

Workshop Manual

HP
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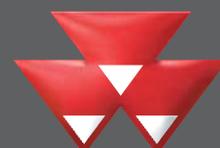
MF5650

Combines

Models: MF 5650 Advanced - MF 5650 Advanced SR



INNOVATION - COMMITMENT - PROXIMITY - VISION - RELIABILITY - LEADERSHIP - SUPPORT - TECHNOLOGY



MASSEY FERGUSON

Machine models applied

MF 5650 Combines

Variations

- With tangential trail (Grain version) - Fig.. 1.
- With trail system and separation by double rotor: Rice version, SR - Figs. 2 and 3.
- Traction 4x2 and 4x4.
- With wheel double or tracks.



Fig. 1



Fig. 2



Fig. 3

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Variable drive

A. Introduction

The variable drive function is to provide the working combine with a range of speed variations in the same selected gear without altering engine rotation.

It consists of a variable pulley assembly (2) mounted on a movable support (1) and controlled by a hydraulic cylinder (17), located behind the support. It operates with two belts: the upper belt (6), coming from the power intake, and the lower belt (7) which leads to the clutch pulley.

The system also has a spring assembly (11) that maintains automatic belt tensioning, helped by a ratchet (9) that keeps the assembly stable when it is working.

The hex adjustable tie rod (4) on the top adjusts the maximum and minimum belt penetration in the pulleys at the minimum and maximum speed positions.

See the final part of this Section..

