

PUMA 200
PUMA 215
PUMA 230
Tractor

SERVICE MANUAL

Part number 47770452

English

October 2015

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Link Product / Engine

Product	Market Product	Engine
PUMA® 200 With cab, 18X6, TIER 3 [HCCZC200JFCR38296 -]	Latin America	F4DE9684B*J113
PUMA® 215 With cab, 18X6, TIER 3 [HCCZC215JFCR38296 -]	Latin America	F4DE9684L*J110
PUMA® 230 With cab, 18X6, Tier 3 [HCCZC230JFCR38296 -]	Latin America	F4DE9684L*J114

Contents

INTRODUCTION

Engine	10
[10.001] Engine and crankcase	10.1
[10.103] Crankshaft and flywheel.....	10.2
[10.216] Fuel tanks	10.3
[10.210] Lift pump and lines	10.4
[10.218] Fuel injection system.....	10.5
[10.250] Turbocharger and lines.....	10.6
[10.254] Intake and exhaust manifolds and muffler	10.7
[10.400] Engine cooling system	10.8
[10.414] Fan and drive	10.9
[10.304] Engine lubrication system.....	10.10
[10.408] Oil cooler and lines.....	10.11
Transmission	21
[21.113] Powershift transmission	21.1
[21.135] Powershift transmission external controls.....	21.2
[21.155] Powershift transmission internal components.....	21.3
[21.160] Creeper	21.4
Four-Wheel Drive (4WD) system	23
[23.202] Electro-hydraulic control	23.1
Front axle system	25
[25.100] Powered front axle	25.1
[25.102] Front bevel gear set and differential	25.2
[25.108] Final drive hub, steering knuckles, and shafts	25.3
Rear axle system	27
[27.100] Powered rear axle.....	27.1

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[27.106] Rear bevel gear set and differential	27.2
[27.120] Planetary and final drives	27.3
Power Take-Off (PTO)	31
[31.101] Rear mechanical control	31.1
[31.104] Rear electro-hydraulic control	31.2
[31.114] Two-speed rear Power Take-Off (PTO)	31.3
Brakes and controls	33
[33.202] Hydraulic service brakes	33.1
[33.300] Pneumatic service brakes	33.2
[33.110] Parking brake or parking lock	33.3
Hydraulic systems	35
[35.000] Hydraulic systems	35.1
[35.300] Reservoir, cooler, and filters	35.2
[35.106] Variable displacement pump	35.3
[35.102] Pump control valves	35.4
[35.105] Charge pump	35.5
[35.322] Regulated/Low pressure system	35.6
[35.204] Remote control valves	35.7
[35.220] Auxiliary hydraulic pump	35.8
[35.114] Three-point hitch control valve	35.9
[35.116] Three-point hitch cylinder	35.10
Pneumatic system	36
[36.100] Pneumatic system	36.1
Hitches, drawbars, and implement couplings	37
[37.100] Drawbars and towing hitches	37.1
[37.110] Rear three-point hitch	37.2
Frames and ballasting	39
[39.100] Frame	39.1

[39.140] Ballasts and supports	39.2
Steering	41
[41.101] Steering control	41.1
[41.106] Tie rods	41.2
[41.200] Hydraulic control components	41.3
[41.206] Pump	41.4
[41.216] Cylinders	41.5
Wheels	44
[44.511] Front wheels	44.1
[44.520] Rear wheels	44.2
Cab climate control	50
[50.100] Heating	50.1
[50.104] Ventilation	50.2
[50.200] Air conditioning	50.3
Electrical systems	55
[55.000] Electrical system	55.1
[55.100] Harnesses and connectors	55.2
[55.201] Engine starting system	55.3
[55.301] Alternator	55.4
[55.010] Fuel injection system	55.5
[55.012] Engine cooling system	55.6
[55.640] Electronic modules	55.7
[55.045] Front axle control system	55.8
[55.051] Cab Heating, Ventilation, and Air-Conditioning (HVAC) controls	55.9
[55.050] Heating, Ventilation, and Air-Conditioning (HVAC) control system	55.10
[55.523] Cab hitch controls	55.11
[55.130] Rear three-point hitch electronic control system	55.12
[55.302] Battery	55.13

[55.DTC] FAULT CODES.....	55.14
Platform, cab, bodywork, and decals.....	90
[90.150] Cab.....	90.1
[90.151] Cab interior.....	90.2
[90.100] Engine hood and panels.....	90.3
[90.102] Engine shields, hood latches, and trims.....	90.4



INTRODUCTION

Safety rules


Personal safety





This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual and on machine safety signs, you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury. The color associated with DANGER is RED.

 WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury. The color associated with WARNING is ORANGE.

 CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation that, if not avoided, could result in machine damage or property damage. The color associated with Notice is BLUE.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine damage or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Basic instructions - Shop and assembly

Shimming

For each adjustment operation, select adjusting shims and measure the adjusting shims individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value shown on each shim.

Rotating shaft seals

For correct rotating shaft seal installation, proceed as follows:

1. Before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes.
2. Thoroughly clean the shaft and check that the working surface on the shaft is not damaged.
3. Position the sealing lip facing the fluid.

