

Warm Up

Model:	LC90
Serial #:	201

IMPORTANT: The machine must be warmed up prior to performing any of the tests described in this document.

IMPORTANT: Make sure that all assembly procedures are complete and signed off prior to performing these tests.

Note: Temperatures indicated are relevant for factory fill fluids only. Any substitution may require adjusting these temperatures.

Engine Warm up

1. Idle engine for 3 minutes.
2. Bring engine to 1000 rpm and hold for 3 minutes.
3. Bring engine to 1800 rpm and hold for 3 minutes.
4. Minimum engine coolant temperature: 180° F.

Transmission Warm up

1. Release the parking brake.
2. Fully apply service brakes (brake pedal).
3. Shift transmission into 4th gear forward.
4. Bring engine to 1500 rpm, and hold for 30 seconds.
5. Shift transmission into neutral.
6. Bring engine to 1500 rpm, and hold for 15 seconds.
7. Repeat steps 3-6 until the transmission fluid reaches 200° F.
8. Shift transmission into 4th gear forward.
9. Bring engine to maximum throttle, and hold for 30 seconds.
10. Shift transmission into neutral.
11. Bring engine to maximum throttle, and hold for 15 seconds.
12. Repeat steps 8 through 11 until the transmission fluid reaches 230° F.
13. Fluid temperature should stabilize between values indicated on the transmission pressure test page.

Hydraulic System Warm Up

1. Minimum hydraulic oil operating temperature prior to starting the machine is 35° F.
2. Slowly operate hydraulic circuits by fully extending and retracting all of the cylinders for five minutes.
3. Move the machine to full work capacity slowly until the hydraulic oil has achieved an operating temperature of 95° F.
4. Maximum hydraulic oil operating temperature is 177° F.

Hydraulic Systems Pressure Settings

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NOTE: Hydraulic pressures should be set or observed at 1500 RPM unless otherwise noted. Check pressures in sequence shown and only when hydraulic oil is hot (above 115° F or 46° C).

	Min PSI	Max PSI	Set or Observed PSI	
Steering Pump, Standby :	375	425		1
Steering Pump, Compensator :	3200	3400		2
Accumulator Charge Supply Pressure :	2650	2900		3

Initials :
Date :

Pump Inlet Pressure Test

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Check pump inlet conditions on pumps equipped with diagnostic quick couplers. Record non applicable (N/A) if the pump is not included, and **No Port** if a diagnostic coupler is not called for on the pump installation documentation. Close hydraulic tank vent, prior to warming up hydraulic system.

	Min	Max	Observed	
Engine Idle Value (rpm):	725	775		4
Top Engine Limit Value (rpm):	na	na		5
Hydraulic Tank Temperature (°F):	80°	140°		6

	Required Engine RPM	Min PSI	Max PSI	Observed PSI	
Steering Pump :	2090-2100	-2.5	15		7
Fan Drive Pump :	2090-2100	-2.5	15		8

Engine Cooling Test

Place cardboard in front of Jacket Water core or the CAC/radiator assembly and load engine to elevate the jacket water temperature.

	Min	Max	Observed	
Fan Speed with Engine Coolant temp < 193° F (RPM) :	200	500		9
Temperature at which Fan Speed begins to increase (°F) :	191°	195°		10
Temperature at which Max Fan Speed is observed (°F) :	201°	205°		11
Observed Maximum Fan Speed at H.F.I. (RPM) :	1500	2200		12

Initials :
 Date :

Transmission Pressure Test

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	Min	Max	Observed
Transmission Oil Temperature (°F):	180	220	13

	Min PSI	Max PSI	Observed PSI
Transmission Pressure, at Idle:	180	220	14
Converter In Pressure:	<i>Measured at Startup (no calculated value)</i>		15
Converter Out Pressure, At Idle / H.F.I.:	55	70	16
Cooler In Pressure, At H.F.I. :	<i>Measured at Startup (no calculated value)</i>		17
Cooler Out Pressure, At H.F.I. :	<i>Measured at Startup (no calculated value)</i>		18
Lube Pressure (Port on Transmission Valve Plate), At H.F.I. :	na	25	19

Note: Calculate the Delta Pressure by subtracting the cooler out Pressure from the cooler in Pressure.

