

45
Cruz - Air
Excavator

Service Manual

S406267M1

CASE

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SAFETY



THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.



CAUTION: When doing any service on the machine, put a tag on the ignition switch or remove the key to prevent operation of the machine.



WARNING: Never disconnect any hydraulic line unless the boom is fully lowered and hydraulic pressure is relieved. To relieve hydraulic pressure, stop the engine and move the hydraulic controls forward and back several times.



CAUTION: ENGINE FAN AND BELTS. To prevent possible serious injury avoid contact with rotating fan and belts.



CAUTION: Be very careful when working with tires. Tires can come apart with explosive force. Never try to disassemble the wheel until all air is released from the tire.



CAUTION: Never operate the alternator on an open circuit. With no battery or other electrical load on the circuit, high voltage will occur in the alternator. This voltage can cause injury to any person who makes contact with the battery terminal of the alternator.



DANGER: Engine exhaust can cause death. If necessary to start the engine in a closed area, make sure there is enough ventilation.



WARNING: To prevent injury from burns, always use a solvent that is not flammable for cleaning component parts. **DO NOT** use gasoline or other flammable substances.



WARNING: Never fill the fuel tank near an open flame or while the engine is running. Keep cigarettes away.



WARNING: To prevent eye injury, wear eye protection when doing maintenance on this machine.



WARNING: Stop the engine before doing any maintenance or adjustments. If necessary to make checks while the engine is running, have one person at the controls while the other person makes the check.



CAUTION: Clean any oil spills immediately and keep the work area as clean as possible. A clean area helps prevent accidents.



WARNING: Read the Operator's Manual before operating the machine.



CAUTION: To prevent personal injury, keep your hands away from the swing pinion when the turntable is being rotated.



WARNING: To prevent injury and possible death, keep hands, feet and loose clothing away from moving parts during operation.



POISON/DANGER: Batteries contain sulfuric acid which can cause severe burns. Avoid contact with skin, eyes or clothing. Antidote: **EXTERNAL**, flush with water; **INTERNAL**, drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately; **EYE**, flush with water for 15 minutes and get prompt medical attention. Keep out of reach of children.



CAUTION: When removing a battery, always disconnect the (-) negative ground cable first. When installing the battery, always connect the (-) negative ground cable last.

SAFETY (CON'T.)



WARNING: Batteries produce explosive gases. Keep sparks, flame and cigarettes away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries.



CAUTION: When checking coolant, remove radiator cap slowly to relieve pressure in the system. To prevent burns, remove radiator cap only when engine is cool.



Disconnect both cables from the battery before you work on the engine or electrical system. Always disconnect the (-) negative ground cable first.



WARNING: Never check battery charge by placing a metal object across the posts - the sparks could cause an explosion. Use a voltmeter or hydrometer.



CAUTION: Storage areas for batteries must be well ventilated to prevent accumulation of hydrogen gas from newly recharged batteries.



WARNING: This machine is equipped with a 24-volt starting system. Sparking will occur across greater distances than with a conventional 12-volt system. NEVER WEAR RINGS OR OTHER METAL OBJECTS that may ground a live circuit.



CAUTION: Before you disconnect any air lines, make sure all air is released from the air reservoir.



CAUTION: Before removing or disassembling the swing brake, SET BOOM ON GROUND to prevent turntable from rotating.



CAUTION: Hydraulic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks. Never use the hands or other parts of the body.

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.

If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.



CAUTION: Use brake fluid to clean rubber parts. Acetone, paint thinner or other mineral base solvents must not be used on rubber parts. Mineral base solvents will cause damage and possible failure of the part.



WARNING: The split rim type wheels on this machine can be dangerous. When you add air to a tire, stand behind the tread of the tire. The retaining ring and rim of the wheel can come off with explosive force and cause you or persons in the area to be severely injured.



Keep a fire extinguisher available and KNOW HOW TO USE IT. Check the fire extinguisher at regular intervals for correct operation.



WARNING: Do not disassemble the brake chamber unless you understand fully the procedure for disassembly. The heavy spring can cause the chamber to come apart with force and cause personal injury.

IMPORTANT: Always install new decals whenever the old decals are destroyed, lost, painted over, or illegible. When individual parts are replaced that have decals attached, be sure to install a new decal with the new part. Replacement decals are available from your Drott Dealer.

Information in this manual was current at time of printing. J I Case, Drott Division, reserves the right to make improvements in design or changes in specifications without incurring any obligation relating to such changes.