NOTE: *With hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will move the fluid towards the inner side of the seal.*

4. Coat the sealing lip with a thin layer of lubricant (use oil rather than grease). Fill the gap between the sealing lip and the dust lip on double lip seals with grease.
5. Insert the seal in its seat and press down using a flat punch or seal installation tool. Do not tap the seal with a hammer or mallet.
6. While you insert the seal, check that the seal is perpendicular to the seat. When the seal settles, make sure that the seal makes contact with the thrust element, if required.
7. To prevent damage to the seal lip on the shaft, position a protective guard during installation operations.

O-ring seals

Lubricate the O-ring seals before you insert them in the seats. This will prevent the O-ring seals from overturning and twisting, which would jeopardize sealing efficiency.

Sealing compounds

Apply a sealing compound on the mating surfaces when specified by the procedure. Before you apply the sealing compound, prepare the surfaces as directed by the product container.

Spare parts

Only use CNH Original Parts or CASE IH Original Parts.

Only genuine spare parts guarantee the same quality, duration, and safety as original parts, as they are the same parts that are assembled during standard production. Only CNH Original Parts or CASE IH Original Parts can offer this guarantee.

When ordering spare parts, always provide the following information:

- Machine model (commercial name) and Product Identification Number (PIN)
- Part number of the ordered part, which can be found in the parts catalog

Protecting the electronic and/or electrical systems during charging and welding

To avoid damage to the electronic and/or electrical systems, always observe the following practices:

1. Never make or break any of the charging circuit connections when the engine is running, including the battery connections.
2. Never short any of the charging components to ground.
3. Always disconnect the ground cable from the battery before arc welding on the machine or on any machine attachment.
 - Position the welder ground clamp as close to the welding area as possible.
 - If you weld in close proximity to a computer module, then you should remove the module from the machine.
 - Never allow welding cables to lie on, near, or across any electrical wiring or electronic component while you weld.
4. Always disconnect the negative cable from the battery when charging the battery in the machine with a battery charger.

NOTICE: *If you must weld on the unit, you must disconnect the battery ground cable from the machine battery. The electronic monitoring system and charging system will be damaged if this is not done.*

5. Remove the battery ground cable. Reconnect the cable when you complete welding.

WARNING

Battery acid causes burns. Batteries contain sulfuric acid.

Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately. Failure to comply could result in death or serious injury.

W0111A

Special tools

The special tools that CASE IH suggests and illustrate in this manual have been specifically researched and designed for use with CASE IH machines. The special tools are essential for reliable repair operations. The special tools are accurately built and rigorously tested to offer efficient and long-lasting operation.

By using these tools, repair personnel will benefit from:

- Operating in optimal technical conditions
- Obtaining the best results
- Saving time and effort
- Working in safe conditions



SERVICE MANUAL

Engine

PUMA® 200 With cab, 18X6, TIER 3 [HCCZC200JFCR38296 -]
PUMA® 215 With cab, 18X6, TIER 3 [HCCZC215JFCR38296 -]
PUMA® 230 With cab, 18X6, Tier 3 [HCCZC230JFCR38296 -]

Engine - Connect

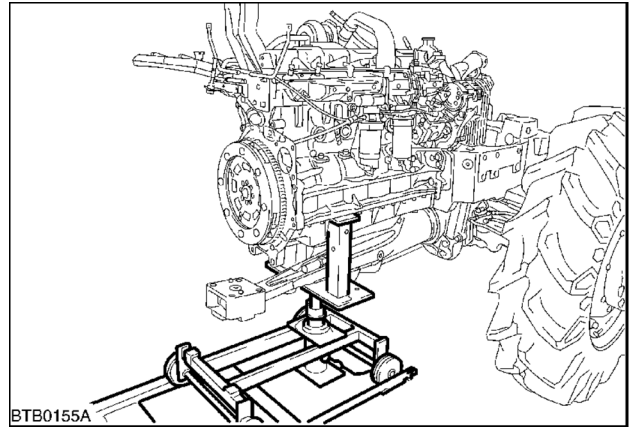
⚠ CAUTION

Heavy object!

The component is heavy. Use care not to drop the component when installing, removing, or handling. Failure to comply could result in minor or moderate injury.

C0095A

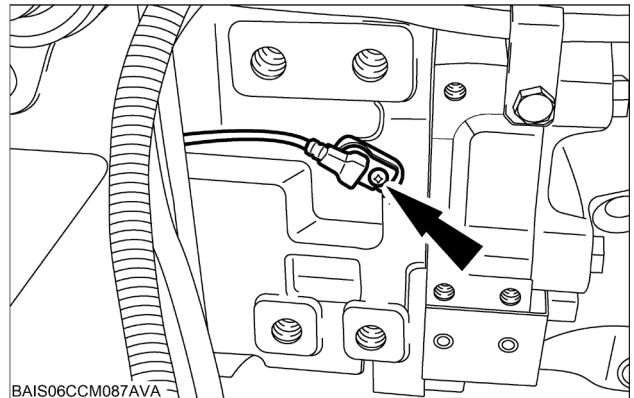
1. Line up the front support and engine assembly with the transmission. Install the engine on the transmission fixing bolts. Torque to **285 - 315 N·m (2522 - 2788 lb in)**. Remove the separation kit from the tractor.



