780CK
Loader Backhoe

Service Manual

9-71439

CASE CONSTRUCTION

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FLUIDS AND LUBRICANTS CHART

COMPONENT	CAPACITY U.S.	CAPACITY Metric	SPECIFICATION
Fuel tank	35 gals.	133 liters	No. 2 diesel fuel
Engine coolant	25 qts.	24 liters	1/2 permanent antifreeze, 1/2 soft water (protects down to -34° F.)
Engine crankcase Without turbocharger With filter change Without filter change With turbocharger With filter change Without filter change	 10 qts. 9 qts. 11 qts. 10 qts.	 9,4 liters 8,5 liters 10,4 liters 9,4 liters	Engine oil: CD - Commercial class D (Service DS, Series 3) MIL-L-45199B Above 32° F. - SAE 30 10° to 50° F. - SAE 20W Below 32° F. - SAE 10W
Brake master cylinders			SAE J1703 brake fluid
Transmission	5 gals.	19 liters	Case TCH fluid Alternate oils: Type A, Suffix A, automatic transmission fluid Type C-2 transmission and hydraulic fluid (above 0° F.)
Rear axle: before S/N 5500354 and S/N 5500426 thru 5500439 Center bowl Each wheel end Rear axle: after S/N 5500354 except S/N 5500426 thru 5500439 Center bowl Each wheel end	 16 pints 5 pints 14 pints 8 pints	 7,6 liters 2,4 liters 6,6 liters 3,8 liters	SAE 90 SCL multipurpose gear lubricant (API-GL-4, MIL-L-2105)
Wheel bearings	As required		No. 2 wheel bearing grease
Hydraulic reservoir (refill) System total	12 gals. 45 gals.	45 liters 170 liters	Case TCH fluid Alternate oils: Engine oil - SD - Service class D, or CA - Commercial class A (Service MS or DG) Above 32° F. - SAE 10W Below 32° F. - SAE 5W
Pressure fittings	As required		Below 32° F. - Multipurpose or No. 1 lithium-soap base grease Above 32° F. - Multipurpose or No. 2 lithium-soap base grease

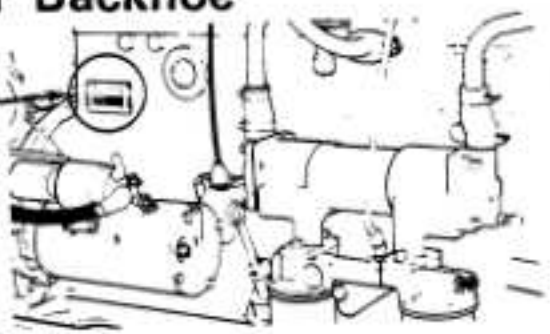
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Section 1010

GENERAL ENGINE SPECIFICATIONS

780CK Loader Backhoe

THE MODEL AND ENGINE SERIAL NUMBER IS STAMPED ON A PLATE LOCATED ON THE SIDE OF THE ENGINE ABOVE THE CRANKING MOTOR.



DIESEL ENGINES

General

Type	4 Cylinder, 4 Stroke Cycle, Valve-in-Head Turbo-Charged
Firing Order	1-3-4-2
Bore	4-5/8 Inches (117.5mm)
Stroke	5 Inches (127mm)
Piston Displacement	336 Cubic Inches (8 259 cm³)
Compression Ratio	15.8 to 1
No Load Governed Speed	2330 to 2370 RPM
Rated Engine Speed	2200 RPM
Engine Idling Speed	700 to 750 RPM
*Valve Tappet Clearance (Exhaust)	(Hot) .020 inch (Cold) .025 Inch (0.635mm)
(Intake)	(Hot and Cold) .015 Inch (0.381mm)

*Hot Settings Are Made After The Engine Has Operated At Thermostat Controlled Temperature For At Least Fifteen Minutes.

Piston and Connecting Rods

Rings per Piston	3
Number of Compression Rings	2
Number of Oil Rings	1
Type Pins	Full Floating Type
Type Bearing	Replaceable Precision, Steel Back, Copper-Lead Alloy Liners

Main Bearings

Number of Bearings	5
Type Bearings	Replaceable Precision Steel Back, Copper-Lead Alloy Liners

Engine Lubricating System

Crankcase capacity	10 Qts. (9.4 litre)
with Filter Change	11 Qts. (10.34 litre)
Oil Pressure	46 to 59 Pounds with Engine Warm and Operating At Rated Engine Speed
Type System	Pressure and Spray Circulation
Oil Pump	Gear Type
Oil Filter	Full Flow Spin on Type

Fuel System

Fuel Injection Pump	Robert Bosch, Type PES Multiple Plunger
Pump Timing	30 Degrees Before Top Dead Center (Port Closing)
Fuel Injectors	Pencil Type (Opening Pressure 2800 PSI)
Fuel Transfer Pump	Plunger Type, Integral Part of Injection Pump
Governor	Variable Speed, Fly-Weight Centrifugal Type, Integral Part of Injection Pump
1st Stage Fuel Filter	Full Flow Spin on Type
2nd Stage Fuel Filter	Full Flow Spin on Type