04

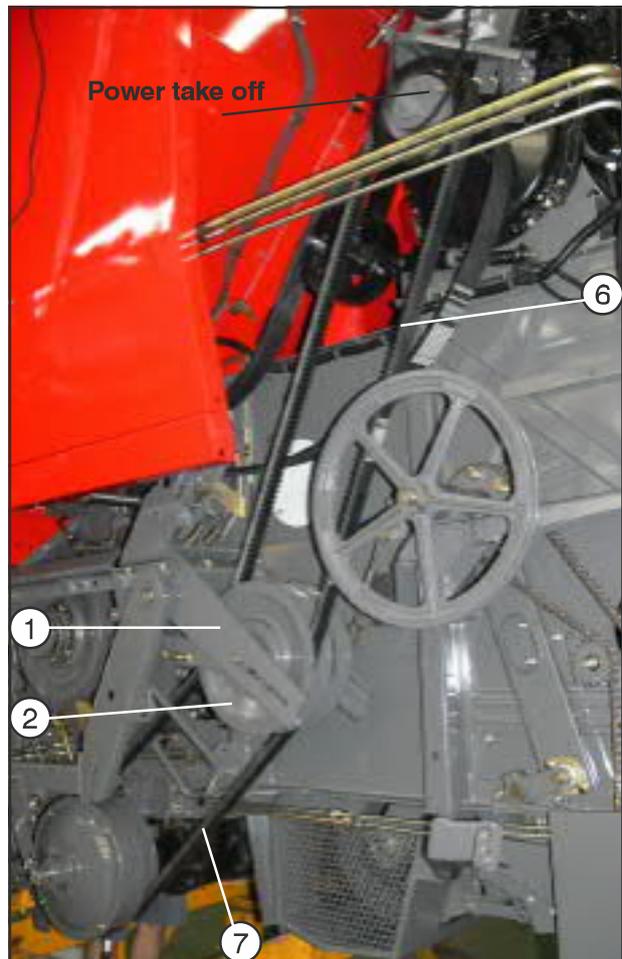


Fig. 1

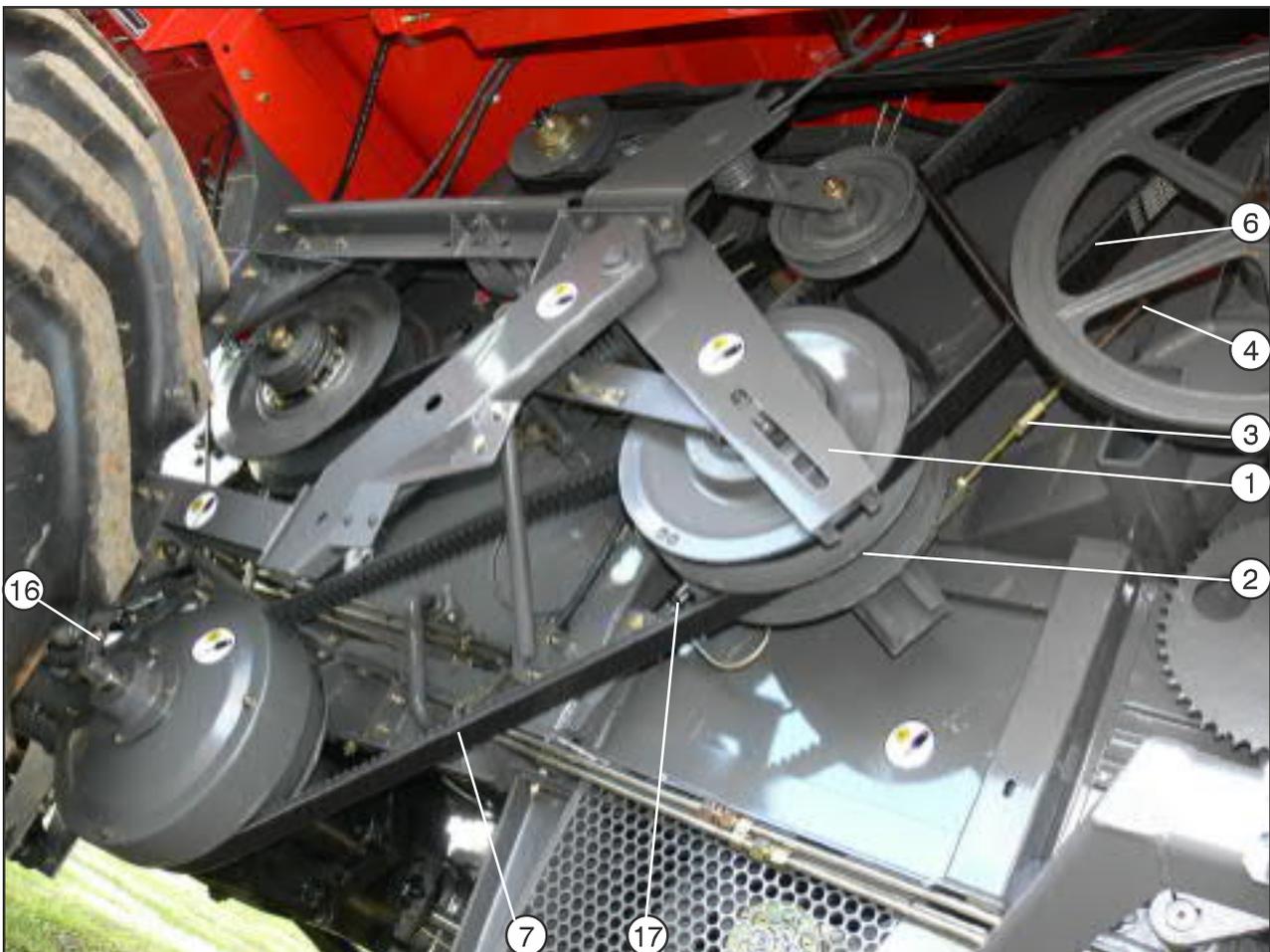


Fig. 2

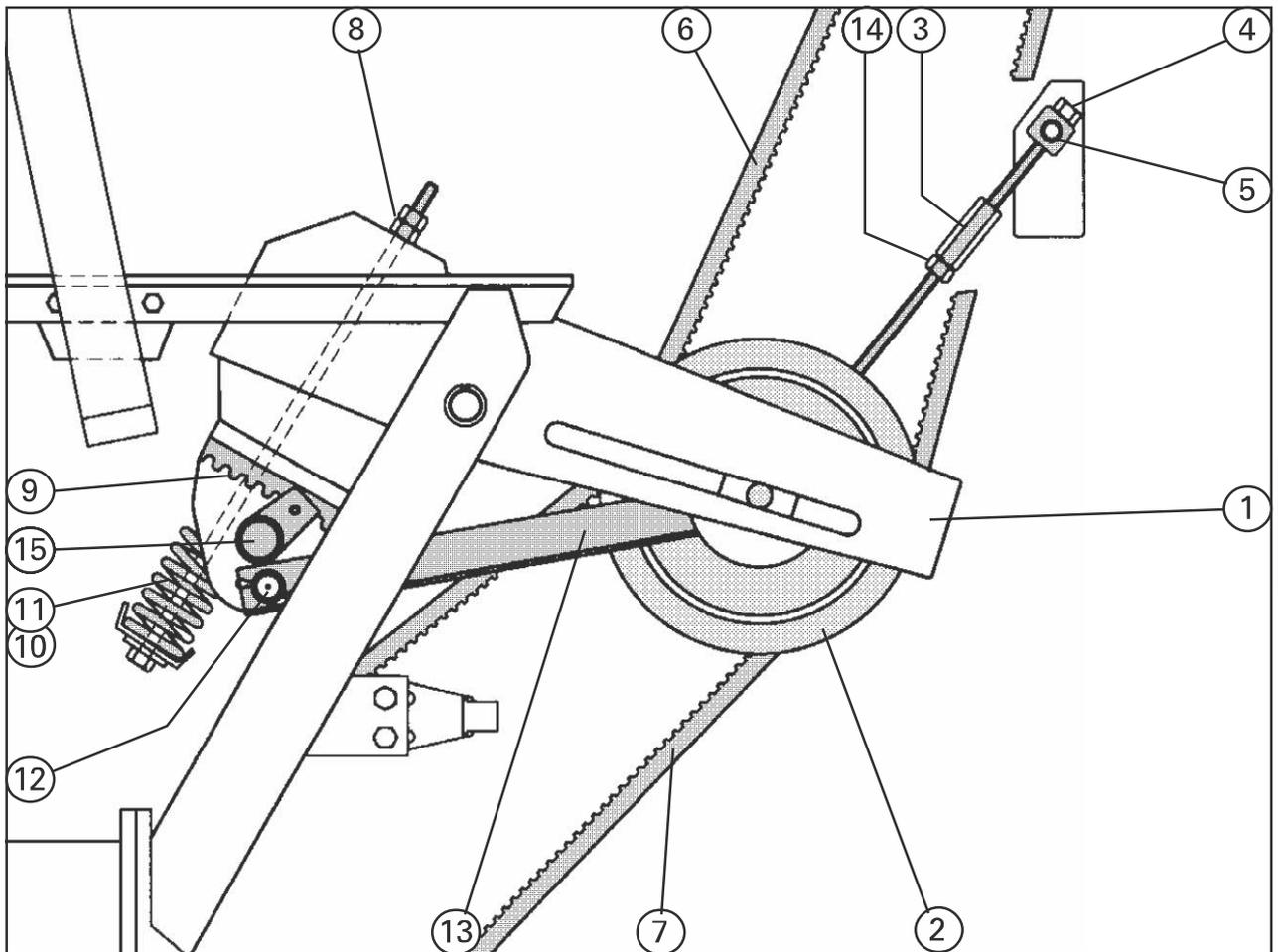


Fig. 3

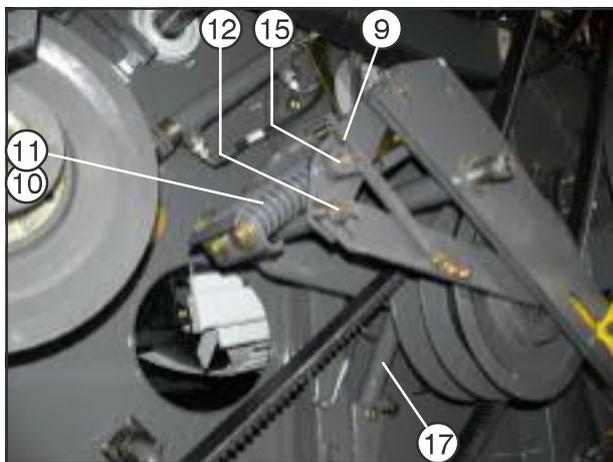


Fig. 4

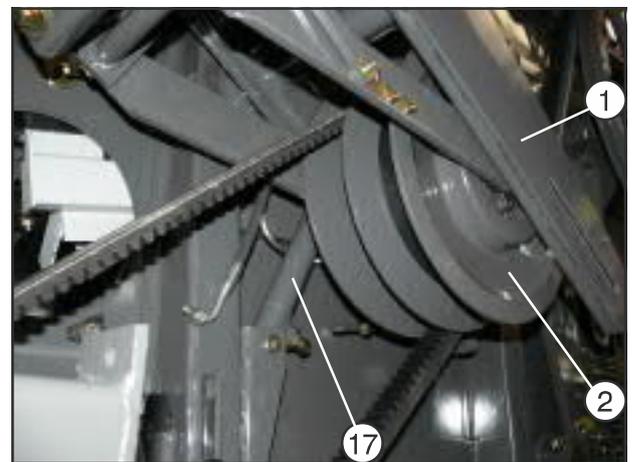


Fig. 5

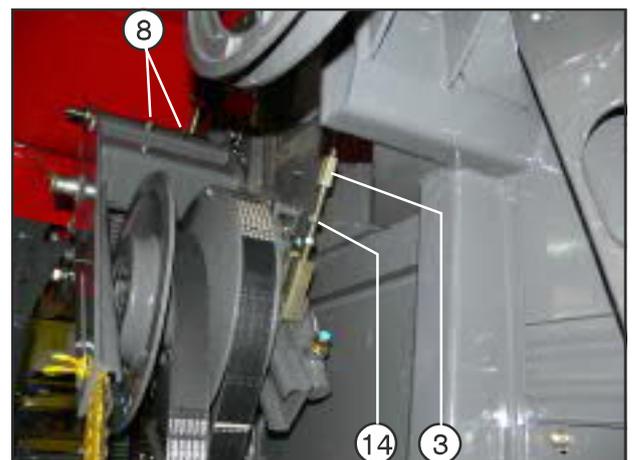


Fig. 6

B. Variable drive belts change

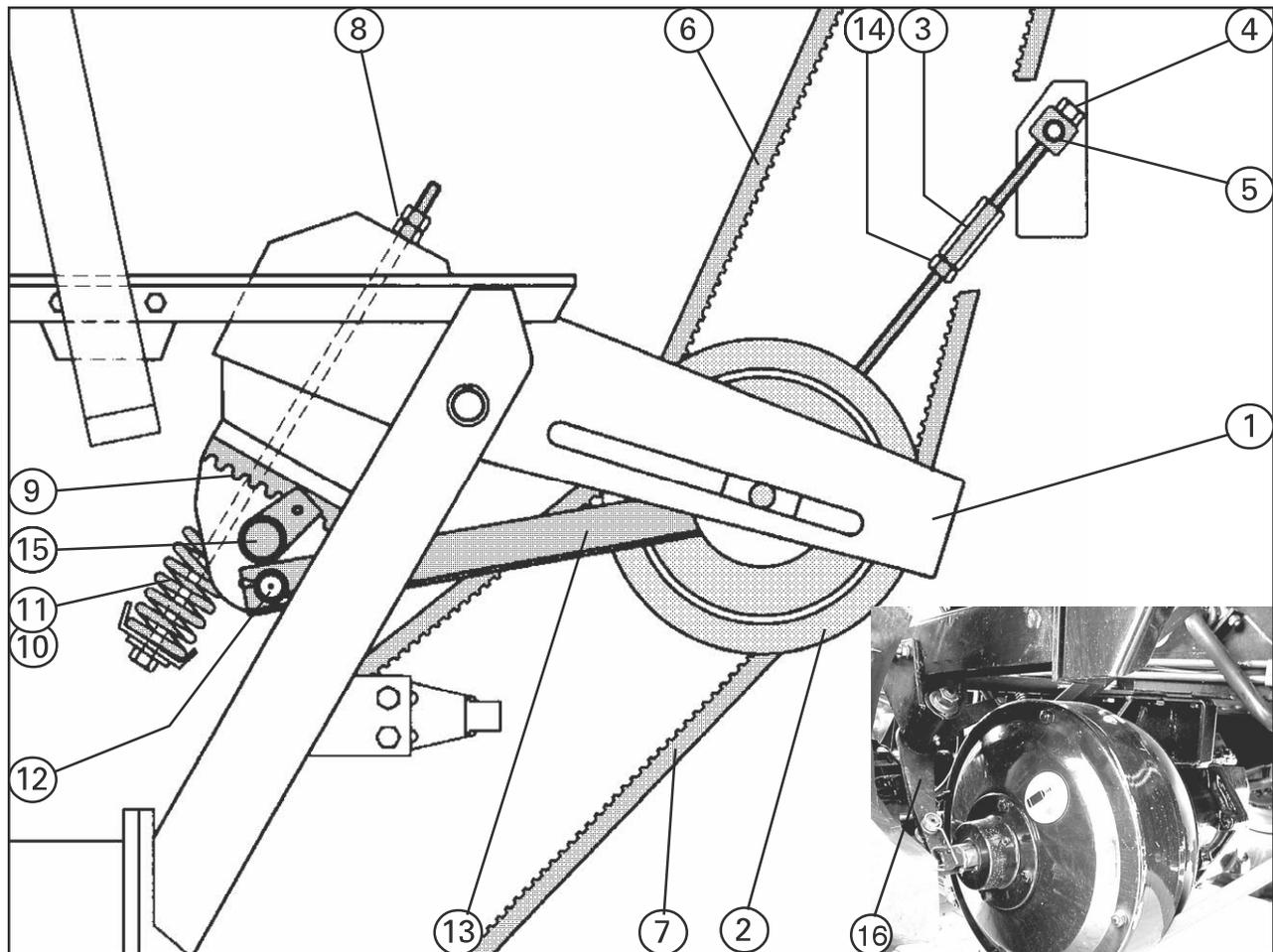


Fig. 1

- a) Run engine and put variable drive (2) in maximum speed position.
- b) Stop the engine and remove the two spring assembly (11) and the ratchet (9).
- d) Loosen the adjusting bolt (4) from the variable drive regulator; Then, loosen the tie rod (16).
- f) Push the variable pulley assembly (2) upwards and remove the upper belt (6) from the power take off pulley.
- g) Lower the variable pulley assembly and remove the lower belt (7) from the clutch pulley.
- h) Remove the cotter pin and the axle (12).
- i) Remove the variable pulley assembly from belts (6 and 7).
- c) Push the variable pulley assembly, putting the upper belt (6) on the power take off pulley and the lower belt (7) on the clutch pulley.
- c) Position the tie rods (13), insert the axle (12), and fix it with the cotter pin.
- d) Install the spring assembly (11) and ratchet (9).
- e) Compress the springs (11) with the nuts (8) until the spacer (10 - inside the spring) touches the upper bracket and tighten the locknuts (8).
- f) Tighten the locknuts (8).