Calculated
Delta-P

Maximum Calculated Delta Pressure (PSI) :	40	20
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	Forward Clutch Engine at Idle		Reverse Clutch Engine at Idle				
	Min PSI	Max PSI	Observed PSI	Min PSI	Max PSI	Observed PSI	
1st Gear:	180	220		180	220		21
2nd Gear:	180	220		180	220		22
3rd Gear:	180	220		180	220		23
4th Gear:	180	220		180	220		24

Note: Calculate the maximum observed difference in clutch pressures by subtracting the lowest value of the eight observed clutch pressures from the highest value of the eight.

Max
Difference

Maximum Observed Difference in Clutch Pressures:	5	25
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	Min	Max	Observed
Transmission Over-Temperature Activation Value (°F) :	na	na	26

Initials :
Date :

Brake System Test

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	Min PSI	Max PSI	Observed PSI
Brake application pressure :	1225	1425	27
Secondary brake pressure ¹ :	950	1425	28

¹ Engine off, record pressure on 6th application, six applications per minute.

	Min PSI	Max PSI	Observed PSI
At Idle with the brake not applied, residual brake circuit pressure ² :	-1.0	+4.5	29
At HFI with the brake not applied, residual brake circuit pressure ² :	-1.0	+4.5	30
Brake cooling pressure (inlet to brake) :	0	72.5	31
Brake cooling pressure (outlet from brake) ² :	0	14.5	32
Accumulator #1 Charge Pressure :	925	1025	33
Accumulator #2 Charge Pressure :	925	1025	34
Parking brake release pressure :	1450	2610	35

	Min PSI	Max PSI	Observed PSI
Low brake warning alarm activation pressure :	1100	1300	36

Initials :
 Date :

Drawbar Pull Test (Tractive Effort)

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Note: Factory test performed with rubber tires.



Verify and record the following values prior to performing this test:

	Min	Max	Observed
Hydraulic tank temperature (°F) :	80	140	37
Engine Idle Value (rpm) :	725	775	38
Engine High Free Idle Value (rpm) :	2150	2300	39
Converter stall (rpm) :	1965	2015	40

Install pressure gauge on stem port.

Record cylinder pressure and stall rpm at converter stall in 1st, 2nd, 3rd and 4th gears.

Note: Annular area of cylinder used for factory testing is 25.92 in²

	Min	Max	Observed
First Gear (if tire slips, record pressure at that moment) (PSI) <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> :	2000	3000	41
Second Gear (PSI) :	1400	1800	42
Third Gear (PSI) :	800	1000	43
Fourth Gear (record na if locked out) (PSI) :	400	600	44

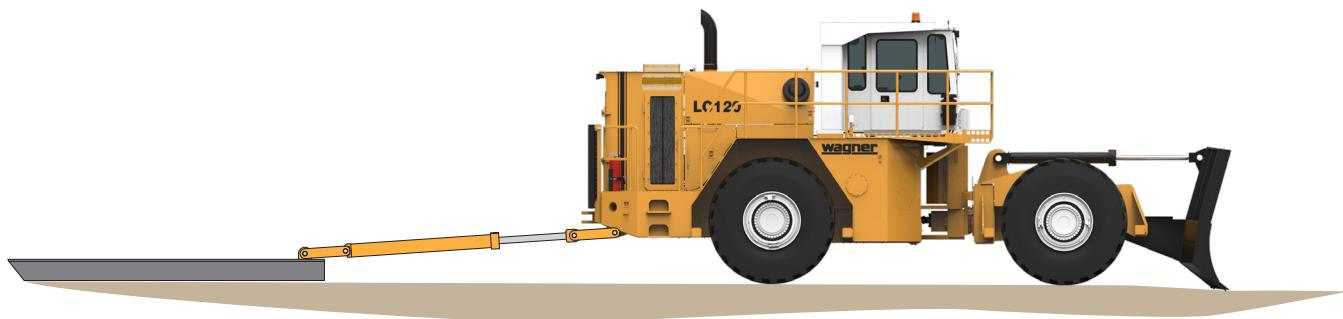
Initials :

Date :

Brake Pull Test

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Note: Factory test performed with rubber tires.



