CASE

PROFESSIONAL PARTNER

REPAIR MANUAL

CRAWLER DOZER

1850K
TIER 3

87630287 NA

Issued 03-2007

MidWestTech | Case 1850K Tier 3 Crawler Dozer Service Manual | Publication 87630287

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

SECTION 0

GENERALITIES

TABLE OF CONTENTS

SUBJECT	PAGE
SAFETY RULES	III-X
IDENTIFICATION DATA	0-3
Table of fluids used	0-5
Main dimensions 1850K BD	0-6
Main dimensions 1850K PAT	0-7
Technical data	0-8
1850K (LGP)	0-22
1850K (LT/XLT)	0-23
WEIGHT TABLE 1850K	0-24
LIST OF WEIGHTS FOR MAIN SERVICE COMPONENTS	0-25
STABILITY	0-27
GENERAL INSTRUCTIONS	0-28
TROUBLESHOOTING	0-34
UNITS OF MEASURE	0-35
TABLE OF TIGHTENING TORQUES	0-37

MidWestTech | Case 1850K Tier 3 Crawler Dozer Service Manual | Publication 87630287 Order the manual at mid-west-tech.com >

SECTION 1

ENGINE

TABLE OF CONTENTS

SECTION	SUBJECT	PAGE
1.1	GENERAL SPECIFICATIONS	1-3
	Identification of the engine	1-4
1.2	ENGINE DATA	1-5
1.3	DIAGRAMS ENGINE	1-6
1.4	ENGINE/CONVERTER REMOVAL AND INSTALLATION	1-11
	Removal of engine group assembly	1-11
	Removal of the radiator group	1-23
	Removal of silencer group	1-25
	Removal of converter group	1-26
	Reinstalling the converter group	1-27
	Reinstalling the silencer group	1-29
	Reinstalling the radiator group	1-30
	Reinstalling the engine group assembly	1-32
1.5	DIAGNOSTICS WITH BLINK CODE	1-45

MidWestTech | Case 1850K Tier 3 Crawler Dozer Service Manual | Publication 87630287 Order the manual at mid-west-tech.com >