NOTE: the spacer function (10), inside the springs (11), is to assign its maximum load, i.e., the drive belts stretching. The stopper must always be against the upper supporting member, so that the belts stretching is always constant.

To install new drive pulleys:

- a) Put the upper belt (6 - long) in the outer "V" of the variable pulley assembly, and the lower belt (7 - short), in the inner "V".

Make sure that the pulley axle greaser stays on the outer side.

- b) Put the variable pulley assembly with the belts into the channels of bracket (1) of the variable drive.

- g) Put the clutch tie rod in place and adjust it.
- h) Adjust the variable drive travel, as described in Chapter H.

C. Variable drive removal



ATTENTION!

Always use the proper devices, and observe the correct safety precautions when handling heavy components, like the variable pulleys!

Serious accidents can result from lack of care.

Before starting the services, block the equipment with wooden wedges under the wheels and remove the key from the ignition switch!

Use the previous pictures as a guide.

- a) While engine is working, place the variable drive at the maximum speed and turn off the engine.
- b) Disassemble the ratchet (9), releasing the spring tensioning bolt (8) nuts (11) and remove the springs.
- c) Release the cotter pin from the transverse shaft (12) of the support (1) and remove the shaft.
- d) Release the hydraulic cylinder (17) and the hex (4) from the support and the tie rod from the variable drive throw.
- e) Lift the support (1) and pulleys (2) and remove the power intake pulley upper belt (6).
- f) Lower the support (1) and remove the pulleys assembly.

NOTE: To totally remove the lower belt (7), it is necessary to remove the operating lever (16) from the drive clutch.

Variable drive

D. Variable drive pulley components identification

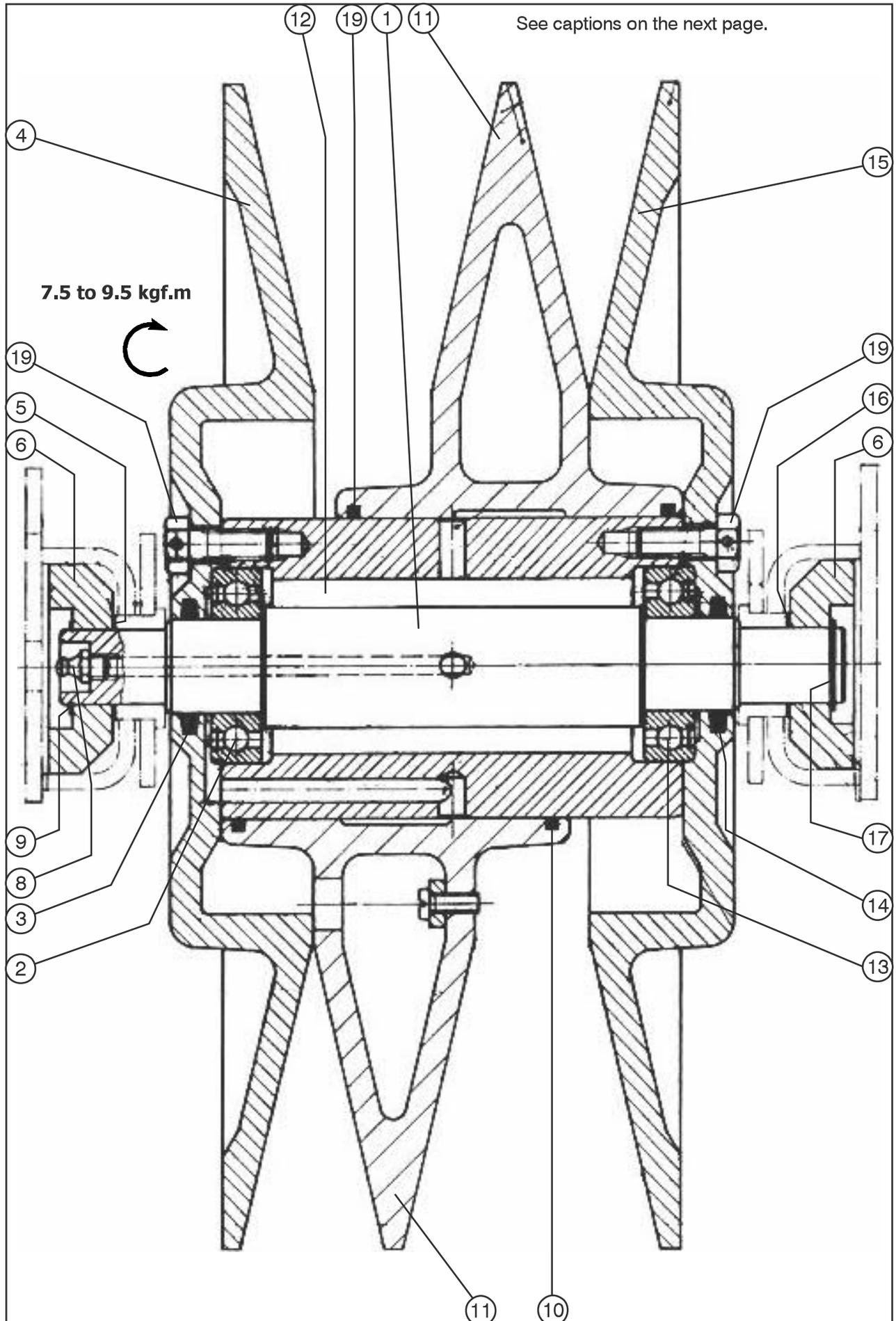


Fig. 1

- 1 - Pulley propping shaft
- 2 - Outer ball bearing.
- 3 - Felt ring.
- 4 - Outer semi-pulley.
- 5 - Washer.
- 6 - Shaft fastening blocks (1).
- 7 - Locking nuts and bolts.
- 8 - Greaser pin.
- 9 - Outer snap ring.
- 10 - O-rings.
- 11 - Sliding pulley
- 12 - Central hub.
- 13 - Inner ball bearing.
- 14 - Felt ring.
- 15 - Inner semi-pulley.
- 16 - Washer.
- 17 - Inner snap ring.
- 18 - Bolts locking wire.
- 19 - Pulley closing bolts.

