Warm Up

Model:	CHD100
Serial #:	103298

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

Model: CHD100
Serial #: 103298

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 :	2500	2600		16
Brake Manifold, Pressure Reducing Valve :	na	na		17

Initials :

Date :

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Operating Specifications

Pump Inlet Pressure Test

Model: CHD100
Serial #: 103298

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°	100°		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	-2.5	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

Hydraulic Cooling Test

	Min	Max	Observed	
Fan Speed with Hydraulic Oil temp < 120° F (RPM) :	300	500		30
Temperature at which Fan Speed begins to increase (°F) :	118°	122°		31
Temperature at which Max Fan Speed is observed (°F) :	138°	142°		32
Observed Maximum Fan Speed at H.F.I. (RPM) :	2250	2550		33
Temperature at which Alarm activates (°F):	178°	182°		34

Initials :

Date :

Transmission Pressure Test

Model: CHD100
Serial #: 103298

	Min	Max	Observed	
Transmission Oil Temperature (°F):	180	220		35

	Min PSI	Max PSI	Observed PSI	
Transmission Pressure, at Idle:	180	220		36
Converter In Pressure:	*Measured at Startup (no calculated value)*			37
Converter Out Pressure, At Idle / H.F.I.:	55	70		38
Cooler In Pressure, At H.F.I. :	*Measured at Startup (no calculated value)*			39
Cooler Out Pressure, At H.F.I. :	*Measured at Startup (no calculated value)*			40
Lube Pressure (Port on Transmission Valve Plate), At H.F.I. :	na	25		41

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		42

	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		43
2nd Gear:	180	220		180	220		44
3rd Gear:	180	220		180	220		45
4th Gear:	180	220		180	220		46

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		47

	Min	Max	Observed	
Transmission Over-Temperature Activation Value (°F) :	na	na		48

Initials :

Date :

Brake System Test

Model: CHD100
Serial #: 103298

	Min PSI	Max PSI	Observed PSI	
Brake application pressure :	1275	1425		49
Secondary brake pressure * :	950	1425		50

* 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	4.5		51
At HFI with the brake not applied, residual brake circuit pressure :	0	4.5		52
Brake cooling pressure (inlet to brake) :	0	72.5		53
Brake cooling pressure (outlet from brake) :	650	14.5		54
Accumulator #1 Charge Pressure :	650	750		55
Accumulator #2 Charge Pressure :	650	750		56
Parking brake release pressure :	1450	2610		57

	Min °F	Max °F	Observed °F	
High brake temp. warning light activation temp :	232	268		58

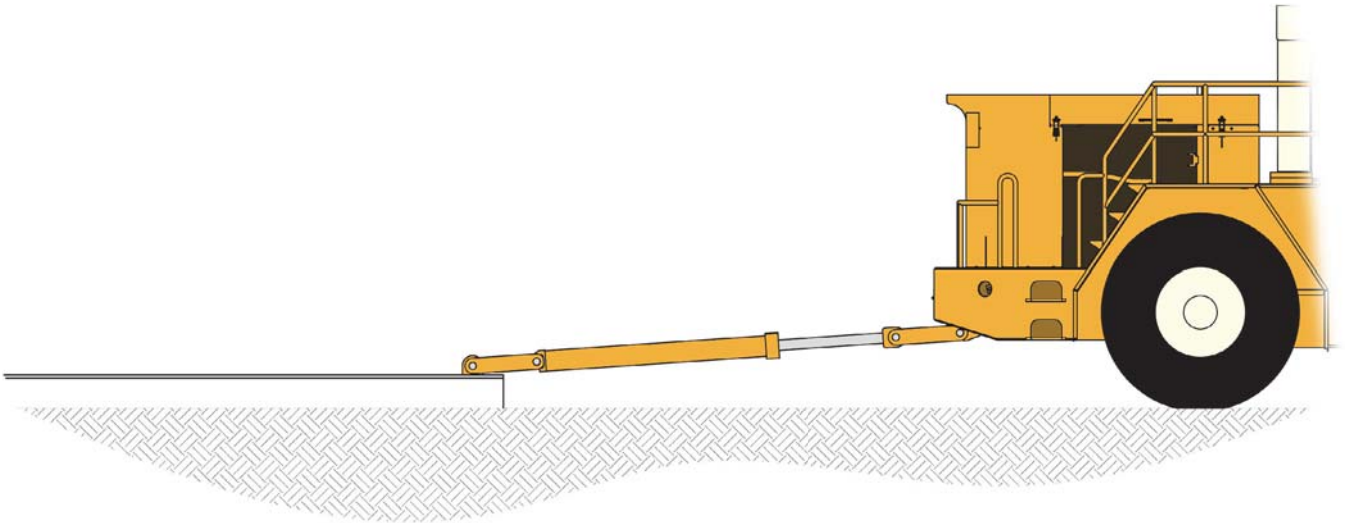
	Min PSI	Max PSI	Observed PSI	
Low brake warning light activation pressure :	1100	1300		59