Install pressure gauge on stem port.

Pressurize stem port separately against service brake and then the parking brake.

Record pressure to move vehicle / slip brake, and whether the vehicle moved (skidded tire) or slipped the brake.

When testing parking brake, release brake accumulator pressure to ensure service brakes are not actuated.

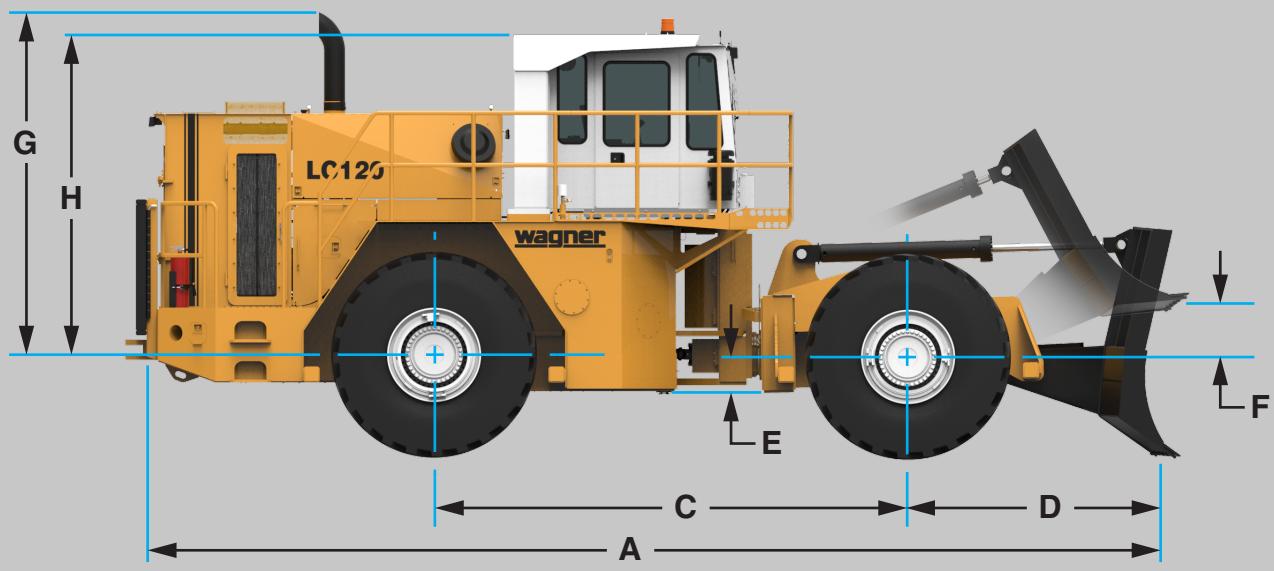
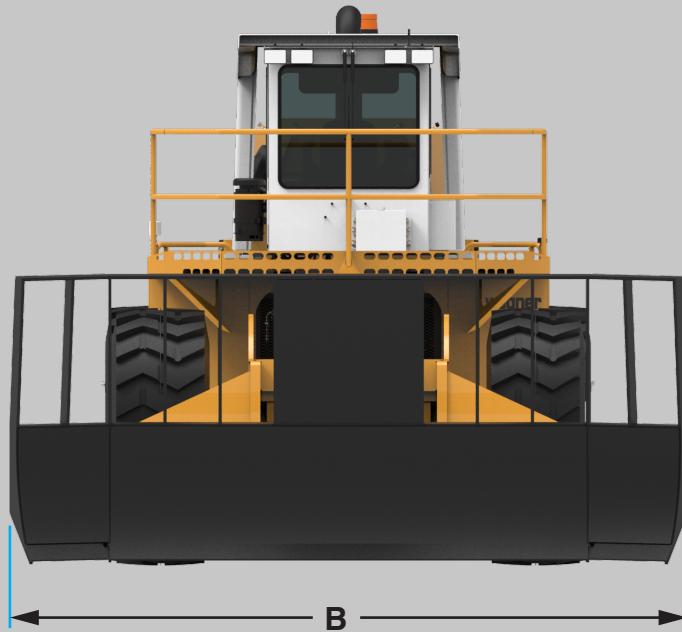
Note: Annular area of cylinder used for factory testing is 25.92 in²

