

Product: Case 28 31 35 Mini Excavator Service Repair Manual 7-83260
Full Download: <https://www.arepairmanual.com/downloads/case-28-31-35-mini-excavator-service-repair-manual-7-83260/>

CONTENTS

Sample of manual. Download All 324 pages at:
<https://www.arepairmanual.com/downloads/case-28-31-35-mini-excavator-service-repair-manual-7-83260/>

Product: Case 28 31 35 Mini Excavator Service Repair Manual 7-83260
Full Download: <https://www.arepairmanual.com/downloads/case-28-31-35-mini-excavator-service-repair-manual-7-83260/>

Sample of manual. Download All 324 pages at:
<https://www.arepairmanual.com/downloads/case-28-31-35-mini-excavator-service-repair-manual-7-83260/>

28/31/35 Mini-excavator 7-83260 SERVICE MANUAL

Table of Contents

Chapter 0 - GENERAL INFORMATION

0.1	SAFETY PRECAUTIONS	0-2
0.2	USING THE SERVICE MANUAL	0-3
0.2.1	Manual introduction	0-3
0.2.2	The structure of the manual	0-3
0.2.3	Page numbers	0-3
0.2.4	Highlight symbols	0-3
0.2.5	Special tools	0-3
0.2.6	Repairs and replacements	0-4
0.2.7	Repair time schedule	0-4
0.2.8	Service information releases	0-4
0.3	MACHINE SPECIFICATIONS	0-5
0.3.1	Machine dimensions	0-5
	General dimensions	0-5
	Machine bucket attachment dimensions	0-6
	Dozer blade dimensions	0-7
0.3.2	Weights and capacities	0-7
	Weights	0-7
	Capacities	0-7
0.3.3	General specifications	0-8
	Engine	0-8
	Fuel system and air cleaner	0-9
	Cooling system	0-9
	Transmission	0-9
	Hydraulic system	0-10

Contents

Electrical system	0-10
Permissible temperature	0-10
Lifting capacities	0-11
General torque figures	0-11
Recommended lubricants	0-15
Maintenance schedule	0-16

Chapter 1 - ENGINE

1.1 ENGINE DATA	1-2
1.1.1 Engine specifications	1-2
1.2 ENGINE MAINTENANCE	1-2
1.2.1 Removing and installing the engine	1-2
Removing the engine	1-2
Installing the engine	1-3
1.2.2 Removing and installing the main hydraulic pump drive coupling	1-4
Removing the main hydraulic pump drive coupling	1-4
Installing the main hydraulic pump drive coupling	1-4
1.3 ENGINE TROUBLESHOOTING	1-5

Annex A ENGINE MANUAL

Chapter 2 - COOLING SYSTEM

2.1 COOLING SYSTEM DATA	2-2
2.1.1 Cooling system specifications	2-2
2.1.2 Cooling system torque data	2-2
2.2 COOLING SYSTEM MAINTENANCE	2-3
2.2.1 Introduction	2-3
2.2.2 Principle of operation of the cooling system	2-3
2.2.3 Checking and topping up the engine coolant level	2-4
2.2.4 Checking and adjusting the fan belt tension	2-5
2.2.5 Checking the antifreeze solution	2-5
2.2.6 Checking the operation of the thermostat	2-6

Contents

2.2.7	Checking the radiator cap	2-6
2.2.8	Cleaning the radiator fins	2-7
2.2.9	Removing and installing the radiator and oil cooler	2-7
	Removing the radiator and oil cooler	2-7
	Installing the radiator and oil cooler	2-7
2.3	COOLING SYSTEM TROUBLESHOOTING	2-9
2.3.1	Engine overheats	2-9

Chapter 3 - FUEL, AIR, AND EXHAUST

3.1	FUEL, AIR, AND EXHAUST DATA	3-2
3.1.1	Fuel, air, and exhaust specifications	3-2
	Low pressure fuel system	3-2
	Air system	3-2
3.1.2	Fuel, air, and exhaust torque data	3-2
3.2	FUEL, AIR, AND EXHAUST MAINTENANCE	3-3
3.2.1	Principle of operation of the fuel, air, and exhaust systems	3-3
	Fuel (low pressure)	3-3
	Air	3-3
	Exhaust	3-3
3.2.2	Replacing the fuel filter	3-4
3.2.3	Draining condensate from the fuel tank	3-4
3.2.4	Draining the agglomerator	3-4
3.2.5	Venting air from the fuel system	3-5
3.2.6	Removing and installing the fuel tank	3-6
	Removing the fuel tank	3-6
	Installing the fuel tank	3-6
3.2.7	Cleaning the main air filter element	3-7
3.2.8	Replacing the air filter element	3-8
3.2.9	Replacing the exhaust system	3-8