SECTION 2

TRANSMISSION

TABLE OF CONTENTS

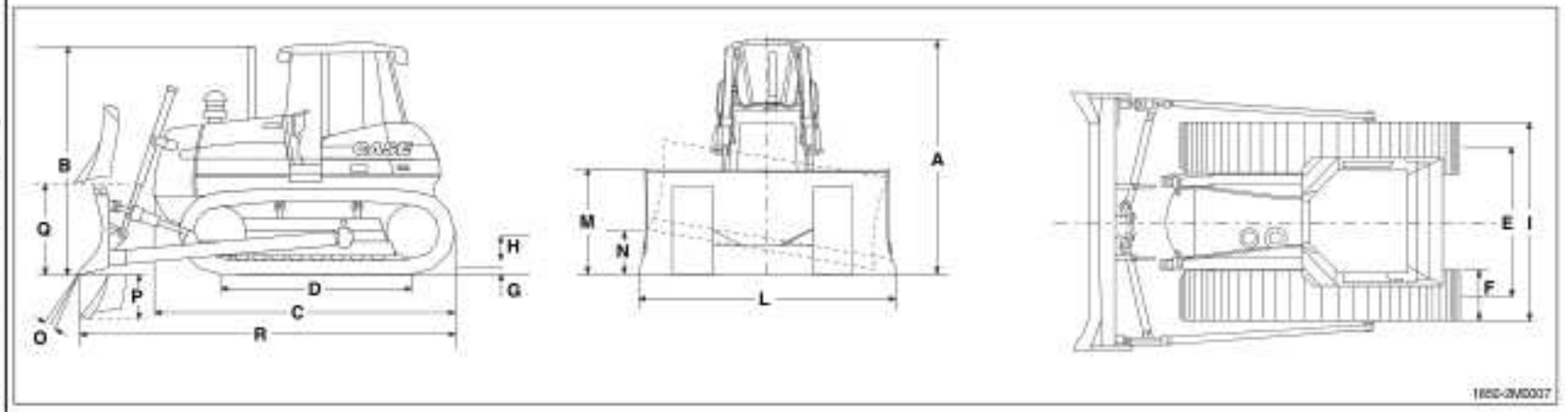
SECTION	SUBJECT	PAGE
2.1	GENERAL DESCRIPTION	2-3
2.1.1	Transmission torque converter hydraulic diagram	2-3
	Transmission housing/propeller shaft/torque converter	2-7
2.2	TROUBLESHOOTING	2-8
2.3	TESTS	2-11
2.3.1	Torque converter stall test	2-11
2.3.2	Delivery pressure test procedure	2-11
2.3.3	Procedure for the check of the converter safety valve pressure	2-12
2.3.4	Transmission gear shifting electric control valve	2-13
2.3.4.1	Positioning of diagnostic hoses	2-14
2.3.5	Transmission setting	2-15
2.4	PROCEDURES FOR THE REPAIR OF THE TORQUE CONVERTER	2-17
2.4.1	Disassembly	2-17
2.4.2	Reassembly	2-28
2.5	PROCEDURES FOR THE REPAIR OF THE TRANSMISSION	2-30
2.5.1	Removal	2-30
2.5.2	Re-Installation	2-31
2.5.3	Disassembly	2-32
2.5.4	Overhaul of the forward speed clutch	2-49
2.5.5	Overhaul of the 3rd speed	2-51
2.5.6	Overhaul of the reverse speed clutch	2-56
2.5.7	Modulating valves (Disassembly/Assembly)	2-60
2.5.8	Pressure relief valve (Disassembly/Assembly)	2-61
2.6	SPECIFICATIONS AND DATA	2-65
2.6.1	General data	2-65
2.6.2	Tightening torques (Torque converter)	2-66
	Transmission housing	2-67
2.6.3	Transmission Data	2-68
	Transmission Clutch	2-68
	Transmission clutch discs	2-70
	1st - 2nd - 3rd speed Transmission Clutch modulating valves	2-70
	Lube oil pressure relief valve	2-71
	Forward/reverse modulating valves	2-72
	Transmission pressure relief and torque converter safety valve	2-73
	Torque converter/transmission feeding pump	2-74
	Oil filters	2-75
2.7	SPECIAL TOOLS	2-77

MidWestTech | Case 1850K Tier 3 Crawler Dozer Service Manual | Publication 87630287 Order the manual at mid-west-tech.com >

MidWestTech | Case 1850K Tier 3 Crawler Dozer Service Manual | Publication 87630287

Carefully read personal and machine SAFETY PRECAUTIONS at the beginning of this Manual

