WHEEL LOADER

SERVICE MANUAL

HL780-3

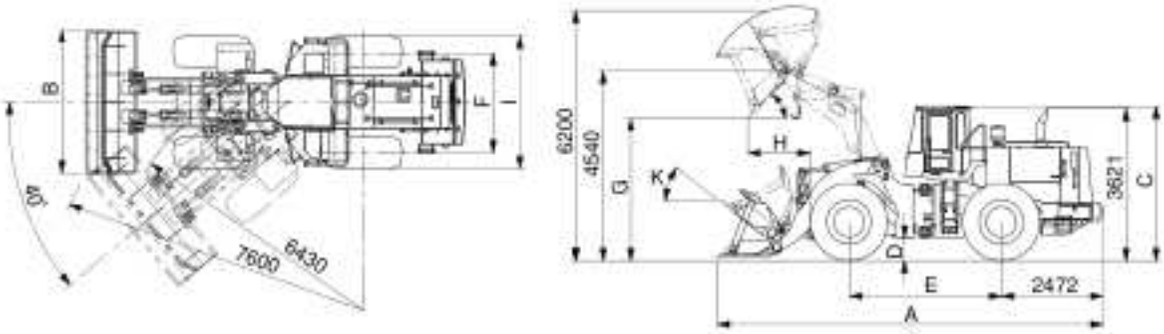
HYUNDAI

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2. SPECIFICATIONS

1) WITHOUT TOOTH AND CUTTING EDGE TYPE BUCKET



Description		Unit	Specification
Operating weight		kg(lb)	28715(63306)
Bucket capacity	Struck	m³(yd³)	4.0(5.2)
	Heaped		4.7(6.2)
Overall length	A	mm(ft-in)	9195(30' 2")
Overall width	B		3450(11' 4")
Overall height	C		3670(12' 0")
Ground clearance	D		475(1' 7")
Wheelbase	E		3700(12' 2")
Tread	F		2440(8' 0")
Dump clearance at 45°	G		3480(11' 5")
Dump reach	H		1435(4' 8")
Width over tires	I		3220(10' 7")
Dump angle	J	Degree (°)	45
Roll back angle(Carry position)	K		48
Cycle time	Lift(With load)	sec	6.4
	Dump(With load)		1.6
	Lower(Empty)		3.6
Maximum travel speed		km/hr(mph)	37.4(23.3)
Braking distance		m(ft-in)	12(39' 4")
Minimum turning radius(Center of outside tire)			6.43(21' 1")
Gradability		Degree (°)	30
Travel speed	Forward	First gear	km/hr(mph)	7.6(4.7)
		Second gear		13.3(8.3)
		Third gear		22.3(13.9)
		Fourth gear		37.4(23.3)
	Reverse	First gear		7.6(4.7)
		Second gear		13.3(8.3)
		Third gear		22.3(13.9)
		Fourth gear		37.4(23.3)

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3. WEIGHT

Item	kg	lb
Front frame assembly	2825	6228
Rear frame assembly	3174	6997
Front fender(LH & RH)	42	93
Counterweight	1200	2646
Cab assembly	1000	2205
Engine assembly	1348	2972
Transmission assembly	796	1755
Torque converter assembly	293	646
Drive shaft(Torque converter to transmission)	14	31
Drive shaft(Front)	30	66
Drive shaft(Center)	50	110
Drive shaft(Rear)	23	51
Front axle(Include differential)	1600	3527
Rear axle(Include differential)	1550	3417
Tire(4EA)	430	948
Hydraulic tank assembly	231	509
Fuel tank assembly	412	908
Main pump assembly	40	88
Main control valve	94	207
Flow amplifier	29	64
Boom	2070	4564
Bell crank	258	569
Bucket link	55	121
5.0m³ bucket, with bolt on cutting edge	2540	5600
4.7m³ bucket, with tooth	2310	5093
4.7m³ bucket, without tooth and cutting edge	2120	4673
Boom cylinder assembly(2EA)	290	639
Bucket cylinder assembly(2EA)	150	331
Steering cylinder assembly(2EA)	65	143
Seat	40	88
Battery	55	121

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2. TROUBLESHOOTING

1) SERVICE BRAKE

Diagnose malfunction charts are arranged from most probable and simplest to verify, to least likely, more difficult to verify. Remember the following steps when troubleshooting a problem :

Step 1. Operational check out procedure(See section 1)
Step 2. Operational checks(In this group)
Step 3. Troubleshooting
Step 4. Tests and adjustments(See group 3)

Problem	Cause	Remedy
Poor or no brakes	Brake accumulator charge low.	Do brake accumulator check.
	Brake pump standby pressure low.	Do brake pump standby pressure test.
	Brake pressure low.	Do brake valve pressure test.
	Air in system.	Bleed brakes.
	Worn brake surface material.	Inspect brake surface material.
	Leakage in brake valve.	Do brake valve leakage test.
	Leakage in brake piston seal.	Check for an over filled differential. Apply brakes and check for leakage from check plug. ※ **It is normal for the oil level to be slightly above the check plug.**
	Wrong oil in hub.	Drain and refill.
Aggressive brakes	Internal restriction in circuit.	Remove lines and components.
	Clutch cut off switch out of adjustment.	Adjust switch.
	Brake valve malfunction.	Disassemble and inspect.
	Low oil level.	Check oil level.
Brakes drag	Brake pedal not returning properly.	Inspect floor mat and pedal.
	Debris holding valve partially open in brake valve.	Do brake valve pressure test.
	Stuck brake piston.	Repair.
	Wrong oil in hub.	Drain and refill.
Brakes lock up	Brake valve malfunction.	Clean or replace brake valve.

