SEN06511-02

Shop Manual

ARTICULATED
DUMP TRUCK

HM300-5

SERIAL NUMBERS 10001 and up

KOMATSU®

MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication SEN06511-02

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

INDEX

00 INDEX AND FOREWORD 00-1
FOREWORD, SAFETY, BASIC INFORMATION 00-21
HOW TO READ THE SHOP MANUAL 00-21
SAFETY NOTICE FOR OPERATION 00-23
PRECAUTIONS TO PREVENT FIRE 00-31
ACTION IF FIRE OCCURS 00-33
PRECAUTIONS FOR DISPOSING OF WASTE MATERIALS 00-34
ACTIONS TAKEN TO MEET EXHAUST GAS REGULATIONS 00-35
PRECAUTIONS FOR AdBlue/DEF 00-36
STORE AdBlue/DEF 00-37
PRECAUTIONS FOR HANDLING HYDRAULIC EQUIPMENT 00-38
PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF PIPINGS 00-40
PRECAUTIONS FOR HANDLING ELECTRICAL EQUIPMENT 00-46
PRECAUTIONS FOR HANDLING FUEL SYSTEM EQUIPMENT 00-48
PRECAUTIONS FOR HANDLING INTAKE SYSTEM EQUIPMENT 00-49
PRACTICAL USE OF KOMTRAX 00-50
DISCONNECT AND CONNECT PUSH-PULL TYPE COUPLER 00-51
PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF CONNECTORS 00-54
METHOD FOR DISCONNECTING AND CONNECTING DEUTSCH CONNECTOR 00-58
METHOD FOR DISCONNECTING AND CONNECTING SLIDE LOCK TYPE CONNECTOR 00-59
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH LOCK TO PULL ... 00-61
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH LOCK TO PUSH .. 00-62
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH HOUSING TO ROTATE 00-64
HOW TO READ ELECTRICAL WIRE CODE 00-65
EXPLANATION OF TERMS FOR MAINTENANCE STANDARD 00-69
ABBREVIATION LIST 00-72
STANDARD TIGHTENING TORQUE TABLE 00-78
CONVERSION TABLE 00-85
01 SPECIFICATION 01-1
CONTENTS 01-2
SPECIFICATIONS 01-3
SPECIFICATION DRAWING 01-3
SPECIFICATIONS 01-5
WEIGHT TABLE 01-11
TABLE OF FUEL, COOLANT, AND LUBRICANTS 01-13
10 STRUCTURE AND FUNCTION 10-1
CONTENTS 10-2
UREA SCR SYSTEM 10-6
LAYOUT DRAWING OF UREA SCR SYSTEM 10-6
UREA SCR SYSTEM DIAGRAM 10-9
FUNCTION OF UREA SCR SYSTEM 10-10
COMPONENT PARTS OF UREA SCR SYSTEM 10-24
BOOT-UP SYSTEM 10-33
LAYOUT DRAWING OF BOOT-UP SYSTEM 10-33
SYSTEM OPERATING LAMP SYSTEM 10-35
BATTERY DISCONNECT SWITCH 10-36
ENGINE SYSTEM 10-38
LAYOUT DRAWING OF ENGINE RELATED PARTS 10-38
AUTOMATIC IDLE STOP SYSTEM 10-41
COMPONENT PARTS OF ENGINE SYSTEM 10-43
COOLING SYSTEM 10-60
LAYOUT DRAWING OF COOLING SYSTEM 10-60
RADIATOR FAN CONTROL SYSTEM 10-63
AFTERCOOLER FAN CONTROL SYSTEM 10-65
COMPONENT PARTS OF COOLING SYSTEM 10-67

MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication S... Order the manual at mid-west-tech.com >