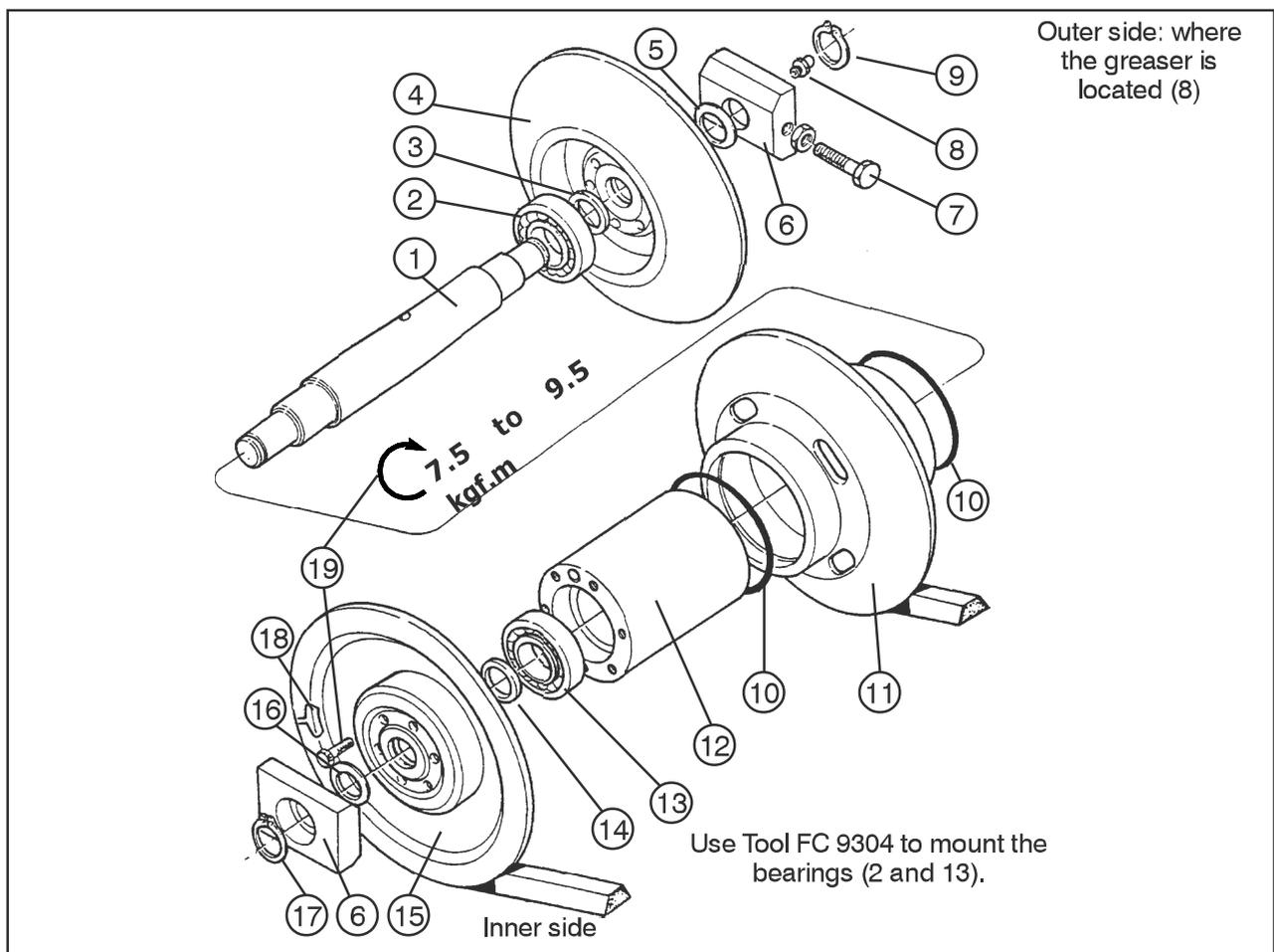


Fig. 2

E. Disassembly

- a) Remove the snap rings (9 and 17) from the shaft ends (1).
- b) Remove the supporting blocks (6) and the washers (5 and 16).
- c) Remove the pulley bolt (19) locking wires (18) and dismantle the whole assembly observing the pictures above.

NOTE: although some parts are symmetric, when dealing with an assembly that has worked for several hours, it is recommended to mount them on the same side. Therefore, it is advisable to identify them according to the side: inner or outer

The parts are the following: the half pulleys (4, 11 and 15) and the hub (12).

The shielded side of the ball bearings (2 and 13) must be facing away from the pulleys

F. Components inspection

- Check the bearings (2 and 13) and the shaft (1) to see if they are worn or cracked. It is a good idea to replace the bearings if the assembly has been used for many hours.
- Pay special attention to the hub (12); the central pulley (11) must slide freely on the hub and there may not be sharp edges or dents.
If there is any irregularity, replace the assembly. Excessive play between hub and pulleys may overheat the whole assembly.
- Check the pulley general condition (4, 11 and 15): the surfaces where the belts work should not present porosity or bumps that may damage the belts.
- Always mount with new sealing rings (10).
- Replace the felts (3 and 14) protecting the pulley bearings.
- Blow compressed air through the shaft channel (1) to make sure it is not obstructed.

G. Pulleys assembly

- Mount the shaft (1) with the bearings (2 and 13) in the hub (12), keeping the bearing shielding facing the pulleys:
- Mount the intermediate pulley (11) on the hub. Be careful with the sealing rings (10). Grease them to facilitate assembly.
- Mount the felt rings (3 and 14) with the pulleys (4 and 15) respectively.
- Apply *LOCTITE 271* on the bolts threads (19) and screw the bolts and semi-pulley (4 and 15) on the hub (12). Tighten the bolts to **7.5 a 9.5 Kgf.m.** torque:
- Lock the bolts (19) with the wires (18), two by two, making sure the wire tips do not interfere with the other parts.
- Mount the pulley lateral arms and make sure the arm with the ratchet mount faces outwards (considering the assembly in the machine).
- Mount the sliding bearings (6) and put the snap rings (9 and 17) on the shaft tips (1).
- Also remember that the sliding bearing that contains the shaft (1) locking bolt (7) and the greaser (8) must be in the arm that is external to the support (towards the outer side of the machine), as you can see in the drawings.