MAIN DIMENSIONS 1850K BD



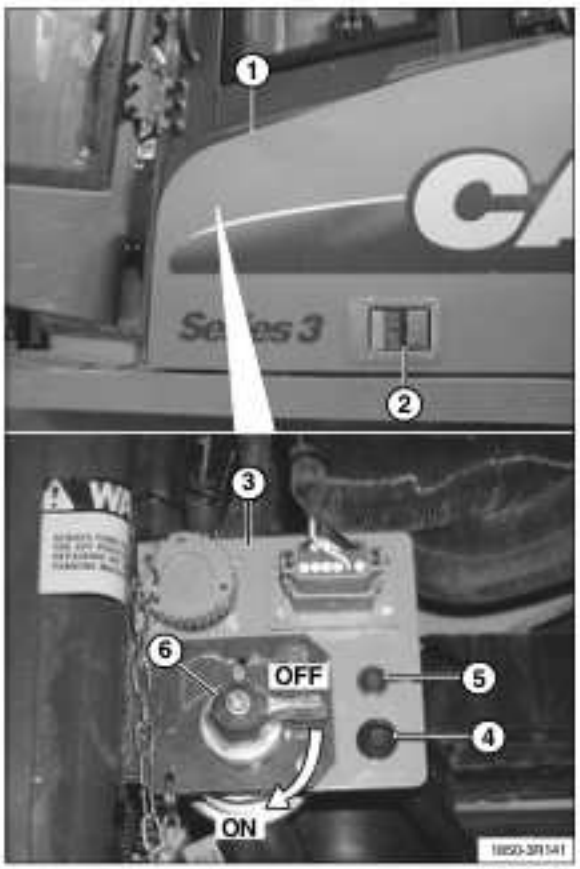
TRACTOR DIMENSION		LT BD	XLT BD	LGP BD
A Height over cab	mm	3235 (127.4 in)	3235 (127.4 in)	3235 (127.4 in)
B Height over muffler	mm	3195 (125.8 in)	3195 (125.8 in)	3195 (125.8 in)
C Tractor length	mm	4195 (165.1 in)	4340 (170.9 in)	4340 (170.9 in)
D Length of track on ground	mm	2700 (106.2 in)	3205 (126.2 in)	3205 (126.2 in)
E Gauge	mm	1900 (74.8 in)	1900 (74.8 in)	2062 (82 in)
F Track shoes width	mm	560-610 (22-24 in)	560-610 (22-24 in)	762-915 (30-36 in)
G Shoe grouser height	mm	71.5 (2.8 in)	71.5 (2.8 in)	71.5 (2.8 in)
H Ground clearance	mm	390 (15.3 in)	390 (15.3 in)	390 (15.3 in)
I Overall width with shoes 560 (22 in)	mm	2460 (96.8 in	2460 (96.8 in)	–
Overall width with shoes 610 (24 in)	mm	2510 (98.8 in)	2510 (98.8 in)	–
Overall width with shoes 760 (30 in)	mm	–	–	2844 (111.9 in)
Overall width with shoes 915 (36 in)	mm	–	–	2997 (118 in)
Shipping weight w blade***	kg	17290 (38117 lb)	18390 (40543 lb)	19400 (42769 lb)

BLADES DIMENSIONS		Semi-U (HSU)	Straight (HS)	Semi-U (HSU)	Straight (HS)	Straight (HS)
Blade capacity SAE J1265	m^3	5.6 (197.8 ft^3)	3.9 (137.7 ft^3)	5.6 (197.8 ft^3)	3.9 (137.7 ft^3)	3,7 (130.7 ft^3)
L Width of blade	mm	3460 (136.2 in)	3385 (133.3 in)	3460 (136.2 in)	3385 (133.3 in)	3900 (153.5 in)
M Height of blade	mm	1425 (56.1 in)	1215 (47.8 in)	1425 (56.1 in)	1215 (47.8 in)	1110 (43.7 in)
N Max. tilt	mm	840 (33.1 in)	758 (29.9 in)	840 (33.1 in)	758 (29.9 in)	836 (32.9 in)
O Max. pitch	deg	± 5°	± 5°	± 5°	± 5°	± 5°
P Digging depth	mm	481 (18.9 in)	481 (18.9 in)	550 (21.6 in)	481 (18.9 in)	535 (21 in)
Q Max. lift above ground	mm	1100 (43.3 in)	1100 (43.3 in)	1190 (46.8 in)	1100 (43.3 in)	1160 (45.7 in)
R Overall length with blade**	mm	5487 (216 in)	5440 (214.1 in)	5878 (231.4 in)	5440 (214.1 in)	5675 (223.4 in)
Operating weight with blade*	kg	20530 (45260.9 lb)	20300 (44753.8 lb)	21630 (47686 lb)	21400 (47178.9 lb)	22730 (50111 lb)

* Includes ROPS Cab, 610 mm (24 in) shoes (915 mm (36 in) for LGP), fuel oil and operator, for unit with ROPS canopy deduct 300 kg (661.4 lb).
** With ripper raised, add 935 mm (36.8 in) to dozer length.
*** Includes ROPS Cab, 610 mm (24 in) shoes (915 mm (36 in) for LGP), 10% fuel, blade lift cylinders, lubricants, coolant.

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

1.5 DIAGNOSTICS WITH BLINK CODE



Open left side panel (**1**) by means of handle (**2**) to gain access to diagnostic component plate (**3**). This houses diagnostic request switch (**4**), error lamp (**5**) for the indication of faults and battery master switch (**6**).
With engine stationary and ignition key (**6**) in second click position (**ON**), activate diagnostic request switch (**4**) to monitor engine ECU operation and check for any active error codes.
Either of two conditions may occur:

a. indicator on: major errors in ECU;
b. indicator off: minor errors or no errors in ECU.

