WORKSHOP MANUAL

450 - 4500 - 550 - 560 - 5600 - 1750 - 2250 Transporters

Emak®
our **power**, your **passion**

450 - 4500 - 550 - 560 - 5600 - 1750 - 2250 Transporters

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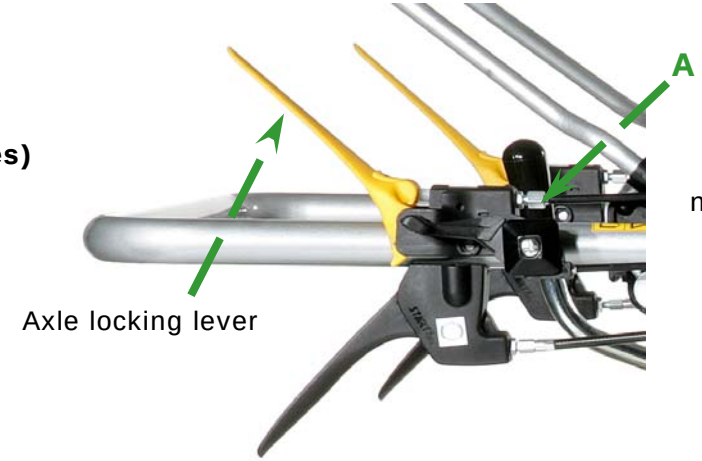


The lever need 1 mm of play before release

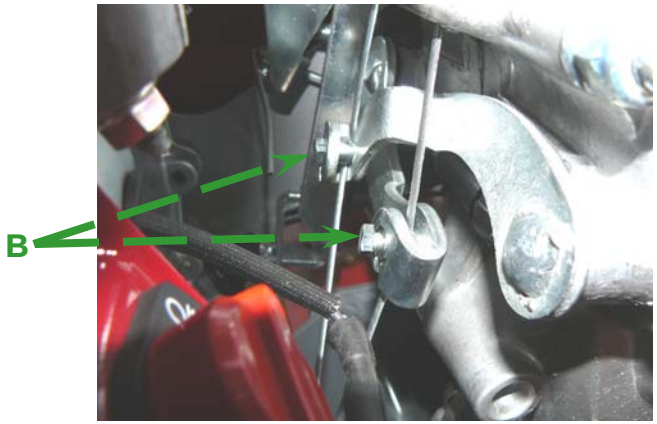
a) Axle locking lever (plastic handles)

Every 20 hrs check the correct adjustment:

1. Loosen the lock nut and removal the cable tension, tighten completely the adjuster **A**. Loosen screws **B** pull the cable out to maximum extension
2. Loosen adjuster **A** to have the necessary play of the cable.

Check the release of the semi axle

3. Tighten the lock nut

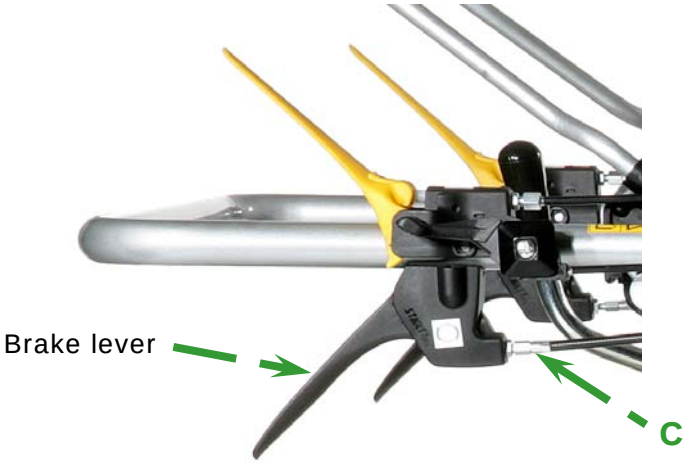


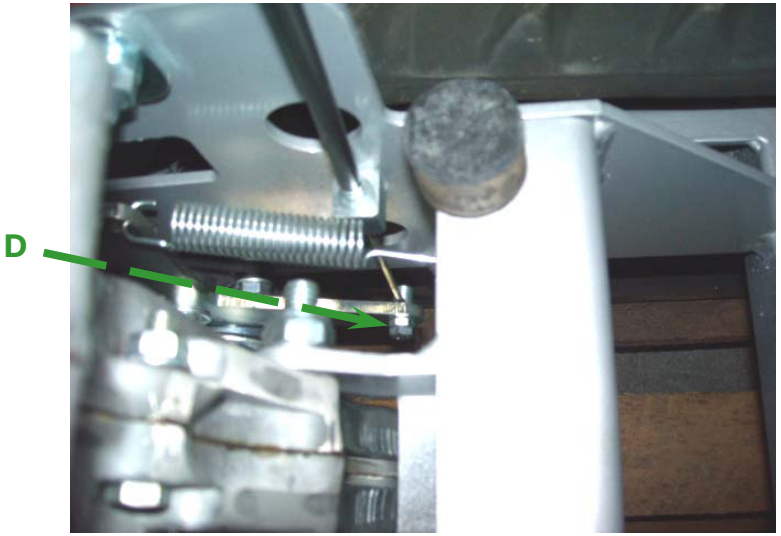
b) Brake lever (plastic handles)

Every 20 hrs check the correct adjustment:

1. Loosen the lock nut and remove the cable tension, tighten completely the adjuster **C**. Loosen the screw **D**, pull the cable out to maximum extension
2. Loosen adjuster **C** to have the necessary play of the cable
   Check the tracks lock
3. Tighten the lock nut

N.B. If after adjustment the tracks do not lock, check the condition of the brake shoes (point **I**)



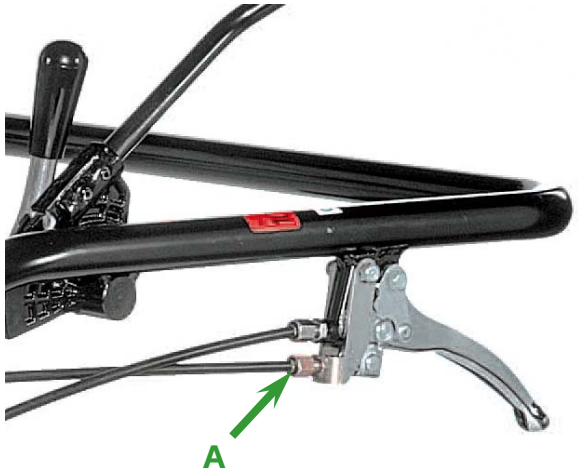


c) Axle locking lever and brake (steel handles)

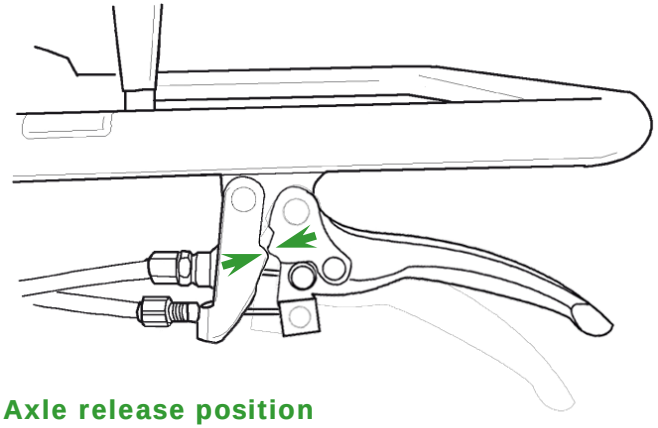
- **Axle locking lever adjustment**

Every 20 hrs check the correct adjustment:

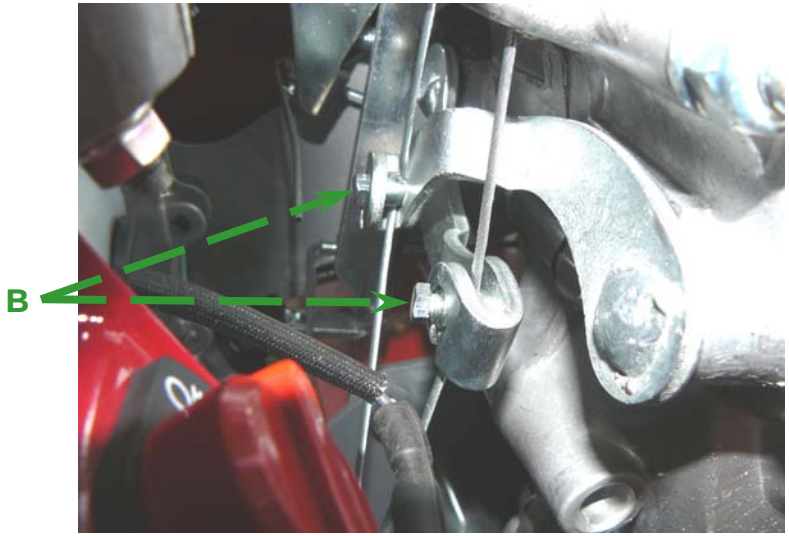
1. Place the lever in the free position (see picture). Loosen the lock nut and remove the cable tension, tighten completely the adjuster **A**. Loosen the screw **B** and pull cable out to maximum extension
2. Loosen adjuster **A** to have the necessary play for the axle lock.
   Control correct adjustment by testing machine
3. Tighten the lock nut



The levers need to have 1 mm of play before the release of the differential



Axle release position

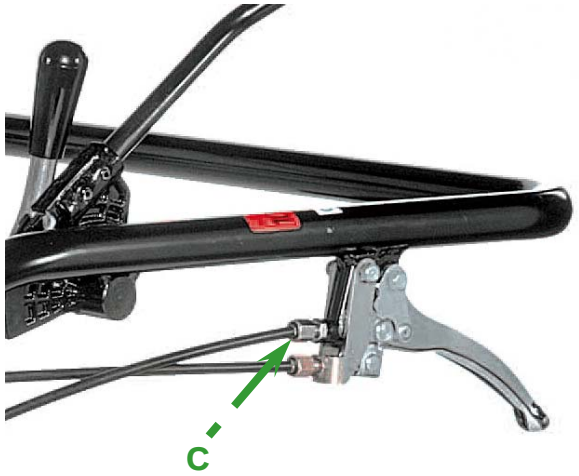


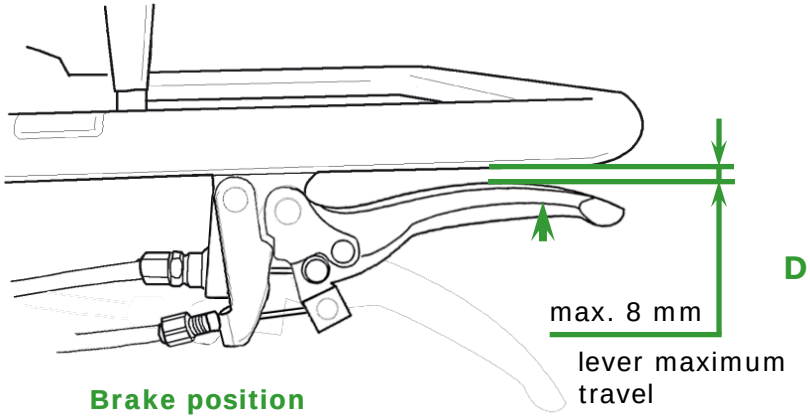
- **Brake adjustment**

Every 20 hrs check the correct adjustment:

1. Place the lever in the braking position (see picture). Loosen the lock nut and remove the cable tension, tighten completely the adjuster **C**. Loosen the screw **D** and pull the cable out to maximum extension
2. Loosen adjuster **C** to have the necessary play **After the adjustment make sure the tracks lock**
3. Tighten the lock nut

N.B. If after the adjustment tracks do not lock, check the condition of the brake shoes (point **I**)



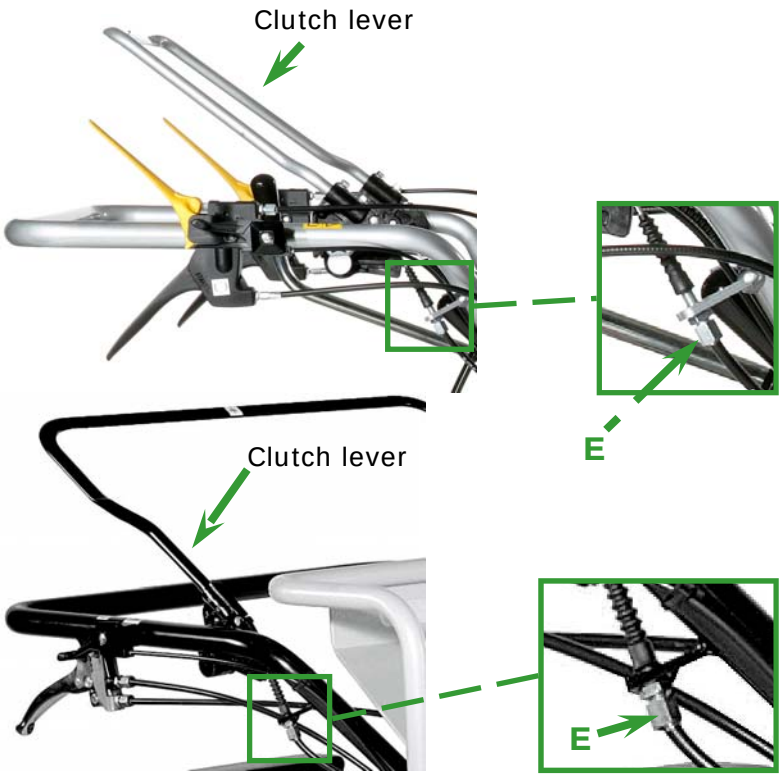


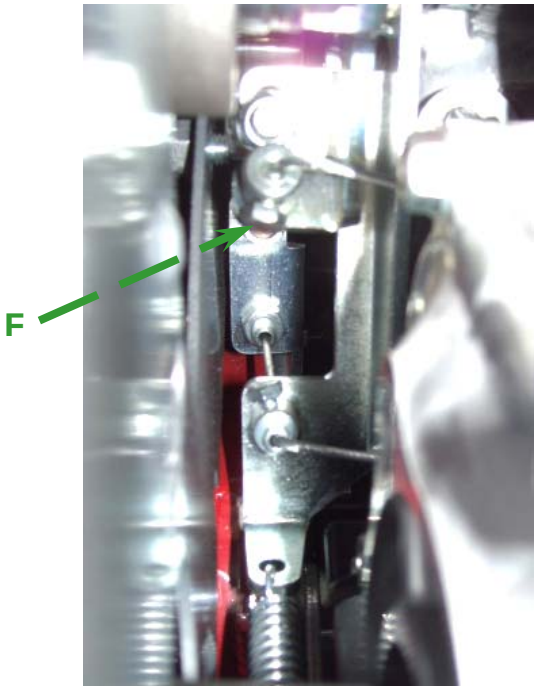
Brake position

d) Clutch lever

Every 20 hrs check the correct adjustment:

1. Loosen the lock nut and remove the cable tension, tighten completely the adjuster **E**. Loosen the screw **F** and pull the cable out to maximum extension
2. Loosen adjuster **E** to have the necessary play of the brake lever
   After adjustment make sure the unit drives
3. Tighten the lock nut

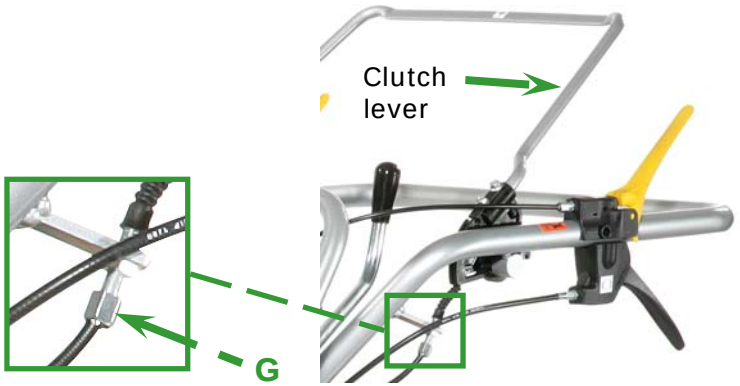




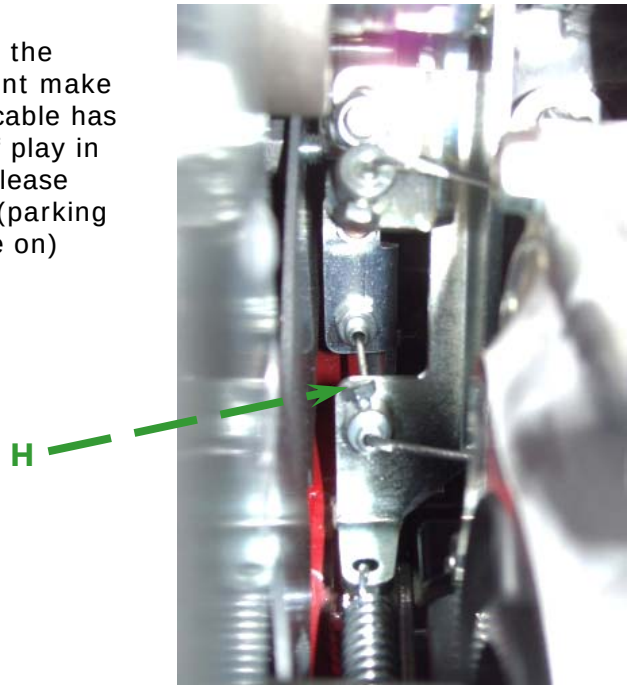
e) Parking brake lever

Every 20 hrs check the correct adjustment:

