Allis Chalmers

Operator's Manual

545 & 545H Diesel

Front End Loader

Operator's Manual

AC-O-545 DSL

Operating instructions

and

Field maintenance

Manual

for

545 (Diesel)

and

545H (Diesel)

WHEEL LOADER®

(S/N 2501-UP)

ALLIS-CHALMERS

Milwaukee, Wisconsin, U.S.A.

Litho in U.S.A. FORM 3052497-9

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GENERAL DESCRIPTION

The ALLIS-CHALMERS 545 (17,000 Lbs. with 1-3/4 cubic yard bucket), and 545H (19,440 Lbs. with 2 cubic yard bucket) Wheel Loaders are articulated, four wheel drive loaders of modular design powered by a six cylinder, four stroke cycle, open combustion chamber, direct injection, turbocharged ALLIS-CHALMERS Model 2900 diesel engine.

Engine power is transmitted directly to the two-stage, four element torque converter. Torque is multiplied to a maximum of 5.1:1 by the converter and transmitted to the full power shift transmission. Power is supplied to the transmission charging pump whenever the engine is operating. Forward and reverse direction in any speed range is transmitted by the transmission, through drive shafts, to the front and rear differentials and axles.

The standard twin turbine transmission provides two mechanical speeds forward and one in reverse. Within each mechanical speed range the twin turbines, through a combining gear set, provide high torque at low speed or higher speed at less torque (resulting in the equivalent of four speeds forward and two in reverse). The combination of turbines and mechanical gearing provides speeds ranging from a high of 6.0 mph in low range to 23.8 mph in high range at engine speed of 2400 rpm.

Loader operation is accomplished hydraulically by two tandem mounted, converter driven hydraulic pumps, a two spool control valve, two lift cylinders, two dump cylinders and the necessary hydraulic lines.

The loader design provides more than adequate strength and the ultimate in servicing accessibility.

Fig. 1 Model 545 and 545H Wheel Loader
(T-74330)

1. Bucket
2. Link, dump
3. Link, cross
4. Boom
5. Cylinder, dump
6. Cylinder, lift
7. Intake, air
8. Stack, exhaust
9. Hood, hinged
10. Opening, radiator filler
11. Neck, fuel filler
12. Box, battery

GENERAL SPECIFICATIONS

GENERAL DIMENSIONS AND WEIGHTS

545 (With 1-3/4 cu. yd. bucket and 14.00 x 24 tires)	
Weight, Shipping (approximate)	17,200 lbs.
Overall Width (wheel hubs)	7'5"
Overall Length:	
(Cutting edge level on ground)	19'
(Bucket at 14" carry height)	18'11-3/8"
545H (With 1-3/4 cu. yd. bucket and 14.00 x 24 tires)	
Weight Shipping (approximate)	18,500 lbs.
Overall Width (wheel hubs)	7'5"
Overall Length:	
(Cutting edge level on ground)	19'4"
(Bucket at 14" carry height)	19'3-3/8"

GENERAL PURPOSE BUCKETS

Capacity (cu. yds.)	1-1/2 to 2-1/2
Maximum Dumping Angle at full raise	52°
Lifting Time	7.0 sec.
Lowering Time	4.8 sec.
Bucket Dumping Time	2.2 sec.

HYDRAULIC SYSTEM

Transmission Mounted Tandem Pump - GPM @ 2400 RPM	55
Lift Cylinders (2) "Double Acting"	5-1/2" dia.
Dump Cylinders (2) "Double Acting"	4-1/2" dia.
Filters	Micronic and Full Flow
Control Valve	2 Spool

TIRES AND TREAD

Tread - Front and Rear Wheels	71"
Tires - Standard (tubeless)	
Front and Rear	14.00 x 24-10 ply (45 psi)
Optional Tires and Pressures	
13.00 x 24-10 ply	60 psi
15.5 x 24-12 ply	55 psi
17.5 x 24-12 ply	40 psi

TURNING RADIUS

545	
Tip of Bucket (at 14" carry position)	16'1-1/8"
To Outside Planetary Hub (front)	14'9-1/4"
545H	
Tip of Bucket (at 14" carry position)	16'1-1/8"
To Outside Planetary Hub (front)	14'9-1/4"

ENGINE

Make	ALLIS-CHALMERS
Model	2900
Type - Vertical In-Line, Compression Ignition, Water Cooled, Four Cycle, Direct Injection, Open Combustion Chamber, Turbocharged	Full Diesel
Number of Cylinders	6
Bore	3-7/8"
Stroke	4-1/4"
Crankshaft Rotation (viewed from fan end)	Clockwise
Number of Main Bearings	7
Piston Displacement	301"
Firing Order	1-5-3-6-2-4
Lubrication	Full Pressure
Fuel Used	Refer to "FUEL SPECIFICATIONS"
Fuel Supplied By	Fuel Injection Pump
Low Idle Speed	650-750 rpm
High Idle Speed	2575-2625 rpm
Governed R.P.M. (governed at full load)	2400 rpm
Air Cleaner	Dry Type
Oil Filter	Full Flow
Electrical System	12-Volt

CAPACITIES (Approximate) (U.S. Standard Measure)

Cooling System	38 qts.
Crankcase (Oil and filter change)	12 qts.
Transmission (Oil and filter change)	39 qts.
Differential - 545	
Front	24 qts.
Rear	16 qts.
Differential - 545H	
Front	24 qts.
Rear	24 qts.
Planetary Hubs (2 qts. each)	8 qts.
Fuel Tank (Fuel & rust inhibitor)	44 gal.
Hydraulic System	30 gal.
Hydraulic Brake System	3 pts.

