WHEEL LOADER

SERVICE MANUAL

HL950I (India)

HYUNDAI

MidWestTech | Hyundai HL950I (India) Wheel Loader Service Manual | Publication HL950I...

Order the manual at mid-west-tech.com >

Contents

I. Safety Precautions 5
II. Pictures and Parameters of the Machine 7
III. Maintenance Schedule of Whole Machine 9
IV. Data Sheet 10
V. Main Components 15
5.1 A/C System 16
5.1.1 Main Composition and Parameters 16
5.1.2 Principle and Schematic Diagram of Cooling and Heating 17
5.1.3 Electrical Schematic Diagram of A/C 19
5.1.4 Installation Guidelines and Precautions 20
5.1.5 Maintenance Guidelines and Precautions 25
5.1.6 Analysis and Troubleshooting of Common Faults 26
5.1.7 Fault Detection Method 31
5.2 Pilot Valve 35
5.2.1 Schematic Diagram of Pilot Valve 37
5.2.2 Introduction to Working Principle 37
5.2.3 Fault and Troubleshooting 38
5.2.4 Precautions for Installation and Use 39
5.3 Multi-way Valve 45
5.3.1 Structural Diagram 45
5.3.2 Schematic Diagram 46
5.3.3 Introduction to Working Principle 47
5.3.4 Installation and Use 47
5.3.5 Fault and Troubleshooting 48
5.4 Booster Pump 51
5.4.1 Purpose 51
5.4.2 Working Principle 51
5.4.3 Fault Diagnosis 53
5.5 Air Brake Valve 56
5.5.1 Working Principle 56
5.5.2 Purpose 56
5.5.3 Analysis and Troubleshooting of Non-braking Air Leakage 58
5.5.4 Analysis and Troubleshooting of Full Brake Air Leakage 60
5.5.5 Analysis and Troubleshooting of Jamming 61
5.6 Unloading Valve 63
5.6.1 Purpose 63
5.6.2 Working Principle 63
5.6.3 Correct Use and Maintenance Methods 63
5.6.4 Common Faults, Fault Analysis and Troubleshooting Methods 64
5.7 Drive Axle 66
5.7.1 Structure and Function 66
5.7.2 Removal and Repair 66

MidWestTech | Hyundai HL950I (India) Wheel Loader Service Manual | Publication HL... Order the manual at mid-west-tech.com >

5.7.3 Disassembly and Repair 68
5.7.4 Faults and Troubleshooting 81
5.8 Torque Converter 83
5.8.1 Structure and Function 83
5.8.2 Test and Adjustment 85
5.8.3 Removal and Installation 85
5.8.4 Disassembly and Repair 85
5.9 Transmission 94
5.9.1 Structure and Function 94
5.9.2 Test and Adjustment 94
Schematic Diagram of Assembly Transmission 96
5.9.3 Removal and Installation 96
5.9.4 Disassembly and Repair 101
5.9.5 Faults and Troubleshooting 106
5.10 Instrument Cluster 112
5.10.1 Instrument Assembly 112
5.10.2 Function Description 113
5.10.3 Instrument Display Indicator 115
5.11 Steering Gear 125
5.11.1 Structure and Function 125
5.11.2 Removal and Installation 125
5.11.3 Disassembly and Repair 127
5.12 Gear Pump 134
5.12.1 Working Principle 134
5.12.2 Analysis of Common Faults 135
5.13 Hydraulic Cylinder 137
5.13.1 Storage and Handling 137
5.13.2 Use of Hydraulic Cylinder 137
5.13.3 Replacement of Spare Parts 138
5.13.4 Troubleshooting for Maintenance and Repair of Oil Cylinder 139
VI. Hydraulic Schematic Diagram 141
VII. Electrical Schematic Diagram 142

MidWestTech | Hyundai HL950I (India) Wheel Loader Service Manual | Publication HL... Order the manual at mid-west-tech.com >