1. Loosen the lock nut and remove the cable tension, tighten completely the adjuster **G**. Loosen the screw **H** and pull the cable out to maximum extension
2. Loosen the adjuster **G** to have the necessary play of the clutch lever
   After the adjustment make sure the unit drives
3. Tighten the lock nut



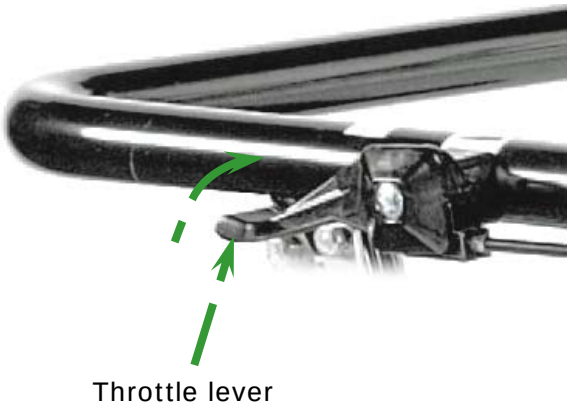
After the adjustment make sure the cable has 2 mm of play in the release position (parking brake on)



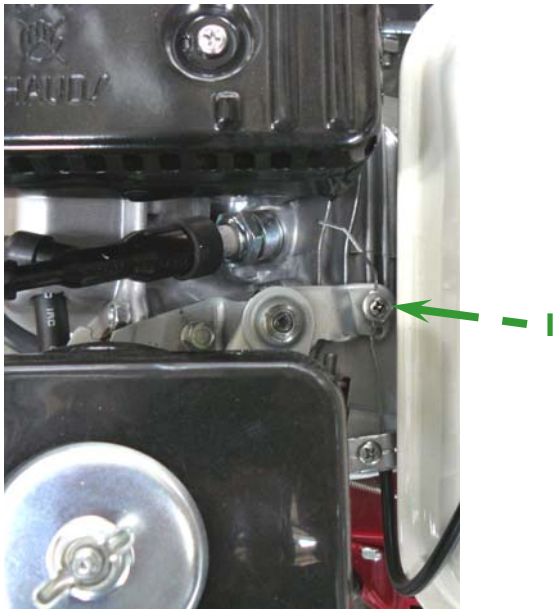
f) Throttle

Every 20 hrs check the correct adjustment:

1. Place the lever into idle position (up)
2. Loosen the screw **I** and pull the cable out to maximum extension. Tighten the screw



Throttle lever



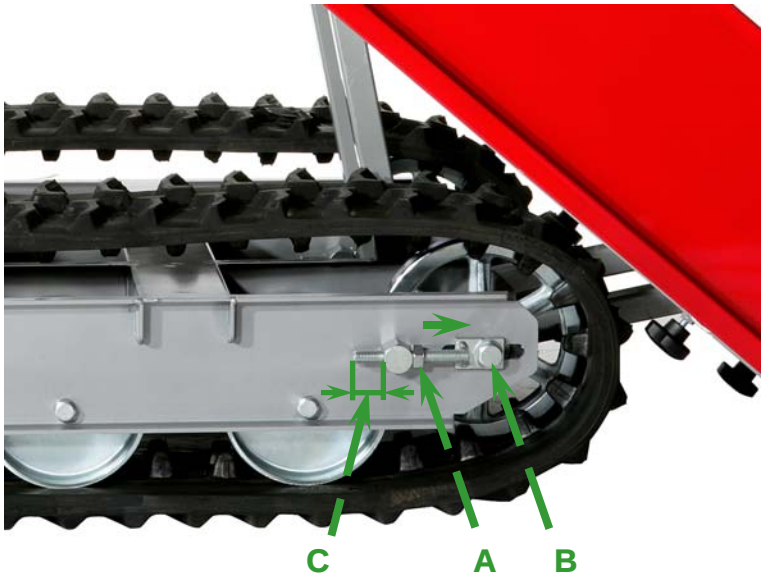
g) Track tension

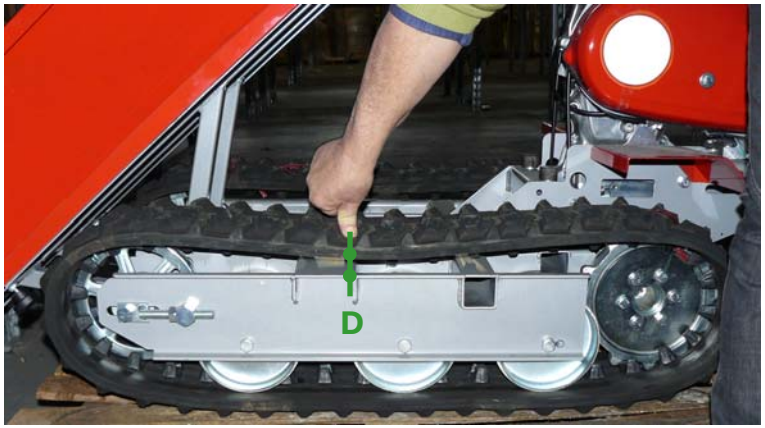
Every 20 hrs check the track tension. Press down and make sure the space between the track and the chassis (**D**) is 25 to 30 mm, if not proceed with the adjustment:

- Loosen bolt **B** (external and internal). Tension with nut **A** until achieving above
- Following tension adjustment make sure the exposed thread **C** is the same on the inside and outside adjuster. Tighten bolt **B**

h) Track removal

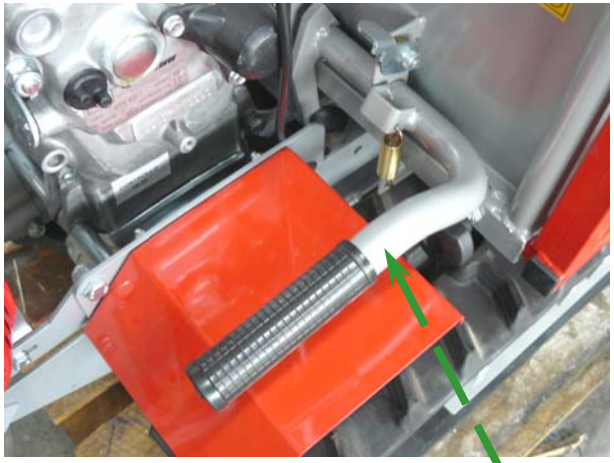
- Loosen bolt **B** and turn nut **A** fully towards nut **B** (internal and external)
- Pull off the belts and insect for wear and tear





i) Bed removal

- Unlock and rest on frame (see photo)
- Loosen the two bolts **A** and remove the pins



