SEN06498-07

Shop Manual

ENGINE

140E -7 SERIES

MidWestTech | Komatsu 140E-7 Series Engine Service Manual | Publication SEN06498-07

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

INDEX

00 INDEX AND FOREWORD 00-1
ABBREVIATION LIST 00-4
FOREWORD, SAFETY, BASIC INFORMATION 00-9
HOW TO READ THE ENGINE SHOP MANUAL 00-9
SAFETY NOTICE FOR OPERATION 00-11
PRECAUTIONS TO PREVENT FIRE 00-19
ACTIONS IF FIRE OCCURS 00-21
PRECAUTIONS FOR DISPOSING OF WASTE MATERIALS 00-22
ACTIONS TAKEN TO MEET EXHAUST GAS REGULATIONS 00-23
PRECAUTIONS FOR DEF 00-24
STORE AdBlue/DEF 00-25
PRECAUTIONS FOR HANDLING HYDRAULIC EQUIPMENT 00-26
PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF PIPINGS 00-29
PRECAUTIONS FOR HANDLING ELECTRICAL EQUIPMENT 00-35
PRECAUTIONS FOR HANDLING FUEL SYSTEM EQUIPMENT 00-37
PRECAUTIONS FOR HANDLING INTAKE SYSTEM EQUIPMENT 00-38
DISCONNECT AND CONNECT PUSH-PULL TYPE COUPLER 00-39
PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF CONNECTORS 00-43
METHOD FOR DISCONNECTING AND CONNECTING DEUTSCH CONNECTOR 00-47
METHOD FOR DISCONNECTING AND CONNECTING SLIDE LOCK TYPE CONNECTOR 00-48
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH LOCK TO PULL ... 00-50
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH LOCK TO PUSH .. 00-51
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH HOUSING TO ROTATE 00-53
HOW TO READ ELECTRICAL WIRE CODE 00-54
EXPLANATION OF TERMS FOR MAINTENANCE STANDARD 00-58
STANDARD TIGHTENING TORQUE TABLE 00-61
CONVERSION TABLE 00-68
01 SPECIFICATIONS 01-1
CONTENTS 01-2
ABBREVIATION LIST 01-3
SPECIFICATIONS 01-8
OUTLINE OF EXHAUST GAS REGULATION 01-8
LIST OF APPLICABLE MACHINES: 140E-7 01-11
SPECIFICATIONS 01-12
ENGINE GENERAL VIEW 01-17
WEIGHT TABLE 01-37
ENGINE PERFORMANCE CURVE 01-39
10 STRUCTURE AND FUNCTION 10-1
CONTENTS 10-2
ABBREVIATION LIST 10-4
UREA SCR SYSTEM 10-9
LAYOUT DRAWING OF UREA SCR SYSTEM 10-9
UREA SCR SYSTEM DIAGRAM 10-12
FUNCTION OF UREA SCR SYSTEM 10-13
COMPONENT PARTS OF UREA SCR SYSTEM 10-31
ENGINE SYSTEM 10-40
LAYOUT OF ENGINE COMPONENTS 10-40
INTAKE AND EXHAUST SYSTEM PARTS 10-42
ENGINE MAIN BODY PARTS 10-46
TURBOCHARGER SYSTEM 10-60
LUBRICATION SYSTEM 10-83
FUEL SYSTEM 10-93
COOLING SYSTEM 10-115
ELECTRICAL SYSTEM 10-121
COMPONENT PARTS OF ELECTRICAL SYSTEM 10-121

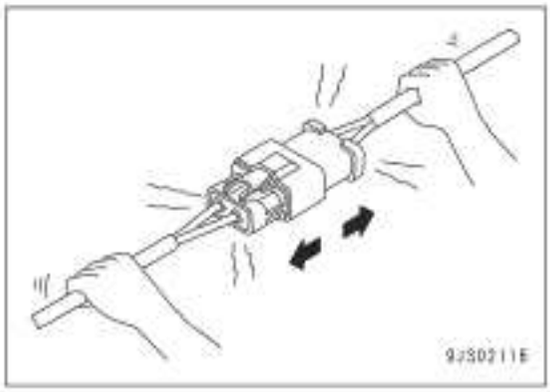
MidWestTech | Komatsu 140E-7 Series Engine Service Manual | Publication SEN0649... Order the manual at mid-west-tech.com >

