KOBELCO

# SERVICE MANUAL

# COMPACT CRAWLER EXCAVATOR

# 30SR
# 35SR
# ACERA
# TIER 4

S5PW0027E01 EN-US

Issued 01Sep 08

MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manual | Publication S5PW0027E01EN

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

# 30SR ACERA & 35SR ACERA SERVICE MANUAL

## TABLE OF CONTENTS


SECTION 1

**SAFETY AND GENERAL INFORMATION**

Section Table of Contents ..... I
Book/Form Number: 5-17080 EN-US

**CHAPTER 1**
GENERAL PRECAUTIONS FOR MAKING REPAIRS
Table of Contents ..... 1-1
Book/Form Number: 5-17090 EN-US

**CHAPTER 2**
SPECIFICATIONS
Table of Contents ..... 2-1
Book/Form Number: 5-17100 EN-US

**CHAPTER 3**
ATTACHMENT DIMENSIONS
Table of Contents ..... 3-1
Book/Form Number: 5-17110 EN-US

SECTION 2

**MAINTENANCE**

Section Table of Contents ..... I
Book/Form Number: 5-17120 EN-US

**CHAPTER 1**
TOOLS
Table of Contents ..... 1-1
Book/Form Number: 5-17130 EN-US

**CHAPTER 2**
STANDARD MAINTENANCE TIME TABLE
Table of Contents ..... 2-1
Book/Form Number: 5-17140 EN-US

**CHAPTER 3**
MAINTENANCE STANDARD AND TEST PROCEDURE
Table of Contents ..... 3-1
Book/Form Number: 5-17150 EN-US

SECTION 3

**SYSTEMS**

Section Table of Contents ..... I
Book/Form Number: 5-17160 EN-US

**CHAPTER 1**
HYDRAULIC SYSTEM
Table of Contents ..... 1-1
Book/Form Number: 5-17170 EN-US

**CHAPTER 2**
ELECTRICAL SYSTEM
Table of Contents ..... 2-1
Book/Form Number: 5-17180 EN-US

**CHAPTER 3**
COMPONENT SYSTEM
Table of Contents ..... 3-1
Book/Form Number: 5-17190 EN-US

SECTION 4

**DISASSEMBLY AND ASSEMBLY**

Section Table of Contents ..... I
Book/Form Number: 5-17200 EN-US

**CHAPTER 1**
ATTACHMENTS
Table of Contents ..... 1-1
Book/Form Number: 5-17210 EN-US

**CHAPTER 2**
UPPER STRUCTURE
Table of Contents ..... 2-1
Book/Form Number: 5-17220 EN-US





MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manual |... Order the manual at mid-west-tech.com >

# CHAPTER 1
# GENERAL PRECAUTIONS FOR MAKING REPAIRS

## TABLE OF CONTENTS

GENERAL PRECAUTIONS FOR MAKING REPAIRS . . . . . 1-3
Preparation Before Disassembling . . . . . 1-3
Safety When Disassembling And Assembling . . . . . 1-3
Disassembling and Assembling Hydraulic Equipment . . . . . 1-3
Removing Hydraulic Equipment Assembly . . . . . 1-3
Disassembling Hydraulic Equipment . . . . . 1-3
Inspecting Parts . . . . . 1-4
Assembling Hydraulic Equipment . . . . . 1-4
Installing Hydraulic Equipment . . . . . 1-4
Electrical Equipment . . . . . 1-4
Hydraulic Parts . . . . . 1-5
Weld Repair . . . . . 1-5
Environmental Issues . . . . . 1-5
INTERNATIONAL UNIT SYSTEM . . . . . 1-6
Introduction . . . . . 1-6



MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manual |... Order the manual at mid-west-tech.com >

# CHAPTER 2
# SPECIFICATIONS
## TABLE OF CONTENTS

SPECIFICATIONS ..... 2-3
Components ..... 2-3
Machine Dimensions ..... 2-4
Specifications and Performance ..... 2-6
Speed and Gradeability ..... 2-6
Engine ..... 2-6
Hydraulic Components ..... 2-6
Side Digging & Dozer ..... 2-6
Weight ..... 2-6
Machine & Components Weight (Dry) ..... 2-7
Transportation ..... 2-9
Type of Crawler Shoes ..... 2-11
Type of Bucket ..... 2-11
Engine Specifications ..... 2-12
Specifications ..... 2-12
Engine Performance Curve ..... 2-13