SPEEDS (MPH at 2400 RPM)

Forward	mph	Reverse	mph
1	2.7	1	3.4
2	6.0	2	8.1
3	11.0		
4	23.8		

ALLIS-CHALMERS reserves the right to make changes in the above specifications or to add improvements at any time without notice or obligation.

13. MASTER BRAKE CYLINDER - FLUID LEVEL

Remove the filler plug (access hole in floor plate of operator's compartment) and check fluid level. If necessary, add brake fluid (SAE J1703, or a good grade of non-petroleum heavy duty automotive brake fluid) and fill to 3/4 inch under the filler plug. Reinstall filler plug securely (Fig. 17).

Fig. 17 Brake Master Cylinder
(T-74342)

14. AXLE DIFFERENTIALS - OIL LEVEL

Check oil level at axle differential by removing oil filler plug from center of axle housing (Fig. 18). Add specified oil as necessary to bring level to plug opening. The axle differential and planetary hubs are interconnected permitting oil to flow from one to the other during operation. Checking and addition of oil at hubs is not necessary unless hubs have been drained.

Fig. 18 Axle Differential Oil Filler Plug
(T-71056)

15. RADIATOR - CORE RESTRICTION

Check core exterior for plugging by dirt or trash. Clean with pressurized water or compressed air if necessary.

16. TURBOCHARGER - LEAKAGE OR NOISE

Check for air leaks or restrictions, exhaust leaks, oil leaks or unusual noises. Refer to "TURBOCHARGER" for detailed information.

17. HYDRAULIC SYSTEM - LEAKAGE AND ADJUSTMENTS

Hydraulic Hoses, Lines and Fittings - Check all hoses, lines and fittings for leaks. Tighten or replace, as necessary. Refer to "HYDRAULIC SYSTEM" for detailed information.

Hydraulic Cylinder Piston Rod Packing - Check packing adjustment of lift and dump cylinder piston rods. Refer to "HYDRAULIC SYSTEM" for detailed information.

18. WHEEL LUG NUTS - TORQUE

Wheel lug nuts require torquing after first 10, 50 and 100 hours of use and should be rechecked after each 100 hours of use thereafter. Stud threads and nut-to-wheel contacting surfaces should be lightly coated with grease. Torque nuts to 365-400 ft. lbs. using a crisscross pattern sequence.

19. CAPSCREWS, NUTS AND PINS - TIGHTNESS

Check entire unit to ensure capscrews, nuts and pins are properly secured.

Fig. 19 Front Axle Breather (545)
Front and Rear Axle Breather (545H)
(T-73458)

1. Breather

Fig. 44 Alternating Current Generator (T-74358)

1. Capscrew, drive belt adjustment
2. Housing, thermostat
3. Terminal, battery
4. Terminal, field
5. Terminal, ground
6. Capscrew, generator mounting
7. Generator, alternating current

diodes that are connected to the stator windings. These diodes replace the separately mounted rectifier that is used in other types of applications. They change AC voltage to a DC voltage that appears at the alternator BAT. terminal.

CAUTION

The alternating current generator ground polarity and battery ground polarity must be the same before making any connections. Instant damage to wiring and diodes will result if polarities are mismatched. Do not operate without a battery. Do not attempt to polarize generator. Do not short across or ground generator terminals. Never operate the generator on an open circuit. Make absolutely certain all connections in the circuit are secure.

D. A.C. GENERATOR REMOVAL AND INSTALLATION

1. Remove capscrew attaching generator to generator adjusting brace.
2. Remove drive belt.
3. Mark generator lead wires for subsequent identification. Disconnect lead wires.
4. Remove capscrews attaching generator to the generator mounting bracket. Remove generator.
5. Install generator in reverse order of removal.

E. REGULATOR

The regulator is a two-unit regulator consisting of a voltage regulator unit and field relay unit. The voltage regulator unit operates to limit generator voltage to a preset value, whereas the field relay unit connects the generator field winding and regulator winding directly to the battery.

The two-unit regulator has 4 slip-connection type terminals. A projection on the connector body serves to latch the assembly together and prevent disconnections due to vibration. The assembly can be disconnected by lifting slightly on the latch.

CAUTION

Polarities of the regulator, generator and battery must be the same. Instant damage will result if polarities are mismatched. Do not short across or ground regulator terminals. Do not operate without a battery.

F. REGULATOR REMOVAL AND INSTALLATION

1. Mark regulator lead wires for subsequent identification. Disconnect lead wires.
2. Remove attaching capscrews, nuts, and lockwashers and remove regulator.
3. Install regulator in reverse order of removal.

Testing and adjusting of the alternating current generator and regulator should not be attempted without dependable testing equipment. Therefore, it is recommended that these units be taken to your Allis-Chalmers dealer or a reliable electrical repair shop when service is required.

G. STARTING MOTOR

The 12 volt starter (Fig. 45) is mounted on the left side of the engine flywheel housing. An over-running clutch type drive is used to mesh the drive pinion of the starter with the flywheel ring gear for cranking the engine and to automatically disengage the drive pinion when the engine has started. The starter is actuated by a heavy-duty solenoid which is mounted on the starter and controlled by an auxiliary solenoid which in turn is actuated by the key switch on the instrument panel.