SENSOR....10-139
20 STANDARD VALUE TABLE....20-1
CONTENTS....20-2
ABBREVIATION LIST....20-3
STANDARD VALUE TABLE FOR ENGINE....20-8
STANDARD VALUE TABLE FOR ENGINE: SAA6D140E-7 (D155AX-8, D155AXI-8)....20-8
STANDARD VALUE TABLE FOR ENGINE: SAA6D140E-7 (HD325-8,HD405-8)....20-10
STANDARD VALUE TABLE FOR ENGINE: SAA6D140E-7 (HM400-5)....20-12
STANDARD VALUE TABLE FOR ENGINE: SAA6D140E-7 (PC650LC-11)....20-14
STANDARD VALUE TABLE FOR ENGINE: SAA6D140E-7 (WA500-8)....20-16
RUNNING-IN STANDARD AND PERFORMANCE TEST STANDARD....20-18
RUNNING-IN STANDARD AND PERFORMANCE TEST STANDARD: SAA6D140E-7 (D155AX-8, D155AXI-8)....20-18
RUNNING-IN STANDARD AND PERFORMANCE TEST STANDARD: SAA6D140E-7(HD325-8,HD405-8)....20-20
RUNNING-IN STANDARD AND PERFORMANCE TEST STANDARD: SAA6D140E-7 (HM400-5)....20-22
RUNNING-IN STANDARD AND PERFORMANCE TEST STANDARD: SAA6D140E-7 (PC650LC-11)....20-24
RUNNING-IN STANDARD AND PERFORMANCE TEST STANDARD: SAA6D140E-7 (WA500-8)....20-26
50 DISASSEMBLY AND ASSEMBLY....50-1
CONTENTS....50-2
ABBREVIATION LIST....50-3
RELATED INFORMATION ON DISASSEMBLY AND ASSEMBLY....50-8
HOW TO READ THIS MANUAL....50-8
COATING MATERIALS LIST....50-10
SPECIAL TOOLS LIST....50-15
SKETCHES OF SPECIAL TOOLS....50-17
ENGINE SYSTEM....50-20
DISASSEMBLE AND ASSEMBLE ENGINE GENERALLY....50-20
REMOVE AND INSTALL SUPPLY PUMP ASSEMBLY....50-88
REMOVE AND INSTALL ENGINE FRONT OIL SEAL....50-92
REMOVE AND INSTALL ENGINE REAR OIL SEAL....50-95
60 MAINTENANCE STANDARD....60-1
CONTENTS....60-2
ABBREVIATION LIST....60-3
ENGINE SYSTEM....60-8
INTAKE AND EXHAUST SYSTEM PARTS....60-8
ENGINE MAIN BODY PARTS....60-9
LUBRICATION SYSTEM....60-33
COOLING SYSTEM....60-36
INDEX....1

MidWestTech | Komatsu 140E-7 Series Engine Service Manual | Publication SEN0649... Order the manual at mid-west-tech.com >

Disconnection in wiring

If the wiring harness is pulled to disconnect the connector, or the components are lifted with a crane while the wiring harness is still connected, or a heavy object hits the wiring harness, it may separate the crimping of the connector, or damage the soldering, or break the wiring harness.

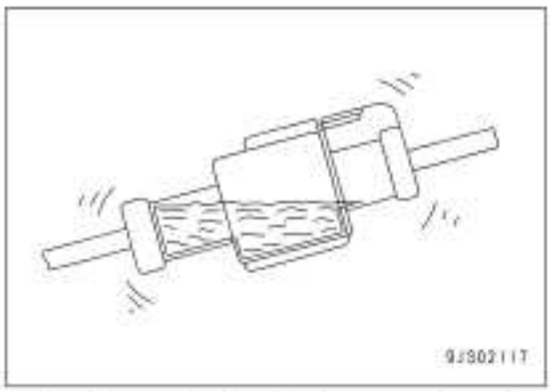


Water entering the connector by high-pressure jetting

The connector is designed to make it difficult for water to enter (drip-proof structure), but if high-pressure water is sprayed directly on the connector, water may enter the connector, depending on the direction of the water jet.

Do not spray water directly on the connector.

If the connector is waterproof, intruded water is hardly drained. Once water enters into the connector, water goes through pins to cause short-circuit. Drying the drenched connector or take appropriate actions before providing electricity.