CONTROL SYSTEM 10-91
LAYOUT OF CONTROL SYSTEM PARTS 10-91
RETARDER AND HOIST CONTROL SYSTEM 10-93
MACHINE MONITOR SYSTEM 10-94
REARVIEW MONITOR SYSTEM 10-96
KOMTRAX SYSTEM 10-97
COMPONENT PARTS OF CONTROL SYSTEM 10-98
HYDRAULIC SYSTEM 10-146
LAYOUT DRAWING OF HYDRAULIC SYSTEM 10-146
COMPONENT PARTS OF HYDRAULIC SYSTEM 10-148
POWER TRAIN SYSTEM 10-169
LAYOUT DRAWING OF POWER TRAIN SYSTEM 10-169
TRANSMISSION CONTROL SYSTEM 10-172
GEAR SHIFT CONTROL SYSTEM 10-177
SHIFT HOLD SYSTEM 10-180
DIRECTION CONTROL SYSTEM 10-181
KOMATSU TRACTION CONTROL SYSTEM (KTCS) 10-182
COMPONENT PARTS OF POWER TRAIN SYSTEM 10-185
WORK EQUIPMENT SYSTEM 10-241
WORK EQUIPMENT CONTROL 10-241
HOIST CONTROL 10-243
COMPONENT PARTS OF WORK EQUIPMENT SYSTEM 10-245
STEERING SYSTEM 10-253
LAYOUT DRAWING OF STEERING SYSTEM 10-253
FUNCTION OF STEERING SYSTEM 10-254
STEERING COLUMN 10-255
COMPONENT PARTS OF STEERING SYSTEM 10-256
BRAKE SYSTEM 10-268
LAYOUT DRAWING OF BRAKE SYSTEM 10-268
RETARDER CONTROL 10-269
PARKING BRAKE INTERLOCK FUNCTION 10-272
ARAC SYSTEM 10-273
COMPONENT PARTS OF BRAKE SYSTEM 10-274
UNDERCARRIAGE AND FRAME 10-300
FRONT SUSPENSION 10-300
CENTER AND REAR SUSPENSIONS 10-302
SUSPENSION CYLINDER 10-305
OSCILLATION HITCH 10-308
WORK EQUIPMENT 10-310
STRUCTURE OF WORK EQUIPMENT 10-310
FUNCTION OF WORK EQUIPMENT 10-311
CAB AND ITS ATTACHMENTS 10-312
ROPS CAB 10-312
CAB TILT 10-313
20 STANDARD VALUE TABLE 20-1
CONTENTS 20-2
STANDARD VALUE TABLE FOR ENGINE 20-3
STANDARD VALUE TABLE FOR ENGINE: HM300-5 20-3
STANDARD VALUE TABLE FOR MACHINE 20-7
STANDARD VALUE TABLE FOR MACHINE: HM300-5 20-7
STANDARD VALUE TABLE FOR ELECTRICAL 20-21
STANDARD VALUE TABLE FOR ELECTRICITY 20-21
30 TESTING AND ADJUSTING 30-1
CONTENTS 30-2
RELATED INFORMATION ON TESTING AND ADJUSTING 30-5
TOOLS FOR TESTING AND ADJUSTING 30-5
SKETCH OF TOOLS FOR TESTING AND ADJUSTING 30-12
ENGINE AND COOLING SYSTEM 30-13

MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication S... Order the manual at mid-west-tech.com >