	Min	Max	Observed	Move Vehicle or Slip Brake?
Service Brake Test (psi) :	1080	na		45
Parking Brake Test (psi) :	1530	1870		46

Initials :	
Date :	

Dimensions

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Dimensions / Weights

Model:	LC90
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	Min	Max	Observed
Machine Length (A) :	345"	351"	
Blade Width (B) :	168"	172"	48
Wheelbase (C) :	149"	151"	49
Front Axle to Forward Edge of Blade (D) :	91"	95"	50
Axle Centerline to Chassis Low Point (E) :	13"	16"	51
Axle Centerline to Blade in Raised Position (F) :	20"	25"	52
Axle Centerline to Top of Exhaust Stack (G) :	115"	120"	53
Axle Centerline to top of ROPS (H) :	120"	125"	54

	Min lbs	Max lbs	Observed lbs*
Axle Weight, Rear :	40,000	44,000	
Axle Weight, Front :	24,000	28,000	56

* Weights are with transport wheels and without blade.

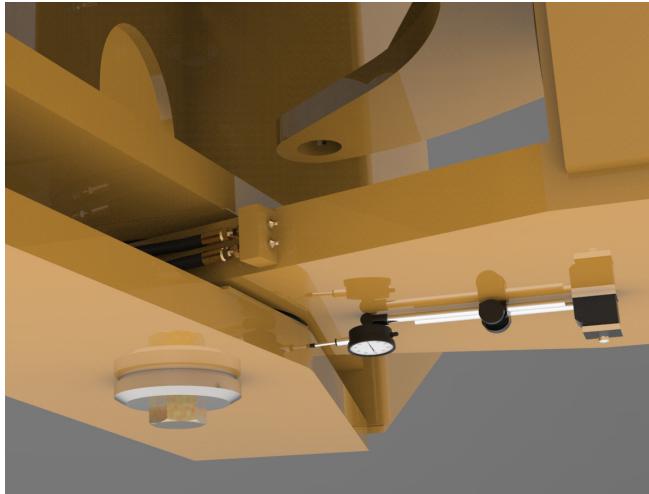
Initials :
 Date :

Swivel Box Joint Wear Check

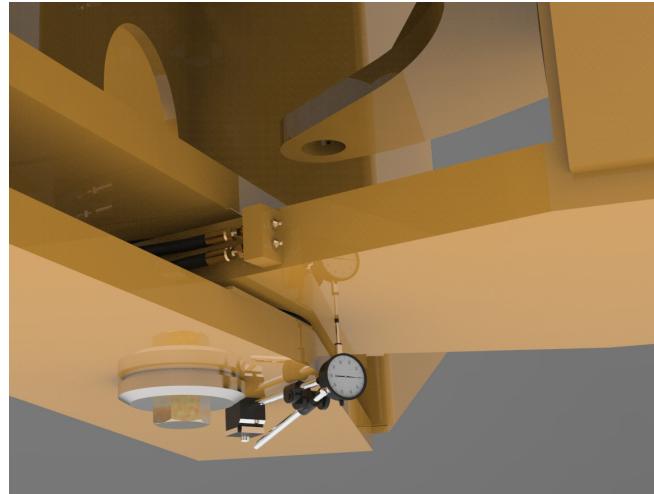
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Swivel Box Joint Wear Check

See form 80-1166-machine sn for procedure.