II. Pictures and Parameters of the Machine

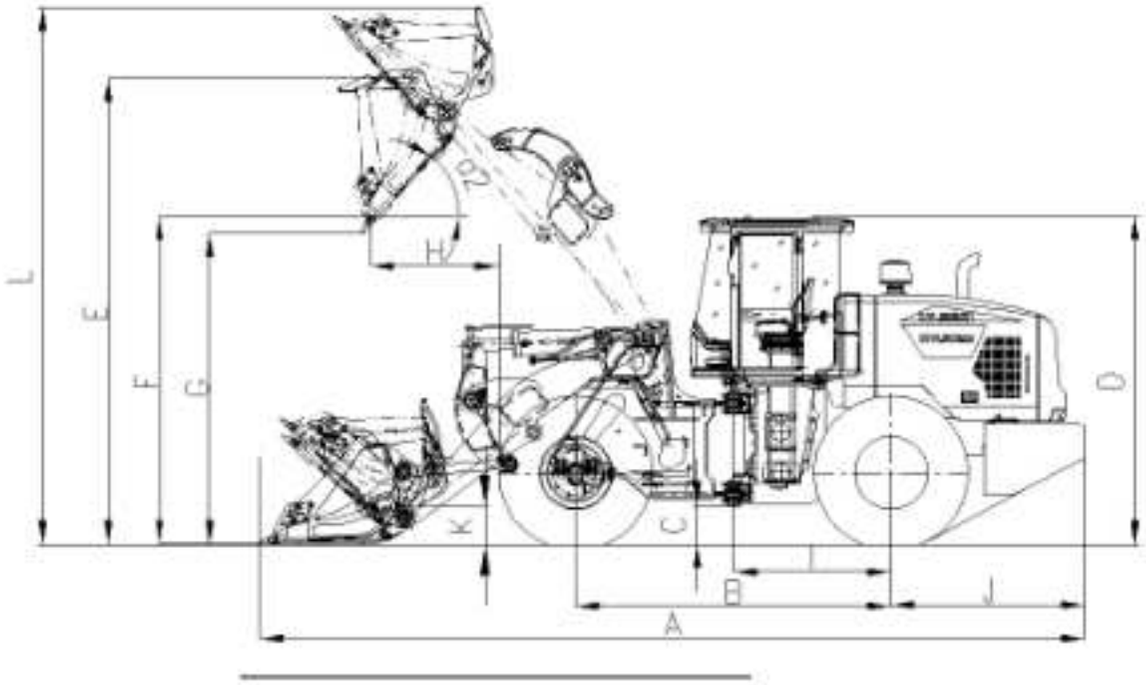


Fig. 2-01-01

Overall dimensions:

Code	Description	Dimension
A	**Length of whole machine**	8650 mm
B	**Wheel base**	3300 mm
C	**Minimum ground clearance**	398mm
D	**Maximum total height of main engine**	3400mm
E	**Height of pin shaft at maximum lifting**	4520mm
F	**Unloading height**	3435mm
G	**Distance from bucket teeth to the ground during unloading**	3250mm
H	**Rear dump distance**	1280mm
I	**Spacing between rear axle and articulated point**	1650mm
J	**Rear overhang length**	2030mm
K	**Height of transport position**	400mm
L	**Overall height at maximum lifting**	5624mm
a2	**Unloading angle**	45°

MidWestTech | Hyundai HL950I (India) Wheel Loader Service Manual | Publication HL... Order the manual at mid-west-tech.com >

V. Main Components

Section 1 A/C System

Contents

5.1.1 Main Composition and Parameters

5.1.2 Principle and Schematic Diagram of Cooling and Heating

5.1.3 Electrical Schematic Diagram

5.1.4 Installation Guidelines and Precautions

5.1.5 Maintenance Guidelines and Precautions

5.1.6 Analysis and Troubleshooting of Common Faults

5.1.7 Fault Detection Method

MidWestTech | Hyundai HL950I (India) Wheel Loader Service Manual | Publication HL... Order the manual at mid-west-tech.com >

5.7.4 Faults and Troubleshooting

(I) Insufficient driving force

Fault characteristics: The loader has normal pressure response in all gears, with sudden weakness during operation, but it runs normally on the road.

Possible cause: The axle shaft of the front or rear axle is twisted off, resulting in insufficient driving force.

Inspection steps or handling methods:

1. Remove the rear drive shaft first, and then start the engine and engage the first gear. If it cannot run, the front axle shaft is twisted off.

2. If it can still run after the rear drive shaft is removed, install the rear drive shaft and remove the front drive shaft. At this point, if the loader cannot run, the rear axle shaft is twisted off.

3. Alternatively, directly remove the front and rear axle wheel-hub end covers to check whether the axle shaft is twisted off.

Note: If the axle shaft is twisted off, clean the inside of the drive axle before replacing it.

(II) Abnormal noise from wheel hub during driving

Fault characteristics: When driving, the tires swing significantly from side to side,

and in severe cases, the loader shakes and even cannot travel.

Possible causes:

1. Excessive clearance or burn of wheel-hub bearing.

2. The wheel-hub gear has broken teeth.

3. The wheel-hub round nut is loose.

Inspection steps or handling methods: Disassemble the wheel hub for inspection and repair.

(III) Abnormal noise from main drive

Fault characteristics: The noise is more obvious when the machine runs in a straight line at high speed during deceleration.

Possible causes: loose bearing; excessive clearance or irregular meshing between driving gear and driven gear.