INTRODUCTION

MANUAL ORGANIZATION

This manual gives information on maintenance and service of the Drott 45 CRUZ-AIR, Excavator and Logger units. All components, systems and functions are included, except the engine. Information on service of the engine can be found in the separate engine manual included with the machine.

The manual has two main parts. The first part gives information on maintenance, description and troubleshooting. The second part gives instructions for disassembly and repair of components.

A separate section is included on Preventive Maintenance. Use this section as a ready reference for normal maintenance of the machine. The section includes a maintenance chart, component capacities, lubricants and fluids, hydraulic pressure settings and a list of grease fitting locations.

For purposes of explanation, the machine is separated into four general systems: Mechanical, Air, Electrical and Hydraulic.

Torque charts and schematics of the electrical and hydraulic systems can be found in back of this manual. If more information is necessary, or if you need service assistance, call your nearest Drott dealer.

SERVICE AND PARTS ASSISTANCE

When you write to the manufacturer or dealer about the machine, always give the model and identification numbers of the machine and of the component.

The Product Identification Number (PIN) plate for the machine is on the lower front corner of the operator's cab (see Figure 1). The engine serial number plate is shown in Figure 2. The serial plates of other main components can be found on the housing of the components.

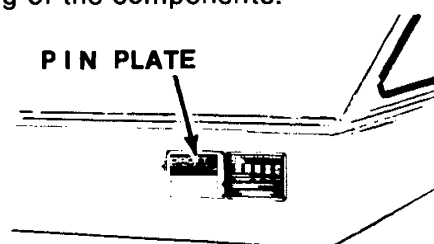


Figure 1. Machine Identification

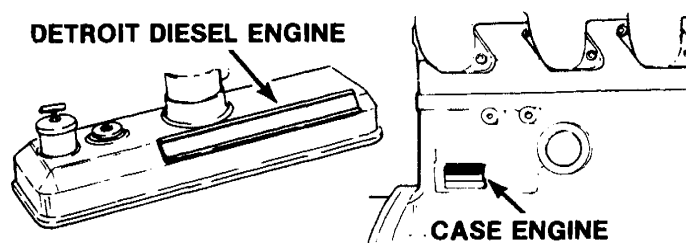


Figure 2. Engine Serial Number Plate

DIRECTIONAL REFERENCE

Because the turntable can turn through a full 360 degrees, it is necessary to make separate reference to the Turntable and Carrier.

Carrier directions are given from a position at the rear of the machine, looking forward. Turntable directions are given from the operator's seat.