BTB0155A

BTB0155A 1

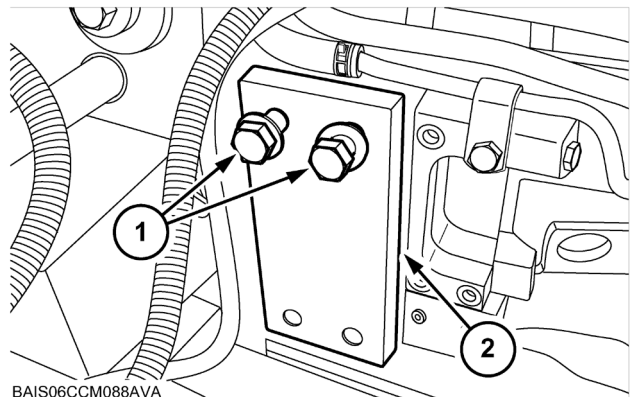
2. Install the flywheel speed sensor.



BAIS06CCM087AVA

BAIS06CCM087AVA 2

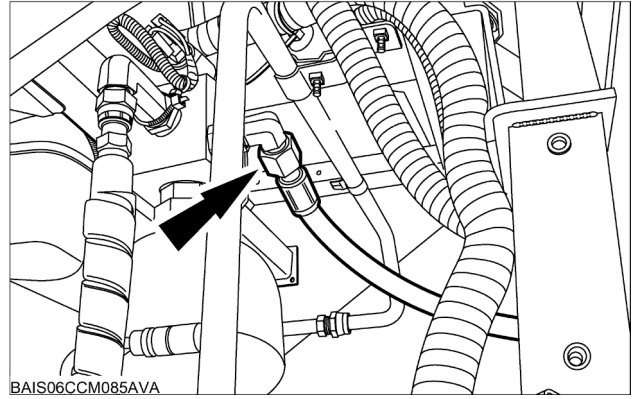
3. Install the spacer (2) and install the fixing bolts (1).



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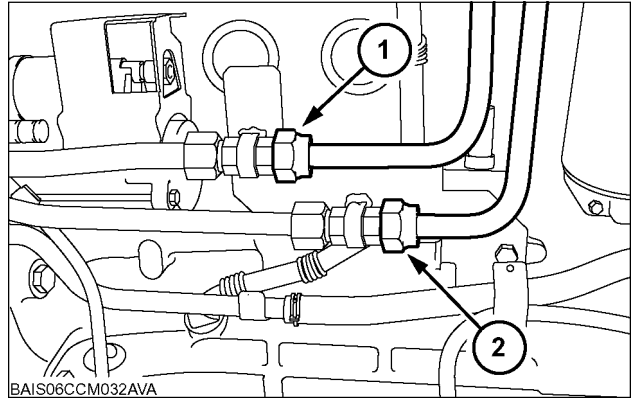
BAIS06CCM088AVA 3

4. Connect the supply hose of the hydraulic brake master cylinder.



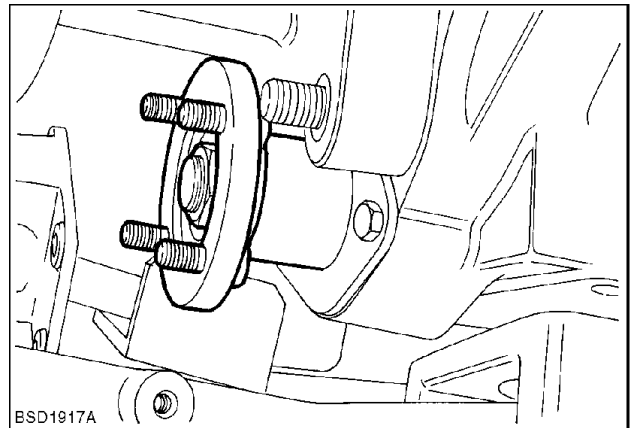
BAIS06CCM085AVA 4

5. Connect the transmission oil cooler pipes (1) and (2).



BAIS06CCM032AVA 5

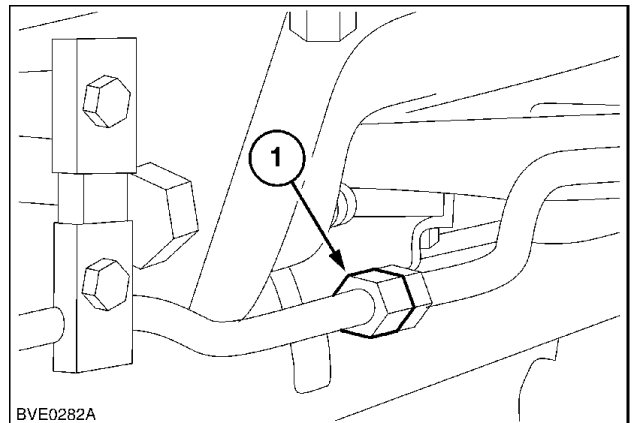
6. Install the transmission shaft flange, if installed. Tighten the M24 nut (if installed) to **294 N·m (217 lb ft)**. Tighten the M12 bolt (if installed) to **80 N·m (59 lb ft)**.



BSD1917A 6

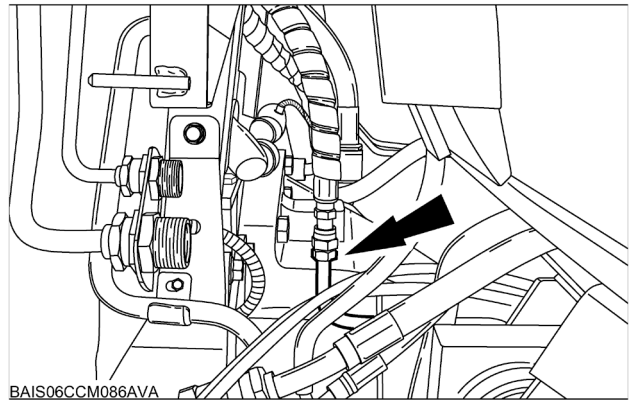
7. Install the drive shaft and then the metal guard.

