WHEELED EXCAVATOR

SERVICE MANUAL

HW160,180

HYUNDAI

MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication HW160...

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

CONTENTS

SECTION 1 GENERAL

Group 1 Safety Hints 1-1
Group 2 Specifications (HW160) 1-9
Group 3 Specifications (HW180) 1-24

SECTION 2 STRUCTURE AND FUNCTION

Group 1 Pump Device 2-1
Group 2 Main Control Valve 2-20
Group 3 Swing Device (type 1) 2-47
Group 3 Swing Device (type 2) 2-58
Group 4 Travel Motor 2-69
Group 5 RCV Lever 2-75
Group 6 Accelerator Pedal 2-82
Group 7 Brake Pedal (Valve) 2-83
Group 8 Transmission 2-85
Group 9 Travel Control Valve 2-92
Group 10 Steering Valve 2-94
Group 11 Front Axle and Rear Axle 2-96

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 3-17
Group 5 Combined Operation 3-32

SECTION 4 ELECTRICAL SYSTEM

Group 1 Component Location 4-1
Group 2 Electrical Circuit 4-3
Group 3 Electrical Component Specification 4-25
Group 4 Connectors 4-37

MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication H... Order the manual at mid-west-tech.com >

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 Variable Power Control System 5-11
Group 9 Attachment Flow Control System 5-12
Group 10 Boom Floating Control System 5-13
Group 11 Intelligent Power Control System 5-14
Group 12 Anti-Restart System 5-16
Group 13 Self-Diagnostic System 5-17
Group 14 Engine Control System 5-54
Group 15 EPPR Valve 5-55
Group 16 Monitoring System 5-60
Group 17 Fuel Warmer System 5-100

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 6-41

SECTION 7 MAINTENANCE STANDARD

Group 1 Operational Performance Test 7-1
Group 2 Major Components 7-19
Group 3 Work Equipment 7-28

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 8-31

MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication H... Order the manual at mid-west-tech.com >

Group 5 Swing Device (Type 1) 8-45
Group 5 Swing Device (Type 2) 8-70
Group 6 Travel Motor 8-100
Group 7 Transmission 8-124
Group 8 Steering Valve 8-178
Group 9 Front Axle 8-203
Group 10 Rear Axle 8-274
Group 11 RCV Lever 8-316
Group 12 Turning Joint 8-330
Group 13 Boom, Arm, Bucket, Dozer and Outrigger Cylinders 8-336
Group 14 Work Equipment 8-359

MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication H... Order the manual at mid-west-tech.com >

7. SPECIFICATIONS FOR MAJOR COMPONENTS

1) ENGINE

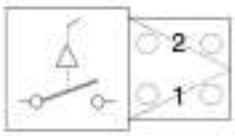
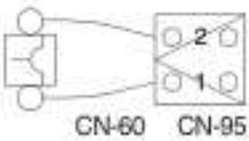
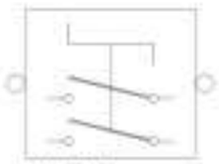
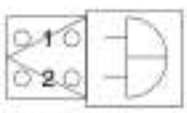
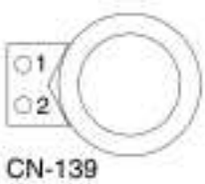
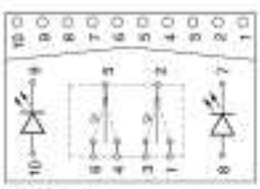
Item	Specification
Model	Cummins QSB 6.7
Type	4-cycle turbocharged diesel engine, low emission
Cooling method	Water cooling
Number of cylinders and arrangement	6 cylinders, in-line
Firing order	1-5-3-6-2-4
Combustion chamber type	Direct injection type
Cylinder bore × stroke	107 × 124 mm (4.2" × 4.9")
Piston displacement	6700 cc (409 cu in)
Compression ratio	17.3 : 1
Rated net horse power (SAE J1349)	171 Hp (127 kW) at 1800 rpm
Rated gross horse power (SAE J1995)	180 Hp (134 kW) at 1800 rpm
Maximum torque	85.7 kgf · m (620 lbf · ft) at 1500 rpm
Engine oil quantity	23.7 ℓ (6.3 U.S. gal)
Dry weight	520 kg (1150 lb)
High idling speed	2200 ± 50 rpm
Low idling speed	850 ± 100 rpm
Rated fuel consumption	163.0 g/Hp · hr at 2200 rpm
Starting motor	Nippon denso (24 V - 4.8 kW)
Alternator	Nippon denso (24 V - 95 A)
Battery	2 × 12 V × 100 Ah