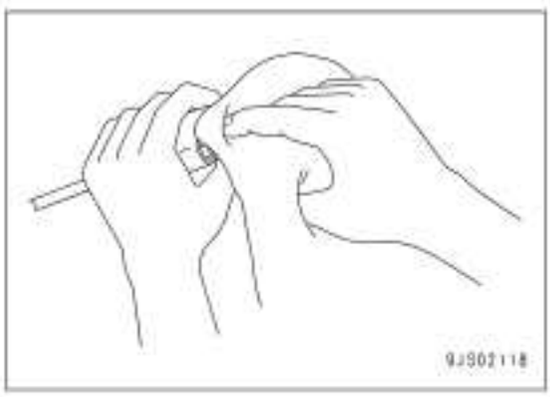


Entry of water, dirt, or dust when disconnecting a connector

If any water, mud or dust is stuck to the outside surface of a connector, it can enter inside the connector when the connector is disconnected. Before disconnecting the connector, wipe off any stuck water or dirt by using a dry cloth or blow it with compressed air.

Oil, mud, or dust stuck to connector

If any oil or grease is stuck to the connector and an oil film is formed on the mating surface of the male and female pins, the oil prevents electricity from passing through resulting in defective contact. If any oil, grease, dirt or dust is stuck to the connector, wipe it off with a dry cloth or blow it with compressed air, and wash it with electrical contact restorer.



NOTICE

- **When wiping the jointed portion of the connector, do not apply excessive force or deform the pins.**
- **If there is oil or water in the compressed air, it causes the contacts to become dirtier. Use clean air which any oil and water has been removed from.**

MidWestTech | Komatsu 140E-7 Series Engine Service Manual | Publication SEN0649... Order the manual at mid-west-tech.com >

SPECIFICATIONS

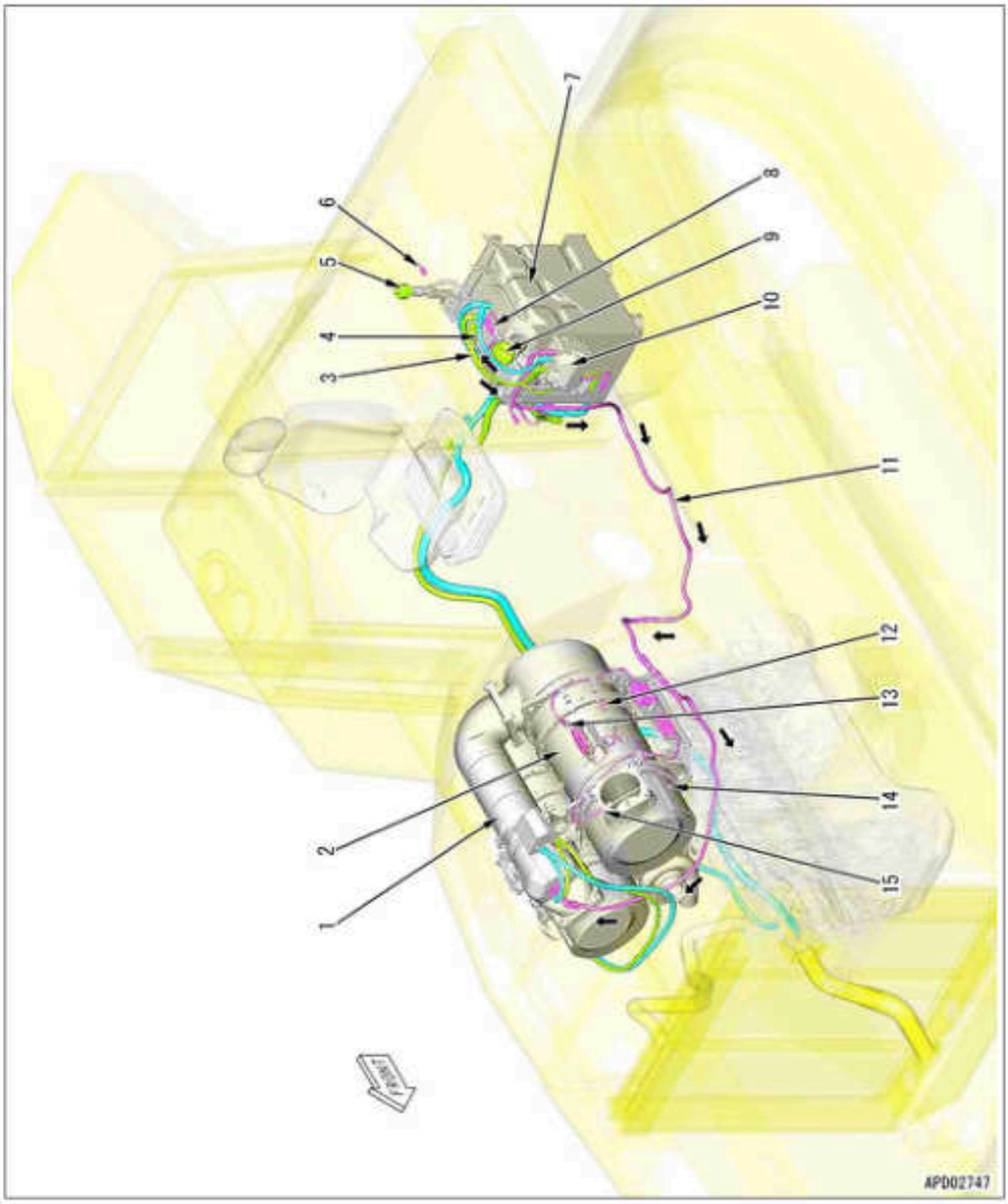
SPECIFICATIONS: SAA6D140E-7 (D155AX-8, D155AXI-8)