8. Connect the differential lock supply hose (1).



BVE0282A 7

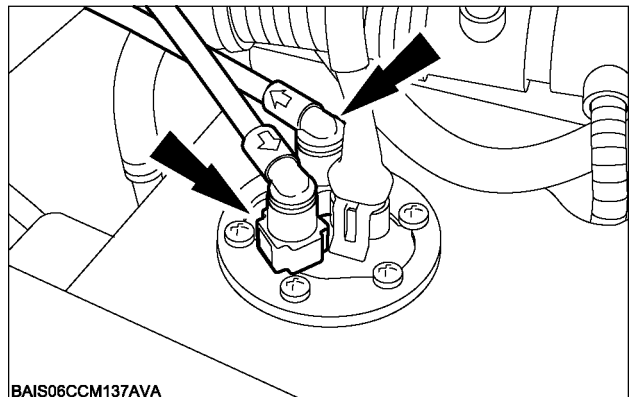
9. Connect the supply hose of the hydraulic brake valve.



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BAIS06CCM086AVA 8

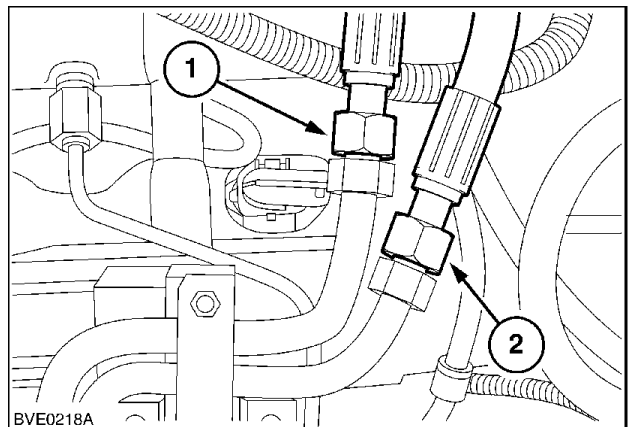
10. Connect the fuel supply and return lines.



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BAIS06CCM137AVA 9

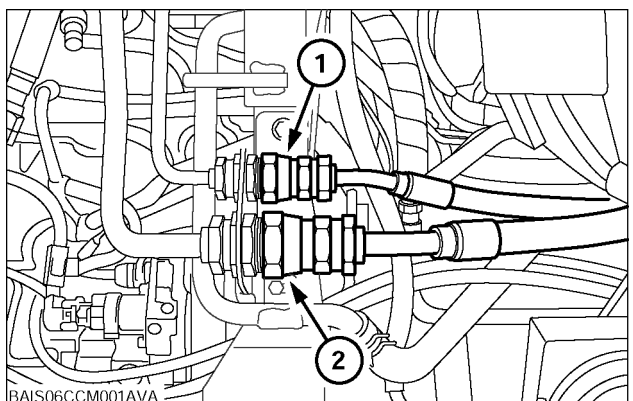
11. Connect the oil supply hoses of the steering cylinder (1) and (2).



EVE0218A

EVE0218A 10

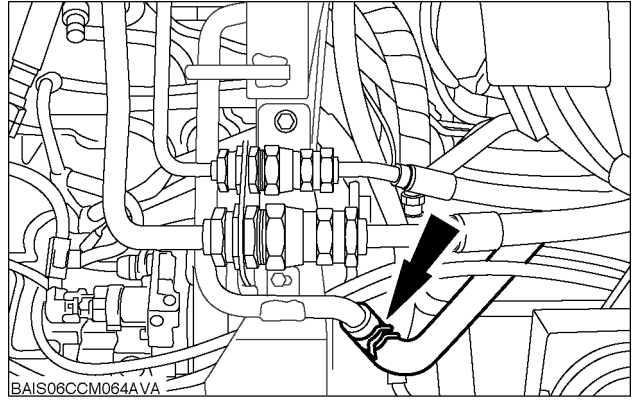
12. Connect the high-pressure hose (1) and the low-pressure hose (2) of the air conditioning.



