CRAWLER EXCAVATOR

SERVICE MANUAL

R160LC-7A

HYUNDAI

MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication R160...

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

CONTENTS

SECTION 1 GENERAL

Group 1 Safety Hints 1-1
Group 2 Specifications 1-9

SECTION 2 STRUCTURE AND FUNCTION

Group 1 Pump Device 2-1
Group 2 Main Control Valve 2-20
Group 3 Swing Device 2-43
Group 4 Travel Device 2-54
Group 5 RCV Lever 2-65
Group 6 RCV Pedal 2-72

SECTION 3 HYDRAULIC SYSTEM

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

SECTION 4 ELECTRICAL SYSTEM

Group 1 Component Location 4-1
Group 2 Electrical Circuit 4-3
Group 3 Electrical Component Specification 4-20
Group 4 Connectors 4-29

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 Function 5-9
Group 7 Engine Overheat Prevention Function 5-10
Group 8 Anti-Restart System 5-11
Group 9 Self-Diagnostic System 5-12

MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication... Order the manual at mid-west-tech.com >

Group 10 Engine Control System 5-17
Group 11 EPPR(Electro Proportional Pressure Reducing) Valve 5-19
Group 12 Monitoring System 5-22
Group 13 Fuel warmer System 5-33

SECTION 6 TROUBLESHOOTING

Group 1 Before Trobleshooting 6-1
Group 2 Hydraulic and Mechanical System 6-4
Group 3 Electrical System 6-24
Group 4 Mechatronics System 6-41

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 8-7
Group 4 Main Control Valve 8-29
Group 5 Swing Device 8-43
Group 6 Travel Device 8-66
Group 7 RCV Lever 8-110
Group 8 Turning Joint 8-125
Group 9 Boom, Arm and Bucket Cylinder 8-130
Group 10 Undercarriage 8-147
Group 11 Work Equipment 8-159

SECTION 9 COMPONENT MOUNTING TORQUE

Group 1 Introduction Guide 9-1
Group 2 Engine System 9-2
Group 3 Electric System 9-4
Group 4 Hydraulic System 9-6
Group 5 Undercarriage 9-8
Group 6 Structure 9-9
Group 7 Work Equipment 9-13

MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication... Order the manual at mid-west-tech.com >

8. SPECIFICATIONS FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	Mitsubishi D04FD-TAA
Type	4-cycle turbocharged, charge air cooled diesel engine.
Cooling method	Water cooling
Number of cylinders and arrangement	4 cylinders, in-line
Firing order	1-3-4-2
Combustion chamber type	Direct injection type
Cylinder bore × stroke	102 × 130mm(4.02" × 5.12")
Piston displacement	4249cc(259cu in)
Compression ratio	16.5 : 1
Rated gross horse power(SAE J1995)	126Hp at 2000rpm(94kW at 2000rpm)
Maximum torque at 1800rpm	47.7kgf · m(345lbf · ft)
Engine oil quantity	18.5 ℓ (4.9U.S. gal)
Dry weight	420kg(926lb)
High idling speed	2100 ± 50rpm
Low idling speed	800 ± 100rpm
Rated fuel consumption	170.6g/Hp · hr at 2000rpm
Starting motor	Mitsubishi 24V-5.0kW
Alternator	Mitsubishi 24V-50A
Battery	2 × 12V × 100Ah

2) MAIN PUMP

Item	Specification
Type	Variable displacement tandem axis piston pumps
Capacity	2 × 80cc/rev
Maximum pressure	330kgf/cm² (4694psi) [360kgf/cm² (5120psi)]
Rated oil flow	2 × 168 ℓ /min (44.4U.S. gpm/ 37.0U.K. gpm)
Rated speed	2100rpm

[ ]: Pooer boost

MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication... Order the manual at mid-west-tech.com >

4. AUTO DECEL SYSTEM DOES NOT WORK

※ Before carrying out below procedure, check all the related connectors are properly inserted.

