Warm Up

Model:	L490
Serial #:	057138

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 110° F.
4. Maximum hydraulic oil operating temperature is 160° F.

Hydraulic Systems Pressure Settings

Model:	L490
Serial #:	057138

NOTE: Set all hydraulic pressures with engine at idle and hydraulic temperatures above 110°. See hydraulic schematic for pressure setting procedure.

	Min PSI	Max PSI	Set or Observed PSI	
Steering LS Relief :	**2000**	**2600**		1
Steering Pump, Standby :	**375**	**425**		2
Steering Pump, Compensator :	**3300**	**3500**		3
LH Pump, Standby :	**325**	**375**		4
LH Pump, Compensator :	**4350**	**4450**		5
RH Pump, Standby :	**325**	**375**		6
RH Pump Compensator :	**4350**	**4450**		7

Initials :	
Date :	

Pump Inlet Pressure Test

Model:	L490
Serial #:	057138

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):	**740**	**760**		8
Hydraulic Tank Temperature (°F):	**110**	**140**		9

	Required Engine RPM	Min PSI	Max PSI	Observed PSI	
LH Hoist :	**2090-2100**	**-2.5**	**15**		10
RH Hoist :	**2090-2100**	**-2.5**	**15**		11
Steering Pump :	**2090-2100**	**-2.5**	**15**		12
LH Fan Drive Pump :	**2090-2100**	**-2.4**	**15**		13
RH Fan Drive Pump :	**2090-2100**	**-2.4**	**15**		14
Brake Pump :	**2090-2100**	**-2.5**	**15**		15

Cooling Test

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

RH Cooling Package

	Min	Max	Observed	
Fan Speed @ Idle, Trans < 220° F (RPM) :	**600**	**900**		16
Temperature at which Fan Speed begins to increase (°F) :	**218**	**222**		17
Observed Max Fan Speed @ HFI (Transducer Disconnected) (RPM)	**1800**	**2000**		18

LH Cooling Package

	Min	Max	Observed	
Fan Speed @ Idle, Engine Coolant < 193° F (RPM) :	**600**	**900**		19
Temperature at which Fan Speed begins to increase (°F) :	**191**	**195**		20
Observed Max Fan Speed @ HFI (Transducer Disconnected) (RPM)	**1800**	**2000**		21

Initials :	
Date :	

Transmission Pressure Test

Model:	L490
Serial #:	057138

	Min	Max	Observed	
Transmission Oil Temperature (°F) :	**180**	**200**		22

	Min PSI	Max PSI	Observed PSI	
Transmission Pressure, at Idle (PSI):	**180**	**220**		23
Converter In Pressure (PSI):	*Measured at Startup (no calculated value)*			24
Converter Out Pressure, At 2000 RPM (PSI):	**55**	**70**		25
Cooler In Pressure, At H.F.I. (PSI:	*Measured at Startup (no calculated value)*			26
Cooler Out Pressure, At H.F.I. (PSI):	*Measured at Startup (no calculated value)*			27
Lube Pressure (Port on Transmission Valve Plate), At H.F.I. (PSI):	**NA**	**25**		28

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**		29

	Forward Clutch Engine at Idle			*Reverse Clutch Engine at Idle*			
	Min PSI	Max PSI	Observed PSI	Min PSI	Max PSI	Observed PSI	
Fwd/Rev:	**180**	**220**		**180**	**220**		30
1st Gear:	**180**	**220**		**180**	**220**		31
2nd Gear:	**180**	**220**		**180**	**220**		32
3rd Gear:	**180**	**220**		**180**	**220**		33
4th Gear:	**180**	**220**		**180**	**220**		34

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 (PSI):	**5**		35

Initials :	
Date :	

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Operating Specifications

Brake System Test

Model:	L490
Serial #:	057138

	Min PSI	Max PSI	Observed PSI	
Brake application pressure * (PSI):	**1250**	**1400**		36
Secondary brake pressure ** (PSI):	**950**	**1400**		37

* Idle engine for minimum 1 minute, release parking brake, depress brake pedal fully and record pressure at idle.

** Engine off, key on, release parking brake, depress pedal (hold 5 sec.), release pedal (off 5 sec.); repeat 5 times, record pressure on 6th depression.