TEST ENGINE SPEED 30-13
TEST BOOST PRESSURE 30-15
TEST EXHAUST GAS TEMPERATURE 30-17
TEST EXHAUST GAS COLOR 30-20
TEST AND ADJUST VALVE CLEARANCE 30-23
TEST COMPRESSION PRESSURE 30-26
TEST BLOWBY PRESSURE 30-29
TEST ENGINE OIL PRESSURE 30-32
TEST EGR VALVE AND KVGT OIL PRESSURE 30-34
TEST FUEL PRESSURE 30-36
TEST FUEL RETURN RATE AND LEAKAGE 30-38
BLEED AIR FROM FUEL SYSTEM 30-44
TEST FUEL CIRCUIT FOR LEAKAGE 30-46
HANDLE CYLINDER CUT-OUT MODE OPERATION 30-48
HANDLE NO-INJECTION CRANKING OPERATION 30-49
TEST AND ADJUST AIR CONDITIONER COMPRESSOR BELT TENSION 30-50
CLEAN FUEL DOSER 30-51
WRITE INJECTOR COMPENSATION VALUE TO ENGINE CONTROLLER 30-53
WRITE ASH IN SOOT ACCUMULATION CORRECTION TO ENGINE CONTROLLER 30-60
TEST SCR RELATED FUNCTIONS 30-61
CLEAN AdBlue/DEF TANK 30-87
TEST TORQUE CONVERTER STALL SPEED 30-92
TEST RADIATOR FAN AND AFTERCOOLER FAN SPEED 30-97
POWER TRAIN 30-99
TEST POWER TRAIN OIL PRESSURE 30-99
ADJUST TRANSMISSION SPEED SENSOR 30-117
ADJUST TRANSMISSION CONTROLLER 30-120
MOVE MACHINE WHICH HAS A TROUBLE IN ELECTRICAL SYSTEM 30-121
MOVE MACHINE WHICH HAS A TROUBLE IN TRACTION CONTROL SYSTEM (KTCS) 30-128
STEERING SYSTEM 30-131
TEST AND ADJUST STEERING CIRCUIT OIL PRESSURE 30-131
BRAKE SYSTEM 30-133
TEST AND ADJUST BRAKE OIL PRESSURE 30-133
TEST AND CHARGE ACCUMULATOR NITROGEN GAS PRESSURE 30-138
TEST BRAKE PERFORMANCE 30-143
BLEED AIR FROM BRAKE CIRCUIT 30-147
TEST WEAR OF WHEEL BRAKE DISC 30-149
RELEASE PARKING BRAKE MANUALLY 30-150
TEST AND ADJUST WEAR OF PARKING BRAKE PAD 30-151
HYDRAULIC SYSTEM 30-154
TEST AND ADJUST SUSPENSION CYLINDER 30-154
TEST AND ADJUST DUMP CIRCUIT OIL PRESSURE 30-160
WORK EQUIPMENT 30-163
TEST AND ADJUST DUMP BODY POSITIONER SENSOR 30-163
TEST AND ADJUST DUMP BODY MOUNT 30-165
CAB AND ITS ATTACHMENTS 30-167
CAB TILT UP 30-167
ELECTRICAL SYSTEM 30-172
SET AND ADJUST EACH EQUIPMENT 30-172
SET AND OPERATE MACHINE MONITOR 30-188
METHOD FOR STARTING UP KOMTRAX TERMINAL 30-299
HANDLE VOLTAGE CIRCUIT OF ENGINE CONTROLLER 30-304
HANDLE BATTERY DISCONNECT SWITCH 30-305
TEST DIODES 30-306
Pm CLINIC 30-307
Pm CLINIC SERVICE 30-307
40 TROUBLESHOOTING 40-1
CONTENTS 40-2

MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication S... Order the manual at mid-west-tech.com >

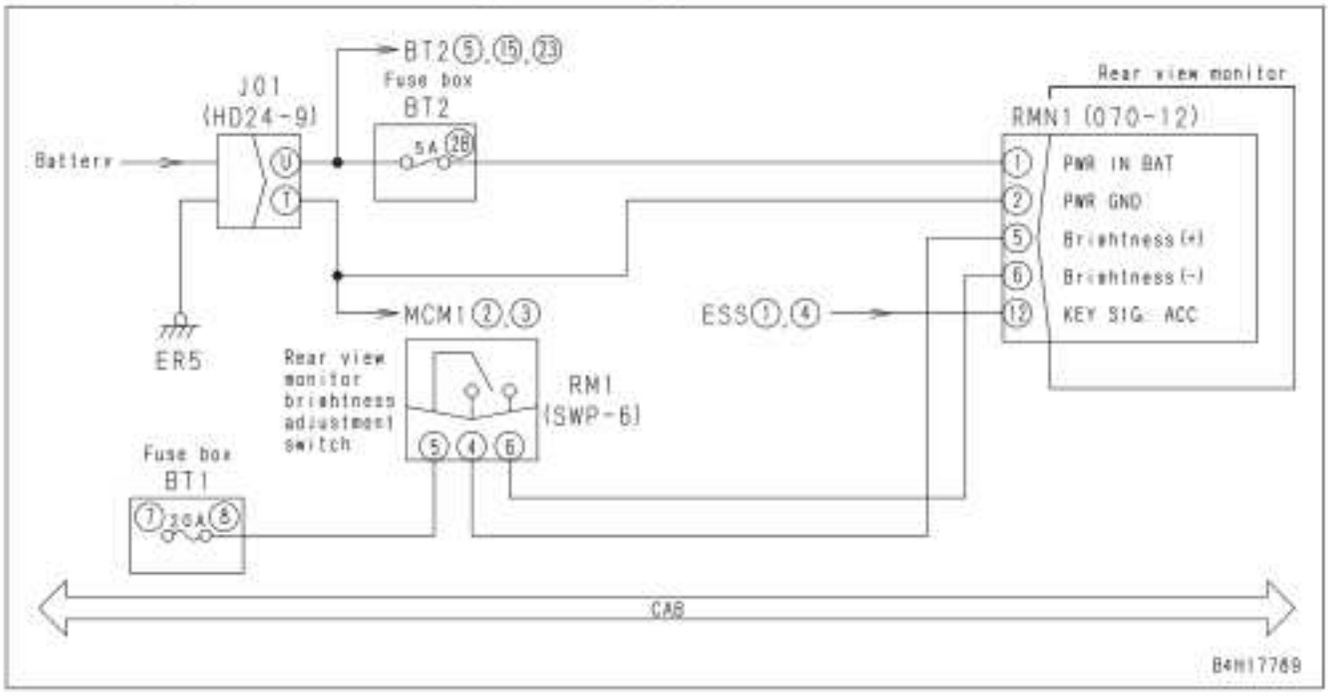
FAILURE CODE [DHAAMA] KDPF Differential Pressure Sensor Frozen