Initials :

Date :

Drawbar Pull Test (Tractive Effort)

Model:	CHD100
Serial #:	103298



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

	Min	Max	Observed	
Hydraulic tank temperature (°F) :	100	177		60
Engine Idle Value (rpm) :	725	775		61
Engine High Free Idle Value (rpm) :	2150	2300		62
Converter stall (rpm) :	1900	1975		63
Converter & Hydraulic stall : (hoist end of stroke) (rpm)	1800	1850		64

Install pressure gauge on stem port.

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

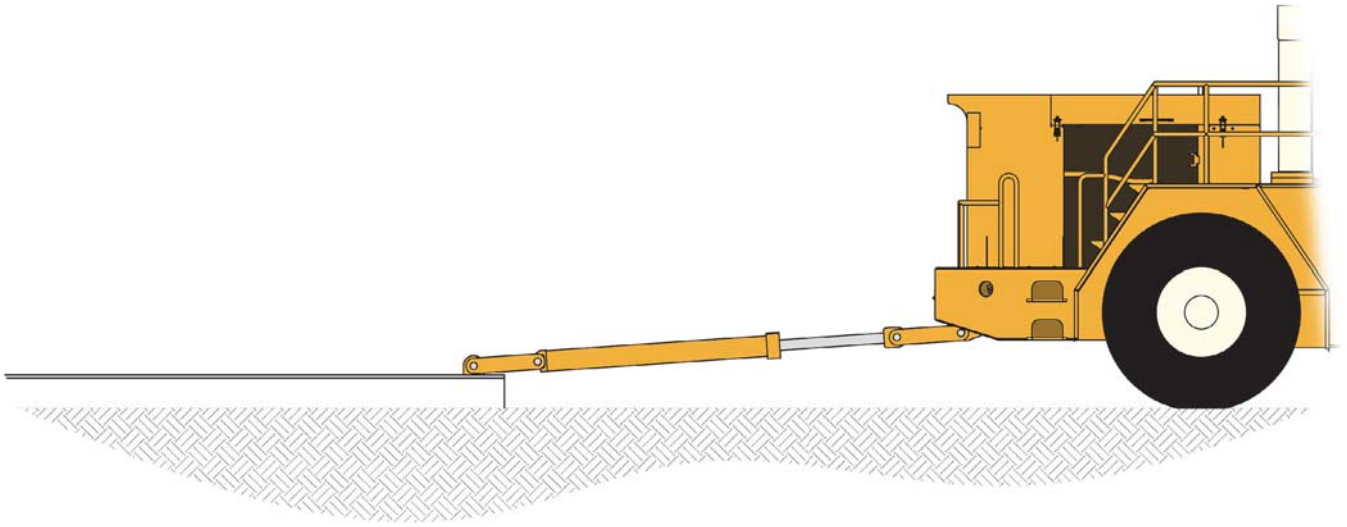
Note: Annular area of cylinder used for factory testing is 25.92 in^2

	Min	Max	Observed	
First Gear (if tire slips, record pressure at that moment) (PSI) Y ☐ N ☐:	3240	3960		65
Second Gear (PSI) :	1800	2200		66
Third Gear (PSI) :	990	1210		67
Fourth Gear (record na if locked out) (PSI) :	450	650		68

Initials :	
Date :	

Brake Pull Test

Model:	CHD100
Serial #:	103298



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.