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22.	Yellow & black	Eng. oil press. sender	Eng. oil press. gauge	29.	Black	Air press. switch	Air press. buzzer
23.	Yellow & black	Fuel sender	Fuel gauge	30.	Purple	Eng. oil press. gauge	Spliced to wire 7
24.	Purple	Fuel gauge	Spliced to wire 7	31.	Purple	Air pressure buzzer	Spliced to wire 7
25.	Purple	Relay No. 3 term.	Spliced to wire 7	32.	White	Relay No. 1 term.	Light switch B term.
26.	Orange & black	Lights circuit breaker	Relay No. 2 term.	33.	Gray	Light switch I term.	Instrument lights.
27.	Purple	Eng. warning light	Spliced to wire 7	34.	White	Light switch B term.	Floodlight switch No. 1 term.
28.	Purple	Eng. warning light, inst.	Eng. warning light, backhoe	35.	White	Floodlight switch No. 3 term.	Spliced to wires 40 & 41
				36.	Pink	Light switch HL term.	Headlights
				37.	Light green	Light switch HL term.	Spliced to wires 42 & 43
				38.	Tan & white	Stop light switch	Spliced to wires 38 & 39
				39.	Tan & white	RH stop light	Spliced to wire 37
				40.	Tan & white	LH stop light	Spliced to wire 37
				41.	Dark blue	Right rear floodlight	Spliced to wire 34
				42.	Dark blue	Left rear floodlight	Spliced to wire 34
				43.	Light green	RH tail light	Spliced to wire 36
				44.	Light green	LH tail light	Spliced to wire 36
				45.	White & green	RH flasher switch	RH flasher light
				46.	White & red	LH flasher switch	LH flasher light
				47.	Brown	Diode	Limit switch NC term.
				48.	Brown	Diode	Tilt spool detent
				49.	Purple	Diode	Tilt & lift spool detents
				50.	Black	Limit switch C term.	Ground
				51.	Pink	Light switch HL term.	LH aux. headlight
				52.	Pink	Light switch HL term.	RH aux. headlight
				53.	Yellow	Flasher unit L term.	Spliced to wires 54 & 55
				54.	Brown	Flasher unit X term.	15 amp circuit breaker
				55.	Yellow	LH flasher switch	Spliced to wire 52
				56.	Yellow	RH flasher switch	Spliced to wire 52
				57.	Black	Key switch A term.	15 amp circuit breaker

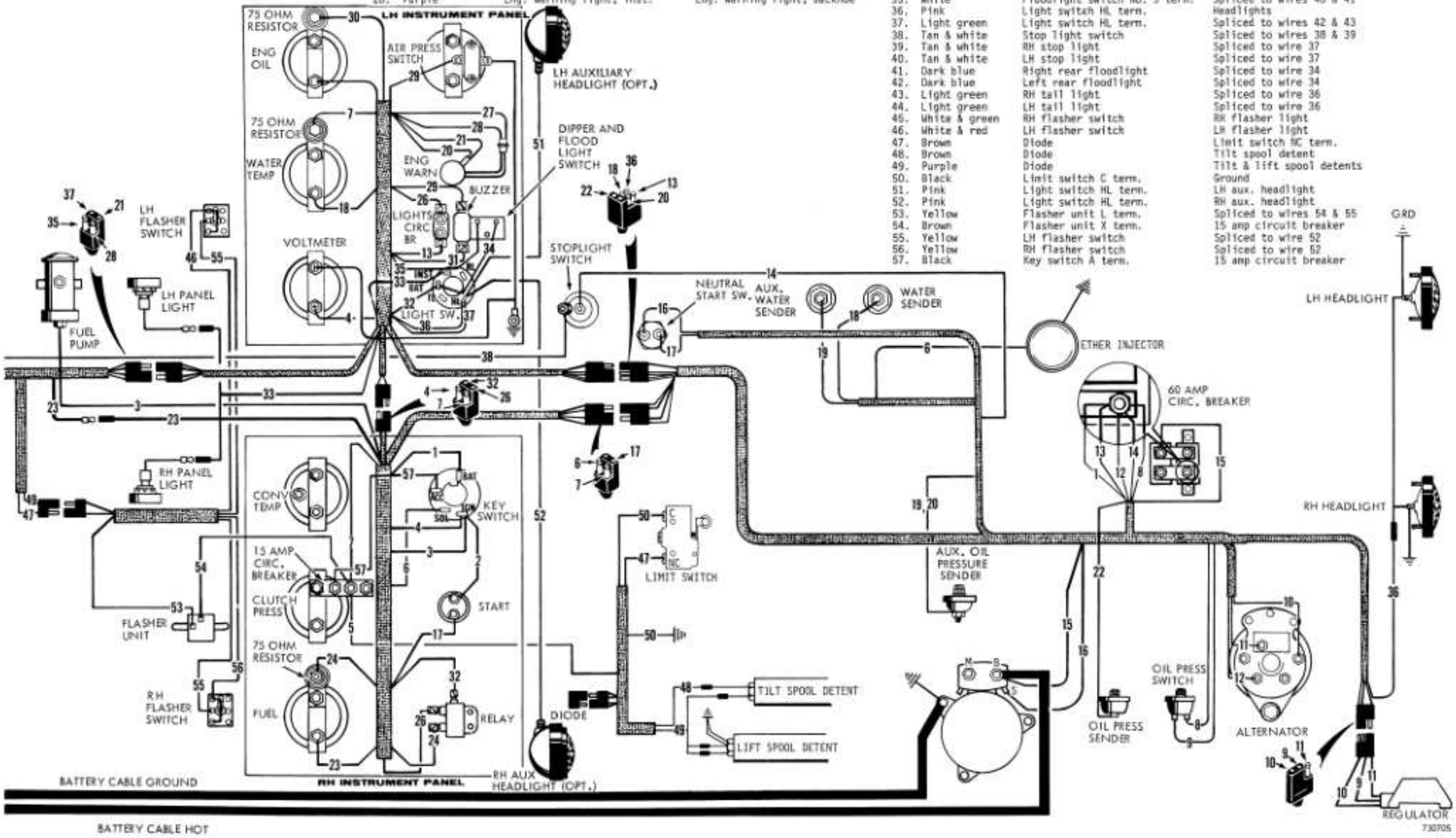


Figure 1 — Wiring Diagram Without Electrical Converter Temperature Gauge

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