



Splitting the tractor



02 - Splitting the tractor

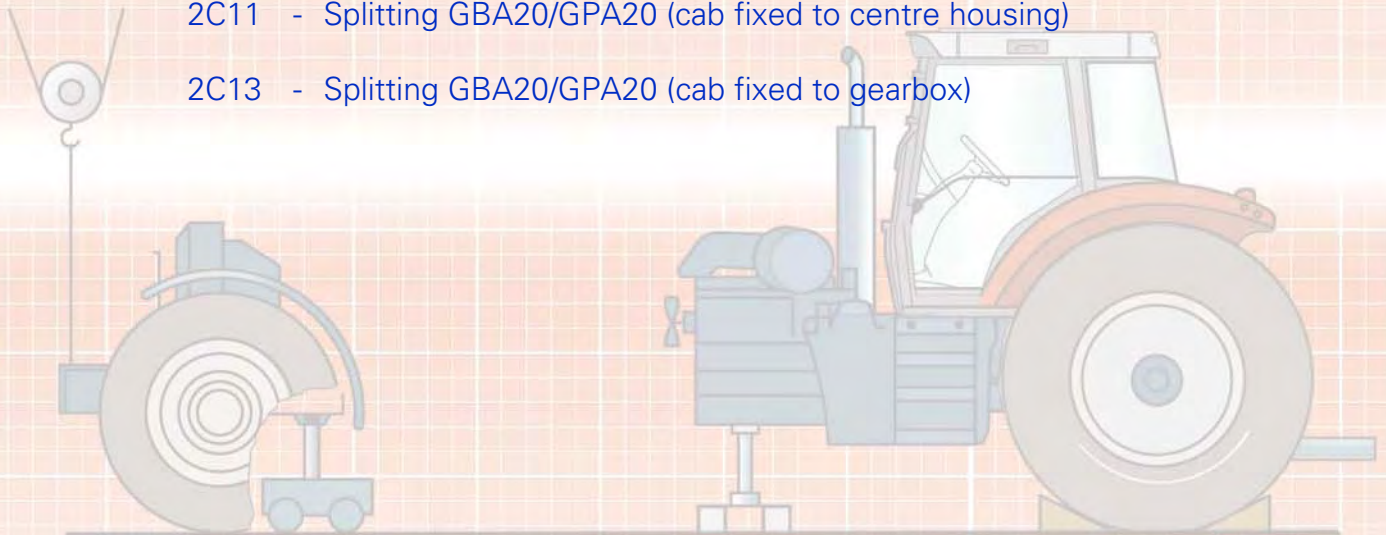
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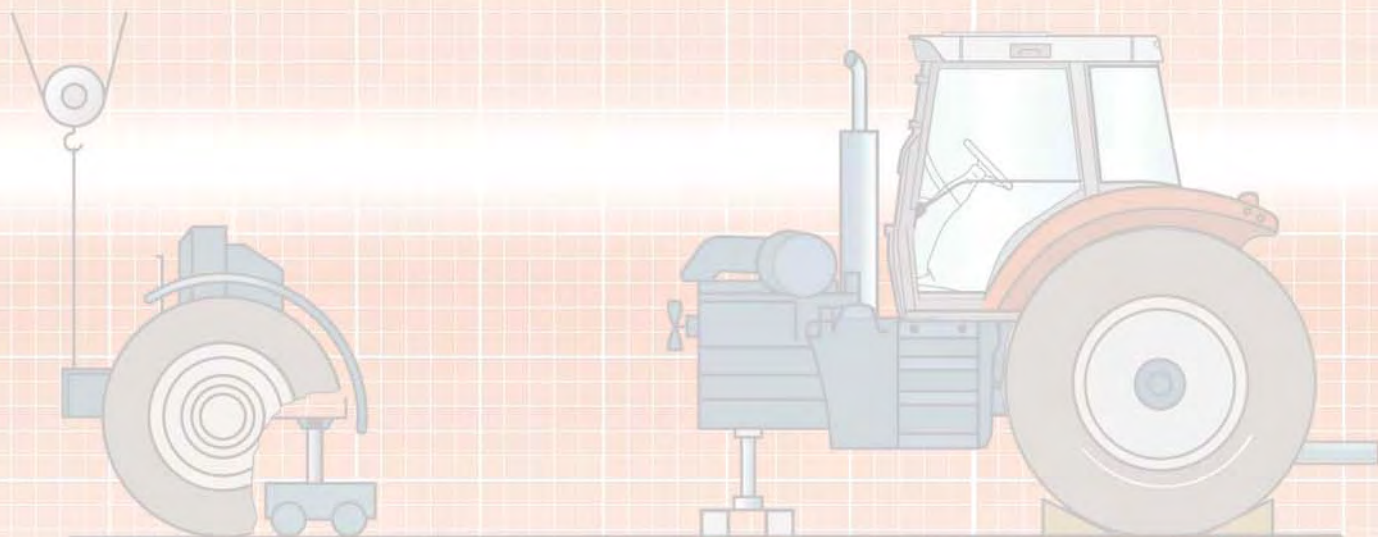
2C13 - Splitting GBA20/GPA20 (cab fixed to gearbox)



Splitting the tractor



5400



2A10- Splitting - Front frame / Perkins engine

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A . General

The front frame and the engine must be separated when each of the assemblies needs to be replaced, or when servicing is necessary on one of the mechanical elements located at the front of the engine.

IMPORTANT: *This section describes a general disassembly procedure. Before and during separation, check that all connections between the fixed assembly and mobile assembly have been disconnected.*

Splitting - Front frame / Perkins engine

B . Disassembly and reassembly (6-cylinder Perkins engine)

Preparation

1. Apply the hand brake.
2. Remove the side panels from each side of the engine and bonnet

Operations under the tractor

3. Remove the guard and the 4WD transmission shaft (if fitted).

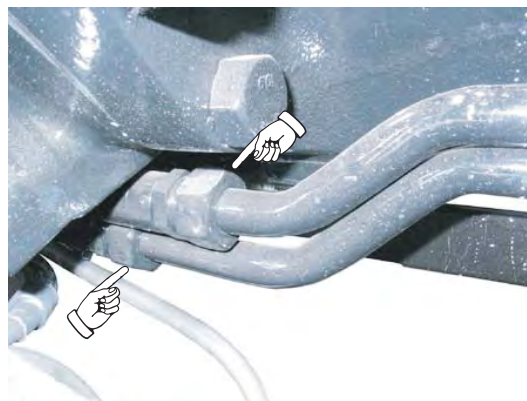
Operations on the right-hand side of the tractor

4. Disconnect the batteries.
5. Mark then disconnect:
 - the differential lock hose on the front axle,
 - the supply hose on the steering ram,
 - the lubrication hoses (running to and from the cooler) (Fig. 1).

Remove the protective grille close to the radiator.
Disconnect the air sleeve (1) (turbo outlet) from the cooling sleeve (Fig. 2).

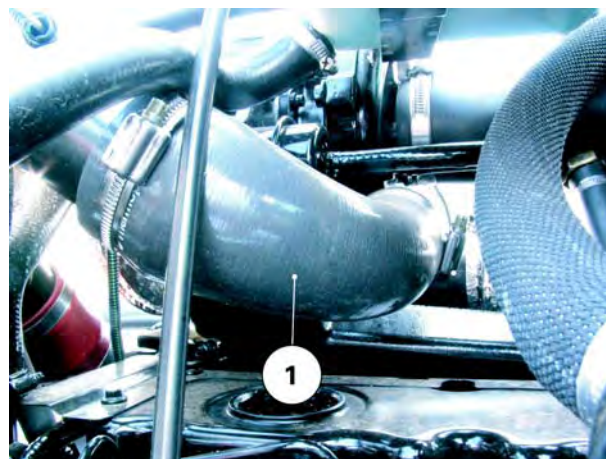
Operations on the left-hand side of the tractor

6. Mark and disconnect the supply hose on the steering ram.
7. Disconnect the air sleeve (2) (inlet on inlet manifold) from the cooling sleeve (Fig. 3).



MA-02-05084A

Fig. 1



MA-02-05023A

Fig. 2



MA-02-05025A

Fig. 3

Splitting - Front frame / Perkins engine

Draining the cooling system

8. Unscrew the fin plug located on the left-hand side and front of the radiator. Drain the liquid into a clean container.



DANGER: If the engine is hot, gradually loosen the expansion tank plug before removing it in order to drive out the pressure from the system.

9. Disconnect the lower hose (1) and the hose (2) linking the expansion tank to the base of the radiator (Fig. 4).

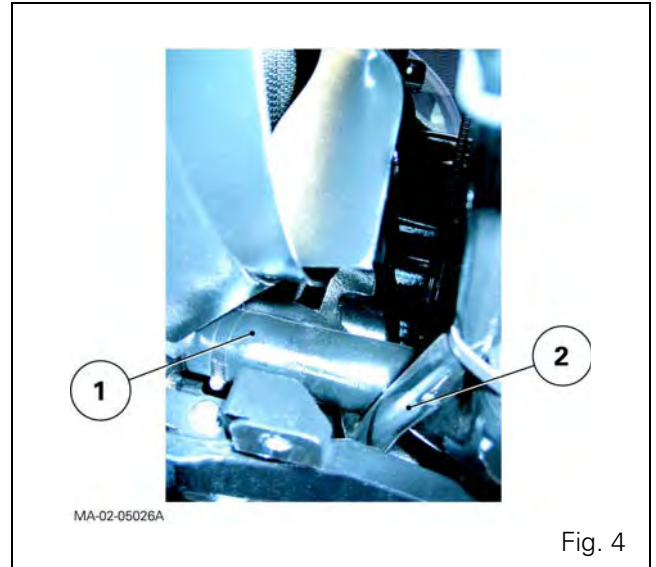


Fig. 4

Operations above the engine

10. Disconnect the upper hose (1) (Fig. 5).

Operations at the front of the tractor

11. Remove the weights (if fitted).
12. Detach the air conditioning compressor, the condenser and the filter from their respective supports. Carefully remove them from the engine, without opening up the system (see chapter 12).
13. Mark and disconnect the electrical harnesses inside the grille.
14. Disconnect the air sleeves (3) and (4) on the air cooler located inside the grille (Fig. 6).

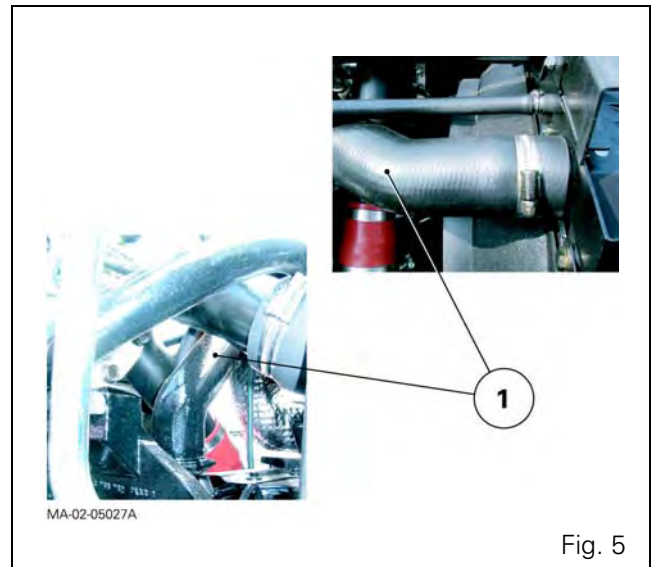


Fig. 5

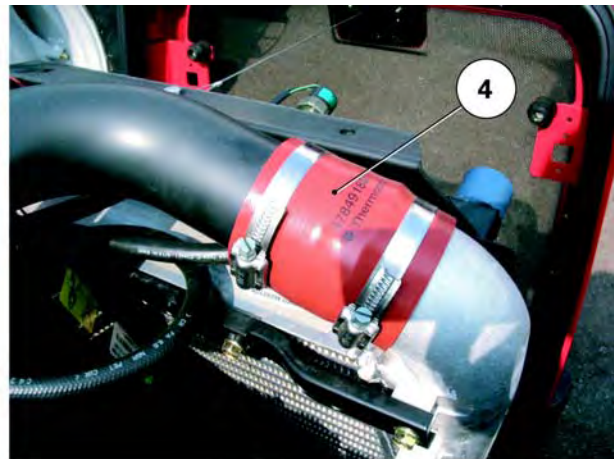


Fig. 6

Splitting - Front frame / Perkins engine

Preparing for disassembly

- 15.** Cancel the oscillation, depending on assembly:
- of the front axle beam (2WD) or
 - of the front axle (4WD),
- by inserting a suitable block on either side of the frame (1) as shown in Fig. 7.
- 16.** Chock the rear wheels.
- 17.** Install (Fig. 9):
- a mobile stand under the front axle beam or front axle (depending on assembly);
 - a suitable sling at the front of the frame;
 - a fixed axle stand under the engine lower housing.

Disassembly

IMPORTANT: During separation, check that all connections (hoses, pipes and harnesses) are disconnected.

- 18.** Remove the side screws (1) (Fig. 8).
- 19.** With the help of an operator, loosen the screws (2)(3) (Fig. 8), simultaneously moving the front frame away from the engine.



DANGER: When disconnecting, use the sling to prevent the front frame assembly from tipping over.

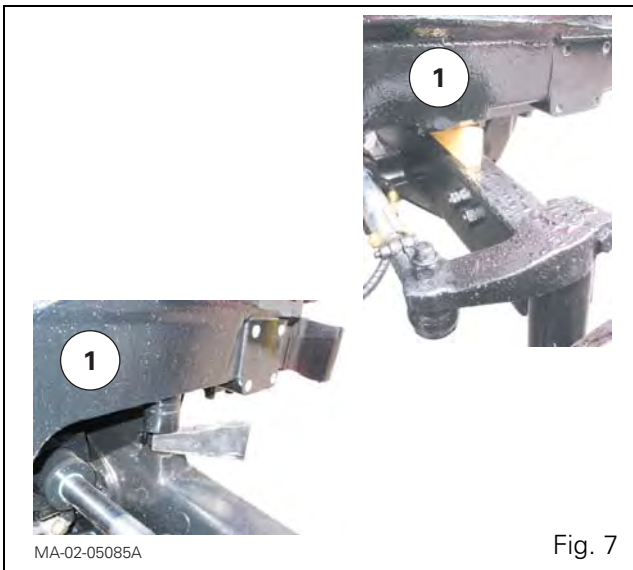


Fig. 7

Splitting - Front frame / Perkins engine

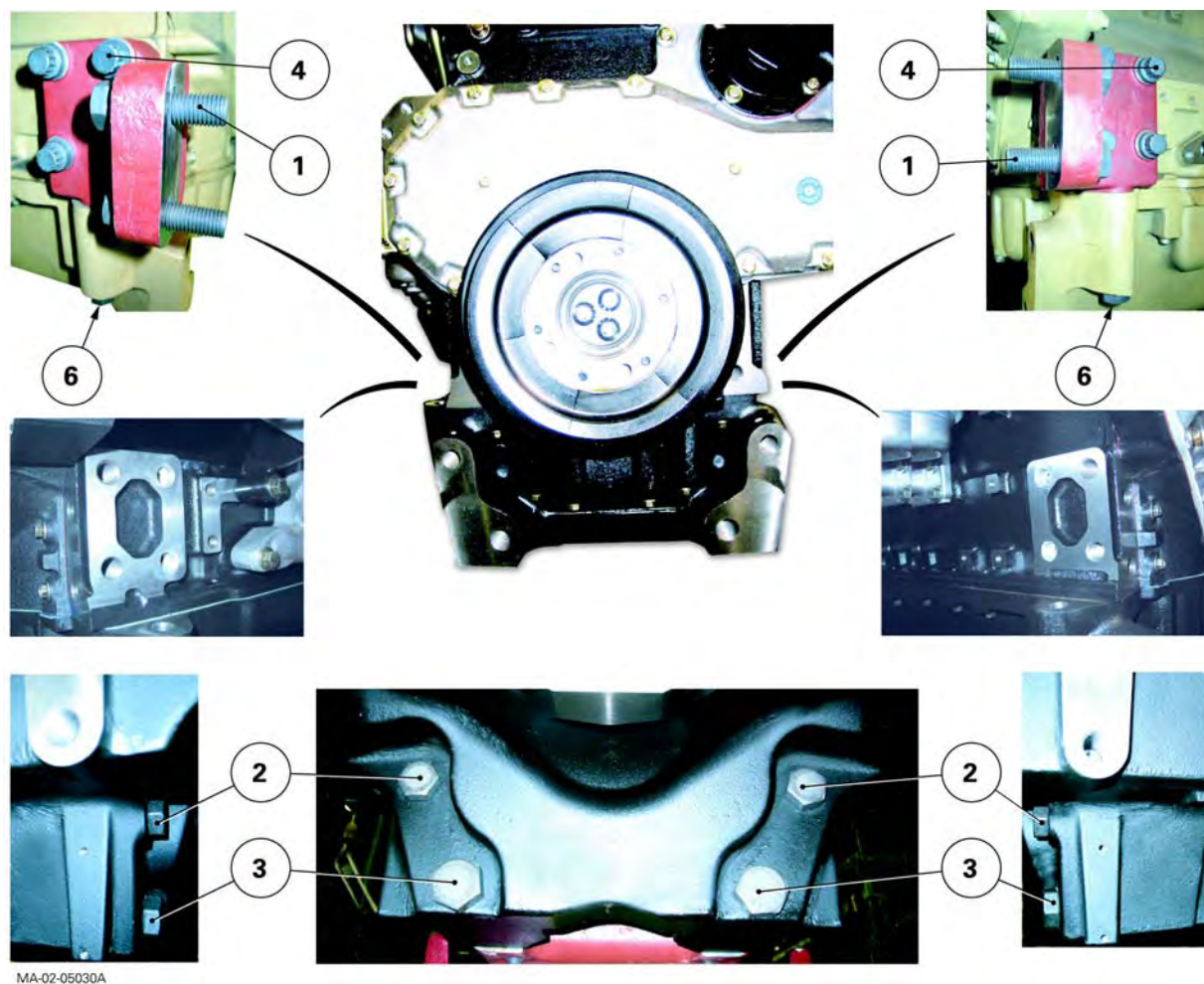


Fig. 8

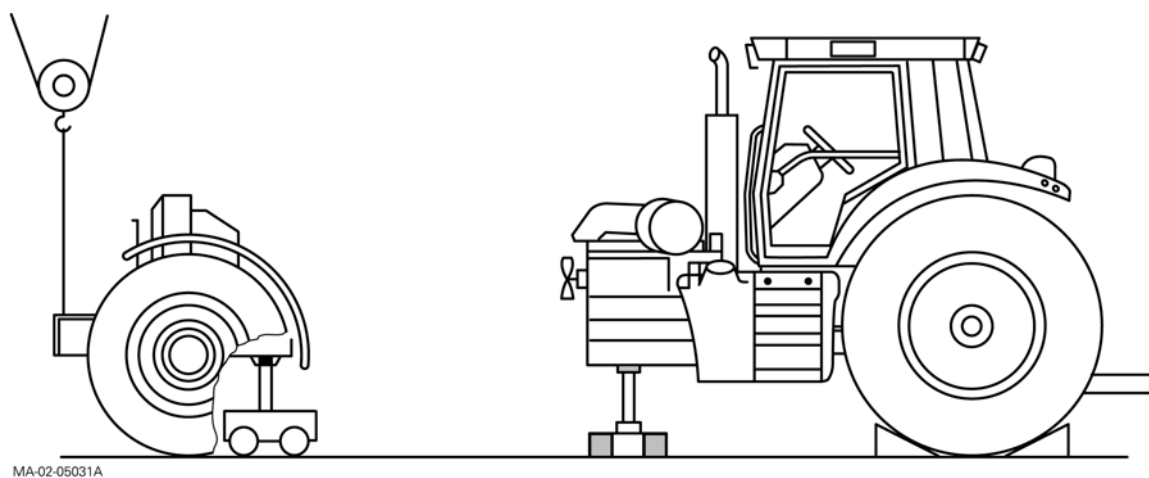


Fig. 9

Splitting - Front frame / Perkins engine

Reassembly

Screw specifications

Screw
M16 x 55 mm
M16 x 60 mm
M16 x 115 mm
M20 x 190 mm
M24 x 200 mm

20. Clean the mating faces of the engine and front frame.

21. Prior to reassembly check with a ruler that the supports (5) are aligned with the front face of the engine lower housing (Fig. 11). If not:

- Adjust the support(s) until they are correctly aligned.
- Tighten:
 - the screws (4) to a torque of 240 - 320 Nm (Loctite 270 or equivalent);
 - the screws (6) to a torque of 240 - 320 Nm.
- Check correct alignment after tightening.

22. Screw a guide stud onto each rear face of the frame (Fig. 10).

23. With the help of an operator, connect the front frame to the engine. Take out the guide studs.

24. Fit and tighten the opposed screws (Fig. 13) in the following order:

- screws (2) to a torque of 480 - 640 Nm;
- screws (3) to a torque of 800 - 1040 Nm;
- screws (1) to a torque of 240 - 320 Nm.

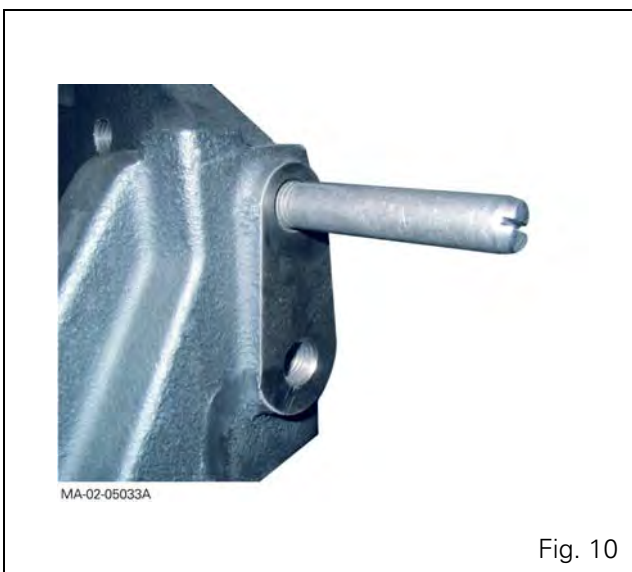


Fig. 10

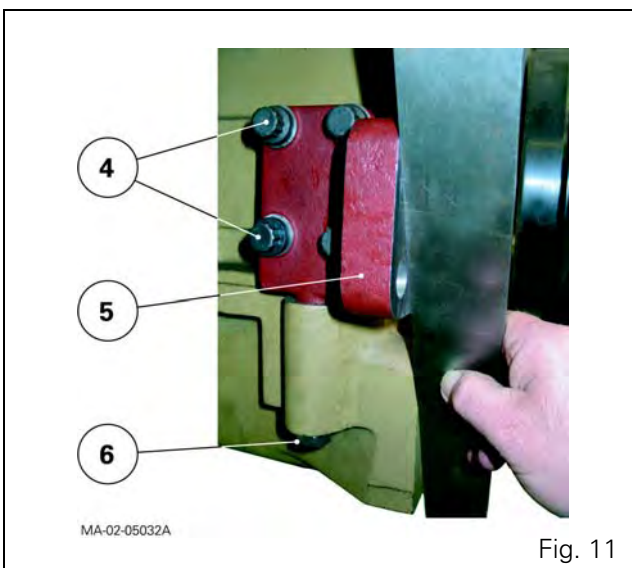


Fig. 11

Final steps

The final steps are not especially difficult.

However, it will be necessary during reassembly to perform the tightening torques, adjustments and tests described below.

- **Tightening torque**

As required, wheel screws or nuts (see chapter 6).

- **Topping up** of coolant, to the maximum level marked on the expansion tank (Fig. 12).

- **Test:**

- the air conditioning system (if fitted - see chapter 12);
- all mechanical, hydraulic and electrical functions relating to the operation.

- **Check tightness:**

- of hydraulic unions,
- of water hoses.

