CRAWLER EXCAVATOR

SERVICE MANUAL

HX500, HX520L Tier 3

HYUNDAI

MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | Public...

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

CONTENTS

SECTION 1 GENERAL

Group 1 Safety Hints 1-1
Group 2 Specifications 1-10

SECTION 2 STRUCTURE AND FUNCTION

Group 1 Pump Device 2-1
Group 2 Main Control Valve 2-17
Group 3 Swing Device 2-46
Group 4 Travel Device 2-57
Group 5 RCV Lever 2-72
Group 6 RCV Pedal 2-79

SECTION 3 HYDRAULIC SYSTEM

Group 1 Hydraulic Circuit 3-1
Group 2 Main Circuit 3-3
Group 3 Pilot Circuit 3-6
Group 4 Single Operation 3-13
Group 5 Combined Operation 3-23

SECTION 4 ELECTRICAL SYSTEM

Group 1 Component Location 4-1
Group 2 Electric Circuit 4-3
Group 3 Electrical Component Specification 4-23
Group 4 Connectors 4-31

SECTION 5 MECHATRONICS SYSTEM

Group 1 Outline 5-1
Group 2 Mode selection System 5-3
Group 3 Automatic Deceleration System 5-6
Group 4 Power Boost System 5-7
Group 5 Travel Speed Control System 5-8
Group 6 Automatic Warming Up System 5-9
Group 7 Engine Overheat Prevention System 5-10
Group 8 Variable Power Control System 5-11

MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | P... Order the manual at mid-west-tech.com >

Group 9 Attachment Flow Control System 5-12
Group 10 Intelligent Power Control System 5-13
Group 11 Anti-Restart System 5-15
Group 12 Self-Diagnostic System 5-16
Group 13 Engine Control System 5-49
Group 14 EPPR (Electro Proportional Pressure Reducing) Valve 5-50
Group 15 Monitoring System 5-53
Group 16 Fuel Warmer System 5-87

SECTION 6 TROUBLESHOOTING

Group 1 Before Troubleshooting 6-1
Group 2 Hydraulic and Mechanical System 6-4
Group 3 Electrical System 6-25
Group 4 Mechatronics System 6-43
Group 5 Air con & Heater System 6-72

SECTION 7 MAINTENANCE STANDARD

Group 1 Operational Performance Test 7-1
Group 2 Major Components 7-21
Group 3 Track and Work Equipment 7-29

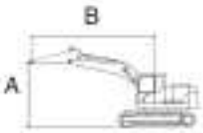
SECTION 8 DISASSEMBLY AND ASSEMBLY

Group 1 Precaution 8-1
Group 2 Tightening Torque 8-4
Group 3 Pump Device 8-8
Group 4 Main Control Valve 8-51
Group 5 Swing Device 8-64
Group 6 Travel Device 8-97
Group 7 RCV Lever 8-127
Group 8 Turning Joint 8-141
Group 9 Boom, Arm and Bucket Cylinder 8-146
Group 10 Undercarriage 8-169
Group 11 Work Equipment 8-181

MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | P... Order the manual at mid-west-tech.com >

Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
HX520LT3	MONO BOOM	Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
		7060	2550	10200	600	-	-	-	-	-

· : Rating over-front · : Rating over-side or 360 degree



Lift-point height (A)		Lift-point radius (B)										At max. reach		
		3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		7.5 m (24.6 ft)		9.0 m (29.5 ft)		Capacity		Reach
														m (ft)
9.0 m (29.5 ft)	kg											*12280	*12280	6.71
	lb											*27070	*27070	(22.0)
7.5 m (24.6 ft)	kg							*11560	*11560			*11450	10870	7.94
	lb							*25490	*25490			*25240	23960	(26.1)
6.0 m (19.7 ft)	kg					*13750	*13750	*11890	11790			*11080	9170	8.75
	lb					*30310	*30310	*26210	25990			*24430	20220	(28.7)
4.5 m (14.8 ft)	kg					*15360	*15360	*12620	11390	*11070	8630	*10910	8250	9.25
	lb					*33910	*33910	*27820	25110	*24410	19030	*24050	18190	(30.3)
3.0 m (9.8 ft)	kg					*16910	14980	*13390	10960	*11340	8430	*10840	7800	9.48
	lb					*37280	33030	*29520	24160	*25000	18580	*23900	17200	(31.1)
1.5 m (4.9 ft)	kg					*17700	14430	*13880	10620	*11470	8260	*10810	7680	9.47
	lb					*39020	31810	*30600	23410	*25290	18210	*23830	16950	(31.1)
0.0 m (0.0 ft)	kg					*17530	14190	*13850	10420	*11160	8170	*10780	7930	9.21
	lb					*38650	31280	*30530	22970	*24600	18010	*23720	17480	(30.2)
-1.5 m (-4.9 ft)	kg			*20350	*20350	*16450	14180	*13080	10390			*10600	8600	8.69
	lb			*44860	*44860	*36270	31260	*28840	22910			*23370	18960	(28.5)
-3.0 m (-9.8 ft)	kg	*18970	*18970	*17470	*17470	*14320	*14320	*11040	10570			*10090	10010	7.84
	lb	*41820	*41820	*38510	*38510	*31570	*31570	*24340	23300			*22240	22070	(25.7)
-4.5 m (-14.8 ft)	kg			*12820	*12820	*10190	*10190					*8660	*8660	6.55
	lb			*28260	*28260	*22470	*22470					*19090	*19090	(21.5)