	Min PSI	Max PSI	Observed PSI	
At Idle with the brake not applied, residual brake circuit pressure (PSI):	**0**	**7**		38
At HFI with the brake not applied, residual brake circuit pressure (PSI):	**0**	**7**		39
Brake cooling pressure (inlet to brake) (PSI):	**0**	**72.5**		40
Brake cooling pressure @ HFI (outlet from brake) (PSI):	**0**	**14.5**		41
Parking brake release pressure (PSI):	**1450**	**2600**		42

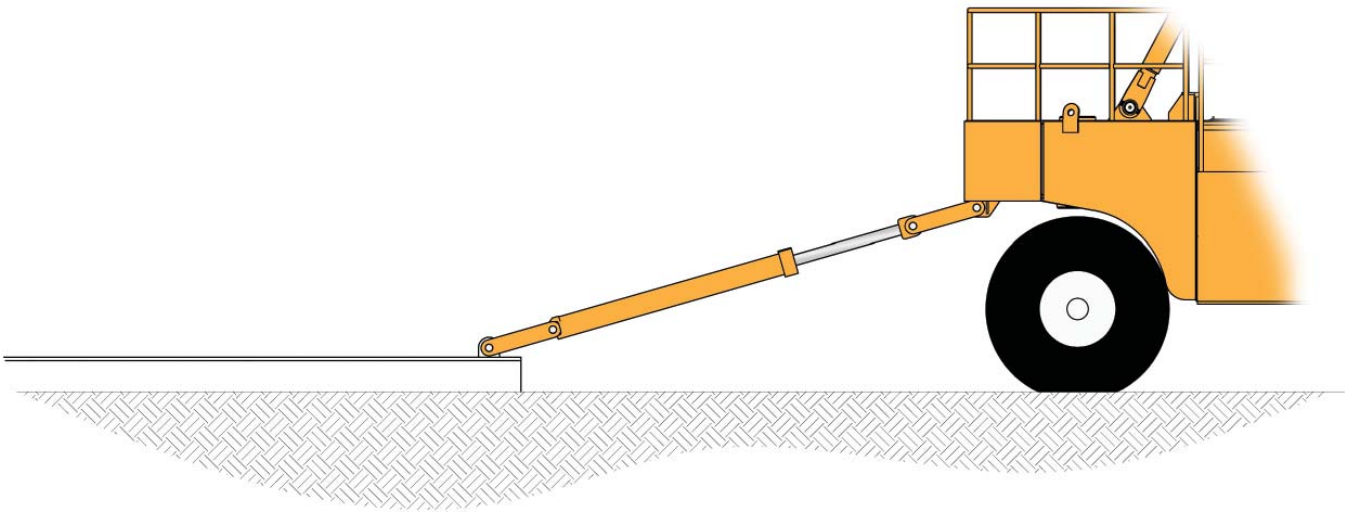
	Min PSI	Max PSI	Observed PSI	
*Low brake pressure activation (PSI):	**1450**	**1550**		43

Record “Yes” or “No” in the box if Audio/Visual low brake pressure indicators work properly		44

Initials :	
Date :	

Drawbar Test (Tractive Effort)

Model:	L490
Serial #:	057138



	Left Side		Observed		Right Side		Observed		
Tire Pressure, Front (PSI):	95	95			95	95			45
Tire Pressure, Rear (PSI):	65				65				46

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

	Min	Max	Observed	
Hydraulic tank temperature (°F) :	110	160		47
Engine Idle Value (RPM) :	725	775		48
Engine High Free Idle Value (RPM) :	2150	2300		49
Converter stall (RPM) :	1950	1975		50

Install pressure gauge on stem port.

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

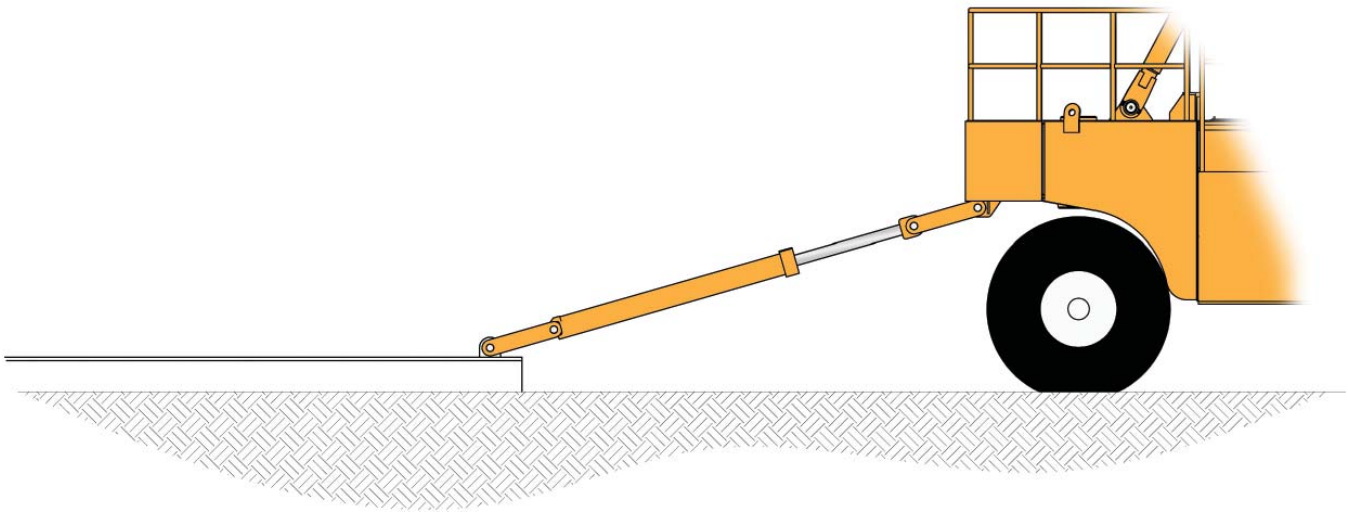
Note: Annular area of cylinder used for factory testing is 25.92 in^2

