SEN05536-06

# Shop Manual

BULLDOZER

# D65EX -17
# D65PX -17
# D65WX -17

SERIAL NUMBERS

D65EX- 1001
D65PX- 1001 and up
D65WX- 1001

KOMATSU®

MidWestTech | Komatsu D65EX-17, D65PX-17, D65WX-17 Bulldozer Service Manual | Publication SEN05536-06

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

# Index (ALL-0310-001-A-00-A)

00 Index and foreword ..... 00-1
Index ..... 00-2
Foreword, safety and general information ..... 00-15
Important safety notice ..... 00-15
How to read the shop manual ..... 00-20
Explanation of terms for maintenance standard ..... 00-22
Handling equipment of fuel system devices ..... 00-24
Handling of intake system parts ..... 00-25
Handling of hydraulic equipment ..... 00-26
Method of disconnecting and connecting of push-pull type coupler ..... 00-28
Handling of electrical equipment ..... 00-31
How to read electric wire code ..... 00-39
Precautions when performing operation ..... 00-42
Standard tightening torque table ..... 00-47
List of abbreviation ..... 00-53
Conversion table ..... 00-58
01 Specification ..... 01-1
Table of contents ..... 01-2
Specifications ..... 01-3
Specification drawing ..... 01-3
Specifications ..... 01-6
Weight table ..... 01-30
Table of fuel, coolant and lubricants ..... 01-38
10 Structure and function ..... 10-1
Table of contents ..... 10-2
Engine and cooling system ..... 10-4
Engine related parts ..... 10-4
Damper ..... 10-6
Cooling system ..... 10-8
Cooling fan pump ..... 10-10
Cooling fan motor ..... 10-24
Power train ..... 10-32
Power train ..... 10-32
HSS system ..... 10-35
Overall drawing of power train unit ..... 10-37
Power train mount ..... 10-39
Power train hydraulic piping drawing ..... 10-40
Transmission, steering, and brake control ..... 10-42
Universal joint ..... 10-44
Torque converter and PTO ..... 10-45
Transmission ..... 10-51
Transmission control valve ..... 10-64
Forward and reverse clutch ECMV and gear shift clutch ECMV ..... 10-66
Lockup clutch ECMV ..... 10-73
Main relief valve and torque converter relief valve ..... 10-77
Transmission lubricating oil relief valve ..... 10-80
Bevel gear shaft, HSS, and brake ..... 10-81
Brake valve ..... 10-102
Final drive ..... 10-106
Undercarriage and frame ..... 10-110
Main frame ..... 10-110
Suspension ..... 10-112
Track frame and idler cushion ..... 10-114
Hydraulic system ..... 10-116
Hydraulic component layout ..... 10-116
Work equipment control ..... 10-120
Hydraulic tank ..... 10-122
CLSS ..... 10-124



MidWestTech | Komatsu D65EX-17, D65PX-17, D65WX-17 Bulldozer Service Manual |... Order the manual at mid-west-tech.com >