To request list of blink codes press diagnostic request switch (**4**). On releasing the button error indicator lamp (**5**) displays the first blink code (consisting of three digits corresponding to three blinking sequences of error indicator lamps. When the first blink code is displayed press again button (**4**) to display the next blink code and so on for the remaining blink codes.
When the ECU has sent the last blink code, it restarts from the first. The blink code display rate, the flashing rate of indicator (**5**) is adjustable and can be increased or reduced.
Example: If boost pressure and temperature sensor workout occurs error codes 133 and 134 are displayed. Therefore, the first active code will be displayed as:

a. 1 blink on indicator lamp (**5**)
b. pause
c. 3 blinks on indicator
d. pause
e. 3 blinks on indicator

Pressing again button (**4**) will activate the following display of the second active code:

a. 1 blink on indicator lamp
b. pause
b. 3 blink on indicator lamp
d. pause
e. 4 blink on indicator lamp

If memory contains no other error codes, upon pressing the button again code 133 will reappear.
List of error codes with associated meanings is given hereunder.

MidWestTech | Case 1850K Tier 3 Crawler Dozer Service Manual | Publication 87630287 Order the manual at mid-west-tech.com >

6.1 GENERAL DESCRIPTION

6.1.1 OPERATION OF THE HYDRAULIC SYSTEM (refer EQUIPMENT HYDRAULIC SCHEMATIC)

The hydraulic system of dozer 1850K can be configured for bulldozer or PAT angle dozer operation.

Bulldozer has two blade lift/lower cylinders, a tilt cylinder and two ripper cylinders. PAT configuration has an extra angle dozer section built into the control valve plus two additional cylinders on blade carrier.

Equipment hydraulic circuit includes a variable displacement swash plate/plunger type pressure pump (**P**) supplying both equipment circuits and steering through control valve (**M**). Thus, both circuits use the same hydraulic oil, the same pump but operate at different pressure levels.

Oil pressure from steering circuit is admitted to hydraulic motor (**M**) which powers driving wheels through steering differential.

Circuit operating pressures are as follows:

equipment (TILT - LIFT - ANGLE) 3046 psi ±72 (210± bar);

equipment (RIPPER) 3553.5 psi±72 (245±5 bar);

steering 5510 psi±72 (380±5 bar).

System oil filtering is through an 8 µ capacity filter unit (**13**) with bypass valve inside tank (**7**).

Distributor spools (**1-2-3-4-5**) are controlled by solenoid operated proportional valves which admit pilot oil pressure at 435 psi (30 bar) from pilot supply valve (**21**) through ports Pst1 - Pst2 - Pst3 etc. to loads to allow high pressure oil to reach loads through ports A1 - B1; A2 - B2; A3 - B3 etc..

A drain circuit connected to ports L1 - L2 - L3, exhausts pilot oil pressure to tank. During rapid lowering of dozer blade, a switch (**18**) on port Ma 2 of control valve admits pilot pressure to solenoid valve (**20**).

Which directs exhaust oil pressure from front chambers of blade raise cylinders to rear chambers of the same cylinders, thereby resulting in dozer blade lowering. Delivery circuit pressure is proportional to the effort required and restricted by overload valves (**8-9-10-11-12**).