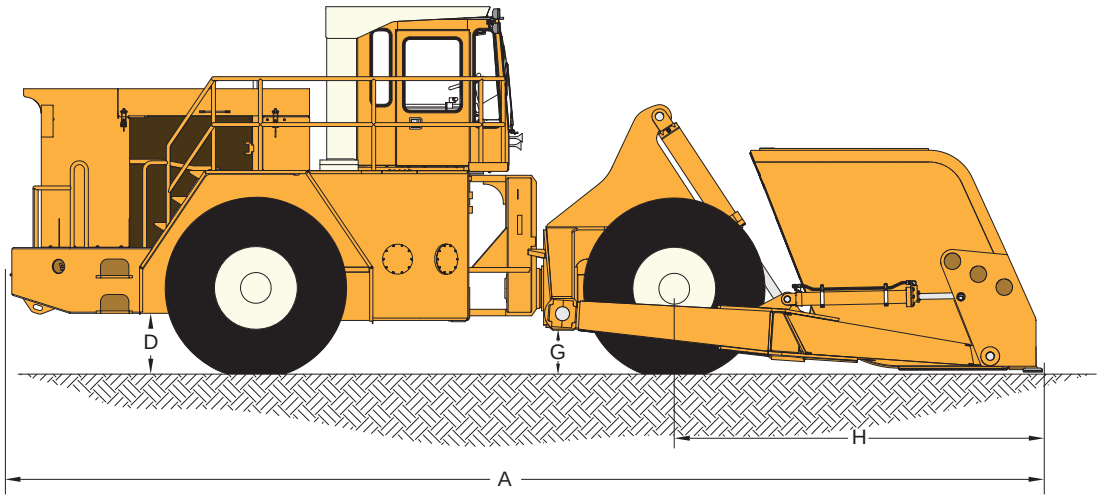
Note: Annular area of cylinder used for factory testing is 25.92 in^2

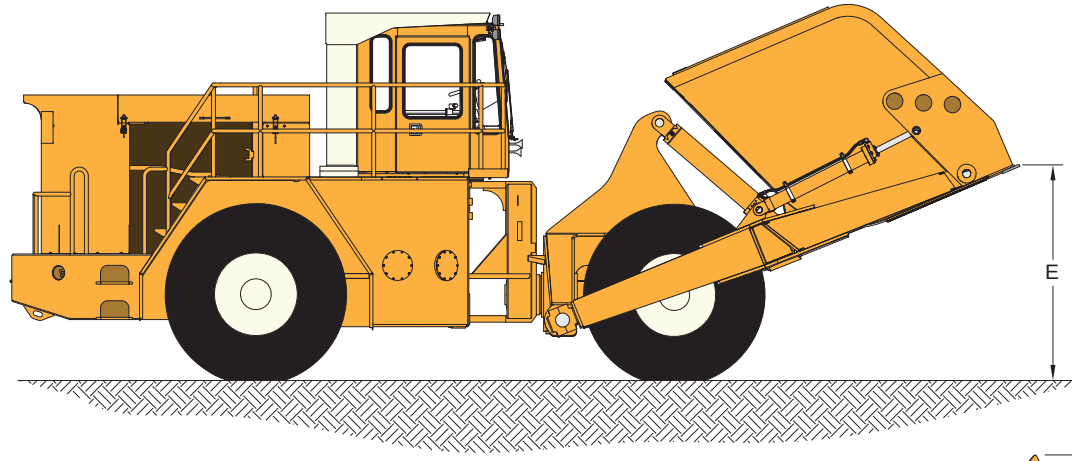
	Min	Max	Observed	Move Vehicle or Slip Brake?	
Service Brake Test (psi) :	1080	na			69
Parking Brake Test (psi) :	1530	1870			70

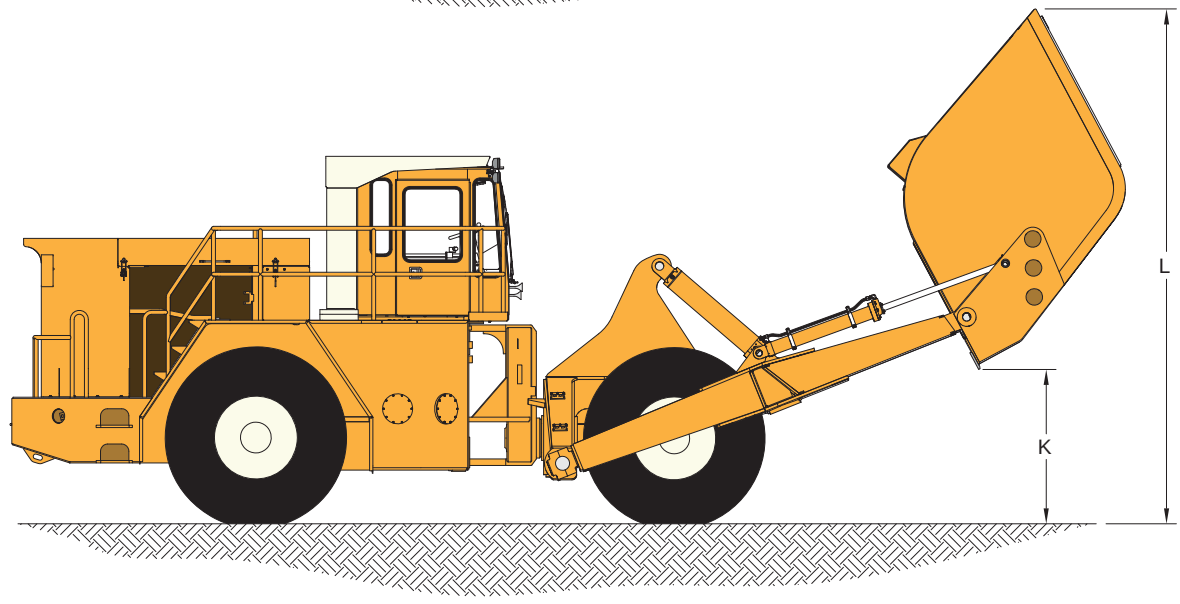
Initials :	
Date :	