Did Tire Slip?	Min	Max	Observed	
First Gear (if tire slips, record pressure at that moment) (PSI) Y ☐ N ☐:	3200	3800		51
Second Gear (PSI) :	1700	2100		52
Third Gear (PSI) :	800	1100		53
Fourth Gear (record NA if locked out) (PSI) :	350	500		54

Initials :	
Date :	

Brake Pull Test

Model:	L490
Serial #:	057138



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.

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

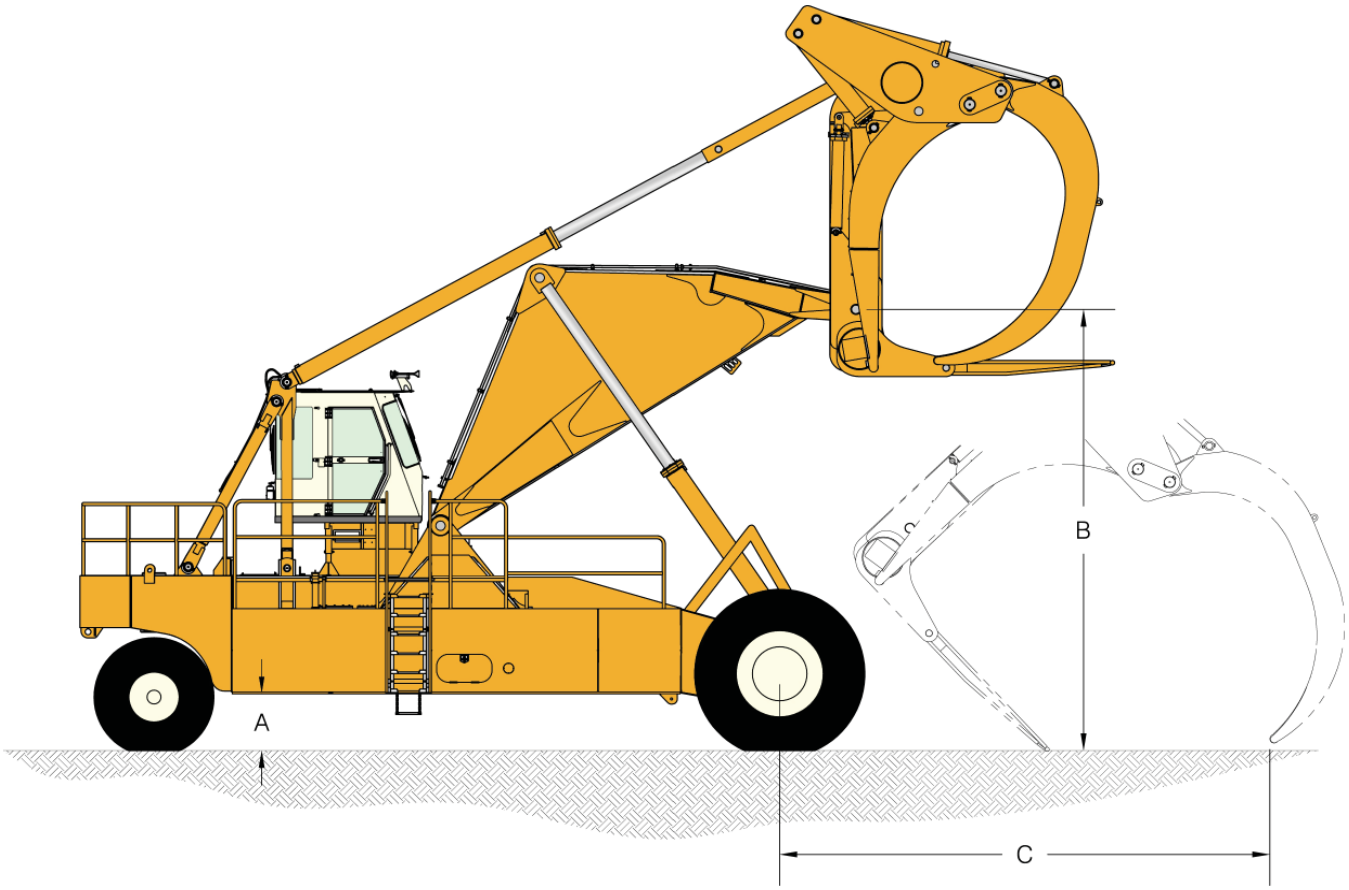
Note: Annular area of cylinder used for factory testing is 25.92 in^2.