3.3 FUEL, AIR, AND EXHAUST TROUBLESHOOTING	3-10
3.3.1 Starter motor turns but engine does not start	3-10
3.3.2 Fuel level lamp comes on	3-10
3.3.3 Air filter lamp comes on	3-10
3.3.4 Engine stalls when speed is low	3-10
3.3.5 Insufficient power	3-10
3.3.6 Fuel consumption high	3-11
3.3.7 Black exhaust smoke	3-11
3.3.8 Blue or white exhaust smoke	3-11

Chapter 4 - TRACK GEARBOX

4.1 TRACK GEARBOX DATA	4-2
4.1.1 Track gearbox specifications	4-2
4.1.2 Track gearbox torque data	4-2
4.2 TRACK GEARBOX MAINTENANCE	4-3
4.2.1 Principle of operation of the track gearbox (Typical)	4-3
Axial piston type hydraulic motor	4-3
Control valve	4-4
4.2.2 Checking the track gearbox oil level	4-6
4.2.3 Changing the track gearbox oil	4-6
4.2.4 Removing and installing the track gearbox	4-7
Removing the track gearbox	4-7
Installing the track gearbox	4-7
4.2.5 Disassembling, inspecting, and assembling the track gearbox	4-8
Disassembling the track gearbox	4-8
Inspecting the track gearbox	4-18
Assembling the track gearbox	4-19
4.3 TRACK GEARBOX TROUBLESHOOTING	4-33
4.3.1 The track gearbox does not turn	4-33
4.3.2 Turning is not stable	4-33

Contents

4.3.3	Direction of rotation is reversed	4-33
4.3.4	Oil leaks from joints	4-33

Chapter 5 - BRAKES

The track and slew brakes are included in their respective motor and reduction sections.

Chapter 6 - TRACK, FRAME, AND UNDERCARRIAGE

6.1	TRACK, FRAME, AND UNDERCARRIAGE DATA	6-2
6.1.1	Track, frame, and undercarriage specifications	6-2
6.1.2	Track, frame, and undercarriage torque data	6-2
6.1.3	Track, frame, and undercarriage wear limits	6-2
	Rubber track	6-2
	Metal track	6-3
	Lower roller	6-3
	Drive sprocket	6-3
	Idler	6-3
	Upper roller	6-4
	Track tensioner	6-4
6.2	TRACK, FRAME, AND UNDERCARRIAGE MAINTENANCE	6-5
6.2.1	Component identification	6-5
6.2.2	Cleaning the tracks	6-6
6.2.3	Removing, inspecting, and installing the rubber tracks	6-7
	Removing the rubber track	6-7
	Inspecting the rubber track	6-8
	Installing the rubber track	6-8
6.2.4	Removing, inspecting, and installing the metal tracks	6-9
	Removing the metal track	6-9
	Inspecting the metal track	6-10
	Installing the metal track	6-10
6.2.5	Adjusting the track tension	6-11

Contents

6.2.6	Removing and installing the lower roller	6-12
	Removing the lower roller	6-12
	Installing the lower roller	6-12
6.2.7	Disassembling, inspecting, and assembling the lower roller	6-13
	Disassembling the lower roller	6-13
	Inspecting the lower roller	6-13
	Assembling the lower roller	6-13
6.2.8	Removing and installing the upper roller	6-14
	Removing the upper roller	6-14
	Installing the upper roller	6-14
6.2.9	Disassembling, inspecting, and assembling the upper roller	6-15
	Disassembling the upper roller	6-15
	Inspecting the upper roller	6-16
	Assembling the upper roller	6-16
6.2.10	Removing and installing the idler and track tensioner	6-17
	Removing the idler and track tensioner	6-17
	Installing the idler and track tensioner	6-17
6.2.11	Disassembling, inspecting, and assembling the idler and track tensioner	6-19
	Disassembling the idler and track tensioner	6-19
	Inspecting the idler and track tensioner	6-19
	Assembling the idler and track tensioner	6-19
6.2.12	Removing, inspecting, and installing the sprocket	6-20
	Removing the sprocket	6-20
	Inspecting the sprocket	6-20
	Installing the sprocket	6-20
6.2.13	Removing and installing the dozer blade	6-21
	Removing the dozer blade	6-21
	Installing the dozer blade	6-21
6.2.14	Adjusting the track lever stroke	6-22

Contents

6.3 TRACK, FRAME, AND UNDERCARRIAGE TROUBLESHOOTING	6-23
6.3.1 Machine will not move in a straight line	6-23
6.3.2 Excessive wear of sprocket	6-23

Chapter 7 - CAB AND ROPS

7.1 CAB AND ROPS DATA	7-2
7.1.1 Cab and ROPS specifications	7-2
7.1.2 Cab and ROPS torque data	7-2
7.2 CAB AND ROPS MAINTENANCE	7-3
7.2.1 General information	7-3
7.2.2 Removing and installing the cab or ROPS	7-3
Removing the cab or ROPS	7-3
Installing the cab or ROPS	7-4
7.2.3 Checking the mounting integrity	7-4
7.2.4 Replacing the cab glazing	7-4
7.3 CAB OR ROPS TROUBLESHOOTING	7-4

This section is not applicable to the cab or ROPS.