Horizontal Wear Check



Vertical Wear Check

	Horizontal Movement		Vertical Movement		57
	Lower Hinge Bar	Upper Hinge Bar	Lower Hinge Bar	Upper Hinge Bar	
Factory Measurement					

Initials :
Date :

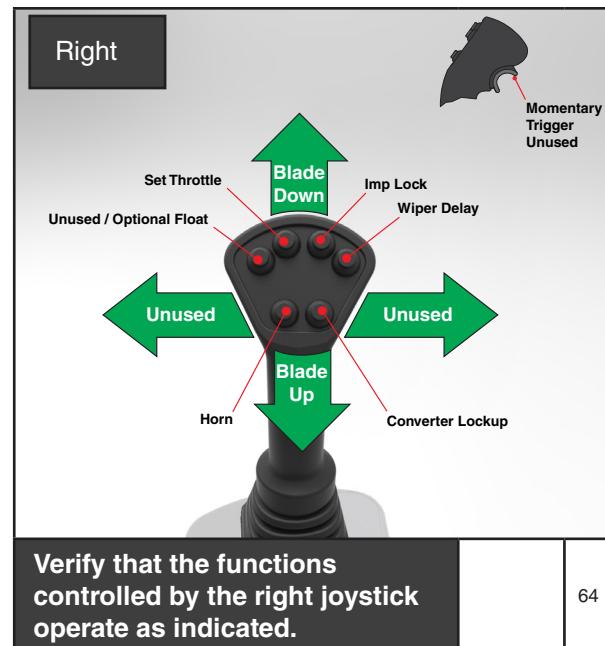
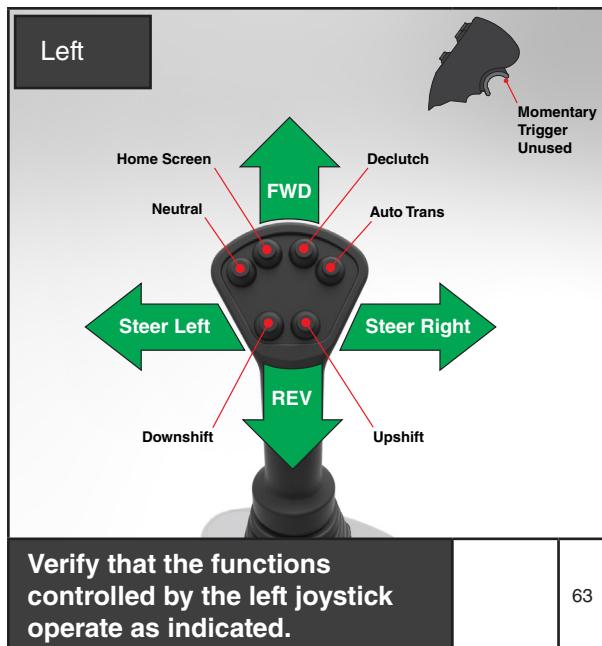
Cycle Times / Performance Validation

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		Engine Idle		Engine H.F.I			
		Min	Max	Observed (Sec)	Min	Max	Observed (Sec)
<i>Hoist Cylinder</i>	<i>Retract :</i>	<i>Measured at Startup (no calculated value)</i>		3	6		58
	<i>Extend :</i>			2	6		59
<i>Joystick Steering</i>	<i>Right-Left</i>	<i>Measured at Startup (no calculated value)</i>		3	7		60
	<i>Left-Right</i>			3	7		61

Initial boxes below if the machine operates as indicated.

Left and Right Joystick Controls



Initials :
Date :