	Min	Max	Observed	
Service Brake Test (psi) :	**1800**	**2500**		55
Parking Brake Test (psi) :	**1300**	**2500**		56

Initials :	
Date :	

Dimensions

Model:	L490
Serial #:	057138



	Min	Max	Observed	
Ground Clearance, Chassis (measure from rear of chassis lower flange) (A) :	**32”**	**36”**		57
Ground to Carriage Pivot Pin at Maximum Hoist (B) :	**265”**	**277”**		58
Axle to Holddown Tip at Maximum Reach (C) :	**293”**	**317”**		59

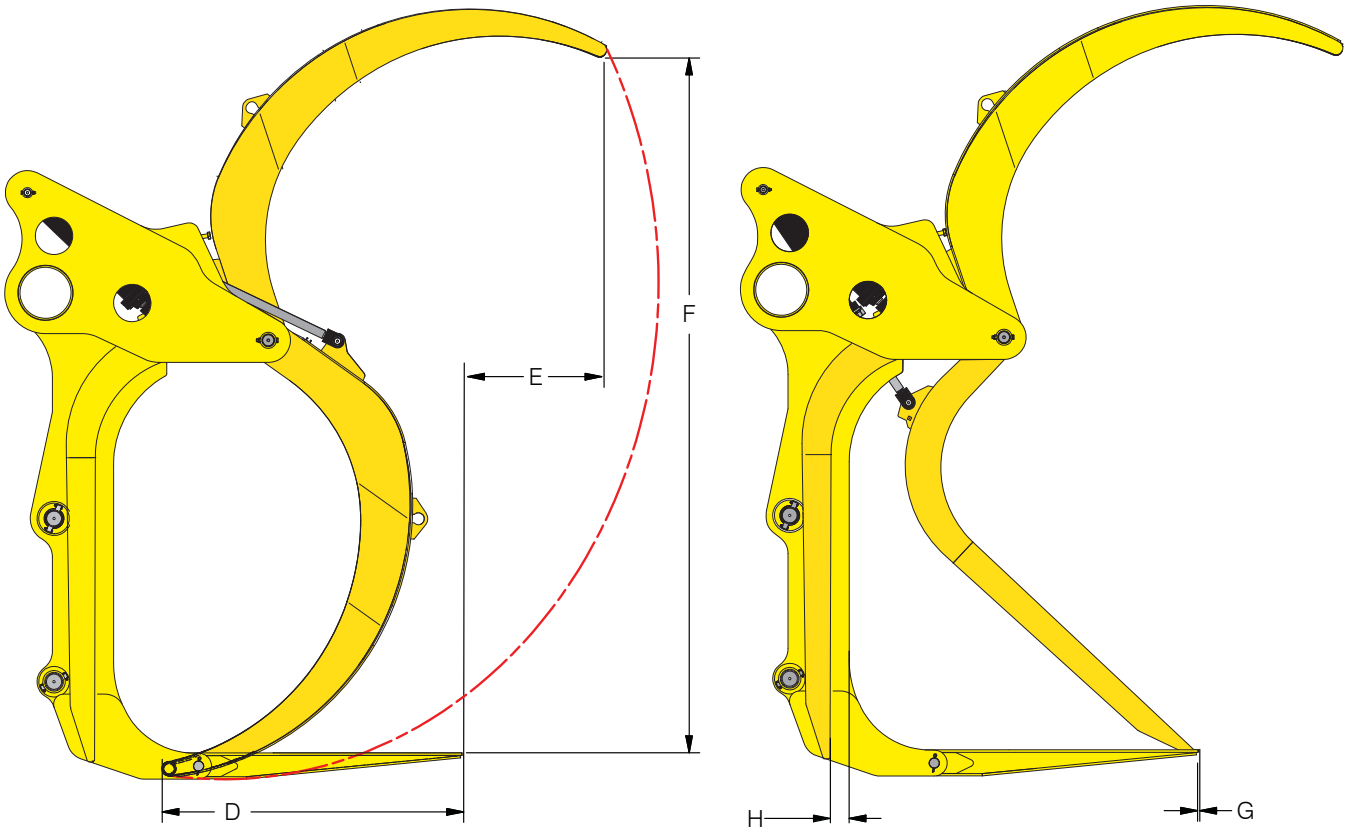
Initials :	
Date :	