Chapter 8 - SHEET METAL AND COVERS

8.1 SHEET METAL AND COVERS DATA	8-2
This section is not applicable to sheet metal and covers.	
8.2 SHEET METAL AND COVERS MAINTENANCE	8-2
8.2.1 Identification of covers	8-2
External covers	8-2
28 Internal covers	8-3
31/35 Internal covers	8-4
8.2.2 Removing and installing the covers and the seat	8-5
General	8-5
Removing the engine cover	8-5
Removing the bumpers	8-5
Removing the bulkhead	8-6

Removing the counterweight	8-6
Removing the sump guard	8-7
Removing the seat	8-7
Removing the suspension from the seat	8-9
Removing the bracket assembly	8-9
Removing the seat support	8-10
Removing the foot rest	8-11
Removing the tool box	8-11
Removing the floor plate	8-12
Installing the floor plate	8-12
Installing the tool box	8-13
Installing the foot rest	8-13
Installing the seat support	8-14
Installing the bracket assembly	8-14
Installing the suspension on the seat	8-15
Installing the seat	8-16
Installing the sump guard	8-18
Installing the counterweight	8-18
Installing the bulkhead	8-19
Installing the bumpers	8-19
Installing the engine cover	8-20
8.3 SHEET METAL AND COVERS TROUBLESHOOTING	8-21

This section is not applicable to sheet metal and covers.

Chapter 9 - ELECTRICAL SYSTEM

9.1 ELECTRICAL SYSTEM DATA	9-2
9.1.1 Electrical system specifications	9-2
9.1.2 Electrical system torque data	9-2
9.2 ELECTRICAL SYSTEM MAINTENANCE	9-2
9.2.1 Principle of operation of the electrical system	9-2

Contents

9.2.2	Removing and installing the alternator	9-6
	Removing the alternator	9-6
	Installing the alternator	9-6
9.2.3	Removing and installing the starter motor	9-7
	Removing the starter motor	9-7
	Installing the starter motor	9-7
9.2.4	Removing and installing the instrument cluster	9-8
	Removing the instrument cluster	9-8
	Installing the instrument cluster	9-8
9.2.5	Removing and installing the battery	9-8
	Removing the battery	9-8
	Installing the battery	9-8
9.2.6	Removing and installing the starter switch	9-9
	Removing the starter switch	9-9
	Installing the starter switch	9-9
9.2.7	Removing and installing relays	9-9
	Removing a relay	9-9
	Installing a relay	9-10
9.2.8	Removing and installing the heater	9-10
	Removing the heater	9-10
	Installing the heater	9-10
9.2.9	Removing and installing the wiper motor	9-11
	Removing the wiper motor	9-11
	Installing the wiper motor	9-11
9.2.10	Disassembling, inspecting, and assembling the alternator	9-11
9.2.11	Testing the alternator	9-11
9.2.12	Disassembling, inspecting, and assembling the starter motor	9-11
9.2.13	Disassembling and assembling the instrument cluster	9-11

9.3 ELECTRICAL SYSTEM TROUBLESHOOTING	9-12
9.3.1 Starter motor will not turn engine	9-12
9.3.2 Battery specific gravity reading low	9-12
9.3.3 Alternator not charging	9-12
9.3.4 Wash and wipe inoperative	9-12
9.3.5 Heater will not operate	9-13
9.3.6 Worklamp inoperative	9-13
9.3.7 Beacon inoperative	9-13
9.3.8 Circuits inoperative	9-13

Chapter 10 - HYDRAULIC SYSTEM (EXCEPT CYLINDERS)

10.1 HYDRAULIC SYSTEM DATA	10-2
10.1.1 Hydraulic system specifications	10-2
10.1.2 Hydraulic system torque data	10-3
Control valve	10-3
Main hydraulic pump	10-3
10.1.3 Hydraulic system special tools	10-4
10.2 HYDRAULIC SYSTEM MAINTENANCE	10-5
28 Hydraulic Circuit Diagram (up to Ser No. DBK0005010)	10-5
28 Hydraulic Circuit Diagram (from Ser No. DBK0005010)	10-6
31/35 Hydraulic Circuit Diagram (31, up to Ser No. DBK0006026/ 35, up to Ser No. DBK0007002)	10-7
31/35 Hydraulic Circuit Diagram (31, from Ser No. DBK0006026/ 35, from Ser No. DBK0007002)	10-8
10.2.1 Principle of operation of the hydraulic system and components	10-9
Main hydraulic pump	10-10
Control valve (28)	10-14
Control valve (31 and 35)	10-15
Control valve operation	10-17
Straight line travel function	10-18
Dipper-in function	10-19