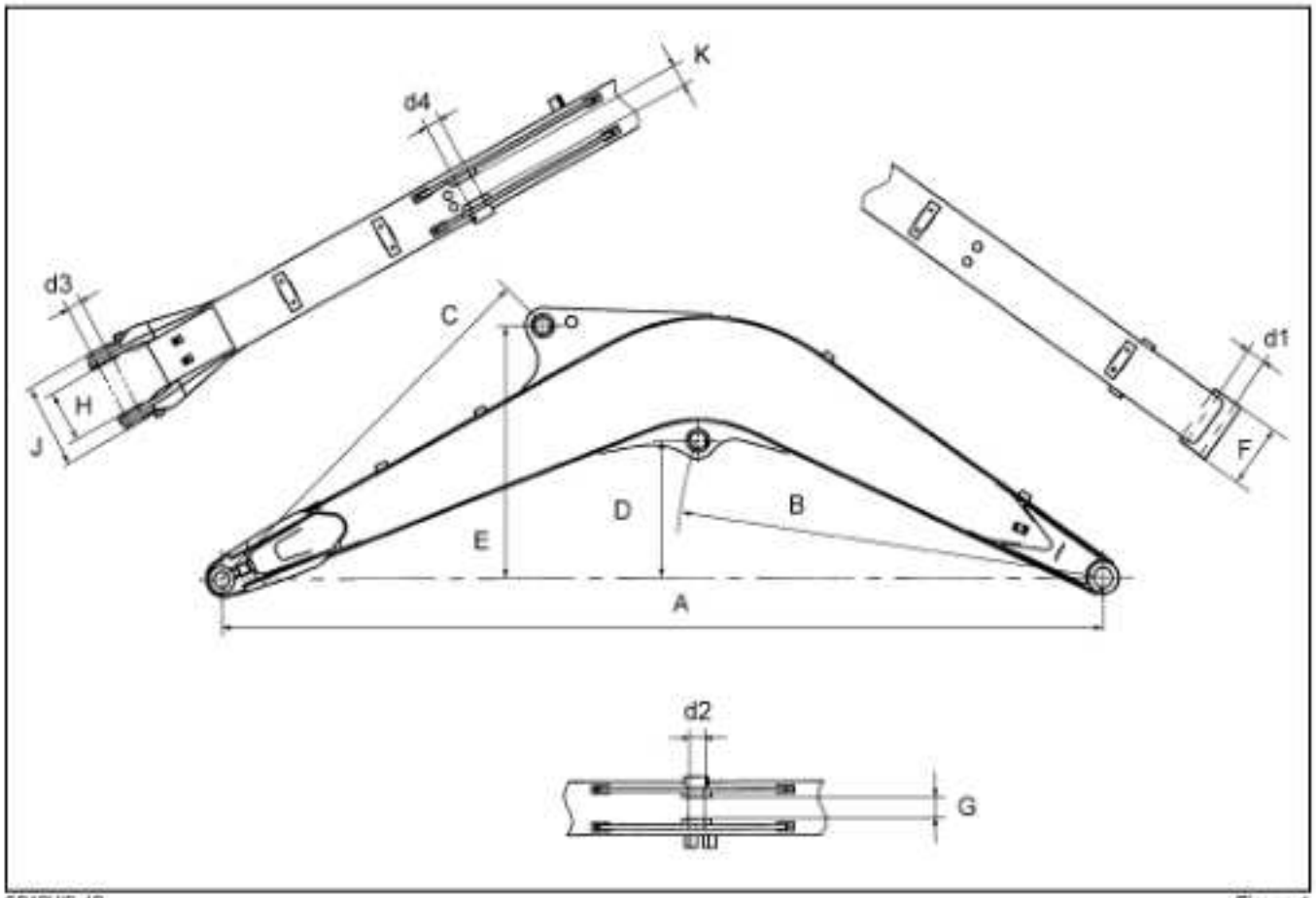


MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manual |... Order the manual at mid-west-tech.com >