Dimensions

Model:	L490
Serial #:	057138

With Tine horizontal, verify dimensions D, E, F, and G.

Verify that the Kickoff Arm is flush or recessed (max 1”) from the carriage face when fully retracted.

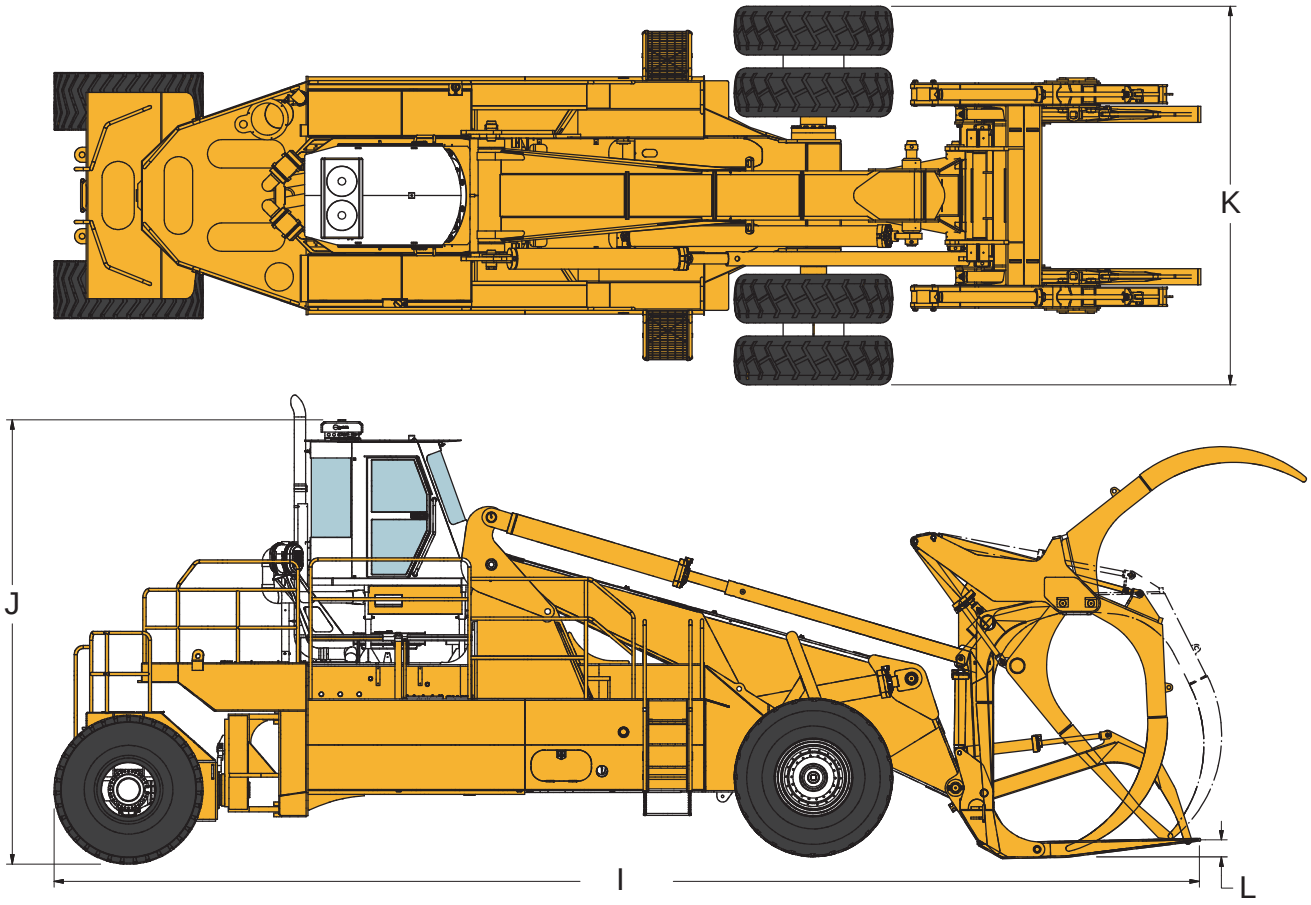


	Min	Max	Observed	
Tine Tip to HD Tip, Horizontal, HD Closed (D) :	**38”**	**48”**		60
Tine Tip to HD Tip, Horizontal, HD Open (E) :	**74”**	**84”**		61
Tine Tip to HD Tip, Vertical, HD Open (F) :	**185”**	**209”**		62
KO Arm Tip to End of Tine (G) :	**0”**	**6”**		63
KO Arm to Carriage Face (H) :	**-1”**	**0”**		64