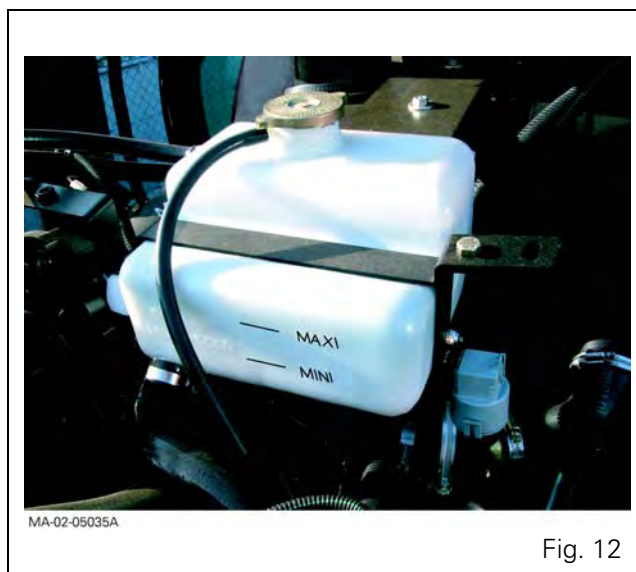


Fig. 12

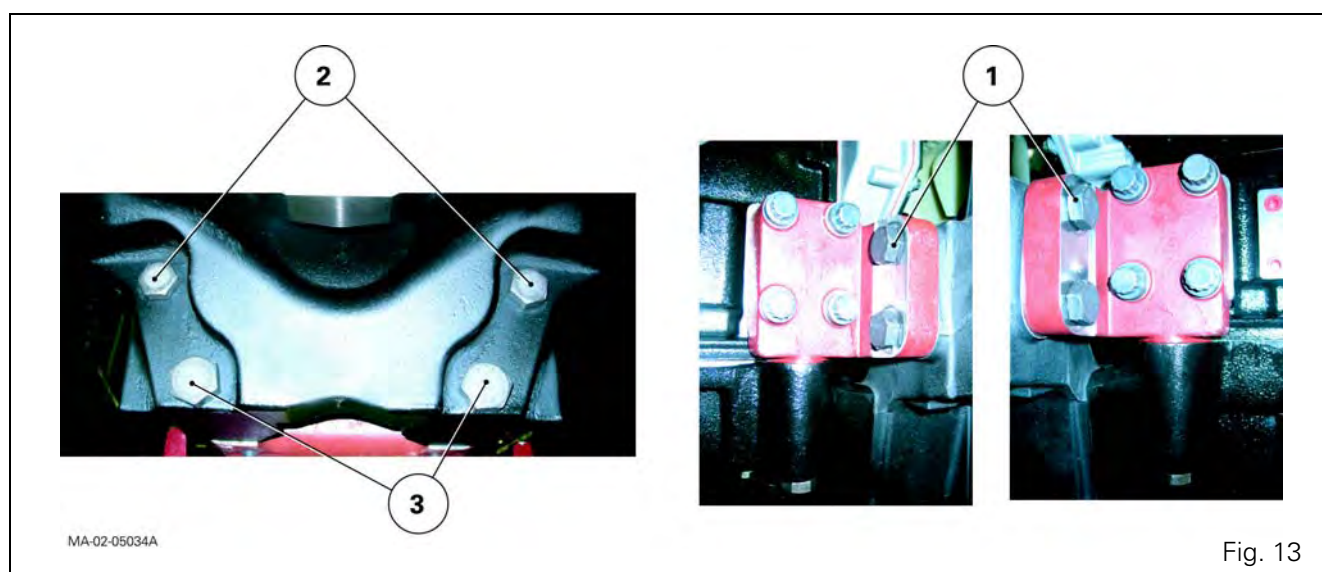


Fig. 13

Splitting - Front frame / Perkins engine

C . Disassembly and reassembly (4-cylinder Perkins engine)

NOTE: Two models of front frame are available for 5400 series tractors with 4-cylinder engines.

Tractors with...	Power (hp)
front frame without shimming	65 to 95
front frame with shimming	105

Preparation

25. Apply the hand brake.
26. Take off the side panels, prefilter (105 hp engine), bonnet and central exhaust pipe (depending on option).

Operations underneath the tractor

27. Take off the guard, transmission shaft and differential lock supply pipe (4WD tractors).

Operations at the front of the tractor

28. Remove the front weights (if fitted).
29. Disconnect the batteries. If required, remove them from the grille compartment.

Tractors with...	Battery location
Perkins engines 65 to 95 hp	In the grille compartment
Perkins engines 105 hp	Behind the right-hand step.
Sloping bonnet	Behind the right-hand step.

Location of batteries

30. Detach the air conditioning compressor, the condenser and the filter from their respective supports (if fitted).
Place the assembly beside the tractor without disconnecting the pipes and hoses (see chapter 12).

Splitting - Front frame / Perkins engine

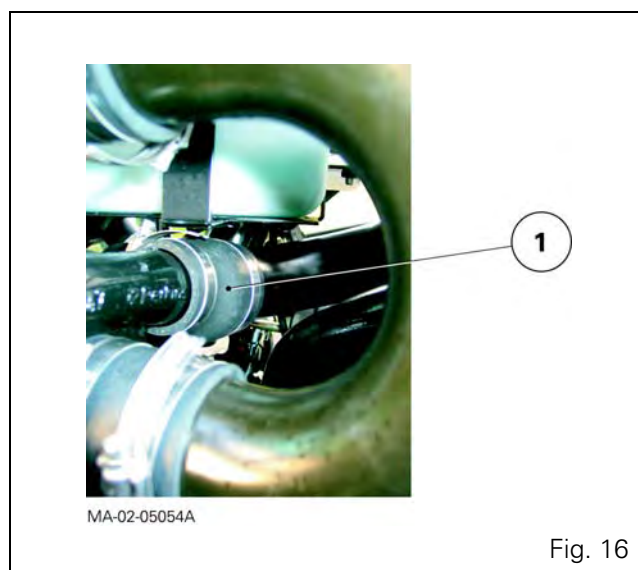
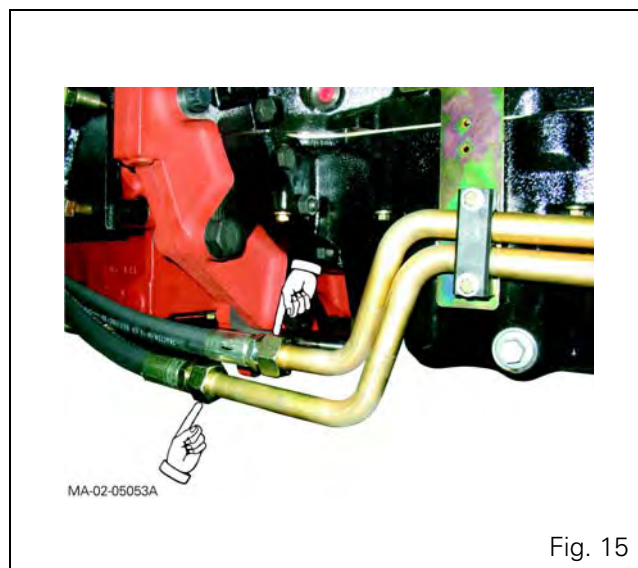
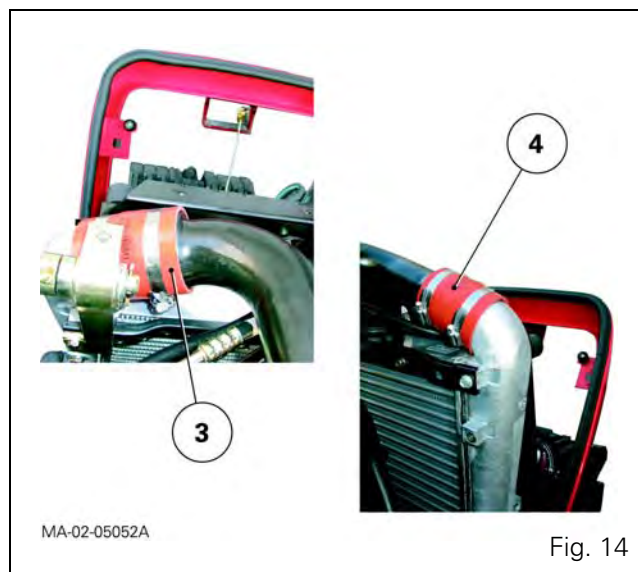
Operations inside the grille

31. Mark then disconnect:

- electrical harnesses,
- air sleeves (3) and (4) on the cooler (105 hp Perkins engine, [Fig. 27](#)).

Operations on the right-hand side of the tractor

- 32.** Mark and disconnect the supply hose on the steering ram.
- 33.** Mark and disconnect the lubrication hoses running to and from the cooler (105 hp Perkins engine, [Fig. 15](#)).
- 34.** Remove the protective grille close to the radiator.
- 35.** Disconnect the air sleeve (1) (turbo outlet) from the cooling sleeve (105 hp Perkins engine, [Fig. 16](#)).



Splitting - Front frame / Perkins engine

Operations on the left-hand side of the tractor

- 36. Mark and disconnect the supply hose on the steering ram.
- 37. Remove the protective grille close to the radiator.

Draining the cooling system

- 38. Unscrew the fin plug located on the left-hand side and front of the radiator, to drain the system.

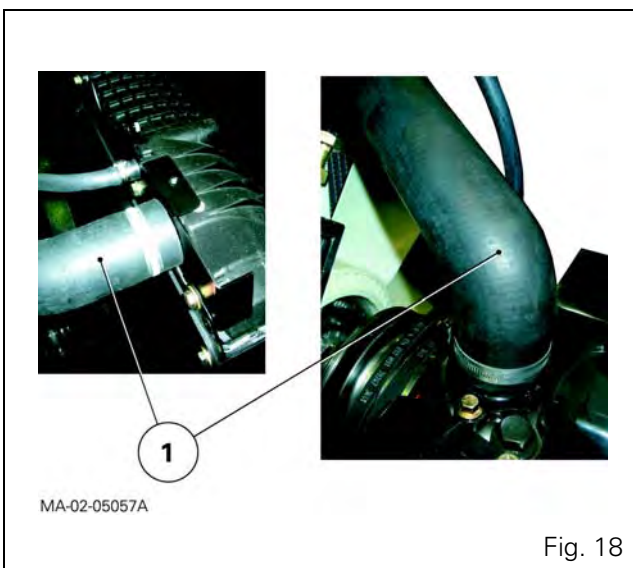
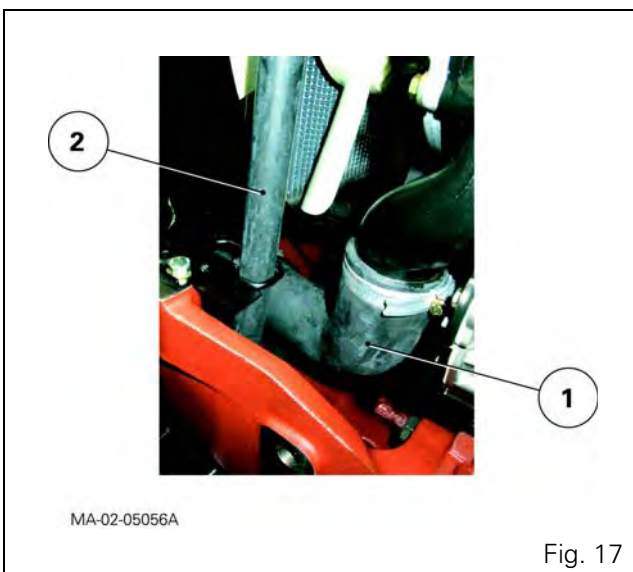


DANGER: *If the engine is hot, gradually loosen the expansion tank plug before removing it in order to drive out the pressure from the system.*

- 39. Disconnect the lower hose (1) and the hose (2) linking the expansion tank to the base of the radiator (Fig. 17).

Operations above the engine

- 40. Disconnect the upper hose (1) (Fig. 18).



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Splitting - Front frame / Perkins engine

Preparing for disassembly

- 41.** Cancel the oscillation, depending on assembly:
- of the front axle beam (2WD) or
 - of the front axle (4WD),
- by inserting a suitable block on either side of the frame (1) as shown in Fig. 19.
- 42.** Chock the rear wheels.
- 43.** Install (Fig. 22):
- a mobile stand under the front axle beam or front axle (depending on assembly);
 - a suitable sling at the front of the frame;
 - a fixed axle stand under the engine lower housing.

Disassembly

IMPORTANT: During separation, check that all connections (hoses, pipes and harnesses) are disconnected. Mark the position and location of shims (1) inserted between the engine lower housing and front frame (105 hp Perkins engine, Fig. 20).

- 44.** Loosen and remove (Fig. 21):
- For Perkins 65 to 95 hp engines: screws and bolts (2), (4) and (1);
 - for Perkins 105 hp engines: screws and bolts (2), (3), (4) and (1).

With the help of an operator, gradually separate the front frame from the engine at the same time.



DANGER: When disconnecting, use the sling to prevent the front frame assembly from tipping over (Fig. 22).

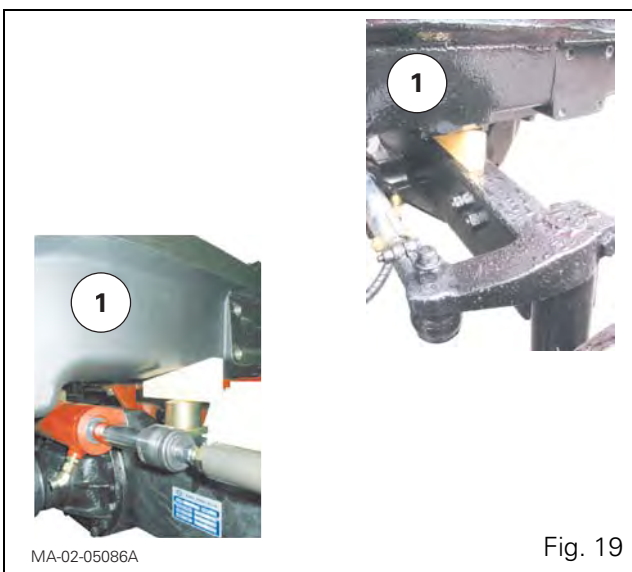


Fig. 19

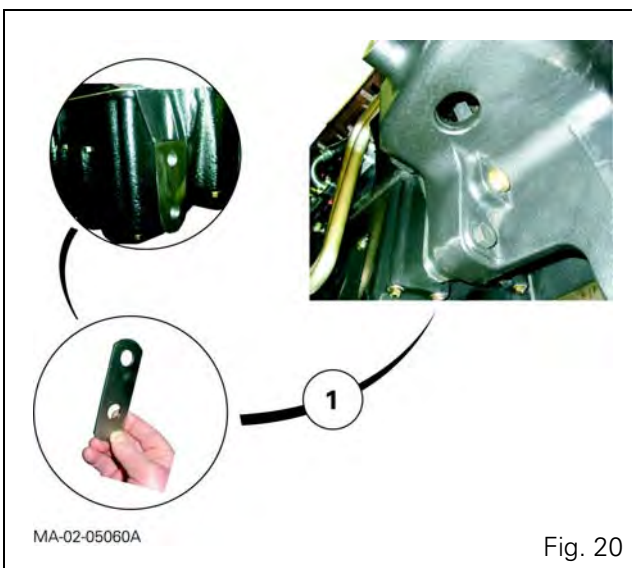
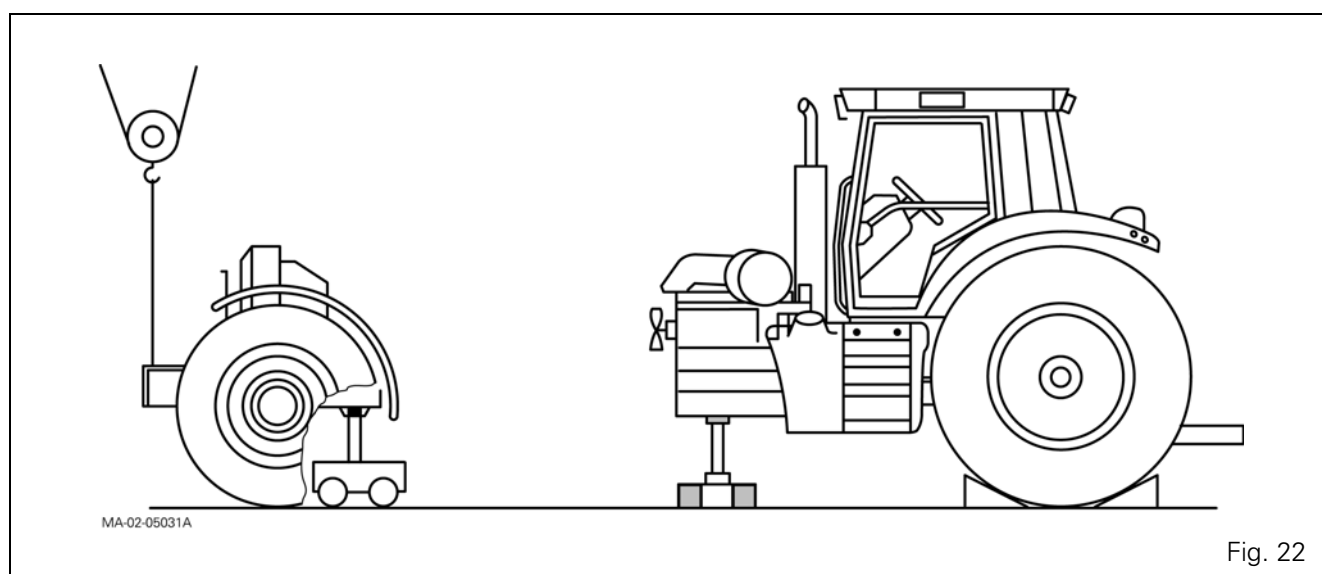
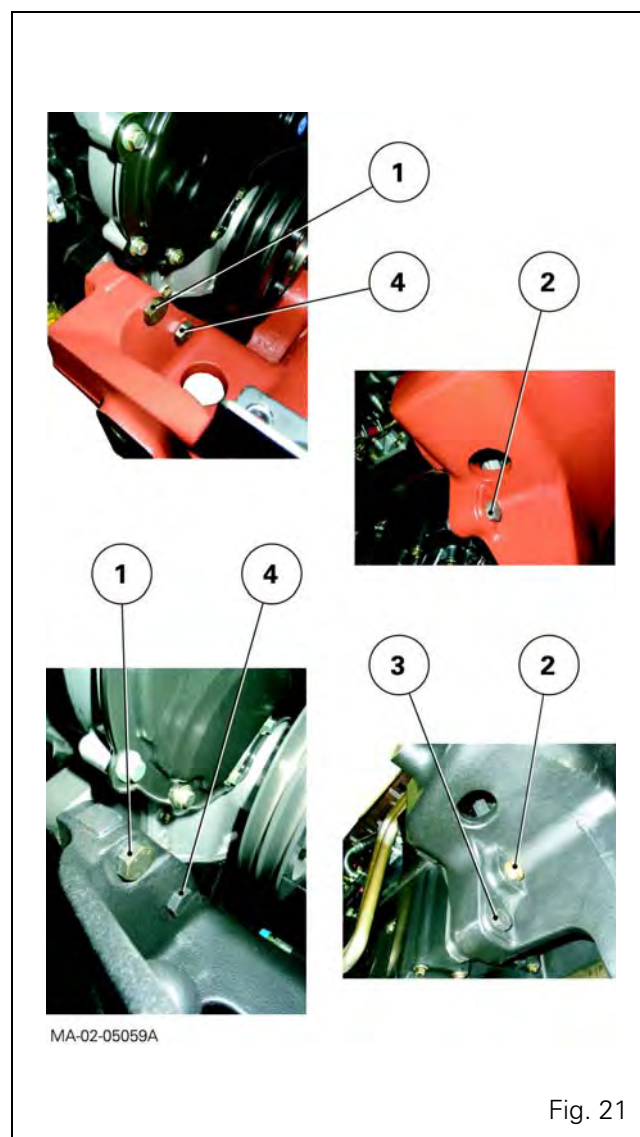


Fig. 20

Splitting - Front frame / Perkins engine



Splitting - Front frame / Perkins engine

Reassembly

INSTRUCTIONS: Use guide studs to assist reconnection of the front frame and engine.

Specifications of the screws and nuts

• Front frame and Perkins 65 to 95 hp engine

Screw	Nuts
M16 x 75 mm	M16
M16 x 85 mm	
M16 x 115 mm	

• Front frame and Perkins 105 hp engine

Screw	Nuts
M16 x 85 mm	M16
M16 x 95 mm	
M16 x 105 mm	
M16 x 120 mm	

45. Clean the mating faces of the engine and front frame.

46. Screw two guide studs (1) to the front face of the engine (Fig. 23).

47. With the help of an operator, reconnect the front frame to the engine as follows:

• Front frame and Perkins 65 to 95 hp engine (Fig. 24)

48. Fit screws (2), (4) and bolts (1), simultaneously taking out the guide studs.

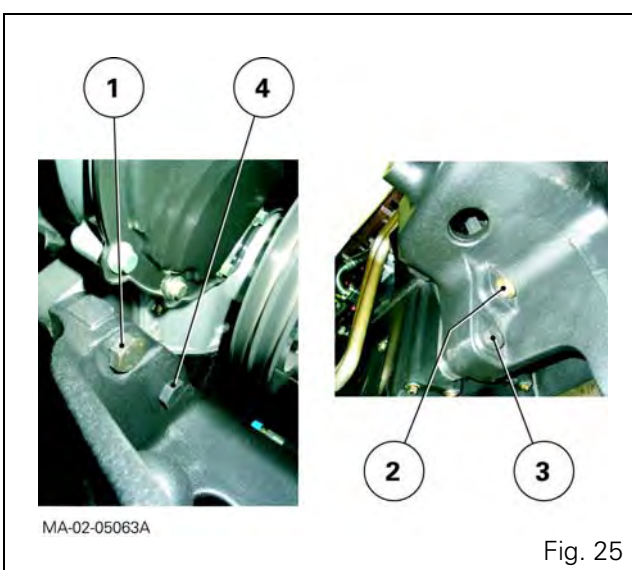
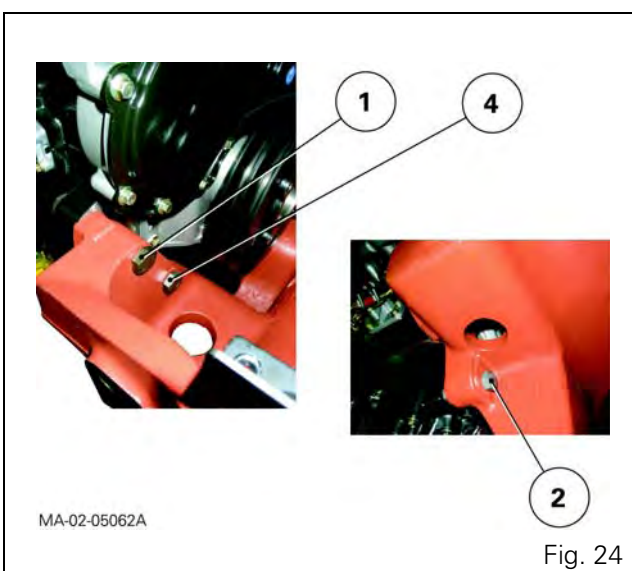
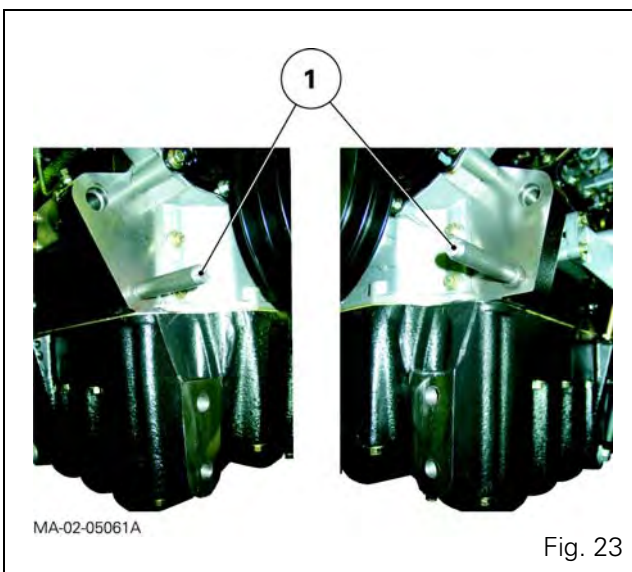
49. Tighten opposing screws and bolts to a torque of 240 - 320 Nm in the following order: (2) (4) (1).

