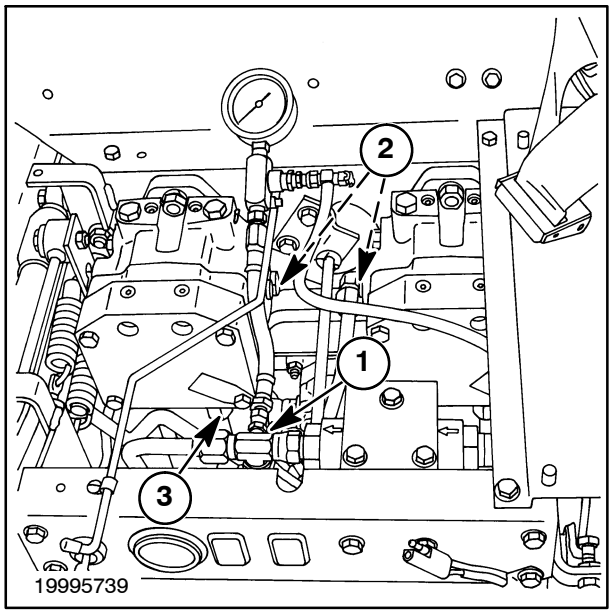

Figure 3

2. If the charge pressure is low, the 80 PSI (551 kPa) charge relief valve, 1, Figure 4, can be removed and checked for trash. This valve is not serviceable and must be replaced if malfunctioning (accessed with belly pan removed).

3. A separate charge pressure relief valve, used as a port plug, is found under the O ring caps, 2, Figure 3. Remove the O ring plug, spring, and plunger assembly to check for trash buildup that may lead to low charge pressure.

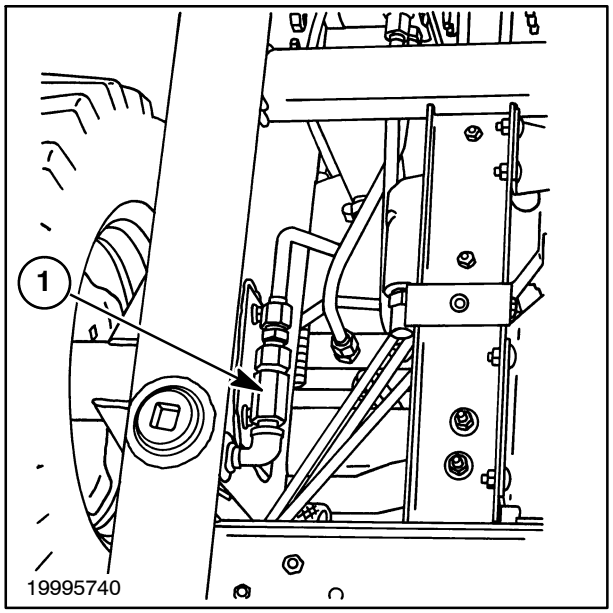

Figure 4

TRANSMISSION CASE PRESSURE (PUMP)

1. To check case pressure tee into the transmission pump case drain line using a 100 PSI (6.8 bar) pressure gauge at 3, Figure 3.

CAUTION: DO NOT DEAD HEAD CASE DRAIN OIL.

2. Normal case pressure is 4-6 PSI (.27-.4 bar). Maximum 15 PSI (1.02 bar).

L225
SPECIFICATIONS
WISCONSIN TJD

ENGINE

Manufacturer	Wisconsin
Model	TJD
Engine Specification No.	390992
Gasoline or Diesel	Gasoline
Cylinders	2
Displacement	53.9 in.^{3} (993 cm^3)
RPM	
High idle	3000 ± 50
Low idle	1100 ± 100
Horsepower	18
Valve clearance	
Intake (cold)	0.008″ (0.203 mm)
Exhaust (cold)	0.016″ (0.406 mm)
Firing order	1-2
Spark plug gap (Champion D-16J)	0.030 (0.76 mm)
Breaker point gap (magneto)	0.015″ (0.38 mm)
Ignition type	Magneto
Timing	20 ° @ 2000 RPM
Fuel consumption at full load	N/A
Fuel filter (see chart)	Replaceable in-line
Air filter (see chart)	Dry type
Oil filter (see chart)	Replaceable cartridge

ELECTRICAL SYSTEM

Battery	SAE 13TC2 (BCI-3ET), 12 volts, 445 amps @ 0 ° F (-18 ° C)
Alternator	30 amps @ 2400 RPM