Initials :	
Date :	

Dimensions

Model:	L490
Serial #:	057138



	Min	Max	Observed	
Overall Length (I) :	**577”**	**589”**		65
*Overall Height (J) :	**212”**	**230”**		66
Overall Width (K) :	**177”**	**183”**		67
Ground to front tip of tine (L) :	**10”**	**14”**		68

* Overall height depends on what options are installed; horn, air conditioner or beacon light.

Initials :	
Date :	

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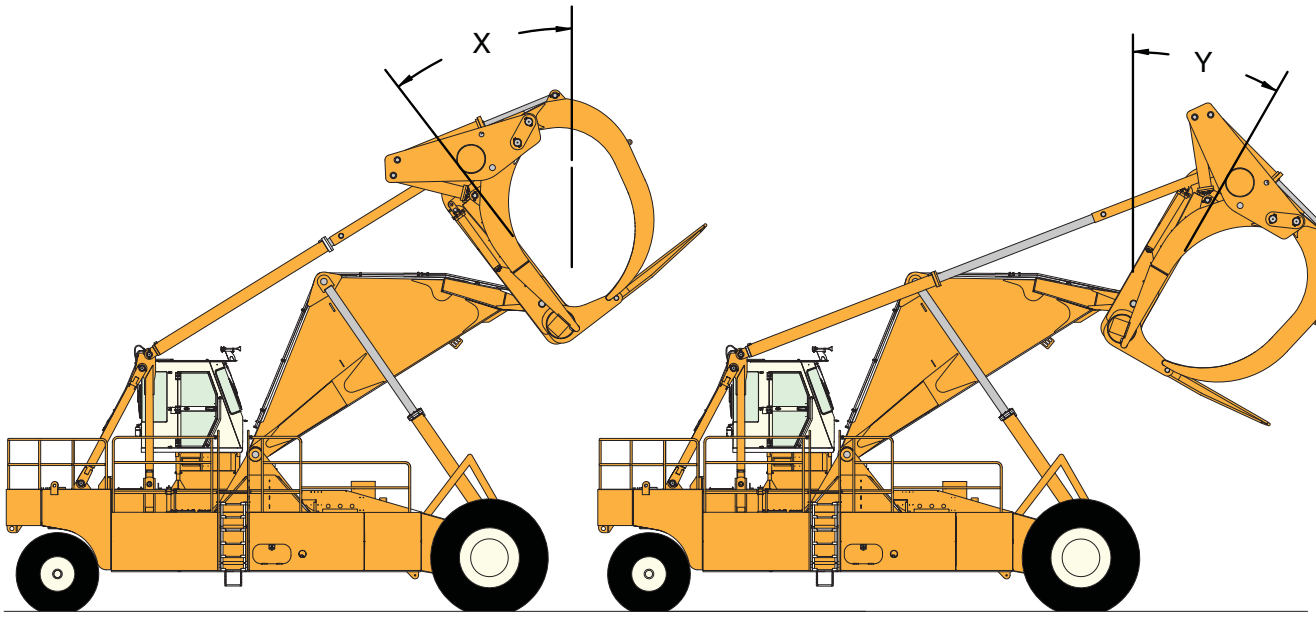
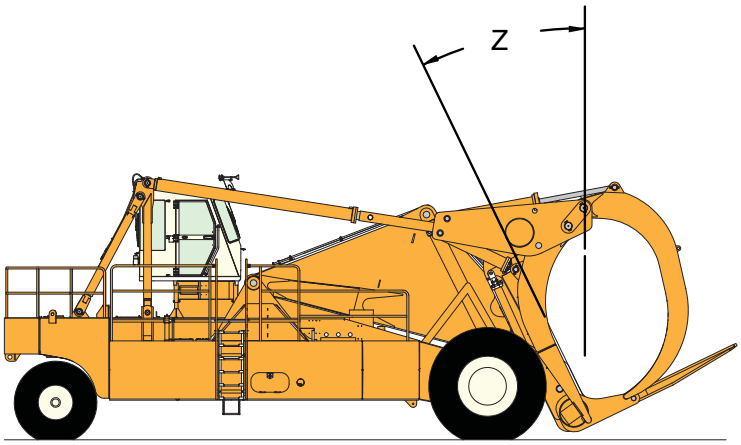
Operating Specifications