• Front frame and Perkins 105 hp engine (Fig. 25)

IMPORTANT: If it is necessary to shim the front frame, refer to § D.

50. Fit screws (2), (3), (4) and bolts (1), simultaneously taking out the guide studs.

51. Tighten opposing screws and bolts to a torque of 240 - 320 Nm in the following order: (2) (3) (4) (1).



Final steps

The final steps are not especially difficult.

However, it will be necessary during reassembly to perform the tightening torques, adjustments and tests described below.

- **Tightening torque**

As required, wheel screws or nuts (see chapter 6).

- **Topping up** of coolant, to the maximum level marked on the expansion tank (Fig. 26).

- **Test:**

- the air conditioning system (if fitted - see chapter 12);
- all mechanical, hydraulic and electrical functions relating to the operation.

- **Check tightness:**

- of hydraulic unions,
- of water hoses.

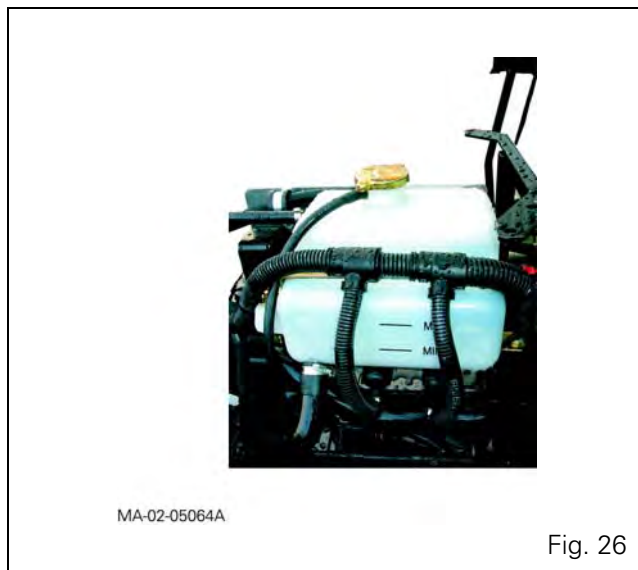


Fig. 26

Splitting - Front frame / Perkins engine

D . Shimming the front frame (4-cylinder Perkins engine)

When the front frame is fitted to the Perkins 4-cylinder 105 Hp engine, the face of the engine/lower housing is not in contact with the face of the front frame. It is therefore advised to fill this space with shims (1) (Fig. 27) whose thickness will be measured and set afterwards.

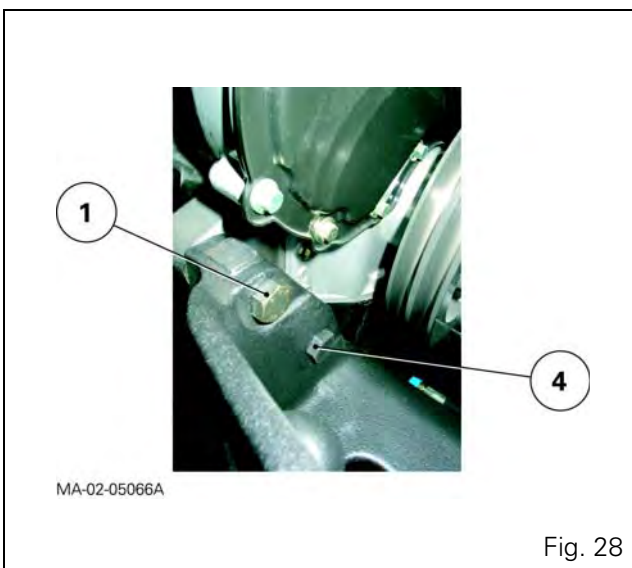
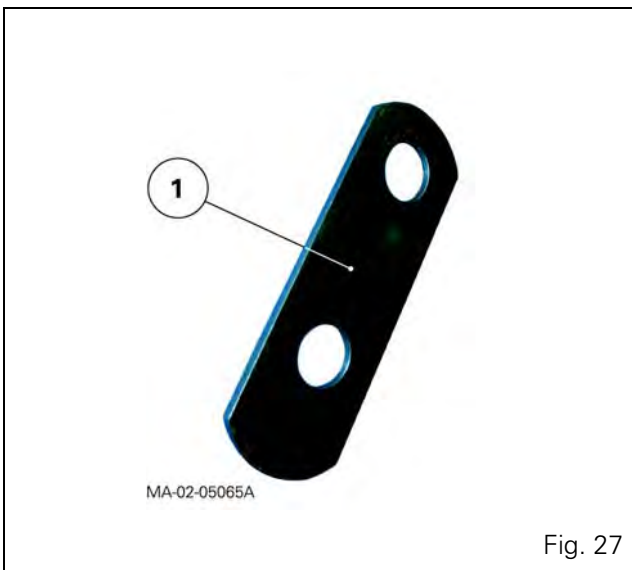
IMPORTANT: Shimming should **only** be carried out if the front frame and/or engine have been replaced.

52. With the help of an operator, connect the front frame to the engine.

Preparing for shimming (Fig. 28)

53. Fit only screws (4) and bolts (1), simultaneously taking out the guide studs.

54. Tighten opposing screws and bolts to a torque of 240 - 320 Nm in the following order: (4) (1).



Shimming

IMPORTANT: To avoid applying undue loads to the mating faces during shimming, avoid adjusting the safety stands placed under the engine and front axle during disassembly.

55. Using two stacked shims (1), each at least 2.30 mm thick (Fig. 29), measure the gap between the faces of the engine/lower housing and front frame.

Determine the thickness of shims to be fitted by increasing, as required, the thickness of each shim until they fit tightly in the gap.

NOTE: Shimming is carried out using shims between 2.30 and 2.60 mm thick.

Inserting shims between the front frame and the engine

56. Slightly loosen the screws (4) and bolts (1) (Fig. 30).
57. Turn the shims (1) so that end "E" faces downwards. Insert them between the front frame and the engine/lower housing (Fig. 29).
58. Fit screws (2) and (3) (Fig. 30).
59. Tighten bolts and all screws of the front frame to a torque of 240 - 320 Nm in opposition and in the following order: (2) (3) (4) (1) (Fig. 30).
60. Release the safety stands.

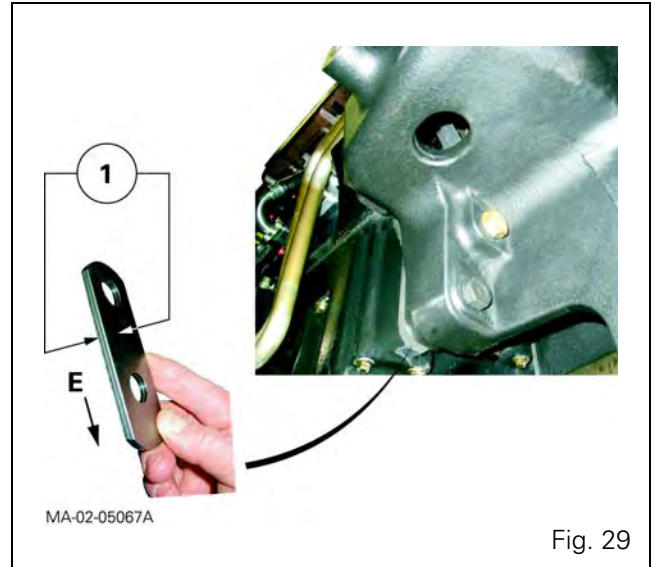


Fig. 29

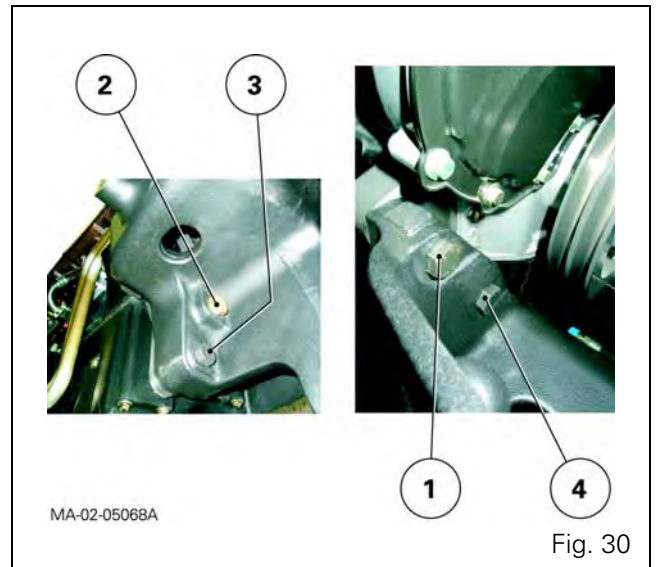


Fig. 30

2B11 - Splitting Perkins engine / GTA2020

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A . General

Tractors in the 5400 series fitted with the GBA20 gearbox are fitted with a :

- with a 4-cylinder Perkins engine
- with a 6-cylinder Perkins engine

Gearbox with Power Shuttle

The tractor should be disconnected between the engine and the gearbox with Power Shuttle when access is necessary to carry out servicing on the main following elements:

- **Engine interface**

- vibration damper
- engine flywheel
- engine adapter plate

- **Gearbox interface**

- spacer and seal
- internal hydraulic pipes,
- Power Shuttle,
- Speedshift

Gearbox with mechanical reverse shuttle (dry clutch)

The tractor should be disconnected between the engine and the gearbox with dry clutch when access is necessary to carry out servicing on the main following elements:

- **Engine interface**

- diaphragm mechanism or friction disc,
- engine flywheel
- engine adapter plate

- **Gearbox interface**

- spacer,
- input shaft seal
- internal hydraulic pipes and slave device assembly,
- Speedshift,
- mechanical reverse shuttle.

IMPORTANT:

- *This section describes a general disassembly procedure. Before and during separation, check that all connections between the fixed assembly and mobile assembly have been disconnected.*
- *The cab remains attached to the centre housing.*

Splitting Perkins engine / GTA2020

B . Disassembly and reassembly (Perkins 4-cylinder engine)

Preparation

1. Apply the hand brake.
2. Remove:
 - the side panels either side of the engine,
 - the prefilter (Perkins 105 hp engine),
 - the central exhaust pipe (depending on option),
 - the bonnet.

Operations under the tractor

3. Take off the guard, 4WD transmission shaft and differential lock supply pipe.

Operations at the front of the tractor

4. Remove the front weights (if fitted).
5. Disconnect the batteries.

Tractors with...	Battery location
Perkins engine up to 95 hp	In the grille compartment
Perkins engines 105 hp	Behind the right-hand step.
Sloping bonnet	Behind the right-hand step.

Location of batteries (Fig. 1)



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Fig. 1

Operations on the right-hand side of the tractor

6. Take off the front right-hand mudguard.
7. If necessary, remove the vertical exhaust assembly (including support) (Fig. 2).
8. Mark then disconnect:
 - the hose on the steering ram or on the spool valve (Orbitrol), depending on the tractor type
 - the lubrication hoses running to and from the cooler (105 hp Perkins engine, Fig. 3).

Operations on the left-hand side of the tractor

9. Take off the front left-hand mudguard.
10. Mark then disconnect:
 - the hose on the steering ram or on the spool valve (Orbitrol), depending on the tractor type;
 - the fuel feed and return hoses on the engine, **immediately** blocking the ports.
11. Disconnect the cables connected to the positive terminal of the starter (Fig. 4).

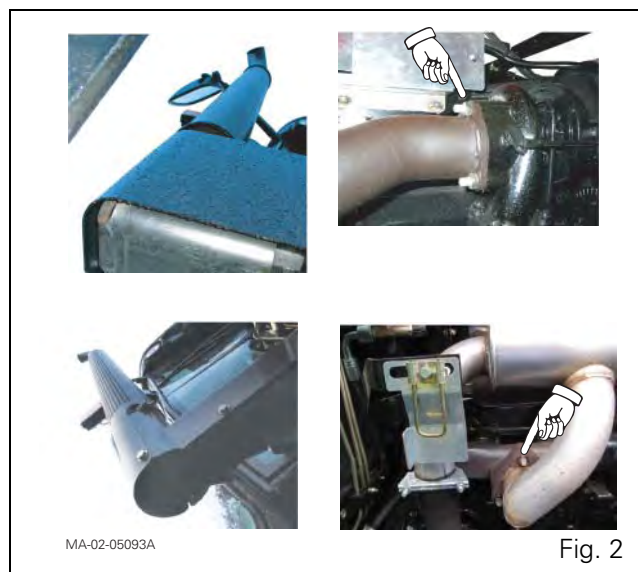


Fig. 2

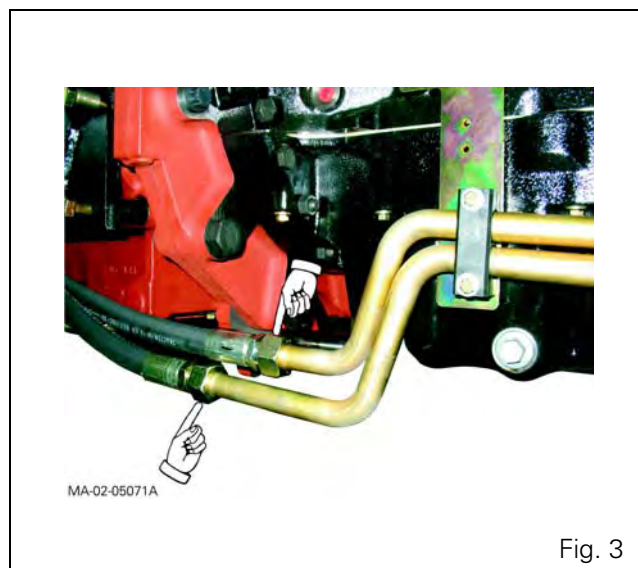


Fig. 3

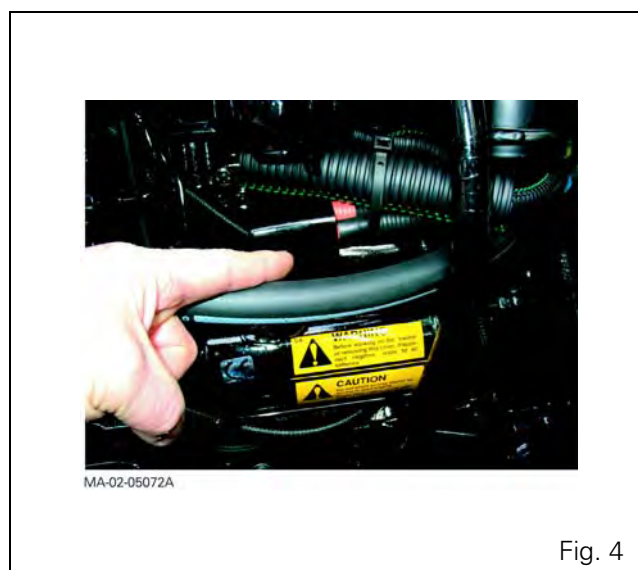


Fig. 4

Splitting Perkins engine / GTA2020

Operations under the cab



CAUTION: *If the engine is still hot, allow it to cool.*

NOTE: *To work on the heating hoses, it is not necessary to drain the engine block cooling system.*

12. Mark and pinch out each heating hose using a clamp fitted with protective jaws (Fig. 5). Disconnect them, **immediately** blocking the ports.

Operations on the engine

13. Disconnect the negative cables on the block at the rear left-hand side of the engine (Fig. 6).
14. Detach the air conditioning compressor, the condenser and the filter from their respective supports (if fitted). Carefully move them from the engine, without disconnecting the pipes and hoses (see chapter 12).

Operations at the front of the cab

15. Disconnect the connectors (2) and the ground terminals (1) on the left-hand side of the cab bulk-head (Fig. 7).



Fig. 5



Fig. 6

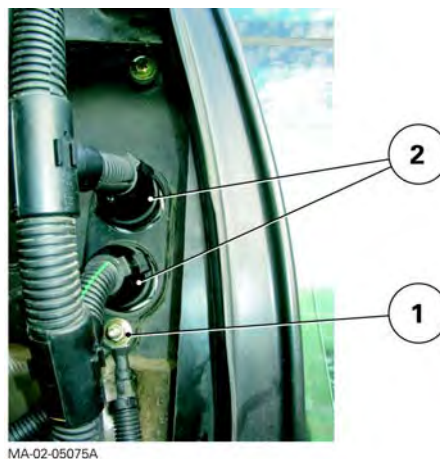


Fig. 7

Preparing for disassembly

16. Cancel the oscillation:

- of the front axle beam (2WD) or
- of the front axle (4WD),

by inserting a suitable wooden block on either side of the frame (1) as shown in Fig. 8.

17. Chock the rear wheels.

18. Install (Fig. 9):

- a fixed axle stand at the front of the gearbox
- a mobile axle stand at the rear of the engine
- a mobile axle stand under the front frame.

19. If necessary, separate the cab from the front right and left-hand supports (see chapter 12).

20. Gently lift the front of the cab using two straps fitted to the side handles.



DANGER: Make the area around the cab safe by temporarily placing a wooden chock between each front support and the right and left-hand cab attachments.

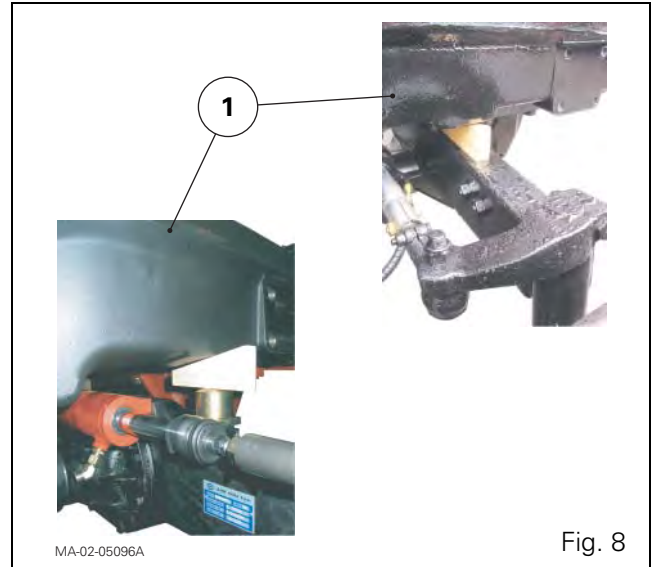


Fig. 8

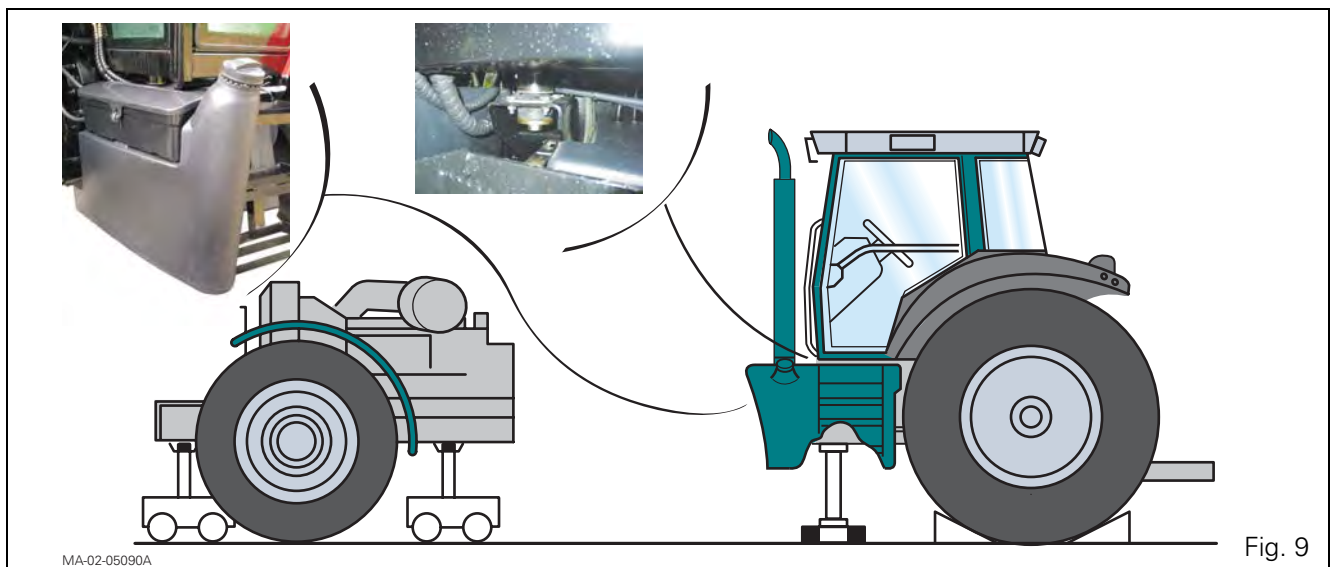


Fig. 9

Splitting Perkins engine / GTA2020

Disassembly

IMPORTANT: During separation, check that all connections (hoses, pipes and harnesses) are disconnected.

21. Remove the screws attaching the engine to the gearbox (Fig. 14 depending on assembly). Mark their length and position.

NOTE:

The tractor may be fitted with one or two fuel tanks (depending on option):

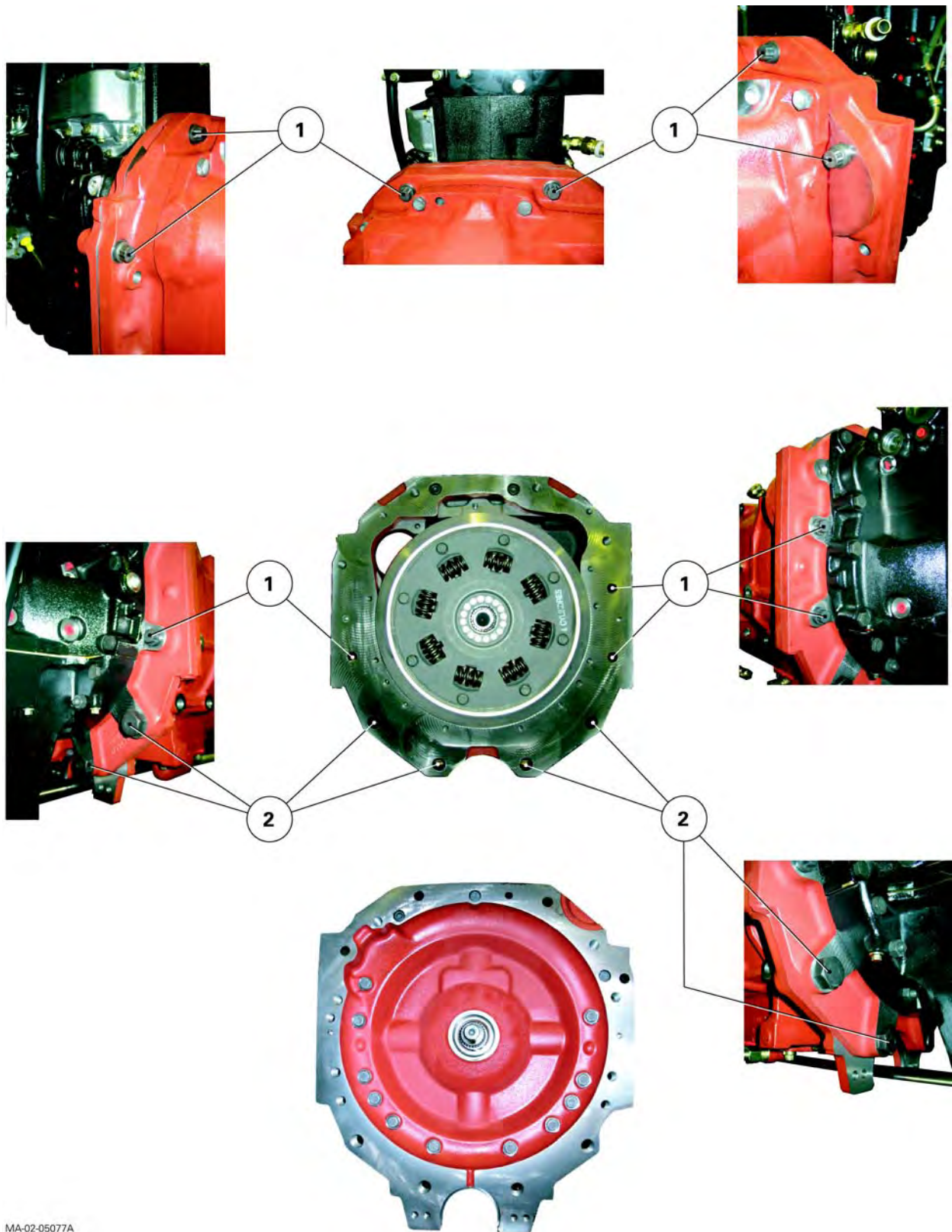
- **Assembly 1:** a single fuel tank on the left-hand side of the tractor
- **Assembly 2:** a fuel tank on each side of the tractor. In this configuration, remove the right-hand fuel tank from the gearbox if it blocks access to the screws and nuts.