Inspection steps or handling methods:

1. Remove the drive shaft, grasp the input flange of the main drive with both hands, push and pull it up and down to see whether it swings obviously, or push and pull it in and out to check whether

there is obvious travel, so as to determine the noise is from the front or rear main drive.

2. Remove the main drive and check the bearing clearance on the driving spiral bevel gear, as well as the clearance between the support bearings of the left and right housing journals.

3. Check the meshing surface and clearance between driving spiral bevel gear and driven spiral bevel gear.

4. Disassemble the differential and check the bevel gear clearance.

Note: The installation must be carried out in strict accordance with the drive axle requirements corresponding to each model.

(IV) Abnormal noise when the loader turns

Fault characteristics: The noise is more obvious when turning, and the steering is hard.

Possible cause: The differential is damaged.

Inspection steps or handling methods: Remove the main drive and disassemble it for repair.

MidWestTech | Hyundai HL950I (India) Wheel Loader Service Manual | Publication HL... Order the manual at mid-west-tech.com >

(III) Commissioning requirements

Commissioning shall be carried out by designated personnel (if required);

(IV) Installation

1. Install the torque converter & transmission assembly in the following order:

① Lift the transmission onto the frame with a special lifting appliance;

② The torque converter & transmission assembly shall be hinged with the inside and outside of the engine;

③ Assemble the bolts and nuts connecting the front and rear drive shafts to the transmission;

④ Fix the torque converter & transmission assembly on the transmission support seat with bolts.



Fig. 5-09-06

Warning

Keep it clean during assembly;

2. Install the cab in the following sequence:

① Check whether all interior trims of the cab assembly are in good condition before hoisting.

② Pre-install the base plate and damping pad. Assemble the damping pad assembly (upper assembly) on the cab support, and align with the holes.



Fig. 5-09-05



Fig. 5-09-07

③ Lift the cab to the top of the frame with special lifting appliance and traveling crane, slowly adjust the height from the frame, insert the upper shock absorber, gasket and bolt into the cab bracket, then steadily place the cab on the cab support seat, align the holes, and lock the shock absorber with the lower shock absorber, large gasket and nut.

MidWestTech | Hyundai HL950I (India) Wheel Loader Service Manual | Publication HL... Order the manual at mid-west-tech.com >

5.11 Steering Gear

5.11.1 Structure and Function

(I) Function

The control element of the vehicle steering system realizes the steering function of the vehicle through the steering wheel.

(II) Working Principle

The control/amplification rotary valve composed of the valve element, valve sleeve and valve body plays a dual role in controlling the oil flow direction and amplifying the flow. The cycloidal pin gear meshing pair composed of rotor and stator acts as a metering motor, which can ensure that the outlet oil quantity is directly proportional to the steering wheel angle. The pull pin and linkage shaft connect with the control/amplification rotary valve and rotor of cycloidal pin gear meshing pair, forming a mechanical feedback link. The return spring enables the valve element and valve sleeve of the control/amplification rotary valve to be strictly centered beyond the dead zone.

When the steering gear is in the middle position, the oil from the priority valve directly returns to the oil tank from the oil return port. When the steering gear deviates from the middle position with the rotation of the steering wheel, the oil from the priority valve is divided into two ways: part of oil (a small amount) flows through the control/amplification rotary valve to the cycloidal pin gear meshing pair to push the rotor to rotate with the steering wheel. The flow passing through the cycloidal pin gear meshing pair is proportional to the speed of the steering wheel. When the steering wheel rotates fast, the flow passing through the cycloidal pin gear meshing pair is large, and vice versa. Other oil flows directly to the steering cylinder through the control/amplification rotary valve to push the frame for steering. Its flow is controlled by a mechanical feedback link, which is formed by pull pin, linkage shaft connecting control/amplification rotary valve and rotor of cycloidal pin gear meshing pair. i.e., it is proportional to the speed of the steering wheel. When the steering wheel rotates faster, its flow will be larger and the steering will be faster, and vice versa.

5.11.2 Removal and Installation

1. Introduction to the position of steering gear on product



Fig. 5-11-01

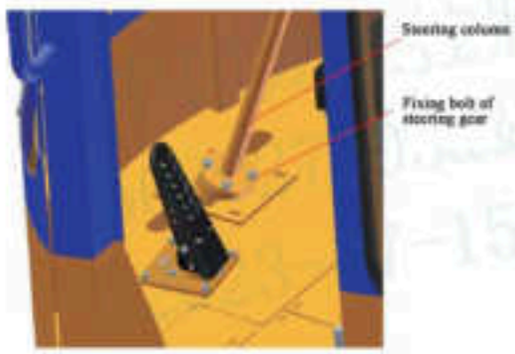


Fig. 5-11-02

MidWestTech | Hyundai HL950I (India) Wheel Loader Service Manual | Publication HL... Order the manual at mid-west-tech.com >