2) MAIN PUMP

Item	Specification
Type	Variable displacement tandem axis piston pumps
Capacity	2 × 80 cc/rev
Maximum pressure	350 kgf/cm² (4980 psi) [380 kgf/cm² (5400 psi)]
Rated oil flow	2 × 172 ℓ/min (45.4 U.S. gpm / 37.8 U.K. gpm)
Rated speed	2200 rpm

[ ] : Power boost

MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication H... Order the manual at mid-west-tech.com >

Part name	Symbol	Specifications	Check
Breaker selection switch	 CS-26A	-	-
Circuit breaker	 CN-60 CN-95	CN-60 : 60A CN-95 : 90A	※ Check disconnection Normal : 0 Ω (connect ring terminal and check resist between terminal 1 and 2)
Master switch	 CS-74B	6-36V	※ Check disconnection Normal : 0.1 Ω
Quick clamp buzzer	 CN-113	24V 200mA 107±4dB	-
Socket	 CN-139	12V 10A	-
SCR switch	 CS-100	24V 8A	※ Check contact Normal OFF : ∞ Ω (for terminal 2-1, 2-3, 4-5, 5-6)

MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication H... Order the manual at mid-west-tech.com >

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
3321 3246 4	Aftertreatment diesel particulate filter outlet temperature sensor circuit - Voltage below normal or shorted to low source. Low signal voltage detected at the aftertreatment diesel particulate filter outlet temperature sensor circuit.	Possible reduced engine performance.
3322 3246 2	Aftertreatment diesel particulate filter outlet temperature - Data erratic, intermittent, or incorrect. The aftertreatment diesel particulate filter outlet temperature is not changing with engine operating conditions.	Possible reduced engine performance.
3326 91 9	SAE J1939 Multiplexed accelerator pedal or lever sensor system - Abnormal update rate. The ECM expected information from a multiplexed accelerator pedal or lever sensor but did not receive it soon enough or did not receive it at all.	Engine will only idle.
3328 191 9	Transmission output shaft speed - Abnormal update rate. No communication or an invalid data transfer rate has been detected on the J1939 data link between the ECM and the transmission output shaft speed sensor.	None on performance.
3342 4752 18	Engine exhaust gas recirculation cooler efficiency - Data valid but below normal operating range - Moderately severe level. The EGR cooler is not cooling the recirculated exhaust gas sufficiently.	None on performance.
3343 5285 18	Engine charge-air cooler efficiency - Data valid but below normal operating range - Moderately severe level. The engine charge air cooler is not cooling the intake air flow sufficiently.	None on performance.
3361 102 10	Intake manifold 1 pressure - Abnormal rate of change. The VGT position reading is stuck.	Possible reduced engine performance.
3366 111 18	Coolant level - Data valid but below normal operating range - Moderately severe level. Very low engine coolant level detected.	None on performance.
3374 1818 31	Roll over protection brake control active - Condition exists. The ECM received a message from the anti-lock braking (ABS) controller, inhibiting cruise control operation.	Cruise control could possibly not operate.
3375 5397 31	Aftertreatment diesel particulate filter regeneration too frequent - Condition exists. The system has detected the need for an active regeneration has occurred too soon following the last active regeneration.	None on performance.
3376 5319 31	Aftertreatment diesel particulate filter incomplete regeneration - Condition exists. The system has detected that the aftertreatment diesel particulate filter differential pressure is too high following an active regeneration.	Possible frequent need for aftertreatment regeneration.

※ Some fault codes are not applied to this machine.

MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication H... Order the manual at mid-west-tech.com >

3) ASSEMBLING PINION GEAR SUB ASSY

(1) Prepare drive shaft pinion gear vertical with ground.