1) INSPECTION PROCEDURE

Check resistance between CN-51 (1)-GND and CN-51(13)-GND

SPEC :
Actuator operating : 0~1V
Actuator stop : 4~5V
See TEST 6

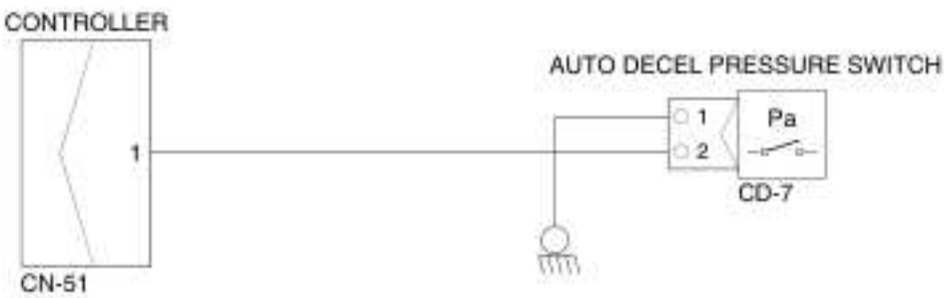
YES

NO

NO

Cause	Remedy
Defective CPU controller	Replace
Short circuit or poor connection between CN-51(1)- pressure switches	Replace or repair
Defective auto decel pressure switch	Replace

Wiring diagram



160TA0MS10

MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication... Order the manual at mid-west-tech.com >

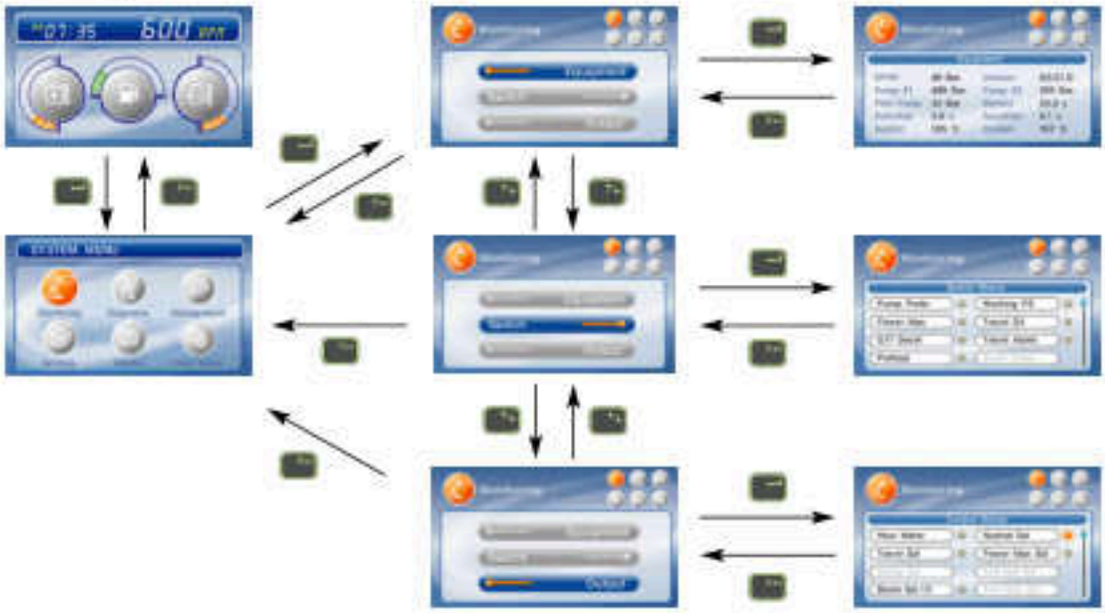
8. CYLINDER

Part name	Inspecting section	Inspection item	Remedy
Piston rod	· Neck of rod pin	· Presence of crack	· Replace
	· Weld on rod hub	· Presence of crack	· Replace
	· Stepped part to which piston is attached.	· Presence of crack	· Replace
	· Threads	· Presence of crack	· Recondition or replace
	· Plated surface	· Plating is not worn off to base metal.	· Replace or replate
		· Rust is not present on plating.	· Replace or replate
		· Scratches are not present.	· Recondition, replate or replace
	· Rod	· Wear of O.D.	· Recondition, replate or replace
	· Bushing at mounting part	· Wear of I.D.	· Replace
Cylinder tube	· Weld on bottom	· Presence of crack	· Replace
	· Weld on head	· Presence of crack	· Replace
	· Weld on hub	· Presence of crack	· Replace
	· Tube interior	· Presence of faults	· Replace if oil leak is seen
	· Bushing at mounting part	· Wear on inner surface	· Replace
Gland	· Bushing	· Flaw on inner surface	· Replace if flaw is deeper than coating

MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication... Order the manual at mid-west-tech.com >

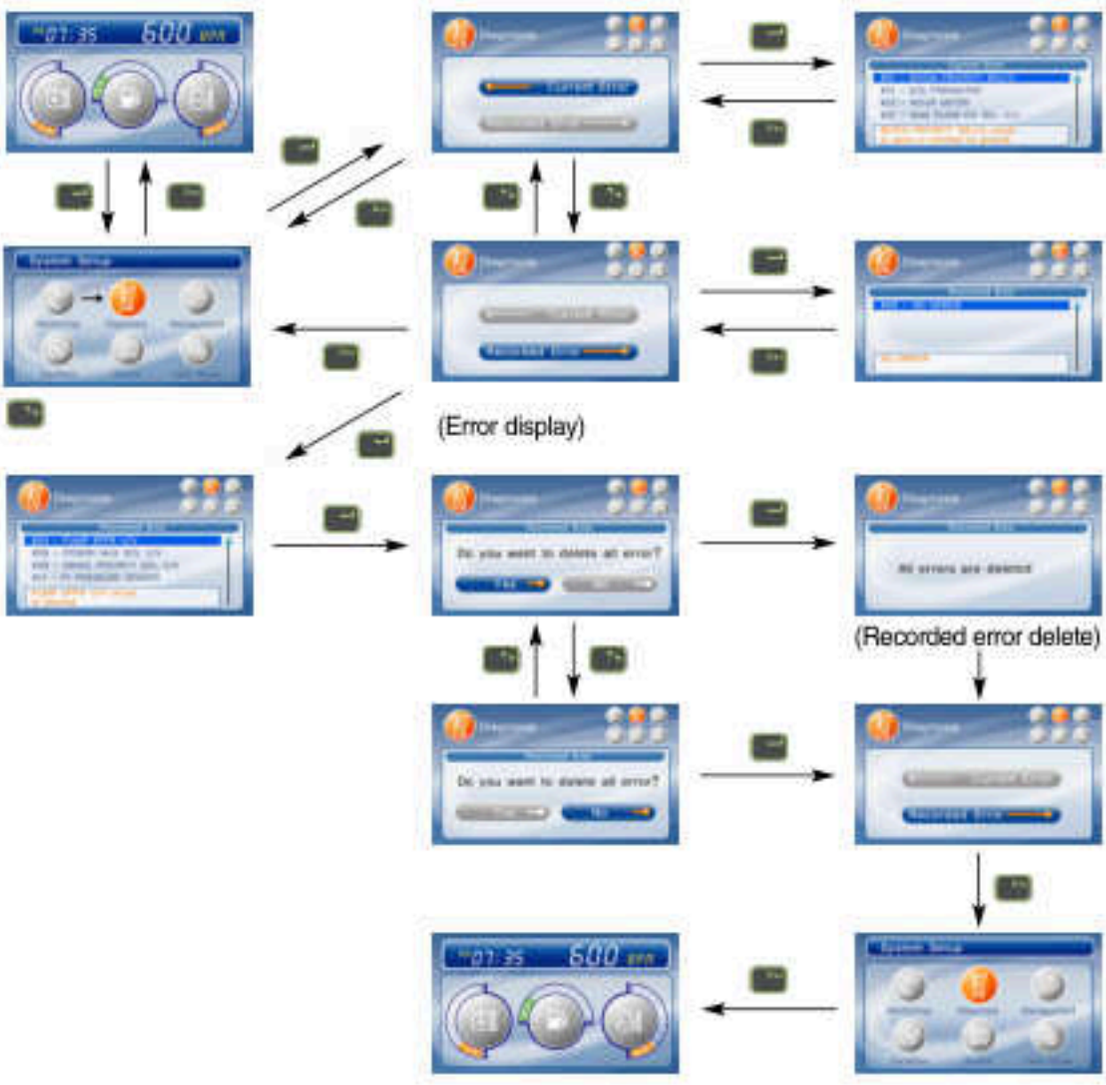
(2) Display map

① Monitoring