	Two speed slew function	10-19
	Main relief valve	10-20
	Port relief valve	10-21
	Anti-cavitation valve	10-23
	Solenoid valve	10-24
	Servo controllers	10-25
	Servo control system	10-26
	Swivel joint	10-27
10.2.2	Checking the hydraulic oil level	10-28
10.2.3	Changing the hydraulic oil	10-28
10.2.4	Replacing the return filter cartridge	10-29
10.2.5	Pressurising the hydraulic tank	10-30
10.2.6	Venting air from the hydraulic system	10-30
10.2.7	Removing and installing the hydraulic tank	10-31
	Removing the hydraulic tank	10-31
	Installing the hydraulic tank	10-31
10.2.8	Removing and installing the main hydraulic pump	10-32
	Removing the main hydraulic pump	10-32
	Installing the main hydraulic pump	10-32
10.2.9	Replacing the main hydraulic pump seals	10-33
10.2.10	Removing and installing the auxiliary hydraulic pump	10-47
	Removing the auxiliary hydraulic pump	10-47
	Installing the auxiliary hydraulic pump	10-47
10.2.11	Replacing the auxiliary hydraulic pump seals	10-48
10.2.12	Removing and installing the control valve	10-49
	Removing the control valve	10-49
	Installing the control valve	10-50
10.2.13	Replacing the main and port relief valve seals	10-51
10.2.14	Replacing the anti-cavitation valve seals	10-53

Contents

10.2.15	Replacing a load check valve seal (31 and 35 only)	10-54
10.2.16	Replacing the spool seals (manually operated section)	10-54
10.2.17	Replacing the spool seals (servo operated section)	10-56
10.2.18	Replacing the slew flow control seals	10-57
10.2.19	Replacing the travelling and straight travelling spool seals	10-58
10.2.20	Replacing the control valve seals	10-59
10.2.21	Removing and installing the solenoid valve	10-65
	Removing the solenoid valve	10-65
	Installing the solenoid valve	10-65
10.2.22	Replacing the solenoid valve seals	10-66
10.2.23	Removing and installing the servo controller	10-66
	Removing the servo controller	10-66
	Installing the servo controller	10-66
10.2.24	Replacing the servo controller seals	10-67
10.2.25	Removing and installing the swivel joint	10-68
	Removing the swivel joint	10-68
	Installing the swivel joint	10-68
10.2.26	Replacing the swivel joint seals	10-69
10.2.27	Inspecting the swivel joint after assembly	10-70
10.2.28	Removing and installing the shuttle valve	10-70
	Removing the shuttle valve	10-70
	Installing the shuttle valve	10-71
10.2.29	Adjusting the main relief valve set pressure	10-72
10.2.30	Adjusting the solenoid valve relief set pressure	10-74
10.2.31	Checking the operation of the servo controls isolator and solenoid valve . .	10-75
10.2.32	Checking operation of the main hydraulic pump	10-75
10.2.33	Checking the main hydraulic pump discharge volume	10-76
10.2.34	Post-assembly test of the main hydraulic pump	10-77
10.2.35	Adjusting the port relief valve set pressure	10-78

Contents

10.2.36	Adjusting the slew cross line relief valve set pressure	10-79
10.2.37	Lowering the attachment after engine failure	10-81
10.3	HYDRAULIC SYSTEM TROUBLESHOOTING	10-82
10.3.1	Main hydraulic pump	10-82
	Pump will not discharge oil	10-82
	Noise level is high	10-82
	Oil leaks from oil seals	10-82
	Oil leaks from between housing and flange or cover	10-82
	Discharge volume is low	10-83
10.3.2	Control valve	10-83
	Oil leaks from spool seal	10-83
	Spool sliding movement not smooth	10-83
	Cylinder drops when shifting to a lifting operation	10-83
	Cylinder drops (will not hold in spool neutral position)	10-84
	Load will not move (pressure will not increase)	10-84
	Load does not move (pressure rises)	10-84
10.3.3	Solenoid valve	10-85
	Solenoid valve does not operate	10-85
10.3.4	Servo controllers	10-85
	Secondary pressure does not rise	10-85
	Secondary pressure does not stabilise	10-85
	Secondary pressure is high	10-85
10.3.5	Swivel joint	10-86
	External oil leakage	10-86
	Internal oil leakage	10-86

Chapter 11 - LOADER

This chapter is not applicable to the 28/31/35 mini-excavators.