Dimensions

Model:	L490
Serial #:	057138





	Min	Max	Observed	
Carriage Angle from Vertical - Hoist Fully Extended, Tilt Fully Retracted (X) :	**45°**	**51°**	°	69
Carriage Angle from Vertical - Hoist Fully Extended, Tilt Fully Extended (Y) :	**23°**	**29°**	°	70
Carriage Angle from Vertical - Hoist Fully Retracted, Tilt Fully Retracted (Z) :	**19°**	**25°**	°	71

Axle Weight, Rear (Lbs) :	**46,000**	**48,000**		72
Axle Weight, Front (Lbs) :	**95,000**	**110,000**		73

Initials :	
Date :	

Cycle Times

Model: L490
Serial #: 057138

		Engine Idle			Engine H.F.I			
		Min	Max	Observed (Sec)	Min	Max	Observed (Sec)	
Hoist Cylinder	*Retract :*	*Measured at Startup (no calculated value)*			**5**	**10**		74
	Extend :				**8**	**10**		75
Tilt Cylinder	*Retract :*	*Measured at Startup (no calculated value)*			**3**	**5**		76
	Extend :				**4**	**7**		77
RH Holddown Cylinder	*Retract :*	*Measured at Startup (no calculated value)*			**2**	**3**		78
	Extend :				**2**	**3**		79
LH Holddown Cylinder	*Retract :*	*Measured at Startup (no calculated value)*			**2**	**3**		80
	Extend :				**2**	**3**		81
RH Kickoff Cylinder	*Retract :*	*Measured at Startup (no calculated value)*			**2**	**3**		82
	Extend :				**2**	**3**		83
LH Kickoff Cylinder	*Retract :*	*Measured at Startup (no calculated value)*			**2**	**3**		84
	Extend :				**2**	**3**		85
RH Aux Holddown Cylinder	*Retract :*	*Measured at Startup (no calculated value)*			**NA**	**NA**		86
	Extend :				**NA**	**NA**		87
LH Aux Holddown Cylinder	*Retract :*	*Measured at Startup (no calculated value)*			**NA**	**NA**		88
	Extend :				**NA**	**NA**		89
Steering Wheel	*Right-Left*	*Measured at Startup (no calculated value)*			**3**	**5**		90
	Left-Right				**3**	**5**		91
Pushbutton Steering	*Right-Left*	*Measured at Startup (no calculated value)*			**3**	**5**		92
	Left-Right				**3**	**5**		93

		Min	Max	Observed (Turns)	
Steering Wheel Turns	*Right-Left*	**4**	**6**		94
	Left-Right	**4**	**6**		95

Initials :

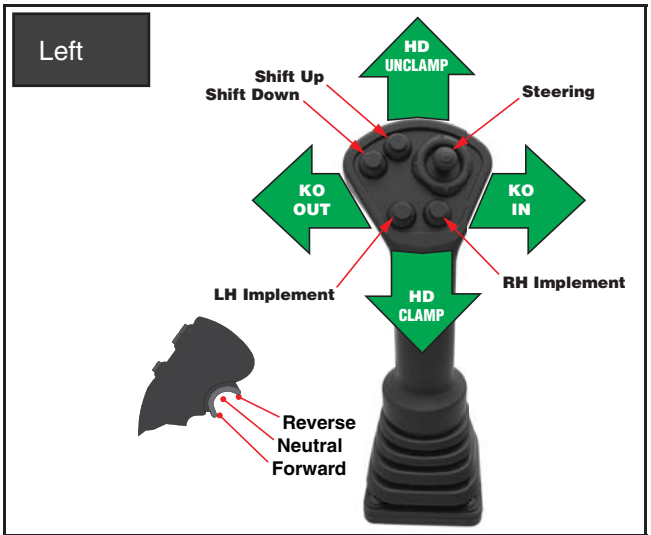
Date :

Performance Validation

Model:	L490
Serial #:	057138

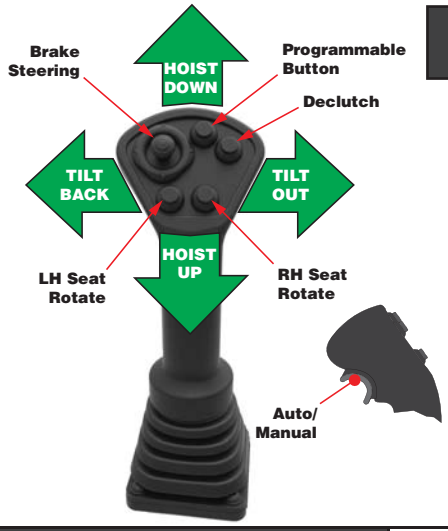
Record “Yes” or “No” in the box for each joystick to indicate if the machine operates as indicated.