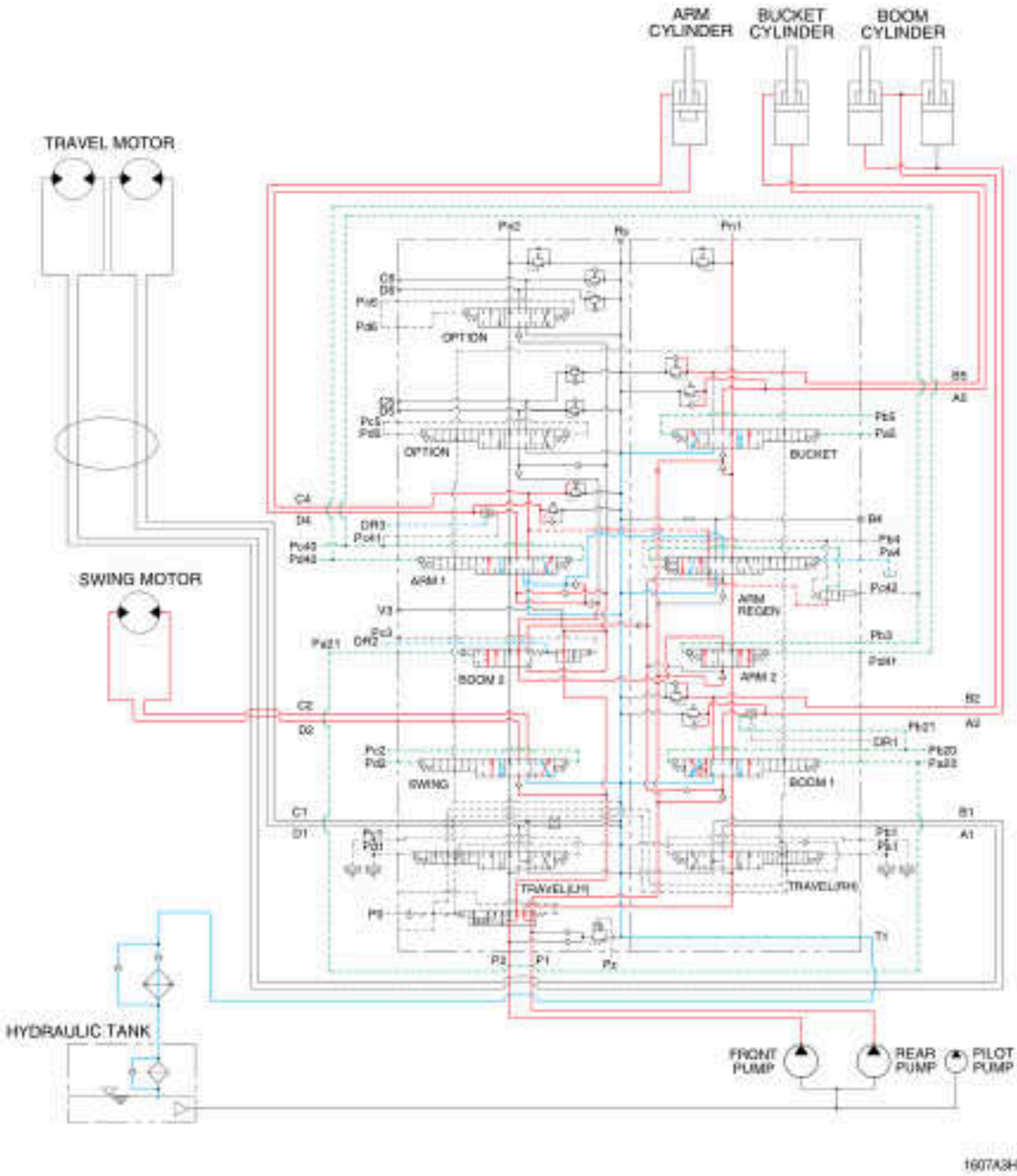
② Diagnosis

a. Protocol type 1



MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication... Order the manual at mid-west-tech.com >