ENGINE OILS

Lubricating oils meeting the requirements of the U.S.	
Ordnance specifications	MIL-L-46152 are recommended
Engine crankcase	API services SF-CC MIL-L-46152
Temperature range	
80° F (27° C) and above	SAE 30
80° F to 40° F (27° C to 4.4° C)	SAE 30
40° F to 15° F(4.4° C to -10° C	SAE 20-20W
15° F to 0° F (-10° C to -18° C	SAE 10W
Below 0° F (-18° C)	SAE 5W-20W

CAPACITIES

Engine crankcase with filter	3.5 qts. (3.3 L)
Cooling system	Air
Fuel tank	10 gal. (30 L)
Gradeability - Intermittent duty	
Front down	N/A
Rear down	N/A
Left side down	N/A
Right side down	N/A

HYDRAULIC SYSTEM

Pump make or model	Cessna-gear type
Output	7.3 gpm (27.6 L/min.)
Hydraulic Fluid	Ford New Holland 134C, 134D, or Universal Tractor Fluid meeting the Ford New Holland spec. ESN-M2C-134C
Filter (see chart)	10 micron bypass type - replaceable cartridge
Pump suction screen	80 mesh
Main system pressure	2000 PSI (141 bar)
Hydraulic reservoir capacity	15 gal. (56.8 L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Cessna - piston type
Pump	1.24 $in.^3$ variable displacement - piston type
Motor	2.48 $in.^3$ fixed displacement - piston type
Filter (charge) (see chart)	No bypass type replaceable cartridge
Charge pressure	100-150 PSI (70-10.5 bar)
Charge pressure warning light setting	50 PSI (3.5 bar)
Case pressure (hydrostatic pump) maximum	25 PSI (1.7 bar)
Transmission relief pressure	4500 PSI (316 bar)
Bucket cycle time	
Curl	1.2 seconds
Dump	1.6 seconds
Boom cycle time	
Raise	3 seconds
Lower	4.2 seconds
Ground Speed - Forward/Reverse -	0-6.9 MPH (11 kph)

TIRE SIZE AND INFLATION PRESSURE

27 x 8.50 x 15	40 PSI (3.16 bar)
27 x 10.50 x 15	40 PSI (3.16 bar)
26 x 12 x 12	35 PSI (2.8 bar)
6.50 x 15 Solid	N/A
Basic Weight	3028 lbs. (1373 kg)

OPERATING CAPACITY

SAE operating load per SAE J818	905 lbs. (410 kg)

L325
SPECIFICATIONS
KOHLER K582S

ENGINE

Manufacturer	Kohler
Model	K582S
Engine Specification No.	36249A
Gasoline or Diesel	Gasoline
Cylinders	2
Displacement	57.7 in.^{3} (946 cm^3)
RPM	
High idle	3200 ± 50
Low idle	1100 ± 100
Horsepower	22.4
Valve clearance	
Intake (cold)	0.008″-0.10″ (0.203 mm-0.254 mm)
Exhaust (cold)	0.017″-0.20″ (0.430 mm-0.508 mm)
Firing order	1-2
Spark advance	27° BTDC
Spark plug gap (Type H-10 only)	0.035″ (0.89 mm)
Breaker point gap	0.020″ (51 mm)
Ignition type	Spark
Timing	27° BTDC @ 1200 RPM +
Fuel consumption at full load	N/A
Fuel filter (see chart)	Replaceable cartridge
Air filter (see chart)	Dry type
Oil filter (see chart)	Replaceable cartridge

ELECTRICAL SYSTEM

Battery	SAE 13TC2 (BCI-3ET), 12 volts, 425 amps @ 0° F (-18 ° C)
Alternator	30 amps

ENGINE OILS

Lubricating oils meeting the requirements of the U.S.	
Ordnance specifications	MIL-L-46152 are recommended
Engine crankcase	API services SF-CC MIL-L-46152
Temperature range	
80° F (27° C) and above	SAE 30
80° F to 40° F (27° to 4.4° C)	SAE 30
40° F to 15° F (4.4° C to -10° C)	SAE 10W-30
15° F to 0° F (-10° C to - 18° C)	SAE 10W-30
Below 0° F (-18° C)	SAE 5W-20

CAPACITIES

Engine crankcase with filter	3.5 qts. (3.3 L)
Cooling system	Air
Fuel tank	10 gal. (38 L)
Gradeability - Intermittent duty	
Front down	35°
Rear down	35°
Left side down	35°
Right side down	35°

