

Warm Up

Model:	CHD100
Serial #:	103297

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. Check pressures in sequence shown and only when hydraulic oil is hot (above 115° F or 46° C).

	Min PSI	Max PSI	Observed PSI	
Steering Main Relief :	2400	2600		1
Steering Circuit Relief :	na	na		2
Steering System Relief Valve on Pressure Filter Manifold :	2475	2525		3
Hoist Main Relief :	2250	2350		4
Hoist Base End Circuit Relief :	2400	2600		5
Hoist Stem End Circuit Relief :	2400	2600		6
Dump Main Relief :	2000	2100		7
Dump Base End Circuit Relief :	2400	2600		8
Dump Stem End Circuit Relief :	2400	2600		9
Side Tilt Main Relief :	2000	2100		10
Side Tilt Base End Circuit Relief :	2400	2600		11
Side Tilt Stem End Circuit Relief :	2400	2600		12
Accumulator Charge Manifold, Pilot Supply Valve :	425	475		13
Accumulator Charge Manifold, Pilot Operating Reducing Valve :	425	475		14
Accumulator Charge Manifold, Brake Main Relief Valve :	3200	3300		15
Accumulator Charge Manifold, Accumulator Sense Valve :	2700	2800		16
Brake Manifold, Pressure Reducing Valve :	na	na		17

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		18
Top Engine Limit Value (rpm):	na	na		19
Hydraulic Tank Temperature (°F):	95	110		20

	Required Engine RPM	Min PSI	Max PSI	Observed PSI	
Implement Pump :	2090 - 2110	-2.5	15		21
Steering Pump :	2090 - 2110	-2.5	15		22
Brake Pump :	2090 - 2110	-2.5	15		23
Hydraulic Cooler Pump :	2090 - 2110	-2.4	15		24
Fan Drive Pump :	2090 - 2110	-2.5	15		25

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) :	300	500		26
Temperature at which Fan Speed begins to increase (°F) :	191	195		27
Temperature at which Max Fan Speed is observed (°F) :	201	205		28
Observed Maximum Fan Speed at H.F.I. (RPM) :	2250	2550		29

Initials :

Date :

Transmission Pressure Test

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	Min	Max	Observed	
Transmission Oil Temperature (°F):	180	200		30

	Min PSI	Max PSI	Observed PSI	
Transmission Pressure, at Idle:	180	220		31
Converter In Pressure:	<i>Measured at Startup (no calculated value)</i>			32
Converter Out Pressure, At Idle / H.F.I.:	55	70		33
Cooler In Pressure, At H.F.I. :	<i>Measured at Startup (no calculated value)</i>			34
Cooler Out Pressure, At H.F.I. :	<i>Measured at Startup (no calculated value)</i>			35
Lube Pressure (Port on Transmission Valve Plate), At H.F.I. :	na	25		36

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	37

	<i>Forward Clutch Engine at Idle</i>			<i>Reverse Clutch Engine at Idle</i>			
	Min PSI	Max PSI	Observed PSI	Min PSI	Max PSI	Observed PSI	
1st Gear:	180	220		180	220		38
2nd Gear:	180	220		180	220		39
3rd Gear:	180	220		180	220		40
4th Gear:	180	220		180	220		41

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	42

	Min	Max	Observed	
Transmission Over-Temperature Activation Value (°F) :	na	na		43

Initials :

Date :

Brake System Test

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	Min PSI	Max PSI	Observed PSI	
Brake application pressure :	800	1000		44
Secondary brake pressure * :	650	1000		45

* 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 :	0	10		46
At HFI with the brake not applied, residual brake circuit pressure :	0	10		47
Brake cooling pressure (inlet to brake) :	0	10		48
Brake cooling pressure (outlet from brake) :	0	10		49
Accumulator #1 Charge Pressure :	650	750		50
Accumulator #2 Charge Pressure :	650	750		51
Parking brake release pressure :	2050	2150		52

	Min °F	Max °F	Observed °F	
High brake temp. warning light activation temp :	232	268		53