Screw specifications

Screw
M16 x 50 mm
M16 x 60 mm
M16 x 80 mm
M22 x 80 mm

22. Assisted by an operator, separate the assemblies (Fig. 9).

Engine/GBA20 transmission with Power Shuttle connection

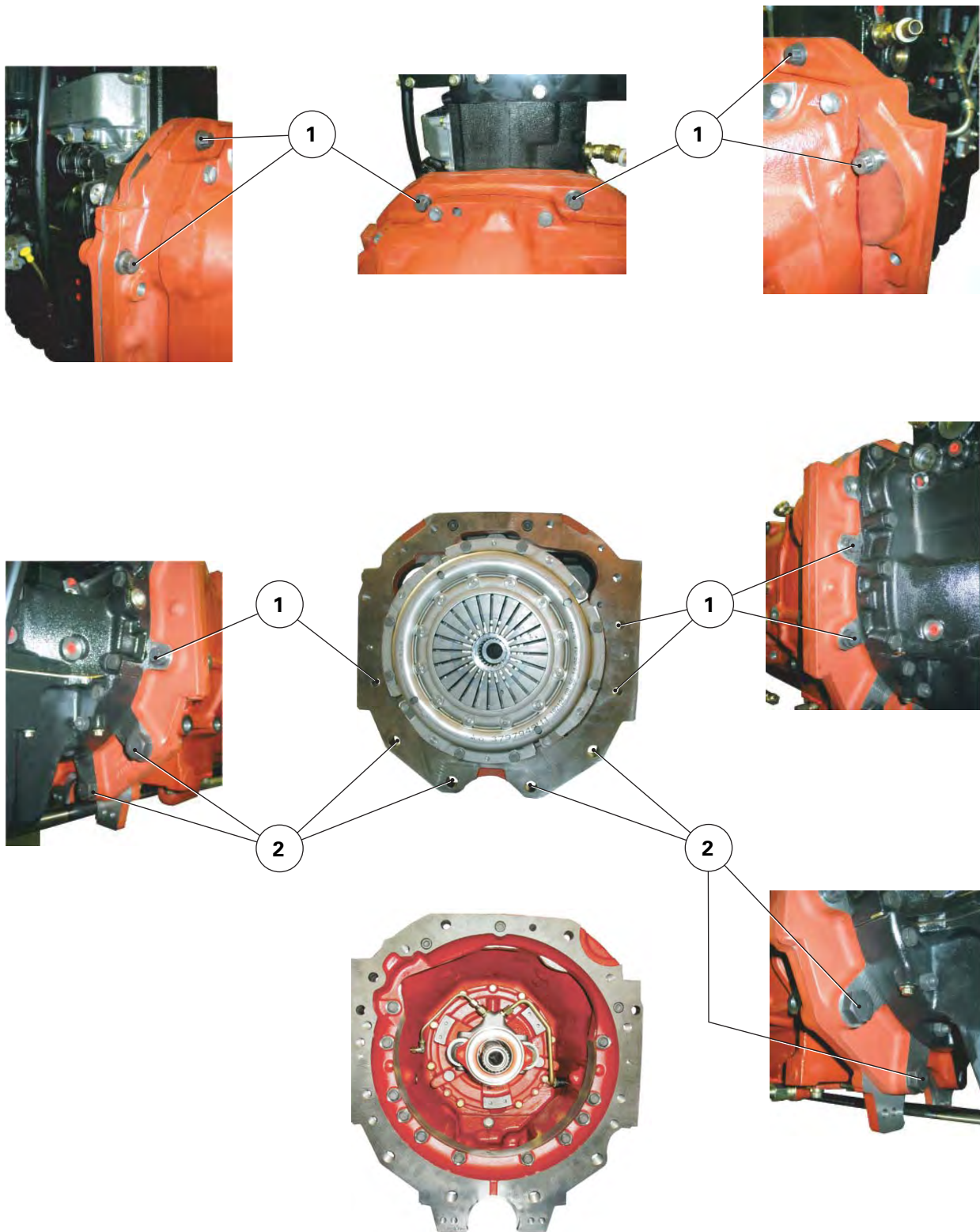


MA-02-05077A

Fig. 10

Splitting Perkins engine / GTA2020

Engine/GBA20 transmission with mechanical reverse shuttle connection



MA-02-05097A

Fig. 11

Reassembly

23. Clean the mating faces of the engine and the gearbox spacer.
24. Check that the dowels (1) are present on the engine (Fig. 12).
25. Depending on the tractor type, carry out the following operations.
 - **Tractors with Power Shuttle (Fig. 13)**
Lightly smear the splines of the input shaft (1) with AS767 graphite grease or equivalent.
 - **Tractors with dry clutch (Fig. 13)**
Replace the seal (2) on the input shaft (1) (see § C).
Lightly smear the splines of the input shaft (1) and PTO shaft (3) with AS767 graphite grease or equivalent.
26. Screw two diametrically opposed guide studs onto the engine adaptor plate or onto the gearbox spacer.

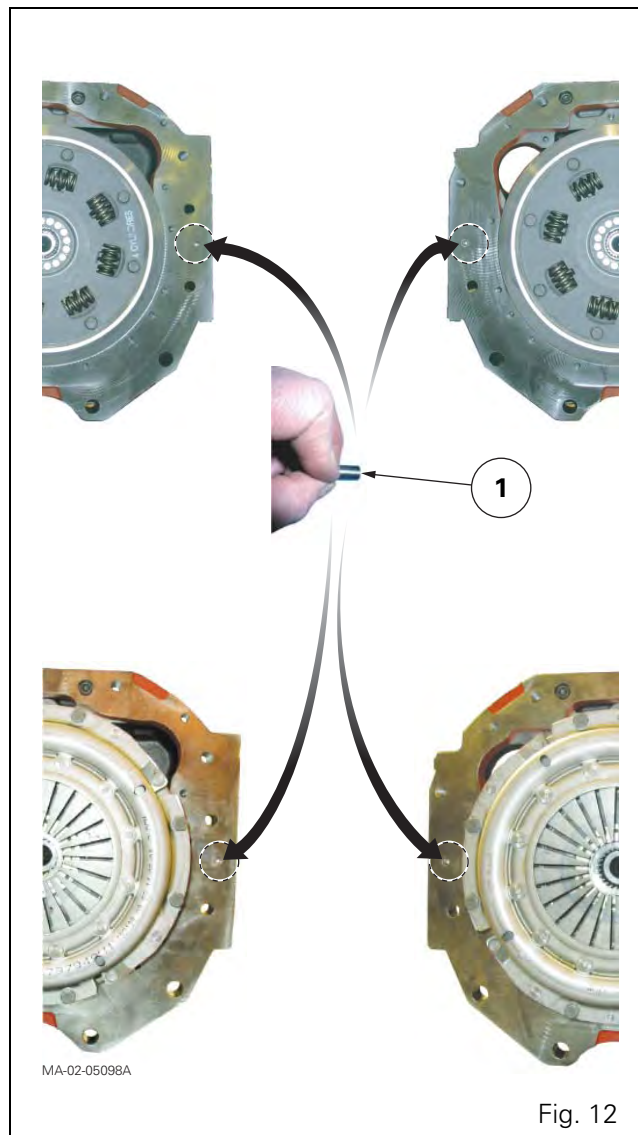


Fig. 12

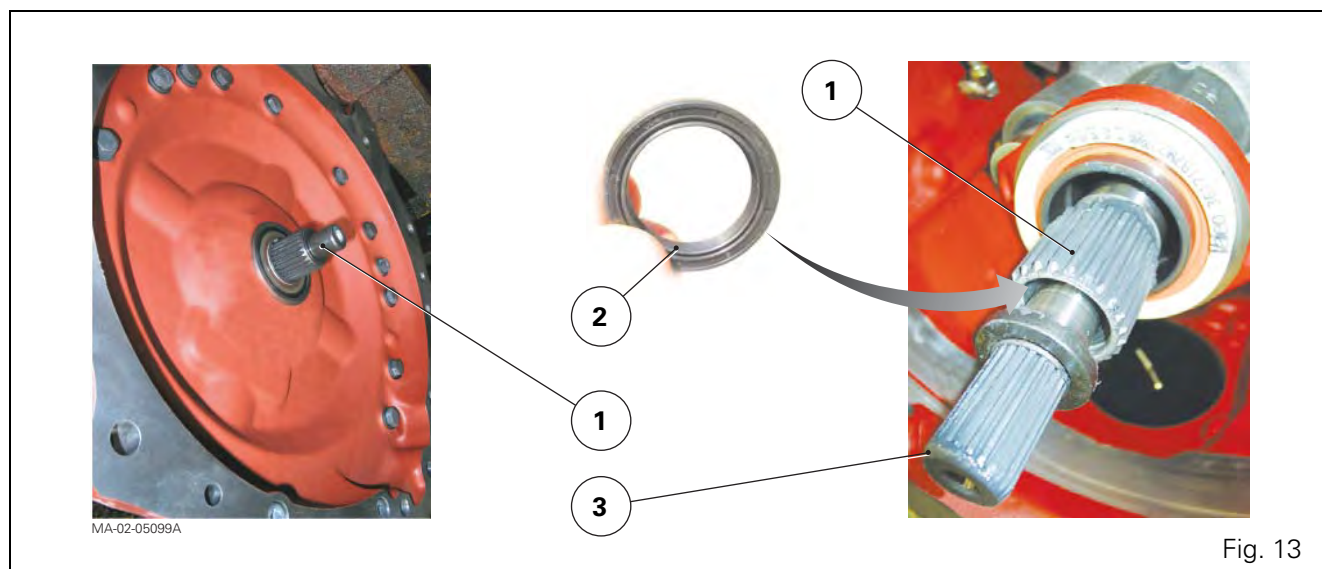


Fig. 13

Splitting Perkins engine / GTA2020

27. Connect the engine to the gearbox spacer.

IMPORTANT: If necessary, remove the starter and turn the engine flywheel ring gear using a suitable tool. This will ease the engagement of the splines of the vibration damper or friction disc (depending on assembly) with those of the input shaft. If there is resistance, do not force it; find the cause of the problem.

28. Once the elements are joined, remove the guide studs.

29. Lightly smear the thread of each screw (1) and (2) with Loctite 270 or equivalent.

Position them according to the marks made during disassembly.

Tighten (Fig. 14):

- screws (1) to a torque of 240 - 320 Nm;
- screws (2) to a torque of 630 - 840 Nm.



Fig. 14

Final steps

The final steps are not especially difficult.

However, it will be necessary during reassembly to perform the tightening torques, adjustments and tests described below.

- **Tightening torque**

As required, front cab screws (see chapter 12).

- **Topping up** of coolant, to the maximum level marked on the expansion tank (Fig. 14).

- **Test:**

- the air conditioning system (if fitted - see chapter 12);
- all mechanical, hydraulic and electrical functions relating to the operation.

- **Checking tightness** of hydraulic unions.

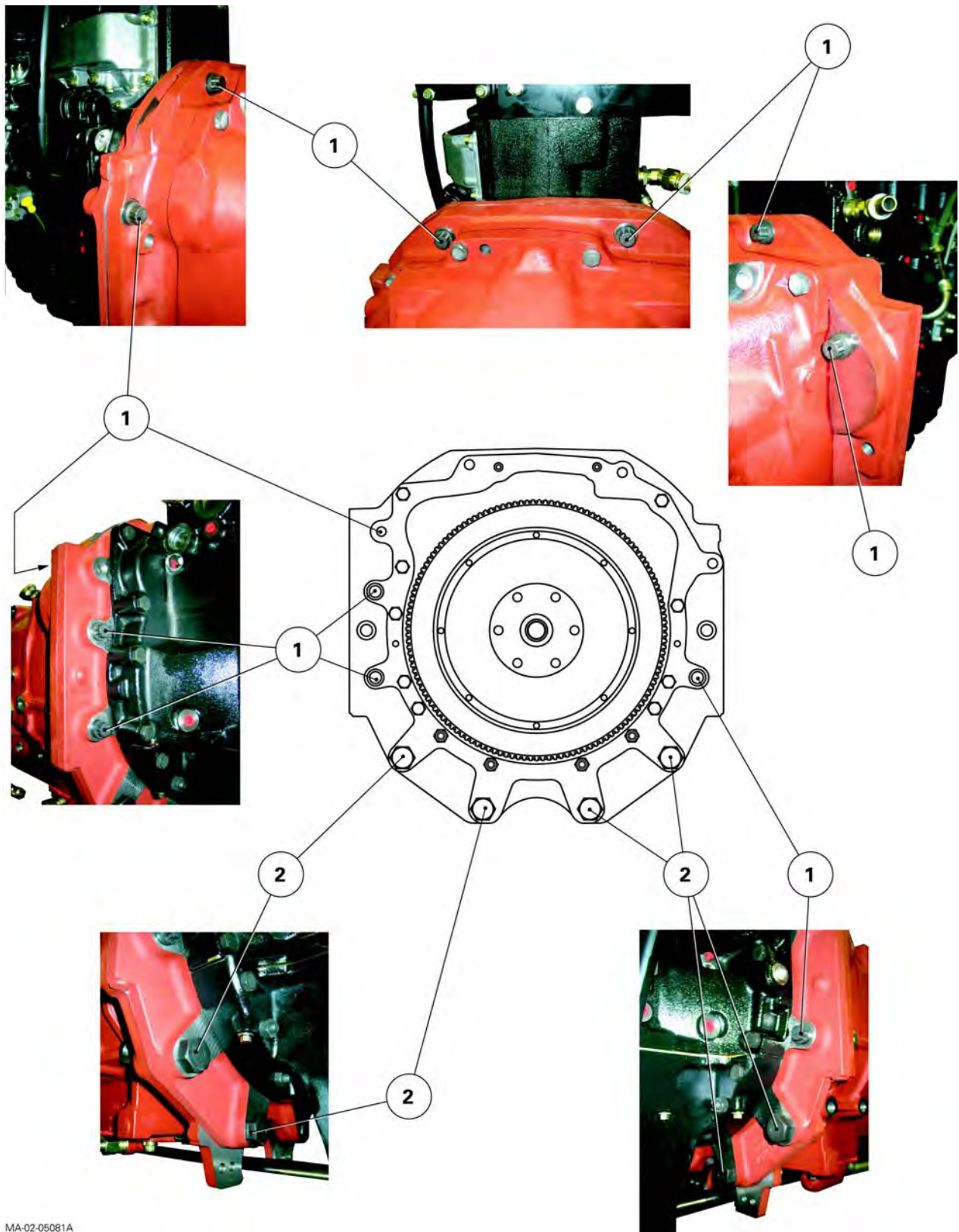


Fig. 15

C . Replacing the input shaft seal (tractors with dry clutch)

Preliminary steps

30. Disconnect the tractor between the engine and the gearbox (see chapter 2).

Preparing for seal (2) replacement (Fig. 16)

31. Take the PTO shaft (3) out of the input shaft (1).

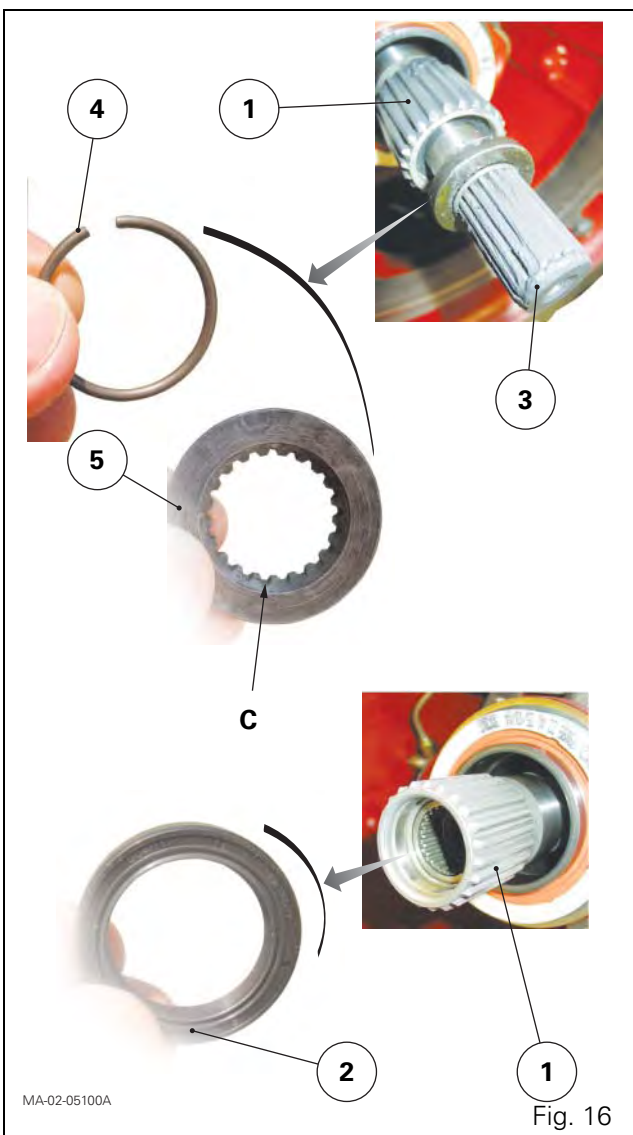
Remove the snap ring (4) and the splined washer (5).

32. Take the worn seal (2) out of the input shaft (1) without using a sharp or pointed tool.

33. Clean the components.

34. Check there are no scratches:

- in the seating of the seal (2) on the input shaft (1),
- on the PTO shaft (3) at the seating of the lip of the seal (2).



Replacing the seal (2) (Fig. 16)

35. Turn the PTO shaft (3) as required. Slide it into the input shaft (1).
36. Cover the PTO shaft splines with a flexible protection.
37. Smear the internal cavity of the seal (2) with miscible grease.
38. Position the seal (2) on the PTO shaft (3) so that its lip, when operating, is in contact with the transmission oil.

Remove the flexible protection.

Fit the seal (2) into the input shaft (1) using tool 3376803M1 (see § E).

IMPORTANT: *Ensure that there are no seal fragments after fitting.*

39. Slide the splined washer (5) onto the PTO shaft (3), turning its chamfer C towards the operator.
40. Fit a new snap ring (4) on the PTO shaft (3), opening it as little as possible. Check that it is positioned correctly at the bottom of the groove.

Final step

41. Reconnect the tractor between the engine and the gearbox (see chapter 2).

Splitting Perkins engine / GTA2020

D . Disassembly and reassembly (6-cylinder Perkins engine)

Preparation

1. Apply the hand brake.
2. Remove:
 - the side panels either side of the engine,
 - the prefilter,
 - the bonnet.

Operations under the tractor

3. Take off the guard, 4WD transmission shaft and differential lock supply pipe.

Operations at the front of the tractor

4. Remove the front weights (if fitted).

Operations on the right-hand side of the tractor

5. Disconnect the batteries.
6. Remove the vertical exhaust assembly (including support [Fig. 1](#)).
7. Mark then disconnect:
 - the cables (positive and negative) on the starter
 - the supply hose on the steering ram,
 - the lubrication hoses (running to and from the cooler) ([Fig. 2](#)).

Operations on the left-hand side of the tractor

8. Mark and disconnect the supply hose on the steering ram.
9. Mark and disconnect the fuel feed and return hoses on the engine, **immediately** blocking the ports.