5. COMBINED SWING, BOOM, ARM AND BUCKET OPERATION



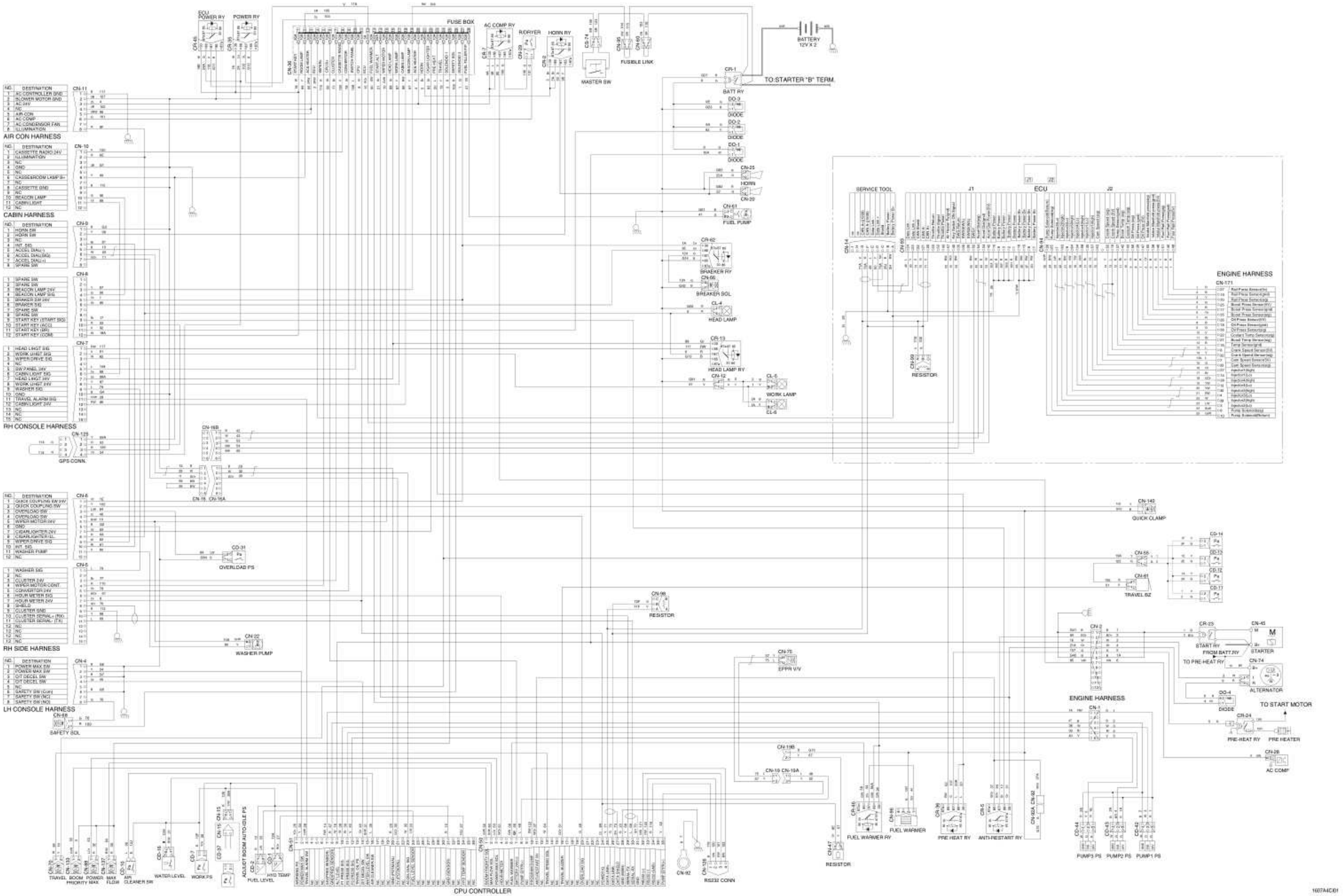
When the swing, boom, arm and bucket functions are operated, simultaneously each spool in the main control valve is moved to the functional position by the pilot oil pressure from the remote control valve.

The oil from the front pump flows into the swing motor, boom cylinders and arm cylinder through the swing spool, boom 2 spool, arm 1 spool, and the parallel and confluence oil passage.

The oil from the rear pump flows into the boom cylinders, arm cylinder and bucket cylinder through the boom 1 spool, arm 2 spool, bucket spool and the parallel and confluence oil passage.

The superstructure swings and the boom, arm and bucket are operated.

MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication... Order the manual at mid-west-tech.com >



MidWestTech | Hyundai R160LC-7A Crawler Excavator Service Manual | Publication R160LC-7A
Order the manual at mid-west-tech.com >