NOTE: Remember to mount the components in the original position, according to what is recommended in "Disassembly," based on the identifications made : inner and outer sides.

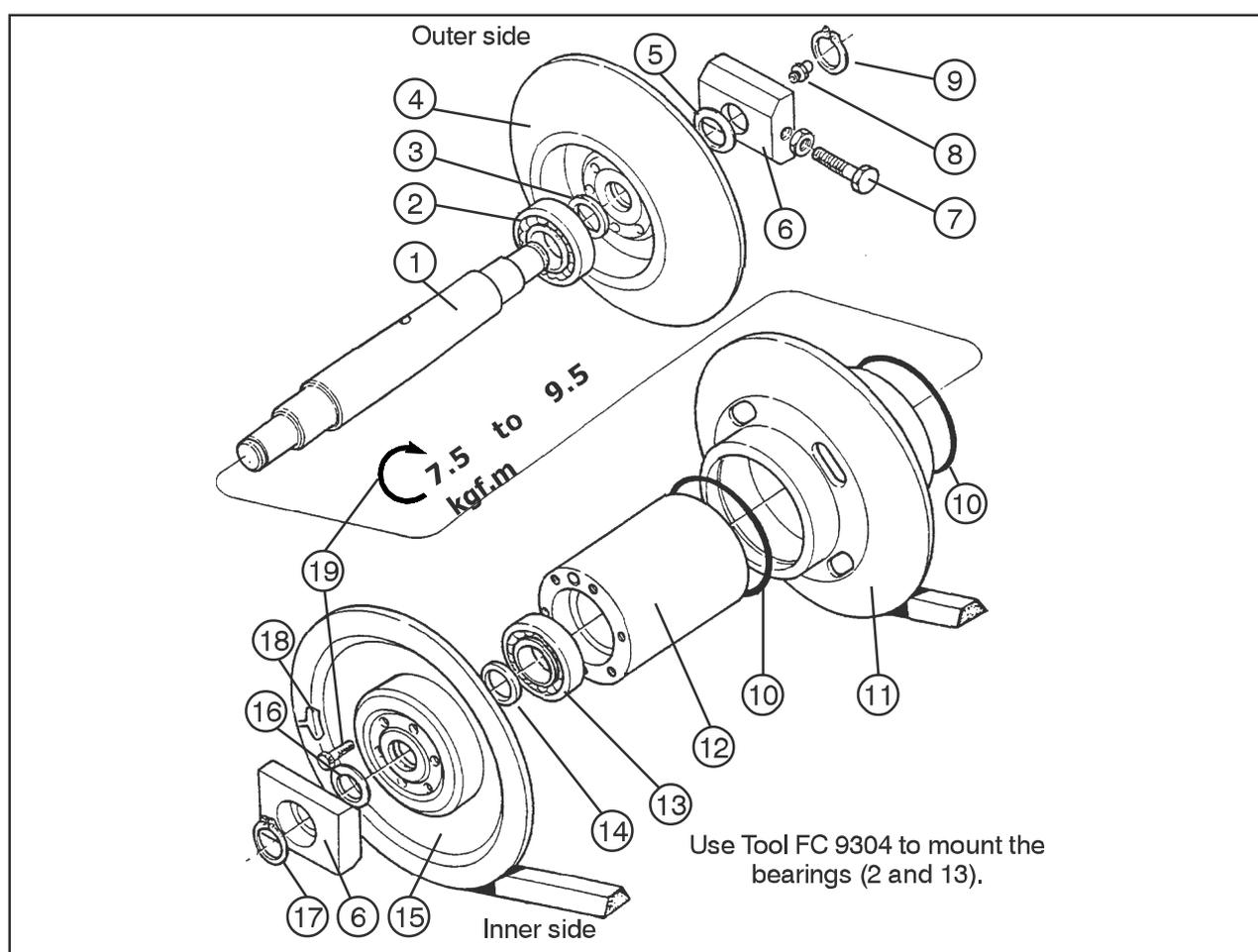


Fig. 1

Variable drive

H. Reinstalling the assembly in the machine

Match the belt to the pulleys in the following order:

- Upper belt (long - 6), on the outer channel of the variable pulley assembly; lower belt (short - 7), on the inner channel of the assembly.
- Match the sliding bearings (18) on the trestle gutter (1), place the upper belt (6) on the power intake pulley and the lower belt (7) on the drive clutch pulley.
- Position the pulley lateral arms (13), place the transverse shaft (12), and lock it with a cotter pin.
- Connect the hydraulic cylinder rod (behind the support 1) and the adjusting tie rod (4) on the support (1).
- Install the tensioning springs (11) and tighten the tensioning bolt nuts (8) until the belts have some tension.

NOTE: spin the assembly a few turns so that the belts settle on the pulleys. To achieve this, start the engine for short periods, observing safety rules.

Next, finish tightening the springs (11) until the inner stopper (inside the springs) touch the mounts top.

Lock the locknuts (8).

- Adjust the variable drive, as described in Chapter 1.

The adjustment is to allow the belts penetration, as shown in Fig. 2, i.e., from 2 to 4 mm from the pulleys outer face.



NOTE:

During the assembly, it is possible to make a pre-adjustment, which makes easier and faster the final adjustment, described below,

This pre-adjustment must be according to the dimension in the Fig. 3, corresponding to the tie rod (4) and spindle (3).

The measures are in mm.