BAIS06CCM001AVA

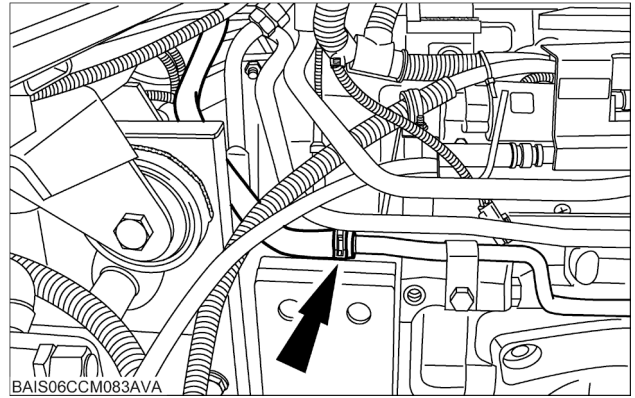
BAIS06CCM001AVA 11

13. Connect the cab heater hose.



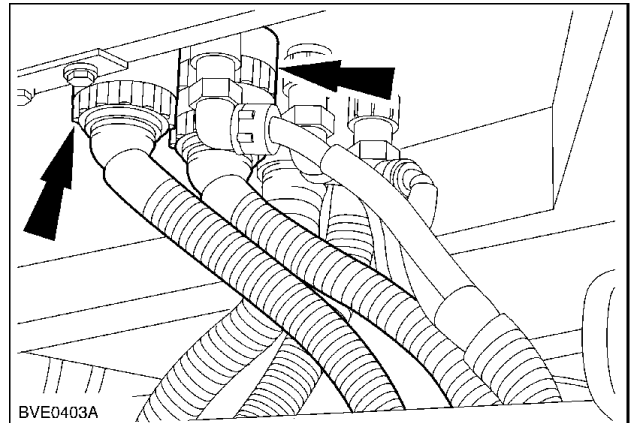
BAIS06CCM064AVA 12

14. Connect the cab heater hose to the radiator.



BAIS06CCM083AVA 13

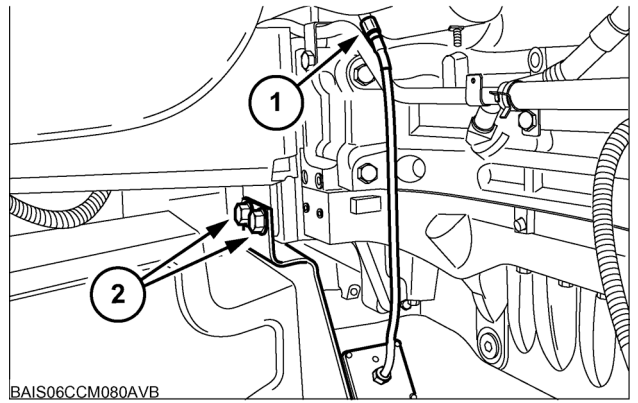
15. Connect the positive battery cable (2) and the negative cable (ground) (1).
16. Connect the engine wire harness connectors.



BVE0403A 14

17. Install the exhaust muffler. See **Exhaust muffler - Install (10.254)**.

18. When installed, install the radar (2). Connect the radar electrical connector (1).



BAIS06CCM080AVB

BAIS06CCM080AVB 15

19. Install the side shield on both sides of the engine.
20. Connect the battery ground lead.
21. Fill the engine cooling system. For further information, refer to **Engine cooling system - Change fluid (10.400)**.

Next operation:
Front ballast - Install (39.140)

Engine - Remove

⚠ DANGER

Heavy objects!

Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply will result in death or serious injury.

D0076A

⚠ DANGER

Pressurized system!

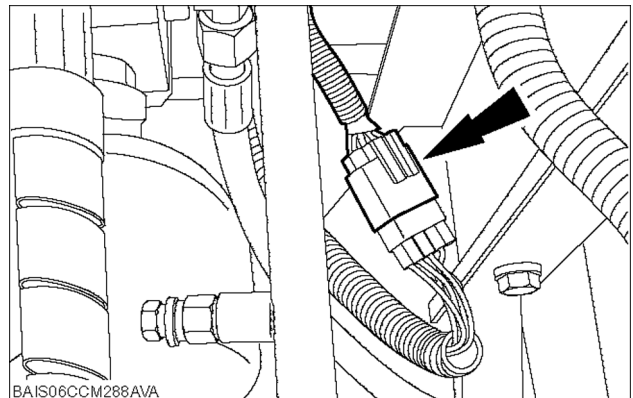
Always remove all pressure before working on the hydraulic system. Follow the pressure BLEED program in the Configuration Mode to remove the pressure in the entire hydraulic system. Failure to comply will result in death or serious injury.

D0035A

Prior operation:

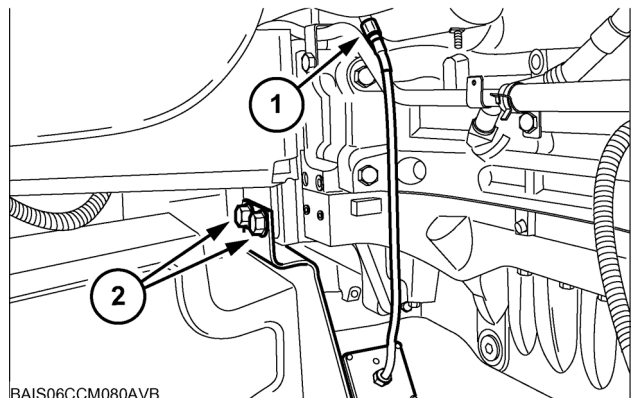
Front frame - Remove (39.100)

1. Disconnect the lighting wiring electrical connector.



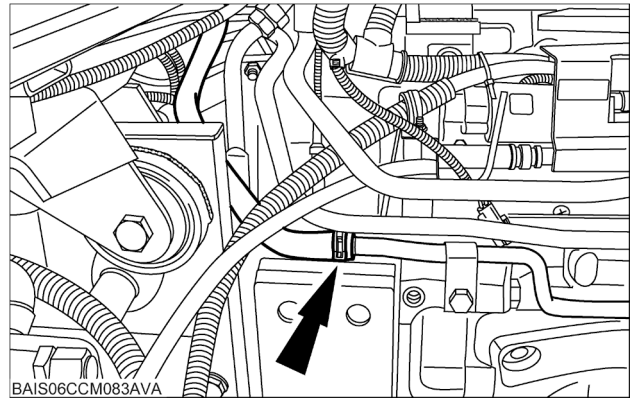
BAIS06CCM288AVA 1

2. Remove the hood.
3. Remove the exhaust muffler. See **Exhaust muffler - Remove (10.254)**.
4. Disconnect the radar electrical connector (1).
Remove the radar (2).