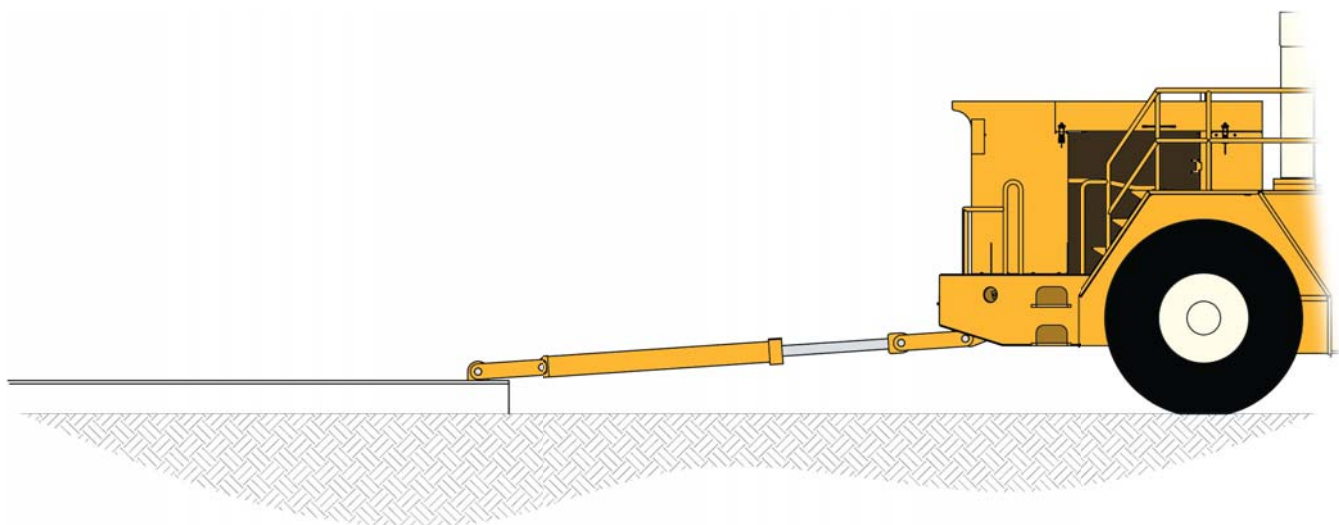
	Min PSI	Max PSI	Observed PSI	
Low brake warning light activation pressure :	1100	1300		54

Initials :

Date :

Drawbar Pull Test (Tractive Effort)

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

	Min	Max	Observed	
Hydraulic tank temperature (°F) :	100	177		55
Engine Idle Value (rpm) :	725	775		56
Engine High Free Idle Value (rpm) :	2150	2300		57
Converter stall (rpm) :	1900	1950		58
Converter & Hydraulic stall : (hoist end of stroke) (rpm)	1800	1850		59

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

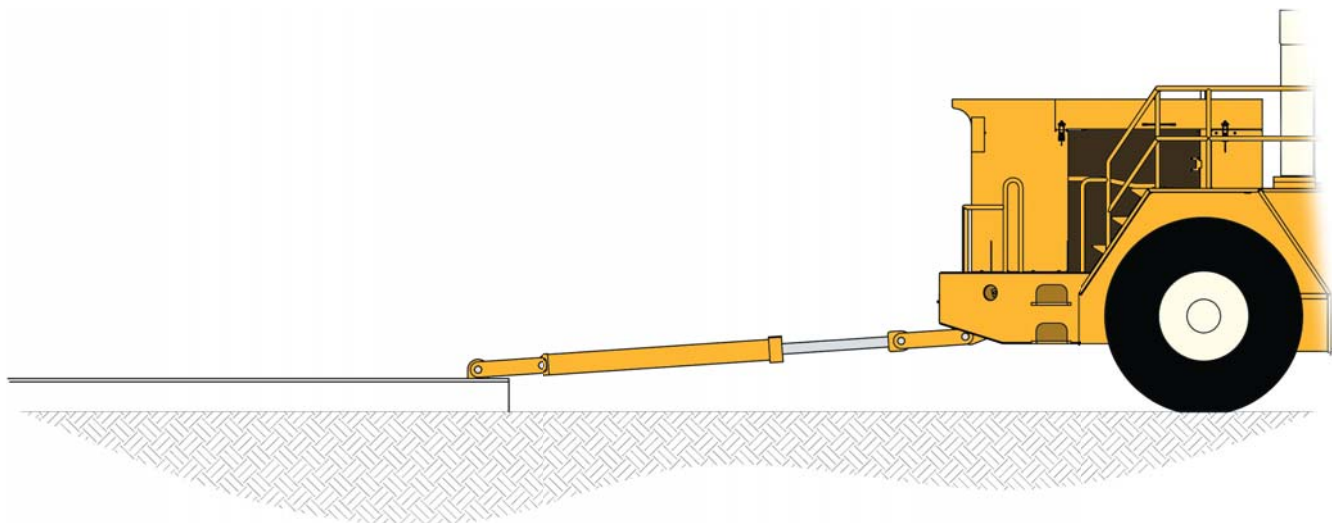
	Min	Max	Observed	
First Gear (if tire slips, record pressure at that moment) (PSI) Y <input type="checkbox"/> N <input type="checkbox"/> :	3240	3960		60
Second Gear (PSI) :	1800	2200		61
Third Gear (PSI) :	990	1210		62
Fourth Gear (record na if locked out) (PSI) :	450	650		63