HYDRAULIC SYSTEM

Pump make or model	Cessna - gear type
Output	7.5 gpm (28.4 lpm) @ 3200
Hydraulic fluid	Dexron II (original oil) If the system was completely emptied of Dexron II, it can be replaced with the Ford New Holland 134C, 134D, or Universal Tractor Fluid meeting the Ford New Holland spec. ESN-M2C-134C
Replaceable spin on cartridge (see chart)	10 micron bypass type replaceable
Pump suction screen	80 mesh
Main system pressure	2250 PSI (153 bar)
Hydraulic reservoir capacity	15 gal. (57.L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Cessna - piston type
Pump	1.24 $in.^3$ variable displacement - piston type
Motor	2.48 $in.^3$ fixed displacement - piston type
Filter (charge) (see chart)	10 micron no bypass - replaceable cartridge
Charge pressure	90-150 PSI (6.8-10.2 bar)
Charge pressure warning light setting	50 PSI (3.45 bar)
Case pressure (hydrostatic pump) maximum	25 PSI (1.7 bar)
Transmission relief pressure	4000 PSI (272 bar)
Bucket cycle time	
Curl	1.5 second
Dump	1.8 seconds
Boom cycle time	
Raise	3.6 seconds
Lower	3.9 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-7.5 MPH (0-11.7 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 15	50 PSI (3.45 bar)
27 x 8.50 x 15	40 PSI (2.76 bar)
27 x 10.50 x 15	40 PSI (2.76 bar)
Basic weight	2903 lbs. (1316 kg)

OPERATING CAPACITY

SAE operating load per SAE J818	900 lbs. (408 kg)

L425
SPECIFICATIONS
WISCONSIN VH4D

ENGINE

Manufacturer	Wisconsin
Model	VH4D
Engine Specification No.	401410
Gasoline or Diesel	Gasoline
Cylinders	4
Displacement	107.7 in.^{3} (1765 cm3)
RPM	
High idle	2400-2500
Low idle	1100-1200
Horsepower	30 @ 2800
Valve clearance	
Intake (cold)	008″ (.203 mm)
Exhaust (cold)	016″ (.406 mm)
Firing order	1-3-4-2
Spark advance	23° @ 2000 RPM
Spark plug gap (Champion D-16J)	030″ (.76 mm)
Breaker point gap	018″-.022″ (.45 mm-56 mm)
Ignition type	Spark
Timing	23° advance @ 2000 RPM
Fuel consumption at full load	2.7 gph (10.2 lph)
Fuel filter (see chart)	Replaceable
Air filter (see chart)	Dry type
Oil filter (see chart)	Replaceable cartridge

ELECTRICAL SYSTEM

Battery	SAE 13TC2 (BCI-3ET), 12 volts, 425 amps @ 0° F (-18° C)
Alternator	30 amps

ENGINE OILS

Lubricating oils meeting the requirements of the U.S.	
Ordnance specifications	MIL-L-46152 are recommended
Engine crankcase	API services SF-CC MIL-L-46152
Temperature range	
80° F (27° C) and above	SAE 30
80° F to 40° F (27° C to 4.4° C)	SAE 30
40° F to 15° F (4.4° C to -10° C)	SAE 20-20W
15° F to 0° F (-10° C to -18° C)	SAE 10W
Below 0° F (-18° C)	SAE 5W-20W

CAPACITIES

Engine crankcase with filter	4 qts. (3.8 L)
Cooling system	Air
Fuel tank	10 gal (38 L)
Gradeability - Intermittent duty	
Front up	25°
Rear up	15°
Left side up	25°
Right side up	25°

HYDRAULIC SYSTEM

Pump make or model	Cessna - gear type
Output	8.1 gpm (30.6 lpm) @ 2400
Hydraulic fluid	Dexron II (original oil) If the system was completely emptied of Dexron II, it can be replaced with the Ford New Holland 134C ,134D, or Universal Tractor Fluid meeting the Ford New Holland spec. ESN-M2C-134C
Filter - replaceable spin on cartridge (see chart)	10 micron bypass type
Pump suction screen	80 mesh
Main system pressure	2250 PSI (153 bar) @ 2400 RPM
Hydraulic reservoir capacity	15 gal. (57 L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Cessna - piston type
Pump	1.24 $in.^3$ variable displacement - piston type
Motor	2.48 $in.^3$ fixed displacement - piston type
Filter (charge) (see chart)	25 micron no bypass type - replaceable
Charge pressure	90-150 PSI (6.3-10.2 bar)
Charge pressure warning light setting	50 PSI (3.45 bar)
Case pressure (hydrostatic pump) maximum	25 PSI (1.7 bar)
Transmission relief pressure	4000 PSI (272 bar)
Bucket cycle time	
Curl	1.3 seconds
Dump	1.3 seconds
Boom cycle time	
Raise	2.5 seconds
Lower	2.3 seconds
Ground Speed - Forward/Reverse -	
High	N/A
Low	0-5.5 MPH (0-8.5 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 15	50 PSI (3.45 bar)
27 x 8.50 x 15	40 PSI (2.76 bar)
27 x 10.5 x 15	40 PSI (2.76 bar)
Basic weight	3233 lbs. (1466 kg)