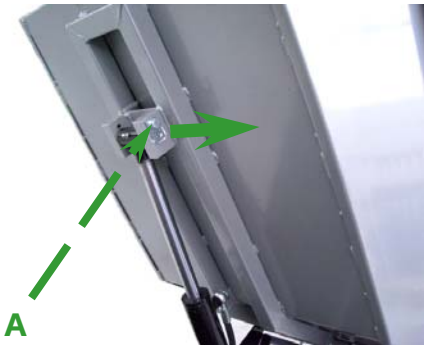
Lock bed lever

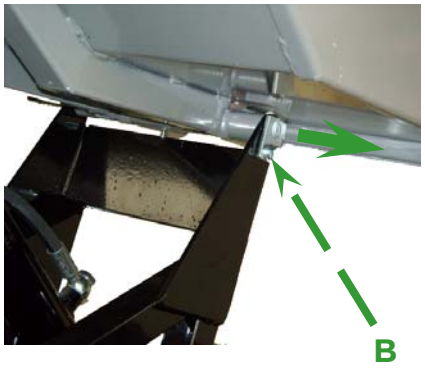
A

Bed removal

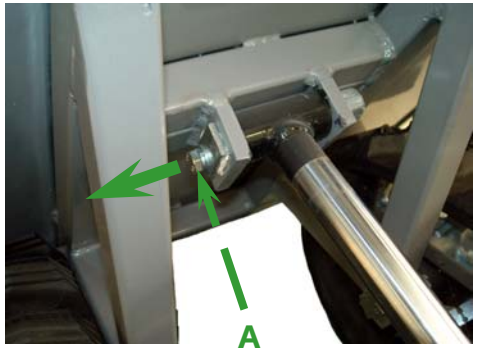
- Lift fully the bed
- Unto screw **A** and remove pin. Rest lifter ram on frame
- Loosen bolt **B** and remove the pin

Frame bed version and hydraulic tipper



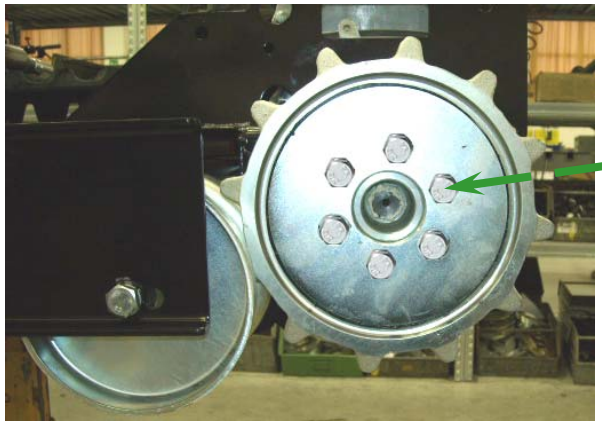


Hydraulic tipper version

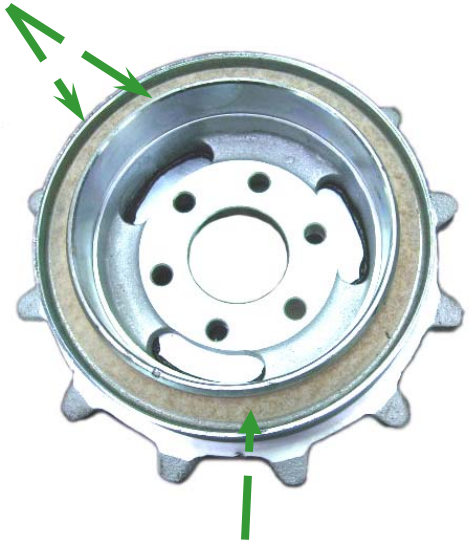


l) Brake pads

- Remove tracks (see **h**). Remove the 6 screws **A** and remove the sprocket drum
- Check wear level, change if necessary

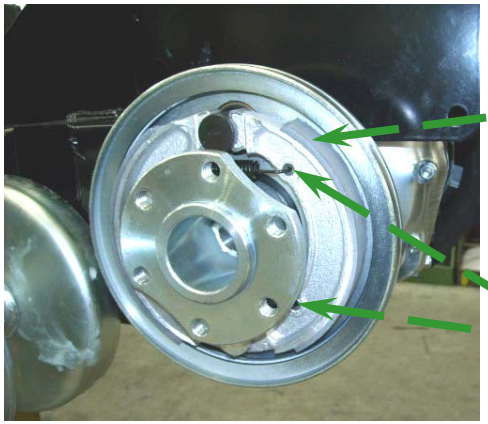


N.B. Before assembly check for edges or cuts which may stop free rotation of the sprocket drum



Check the felt packing for wear

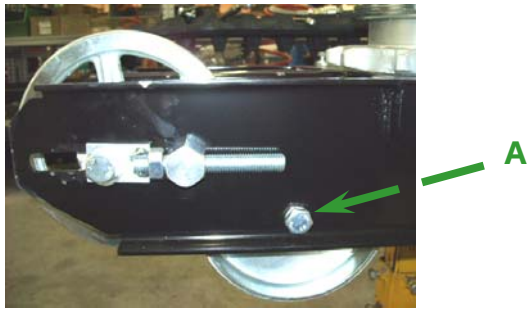
N.B. before assembly oil well the felt packing



m) Roller inspection

Every 70 hrs grease well and inspect for wear

- Remove track (see **h**). Remove bolt **A** (internal and external) and pull out roller
- Check pin for wear, change if worn (photo 1) grease bearing



- **Rollers exchange**

  Remove the two spacers and pull out the roller bearings

Nipple version:
every 20 – 30 hrs grease bearing

- **Tensioner wheel bearing exchange**

  Substitute tensioner wheel bearings and spacers

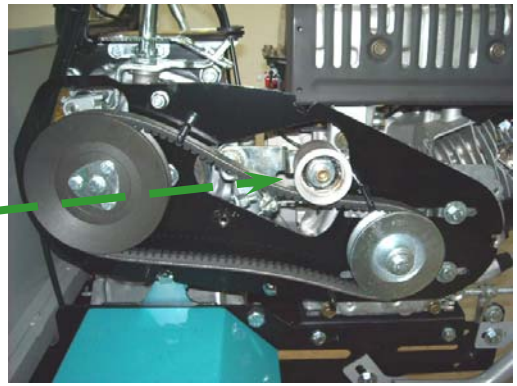
2) Extraordinary maintenance

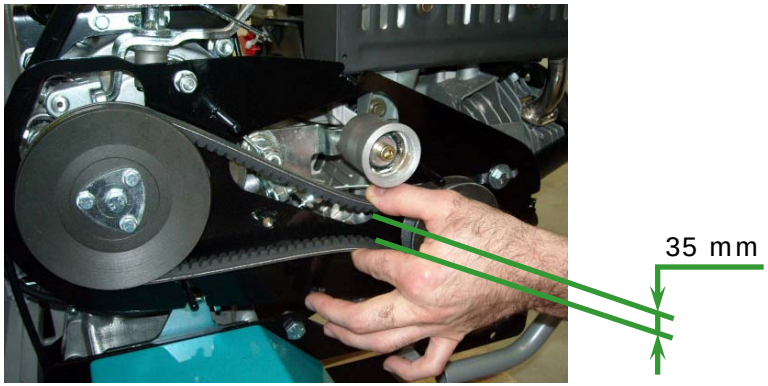
a) Belt inspection
b) Pulley removal
c) Handle removal
d) Engine removal
e) Hub removal
f) Gearbox removal

a) Belt inspection

- Loosen bolt **A** and pull off the belt cover
- Inspect belt for wear, change if necessary
- During assembly correct tension should be 35 mm (see photo). If necessary adjust the tension moving the engine (see engine removal point **d**)

Check than when the clutch lever the tensioner pulley is free and does not put any tension onto the belt