Dimensions

Model:	CHD100
Serial #:	103298

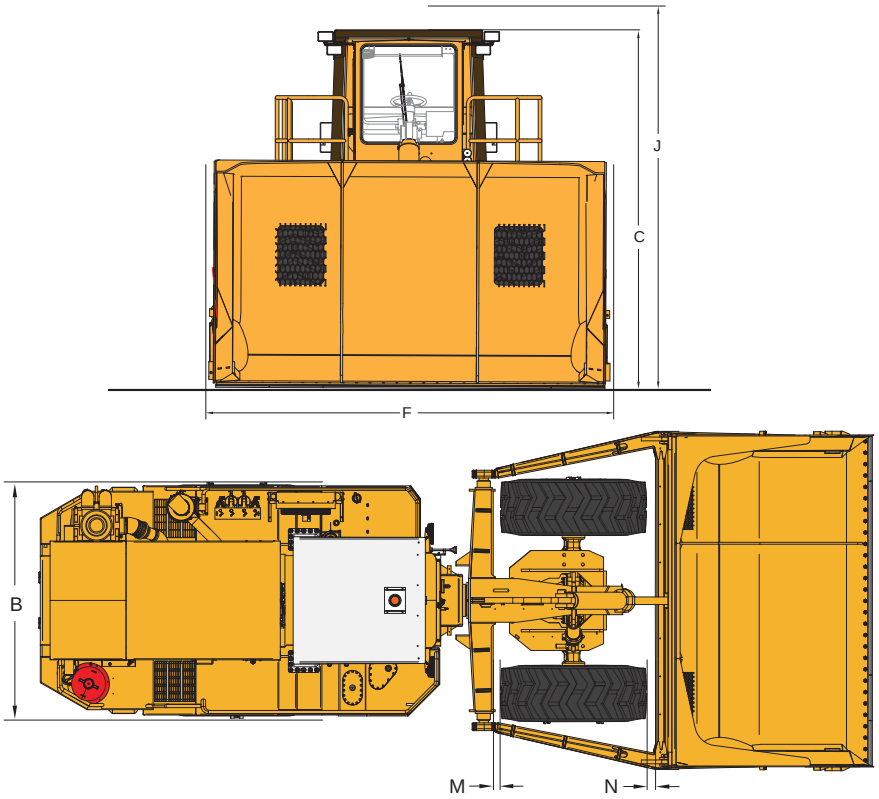






Dimensions

Model: CHD100
Serial #: 103298

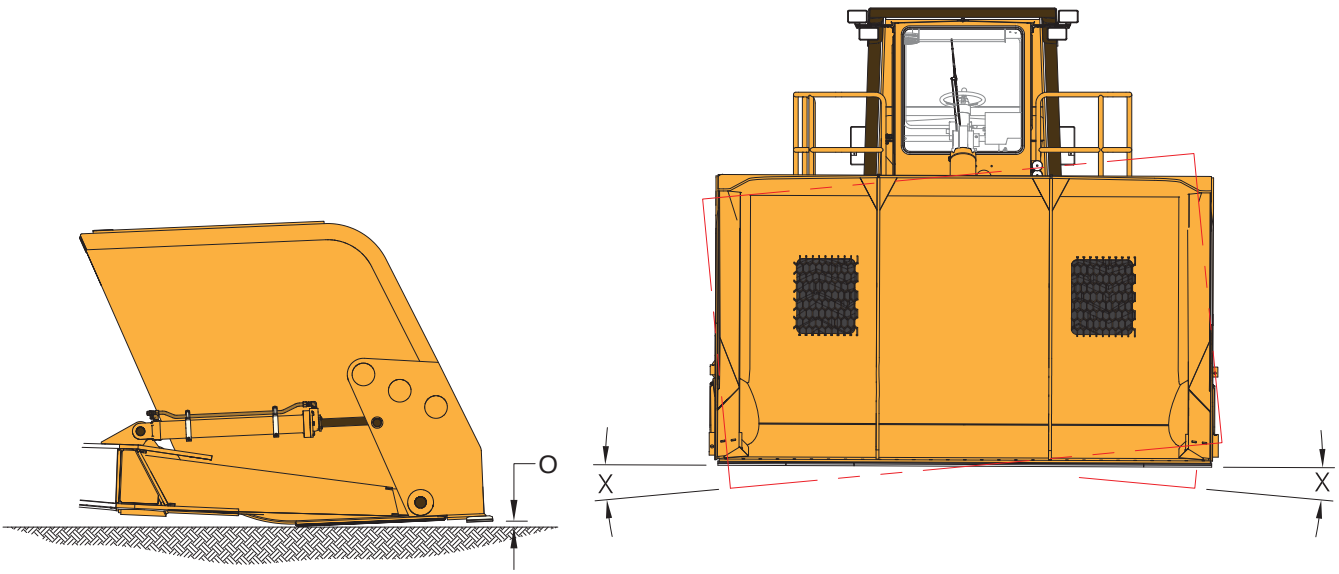


	Min	Max	Observed	
Machine Length (A) :	438"	442"		71
Machine Width, Chassis (B) :	129"	133"		72
Ground to top of ROPS (C) :	154"	160"		73
Ground Clearance, Chassis (D) :	20”	24”		74
Ground to Tip of Blade, Hoist Fully Retracted, Tilt Fully Retracted (E) :	87”	93”		75
Bucket Width (F) :	178"	180"		76
Ground Clearance, Bogie Cross Beam (G) :	16"	20"		77
Front Axle to Tip of Blade, Bucket on Ground and Horizontal (H) :	155”	159”		78
Ground to highest point of machine (J) :	170"	183"		79
Ground to Tip of Blade, Hoist Fully Retracted, Tilt Fully Extended (K) :	60”	66”		80
Ground to Top of Bucket, Hoist Fully Retracted, Tilt Fully Extended (L) :	211”	223”		81
RH Front Tire and Bogie Crossbeam clearance (M) :	1"	5"		82
LH Front Tire and Bogie Crossbeam clearance (M) :	1"	5"		83
RH Front Tire and H-Frame clearance while raising/lowering and side tilting bucket (N) :	1"	3"		84
LH Front Tire and H-Frame clearance while raising/lowering and side tilting bucket (N) :	1"	3"		85

Dimensions / Weights

Model:	CHD100
Serial #:	103298

Verify dimensions, A through X.



	Min	Max	Observed	