Scavenging pump ..... 10-128
Steering lubricating oil pump and power train pump ..... 10-129
HSS pump ..... 10-130
HSS motor ..... 10-150
Control valve ..... 10-159
Blade PPC valve ..... 10-186
Ripper PPC valve ..... 10-194
Quick drop valve ..... 10-199
Work equipment lock solenoid valve ..... 10-202
Pitch selector solenoid valve ..... 10-207
Angle control EPC valve ..... 10-208
Hydraulic oil cooler bypass valve ..... 10-213
PPC accumulator ..... 10-214
Work equipment ..... 10-215
Work equipment ..... 10-215
Ripper ..... 10-218
Piston valve ..... 10-219
Cab and its attachments ..... 10-221
ROPS cab ..... 10-221
Cab mount ..... 10-223
Electrical system ..... 10-224
Engine control system ..... 10-224
Cooling system control system ..... 10-227
Palm command control system ..... 10-229
Machine monitor system ..... 10-233
KOMTRAX system ..... 10-253
System component parts ..... 10-256
Sensor ..... 10-271
20 Standard value tables ..... 20-1
Table of contents ..... 20-2
Standard service value table ..... 20-3
Standard value table for engine ..... 20-3
Standard value table for machine ..... 20-5
30 Testing and adjusting ..... 30-1
Table of contents ..... 30-2
Related information on testing and adjusting ..... 30-4
Tools for testing, adjusting, and troubleshooting ..... 30-4
Engine and cooling system ..... 30-8
Testing engine speed ..... 30-8
Measuring boost pressure ..... 30-10
Measuring exhaust gas temperature ..... 30-11
Measuring exhaust gas color ..... 30-13
Measuring and adjusting valve clearance ..... 30-15
Measuring compression pressure ..... 30-17
Measuring blowby pressure ..... 30-19
Measuring engine oil pressure ..... 30-21
Measuring EGR valve and KVGT oil pressure ..... 30-22
Releasing remaining pressure from fuel system ..... 30-23
Measuring fuel pressure ..... 30-24
Measuring fuel delivery, return rate and leakage ..... 30-31
Handling cylinder cutout mode operation ..... 30-35
Handling no-injection cranking operation ..... 30-36
Bleeding air from fuel system ..... 30-37
Testing fuel circuit for leakage ..... 30-38
Testing and adjusting air conditioner compressor belt tension ..... 30-39
Check alternator belt, replace ..... 30-40
Check auto-tensioner, replace ..... 30-42
Adjusting fuel dial and decelerator pedal ..... 30-44



MidWestTech | Komatsu D65EX-17, D65PX-17, D65WX-17 Bulldozer Service Manual |... Order the manual at mid-west-tech.com >

Writing compensation amount for soot accumulation caused by ash on engine controller ..... 30-46
Power train ..... 30-48
Measuring power train oil pressure ..... 30-48
Adjusting transmission output shaft speed sensor (replacement procedure) ..... 30-53
Simple test procedure for brake performance ..... 30-54
Adjusting brake pedal ..... 30-55
Adjusting parking brake lever ..... 30-57
Retrieval of disabled machine using brake release device ..... 30-59
Undercarriage and frame ..... 30-62
Adjusting idler clearance ..... 30-62
Checking sprocket wear ..... 30-63
Testing and adjusting track tension ..... 30-64
Hydraulic system ..... 30-65
Releasing remaining pressure in work equipment cylinder ..... 30-65
Measuring and adjusting work equipment and HSS oil pressure ..... 30-66
Measuring source pressure of control circuit ..... 30-69
Measuring PPC valve output pressure ..... 30-70
Adjusting play of work equipment PPC valve ..... 30-73
Isolating the parts causing hydraulic drift in blade and ripper ..... 30-75
Measure internal oil leakage of work equipment cylinder ..... 30-76
Checking fan speed ..... 30-77
Measuring fan circuit oil pressure ..... 30-78
Bleeding air from hydraulic circuit ..... 30-79
Work equipment ..... 30-81
Adjusting work equipment lock lever ..... 30-81
Adjustment of straight tilt dozer ..... 30-82
Cab and its attachments ..... 30-84
Adjusting operator's cab ..... 30-84
Adjusting play of blade center ball ..... 30-87
Electrical system ..... 30-88
Special functions of machine monitor ..... 30-88
Handling voltage circuit of engine controller ..... 30-150
Adjustment method when controller has been replaced ..... 30-151
Testing diodes ..... 30-153
Pm clinic ..... 30-154
Pm Clinic service ..... 30-154
Pm Clinic check sheet ..... 30-160
40 Troubleshooting ..... 40-1
Table of contents ..... 40-2
Related information on troubleshooting ..... 40-9
Troubleshooting points ..... 40-9
Sequence of events in troubleshooting ..... 40-11
Check before troubleshooting ..... 40-13
Inspection procedure before troubleshooting ..... 40-15
Preparation for troubleshooting of electrical system ..... 40-35
Classification and procedures for troubleshooting ..... 40-39
Classification and procedures for troubleshooting numbers ..... 40-41
Information in troubleshooting table ..... 40-44
Troubleshooting method for open circuit in wiring harness of pressure sensor system ..... 40-46
Connector list and layout ..... 40-48
Connector contact identification ..... 40-61
T-branch box and T-branch adapter table ..... 40-100
Fuse locations table ..... 40-105
Precautions for KDPF (KCSF and KDOC) Cleaning and Replacement ..... 40-108
Preparation of dummy temperature sensor (for KDOC and KDPF temperature sensors) ..... 40-111
Preparation of short circuit electrical connector (for failure codes [CA1883] and [CA3135]) ..... 40-112