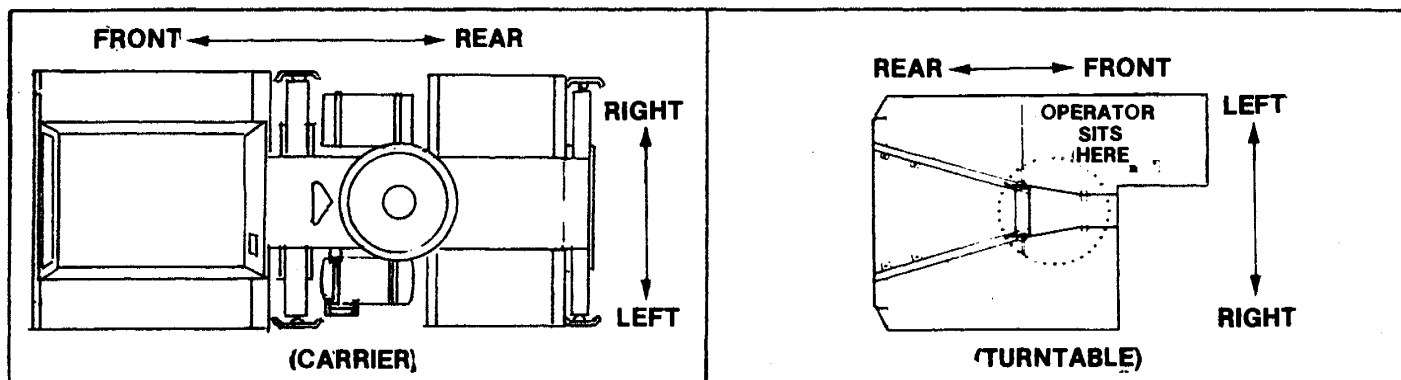
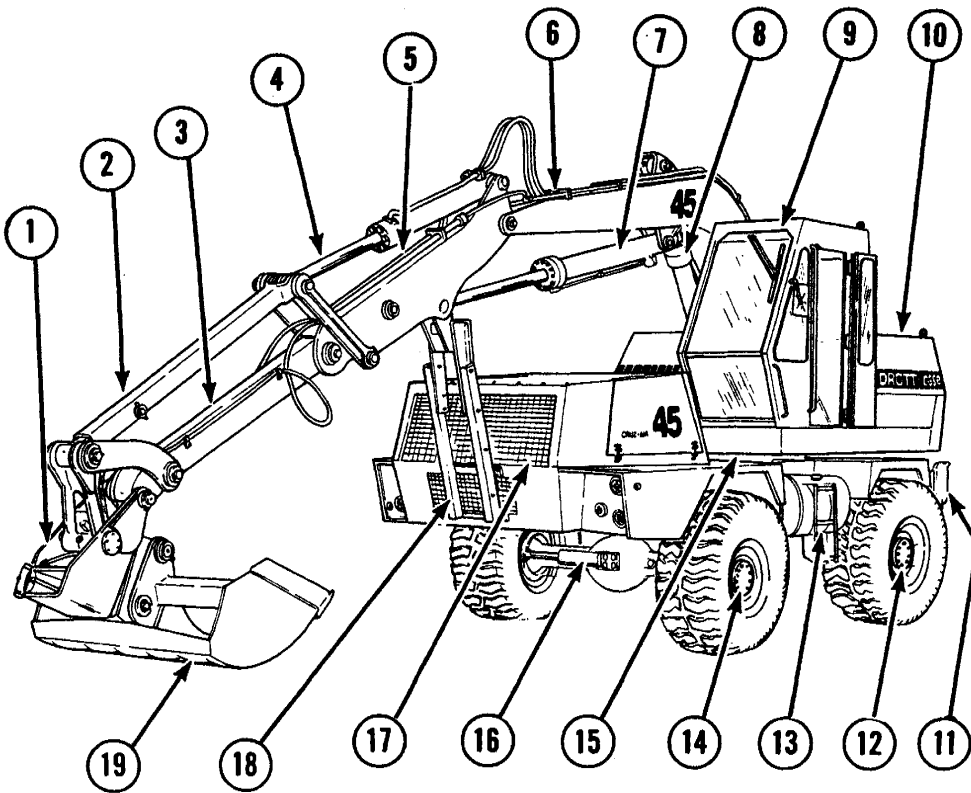