Action level	Failure code	Failure	KDPF Differential Pressure Sensor Frozen (Engine controller system)
-	DHAAMA		
Detail of failure	Signal voltage from KDPF differential pressure sensor does not show a correct value when ambient temperature is low because of frozen KDPF differential pressure sensor. (Signal voltage is within "normal" or "operating" range.)		
Action of controller	• Normal operation		
Phenomenon on machine	None in particular		
Related information	⚠ **Since KDOC and KDPF are heated to 500 °C or be careful not to get burned.** • The cause of this failure code is solved after freeze is solved. Troubleshooting is not necessary. • If the ambient temperature is not at freezing point of the sensor when this failure code is displayed on abnormality record, identify the cause according to the following procedures. • KDPF differential pressure sensor and KDPF outlet pressure sensor are provided as a unit. • Signal voltage from KDPF differential pressure sensor can be checked by monitoring function. (Code: 47101 (V)) • Differential pressure in KDPF differential pressure sensor can be checked by monitoring function. (Code: 47100 (kPa)) • Temperature in KDOC inlet temperature sensor can be checked by monitoring function. (Code: 47300 (°C)) • Temperature in KDOC outlet temperature sensor can be checked by monitoring function. (Code: 47400 (°C)) • Temperature in KDPF outlet temperature sensor can be checked by monitoring function. (Code: 47200 (°C)) • The KDOC inlet temperature sensor, the KDOC outlet temperature sensor, and the KDPF outlet temperature sensor are integrated into one sensor controller which provides CAN communication with the engine controller. • For details of access to KDPF differential pressure sensor, wiring harness and tube, see Chapter 50 "DISASSEMBLY AND ASSEMBLY", "REMOVE AND INSTALL KDPF ASSEMBLY" and "DISASSEMBLE AND ASSEMBLE OF KDPF ASSEMBLY". • After turning starting switch to OFF position, engine controller performs AdBlue/DEF purging (for Max. 6 minutes) and then stops. To restart engine, wait until system operating lamp goes off after turning starting switch to OFF position, and then turn starting switch to ON position.		

No.	Cause	Procedure, measuring location, criteria and remarks
1	Defective KDPF differential pressure sensor tube	If failure code [CA1883] is displayed on the abnormality record screen, perform troubleshooting for failure code [CA1883] first.
2	Ambient temperature sensor installation error	Check the installation of the ambient temperature sensor.
3	Defective engine room temperature sensor	Check the installation of the engine room temperature sensor.
4	Defective engine controller	If this failure code displays when the ambient temperature is high, the engine controller is defective. (In case of an internal defect, troubleshooting is impossible as an assembly. Replace whole assembly.)

MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication S...
Order the manual at mid-west-tech.com >

Circuit diagram related to brightness adjustment switch of rearview monitor



MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication S... Order the manual at mid-west-tech.com >

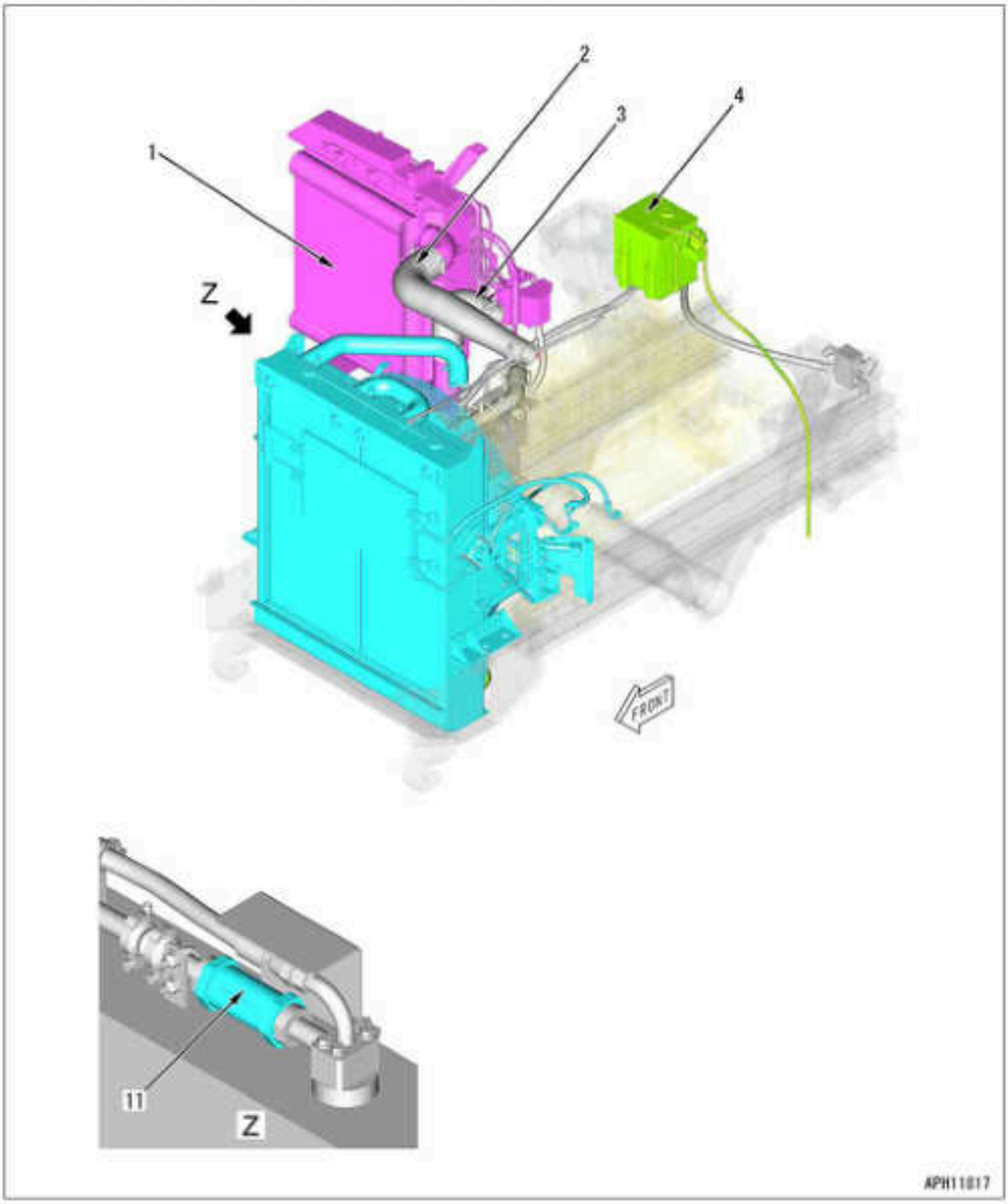
Unit: mm

No.	Item	Criteria					Remedy
		Standard dimension			Repair limit		
1	Spool return spring	Free height x outside diameter	Installed height	Load at installed height	Free height	Load at installed height	Replace spring if damaged or deformed
		45.3 x 20	43	75.5 N {7.7 kg}	-	60.0 N {6.2 kg}	
2	Spool return spring	35.93 x 9.6	35	44 N {4.5 kg}	-	35.2 N {3.6 kg}	

MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication S... Order the manual at mid-west-tech.com >