Initials :

Date :

Brake Pull Test

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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

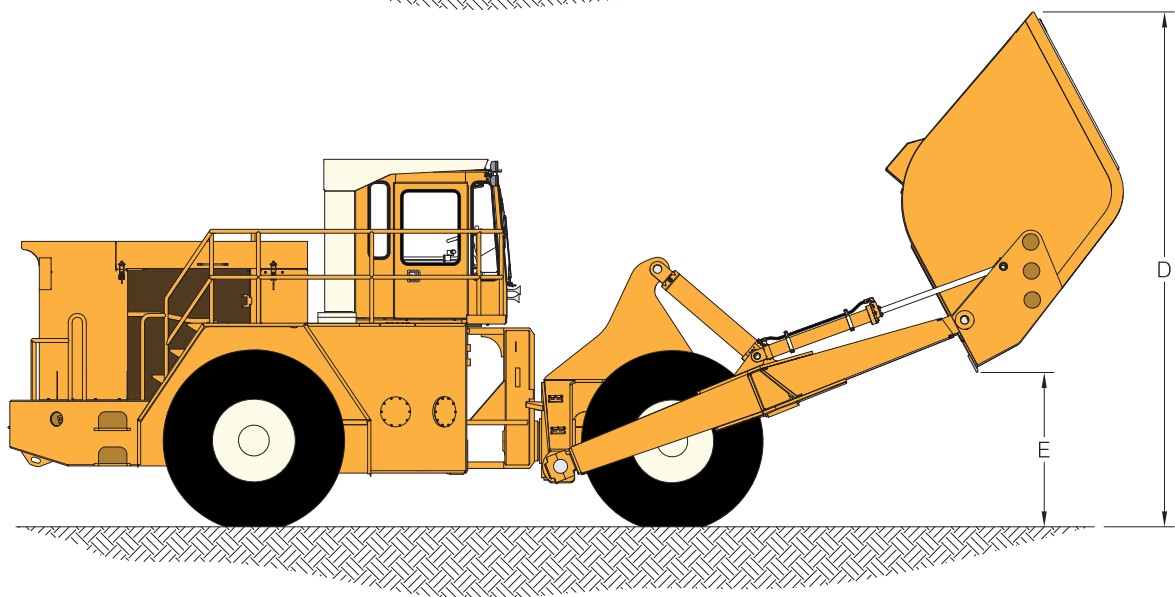
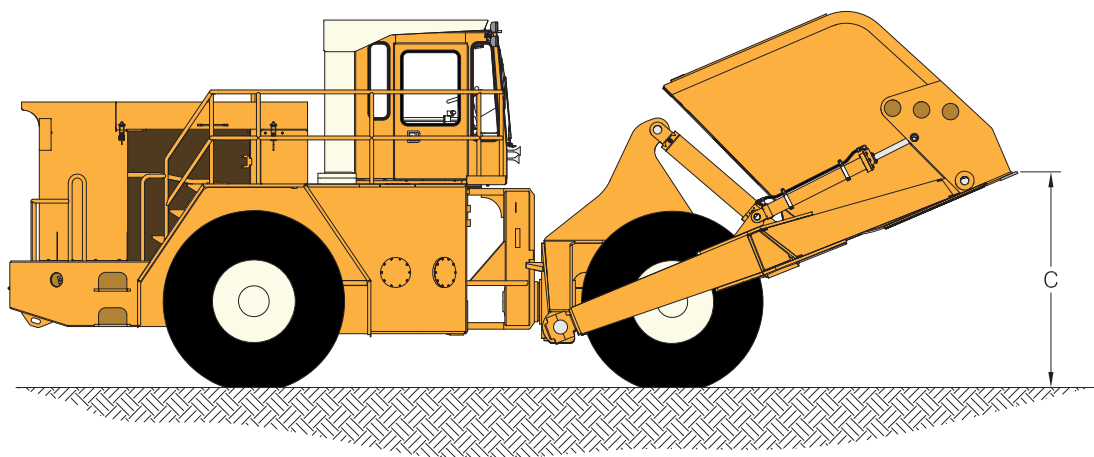
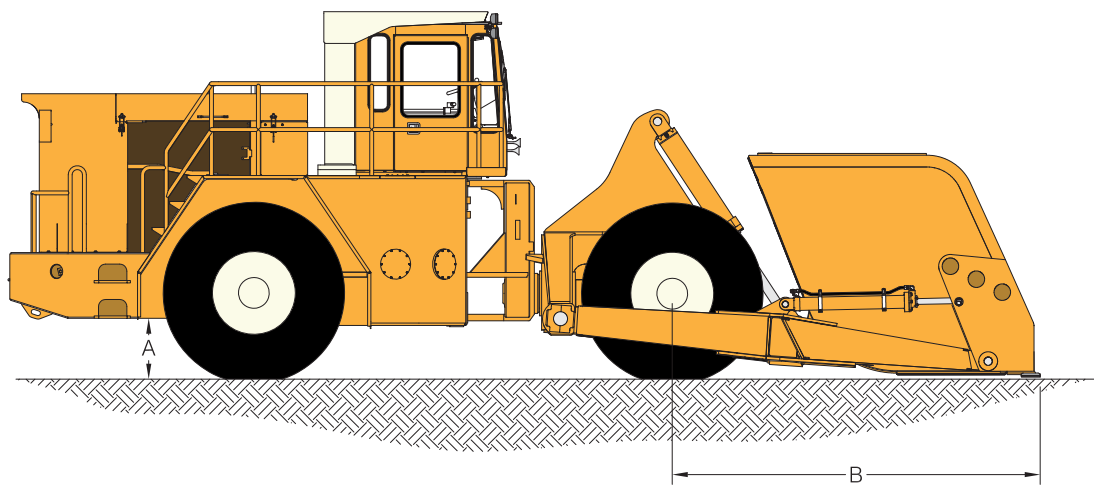
	Min	Max	Observed	Move Vehicle or Slip Brake?	
Service Brake Test (psi) :	1080	na			64
Parking Brake Test (psi) :	1530	1870			65