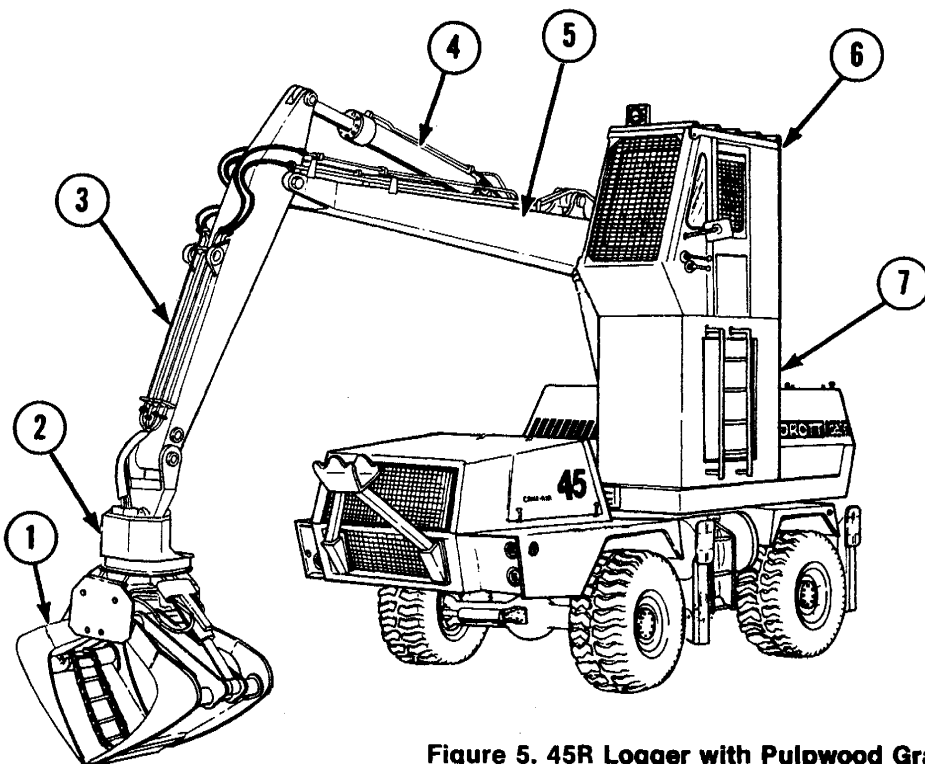
Figure 3. Directions

NOMENCLATURE



1. Wrist-O-Twist (optional)
2. Tool Cylinder Extension
3. Tool Boom Extension
4. Tool Cylinder
5. Tool Boom
6. Main "Y" Boom
7. Crowd Cylinder
8. Hoist Cylinder
9. Operator's Cab with Controls
10. Location of Hydraulic Valves and Counterweight
11. Outrigger
12. Planetary Drive Axle
13. Fuel Tank (Hydraulic Oil Tank on side opposite)
14. Planetary Drive/Steer Axle
15. Turntable
16. Steering Cylinder
17. Engine Compartment
18. Boom Rest
19. Ditch Bucket

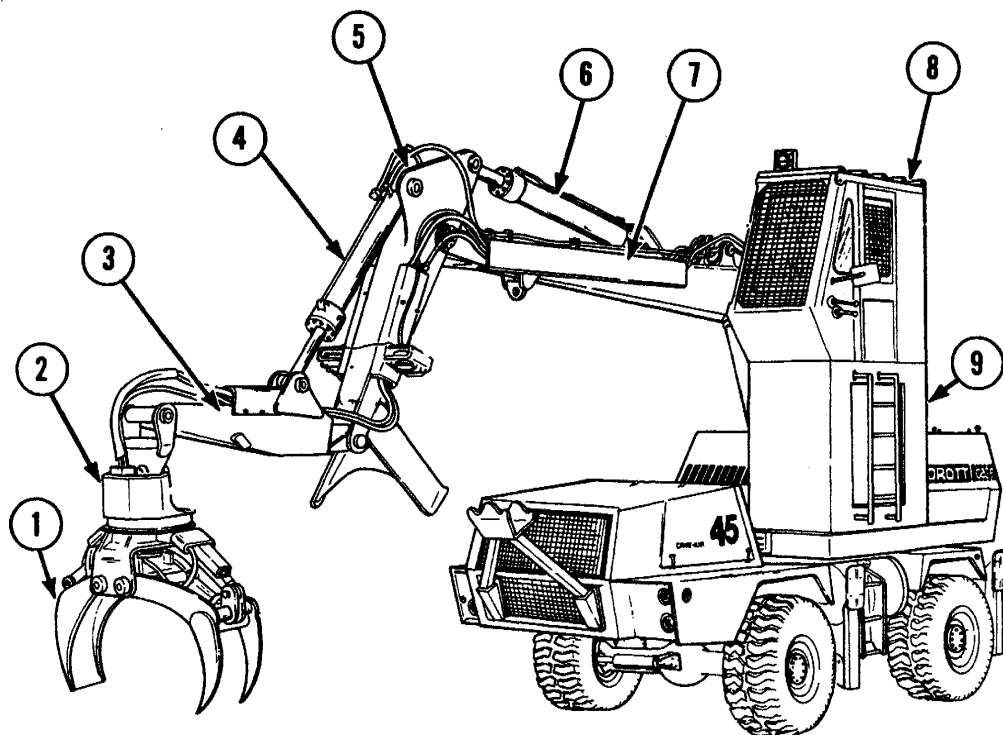
Figure 4. 45R Excavator with Y-Boóm



1. Grapple
2. Rotator for Grapple
3. Grapple Boom
4. Crowd Cylinder
5. Main "E" Boom
6. Logger Cab (optional)
7. Cab Riser (optional)

NOTE: Remainder of Nomenclature is same as shown for Excavator units. See Figure 4.

Figure 5. 45R Logger with Pulpwood Grapple



1. Grapple
2. Rotator for Grapple
3. Grapple Boom
4. Grapple Cylinder
5. Heel Boom
6. Heel Boom Cylinder
7. Main "E" Boom
8. Logger Cab (optional)
9. Cab Riser (optional)

NOTE: Remainder of Nomenclature is same as shown for Excavator units. See Figure 4.

