SEN06580-04

Shop Manual

ENGINE

170E -7 SERIES

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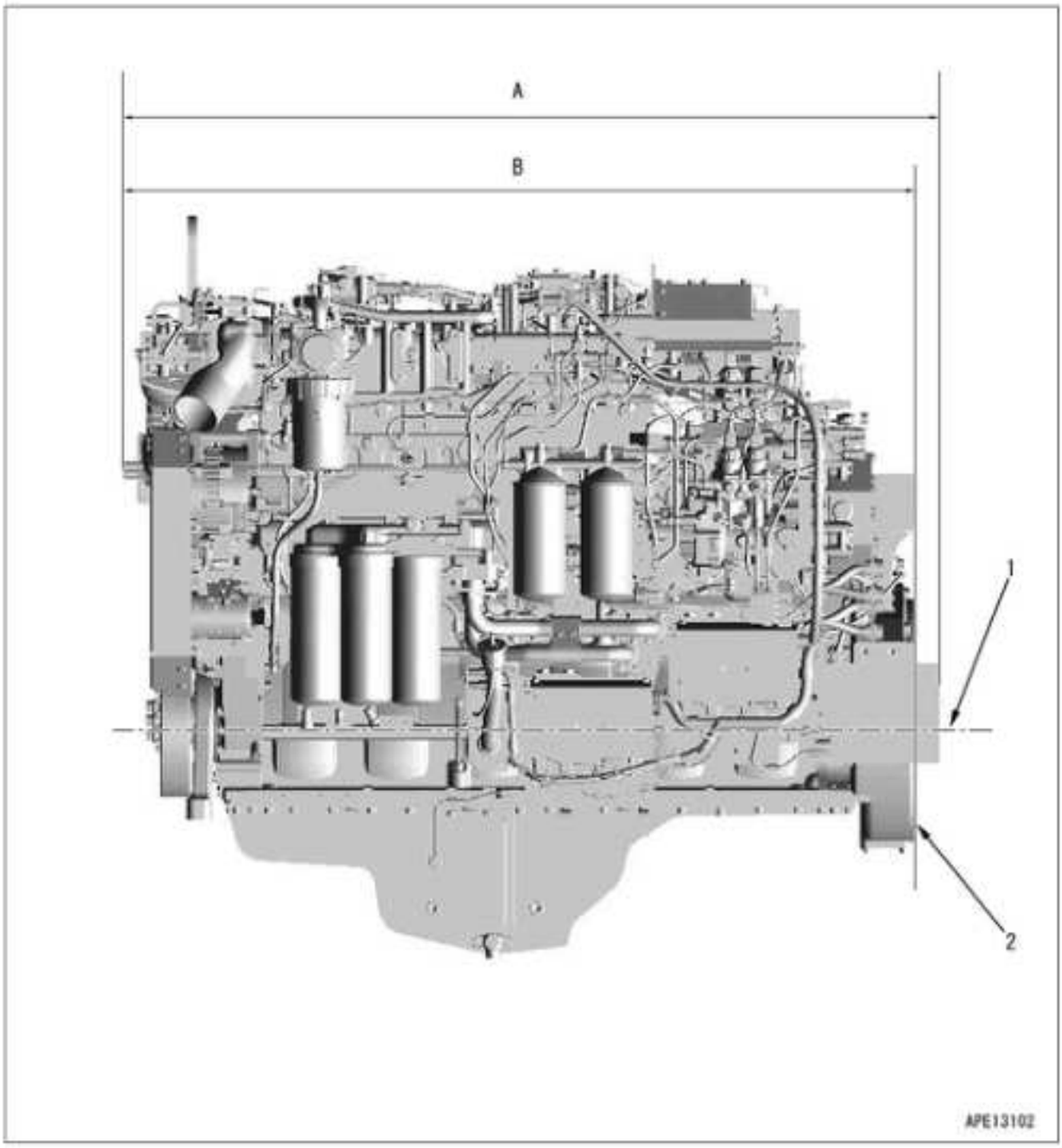
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ENGINE GENERAL VIEW: SAA6D170E-7(HD465-8, HD605-8)

REMARK

The shape depends on the machine models.