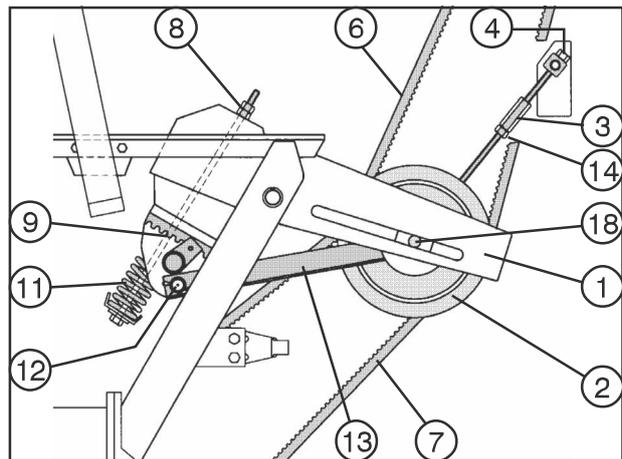


Fig. 1

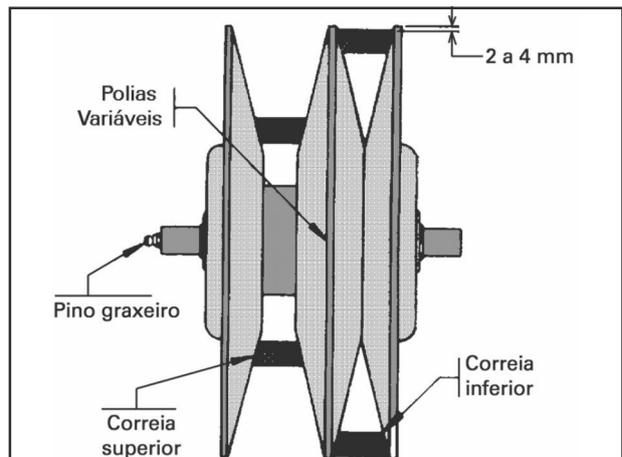


Fig. 2 - Maximum advancing position

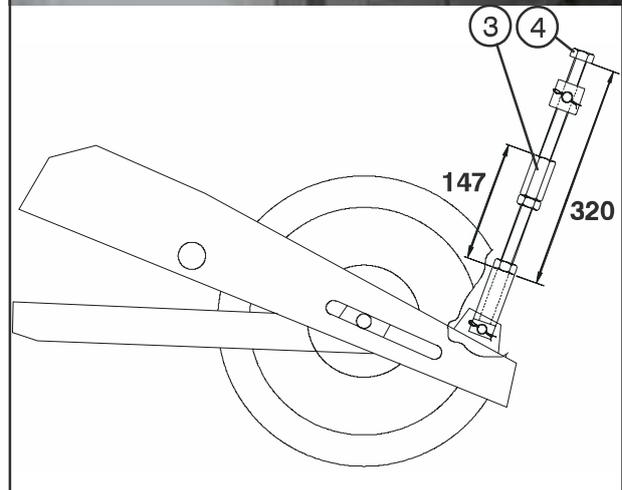


Fig. 3

I. Variable drive adjustment

Adjust it on maximum speed position.

- Put the variable drive in the maximum speed position. - Fig. 1A
The lower belt (7) should sit 2 to 4 mm below the rim of the variable pulleys.
- If the belts penetration is not correct, adjust it through the bolt (4), which determines the travel of the variable drive against the stopper (5).

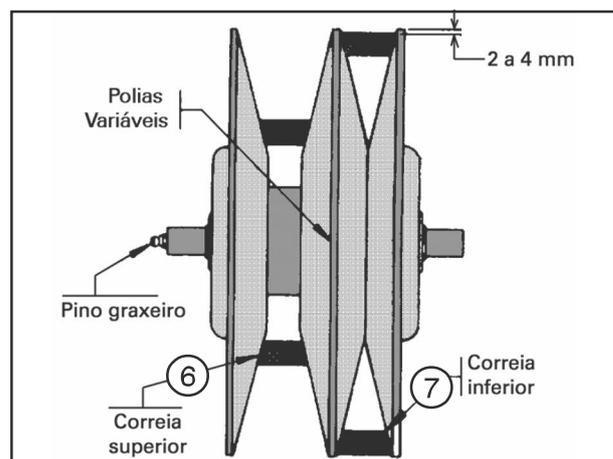


Fig. 1A - Maximum speed

Adjust it on minimum speed position.

- Put the variable drive in the minimum speed position. - Fig. 1B
The lower belt (6) should sit 2 to 4 mm below the rim of the variable pulleys.
- If the belts penetration is not correct, adjust the spindle (3) against the stopper (5). After adjustment, retighten locknut (14).