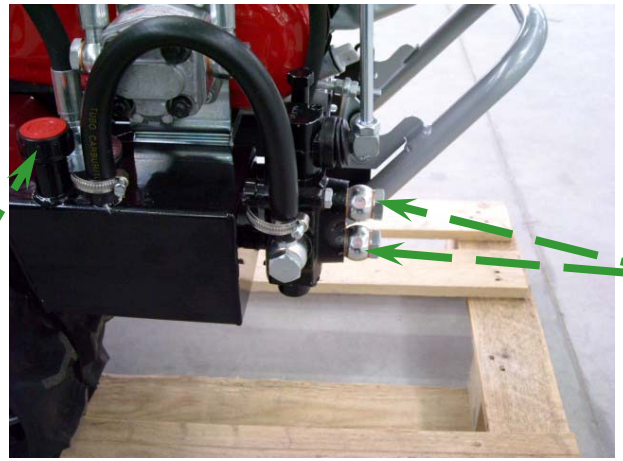


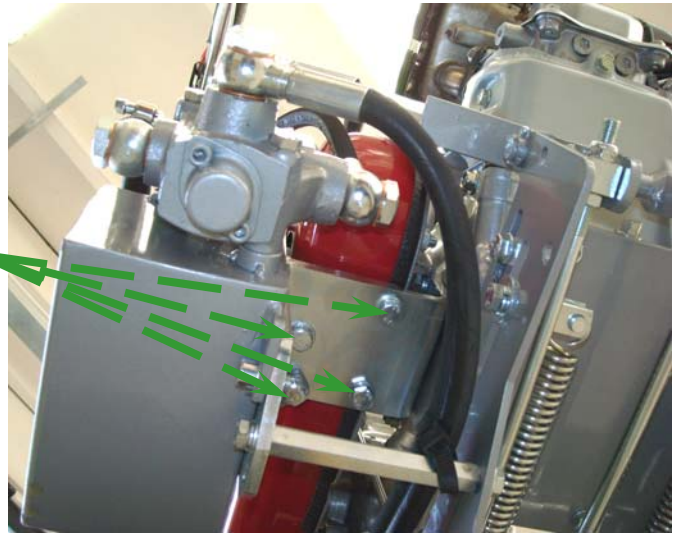


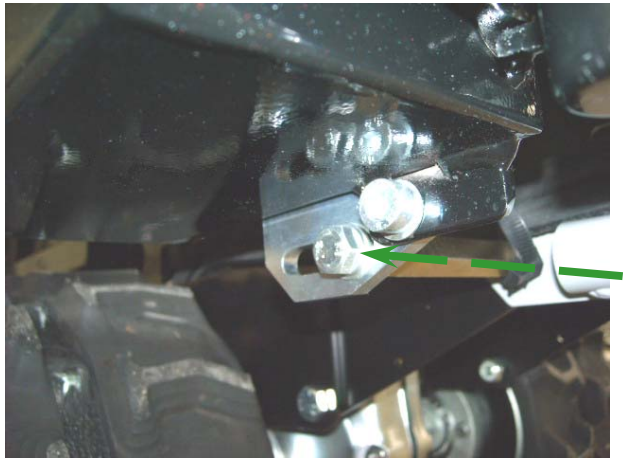
Remove the following parts to check the tension belt (hydraulic tipper version)

- Pull off the hydraulic tube to the pump
- Remove the 4 screws **A**, the screw **B** and take off the pump
- Pull off belt cover and check the belt (see the preceding page)

Attention:
During assembly fill the pump with 1,5 liter of oil SAE 15W/40

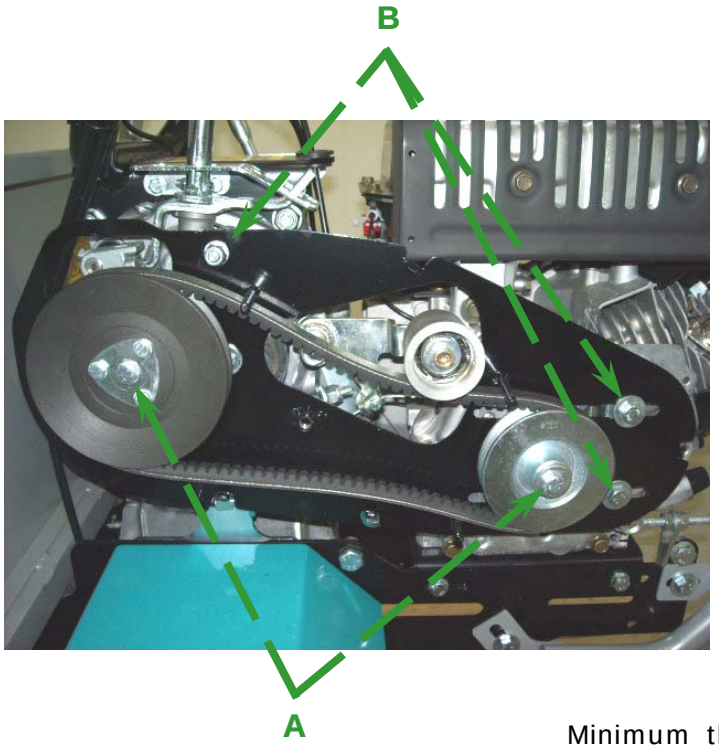


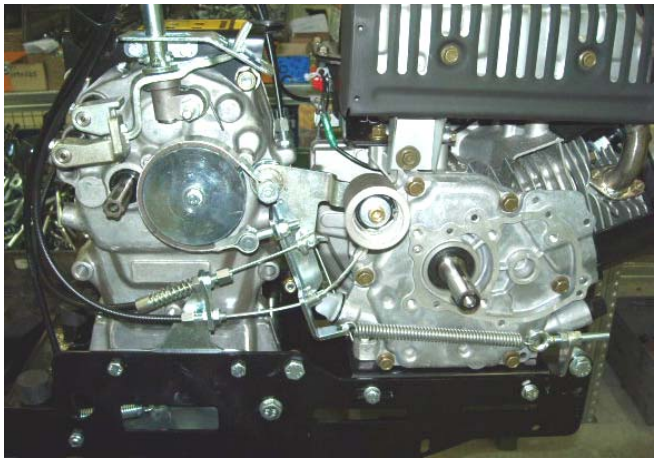




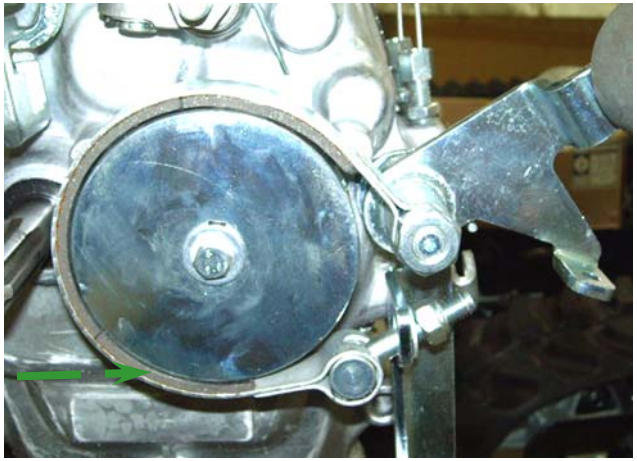
b) Pulley removal

- Remove belt
- Remove screw **A** and pulley
- Remove screw **B** and crankcase guard





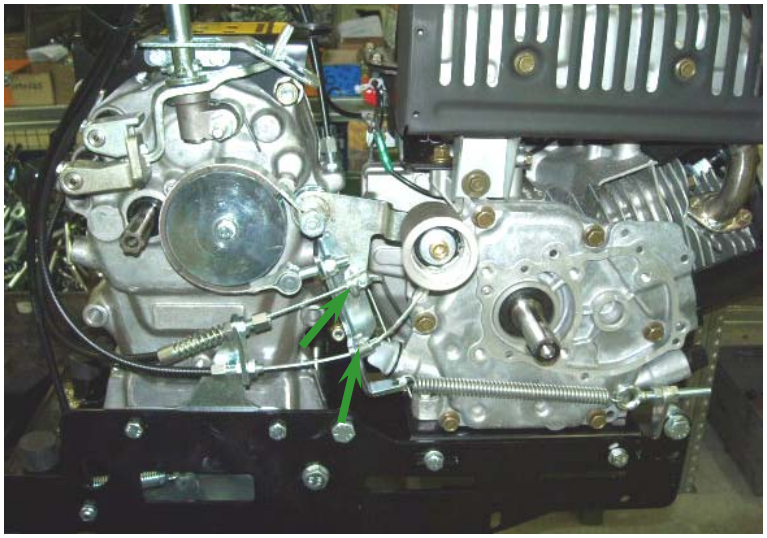
Minimum thickness of shoe: **1 mm**

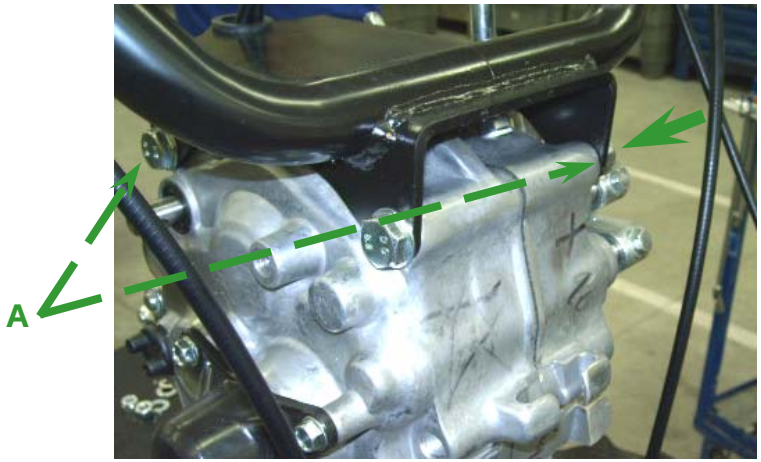


c) Handle removal

- Remove all the screws holding the cables fitted to the handles
- Remove the bolts **A** and remove handles with cables