Chapter 12 - BOOM, DIPPER, AND LINKAGE

12.1 BOOM, DIPPER, AND LINKAGE DATA	12-2
12.1.1 Boom, dipper, and linkage specifications	12-2
Bucket	12-2
Boom	12-3
Dipper	12-4
12.2 BOOM, DIPPER, AND LINKAGE MAINTENANCE	12-5
12.2.1 Greasing the pivot pins, the pedals, and the levers	12-5
12.2.2 Removing and installing the bucket	12-6
Removing the bucket	12-6
Installing the bucket	12-6
12.2.3 Removing and installing the bucket link	12-8
Removing the bucket link	12-8
Installing the bucket link	12-8
12.2.4 Removing and installing the dipper	12-9
Removing the dipper	12-9
Installing the dipper	12-9
12.2.5 Removing and installing the boom	12-10
Removing the boom	12-10
Installing the boom	12-11
12.2.6 Removing and installing the king post support, off-set arm, and linkage	12-12
Removing the king post support, off-set arm, and linkage	12-12
Installing the king post support, off-set arm, and linkage	12-12
12.3 BOOM, DIPPER, AND LINKAGE TROUBLESHOOTING	12-13

Chapter 13 - HYDRAULIC CYLINDERS

13.1 HYDRAULIC CYLINDERS DATA	13-2
13.1.1 Hydraulic cylinders specifications	13-2
Boom cylinder	13-2
Dipper cylinder	13-2

Bucket cylinder	13-2
Off-set cylinder	13-2
Dozer blade cylinder	13-2
13.2 HYDRAULIC CYLINDERS MAINTENANCE	13-3
13.2.1 Principle of operation of hydraulic cylinders (Typical)	13-3
13.2.2 Removing and installing cylinders	13-4
Removing and installing cylinders	13-4
13.2.3 Disassembling, inspecting, and assembling cylinders (Typical)	13-4
Disassembling cylinders	13-4
Inspecting cylinders after disassembly	13-5
Assembling cylinders	13-5
Inspecting cylinders after assembly	13-5
13.2.4 Cylinder leak test	13-6
External leak test	13-6
Internal leak test	13-6
13.2.5 Venting air from a hydraulic cylinder	13-6
13.3 HYDRAULIC CYLINDER TROUBLESHOOTING	13-7
13.3.1 Oil leaks from piston rod sliding surface	13-7
13.3.2 Oil leaks from the outer circumference of the rod cover	13-7
13.3.3 Cylinder natural fall is 0,5 mm or greater	13-7
13.3.4 Boom or dipper cylinder will not operate or operation is slow or there is no power	13-8
13.3.5 Off-set cylinder will not operate	13-8
13.3.6 Bucket cylinder does not move or there is no power	13-8
13.3.7 Dozer blade cylinder does not move or there is no power	13-9
13.3.8 Boom drops temporarily when operating lever is pulled gently	13-9
13.3.9 Boom cylinder natural fall is excessive	13-9
13.3.10 Dipper or bucket cylinder natural fall is excessive	13-9
13.3.11 Dozer blade cylinder natural fall is excessive or dozer blade will not hold up the machine	13-9

Chapter 14 - SUPERSTRUCTURE (INCLUDING SLEW MOTOR)

14.1 SUPERSTRUCTURE (INCLUDING SLEW MOTOR DATA)	14-2
14.1.1 Superstructure (including slew motor) specifications (28, up to Ser No. DBK0005010/31, up to Ser No. DBK0006026/35, up to Ser No. DBK0007002)	14-2
14.1.2 Superstructure (including slew motor) torque data (28, up to Ser No. DBK0005010/31, up to Ser No. DBK0006026/35, up to Ser No. DBK0007002)	14-2
14.2 SUPERSTRUCTURE (INCLUDING SLEW MOTOR) MAINTENANCE	14-3
14.2.1 Principle of operation of slewing	14-3
Slew bearing	14-3
Slew motor (28, up to Ser No. DBK0005010/31, up to Ser No. DBK0006026/35, up to Ser No. DBK0007002)	14-4
Reduction gear	14-4
Relief valve	14-5
Parking brake	14-6
Timer valve	14-7
Bypass valve	14-7
Slew motor (28, from Ser No. DBK0005010/31, from Ser No. DBK0006026/35, from Ser No. DBK0007002)	14-8
14.2.2 Removing and installing the superstructure	14-10
Removing the superstructure	14-10
Installing the superstructure	14-10
14.2.3 Removing and installing the control lever stands	14-11
Removing the control lever stands	14-11
Installing the control lever stands	14-11
14.2.4 Removing and installing the slew motor	14-12
Removing the slew motor	14-12
Installing the slew motor	14-12
14.2.5 Removing and installing the slew bearing (ring)	14-12
Removing the slew bearing	14-12
Installing the slew bearing	14-13

CASE CORPORATION 18 Man 7-83260 GB
October 1998

Chapter 0
GENERAL INFORMATION

0.1 SAFETY PRECAUTIONS

- Accidents are caused, they do not just happen!
- Attention to the work, and general common sense will prevent most accidents, remember SAFETY is only a word until it is put into practice. Use safe practices and ensure that people working with you do the same.