# ATTACHMENT DIMENSIONS

## BOOM

### Boom Dimensional Drawings




GRAPHIC_10

Figure 1

Unit : mm(ft-in)

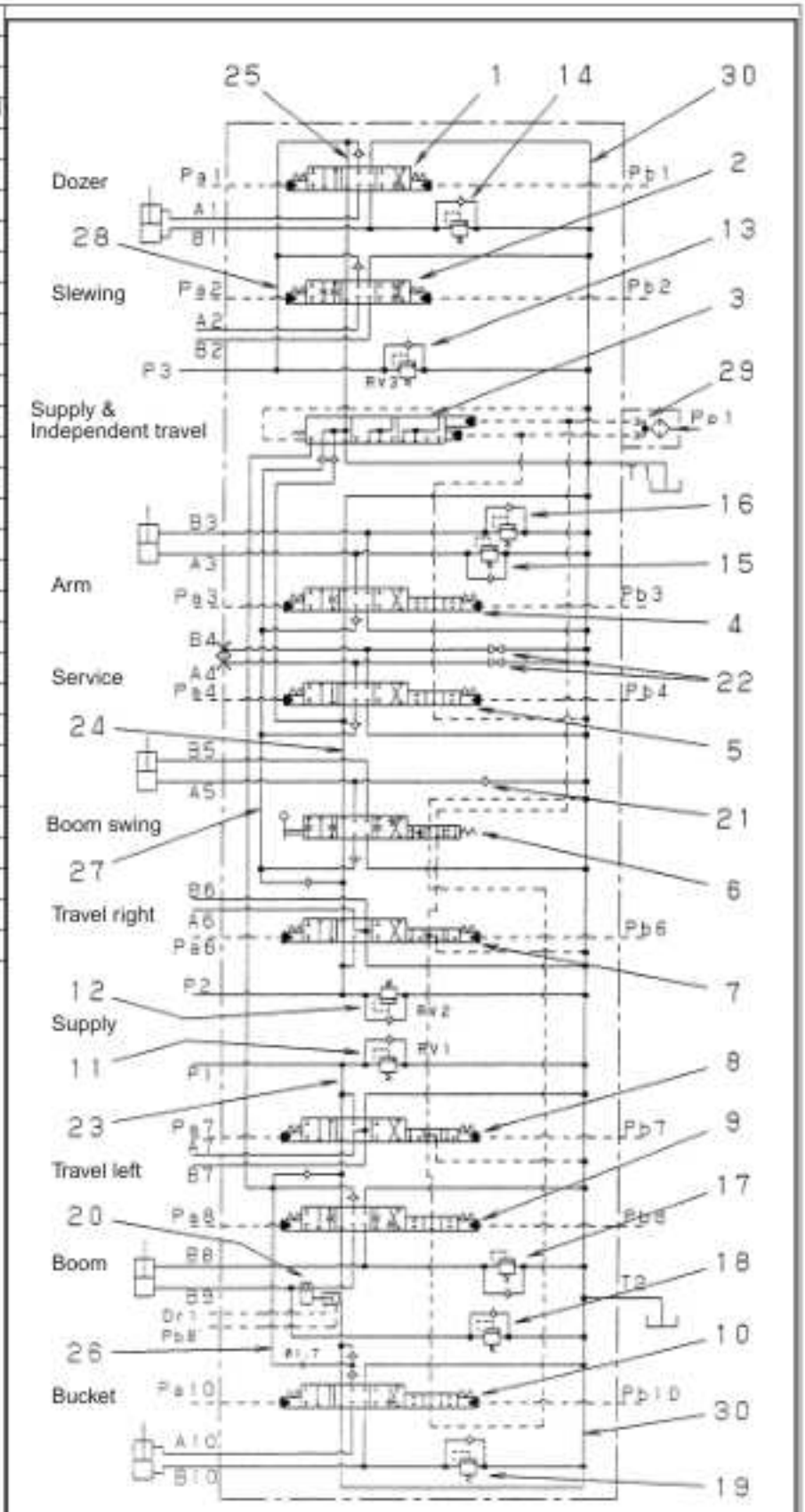
| No. | NAME | DIMENSIONS | |
|---|---|---|---|
| | | 30SR Acera | 35SR Acera |
| A | Boom length | 2300 (7ft-6.55in) | 2500 (8ft-2.43in) |
| B | Distance between pins of boss | R1217.5 (3ft-11.93in) | R1210 (3ft-11.64in) |
| C | Distance between pins of bracket | R1130.5 (3ft-8.51in) | R1157 (3ft-9.55in) |
| D | Height of boom cylinder rod pin | 420.5 (1ft-4.56in) | 385.5 (1ft-3.18in) |
| E | Height of arm cylinder (head side) pin | 764 (2ft-6.08in) | 708 (2ft-3.87in) |
| F | Boom foot width | 178 (7.01in) | ← |
| G | Inner width of bracket for boom cylinder (rod side) mounting | 61 (2.40in) | ← |
| H | Boom end inner width | 150 (5.91in) | ← |
| J | Boom end outer width | 235 (9.25in) | ← |
| K | Inner width of bracket for arm cylinder (head side) | 61 (2.40in) | ← |
| d1 | Boom foot pin dia.<br>[Bushing outer dia.] | ø45 (1.77in)<br>[ø55 (2.17in)] | ← |
| d2 | Boom cylinder (rod side) pin dia. | ø45 (1.77in) | ← |
| d3 | Pin dia. of arm end | ø45 (1.77in) | ← |
| d4 | Arm cylinder (head side) pin dia. | ø45 (1.77in) | ← |



MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manual |... Order the manual at mid-west-tech.com >

## Hydraulic Circuit

| No. | Name |
|---|---|
| 1 | Dozer spool |
| 2 | Slewing spool |
| 3 | Travel independent & conflux spool |
| 4 | Arm spool |
| 5 | Service spool |
| 6 | Boom swing spool |
| 7 | Travel right spool |
| 8 | Travel left Spool |
| 9 | Boom spool |
| 10 | Bucket spool |
| 11 | P1 (RV1) relief valve |
| 12 | P2 (RV2) relief valve |
| 13 | P3 (RV3) relief valve |
| 14 | B1 Overload relief valve |
| 15 | A3 Overload relief valve |
| 16 | B3 Overload relief valve |
| 17 | B8 Over load relief valve |
| 18 | B9 Overload relief valve |
| 19 | B10 Overload relief valve |
| 20 | Boom lock valve |
| 21 | Anti cavitation valve |
| 22 | Overload relief plug |
| 23 | P1 Bypass passage |
| 24 | P2 Bypass passage |
| 25 | P3 Bypass passage |
| 26 | P1 Parallel passage |
| 27 | P2 Parallel passage |
| 28 | P3 Parallel passage |
| 29 | Pp1 Pilot passage |
| 30 | Tank passage |




GRAPHIC_1D

Figure 32



MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manual |...

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

CHAPTER 3

# 30SR ACERA
# 35SR ACERA
# COMPACT CRAWLER EXCAVATOR
# TIER 4

# TROUBLESHOOTING (ENGINE)

Issued 09-2008
Book/Form Number 5-17270 EN-US
Copyright © 2008. CNH America LLC. All Rights Reserved.
Printed in U.S.A. • Bur
Source Code No. S5PW0027E01

MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manual |... Order the manual at mid-west-tech.com >

**CAUTION**

Do not operate the engine if the alternator is producing unusual sounds. Damage to the alternator will result.

0000039en

**CAUTION**

If the engine coolant pump must be replaced, replace the engine coolant pump as an assembly only. Do not attempt to repair the engine coolant pump or replace individual components.

0000041en

**CAUTION**

Use a new special O-ring between the engine coolant pump and the joint. Be sure to use the special O-ring for each engine model. Although the O-ring dimensions are the same as a commercially available O-ring, the material is different.