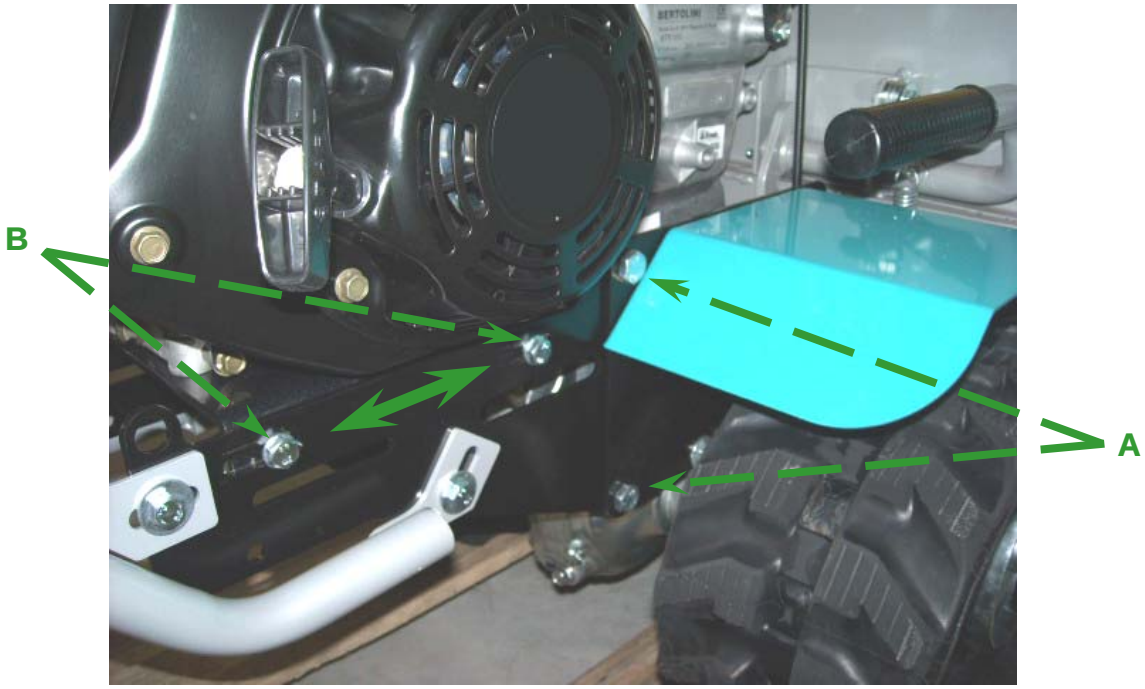
Important:
When refitting the handles make sure the nut is to the side of the plate





d) Engine removal

- Remove bolts **A** and slide out the engine from the support

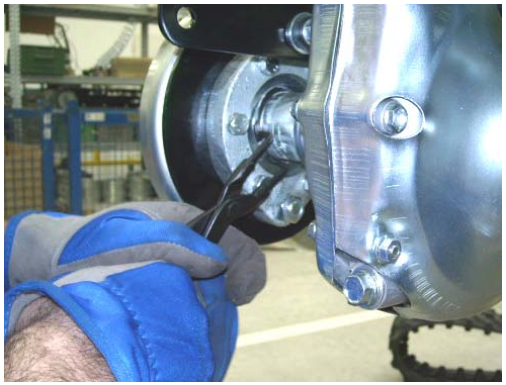


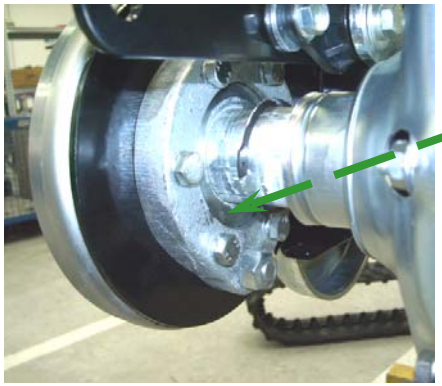
Important:

Loosen bolts **B** and move forwards and backwards the engine to get the correct belt tension

e) Drive hub removal

- Remove drive tracks (chap. **1**, point **h**), remove the gear wheel and the brake shoes (chap. **1**, point **l**)
- Remove circlip holding the hubs
- Use a puller to remove the hubs



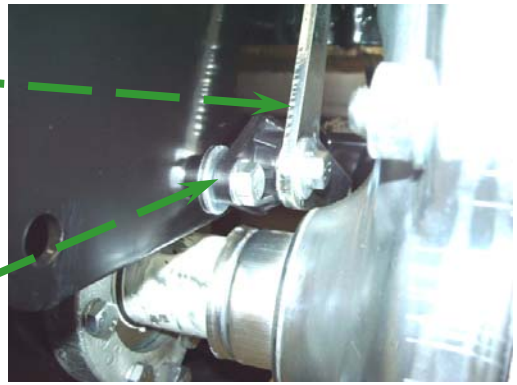


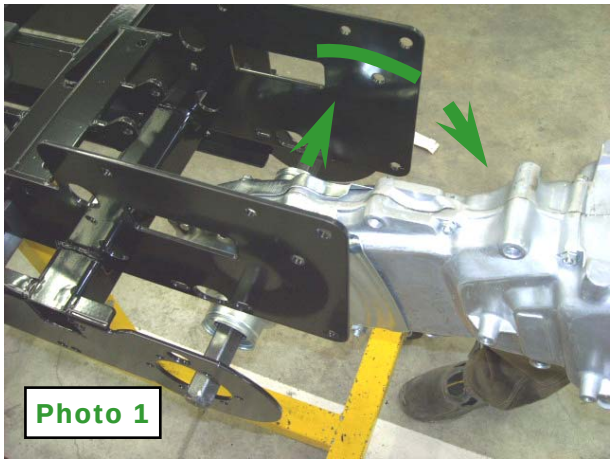
During the removal make sure the washer does not stick between seat and the hub

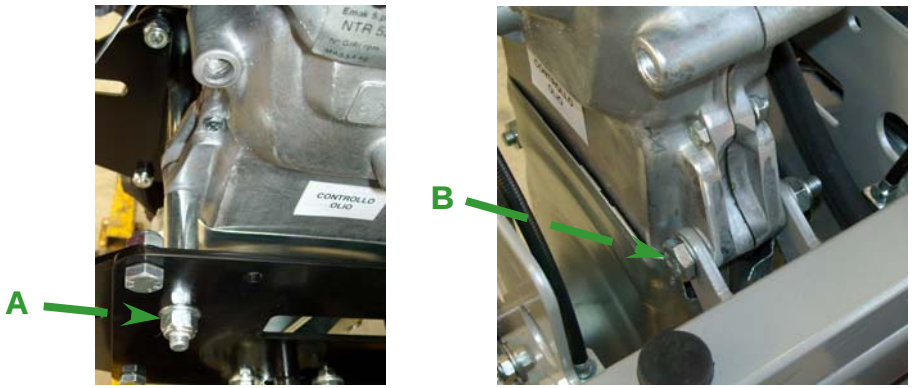
Grease the half shafts

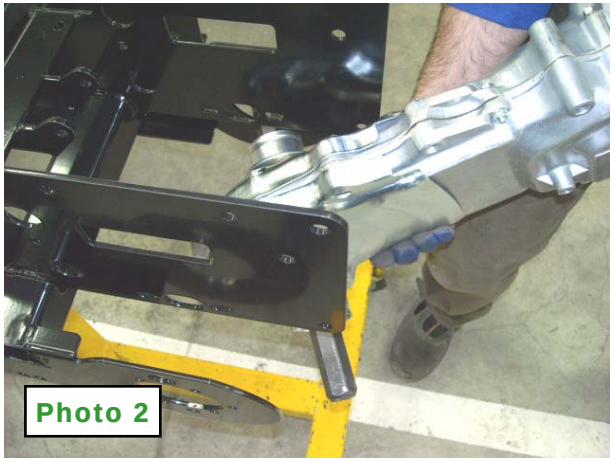
f) Gearbox removal

- Remove lever brake and support
- Remove nuts **A** and **B** and roll out the gearbox as shown in a photo 1
- Move the gearbox to the right and slide out from the frame as shown in a photo 2