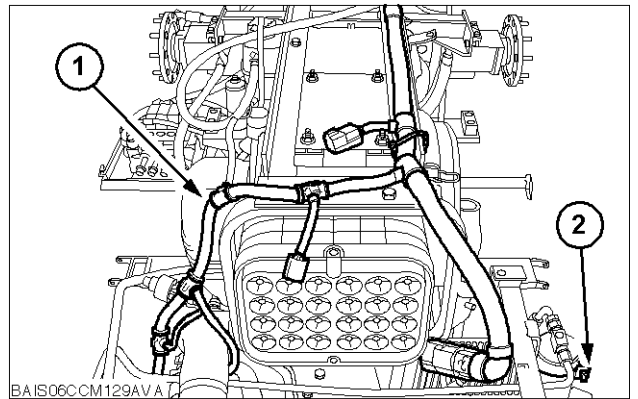
BAIS06CCM080AVB 2

5. Disconnect the cab heater coolant hose.



BAIS06CCM083AVA 3

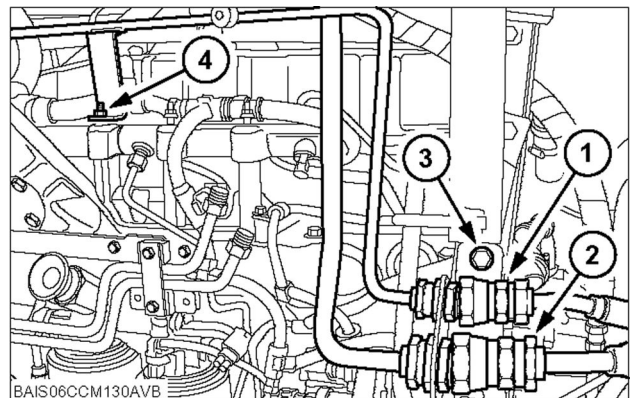
6. Remove the electrical wiring from the air filter frame (1).
Remove the filter-drier from the air filter frame (2).



BAIS06CCM129AVA 4

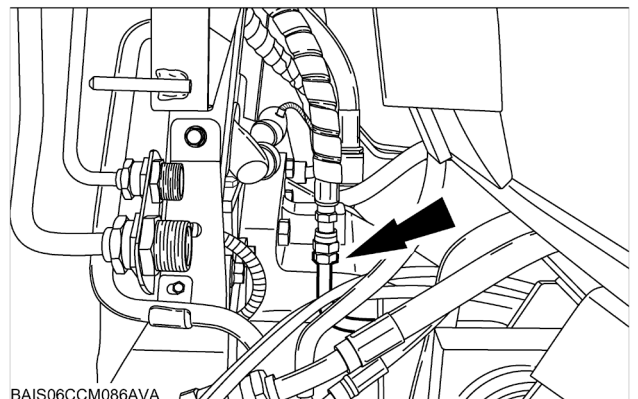
7. Disconnect the high-pressure hose (1) and the low-pressure hose (2) of the air conditioning.
Remove the high pressure hose fixing bolt (3) and clamp (4).

NOTE: You do not need to drain the air conditioning system because the joints are self-sealing.