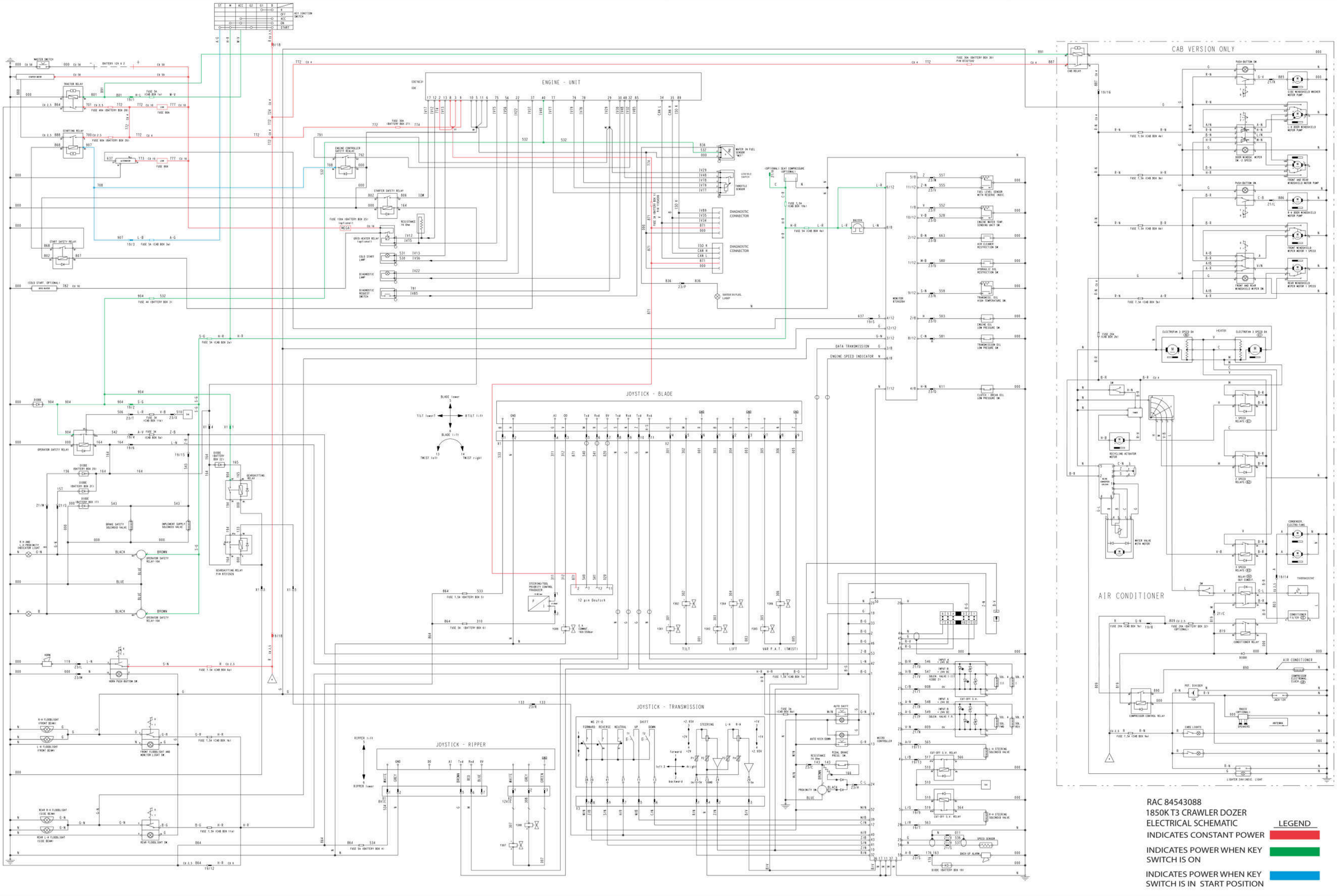
Load-sensing (**LS**) type system regulates flow rate according to a logic of steering priority prevailing in equipment circuit whenever both circuits are activated simultaneously. In such cases, a connection between supply pump and control valve enables the control valve to signal the pump to restrict max. flow rate (240 l/min @) to loads in use according to actual requirements.

When steering control (**Mt**), is applied, pressure transducer (**19**) senses the change in pressure in ports Ma 5 - Mb 5.

The resulting change in electric pulse, is handled by ECU as a priority input for steering section.

Accidental operation of equipment controls is prevented electrically by two steering levers. In fact, two proximity switches cut off supply to equipment joysticks (**Ma**), ripper (**Mr**) and steering (**Mt**) which are fully electric devices for ease of repair in case of system malfunction and for simplicity of hydraulic circuit layout.

MidWestTech | Case 1850K Tier 3 Crawler Dozer Service Manual | Publication 87630287 Order the manual at mid-west-tech.com >



MidWestTech | Case 1850K Tier 3 Crawler Dozer Service Manual | Publication 87630287
Order the manual at mid-west-tech.com >