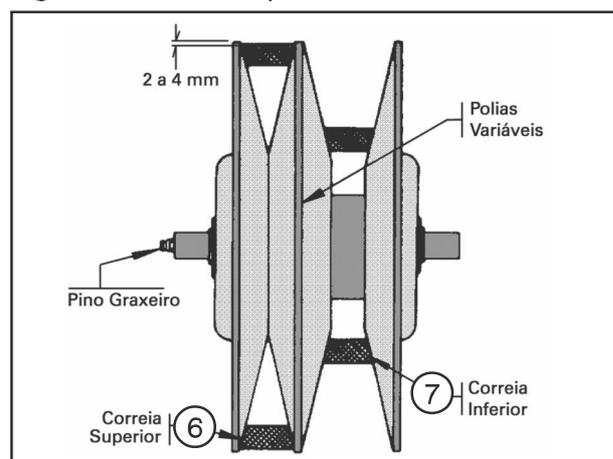


Fig. 1B - Minimum speed

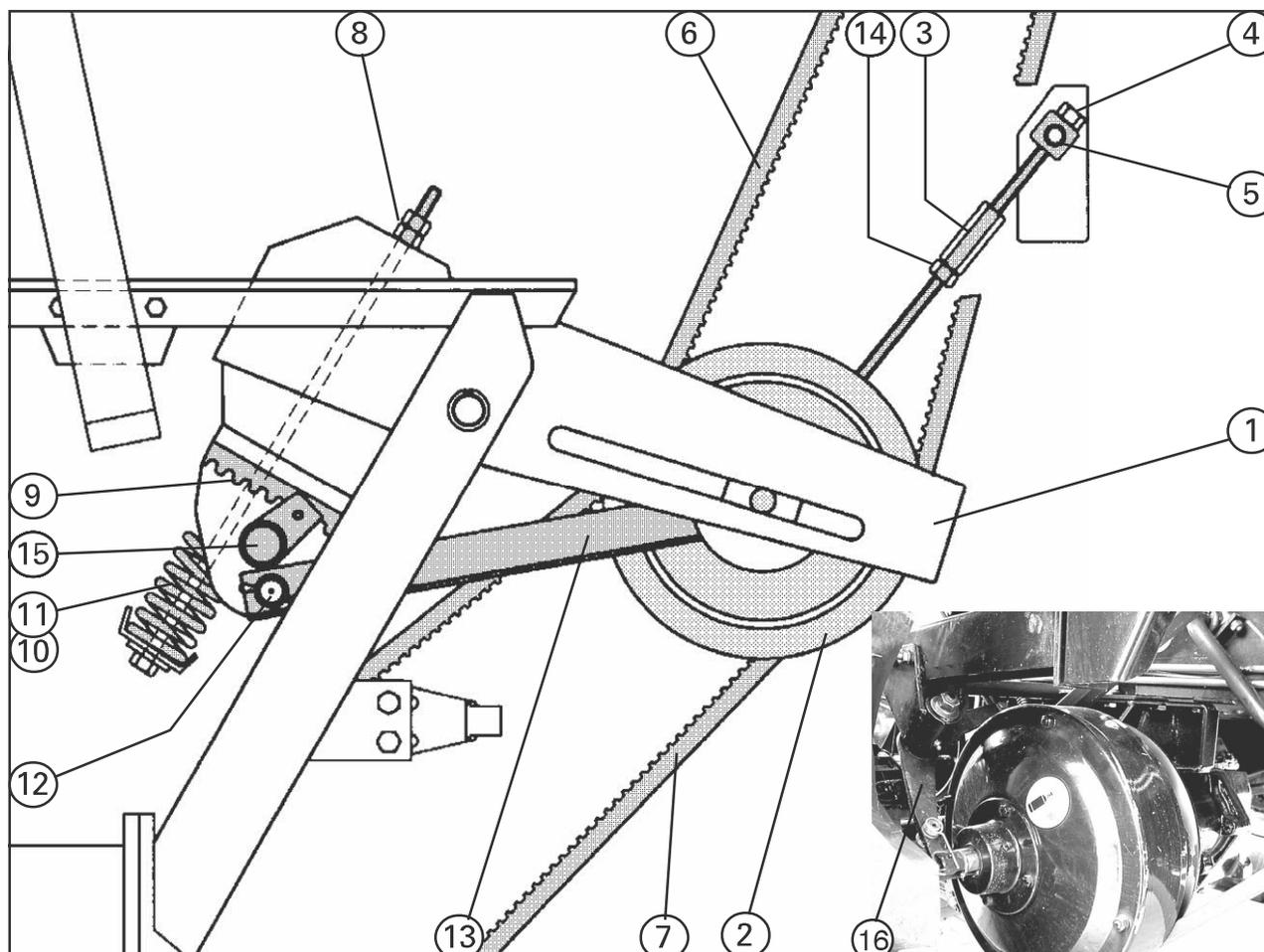


Fig. 2

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Clutch

A. Introduction

The drive clutch is located at the machine's left side, and it is mounted on the pulley of the reversing gearbox shaft.

It receives motion through the variable drive lower belt.

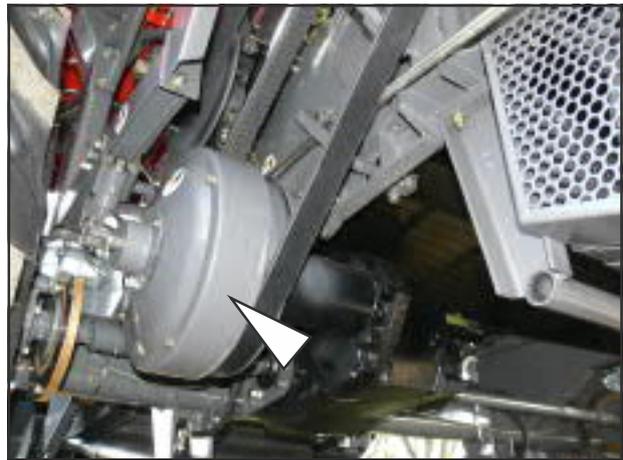


Fig. 1

1. Components identification

1 - Clutch cover

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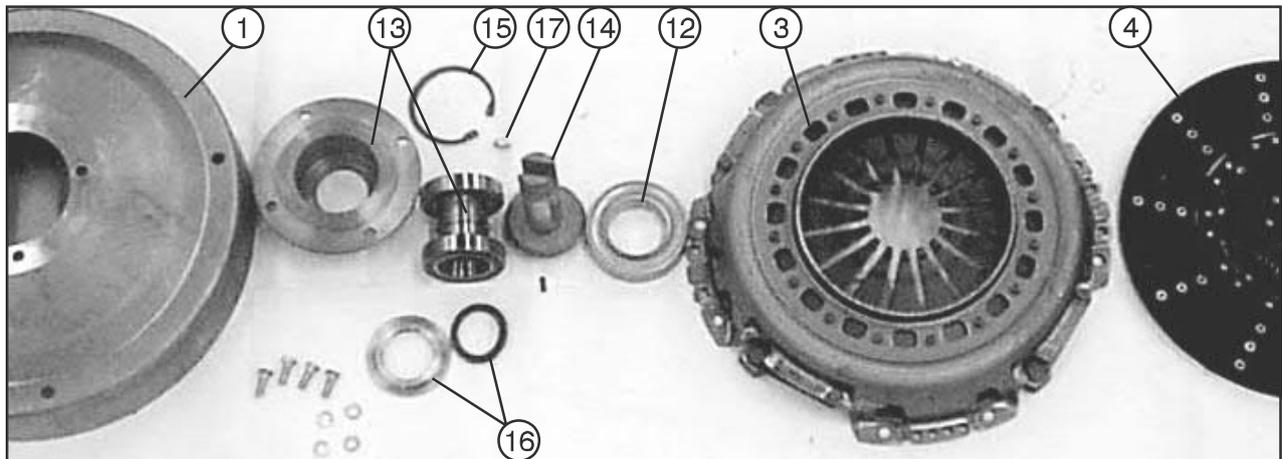


Fig. 2

2 - Nuts and studs fastening the cover (1) and plate assembly (3)

3 - Pressure plate assembly

4 - Fiber clutch disc

5 - Pulley from the variable drive: see Section 04A01.

6 - Pulley.

7 - Snap ring.

8 - Shielded ball bearings.

9 - Spacer ring.

10 - Felt sealing ring.

11 - Snap ring.

12 - Collar bearing.

13 - Bearing allowing operating pin to slide (14).

14 - Clutch collar operating pin.

15 - Snap ring.

16 - Felt oil seal ring.

17 - Pin restrictor (14).

18 - Fastening bolts.

19 - Gearshift drive via reversing box.



Fig. 3

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