Ground to Tip of Blade, Bucket on Ground, Tilt Fully Retracted (O) :	0”	1”		86
Bucket Angle from Horizontal, Both Sides (X) :	4 °	6 °		87

	Min lbs	Max lbs	Observed lbs	
Axle Weight, Rear :	42500	44500		88
Axle Weight, Front :	50000	53000		89

Initials :	
Date :	

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Operating Specifications

Cycle Times

Model: CHD100
Serial #: 103298

		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		90
	Extend :				2	8		91
Dump Cylinder	Retract :	Measured at Startup (no calculated value)			3	7		92
	Extend :				3	7		93
Side Tilt Cylinder	Retract :	Measured at Startup (no calculated value)			2	5		94
	Extend :				3	5		95
Steering	Right-Left	Measured at Startup (no calculated value)			3	6		96
	Left-Right				3	6		97
Pushbutton Steering	Right-Left	Measured at Startup (no calculated value)			4	7		98
	Left-Right				4	7		99

		Min	Max	Observed (Turns)	
Steering Wheel Turns	Right-Left	6	8		100
	Left-Right	6	8		101

Initials :

Date :

Performance Validation

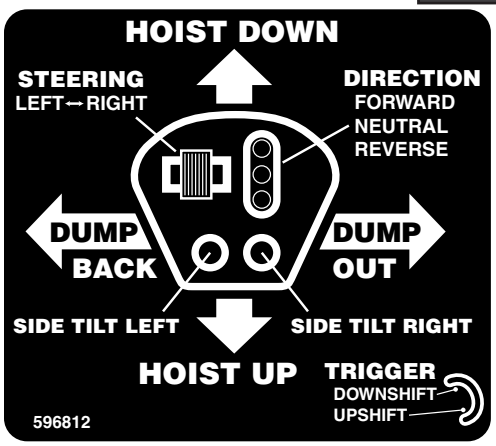
Model:	CHD100
Serial #:	103298

Record “Yes” or “No” to indicate if the machine operates as indicated.

Left

Verify that the transmission shifts as indicated.		102

Right



Verify that the functions controlled by the right joystick operate as indicated.		103

Initials :	
Date :	