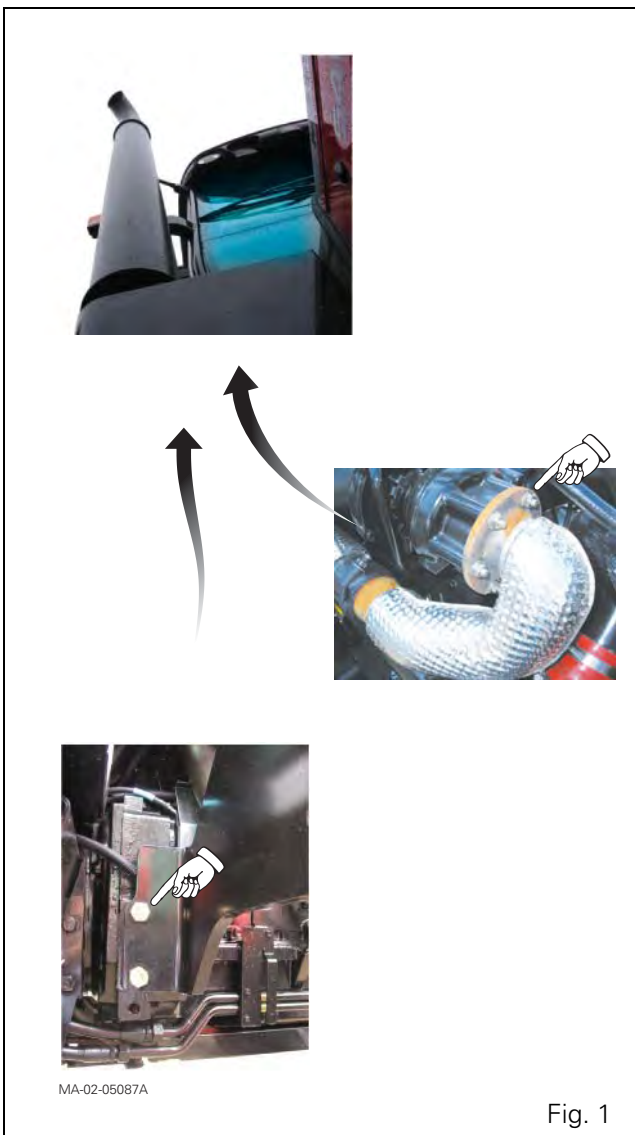


Fig. 1

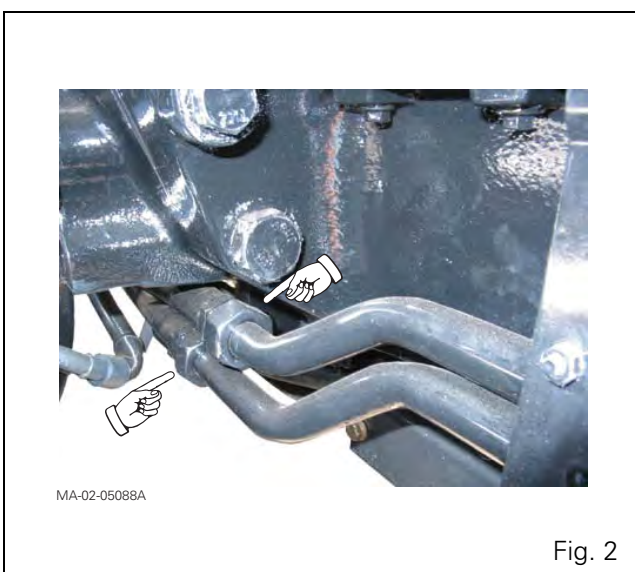


Fig. 2

Operations under the cab

10. Mark, pinch out and disconnect each heating hose, **immediately** blocking the ports.

Operations on the engine

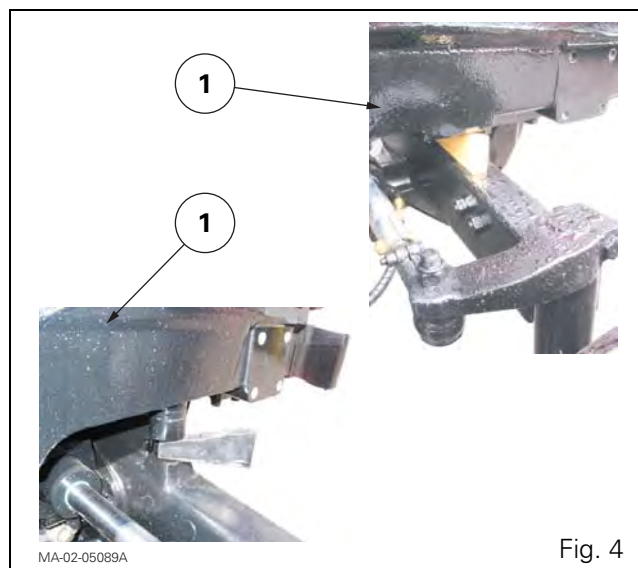
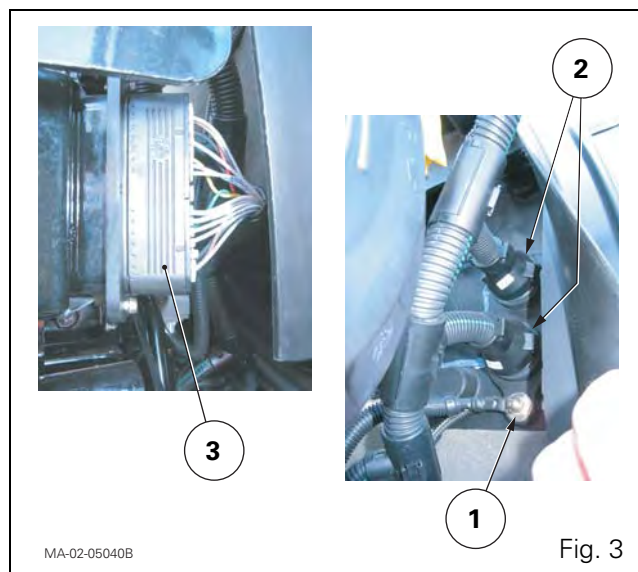
11. If necessary, disconnect the connector (3) of the main wiring harness (Fig. 3).
12. Detach the air conditioning compressor, the condenser and the filter from their respective supports (if fitted). Carefully remove them from the engine, without opening up the system (see chapter 12).

Operations at the front of the cab

13. Disconnect the connectors (2) and the ground terminals (1) on the left-hand side of the cab bulk-head (Fig. 3).

Preparing for disassembly

14. Cancel the oscillation, depending on assembly:
 - of the front axle beam (2WD) or
 - of the front axle (4WD),by inserting a suitable block on either side of the frame (1) as shown in Fig. 4.
15. Chock the rear wheels.



Splitting Perkins engine / GTA2020

16. Install (Fig. 5):
- a fixed axle stand at the front of the gearbox
 - a mobile axle stand at the rear of the engine
 - a mobile axle stand under the front frame.
17. If necessary, separate the cab from the front right and left-hand supports (see chapter 12).
18. Gently lift the front of the cab using two straps fitted to the side handles.



DANGER: Make the area around the cab safe by temporarily placing a wooden chock between each front support and the right and left-hand cab attachments.

Disassembly

IMPORTANT: During separation, check that all connections (hoses, pipes and harnesses) are disconnected.

19. Remove the screws and nuts attaching the engine to the gearbox (Fig. 6 or Fig. 7 depending on assembly). Mark their length and position.

NOTE:

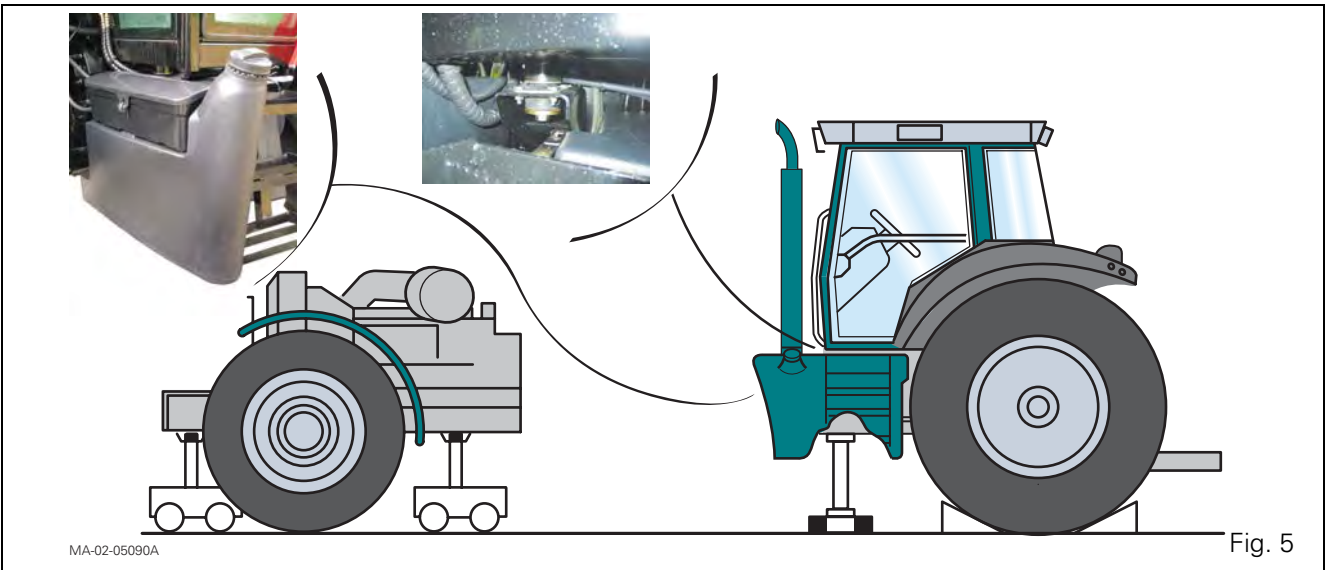
The tractor may be fitted with one or two fuel tanks (depending on option):

- **Assembly 1:** a single fuel tank on the left-hand side of the tractor
- **Assembly 2:** a fuel tank on each side of the tractor. In this configuration, remove the right-hand fuel tank from the gearbox if it blocks access to the screws and nuts.

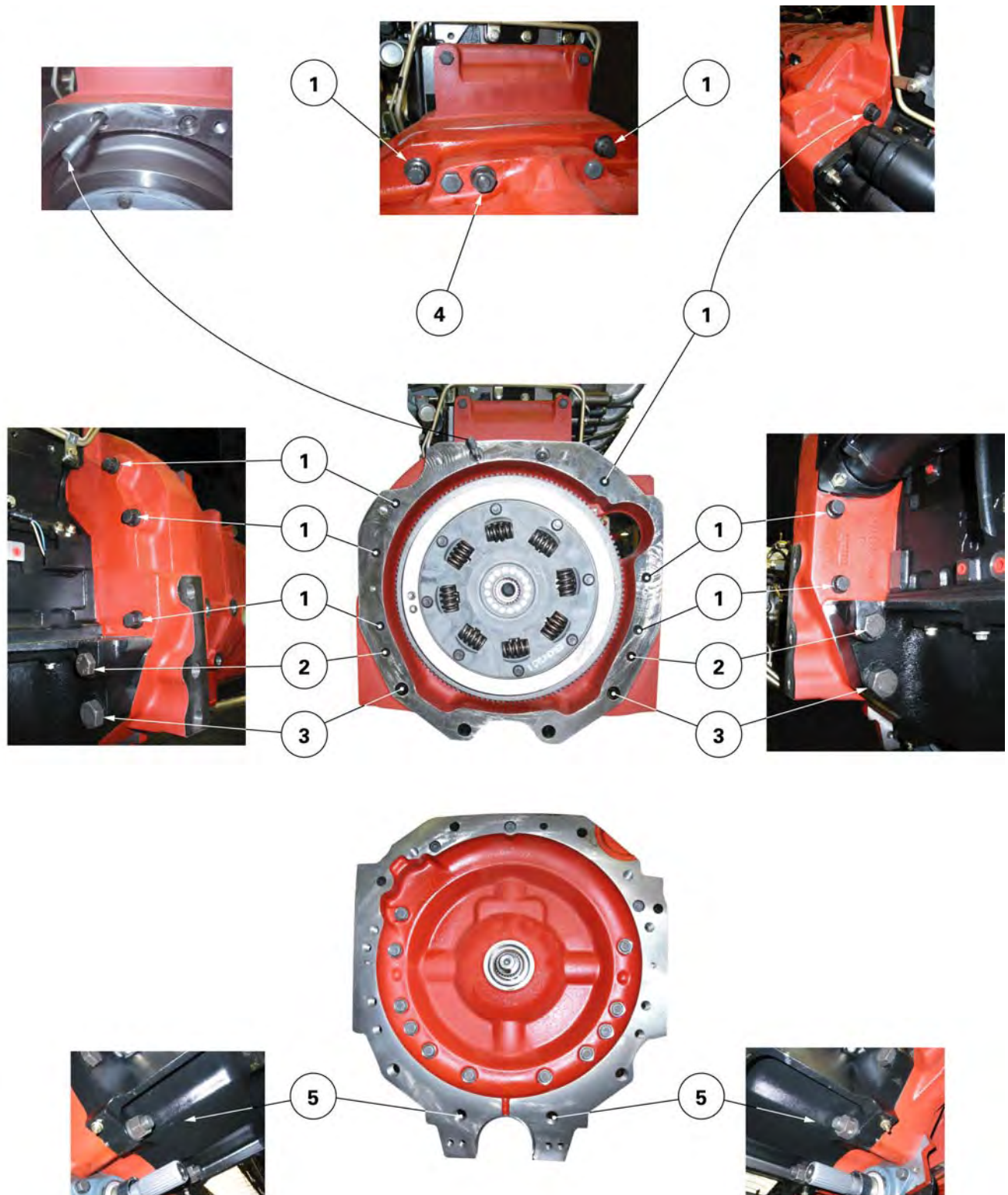
Specifications of the screws, studs and nuts

Screw	Studs	Nuts
M16 x 60 mm	M12 x 185 mm	M12
M16 x 115 mm	M22 x 160 mm	M22
M16 x 185 mm		
M22 x 160 mm		

20. Assisted by an operator, separate the assemblies (Fig. 5).



Engine/GBA20 transmission with Power Shuttle connection

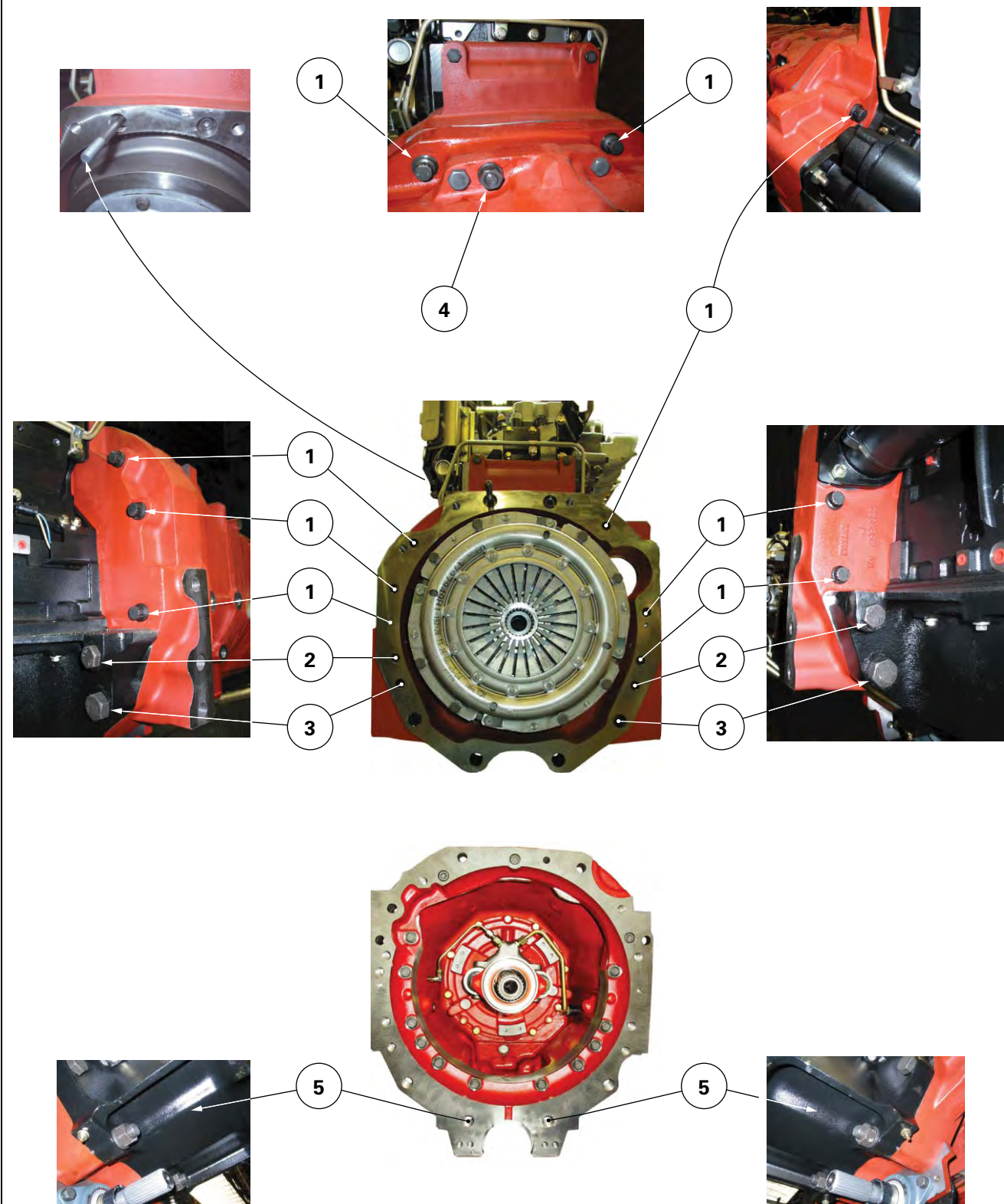


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Fig. 6

Splitting Perkins engine / GTA2020

Engine/GBA20 transmission with mechanical reverse shuttle (dry clutch) connection

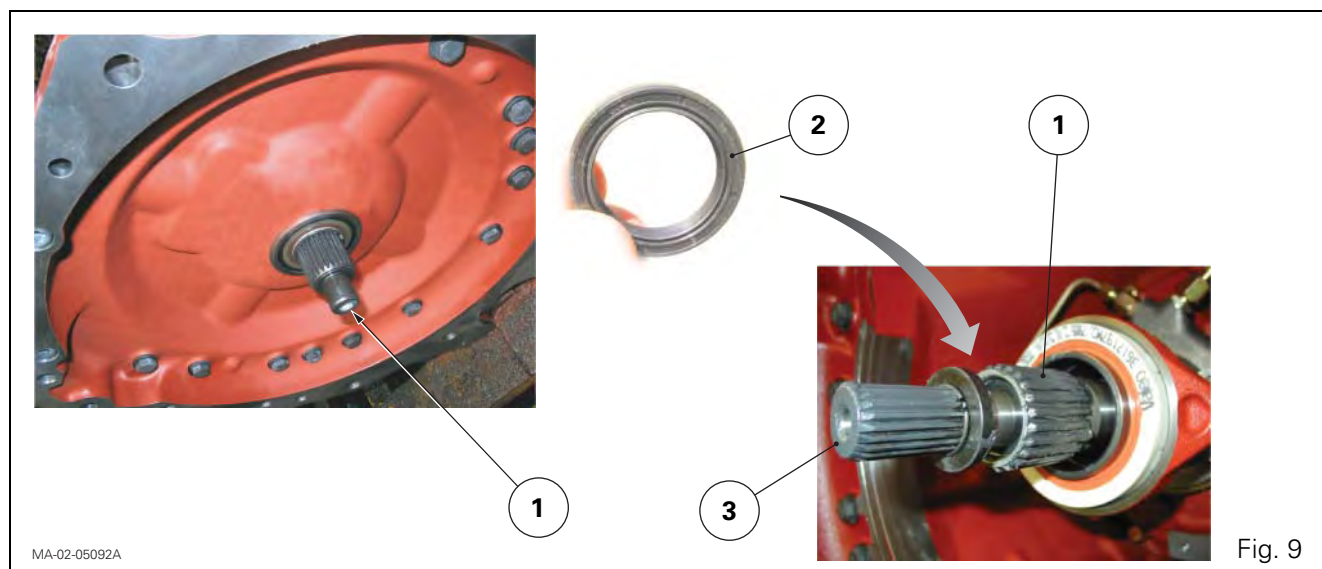
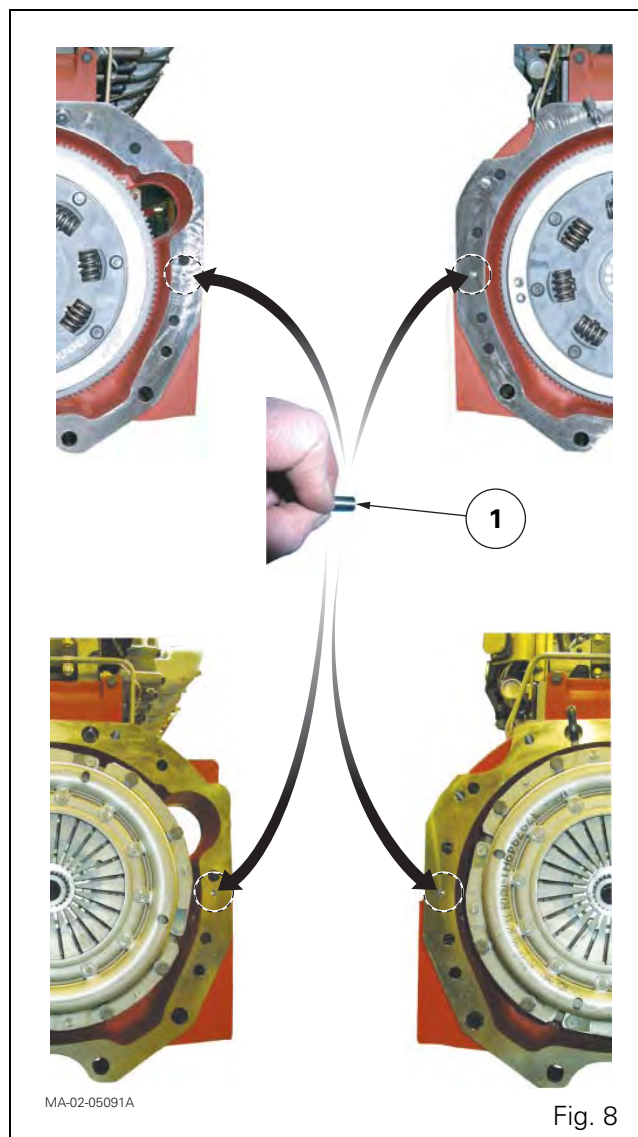


MA-02-05102A

Fig. 7

Reassembly

21. Clean the mating faces of the engine and the gearbox spacer.
22. Check:
 - the presence of dowels (1) on the engine (Fig. 8)
 - the tightness of the upper stud (M12) on the engine adapter plate (Loctite 270),
 - the tightness of the lower studs (M22) on the gearbox spacer (Loctite 270).
23. Depending on the tractor type, carry out the following operations.
 - **Tractors with Power Shuttle (Fig. 9)**
Lightly smear the splines of the input shaft (1) with AS767 graphite grease or equivalent.
 - **Tractors with dry clutch (Fig. 9)**
Replace the seal (2) on the input shaft (1) (see § C).
Lightly smear the splines of the input shaft (1) and PTO shaft (3) with AS767 graphite grease or equivalent.
24. If necessary, screw two extra diametrically opposed guide studs into the gearbox.



Splitting Perkins engine / GTA2020

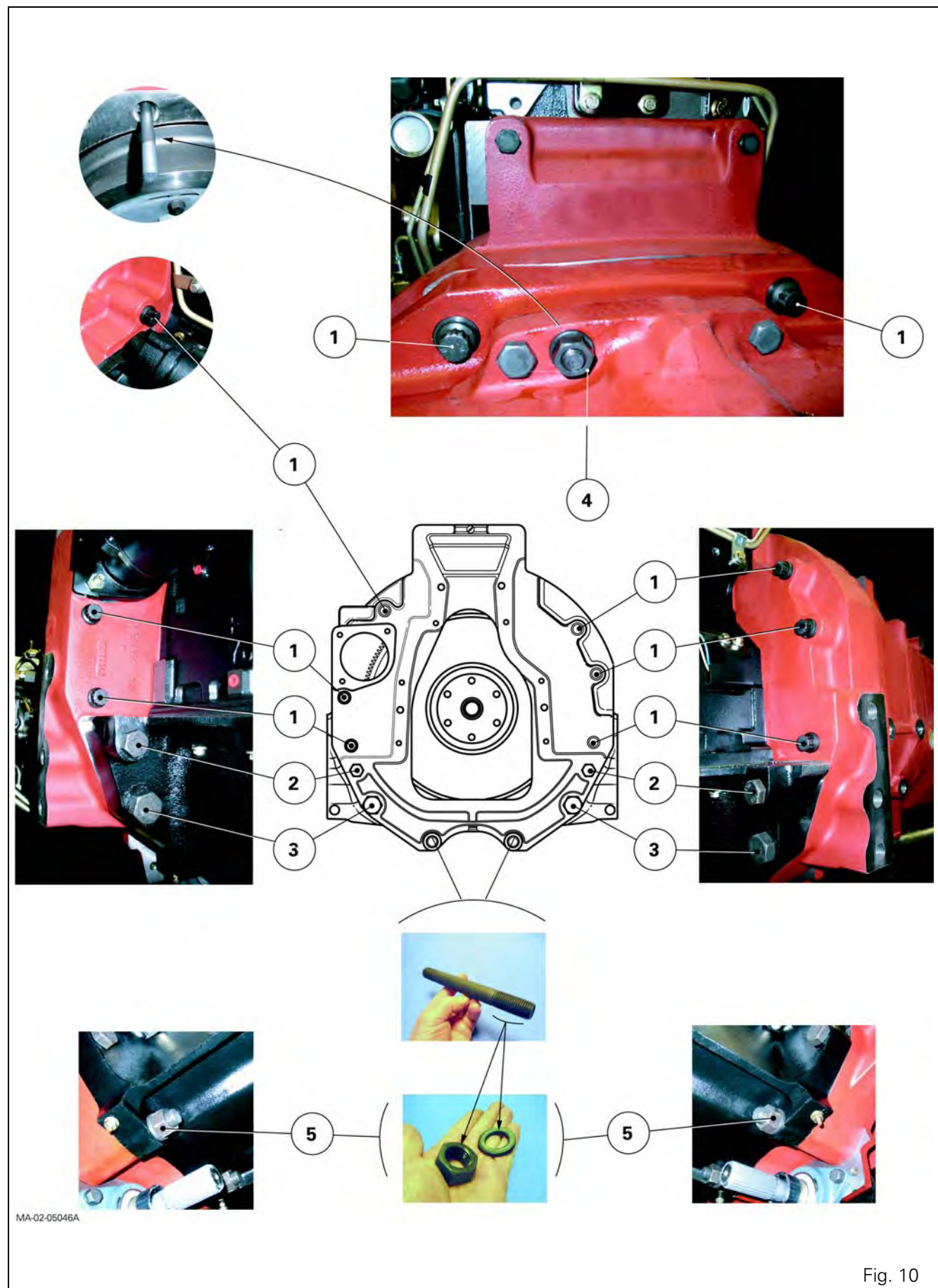


Fig. 10

25. Connect the engine to the gearbox spacer.

IMPORTANT: If necessary, remove the starter and turn the engine flywheel ring gear using a suitable tool. This will ease the engagement of the splines of the vibration damper or friction disc (depending on assembly) with those of the input shaft. If there is resistance, do not force it; find the cause of the problem.