Engine model			SAA6D140E-7
No. of cylinders - bore x stroke		mm	6-140 x 165
Piston displacement		ℓ{ cc}	15.2 {15230}
Firing order		–	1–5–3–6–2–4
Dimensions	Overall length	mm	1579
	Overall width	mm	1194
	Overall height (excluding KDPF/SCR)	mm	1334
	Overall height (including KDPF/SCR)	mm	2024
Performance	Rated horsepower	kW{ HP}/ min^{-1} { rpm}	268 {359}/ 1900 {1900}
	Max. torque	Nm{ kgm}/ min^{-1} { rpm}	1834 {187}/ 1300 {1300}
	Max. speed with no load (high idle speed)	min^{-1} { rpm}	2100 (0/-50) {2100 (0/-50)}
	Min. speed with no load (low idle speed)	min^{-1} { rpm}	740 (+25/0) {740 (+25/0)}
	Fuel consumption ratio at rated horsepower	g/kWh{ g/HPh}	215 {160}
Dry weight		kg	2285
Fuel injection system		–	High-pressure common rail type
Control of fuel injection system		–	Electronic control type
Amount of lubricating oil (Refill capacity)		ℓ	45 (37)
Amount of coolant		ℓ	27 (only engine)
Alternator		–	24 V, 90 A, or 140 A
Starting motor		–	24 V, 11 kW
Turbocharger		–	KOMATSU, Model KTR95V

MidWestTech | Komatsu 140E-7 Series Engine Service Manual | Publication SEN0649... Order the manual at mid-west-tech.com >

Status		Elapsed time (*1)	Machine monitor					Engine deration (*5)
			Message of SCR Information	Caution lamp (Action level)	Tone of audible alert	Failure code for abnormality (*2),(*3)	Failure code for Inducement strategy status (*4)	
1	Warning	5 hours	1: Please inspect and maintain SCR system.	Red  APP14416 Red  APP14414	Long intermittently	CA2271 CB2271	No indication	Torque: over 25%
2	Continuous Warning (Warning 2)	10 hours	2: Without treatment, engine power will be derated.	Red  APP14416 Yellow  APP14417 Red  APP14414	Triplet (*6) Short intermittently (*7)	CA2271 CB2271	AS00R2 (Warning 2 (SCR Device Abnormality))	Torque: over 25%
3	Low-Level Inducement (Inducement 1)	20 hours	3: Engine power is under deration.	Red  APP14416 Red  APP14415 Red  APP14414	Long intermittently	CA2271 CB2271	AS00R3 (Inducement 1 (SCR Device Abnormality))	Torque: over 25%

MidWestTech | Komatsu 140E-7 Series Engine Service Manual | Publication SEN0649... Order the manual at mid-west-tech.com >