COOLING SYSTEM

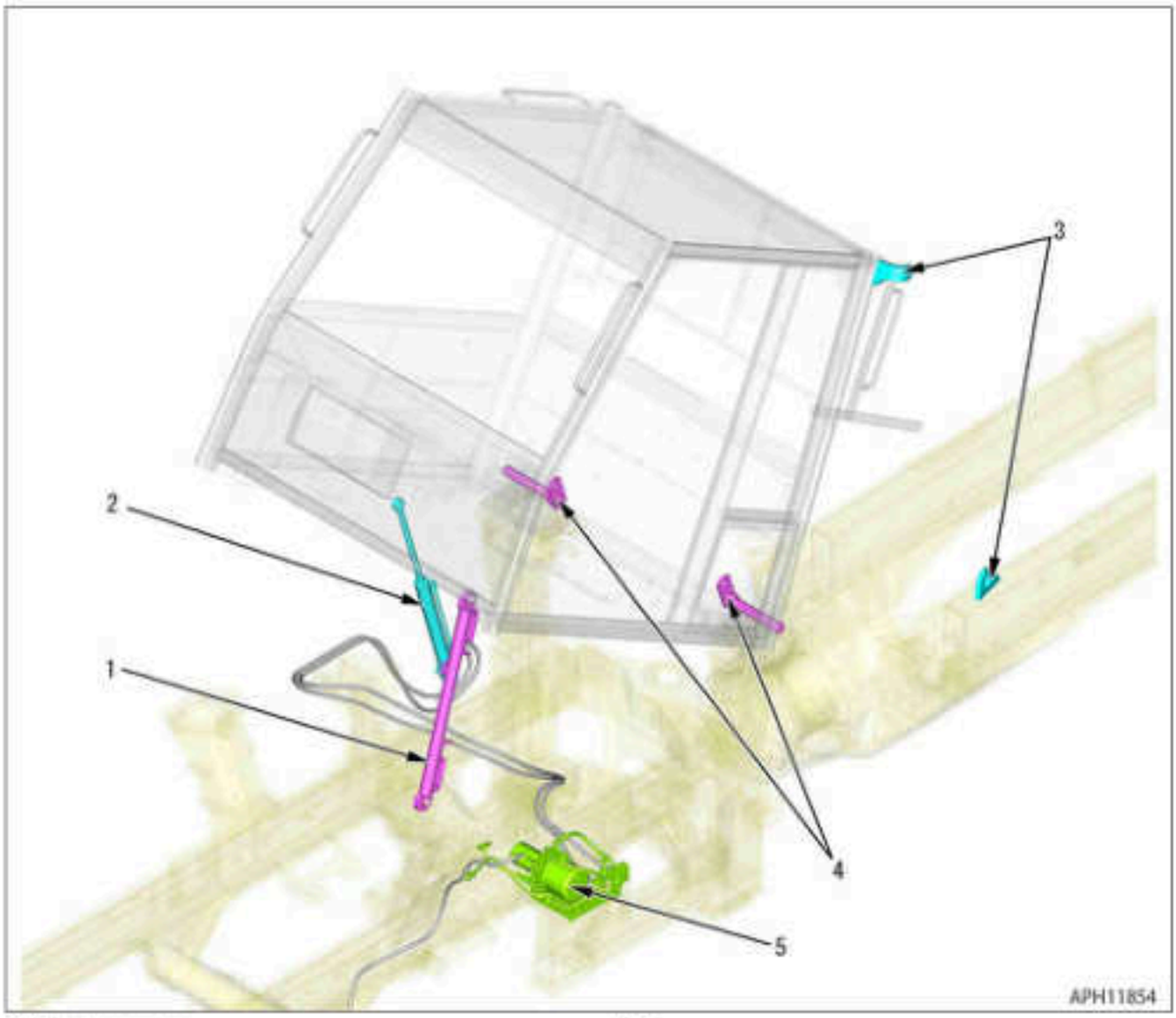
LAYOUT DRAWING OF COOLING SYSTEM



MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication S... Order the manual at mid-west-tech.com >