MidWestTech | Komatsu D65EX-17, D65PX-17, D65WX-17 Bulldozer Service Manual |... Order the manual at mid-west-tech.com >

- Angle dozer

| Machine model | | | D65EX-17 | |
|---|---|---|---|---|
| | | | Sigma dozer | Power angle power tilt dozer |
| Serial number | | | 1001 and up | 1001 and up |
| Blade supporting method | | | Right/left: brace type | |
| Performance | Max. lift above ground | mm | 1,175 [1,180] | - |
| | Max. drop below ground | mm | 445 [440] | - |
| | Max. adjustment tilt | mm | 400 | - |
| | Maximum angle | deg. | 25 | - |
| Dimensions | Blade width | mm | 3,970 | - |
| | Blade height | mm | 1,100 | - |
| | Blade cutting angle | deg. | 55 | - |

Values in [ ] are for machines equipped with PLUS type track shoes.

Ripper

| Machine model | | | D65EX-17 | |
|---|---|---|---|---|
| | | | Sigma dozer | Power angle power tilt dozer |
| Serial number | | | 1001 and up | 1001 and up |
| Type | | | Parallelogram type | |
| Beam length | | mm | 2,170 | |
| Number of shanks | | piece | 3 | |
| Performance | Digging angle | deg. | 55 | |
| | Digging depth adjustment | | 3-stage variable | |
| | Max. digging depth | mm | 590 [585] | |
| | Max. lift above ground | mm | 640 [645] | |
| | Shank position (left/right) | mm | 950/950 | |

Values in [ ] are for machines equipped with PLUS type track shoes.

## D65PX-17 *(D65PX_17-2111-831-A-00-A)*

Weight

| Machine model | | D65PX-17 | |
|---|---|---|---|
| | | Straight tilt dozer | Power angle power tilt dozer |
| Serial number | | 1001 and up | 1001 and up |
| Machine weight | | | |
| • Bare tractor and ROPS cab | kg | 18,980 [19,300] | 18,960 [19,300] |
| • With work equipment | kg | 21,080 [21,400] | 21,950 [22,290] |
| • With work equipment and ripper | kg | - | - |

Values in [ ] are for machines equipped with PLUS type track shoes.

Performance

| Machine model | | D65PX-17 | |
|---|---|---|---|
| | | Straight tilt dozer | Power angle power tilt dozer |
| Serial number | | 1001 and up | 1001 and up |
| Min. turning radius | m | - [Counter-rotation turn] | - [Counter-rotation turn] |
| Gradeability | deg. | 30 | 30 |
| Stability (front/rear/left/right) | deg. | 35 | 35 |



MidWestTech | Komatsu D65EX-17, D65PX-17, D65WX-17 Bulldozer Service Manual |... Order the manual at mid-west-tech.com >