OPERATING CAPACITY

SAE operating load per SAE J818	1000 lbs. (453 kg)

L445
SPECIFICATIONS
WISCONSIN VH4D

ENGINE

Manufacturer	Wisconsin
Model	VH4D
Engine Specification No.	401410
Gasoline or Diesel	Gasoline
Cylinders	4
Displacement	107.7 in.^{3} (1765 cm3)
RPM	
High idle	2400-2500
Low idle	1100-1200
Horsepower	30 @ 2800
Valve clearance	
Intake (cold)	008″ (.203 mm)
Exhaust (cold)	016″ (.406 mm)
Firing order	1-3-4-2
Spark advance	23 @ 2000 RPM
Spark plug gap (Champion D-16J)	030″ (.76 mm)
Breaker point gap	018″ -.022″ (.45 mm-56 mm)
Ignition type	Spark
Timing	27° advance @ 2000 RPM
Fuel consumption at full load	2.7 gph (10.2 lph)
Fuel filter (see chart)	Replaceable
Air filter (see chart)	Dry type
Oil filter (see chart)	Replaceable cartridge

ELECTRICAL SYSTEM

Battery	SAE 13TC2 (BCI-3ET), 12 volt, 425 amps @ 0° F (-18° C)
Alternator	30 amps

ENGINE OILS

Lubricating oils meeting the requirements of the U.S.	
Ordnance specifications	MIL-L-46152 are recommended
Engine crankcase	API services SF-CC MIL-L-46152
Temperature range	
80° F (27° C) and above	SAE 30
80° F to 40° F (27° C to 4.4° C)	SAE 30
40° F to 15° F (4.4° C to -10° C)	SAE 20-20W
15° to 0° F (-10° C to -18° C)	SAE 10W
Below 0° F (-18° C)	SAE 5W-20W

CAPACITIES

Engine crankcase with filter	4 qts. (3.8 L)
Cooling system	Air
Fuel tank	10 gal. (38 L)
Gradeability - Intermittent duty	
Front up	25°
Rear up	15°
Left side up	25°
Right side up	25°

HYDRAULIC SYSTEM

Pump make or model	Cessna - gear type
Output	8.1 gpm (30.6 lpm) @ 2400
Hydraulic fluid	Dexron II (original oil) If the system was completely emptied of Dexron II, it can be replaced with the Ford New Holland 134C, 134D, or Universal Tractor Fluid meeting the Ford New Holland spec. ESN-M2C-134C
Filter-replaceable spin on cartridge (see chart)	10 micron bypass type
Pump suction screen	80 mesh
Main system pressure	2250 PSI (153 bar) @ 2400 RPM
Hydraulic reservoir capacity	15 gal. (57 L)
Type	Chaincase

HYDROSTATIC TRANSMISSION

Manufacturer	Cessna - piston type
Pump	1.24 $in.^3$ variable displacement - piston type
Motor	2.48 $in.^3$ fixed displacement - piston type
Filter (charge) (see chart)	25 micron no bypass type - replaceable
Charge pressure	90-150 PSI (6.8-10.2 bar)
Charge pressure warning light setting	50 PSI (3.45 bar)
Case pressure (hydrostatic pump) maximum	25 PSI (1.7 bar)
Transmission relief pressure	4000 PSI (272 bar)
Bucket cycle time	
Curl	1.3 seconds
Dump	1.3 seconds
Boom cycle time	
Raise	2.5 seconds
Lower	2.3 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-5.5 MPH (0-8.5 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 15	50 PSI (3.45 bar)
27 x 8.50 x 15	40 PSI (2.76 bar)
27 x 10.5 x 15	40 PSI (2.76 bar)
Basic weight	3273 lbs. (1485 kg)