Left side view



1: Center of crankshaft

2: Rear face of flywheel housing

Dimension (A): 1895 mm

Dimension (B): 1840 mm

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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)	
3	Low-Level Inducement (Inducement 1)	20 hours	3: Engine power is under deration.	Red  APP14410 Red  APP14415 Red  APP14414	Long intermittently	CA4151 CB4151	AS00R3 (Inducement 1 (SCR Device Abnormality))	Torque: over 25%
4	Severe Inducement (Inducement 2)	Until repairing	4: Engine power is under heavy deration.	Red  APP14410 Red  APP14415 Red  APP14413	Continuously	CA4151 CB4151	AS00R4 (Inducement 2 (SCR Device Abnormality))	Torque: 50% and RPM: 40%

*1: Elapsed time of each stage describes an accumulated time advancing to the next stage after starting "Warning"stage. Final Inducement is not cleared till abnormality is repaired.

*2: These failure codes are displayed on "Current Abnormality" in the operator mode, or "Abnormality Record" in the service mode. The failure code shown here is an example of failure code which is displayed on the machine monitor when an abnormality occurs. For the failure codes, see TROUBLESHOOTING, "TROUBLESHOOTING POINTS FOR UREA SCR SYSTEM".

*3: The failure code which starts with CB may be displayed for the machine equipped with aftertreatment devices branching off to 2 lines.

*4: These failure codes are displayed on "Current Abnormality" in the operator mode, or "Abnormality Record" in the service mode.

*5: These percentages show a torque reduction ratio from the full torque curve, and a speed reduction ratio from the rated speed.