0000042en

**CAUTION**

Remove or install the high-pressure fuel injection lines as an assembly whenever possible. Disassembling the high-pressure fuel injection lines from the retainers or bending any of the fuel lines will make it difficult to reinstall the fuel lines.

0000047en

**CAUTION**

After marking the position of the pump drive gear, do not rotate the engine crankshaft. Rotating the crankshaft will cause the fuel injection pump to become misaligned.

0000048en

**CAUTION**

Do not use a high-pressure wash directly on the alternator. Water will damage the alternator and result in inadequate charging.

0000049en

**CAUTION**

Do not reverse the positive (+) and negative (-) ends of the battery cable. The alternator diode and stator coil will be damaged.

0000050en

**CAUTION**

When the battery indicator goes out, it should not come on again. The battery indicator only comes on during operation if the alternator fails. However, if an LED is used in the battery indicator, the LED will shine faintly during normal operation.

0000051en

**CAUTION**

Using a non-specified V-belt will cause inadequate charging and shorten the belt life. Use the specified belt.

0000052en

**CAUTION**

Agricultural or other chemicals, especially those with a high sulfur content, can adhere to the IC regulator. This will corrode the conductor and result in battery over-charging (boiling) and charging malfunctions. Consult Yanmar before using the equipment in such an environment or the warranty is voided.

0000053en



MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manua... Order the manual at mid-west-tech.com >

**CAUTION**

Do not connect a load between alternator terminals L and E. Damage to the alternator will result.

0000036en

**CAUTION**

Do not remove the positive (+) battery cable from alternator terminal B while the engine is operating. Damage to the alternator will result.

0000037en

**CAUTION**

Do not turn the battery switch OFF while the engine is operating. Damage to the alternator will result.

0000038en

**CAUTION**

Do not operate the engine if the alternator is producing unusual sounds. Damage to the alternator will result.

0000039en

**CAUTION**

Do not reverse the positive (+) and negative (-) ends of the battery cable. The alternator diode and stator coil will be damaged.

0000050en

**CAUTION**

When the battery indicator goes out, it should not come on again. The battery indicator only comes on during operation if the alternator fails. However, if an LED is used in the battery indicator, the LED will shine faintly during normal operation.

0000051en

**CAUTION**

Using a non-specified V-belt will cause inadequate charging and shorten the belt life. Use the specified belt.

0000052en

**CAUTION**

Agricultural or other chemicals, especially those with a high sulfur content, can adhere to the IC regulator. This will corrode the conductor and result in battery over-charging (boiling) and charging malfunctions. Consult Yanmar before using the equipment in such an environment or the warranty is voided.

0000053en

**CAUTION**

Do not use a high-pressure wash directly on the alternator. Water will damage the alternator and result in inadequate charging.

0000049en



MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manua... Order the manual at mid-west-tech.com >