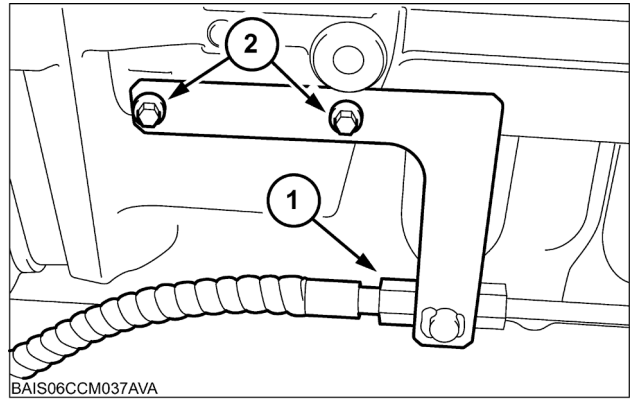
BAIS06CCM130AVB 5

8. Disconnect the hydraulic brake hose.



BAIS06CCM086AVA 6

9. Disconnect the differential lock supply hose (1) and remove the support (2).

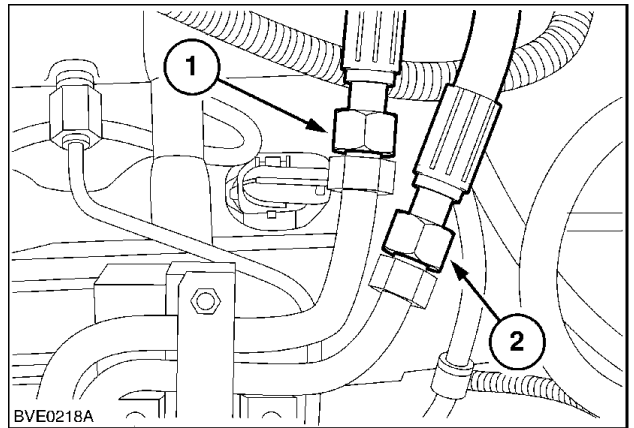


BAIS06CCM037AVA

BAIS06CCM037AVA 7

10. Disconnect the steering cylinder supply hoses (1) and (2).

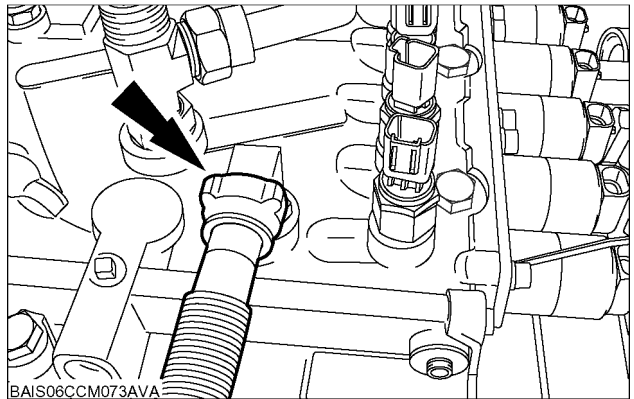
NOTE: Note the position of the steering cylinder oil feed hoses.



BVE0218A

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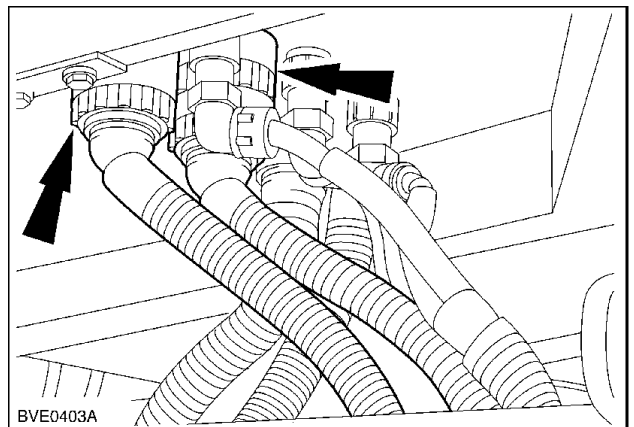
11. Disconnect the hydraulic brake ventilation hose.



BAIS06CCM073AVA

BAIS06CCM073AVA 9

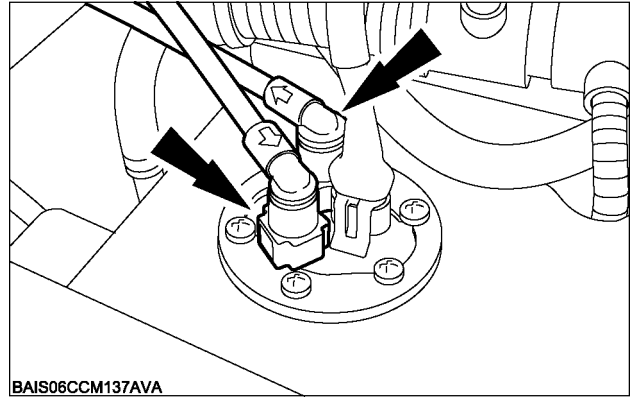
12. Disconnect the engine wiring electrical connectors.



BVE0403A

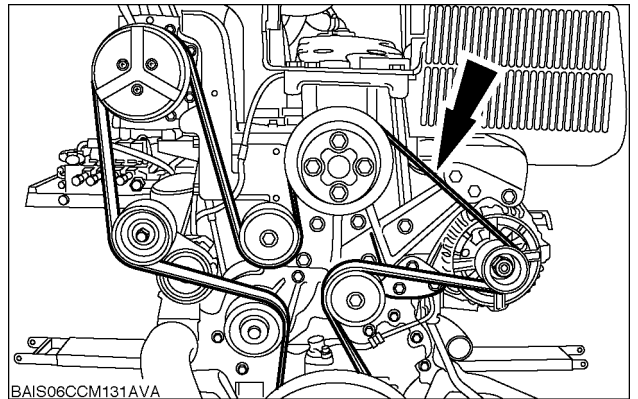
BVE0403A_37 10

13. Disconnect the fuel supply and return lines.



BAIS06CCM137AVA 11

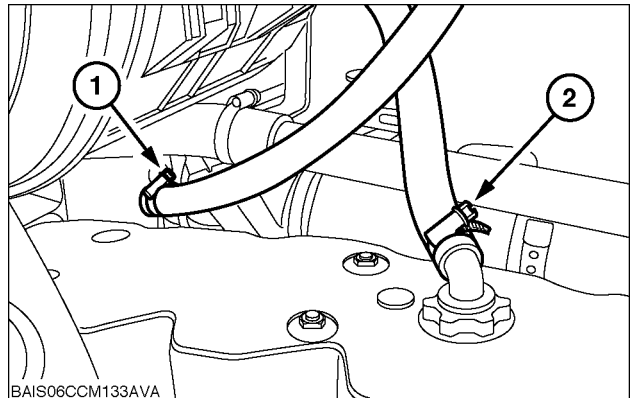
14. Remove the attachment drive chain.