*6: Construction equipment with crawler

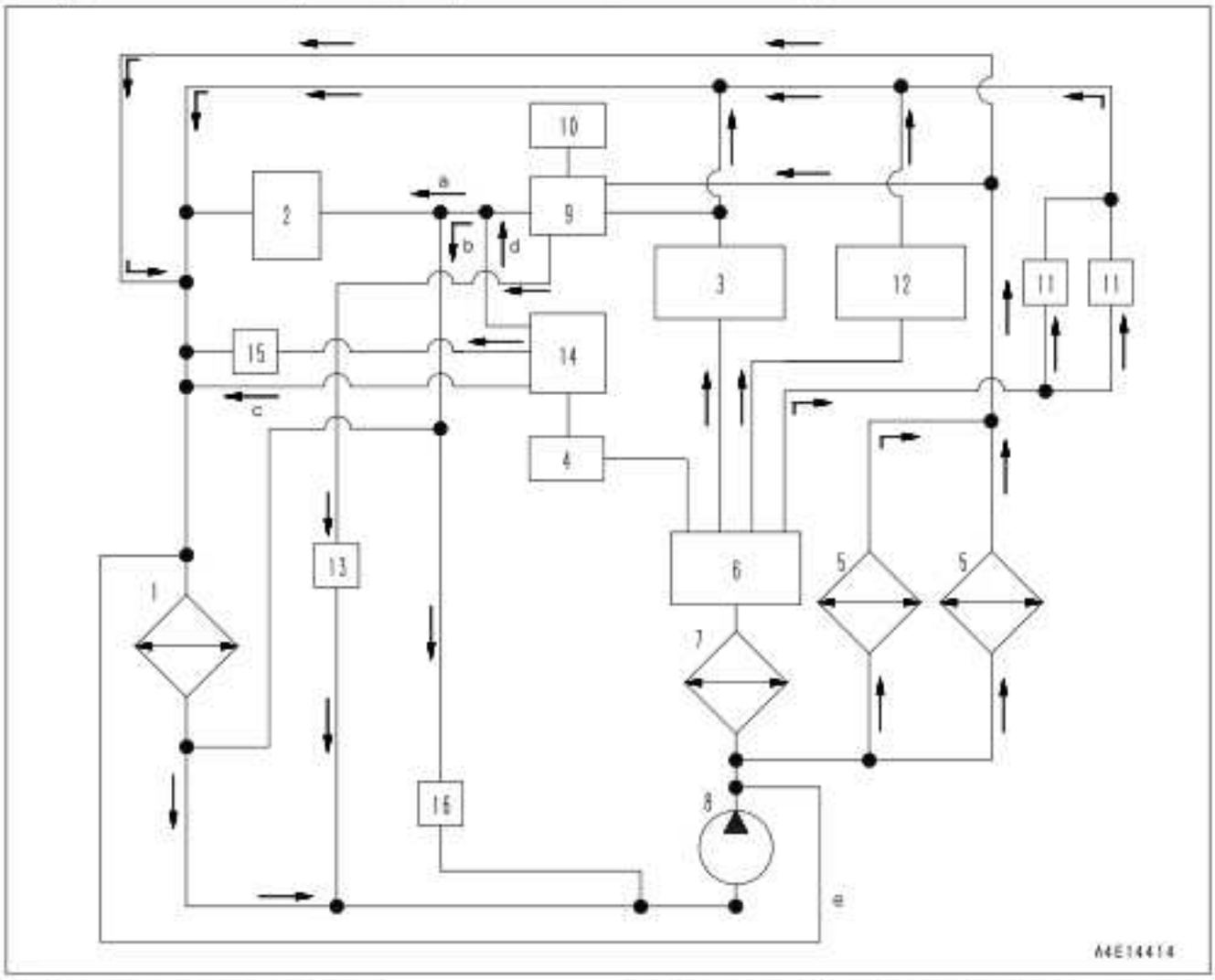
*7: Construction equipment with wheel

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COOLING SYSTEM CIRCUIT DIAGRAM

REMARK

The figure shows machine (HD465/605-8) without AdBlue/DEF as an example.



a: Flow when thermostat is opened

b: Flow when thermostat is closed

c: Flow when the thermostat valve with jiggle valve is opened (coolant temperature is 71°C or higher)

d: Flow when the thermostat valve with jiggle valve is closed (coolant temperature is less than 71°C)

e: Air bleeding piping

1: Radiator

2: Thermostat

3: Cylinder head

4: VGT

5: EGR cooler

6: Cylinder block

7: Engine oil cooler

8: Water pump

9: Water manifold

10: Coolant temperature sensor

11: Fuel doser

12: KCCV assembly

13: Air conditioner unit (heater)

14: Thermostat valve

15: Thermostat valve with jiggle valve

16: Orifice (for air bleeding)