CAUTION

Ensure the engine stop control is connected or has been re-connected before attempting to start the engine.

- Only start the machine when seated in the driving position.
- Never get on or off the machine whilst it is in motion.
- It is dangerous to make mechanical adjustments when the engine is running.
- Never repair or tighten hydraulic hoses or fittings while the system is under pressure.
- Never take chances when slinging or handling heavy components, they always cause damage or injury if they slip.
- When working underneath the machine ensure that all hydraulic services are thoroughly depressurised.
- **Never** rely on hydraulic jacks alone, **always** fully support the weight of the machine.
- Ensure there is a ready supply of drain and drip-trays and a convenient point to discard waste oil.
- Always cover oil spillages with sawdust or proprietary oil absorbent materials, and clean-up as soon as possible.
- The workshop must be clean and tidy, always remove scrap to a disposal site or to a store.

- **Fire hazard:-** Scrap parts tend to accumulate oil soaked sawdust, paper and other highly combustible material.
- Ensure fire equipment is readily accessible and know how to use it, especially around welding plant, and when working on electrical and fuel injection systems.



WARNING

Never make drifts and punches from old machine parts as the materials used can splinter and crack when subjected to hammer blows.

- Make sure the First Aid facilities are adequately stocked.
- When testing machines always observe the safety instructions given in the Operator Book.

Remember it is not your own machine you will work on and the fault you have been asked to repair may not be the only malfunction on the machine. It is common for major controls to malfunction or even be disconnected yet not be reported as a problem by the owner or operator - CHECK THE MACHINE THOROUGHLY BEFORE DRIVING IT IN CONFINED SPACES.

0.2 USING THE SERVICE MANUAL

0.2.1 Manual introduction

The purpose of this manual is to assist Dealers and Distributors with the efficient repair and maintenance of the 28, 31 and 35 mini-excavators.

Following the procedures as detailed together with using the special tools where appropriate, will enable the operations to be completed within the time stated in the Repair Time Schedule (RTS).

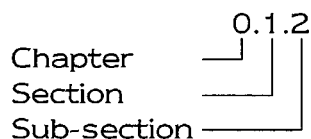
0.2.2 The structure of the manual

This manual has been divided into 15 Chapters using the same numbering system as the Operator's Book and the Parts Catalogue.

Each Chapter is divided into three Sections. The three Sections are Data, Maintenance and Troubleshooting.

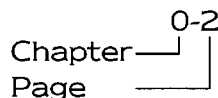
Some Sections are further divided into Sub-sections.

The Contents at the front of this manual lists all Chapters, Sections and Sub-sections with corresponding page numbers using the following numbering system for identification.



0.2.3 Page numbers

The page numbers are shown at the bottom of each page in sequential order. Each Chapter starts at page 1. The Chapter number is also included on each page.



0.2.4 Highlight symbols

Throughout this manual the following symbols are used to draw your attention to areas where special care is required, to prevent accident, injury, damage to equipment or to give you additional information.



WARNING

A warning gives the reader information (or a command) which, if disregarded, could cause injury or death. Because of its importance, any warning precedes the Instruction(s) which, in the act of being performed, could be dangerous.



CAUTION

A caution provides the reader with advice, which, if disregarded, could cause damage to the equipment.



Note

A note furnishes additional information to assist the reader when reading a particular paragraph.

0.2.5 Special tools

The use of the special tools mentioned in the text contributes to safe, efficient and profitable repair. Some operations are impracticable without their use.

0.2.6 Repairs and replacements

When service parts are required it is essential that only genuine CASE replacements are used.

Attention is particularly drawn to the following points concerning repairs and the fitting of replacement parts and accessories.

Safety features embodied in the machine may be impaired if other than genuine parts are fitted.

In certain territories, legislation prohibits the fitting of parts not to the machine manufacturer's specification. Torque wrench setting figures given in the Service Manual must be strictly used. Locking devices, where specified, must be fitted. If the efficiency of a locking device is impaired during removal it must be renewed.

The machine warranty may be invalidated by the fitting of other than genuine CASE parts. All CASE replacements have the full backing of the manufacturer's warranty. Distributors and Dealers are obliged to supply only genuine service parts.

0.2.7 Repair Time Schedule

The operations listed in the Repair Time Schedule (RTS) will include those described in this manual. The time set against each operation in the schedule is established by performing the actual operations on standard machines using special tools where applicable. The RTS for use with this manual is issued as a separate distribution.



Note

Repair Time Schedules are issued to Distributors and Dealers only and are not for general publication.

0.2.8 Service Information Releases

It is important to maintain the Service Information Releases library up-to-date as servicing procedures or part number changes may modify the instructions given in this manual.