# Failure code [CA3322] KDPF Outlet Temp Sens In Range Error (D65-CA3322-400-A-Z0-A)

| Action level | Failure code | Failure | KDPF Outlet Temperature Sensor In Range Error (Engine controller system) |
|---|---|---|---|
| L03 | CA3322 | | |
| Detail of failure | • Temperature sensed by KDPF outlet temperature sensor differs from expected value. (Signal voltage is within input range.) | | |
| Action of controller | • Uses KDOC outlet temperature for KDPF outlet temperature to run engine. (If failure is detected in KDOC outlet temperature sensor as well, controller sets KDPF outlet temperature to default value (250°C) and runs engine.)<br>• Closes EGR valve.<br>• Limits engine output and runs engine.<br>• Stops KDPF regeneration control. | | |
| Problem on machine | • Engine output lowers. | | |
| Related information | ⚠ **Since KDPF and KDOC are heated to 500°C or above, take care not to get burn injury.**<br>• Signal voltage from KDOC inlet temperature sensor can be checked with monitoring function. (Code: 47301 (V))<br>• Temperature sensed by KDOC inlet temperature sensor can be checked with monitoring function. (Code: 47300 (°C))<br>• Signal voltage from KDOC outlet temperature sensor can be checked with monitoring function. (Code: 47401 (V))<br>• Temperature sensed by KDOC outlet temperature sensor can be checked with monitoring function. (Code: 47400 (°C))<br>• Signal voltage from KDPF outlet temperature sensor can be checked with monitoring function. (Code: 47201 (V))<br>• Temperature sensed by KDPF outlet temperature sensor can be checked with monitoring function. (Code: 47200 (°C))<br>• KDOC inlet temperature sensor connector label "TEMP1" expressed in black embossed letters is seen on KDPF temperature sensor consolidating box (KDOC outlet temperature sensor connector label "TEMP2" and KDPF outlet temperature sensor connector label "TEMP3" are shown similarly to "TEMP1").<br>• As to procedure for accessing KDPF temperature sensor, see 50 Disassembly and assembly, "Removal and installation of KDPF assembly" and "Disassembly and assembly of KDPF assembly".<br>• Engine controller stops approximately 30 seconds after starting switch is turned to OFF position. So when you restart engine, wait 1 minute and more before turning starting switch to ON position again. | | |
| Machine operation for clearing failure code | • When this failure code appears, perform troubleshooting according to the following work flow.<br>A. Identification of cause and repair<br>↓<br>B. Machine operation for clearing failure code<br>★ This failure code does not disappear by simply turning starting switch to ON position from OFF position after repair. You must perform machine operation for clearing failure code after repair.<br>★ In machine operation for clearing failure code, "dummy temperature sensor: 799T-601-4680" is used. | | |