26. Once the elements are joined, remove the guide studs (if fitted).

27. Lightly smear the thread of the each screw and nut with Loctite 270 or equivalent.

Position them according to the marks made during disassembly.

Tighten (Fig. 10):

- screws (1) to a torque of 240 - 320 Nm;
- screws (2) to a torque of 240 - 320 Nm;
- screws (3) to a torque of 630 - 840 Nm.
- nuts (4) to a torque of 100 - 130 Nm;
- nuts (5) to a torque of 630 - 840 Nm.

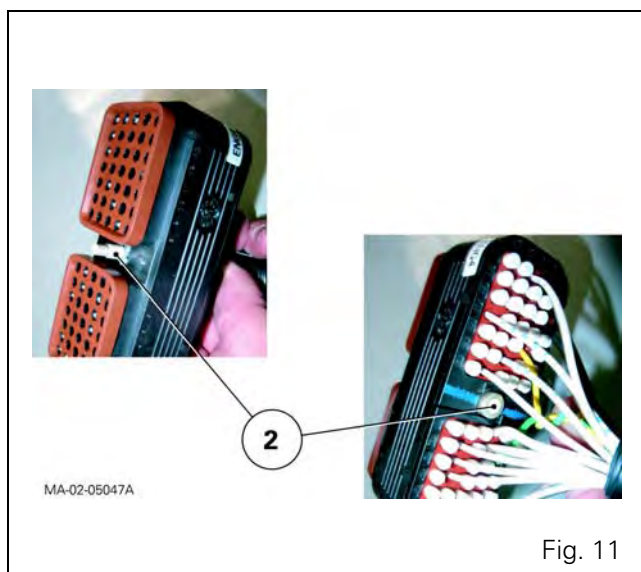


Fig. 11

Final steps

The final steps are not especially difficult.

However, it will be necessary during reassembly to perform the tightening torques, adjustments and tests described below.

• Tightening torque

As required:

- Front cab screws (see chapter 12)
- Screws (2) of connector (3) on main wiring harness from 2.82 to 3.15 Nm (Fig. 3 and Fig. 11).

- **Topping up** of coolant, to the maximum level marked on the expansion tank (Fig. 12).

• Test:

- the air conditioning system (if fitted - see chapter 12);
- all mechanical, hydraulic and electrical functions relating to the operation.

- **Checking tightness** of hydraulic unions.

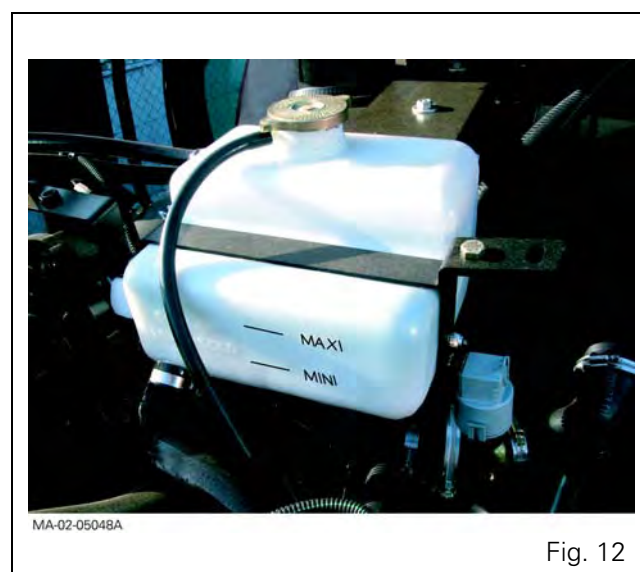


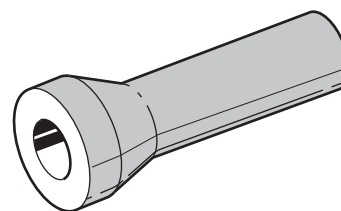
Fig. 12

Splitting Perkins engine / GTA2020

E . Service tool

Tool available in the AGCO network

- **3376803M1**: Fitting drift for input shaft seal (tractors with dry clutch) ([Fig. 13](#))



MA-02-05101A

Fig. 13

2C11 - Splitting GBA20/GPA20 (cab fixed to centre housing)

CONTENTS

A . General 3

B . Disassembly and reassembly with the cab fixed to the centre housing 4

Splitting GBA20/GPA20 (cab fixed to centre housing)

Splitting GBA20/GPA20 (cab fixed to centre housing)

A . General

Disconnecting the tractor with the cab fixed to the centre housing allows access:

- to the gearbox output shaft,
- to the creeper or super creeper unit and selection mechanism (depending on option),
- to the PTO clutch,
- to the hand brake mechanism.

IMPORTANT: *This section describes a general disassembly procedure. Before and during separation, check that all connections between the fixed assembly and mobile assembly have been disconnected.*

Splitting GBA20/GPA20 (cab fixed to centre housing)

B . Disassembly and reassembly with the cab fixed to the centre housing

Preparation

1. Apply the hand brake.
2. Remove:
 - the side panels either side of the engine,
 - the prefilter,
 - the central exhaust pipe (depending on option),
 - the bonnet (if necessary).
3. Remove the steps.
4. Disconnect the batteries.

Tractors with...	Battery location
Perkins engines 65 to 95 hp	In the grille compartment
Perkins engines 105 hp	Behind the right-hand step.
Sloping bonnet	Behind the right-hand step.

Location of batteries (Fig. 1)



MA-02-05069A

Fig. 1

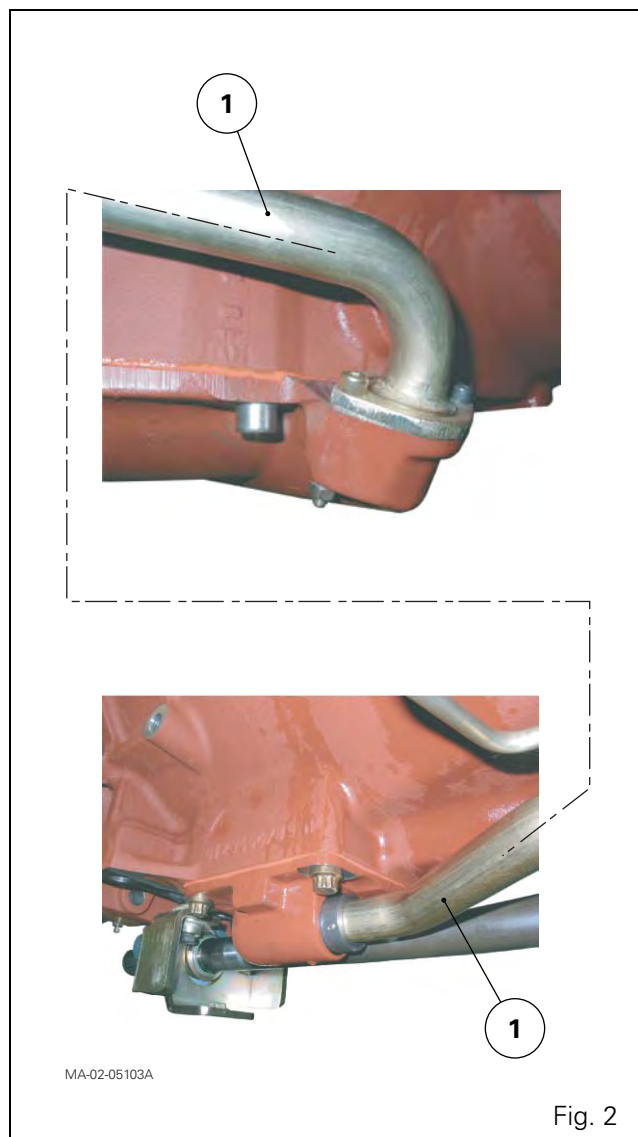
Splitting GBA20/GPA20 (cab fixed to centre housing)

Operations underneath the tractor

5. Take off the guard, 4WD transmission shaft and differential lock supply pipe.
6. Drain the oil from the gearbox and centre housing.
7. Remove the lubrication pipe (1) of the Power Shuttle (if fitted) located between the centre housing and gearbox (Fig. 2).

Operations on the right-hand side of the tractor

8. Remove the batteries and their support located behind the right-hand step.
9. Mark then disconnect:
 - the hose on the steering ram or spool valve (Orbitrol),
 - the main pipe (17 bar) to the selector cover plate,
 - the front differential lock hose on the right-hand hydraulic cover plate
 - the return hoses on the selector cover plate
 - the gear cable and rod on the selector cover plate,
 - the creeper or super creeper gear cable (depending on option).

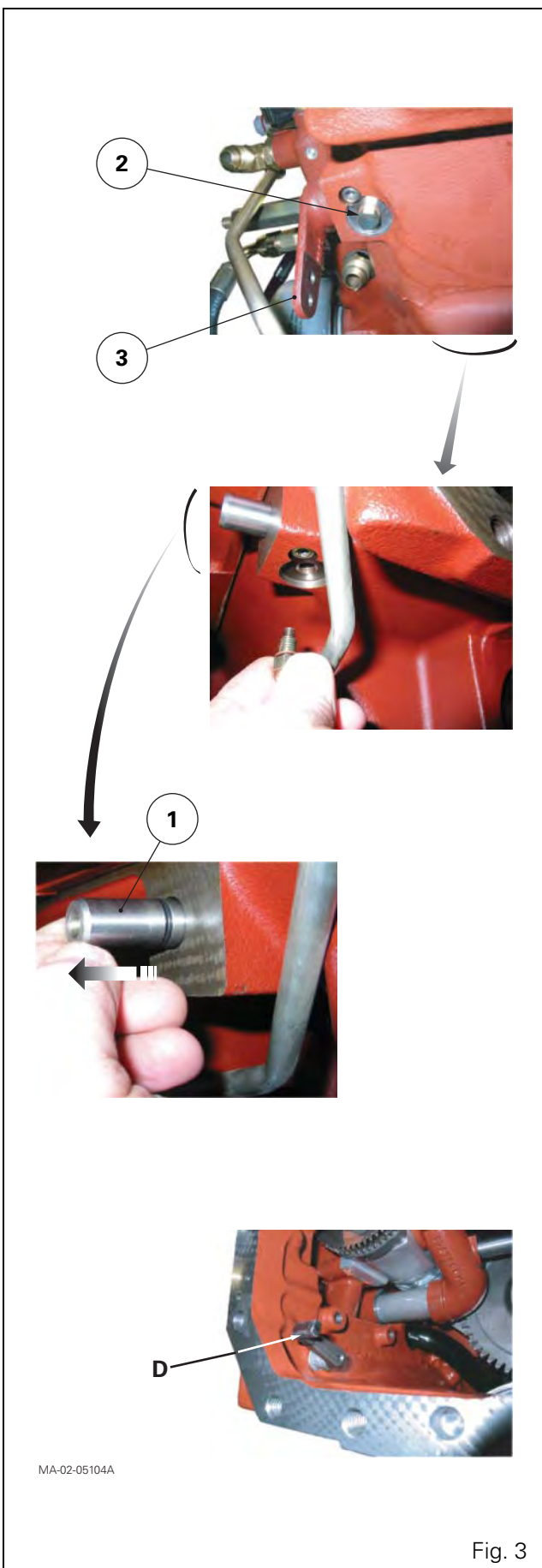


Splitting GBA20/GPA20 (cab fixed to centre housing)

10. On tractors fitted with a creeper or super creeper unit (Fig. 3), carry out the following operations.
- Remove the rod (3) (if necessary).
 - Remove the screw (2).
 - Pull the pin (1) outwards in order to free the "D" finger of the final drive fork.
11. Mark and disconnect the electrical connectors on:
- the right and left-hand hydraulic cover plates,
 - the selector cover plate;
 - the Speedshift solenoid valve,
 - Power Shuttle proportional solenoid valves (if fitted).

Operations on the left-hand side of the tractor

12. Mark then disconnect:
- the hose on the steering ram or spool valve (Orbitrol),
 - the harness of the fuel gauge on the fuel tank
 - the fuel feed and return hoses on the engine, **immediately** blocking the ports,
 - the vent hose on the fuel tank.
13. Drain the tank (if necessary). Remove it.
14. Disconnect the transmission lubrication supply line (pipes and hoses) located to the front and left of the gearbox.



Splitting GBA20/GPA20 (cab fixed to centre housing)

Operations under the cab

- 15.** Mark and pinch out each heating hose using a clamp fitted with protective jaws (Fig. 4). Disconnect them, **immediately** blocking the ports.

Operations on the engine

- 16.** Disconnect:
- the connector of the main engine harness,
 - the throttle control cable on the injection pump (4-cylinder Perkins engine only).
- 17.** Detach the air conditioning compressor, the condenser and the filter from their respective supports. Carefully remove them from the engine, without opening up the system (see chapter 12).

Preparing for disassembly

- 18.** Cancel the oscillation, depending on assembly:
- of the front axle beam (2WD) or
 - of the front axle (4WD),
- by inserting a suitable wooden block on either side of the frame (1) as shown in Fig. 5.
- 19.** Chock the rear wheels.



Fig. 4

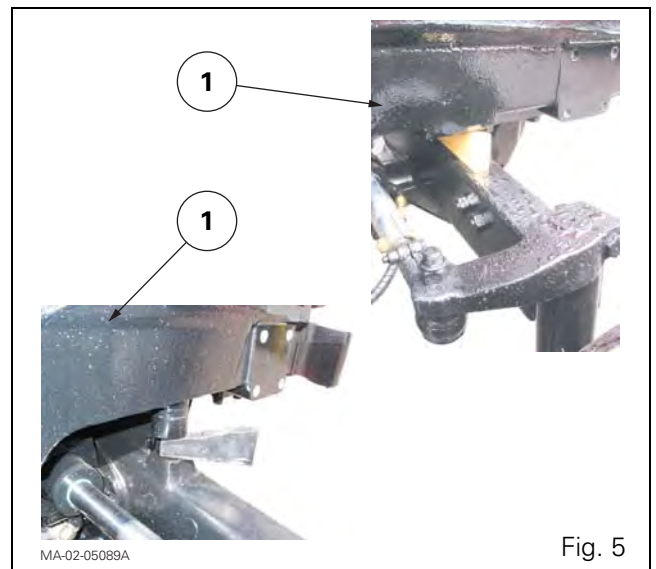


Fig. 5

Splitting GBA20/GPA20 (cab fixed to centre housing)

20. Install (Fig. 6):
- a fixed axle stand at the front of the centre housing,
 - a fixed axle stand at the rear of the hitch hook,
 - a mobile axle stand at the rear of the gearbox.
21. If necessary, separate the cab from the front right and left-hand supports (see chapter 12).
22. Gently lift the front of the cab using two straps fitted to the side handles.



DANGER: Make the area around the cab safe by temporarily placing a wooden chock between each front support and the right and left-hand cab attachments.

Disassembly

IMPORTANT: During separation, check that all connections (hoses, pipes and harnesses) are disconnected.

23. Remove the screws (1) and nuts (2) fixing the gearbox to the centre housing (Fig. 7). Mark their length and position.

Specifications of the screws and nuts

Screws (1)	Nuts (2)
M14 x 45 mm	M14
M14 x 60 mm	
M14 x 70 mm	

24. Remove the wooden chocks inserted during step 22.
25. Assisted by an operator, separate the assemblies (Fig. 6).
26. Hold the cab still using suitable axle stands positioned under the right and left-hand supports (Fig. 6).

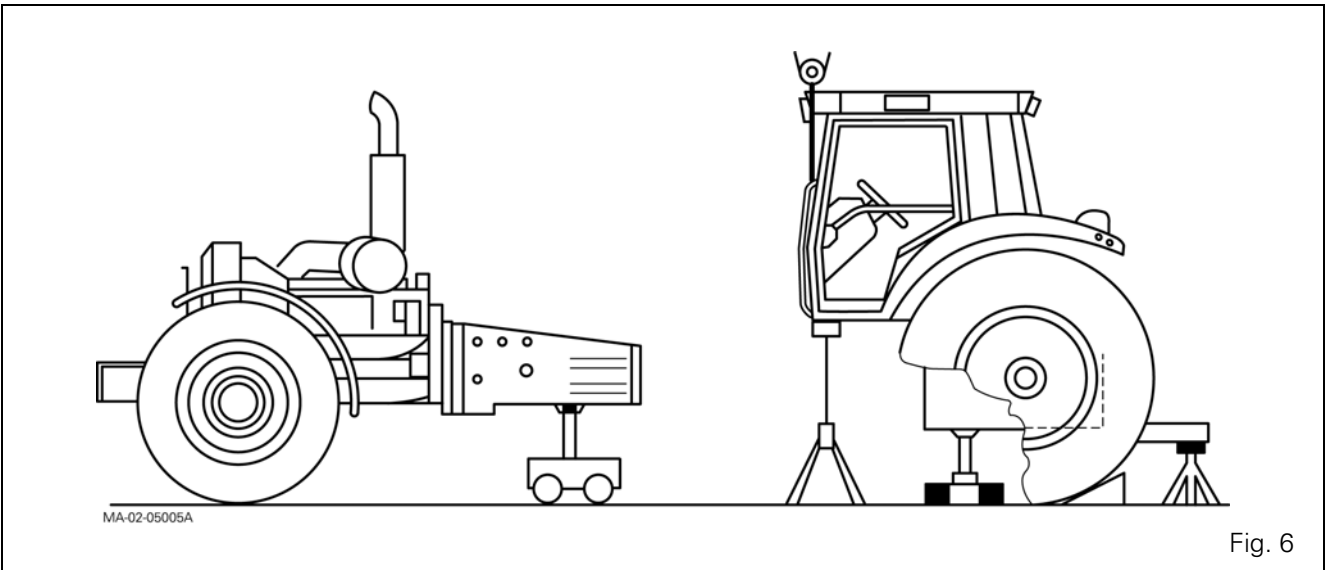


Fig. 6

Splitting GBA20/GPA20 (cab fixed to centre housing)

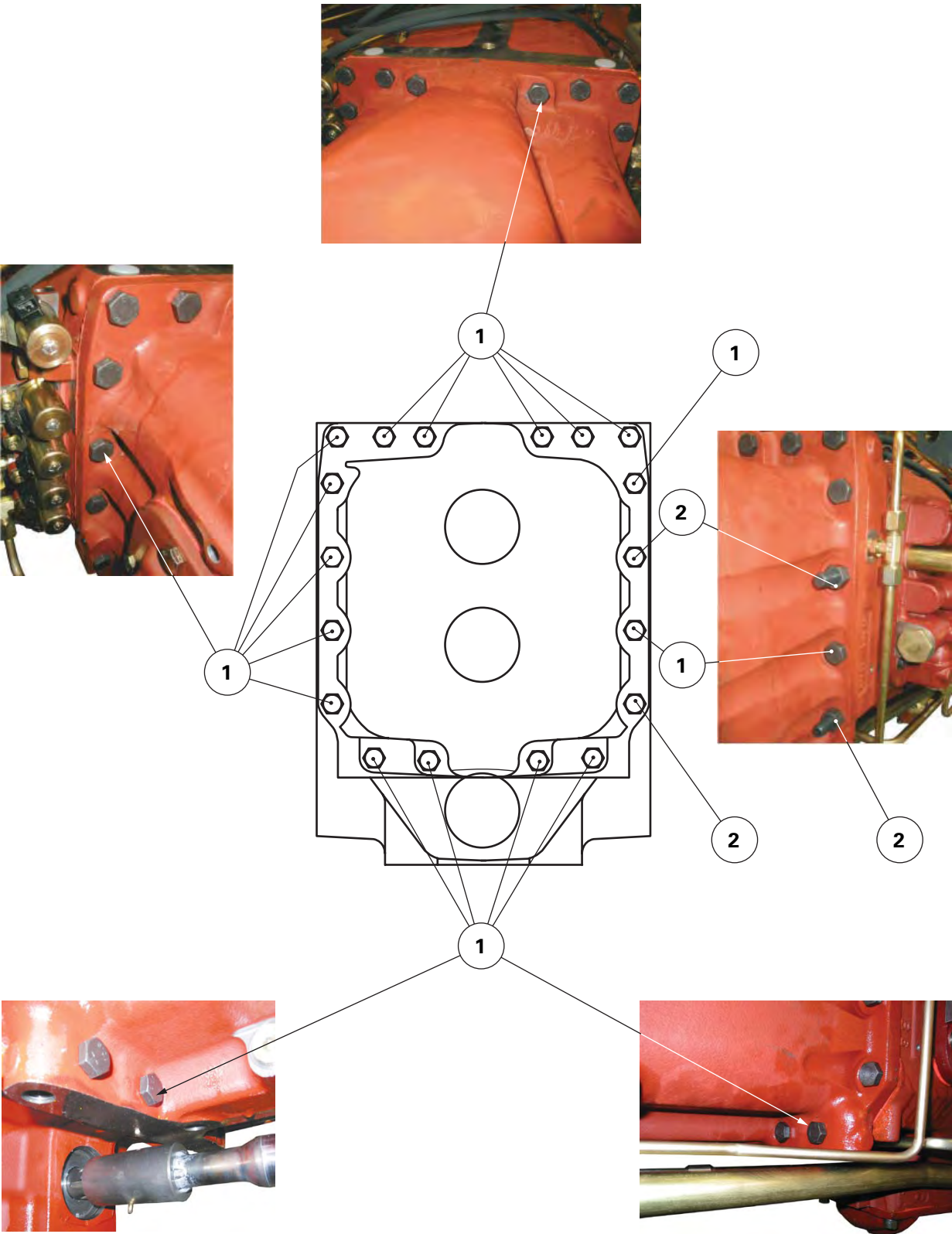


Fig. 7

Splitting GBA20/GPA20 (cab fixed to centre housing)

Reassembly

27. Clean the mating faces of the gearbox and the centre housing.

On the centre housing

28. Check the presence of dowels (4) (Fig. 8).

NOTE: The dowels are force fitted.

29. Position the spring (1) in the PTO clutch (Fig. 9).
30. Smear the mating face of the centre housing with Loctite 5206 or equivalent, avoiding the Hare and Tortoise ports.
31. Replace the "O" rings (2) (Fig. 9).
32. If necessary, screw two diametrically opposed guide studs onto the centre housing.