OPERATING CAPACITY

SAE operating load per SAE J818	1000 lbs. (453 kg)

L445
SPECIFICATIONS
DEUTZ F2L411 or F2L511

ENGINE

Manufacturer	Deutz
Model	F2L411 or F2L511
Engine Specification No.	F2L411-D-147Z421 F2L511-D-0251-015
Gasoline or Diesel	Diesel
Cylinders	4
Displacement	101 in.^{3} (1650 cm^3)
RPM	
High idle	2400-2500
Low idle	1000-1050
Horsepower	31.5 @ 2400 RPM
Valve clearance	
Intake (cold)	006″ (0.15 mm)
Exhaust (cold)	006″ (0.15 mm)
Firing order	1-2
Spark advance	N/A
Spark plug gap	N/A
Breaker point gap	NA
Ignition type	Compression
Timing	See engine manual
Fuel consumption at full load	1.7 gph (6.4 lph)
Fuel filter (see chart)	Replaceable cartridge
Air filter (see chart)	Replaceable
Oil filter (see chart)	Replaceable cartridge

ELECTRICAL SYSTEM

Battery	SAE 13TC2 (BCI-3ET), 12 volt, 425 amps @ 0° F (-18° C)
Alternator	30 amps

ENGINE OILS

Lubricating oils meeting the requirements of the U.S.	
Ordnance specifications	MIL-L-46152 are recommended
Engine crankcase	API services SF-CC MIL-L-46152
Temperature range	
80° (27° C) and above	SAE 30
80° F to 40° F (27° C to 4.4° C)	SAE 20-20W, SAE 30
40° F to 15° (4.4° to 0 -10° C)	SAE 20-20W
15° to 0° F (-10° C to -18° C)	SAE 10W
Below 0° F (-18° C)	SAE 10W

CAPACITIES

Engine crankcase with filter	3.7 qts. (3.5 L)
Cooling system	Air
Fuel tank	10 gal. (38 L)
Gradeability - Intermittent duty	
Front up	25°
Rear up	20°
Left side up	40°
Right side up	40°

HYDRAULIC SYSTEM

Pump make or model	Cessna - gear type
Output	8.1 gpm (30.6 gpm) @ 2400 RPM
Hydraulic fluid	Dexron II (original oil) If the system was completely emptied of Dexron II, it can be replaced with the Ford New Holland 134C, 134D, or Universal Tractor Fluid meeting the Ford New Holland spec. ESN-M2C-134C
Filter (see chart)	Replaceable 10 micron bypass type
Pump suction screen	80 mesh
Main system pressure	2250 PSI (153 bar) @ 2400 RPM
Hydraulic reservoir capacity	15 gal. (57 L)
Type	Chaincase

HYDROSTATIC TRANSMISSION

Manufacturer	Cessna - piston type
Pump	1.24 $in.^3$ variable displacement - piston type
Motor	2.48 $in.^3$ fixed displacement - piston type
Filter (charge) (see chart)	25 micron no bypass type - replaceable
Charge pressure	90-150 PSI (6.8-10.2 bar)
Charge pressure warning light setting	50 PSI (3.45 bar)
Case pressure (hydrostatic pump) maximum	25 PSI (1.7 bar)
Transmission relief pressure	4000 PSI (272 bar)
Bucket cycle time	
Curl	1.3 seconds
Dump	1.3 seconds
Boom cycle time	
Raise	2.5 seconds
Lower	2.3 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-5.5 MPH (0-8.5 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 15	50 PSI (3.45 bar)
27 x 8.50 x 15	40 PSI (2.76 bar)
27 x 10.50 x 15	40 PSI (2.76 bar)
Basic weight	3233 lbs. (1466 kg)

OPERATING CAPACITY

SAE operating load per SAE J818	1000 lbs. (453 kg)

HYDRAULIC SYSTEM PRESSURE

The hydraulic system pressures are factory set. Changes to the settings should not be necessary. If, however, there is some reason to suspect incorrect pressure, check the pressures as follows:

WARNING: GAUGES, GAUGE FITTINGS, AND HOSES MUST HAVE OPERATING PRESSURE RATINGS OF AT LEAST 25 PERCENT HIGHER THAN HIGHEST PRESSURES OF THE SYSTEM.

WARNING: ALWAYS PROTECT THE SKIN AND EYES FROM ESCAPING FLUID UNDER PRESSURE. FLUID UNDER PRESSURE CAN HAVE SUFFICIENT FORCE TO PENETRATE THE SKIN, CAUSING SERIOUS PERSONAL INJURY.