A. Identification of cause and repair

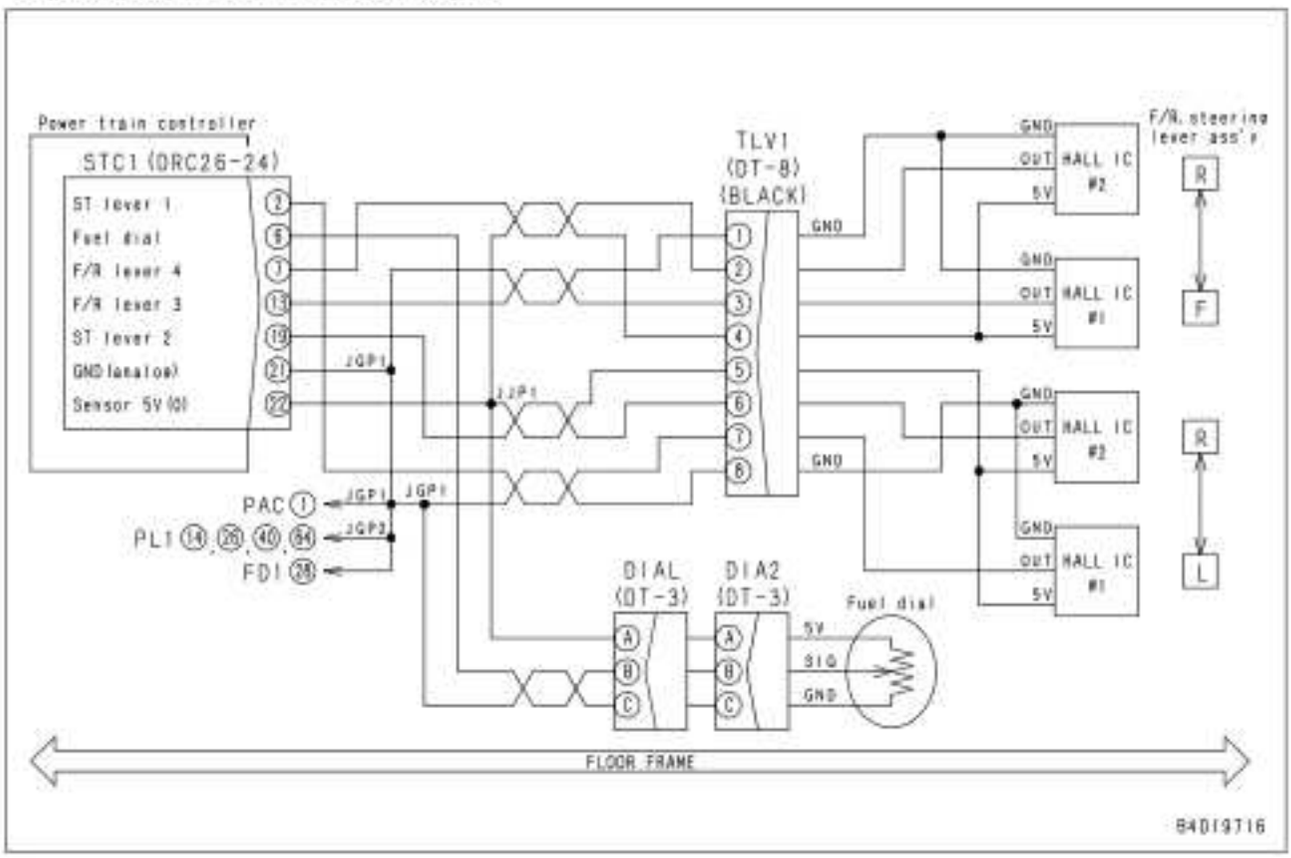
| No. | Cause | Procedure, measuring location, criteria, and remarks |
|---|---|---|
| 1 | Defective KDPF outlet temperature sensor | If failure code [CA3319] or [CA3321] is displayed, perform troubleshooting for it first. |
| 2 | Defective wiring harness connector | 1. See descriptions of wiring harness and connectors in "c: Electrical equipment" in "Checks before troubleshooting" of "Related information on troubleshooting", and check it. |



MidWestTech | Komatsu D65EX-17, D65PX-17, D65WX-17 Bulldozer Service Manual |... Order the manual at mid-west-tech.com >

| No. | Cause | Procedure, measuring location, criteria and remarks | | |
|---|---|---|---|---|
| 4 | Ground fault in wiring harness (contact with ground circuit) | ★ If no failure is found in checks on cause 2 this check is not required.<br>1. Turn starting switch to OFF position.<br>2. Disconnect connectors STC1 and TLV1, and connect T-adapter to female side of either connector. | | |
| | | Resis-tance | Between STC1 (female) (2) and (21), or between TLV1 (female) (7) and (8) | Min. 1 MΩ |
| | | | Between STC1 (female) (2) and ground, or between TLV1 (female) (7) and ground | Min. 1 MΩ |
| 5 | Defective power train controller | If no failure is found in above checks, power train controller is defective.<br>▪ Reference<br>1. Turn starting switch to OFF position.<br>2. Insert T-adapter into connector STC1.<br>3. Turn starting switch to ON position.<br>4. Operate PCCS lever (steering) and perform troubleshooting. | | |
| | | Voltage | Between STC1 (2) and (21) | 0.5 to 4.5 V |