CAB TILT

STRUCTURE OF CAB TILT



1. Tilt stopper bar
2. Tilt cylinder
3. Manual tilting bracket
4. Pin
5. Tilt power unit

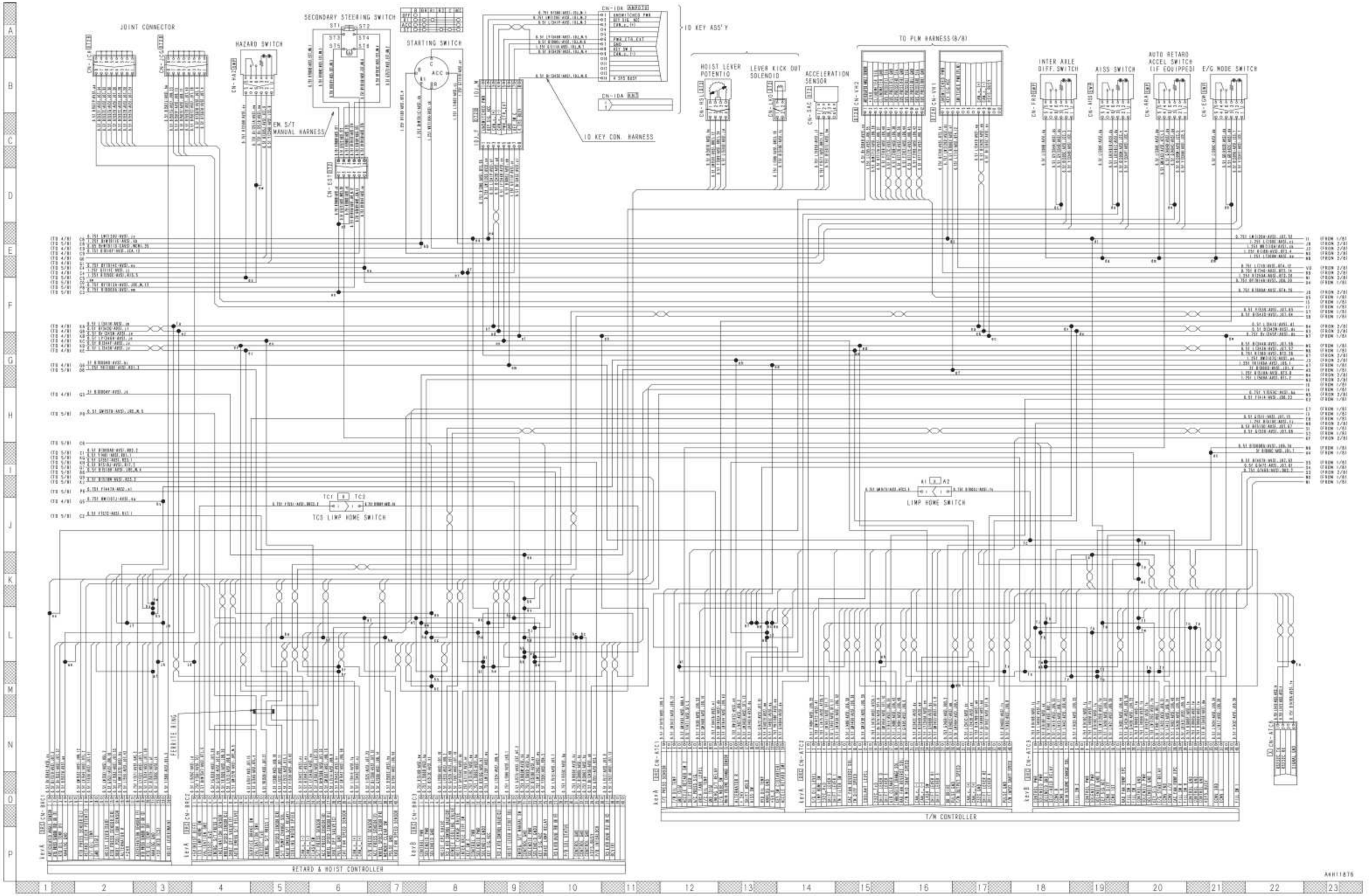
MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication S... Order the manual at mid-west-tech.com >

INSIDE CAB ELECTRICAL CIRCUIT DIAGRAM (3/8)

HM300–5

REMARK

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



MidWestTech | Komatsu HM300-5 Hydraulic Excavator Service Manual | Publication SEN06511-02 Order the manual at mid-west-tech.com >