Initials :

Date :

Dimensions

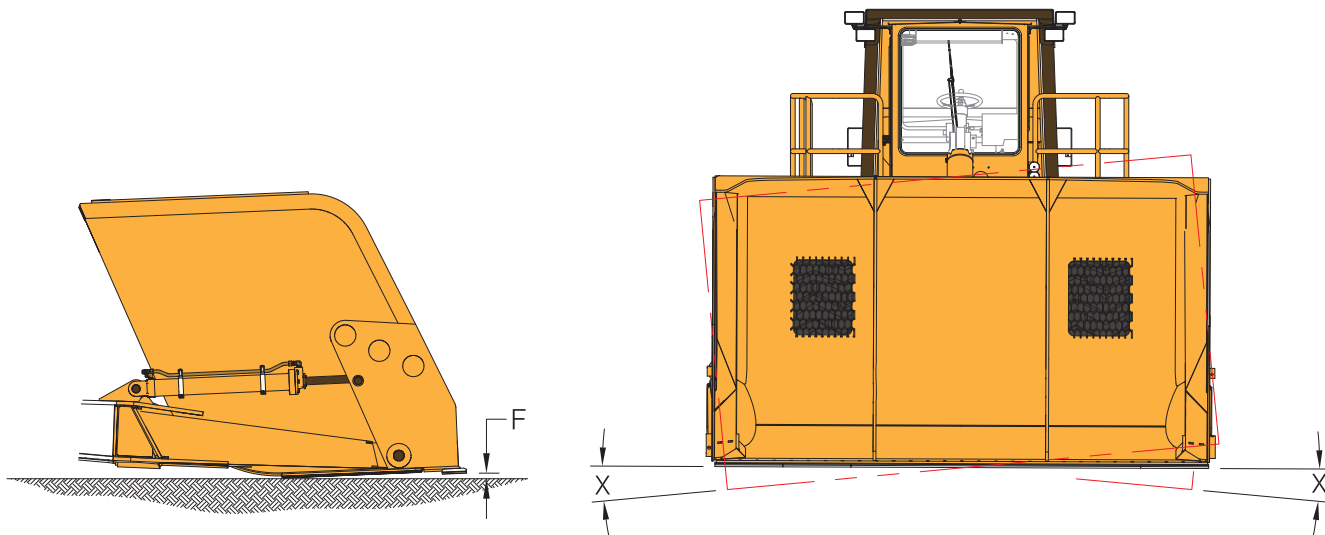
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Dimensions / Weights