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UREA SCR SYSTEM

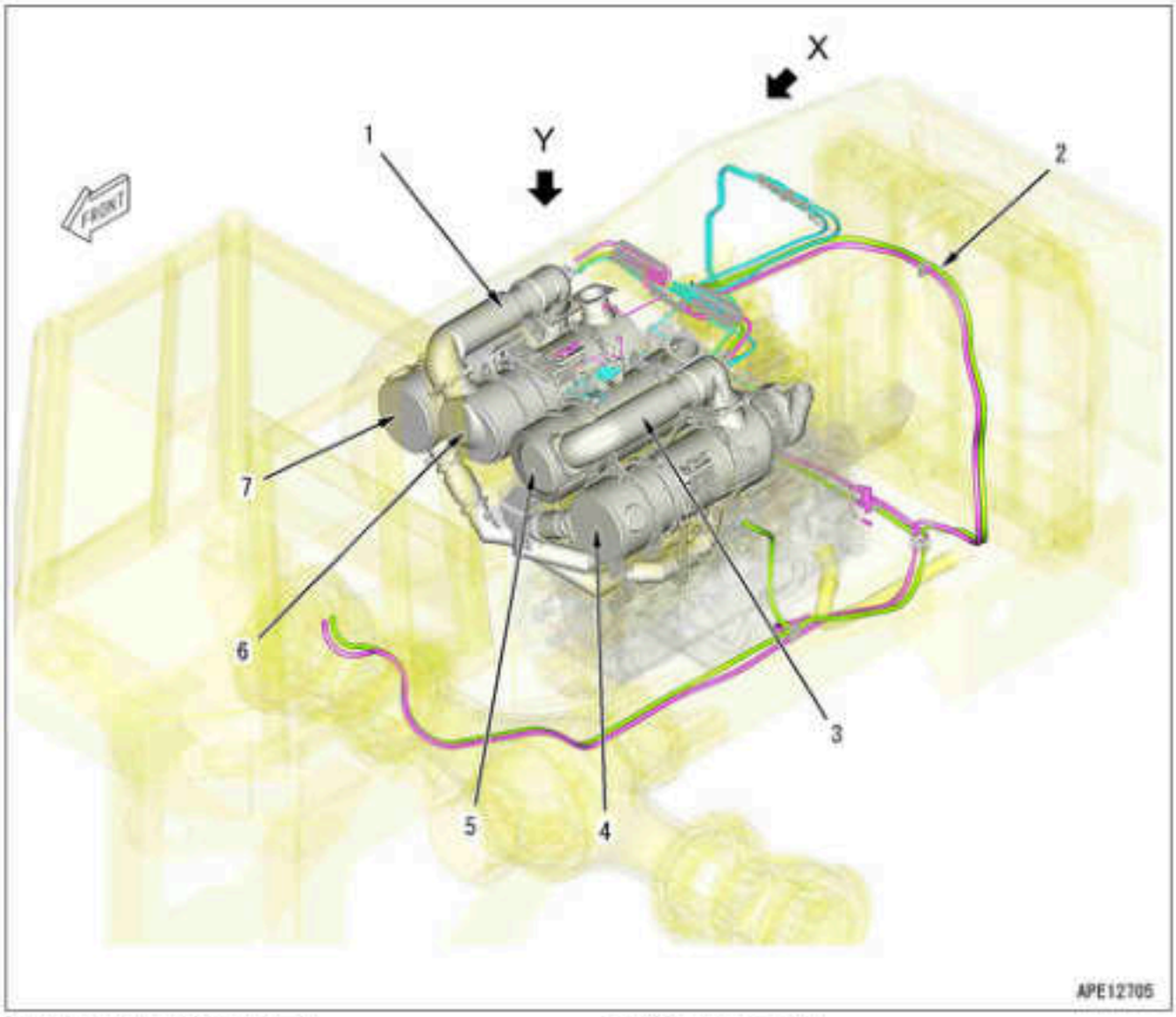
SCR

Abbreviation for Selective Catalytic Reduction

LAYOUT DRAWING OF UREA SCR SYSTEM

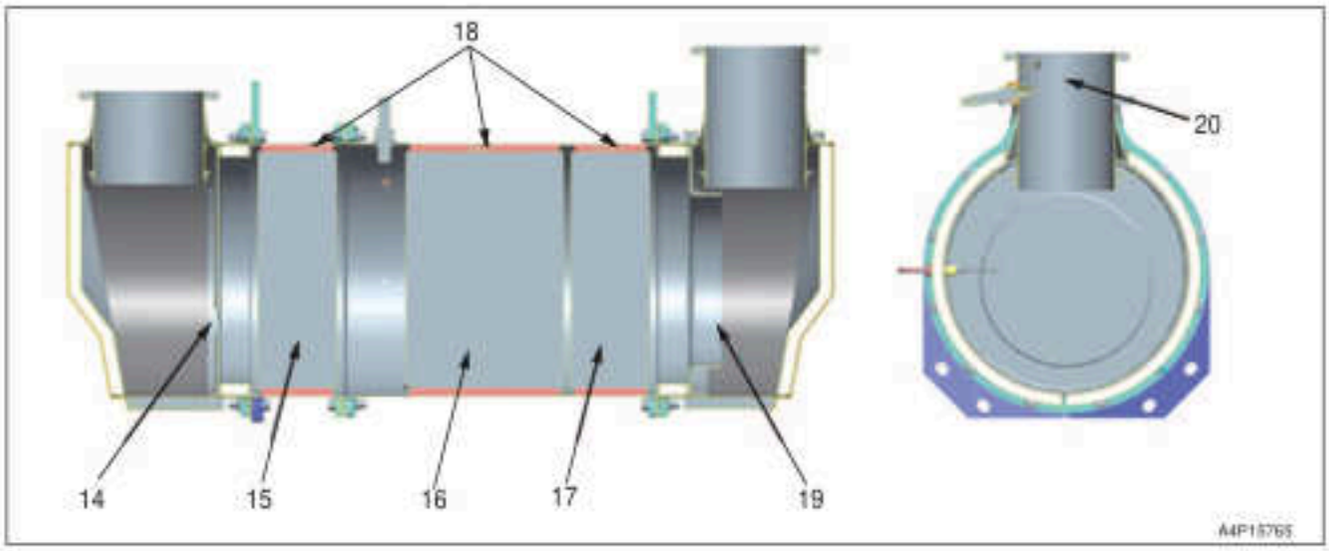
REMARK

The figure shows type 8 of WA600 series as an example.



1: AdBlue/DEF mixing tube -B
2: AdBlue/DEF injector coolant hose
3: AdBlue/DEF mixing tube -A
4: KDPF -A
5: SCR assembly -A
6: SCR assembly -B
7: KDPF -B

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A: From AdBlue/DEF mixing tube
B: To exhaust pipe
C: Water drain

1: Inlet unit
2: Upstream SCR catalyst unit
3: Downstream SCR catalyst unit
4: Ammonia sensor
5: SCR temperature sensor
6: Temperature sensor controller
7: Sensor bracket
8: Sensor bracket band
9: Outlet unit
10: SCR outlet temperature sensor
11: SCR outlet NOx sensor
12: Water drain port
13: Hanger plate
14: Rectifying plate
15: Upstream SCR catalyst
16: Downstream SCR catalyst
17: Ammonia oxidation catalyst
18: Catalyzer holding mat
19: Water dam
20: Water baffle

- SCR assembly consists of the following: The inlet unit (1) which introduces the exhaust gas and equalize the distribution of flow speed, the upstream SCR catalyst unit (2) which stores upstream SCR catalyst, the downstream SCR catalyst unit (3) which stores downstream SCR catalyst and ammonia oxidation catalyst, the outlet unit (9) which discharges the exhaust gas and as well as prevents rainwater from entering through outlet into downstream SCR catalyst unit (3).
- Ammonia oxidation catalyst (17) oxidizes ammonia to water and nitrogen to prevent ammonia which is supplied to SCR assembly from being released out because SCR catalysts (15) and (16) cannot completely consume it.
- Each 1 piece of SCR temperature sensor (5), SCR outlet temperature sensor (10), ammonia sensor (4), and SCR outlet NOx sensor (11) are installed. These sensors are usable for various troubleshooting, such as they are used to control the feedback of denitration efficiency or they monitor that SCR catalyst properly functions or not.
- Rectifying plate (14) equalizes the distribution of exhaust gas flow speed.
- SCR catalysts (15) and (16) use the ceramic honeycomb.
- The catalyzer holding mat (18) is made of a specific fiber and protects the ceramic catalyst against vibrations by the engine and the machine body. It also restrains the temperature of outer periphery of SCR assembly from becoming high caused by a heat transfer of the ceramics during operation.
- Water dam (19) is located at the upstream side of the outlet and prevents rainwater from entering into downstream SCR catalyst unit (3).
- Water baffle (20) is located at the downstream side of the outlet and prevents rainwater at outlet from splashing over the detection part of NOx sensor.

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