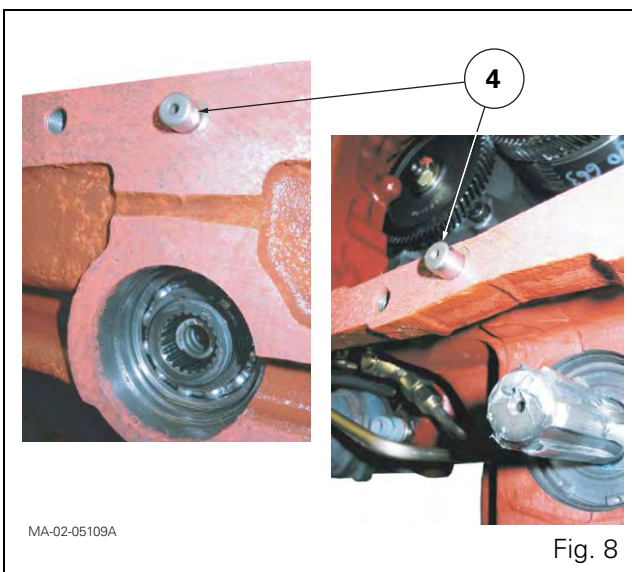


Fig. 8

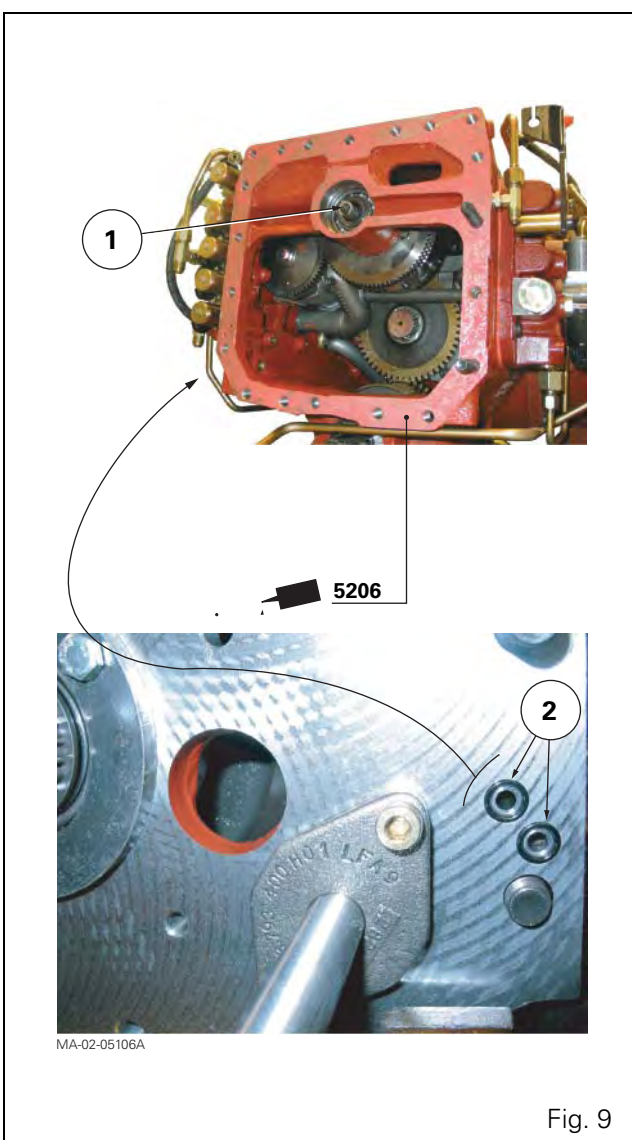


Fig. 9

Splitting GBA20/GPA20 (cab fixed to centre housing)

On the gearbox

33. Check that the PTO shaft is present and positioned correctly.

34. Depending on the option, carry out the following actions.

- **Gearbox without creeper or super creeper unit (Fig. 10)**

Check the correct assembly of the connecting shaft (1) fitted with the sleeves (2) and double pins (3).

- **Gearbox with creeper unit (Fig. 11)**

Check:

- the correct assembly of the connecting shaft (1) fitted with the sleeve (2) and double pin (3),
- that the control mechanism (fork and coupler) is operating correctly in each position.

Push the fork (4) towards the front of the gearbox in direct drive position.

NOTE: The output shaft of the gearbox with creeper unit supports the connecting shaft (1) via the needle roller bearing (5).

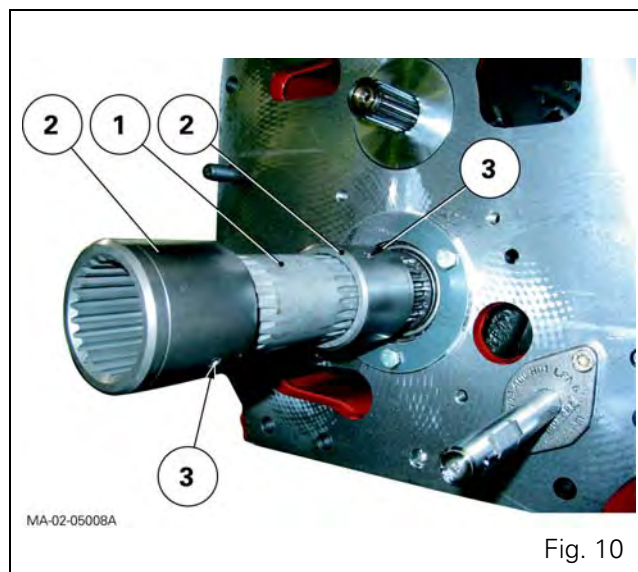


Fig. 10

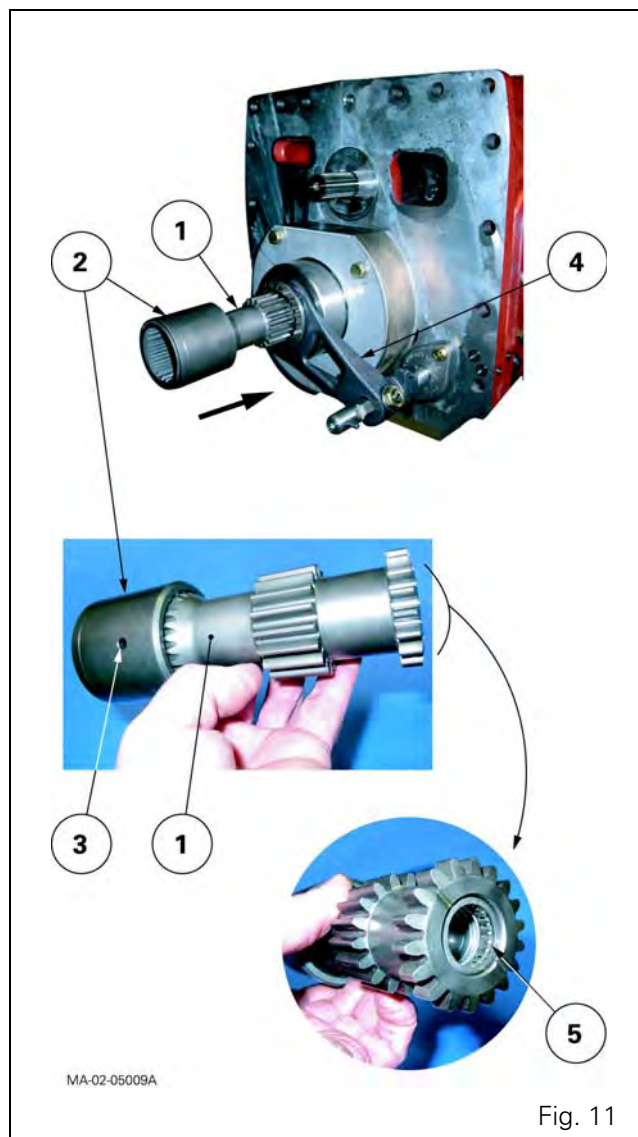


Fig. 11

Splitting GBA20/GPA20 (cab fixed to centre housing)

- **Gearbox with super creeper unit (Fig. 12)**

Check:

- the presence of the connecting shaft (1) fitted with the sleeve (2) and double pin (3),
- that the control mechanism (fork and coupler) is operating correctly in each position.

Push the fork (4) towards the front of the gearbox in super creeper position.

NOTE: The output shaft of the gearbox with super creeper unit supports the connecting shaft (1) via the needle roller bearing (5).

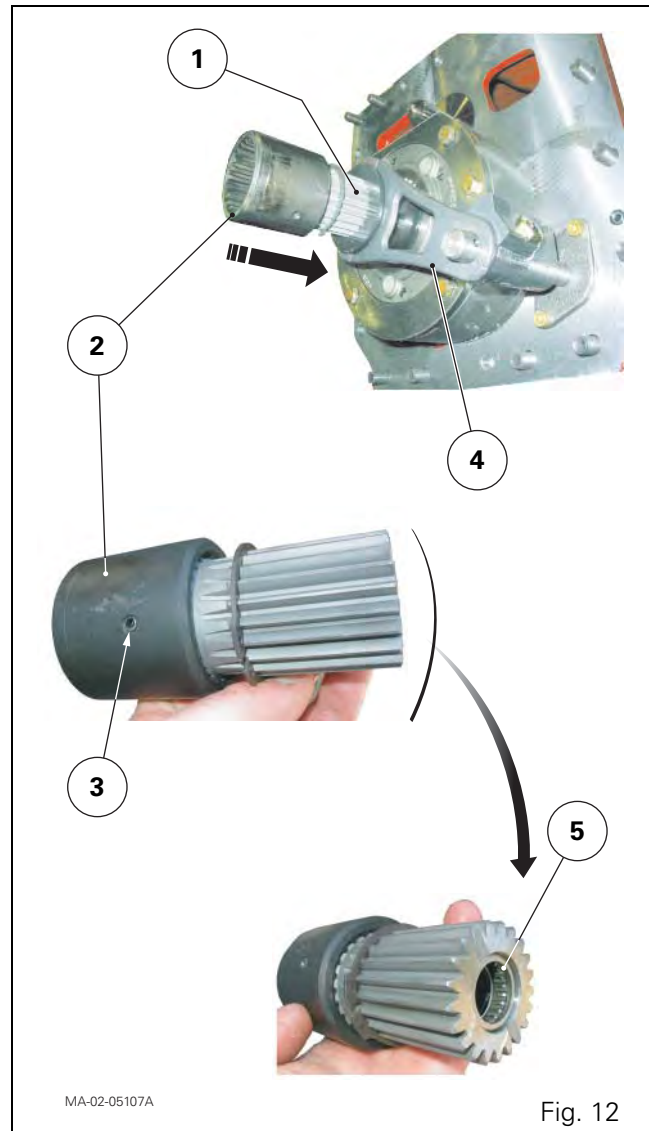


Fig. 12

Splitting GBA20/GPA20 (cab fixed to centre housing)

On the centre housing (Fig. 13)

35. Pull the pin (1) outwards.

Turn finger D towards the front of the centre housing (version with creeper or super creeper unit).

36. Attach the gearbox to the centre housing.

IMPORTANT: If there is resistance when moving the elements (gearbox, centre housing) together, do not force them; find the cause of the problem.

37. Once the elements are joined, remove the guide studs (if fitted).

38. Fit the screws (1) and nuts (2) (Fig. 7) according to the marks made during disassembly.

Tighten the screws and nuts to a torque of 155 - 195 Nm.

39. Engage finger D in the fork of the creeper or super creeper unit (if fitted).

40. Fit a new seal on the screw (2) (Fig. 13).

Lightly smear the thread of the screw (2) with Loctite 242 or equivalent. Tighten the screw moderately.

41. Refit the rod (3) (if fitted).

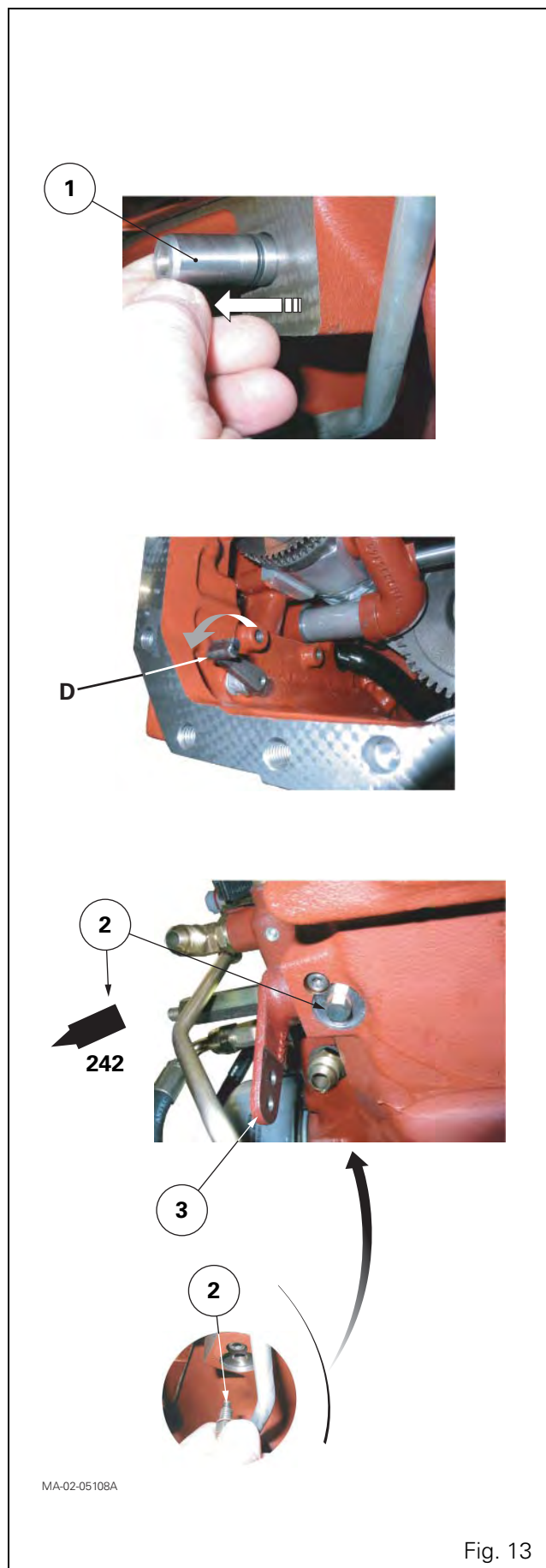


Fig. 13

Splitting GBA20/GPA20 (cab fixed to centre housing)

Final steps

The final steps are not especially difficult.

However, it will be necessary during reassembly to perform the tightening torques, adjustments and tests described below.

- **Tightening torque:**

- Front cab screws (see chapter 12)
- Rear wheel screws or nuts (see chapter 6).

- **Top up:**

- Transmission oil in the housings (check using the gauge located at the rear of the centre housing)
- Coolant, to the maximum level marked on the expansion tank.

- **Adjustment:**

- of the creeper or super creeper gear cable (if fitted),
- of the control rod and cable of the four basic gears,
- of the throttle control cable on the injection pump (4-cylinder engine only).

- **Test:**

- the air conditioning system (if fitted - see chapter 12);
- the mechanical reverse shuttle or Power Shuttle (depending on option),
- the four basic gears,
- the Hare and Tortoise ranges
- the Speedshift,
- the creeper or super creeper unit (depending on option).

- **Check tightness:**

- the mating faces;
- Hydraulic unions

2C13- Splitting GBA20/GPA20 (cab fixed to gearbox)

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Splitting GBA20/GPA20 (cab fixed to gearbox)

Splitting GBA20/GPA20 (cab fixed to gearbox)

A . General

Disconnecting the tractor with the cab fixed to the gearbox is quite similar to disconnecting with the cab fixed to the centre housing. However, all disassembly operations close to the centre housing required to make the rear axle mobile must also be included.

Disconnecting the tractor in this way allows replacement:

- of the rear axle crownwheel and pinion
- of the centre housing.

IMPORTANT: *This section describes a general disassembly procedure. Before and during separation, check that all connections between the fixed assembly and mobile assembly have been disconnected.*

Splitting GBA20/GPA20 (cab fixed to gearbox)

B . Disassembly and reassembly with the cab fixed to the gearbox

Preparation

1. Apply the hand brake.
2. Remove:
 - the side panels either side of the engine,
 - the prefilter,
 - the central exhaust pipe (depending on option),
 - the bonnet (if necessary).
3. Remove the steps.
4. Disconnect the batteries.

Tractors with...	Battery location
Perkins engines 65 to 95 hp	In the grille compartment
Perkins engines 105 hp	Behind the right-hand step.
Sloping bonnet	Behind the right-hand step.

Location of batteries (Fig. 1)



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Fig. 1

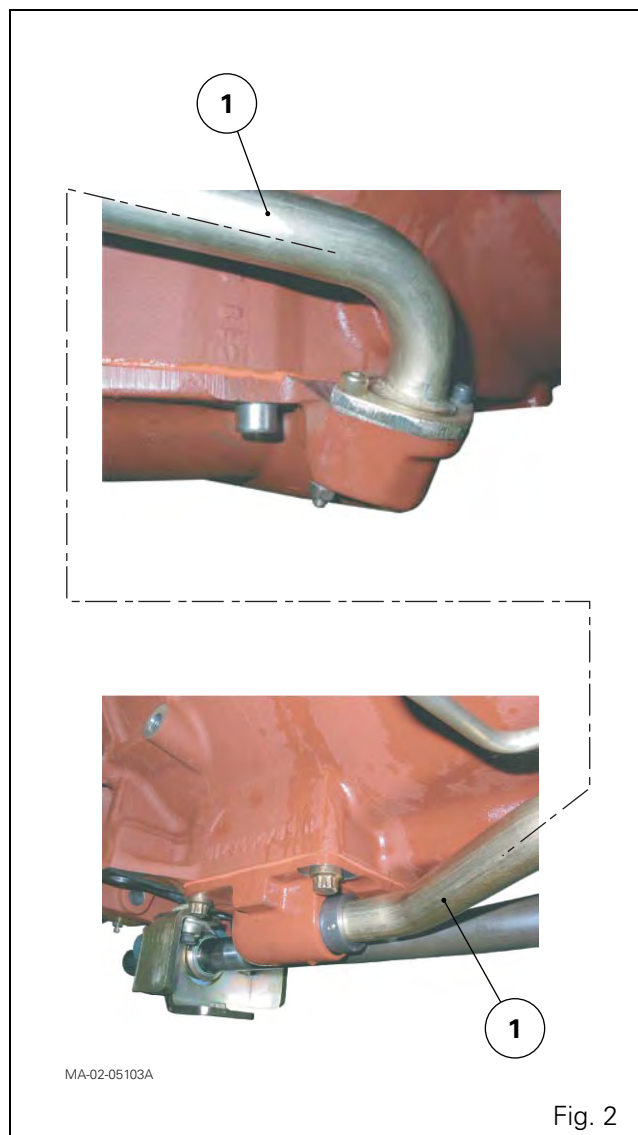
Splitting GBA20/GPA20 (cab fixed to gearbox)

Operations underneath the tractor

5. Take off the guard, 4WD transmission shaft and differential lock supply pipe.
6. Drain the oil from the gearbox and centre housing.
7. Remove the lubrication pipe (1) of the Power Shuttle (if fitted) located between the centre housing and gearbox (Fig. 2).

Operations on the right-hand side of the tractor

8. Remove the batteries and their support located behind the right-hand step.
9. Mark then disconnect:
 - the main pipe (17 bar) to the selector cover plate,
 - the front differential lock hose on the right-hand hydraulic cover plate
 - the return hoses on the selector cover plate
 - the gear cable and rod on the selector cover plate (if necessary)
 - the creeper or super creeper gear cable (depending on option).



Splitting GBA20/GPA20 (cab fixed to gearbox)

10. On tractors fitted with a creeper or super creeper unit (Fig. 3), carry out the following operations.
- Remove the rod (3) (if necessary).
 - Remove the screw (2).
 - Pull the pin (1) outwards in order to free the "D" finger of the final drive fork.
11. Mark and disconnect the electrical connectors on:
- the right and left-hand hydraulic cover plates,
 - the selector cover plate;
 - the Speedshift solenoid valve,
 - Power Shuttle proportional solenoid valves (if fitted).

Operations on the left-hand side of the tractor

12. Mark then disconnect:
- the harness of the fuel gauge on the fuel tank
 - the fuel feed and return hoses on the engine, **immediately** blocking the ports,
 - the vent hose on the fuel tank.
13. Drain the tank (if necessary). Remove it.
14. Disconnect the transmission lubrication supply line (pipes and hoses) located to the front and left of the gearbox.

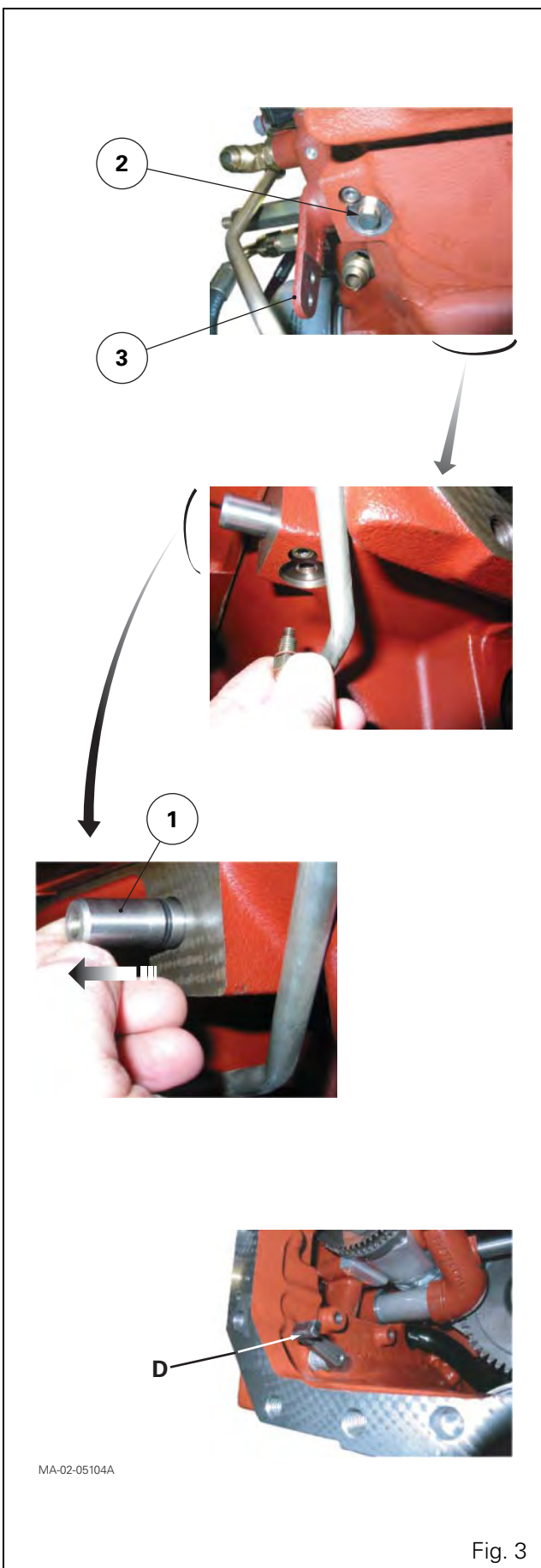


Fig. 3

Splitting GBA20/GPA20 (cab fixed to gearbox)

Operations under the cab

15. Mark then disconnect:

- the right and left-hand brake hoses,
- the control hose of the trailer brake valve (if fitted), **immediately** blocking the ports,
- the hand brake cable,
- the speed sensor connectors (power take-off and forward speed).

Operations at the rear of the tractor

16. Mark and disconnect the control cables:

- of the auxiliary spool valves,
- of the PTO (all versions).

17. Mark and disconnect the connectors:

- of the linkage valve
- of the PTO
- of the draft sensor (top link).

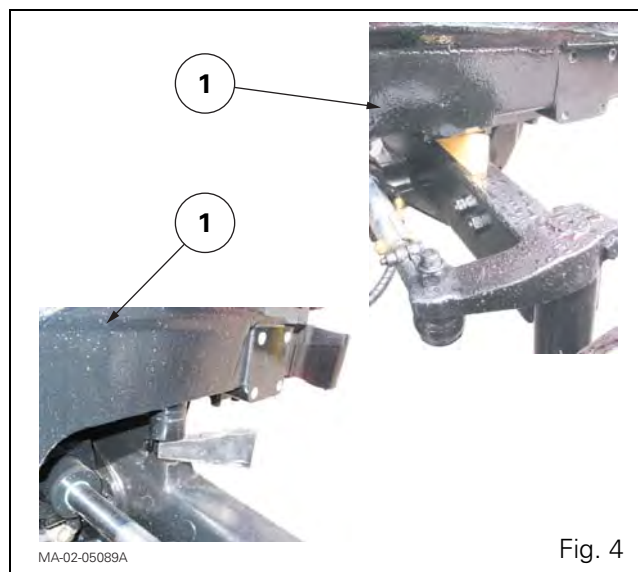


Fig. 4

Preparing for disassembly

18. Cancel the oscillation, depending on assembly:

- of the front axle beam (2WD) or
 - of the front axle (4WD),
- by inserting a suitable wooden block on either side of the frame (1) as shown in [Fig. 4](#).