3) Gearbox inspection

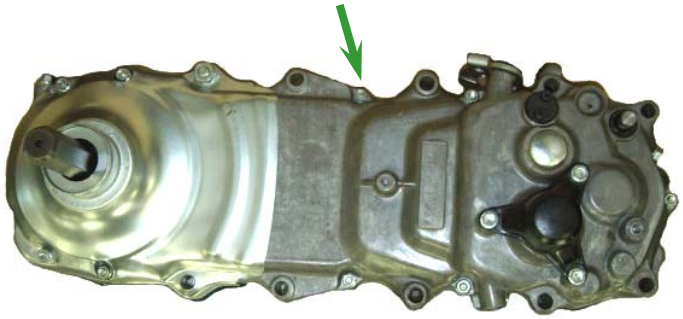
a) **Disassembly**
b) **Assembly**

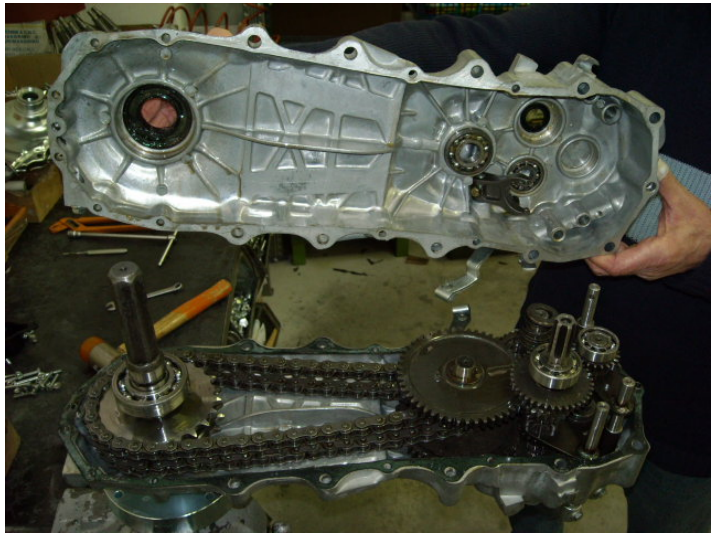
a) Disassembly

- Remove all the oil
- Remove the two case guards
- With the gearbox supported in a vice on a bench and the drive shaft pointing up use pliers to remove without damaging the case guards.

- Remove all bolts holding the cases
- Split the cases using a plastic hammer, as shown in a photo

Tighten torque carter
1,06 Kgm



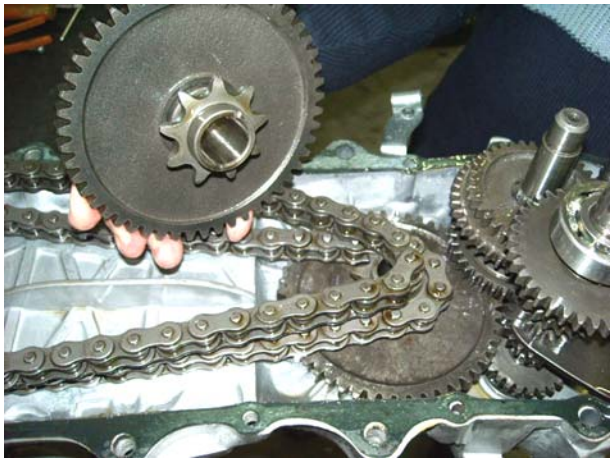


- Check condition of the selector, the bearings of both halves. Change if necessary

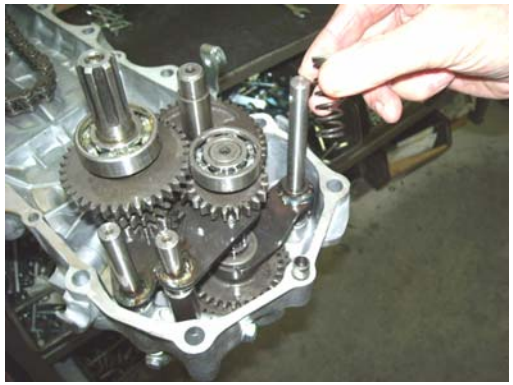
- Remove spring and seat

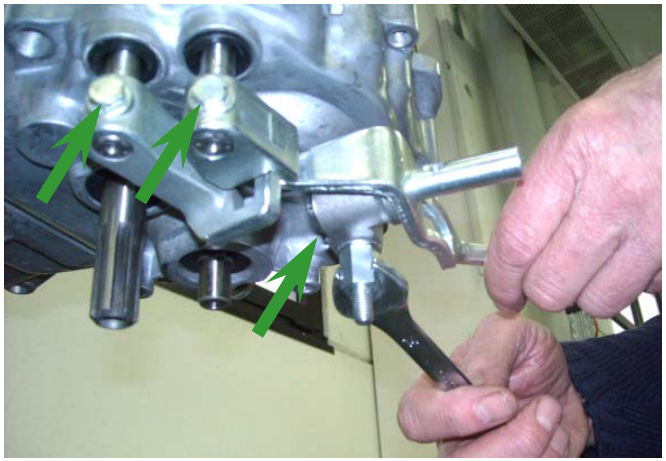
- Remove drive sprocket shaft

- Remove drive gear, chain and half axle
- Check condition of gears and chain, change if necessary.

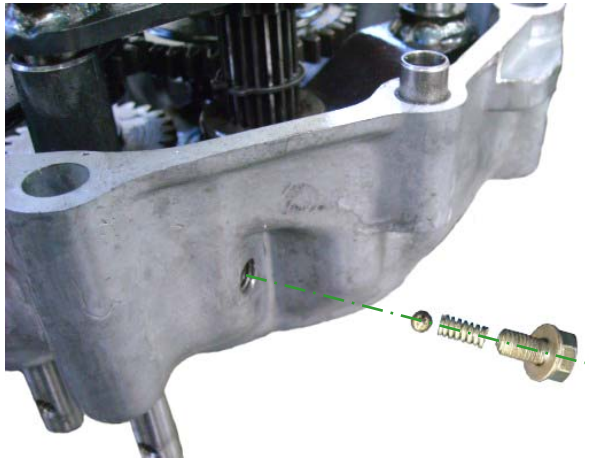


- Remove spring and selector

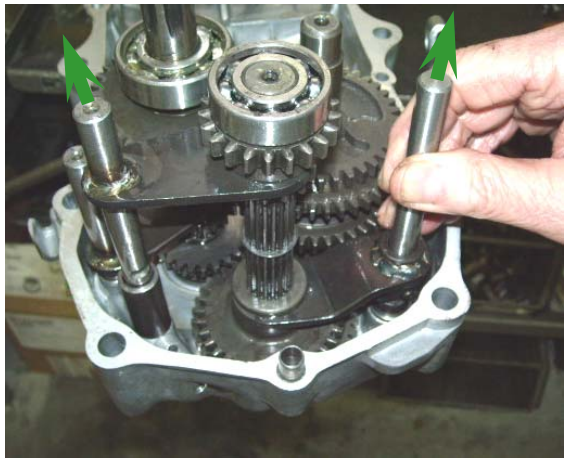




- Remove screw and bearing stud and spring

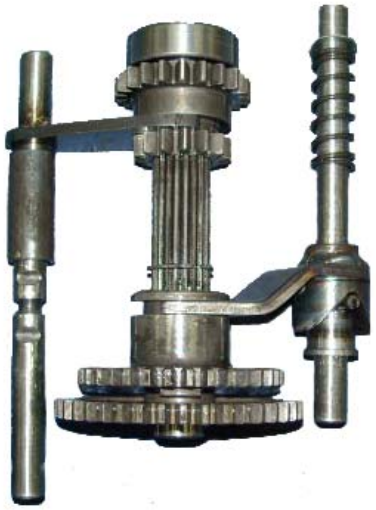


- Slide out 1st and reverse gear shafts
- Check for wear, change if necessary
- Make sure the selectors are not worn or bent, (see photo) change if necessary