| Symptoms and conditions of failure / Possible causes | | Starting failure: Starter does not rotates: ECU failure lamp does not go on immediately after turning on the key | Starting failure: Starter does not rotates: ECU failure lamp goes on immediately (within 2 seconds) after turning on the key | Starting failure: Starter rotates: Engine does not start up (without initial ignition) | Starting failure: Starter rotates: Engine does not start up (it stops immediately after initial ignition) | Starting failure: Starter rotates: It takes longer than before to start up engine | Engine stall after start up: Smoke: None | Engine stall after start up: Smoke: Slight | Engine stall after start up: Smoke: Remarkable | Speed control error: Revolution speed cannot be changed with accelerator (stays at a constant speed) | Speed control error: No load: Cannot be set to particular speed | Speed control error: No load: Poor acceleration | Speed control error: No load: Does not smoothly return to low speed | Speed control error: No load: Hunting occurs | Speed control error: Workload: Hunting occurs | Engine output low: Smoke color: Normal | Engine output low: Smoke color: White | Engine output low: Smoke color: Black | Noise and vibration: High knocking sound at combustion time | Noise and vibration: Uneven combustion sound | Noise and vibration: Abnormal sound (other than combustion sound) from engine | Noise and vibration: Engine vibrates heavily | Lubricating oil: Too much lubricating oil consumed | Lubricating oil: Lubricating oil diluted with fuel | Lubricating oil: Lubricating oil mixed with water | Lubricating oil: Oil pressure low (oil pressure warning lamp lit) | Cooling water: Overheat (water temperature warning lamp lit) | Cooling water: Water temperature low | Intake air: Pressure low (air cleaner warning lamp lit) | Intake air: Pressure high | Exhaust gas: Workload: White exhaust gas | Exhaust gas: Workload: Black exhaust gas | Exhaust gas: Too much blow-bye | Exhaust gas: Exhaust gas temperature high | Fuel: Too much fuel consumed | Fuel: Fuel mixed with water (oil-water separator warning lamp lit) | Fuel: Fuel filter fouled shortly | Electrical parts: Battery charge error (charge lamp lit) | Electrical parts: ECU failure lamp flashes | Electrical parts: ECU failure lamp stops flashing immediately (within 2 seconds) after turning off the key | Electrical parts: Specific ECU control functions fail | Electrical parts: Fuses get blown or broken (repeatedly) | Corrective Action | Referenced page number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electrical system | Fuse blown or broken | ○ | ○ | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | Replace the fuse. | |
| | Starter faulty | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | Repair or replace the starter. | See "Starter" (on page 11-9). |
| | Alternator faulty | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | | | | | Repair or replace the alternator. | See "Removing the Alternator" (on page 12-12). |
| | Wires disconnected | ○ | ○ | ○ | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | | Repair or replace the disconnected wire(s) of the harness. | |
| | Wires short-circuited (sheathing broken); overloaded by the power consumption by additional devices | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | Inspect, repair, or replace the harnesses and wires as needed. Reexamine the additional devices. | |
| | Battery voltage low | | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | – | | | | | Inspect and charge the battery. | See "Inspecting the Electrolyte Level and Charging the Battery" (on page 5-23). |
| | Key switch faulty or disconnected | ○ | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | | Repair or replace the harness. Replace the key switch. | |
| | Key switch instantly cut off | | | | ○ | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Replace the key switch. | |
| | Starter relay faulty, disconnected, or short-circuited | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Repair or replace the harness. Replace the starter relay. | |
| | Main relay faulty (except for sticking of the contact, which is undetectable by ECU) | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | | Repair or replace the harness. Replace the main relay. | |
| | Actuator relay faulty (contact failure undetectable by ECU) | | ? | ? | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Replace the actuator relay. | |
| | Start assist relay faulty (contact failure undetectable by ECU) | | | ○ | | ○ | | | | | | | | | | | | | ● | | | | | | | | | | | △ | | | | | | | | | | | | | Replace the start assist relay. | |
| | Accelerator sensor signal error (an error undetectable by ECU) | | | | | | | | | ○ | | | ○ | ○ | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | Repair or replace the accelerator sensor. | |
| | Water temperature sensor signal error (an error undetectable by ECU) | | | ○ | | ○ | | | | | | | ● | ● | | | | | ● | | | | | | | | | | | | | | | | | | | | | | | Replace the water temperature sensor. | |
| | Speed sensor signal error (an error undetectable by ECU, such as caused by noise) | | | | ○ | ● | ○ | | | | | | ○ | ○ | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | Repair or replace the fuel injection pump. | Monitor the engine speed using the diagnosis tool. |
| | Rack position sensor signal error (an error undetectable by ECU) | | | | | ● | ○ | | | | | ● | ○ | ○ | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | Repair or replace the fuel injection pump. | Monitor the rack position sensor signal using the diagnosis tool. |
| | Rack actuator malfunctioning (an error undetectable by ECU) | | | | | ● | ○ | | | | | ● | ○ | ○ | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | Repair or replace the fuel injection pump. | Monitor the rack actuator using the diagnosis tool. |
| | ECU failure lamp disconnected | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | | Replace the lamp. Repair or replace the harness. | |
| | ECU faulty (ECU self diagnosis failure) | ○ | ○ | | | | | | | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ○ | ○ | | Replace the ECU. | |



MidWestTech | Kobelco 30SR, 35SR Tier 4 Compact Crawler Excavator Service Manual | Publication S5PW0027E01EN

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