**Circuit diagram related to steering lever**



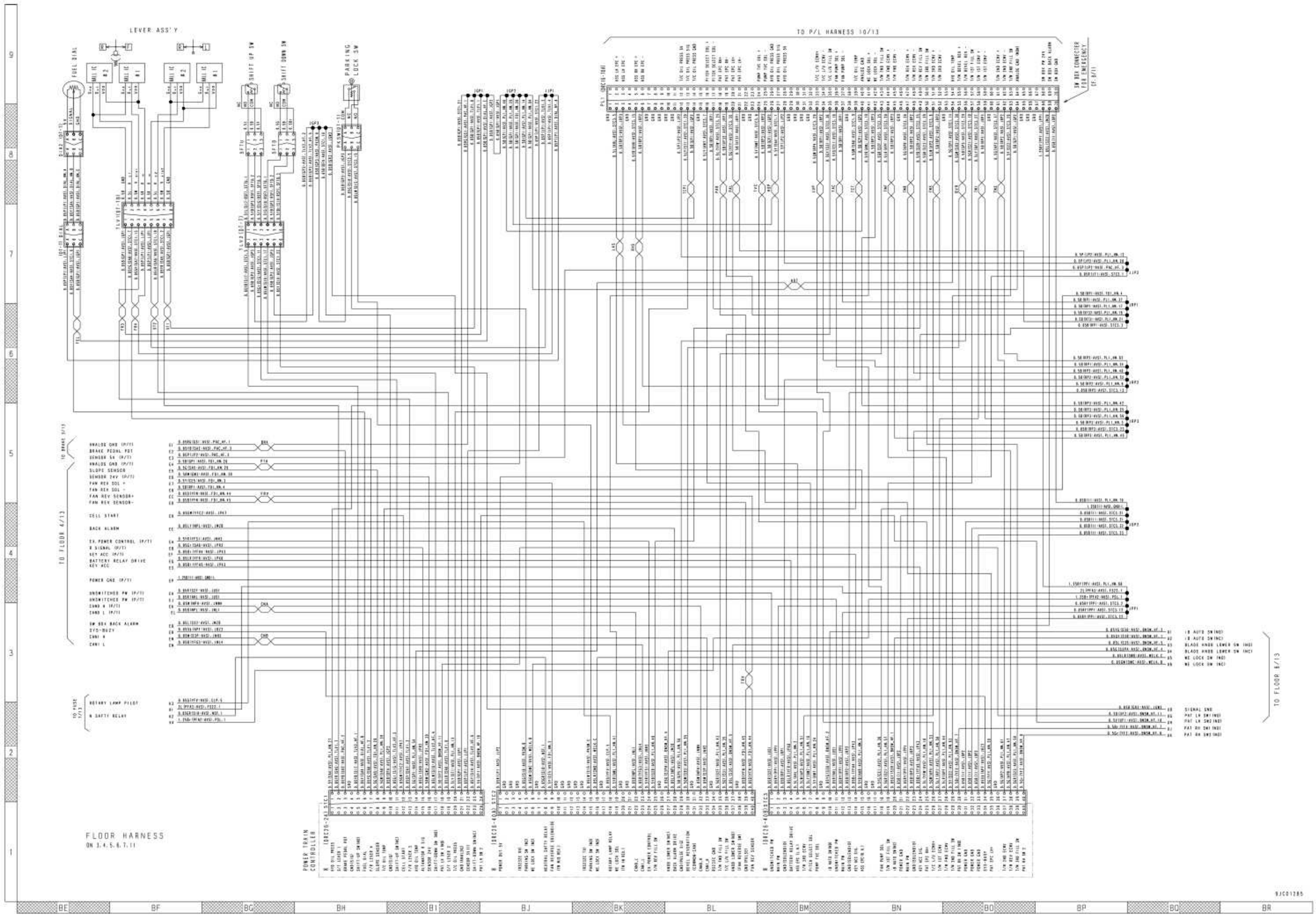



MidWestTech | Komatsu D65EX-17, D65PX-17, D65WX-17 Bulldozer Service Manual |... Order the manual at mid-west-tech.com >

# Electrical circuit diagram (5/13)

**D65EX-17, D65PX-17, D65WX-17**

★ This figure covers the equipment and devices that are unavailable as optional items in some areas.






MidWestTech | Komatsu D65EX-17, D65PX-17, D65WX-17 Bulldozer Service Manual | Publication SEN05536-06

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