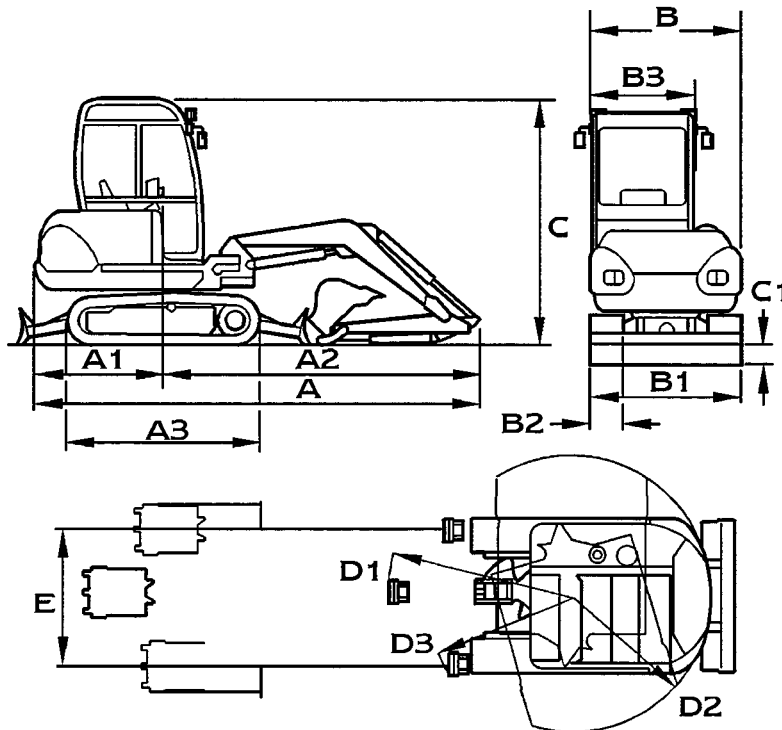
0.3 MACHINE SPECIFICATIONS

0.3.1 Machine dimensions

The machine dimensions are as follows:

General dimensions

	28	31	35
A Overall length	4510 mm	4700 mm	4970 mm
A1 Slew ring centre to engine cover	1280 mm	1370 mm	1390 mm
A2 Slew ring centre to lowered boom	3230 mm	3330 mm	3580 mm
A3 Length of one track:			
Rubber	1910 mm	2020 mm	2110 mm
Metal	1870 mm	1980 mm	2075 mm
B Overall width of body	1400 mm	1400 mm	1400 mm
B1 Overall width of track	1450 mm	1520 mm	1630 mm
B2 Width of one track	300 mm	300 mm	350 mm
B3 Width of cab	955 mm	955 mm	955 mm
C Overall height	2530 mm	2530 mm	2530 mm
C1 Minimum ground clearance	290 mm	290 mm	290 mm
D1 Minimum slew radius	1745 mm	1755 mm	1820 mm
D2 Tail swing radius	1285 mm	1370 mm	1390 mm
D3 Minimum off-set slew radius	1370 mm	1375mm	1430mm
E Bucket off-set:			
Left	690 mm	710 mm	750 mm
Right	580 mm	610 mm	620 mm
Slew offset angle:			
Cab	L75°, R90°	L80°, R90°	L80°, R90°
Canopy	L89°, R90°	L90°, R90°	L90°, R90°