Note 1. Lifting capacity are based on ISO 10567.

2. Lifting capacity of the HX series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
3. The Lift-point is bucket pivot mounting pin on the arm (without bucket mass).
4. *Indicates load limited by hydraulic capacity.

※ Lifting capacities are based upon a standard machine conditions.
Lifting capacities will vary with different work tools, ground conditions and attachments.
The difference between the weight of a work tool attachment must be subtracted.
Consult with your local HD Hyundai Construction Equipment dealer regarding the lifting capacities for specific work tools and attachments.

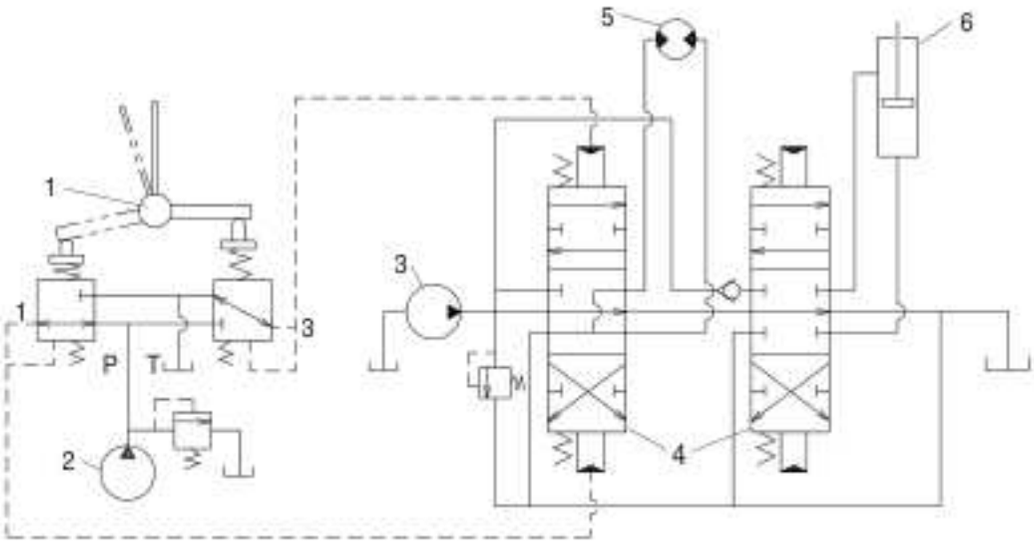
⚠ Failure to comply to the rated load can cause serious injury, death, or property damage. Make adjustments to the rated load as necessory for non-standard configurations.

MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | P... Order the manual at mid-west-tech.com >

3) OPERATION

The operation of the pilot valve will be described on the basis of the hydraulic circuit diagram shown below and the attached operation explanation drawing.

The diagram shown below is the typical application example of the pilot valve.



2-70

1	Pilot valve	3	Main pump	5	Hydraulic motor
2	Pilot pump	4	Main control valve	6	Hydraulic cylinder

MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | P... Order the manual at mid-west-tech.com >

2) WEAK AIR FLOW FROM FAN MOTOR

Cause	Check	Remedy
Clogged evaporator or obstacles around air inlet	Check if evaporator is contaminated	Clean
Leakage of air flow	Check HVAC case assembly	Adjust
Duct sensor failure	Check if evaporator is frozen	Replace

3) ABNORMAL OPERATION OF FAN MOTOR

Cause	Check	Remedy
Abnormal operation of each step of control	4 step only operate	Replace resistor
	1 or 2 step does not operate	Replace control
	3 or 4 step does not operate	Replace relay

4) COMPRESSOR DOES NOT ROTATE OR HARDLY ROTATE

Cause	Check	Remedy
Loose belt	Belt shaking is severe	Adjust tension
Failure of compressor itself	Belt slip	Repair or Replace
Low voltage of battery	Slip when rotate	Charge battery
Fieldcoil short	Slip when rotate	Replace magnetic clutch
Oily clutch face	Contamination around clutch	Replace magnetic clutch, clean
Fieldcoil is broken	Magnetic clutch does not operate or "∞" resistance	Replace compressor
Leakage of refrigerant or oil inside	Check if wet with oil	Replace compressor Charge refrigerant

MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | P... Order the manual at mid-west-tech.com >

(4) Assembling pinion gear sub assy

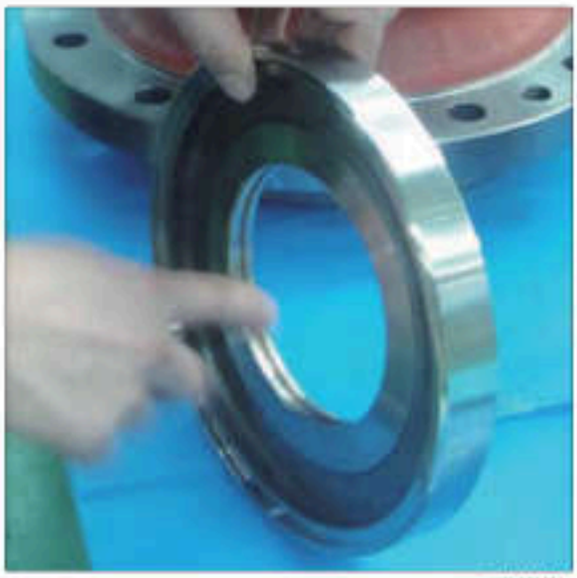
① Prepare drive shaft pinion gear vertical with ground.



490L25M70

② Fully apply grease (albania ep02) to sleeve's O-ring gutter.
(Be sure to maintain it vertical with ground when assembling it.)

③ Put O-ring into sleeve's O-ring gutter.
(Fully apply grease on O-ring.)



490L25M71

④ Assemble taper roller bearing and sleeve into drive shaft using press jig.
(Use special jig for pressing. Leave no space between sleeve and taper roller bearing.)



490L25M72

MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | P... Order the manual at mid-west-tech.com >

6) SEAL COVER ASSEMBLY

Apply three bond #1194 on contact surface of housing and seal cover, tighten hex socket head bolt (M10×25L) with designed torque 6.3±0.6 kgf·m (45.6±4.3 lbf·ft) using torque wrench.

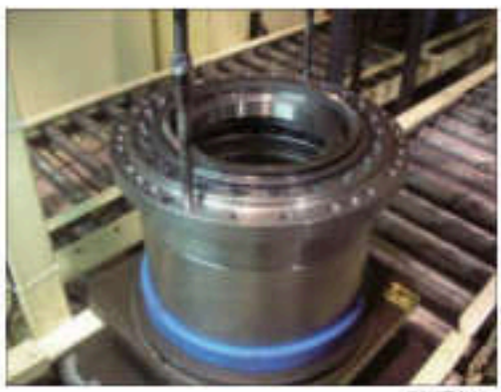


480LZTM225

7) HOUSING COMPONENTS AND RING GEAR ASSEMBLY

(1) Apply three bond #1194 on the surface of ring gear and housing contact surface, tighten hex socket head bolt (M20×120L) with designed torque 53±5.3 kgf·m (383±38.3 lbf·ft) using torque wrench.

(2) Wipe O-ring side of floating seal and contact surface of floating seal of seal cover with oil applied lint free towel, and press fitting floating seal into seal cover.



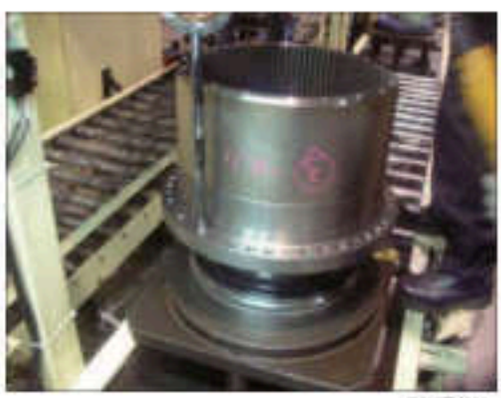
480LZTM223

8) MOTOR & ASSEMBLED HOUSING COMPONENTS ASSEMBLY

(1) Set eye bolt (M20) in housing flange tap hole.

(2) Assemble assembled housing components on motor using hoist.

※ Be sure set eye bolt firmly to keep operator safe.



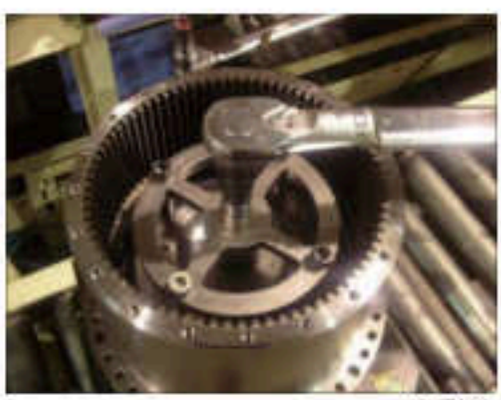
480LZTM228

9) NUT RING AND LOCK PLATE ASSEMBLY

(1) Tighten nut ring with designed torque using torque wrench.