BEFORE DISCONNECTING LINES OR FITTINGS, BE SURE TO RELIEVE ALL PRESSURE. BEFORE APPLYING PRESSURE TO THE SYSTEM, BE SURE ALL CONNECTIONS ARE TIGHT, AND LINES, PIPES, AND HOSES ARE NOT DAMAGED.

IF INJURED BY ESCAPING FLUID, OBTAIN MEDICAL ASSISTANCE AT ONCE. SERIOUS INFECTION OR REACTION CAN DEVELOP IF MEDICAL TREATMENT IS NOT ADMINISTERED IMMEDIATELY.

DANGER: THE BOOM LOCK SHOULD ALWAYS BE ACTUATED BEFORE LEAVING A MACHINE WITH THE BOOM UP AND/OR WHEN SERVICING OR REPAIRING THE UNIT WITH THE BOOM UP. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

DANGER: NEVER WORK BENEATH A LOADER OR BOOM WHEN IT IS HELD UP ONLY BY THE HYDRAULIC SYSTEM. A BROKEN HYDRAULIC LINE COULD CAUSE THE BOOM TO DESCEND RAPIDLY.

PROCEDURE:

1. **CAUTION: RAISE THE BOOM, EXTEND THE BOOM LOCK ARMS, AND LOWER THE BOOM ON THE BOOM LOCK ARMS.**

2. **AFTER STOPPING THE ENGINE AND BEFORE DISMOUNTING FROM THE LOADER, TURN ON THE IGNITION SWITCH.**

NOTE: On loaders equipped with the seat-activated boom lockout, the ignition switch will have to be "on" before activating the boom pedal to relieve the residual pressure in that system.

3. **PUSH BOTH THE BOOM AND BUCKET PEDALS IN BOTH DIRECTIONS TO RELIEVE ALL HYDRAULIC PRESSURE IN BOTH CIRCUITS.**

4. TURN OFF THE IGNITION SWITCH.

a. Raise the boom, extend the lock arms and lower the boom down on the arms.

b. Install a 3000 PSI (207 bar) capacity gauge in one of the boom or bucket lines as shown in Figure 5.

c. Start the engine and run it at full throttle.

d. If the gauge is installed as shown in Figure 5, raise the boom by depressing the heel end of the boom lift pedal until the system bypasses.

e. The pressure should be from 2000-2350 PSI (138-162 bar) when the hydraulic oil temperature is 120° F (48.9° C).

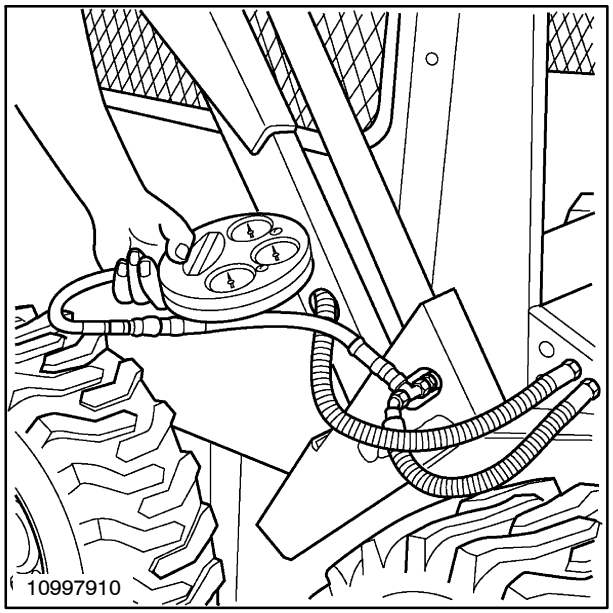

Figure 5

f. The relief valve is the cartridge type and is not adjustable. The relief valve cartridge, 1, Figure 6, should be replaced if it is not functioning correctly. The new cartridge should be marked 2000 PSI (138 bar).

NOTE: Some loaders were also equipped with 2250 PSI relief valves. Pressure checks should indicate 2250 PSI - 2350 PSI (155 bar - 162 bar).