Figure 6. 45R Logger with Tree Length Grapple

GENERAL DESCRIPTION

The 45 CRUZ-AIR is powered by either a Detroit Diesel 4-71 N or Case 504 BDT engine, located at the front of the carrier. In addition to propelling the carrier, the engine

- a) Drives a tandem gear pump which gives hydraulic power for operation of the excavator or logger functions
- b) Drives a single gear pump for operation of the power steering system
- c) Runs an air compressor for operation of the air-over-hydraulic brakes, park brake and air operated components
- d) Turns an alternator for operation of the lights and electrical equipment.

The machine is equipped with a planetary drive and steer axle at the front and a planetary drive axle at the rear. The rear axle is rigid. The front axle is mounted on an oscillating frame. Mechanical locks are installed between the chassis and the oscillating frame.

Steering is hydraulic powered and is reversible to permit normal steering when the turntable is over front or rear of the carrier.

The turntable can be rotated through a full 360 degrees. Turntable rotation is powered by a tandem gear motor through a spur gear reduction.

NOTE

The basic machine for the excavator and logger units is the same, except for the upper hydraulics, attachment, boom, cab and turntable. The differences between the two models will be indicated in the text, where applicable.

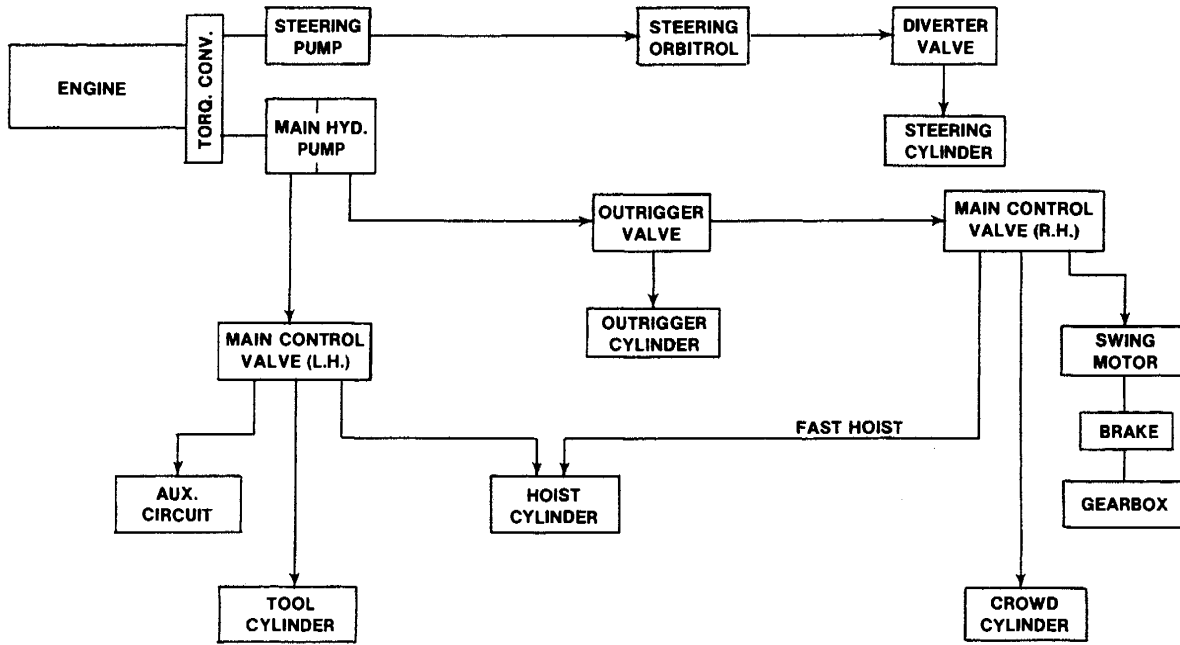


Figure 7. 45R BLOCK DIAGRAM — EXCAVATOR UNITS

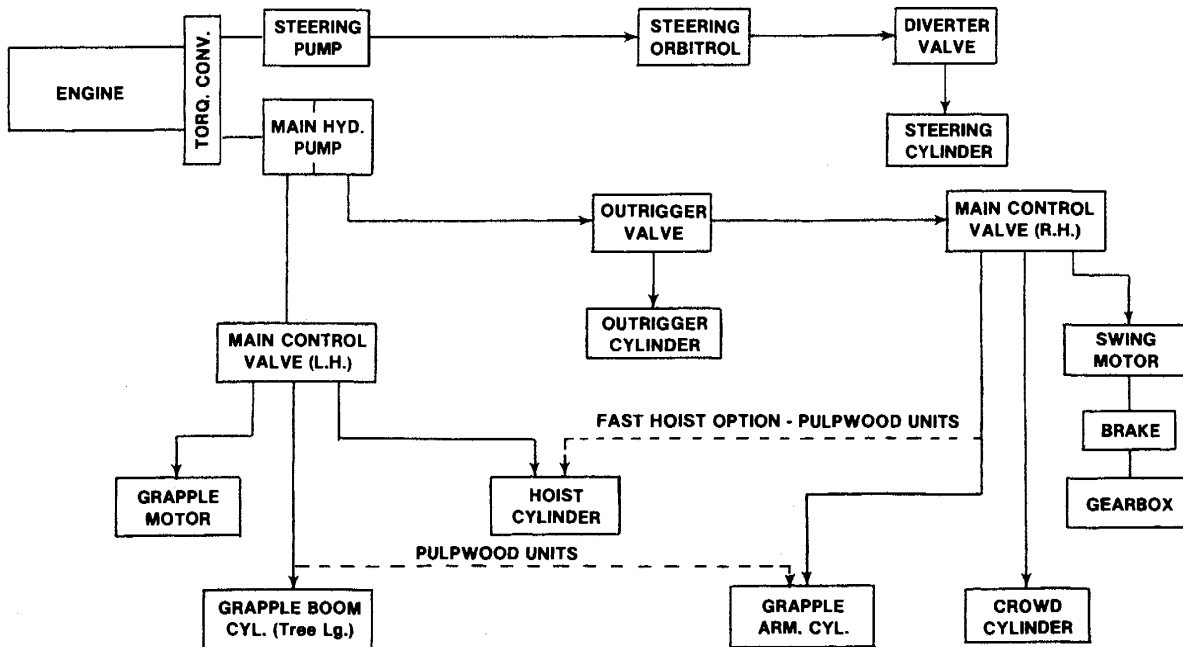


Figure 8. 45R BLOCK DIAGRAM — LOGGER UNITS