(2) Set lock plate along with bolt hole of nut ring and assemble them.

(3) Tighten hex head bolt (M12×20L) with designed torque 8.8±0.9 kgf·m (63.6±6.5 lbf·ft).

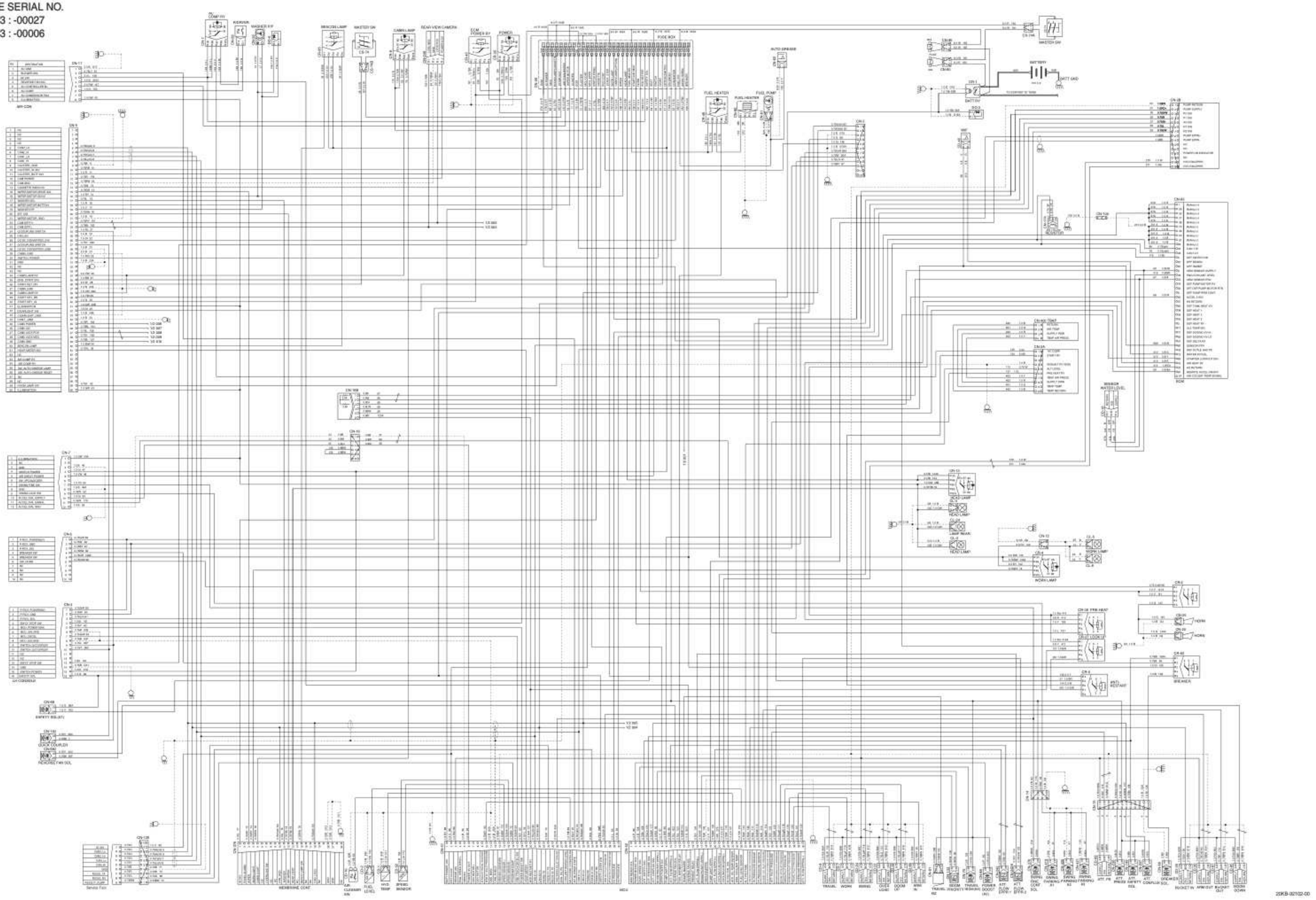


480LZTM229

MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | P... Order the manual at mid-west-tech.com >

ELECTRICAL CIRCUIT (1/3)

- MACHINE SERIAL NO.
  HX500LT3 : -00027
  HX520LT3 : -00006



MidWestTech | Hyundai HX500, HX520L Tier 3 Crawler Excavator Service Manual | Publication HX500, HX520L Tier 3

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