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7. HYDRAULIC SYSTEM RESTRICTION TEST

- **SPECIFICATION**

  Oil temperature 65±6℃(150±10℉)
  Engine speed High idle
  Maximum pressure 2MPa(20bar, 285psi) at flow amplifier
  Maximum pressure at main control valve 1MPa(10bar, 145psi)

- **GAUGE AND TOOL**

  Gauge 0~7MPa(0~70bar, 0~1000psi) 2EA

This test will check for restrictions in the hydraulic system which can cause overheating of hydraulic oil.

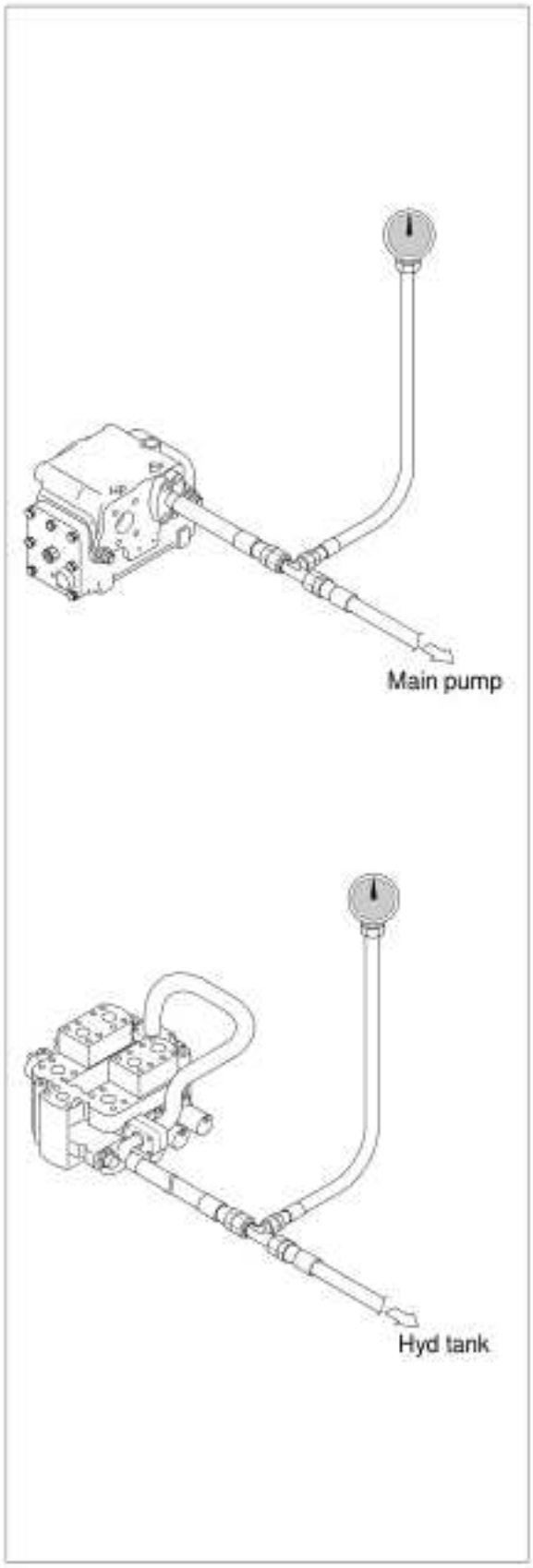
1) Install temperature reader. (See temperature reader installation procedure in this group.)
2) Heat hydraulic oil to specifications. (See hydraulic oil warm up procedure in this group.)
3) Connect fitting and gauge to flow amplifier.
4) Connect fitting and gauge to main control valve.

⚠ **Do not operate steering or loader functions or test gauge may be damaged.**

5) Run engine at specification and read pressure gauges.

   If pressure is more than specification at the loader control valve, check for a kinked, dented or obstructed hydraulic line. Check loader control valve for a binding spool.

   If pressure is more than specification at the steering unit, inspect neutral condition of the steering unit and flow amplifier for a stuck spool. Make sure orifice plugs are installed in ends of priority valve spool. Check for plugged orifice in priority valve "LS" port and dynamic signal orifice on flow amplifier body.



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6. CHARGING CIRCUIT

When the starter is activated and the engine is started, the operator releases the key switch to the ON position.

Charging current generated by operating alternator flows into the battery through the battery relay(CR-1).

The current also flows from alternator to each electrical component and controller through the fuse box.

1) OPERATING FLOW

(1) Warning flow

Altermator [CN-74(I)] → I/conn [CN-4(6)] → I/conn [CN-2(2)] → Check unit [CN-58(2)→(18)]
→ I/conn [CN-6(1)] → Cluster charge warning lamp ON [CL-46(1), Below 24V]
→ JT-27(4)→(10) → Volt meter [CN-104(B)]

(2) Charging flow

Alternator → Starter [CN-45(B+)] → Battery relay [CR-1]
→ Battery(+) terminal → Charging
→ I/conn [CN-60(1),(2)] → I/conn [CN-1(1),(2)] → Fuse box

2) CHECK POINT

Engine	Key switch	Check point	Voltage
Running	ON	① - GND (Battery) ② - GND (Battery relay) ③ - GND (ALT B) ④ - GND (ALT I) ⑤ - GND (Check unit) ⑥ - GND (Fuse box)	20~28V

Engine	Key switch	Check point	Resistance
Running	ON	⑦ - GND (Cluster)	∞ Ω

※ GND : Ground

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