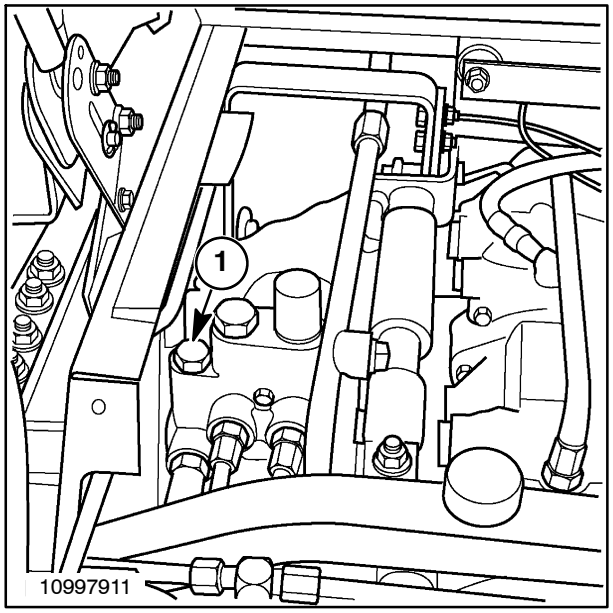

Figure 6

HYDROSTATIC CHARGE PRESSURE CHECK

To check the charge pressure, insert a 300 PSI (20 bar) pressure gauge in the charge pressure line, 1, Figure 7. If the pressure is 90-150 PSI (6.8-10.2 bar) and the charge light is on, the pressure switch, 2, is bad. If the charge pressure is low, check the oil supply, supply lines, and filters for obstructions or leaks. Check the charge pump next for proper assembly, shaft key installed, or wear.

TRANSMISSION CASE PRESSURE (PUMP)

1. To check case pressure tee into the transmission pump case drain line using a 100 PSI (6.8 bar) pressure gauge at 3, Figure 7.

   CAUTION: DO NOT DEAD HEAD CASE DRAIN OIL.

2. Normal case pressure is 4-6 PSI (.27-.4 bar). Maximum 25 PSI (1.7 bar).

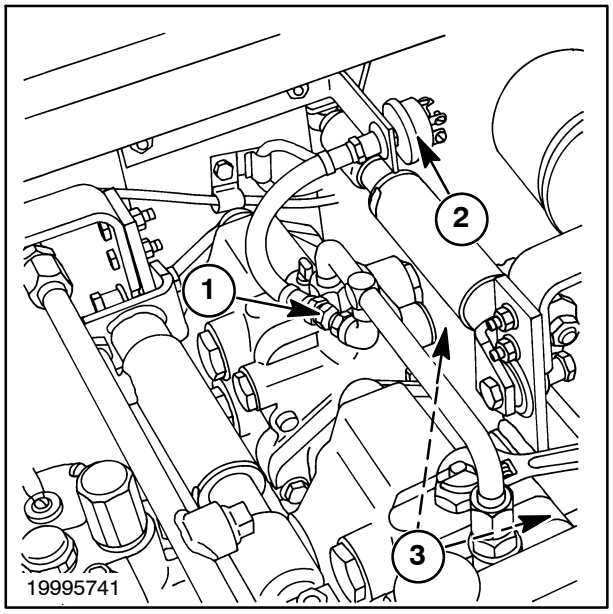

Figure 7

L451
SPECIFICATIONS
DEUTZ F2L511

ENGINE

Manufacturer	Deutz
Model	F2L511
Engine Specification No.	D0251-015/02
Gasoline or Diesel	Diesel
Cylinders	2
Displacement	101 in.^{3} (1650 cm3)
RPM	
High idle	2400-2500
Low idle	1000-1050
Horsepower	31.5 @ 2400
Valve clearance	
Intake (cold)	0.006″ (0.15 mm)
Exhaust (cold)	0.006″ (0.15 mm)
Firing order	1-2
Spark advance	N/A
Spark plug gap	N/A
Breaker point gap	N/A
Ignition type	Compression
Timing	See engine manual
Fuel consumption at full load	1.7 gph (.64 L/h)
Fuel filter (see chart)	Replaceable in-line
Air filter (see chart)	Dry type
Oil filter (see chart)	Replaceable cartridge

ELECTRICAL SYSTEM

Battery -	
Primary	SAE 13TC2 (BC1-3ET), 12 volt, 425 amps @ 0° F (-18° C)
Secondary	BC1 24, 12 volt, 455 amps @ 0° F (-18° C) approximate
Alternator	37 amps