SPECIFICATIONS

ENGINE	DETROIT DIESEL 4-71 N	CASE 504 BDT
Type	Diesel, 4-cylinder	Diesel, 6-cylinder
Bore and Stroke	4.25 in. x 5 in. (108 mm x 127 mm)	4.625 in. x 5 in. (117 mm x 127 mm)
Displacement	284 cu. in. (4 654 cm ³)	504 cu. in. (8 259 cm ³)
Horsepower at Governed Speed	157 (117 kW)	164 (122 kW)
Horsepower — SAE Net	141 (105 kW)	148 (110 kW)
Compression Ratio	18.7 to 1	15.5 to 1
Governed RPM	2300	2100
High Idle RPM	2475	2250-2300
Low Idle RPM	550 ± 25	725 ± 25

TORQUE CONVERTER

Model Funk 20E 13T
 Type Remote Mount
 Converter Size 12.75 in (324 mm)

TRANSMISSION

Model Funk 1024R
 Type Power Shift
 Gear Ratio
 1st 5.12:1
 2nd 2.70:1
 3rd 1.50:1
 4th 79:1

AXLE, FRONT

Type Planetary drive/steer
 Ratio 14.76:1

AXLE, REAR

Type Planetary drive, rigid
 Ratio 14.76:1

BRAKES, SERVICE

Brake Shoe Size 17.25 in x 4 in
 (438 mm x 102 mm)
 Lining Area 135 sq in (871 cm²)
 Location One each wheel
 Type Air-over-Hydraulic

PARKING BRAKE

Type Air-actuated, band
 Location On input to rear axle

OUTRIGGERS

Type Hydraulic
 Number Used 2 standard, 4 optional
 Pad Size 14 in x 17 in (356 mm x 432 mm)

COUNTERWEIGHT

Construction Ironcrete
 Location Rear of turntable
 Weight 9200 lb (4 173 Kg)

HEATER

Type Diesel Fuel
 Rating 7,000 BTU/hr (2 000 W)
 Location Rear of Cab

TURNTABLE BEARING

Type Single race, internal gear
 Diameter 45.8 in (1 163 mm)

BRAKE, SWING

Make Drott
 Type Integral disc
 Location On swing gearbox
 Actuation Mechanical, from cab

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