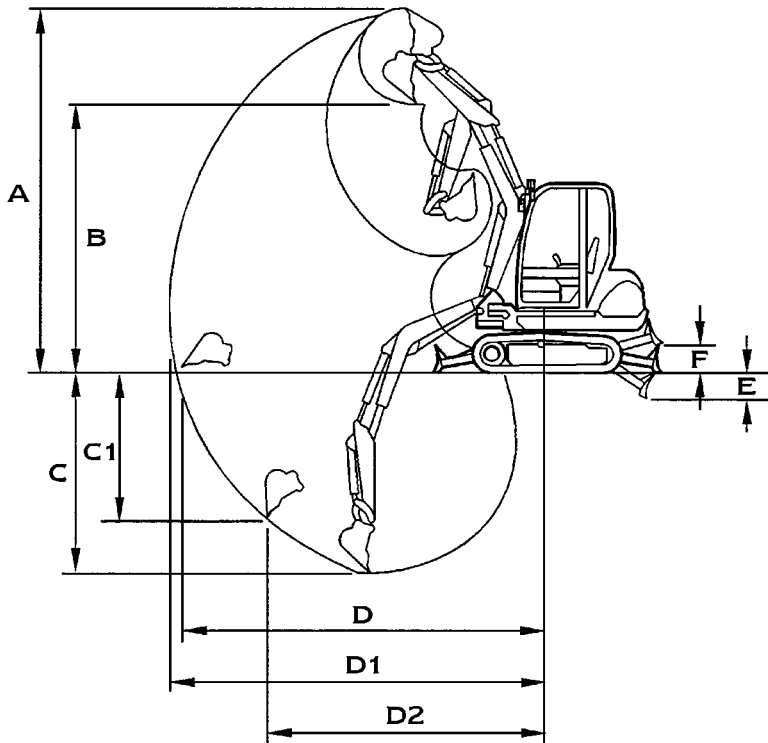


CC133

General Information

Machine bucket attachment dimensions

		28	31	35
A	Maximum digging height	4485 mm	4805 mm	5070 mm
B	Maximum loading height	3210 mm	3465 mm	3660 mm
C	Maximum digging depth	2600 mm	2850 mm	3105 mm
C1	Maximum depth of flat excavation . . .	1885 mm	2070 mm	2280 mm
D	Maximum reach at ground level	4540 mm	4755 mm	5100 mm
D1	Maximum digging reach	4665 mm	4885 mm	5220 mm
D2	Reach with vertical excavation face . . .	3445 mm	3500 mm	3760 mm
E	Maximum cutting depth	390 mm	405 mm	430 mm
F	Maximum height	370 mm	385 mm	405 mm
Operating Angle (maximum)				
Tracks in line with slope:				
	Intermittent	30°	30°	30°
	Continuous	25°	25°	25°
	Tracks across slope	15°	15°	15°



CC134

General Information

Dozer blade dimensions

Overall length	1170 mm	1270 mm	1350 mm
Overall height	350 mm	350 mm	350 mm
Overall width	1450 mm	1520 mm	1630 mm
Weight	125 kg	35 kg	151 kg

0.3.2 Weights and capacities

Weights

Weight in transport condition with standard attachment:

	28	31	35
Base	2810 kg	3110 kg	3430 kg
With cab	2810 kg	3110 kg	3430 kg
With canopy	-79 kg	-79 kg	-79 kg
With metal track	+37 kg	+31 kg	+ 43kg
Ground pressure:			
With rubber track	0,29 kgf/cm ²	0,30 kgf/cm ²	0,31 kgf/cm ²
With metal track	0,30 kgf/cm ²	0,30 kgf/cm ²	0,30 kgf/cm ²

Capacities

Fuel tank	40 ltr	40 ltr	40 ltr
Cooling system (Radiator+cylinder block)	5 ltr	5 ltr	5 ltr
Engine oil (inc filter)	5,7 ltr	5,7 ltr	5,7 ltr
Hydraulic tank	48 ltr	48 ltr	48 ltr
Hydraulic circuit (Tank + pipework)	60 ltr	62 ltr	64 ltr
Upper rollers 2 x	45 cc	45 cc	45 cc
Lower rollers:			
6x (28), 8x (31,35)	70 cc	70 cc	70 cc
Idlers 2x	50 cc	50 cc	50 cc
Track gearbox 2x	0,8 ltr	0,8 ltr	1 lt

General Information

Product: Case 28-31-35 Mini Excavator Service Repair Manual 7-83260
Full Download: <https://www.arepairmanual.com/downloads/case-28-31-35-mini-excavator-service-repair-manual-7-83260/>

Anti-freeze (See table)

Lowest temperature of protection needed	% Volume of anti-freeze	Mixture ratio by volume anti-freeze:water
-12°C	25	1:3
-18°C	33	1:2
-25°C	40	1:1.5
-37°C	50	1:1

0.3.3 General specifications

Engine

	28	31	35
Make	Perkins	Perkins	Perkins
Type	103-13	103-15	103-15
Build list	KH50564	KE50563	KE50563
Number of cylinders	3	3	3
Bore	84 mm	84 mm	84 mm
Stroke	80 mm	90 mm	90 mm
Compression ratio	23:1	22:1	22:1
Firing order	1,2,3	1,2,3	1,2,3
Head bolt torque (oiled)	88-93 Nm - All Models		
Valve Clearance (inlet and exhaust)	0.20 mm (cold) 0.20 mm (cold) 0.20 mm (cold)		
Low idle speed (Adjust to avoid vibration)	900-1200 rpm 900-1200 rpm 900-1200 rpm		
Maximum governed no load speed	2350 rpm	2460 rpm	2800 rpm
Power	17.0 kW @ 2200 rpm	20.8 kW @ 2300 rpm	22.5 kW @ 2600 rpm
Torque	74 Nm @ 2200 rpm	88 Nm @ 2000 rpm	88 Nm @ 2000 rpm
Oil filter	Canister with bypass valve - All Models		

Sample of manual. Download All 324 pages at:

CASE CORPORATION <https://www.arepairmanual.com/downloads/case-28-31-35-mini-excavator-service-repair-manual-7-83260/> Manual 7-83260 GB

October 1998