ENGINE OILS

Lubricating oils meeting the requirements of the U. S.	
Ordnance specifications	MIL-L-46152 are recommended
Engine crankcase	API services SF-CC MIL-L-46152
Temperature range	
80° F (27° C) and above	SAE 30, SAE 10W-30
80° F to 40° (27° C to 4.4° C)	SAE 30, SAE 10W-30
40° F to 15° F (4.4° C to -10° C)	SAE 20-20W, SAE 10W-30
15° to 0° F (-10° C to -18° C)	SAE 10W
Below 0° F (-18° C)	SAE 10W

CAPACITIES

Engine crankcase with filter	3.7 qts. (3.5 L)
Cooling system	Air
Fuel tank	10 gal. (38 L)
Gradeability - Intermittent duty	
Front down	35°
Rear down	35°
Left side down	35°
Right side down	35°

HYDRAULIC SYSTEM

Pump make or model	Cessna - piston type
Output	8.2 gpm (30 lpm) @ 2400
Hydraulic fluid	Ford New Holland 134C, 134D, or Universal Tractor Fluid meeting the Ford New Holland spec. ESN-M2C-134C
Replaceable spin on cartridge	10 micron bypass type
Pump suction screen	100 mesh
Main system pressure	2000 PSI (137.8 bar)
Hydraulic reservoir capacity	15 gal. (57 L)
Type	Chaincase

HYDROSTATIC TRANSMISSIONS

Manufacturer	Cessna - piston type
Pump	1.24 $in.^3$ variable displacement - piston type
Motor	2.48 $in.^3$ fixed displacement - piston type
Filter (charge) (see chart)	10 micron no bypass type
Charge pressure	90 PSI (6.2 bar)
Charge pressure warning light setting	50 PSI (3.45 bar)
Case pressure (hydrostatic pump) maximum	25 PSI (1.7 bar)
Transmission relief pressure	4000 PSI (275.6 bar)
Bucket cycle time	
Curl	1.6 seconds
Dump	1.8 seconds
Boom cycle time	
Raise	4.2 seconds
Lower	3.0 seconds
Ground Speed - Forward/Reverse -	
High	None
Low	0-6.5 MPH (0-10.5 kph)

TIRE SIZE AND INFLATION PRESSURE

5.70 x 15 (4-ply tubeless)	50 PSI (3.45 bar)
27 x 8.50 x 15 (6-ply tubeless)	40 PSI (2.76 bar)
27 x 10.50 x 15 (6-ply tubeless)	40 PSI (2.76 bar)
Basic weight	3315 lbs. (1463 kg)

OPERATING CAPACITY

SAE operating load per J818	1100 lbs. (499 kg)

SPECIFICATIONS

WISCONSIN VH4D

ENGINE

Manufacturer	Wisconsin
Model	VH4D
Engine Specification No.	401410
Gasoline or Diesel	Gasoline
Cylinders	4
Displacement	107 in.^{3} (1765 cm^3)
RPM	
High idle	2400-2500
Low idle	1000-1200
Horsepower	30 @ 2800
Valve clearance	
Intake	.008″ (0.203 mm)
Exhaust	.016″ (0.406 mm)
Firing order	1-3-4-2
Spark plug type	Champion D-16
Spark advance	23° @ 2000
Spark plug gap	0.030″ (76 mm)
Breaker point gap	.018″-.022″ (0.45 mm-0.56 mm)
Ignition type	Spark
Timing	23° @ 2000
Fuel consumption at full load	2.7 gph (3.8 lph)
Fuel filter (see chart)	Replaceable in-line
Air filter (see chart)	Dry filter
Oil filter (see chart)	Replacement cartridge

ELECTRICAL SYSTEM

Battery	SAE 13TC2 (BCI-3ET), 12 volt, 445 amps @ 0° F (-18° C)
Alternator	37 amps

ENGINE OILS

Lubricating oils meeting the requirements of the U. S.	
Ordnance specifications	MIL-L-46152 are recommended
Engine crankcase	API services SF-CC MIL-L-46152
Temperature range	
80° F (27° C) and above	SAE 30, SAE 10W-30
80° F to 40° F (27° C to 4.4° C)	SAE 30, SAE 10W-30
40° F to 15° F (4.4° C to -10° C)	SAE 20-20W, SAE 10W-30
15° F to 0° F (-10° C to -18° C)	SAE 10W, SAE 10W-30
Below 0° F (-18° C)	SAE 15W-20, SAE 10W-30

CAPACITIES

Engine crankcase with filter	4 qts. (3.8 L)
Cooling system	Air
Fuel tank	10 gal. (38 L)
Gradeability - Intermittent duty	
Front down	15°
Rear down	25°
Left side down	25°
Right side down	25°