19. Chock the front wheels.

Splitting GBA20/GPA20 (cab fixed to gearbox)

20. Install (Fig. 5):
- a fixed axle stand at the rear of the gearbox,
 - a mobile axle stand at the front of the rear axle,
 - a mobile axle stand at the rear of the hitch hook.
21. Separate the cab from the right and left-hand rear supports (see chapter 12).
22. Gently lift the cab rear using two straps fitted to the hooks on the rear lower pillars.



DANGER: Make the area around the cab safe by temporarily inserting a wooden chock between each rear support and the right and left-hand cab attachments.

Disassembly

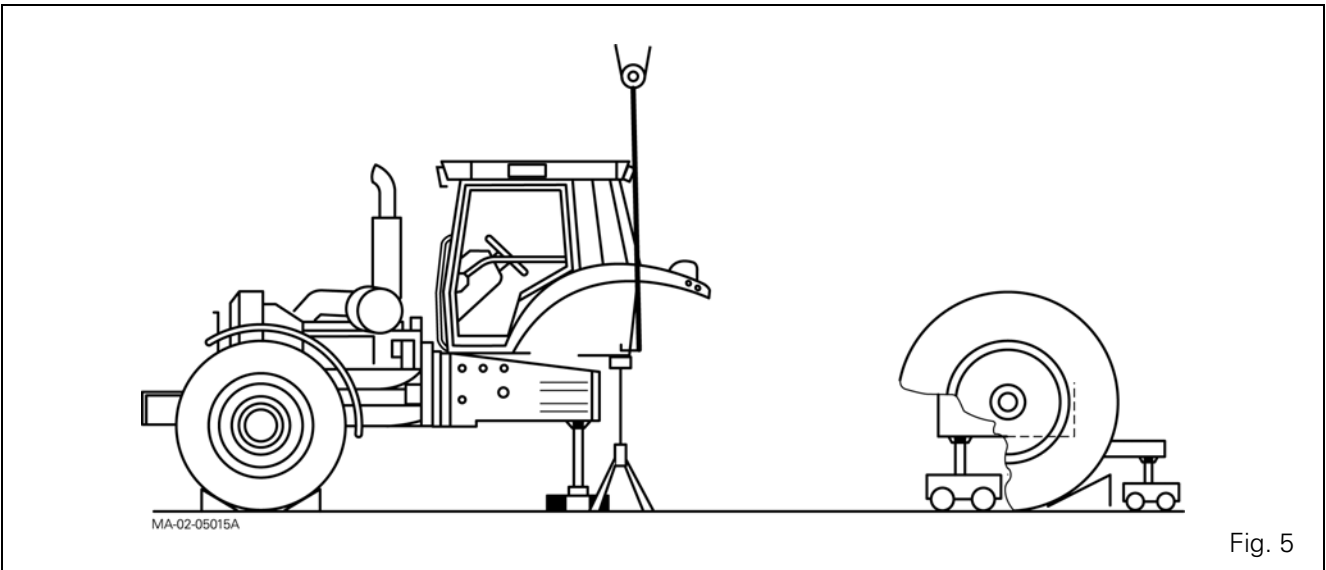
IMPORTANT: During separation, check that all connections (hoses, pipes and harnesses) are disconnected.

23. Remove the screws (1) and nuts (2) fixing the gearbox to the centre housing (Fig. 6). Mark their length and position.

Specifications of the screws and nuts

Screws (1)	Nuts (2)
M14 x 45 mm	M14
M14 x 60 mm	
M14 x 70 mm	

24. Remove the wooden chocks inserted during step 22.
25. Assisted by an operator, separate the assemblies (Fig. 5).
26. Hold the cab still using suitable axle stands positioned under the right and left-hand supports (Fig. 5).



Splitting GBA20/GPA20 (cab fixed to gearbox)

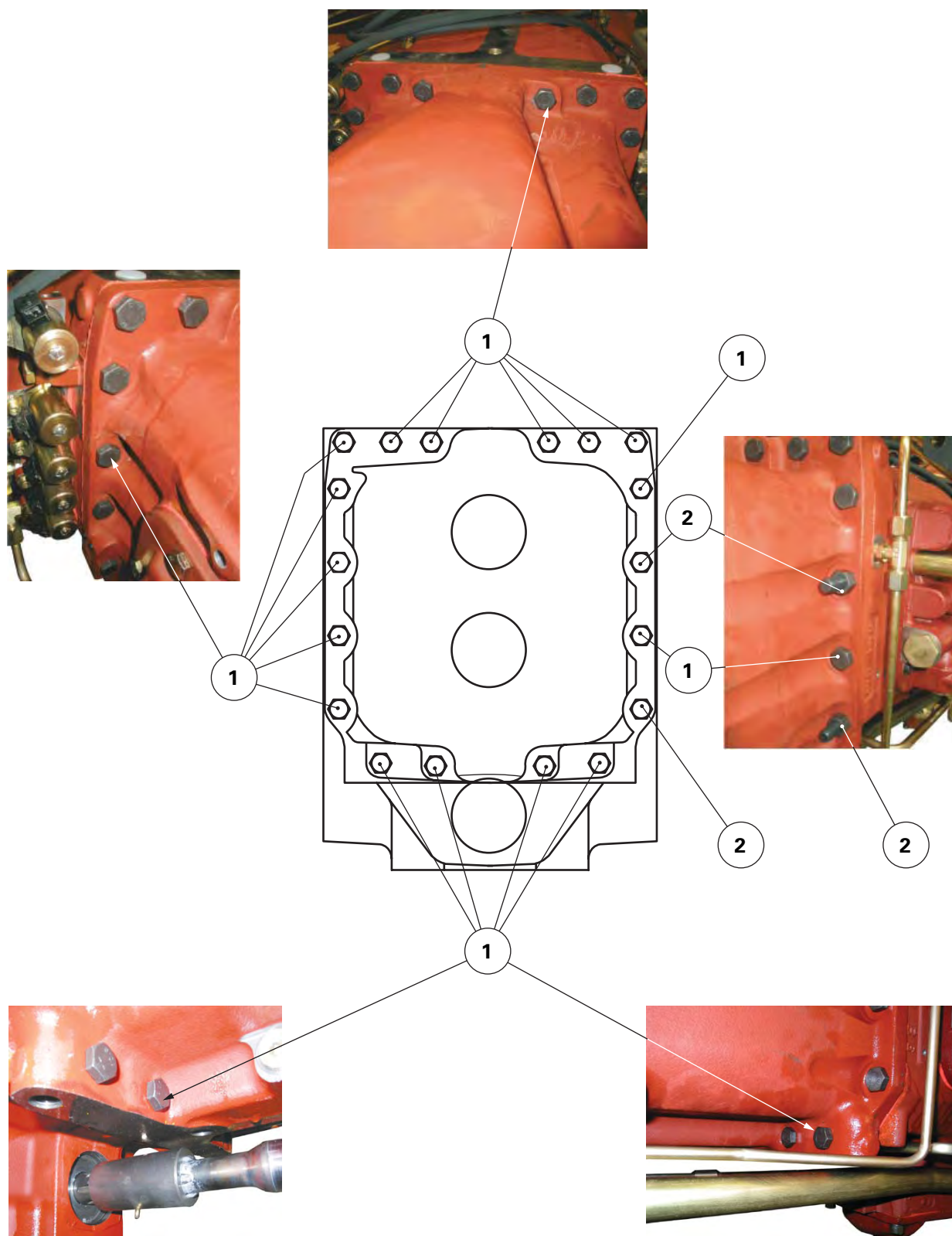


Fig. 6

Splitting GBA20/GPA20 (cab fixed to gearbox)

Reassembly

27. Clean the mating faces of the gearbox and the centre housing.

On the centre housing

28. Check the presence of dowels (4) (Fig. 7).

NOTE: The dowels are force fitted.

29. Position the spring (1) in the PTO clutch (Fig. 8).
30. Smear the mating face of the centre housing with Loctite 5206 or equivalent, avoiding the Hare and Tortoise ports.
31. Replace the "O" rings (2) (Fig. 8).
32. If necessary, screw two diametrically opposed guide studs onto the centre housing.

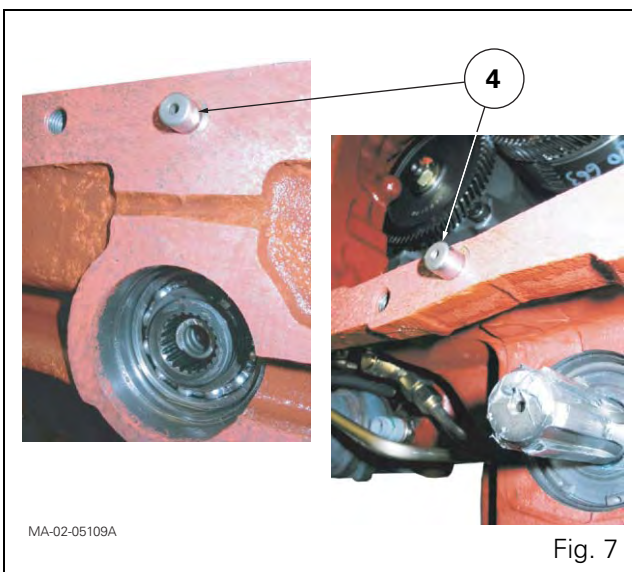


Fig. 7

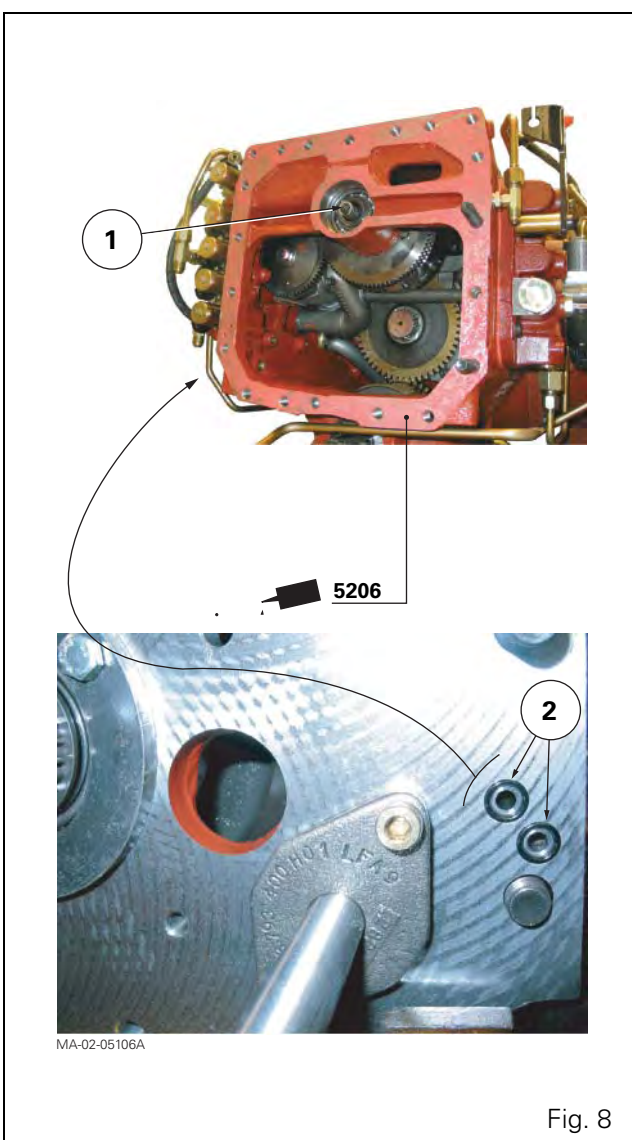


Fig. 8

Splitting GBA20/GPA20 (cab fixed to gearbox)

On the gearbox

33. Check that the PTO shaft is present and positioned correctly.

34. Depending on the option, carry out the following actions.

- **Gearbox without creeper or super creeper unit (Fig. 9)**

Check the correct assembly of the connecting shaft (1) fitted with the sleeves (2) and double pins (3).

- **Gearbox with creeper unit (Fig. 10)**

Check:

- the correct assembly of the connecting shaft (1) fitted with the sleeve (2) and double pin (3),
- that the control mechanism (fork and coupler) is operating correctly in each position.

Push the fork (4) towards the front of the gearbox in direct drive position.

NOTE: The output shaft of the gearbox with creeper unit supports the connecting shaft (1) via the needle roller bearing (5).

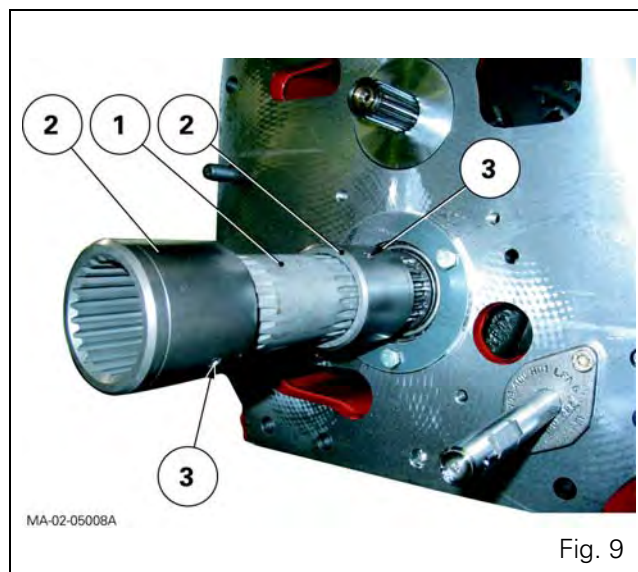


Fig. 9

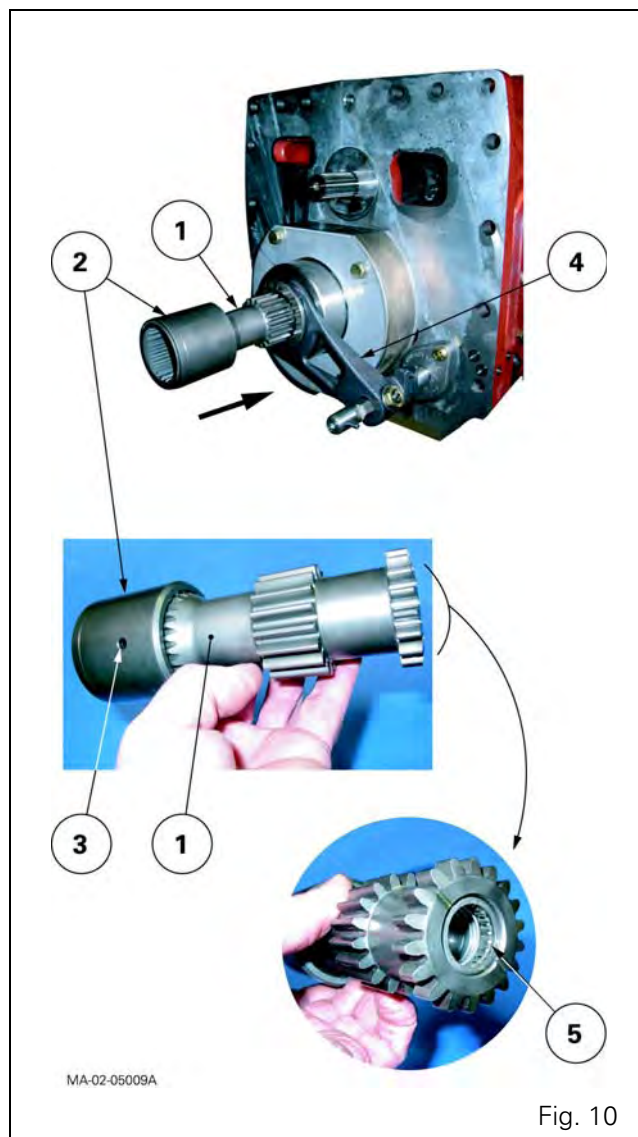


Fig. 10

Splitting GBA20/GPA20 (cab fixed to gearbox)

- **Gearbox with super creeper unit (Fig. 11)**

Check:

- the presence of the connecting shaft (1) fitted with the sleeve (2) and double pin (3),
- that the control mechanism (fork and coupler) is operating correctly in each position.

Push the fork (4) towards the front of the gearbox in super creeper position.

NOTE: The output shaft of the gearbox with super creeper unit supports the connecting shaft (1) via the needle roller bearing (5).

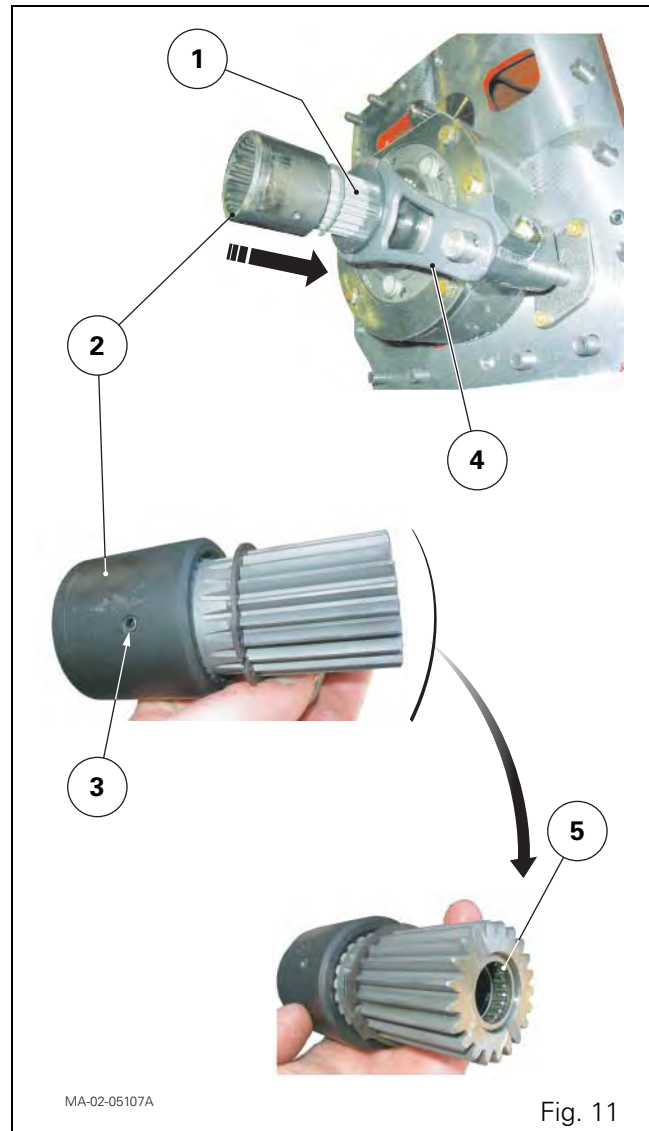


Fig. 11

Splitting GBA20/GPA20 (cab fixed to gearbox)

On the centre housing (Fig. 12)

35. Pull the pin (1) outwards.

Turn finger D towards the front of the centre housing (version with creeper or super creeper unit).

36. Attach the gearbox to the centre housing.

IMPORTANT: If there is resistance when moving the elements (gearbox, centre housing) together, do not force them; find the cause of the problem.

37. Once the elements are joined, remove the guide studs (if fitted).

38. Fit the screws (1) and nuts (2) (Fig. 6) according to the marks made during disassembly.

Tighten the screws and nuts to a torque of 155 - 195 Nm.

39. Engage finger D in the fork of the creeper or super creeper unit (if fitted).

40. Fit a new seal on the screw (2) (Fig. 12).

Lightly smear the thread of the screw (2) with Loctite 242 or equivalent. Tighten the screw moderately.

41. Refit the rod (3) (if fitted).

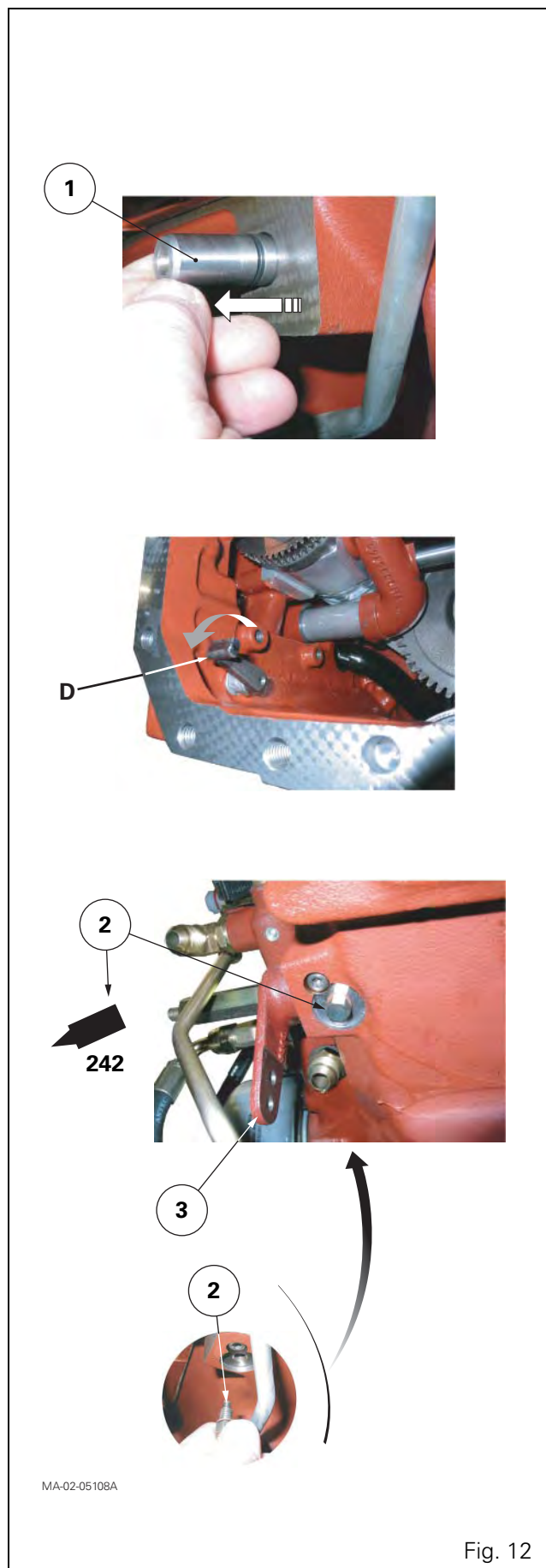


Fig. 12

Splitting GBA20/GPA20 (cab fixed to gearbox)

Final steps

The final steps are not especially difficult.

However, it will be necessary during reassembly to perform the tightening torques, adjustments and tests described below.

- **Tightening torque:**

- Front cab screws (see chapter 12)
- Rear cab screws (see chapter 12)
- Rear wheel screws or nuts (see chapter 6).

- **Top up:**

- Transmission oil in the housings (check using the gauge located at the rear of the centre housing)
- Coolant, to the maximum level marked on the expansion tank.

- **Adjustment:**

- of the creeper or super creeper gear cable (if fitted),
- of the control rod and cable of the four basic gears.

- **Test:**

- the air conditioning system (if fitted - see chapter 12);
- the mechanical reverse shuttle or Power Shuttle (depending on option),
- the four basic gears,
- the Hare and Tortoise ranges
- the Speedshift,
- the creeper or super creeper unit (depending on option).

- **Check tightness:**

- the mating faces;
- Hydraulic unions