BAIS06CCM131AVA 12

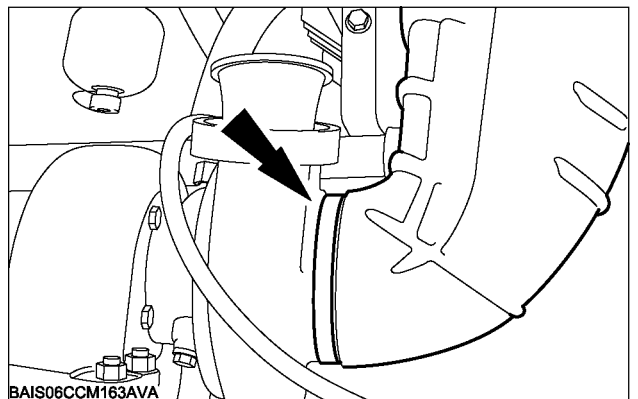
15. Remove the air-conditioning compressor assembly, the condenser filter-drier, and the tubing from the engine. Do not disconnect the tubing. See **Air-conditioning compressor - Remove (50.200)**.

16. Disconnect the expansion tube (1) and the engine breather tube (2).



BAIS06CCM133AVA 13

17. Disconnect the turbo air filter outlet hose.



BAIS06CCM163AVA 14



Suggest:

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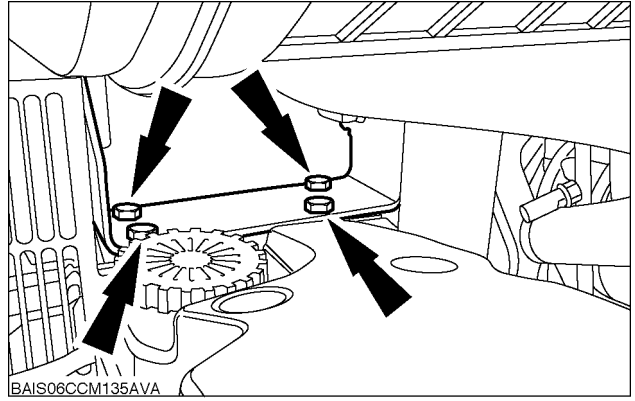
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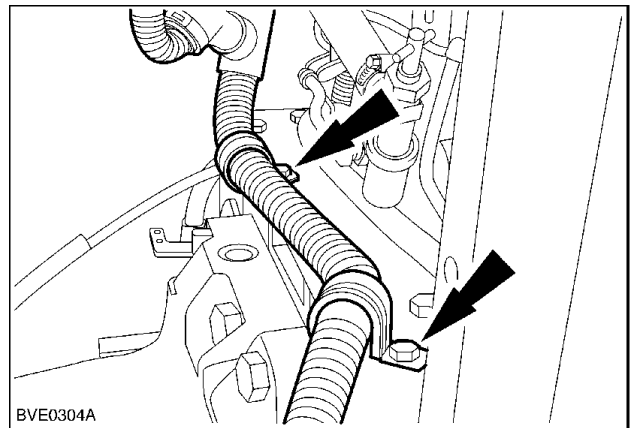
Thank you so much for reading

18. Remove the front fixing bolts of the air filter mounting frame.



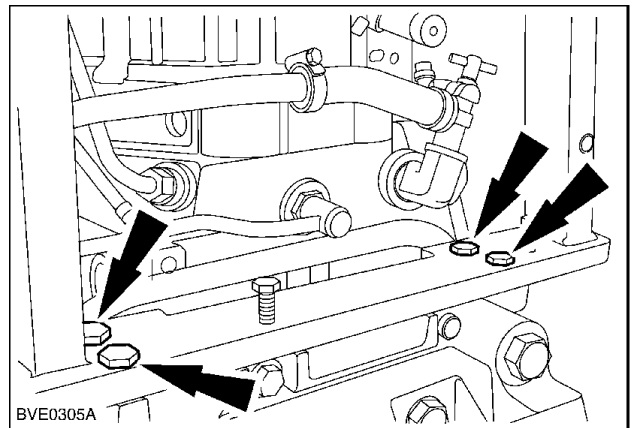
BAIS06CCM135AVA 15

19. Remove the engine wiring clamp fixing bolts and reposition the engine wiring on top of the engine.



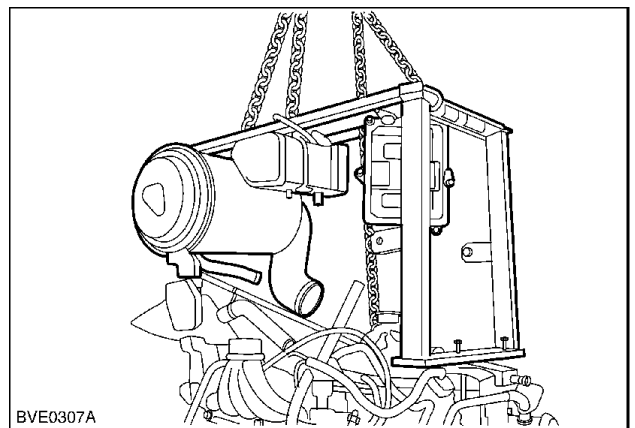
BVE0304A 16

20. Remove the rear fixing bolts of the air filter mounting frame.



BVE0305A 17

21. Remove the air filter mounting frame with a suitable chain and a hoist.



BVE0307A 18

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