MidWestTech | Komatsu 140E-7 Series Engine Service Manual | Publication SEN0649... Order the manual at mid-west-tech.com >

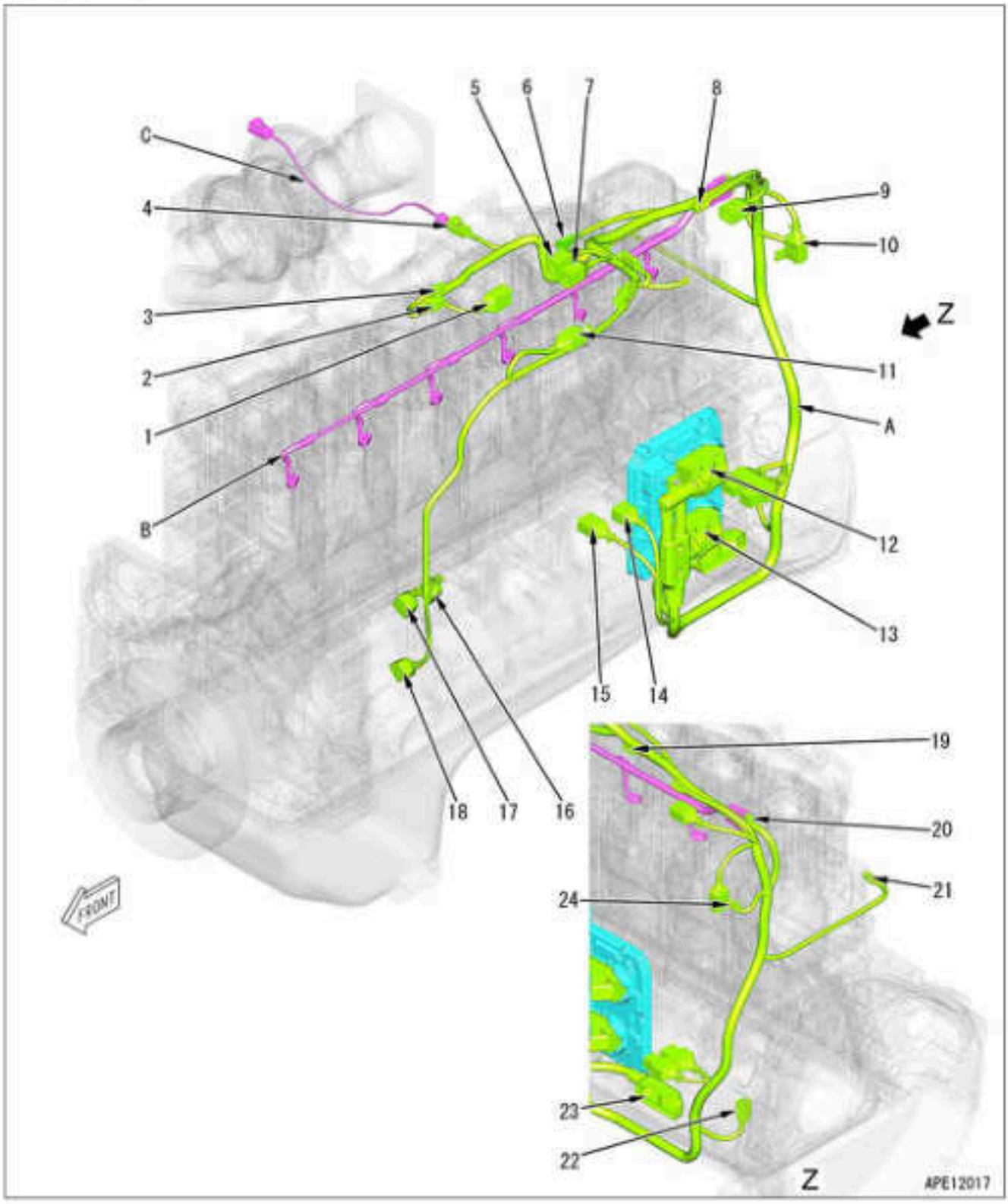
ENGINE WIRING HARNESS

STRUCTURE OF ENGINE WIRING HARNESS

REMARK

The shape is subject to machine models.

General view



MidWestTech | Komatsu 140E-7 Series Engine Service Manual | Publication SEN0649... Order the manual at mid-west-tech.com >