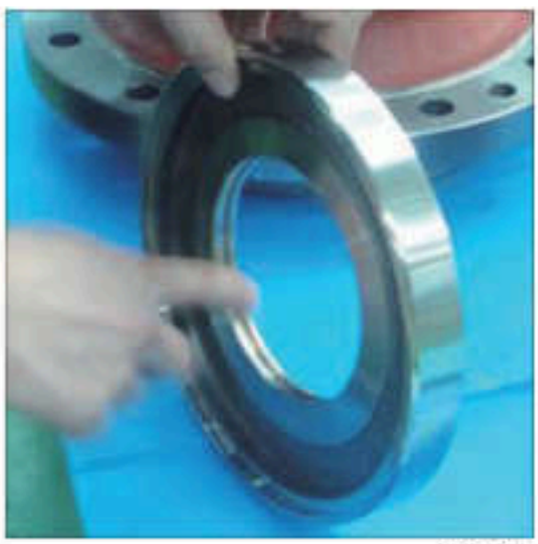


2209A03M21

(2) Fully apply grease (albania EP02) to O-ring groove of sleeve.

※ Be sure to maintain it vertical with ground when assembling it.

(3) Put O-ring into O-ring groove of sleeve. Fully apply grease on O-ring.



2209A03M22

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

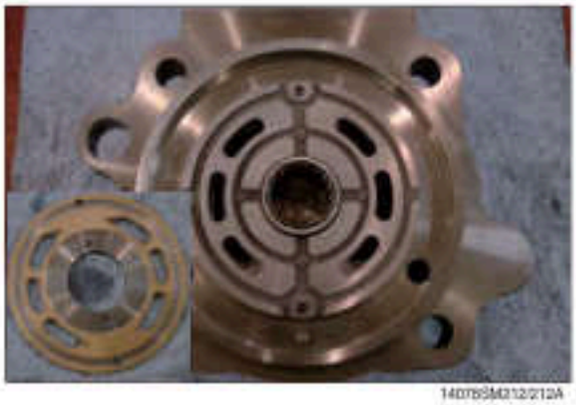


2209A03M23

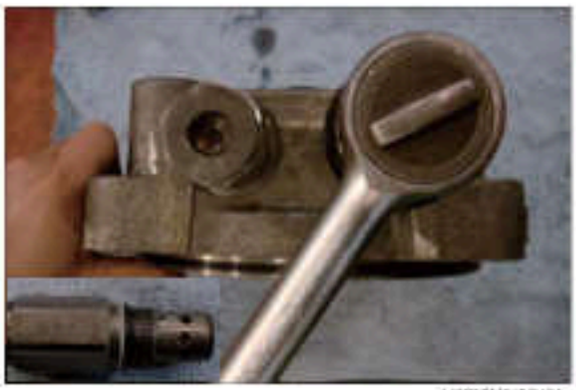
MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication H... Order the manual at mid-west-tech.com >

(3) Disassemble rear cover assy sub

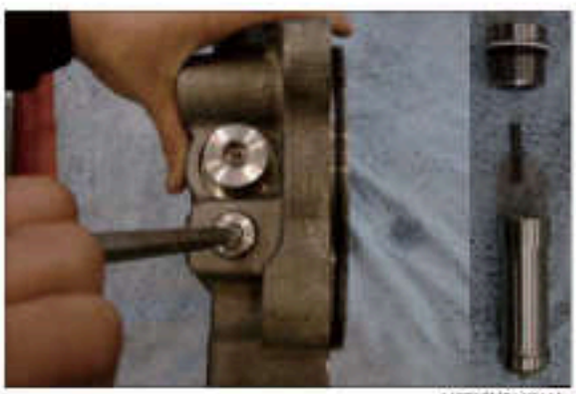
① Disassemble pin (8, 23), valve plate (24) from rear cover (21).



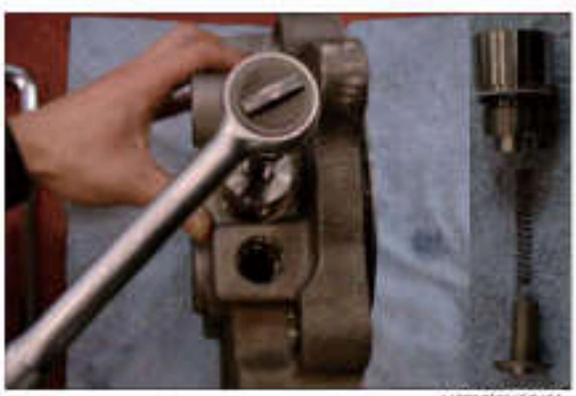
② Using a torque wrench, disassemble relief valve assy (31) 2 set from rear cover (21).