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Verify dimensions, A, B, C, D, E, F, and X.



	Min	Max	Observed	
Ground Clearance, Chassis (A) :	20"	24"		66
Front Axle to Tip of Blade, Bucket on Ground and Horizontal (B) :	155"	159"		67
Ground to Tip of Blade, Hoist Fully Retracted, Tilt Fully Retracted (C) :	87"	93"		68
Ground to Top of Bucket, Hoist Fully Retracted, Tilt Fully Extended (D) :	211"	223"		69
Ground to Tip of Blade, Hoist Fully Retracted, Tilt Fully Extended (E) :	60"	66"		70
Ground to Tip of Blade, Bucket on Ground, Tilt Fully Retracted (F) :	0"	1"		71
Bucket Angle from Horizontal, Both Sides (X) :	4	6		72

	Min lbs	Max lbs	Observed lbs	
Axle Weight, Rear :	42500	44500		73
Axle Weight, Front :	50000	53000		74

Initials :

Date :

Cycle Times

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		Engine Idle			Engine H.F.I		
		Min	Max	Observed (Sec)	Min	Max	Observed (Sec)
Hoist Cylinder	Retract :	Measured at Startup (no calculated value)			5	8	75
	Extend :				5	8	76
Dump Cylinder	Retract :	Measured at Startup (no calculated value)			3	7	77
	Extend :				3	7	78
Side Tilt Cylinder	Retract :	Measured at Startup (no calculated value)			2	5	79
	Extend :				3	5	80
Steering	Right-Left	Measured at Startup (no calculated value)			3	6	81
	Left-Right				3	6	82

		Min	Max	Observed (Turns)	
Steering Wheel Turns	Right-Left	6	8		83
	Left-Right	6	8		84

Initials :

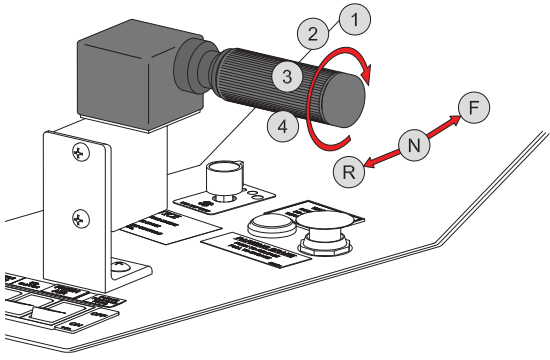
Date :

Performance Validation

Model:	CHD100
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Record "Yes" or "No" to indicate if the machine operates as indicated.

Left

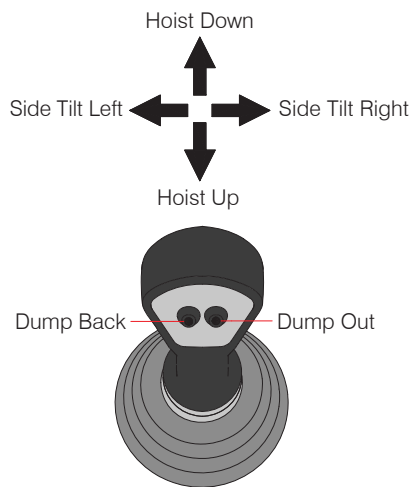


Verify that the transmission shifts as indicated.

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85

Right



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

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86

Initials :

Date :