Left



Verify that the functions controlled by the left joystick operate as indicated.		96

Right



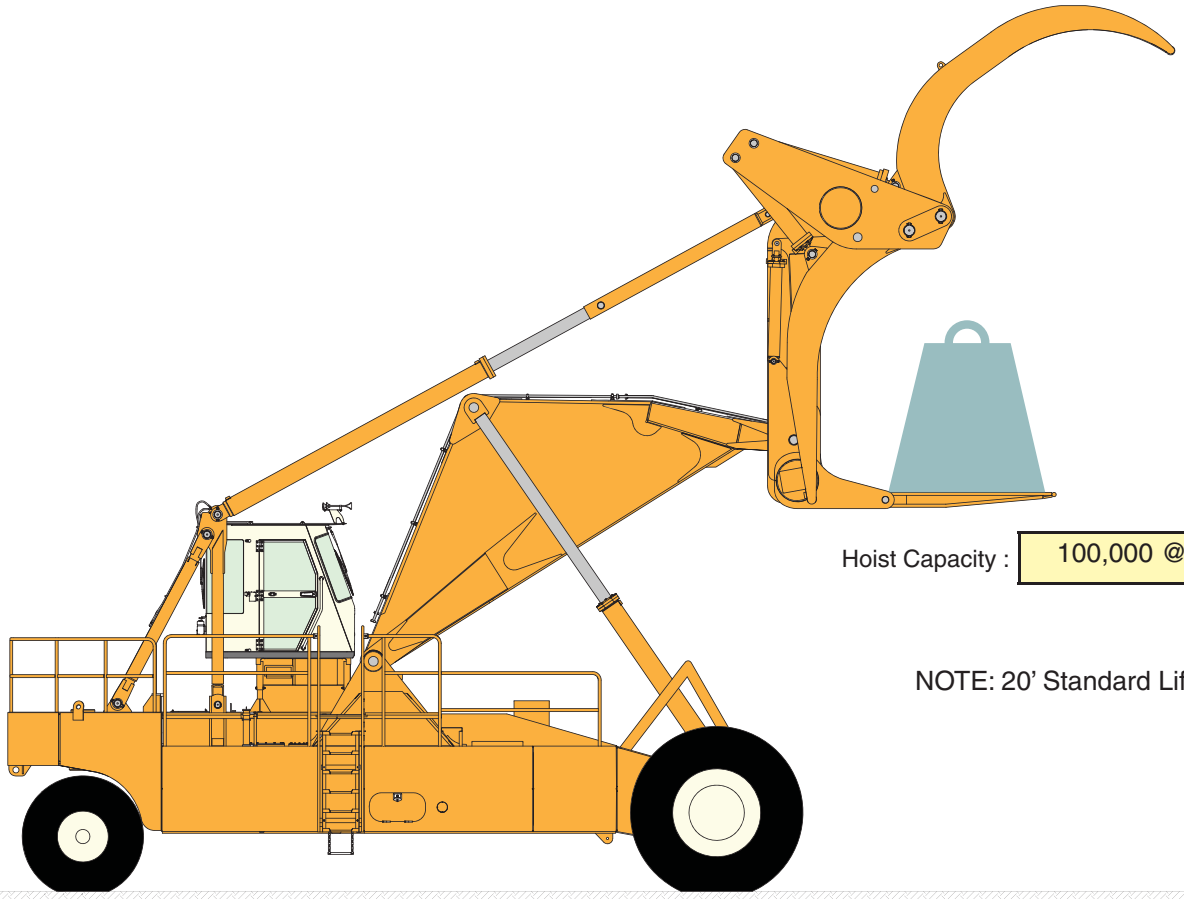
Verify that the functions controlled by the right joystick operate as indicated.		97

Initials :	
Date :	

Performance Validation

Model:	L490
Serial #:	057138

Record “Yes” or “No” in the box to indicate if the machine can hoist the rated load.



Hoist Capacity :	100,000 @ 54”

NOTE: 20’ Standard Lift Boom

Verify that the machine can hoist the rated load. **Secure back end before testing.** **- Load centered in carriage** **- Carriage level** **- Carriage raised to its highest point**		98

Initials :	
Date :	