③ After disassembling plug with a L-wrench from rear cover (21), disassemble respectively back up ring, O-ring, O-ring, spring, anti-inversion valve assy (32)

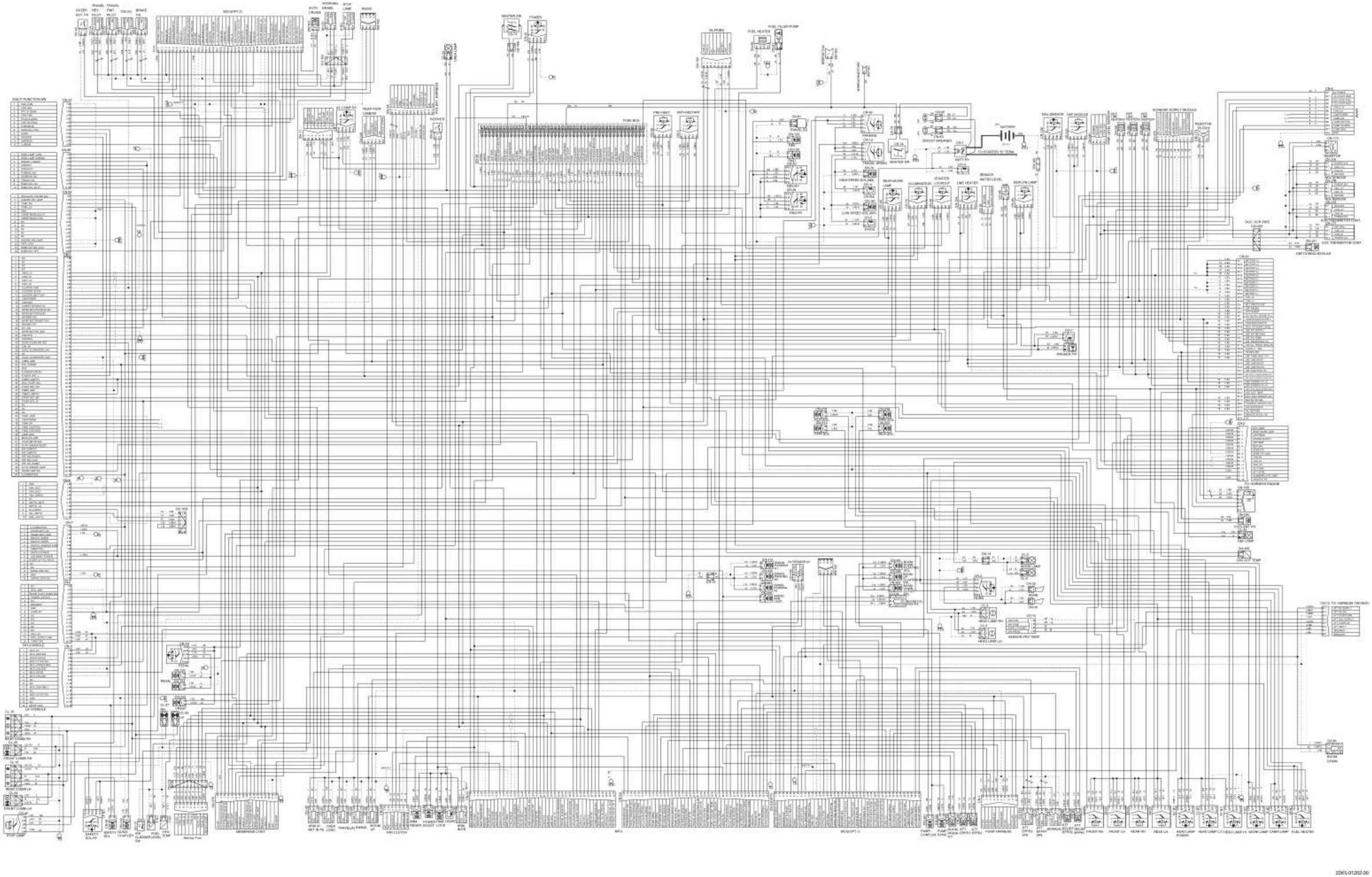


④ Disassemble make up check valve assy with a torque wrench from rear cover (21).



MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication H... Order the manual at mid-west-tech.com >

· ELECTRICAL CIRCUIT (1/6, MACHINE SERIAL NO. HW160 : -#0175, HW180 : -#0094)



20K5-01202-00

MidWestTech | Hyundai HW160,180 Wheel Excavator Service Manual | Publication HW160,180 Order the manual at mid-west-tech.com >