Replace

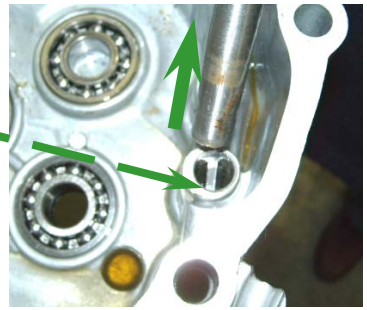
Ok



- Slide out 2nd and 3rd gear support shafts use a rubber hammer

Attention:

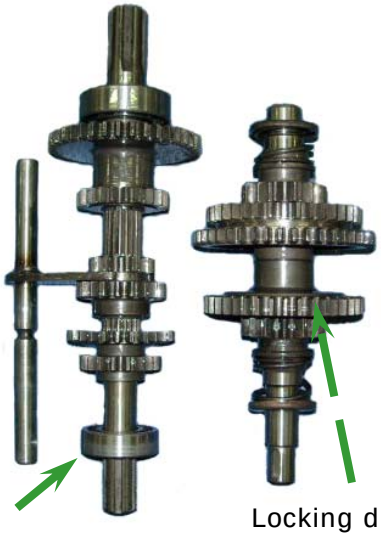
- During the removal pay attention to the exit of the ball bearing
- Make sure during assembly the spring and ball bearing are positioned properly



- Check gears for wear and change if necessary
- Check selectors for wear ,change if necessary see photo

Replace

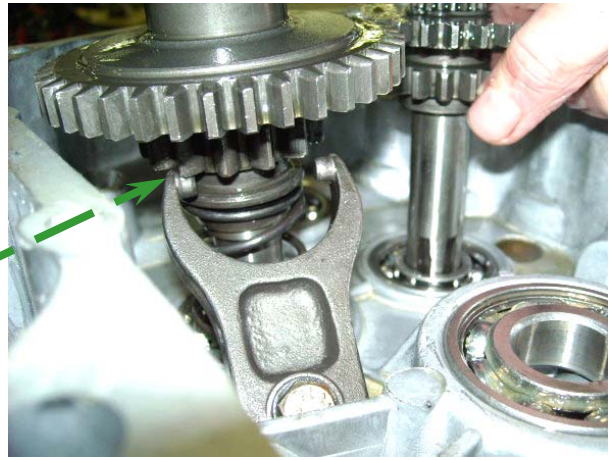
Ok



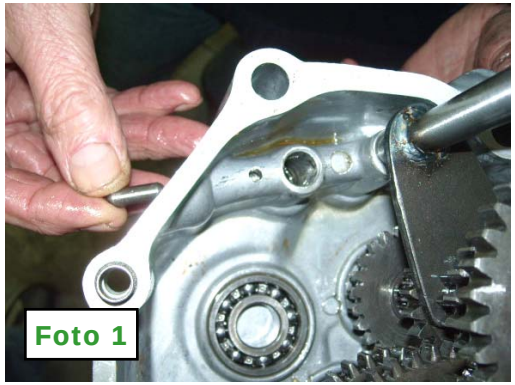
b) Assembly

- Before reassembly check the conditions of the selectors, bearings change if necessary
- Fit spring and ball bearing
- Fit selector
- Fit 2nd and 3rd gears as per photo
- Fit locking differential

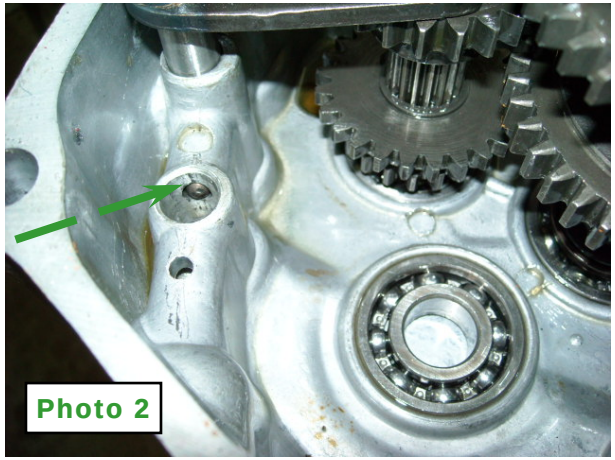
Important:
During assembly make sure the selector is in the correct position inside the groove of the gear



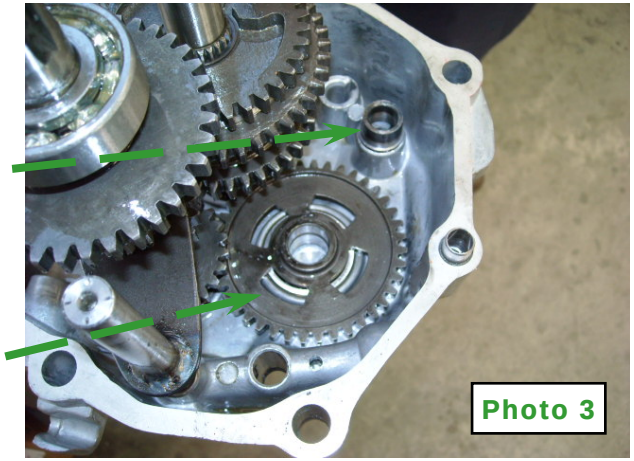
- Fit pin, see photo 1



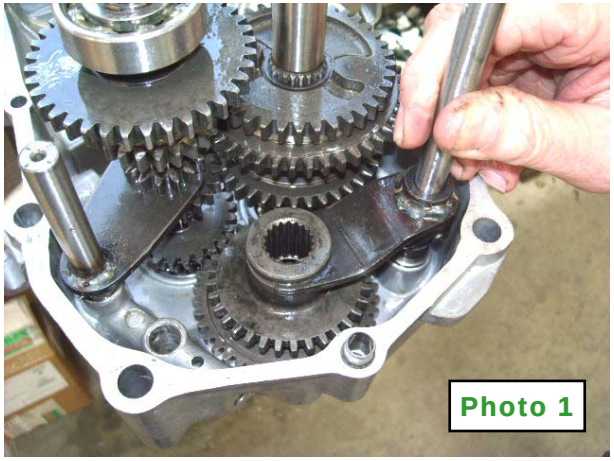
Important:
Place the pin level with hole, see photo 2

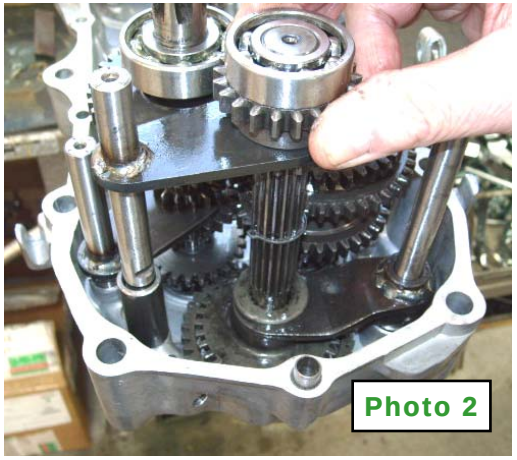


- Fit reverse gear and bushing as shown in photo 3

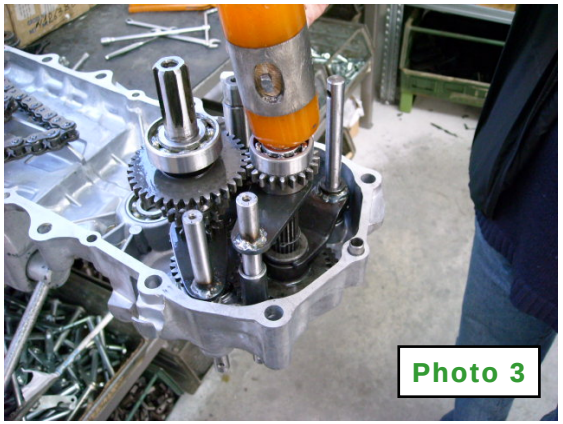


- Fit reverse gear shaft, as shown in a photo 1
- Fit 1st and reverse gear shaft, as shown in a photo 2

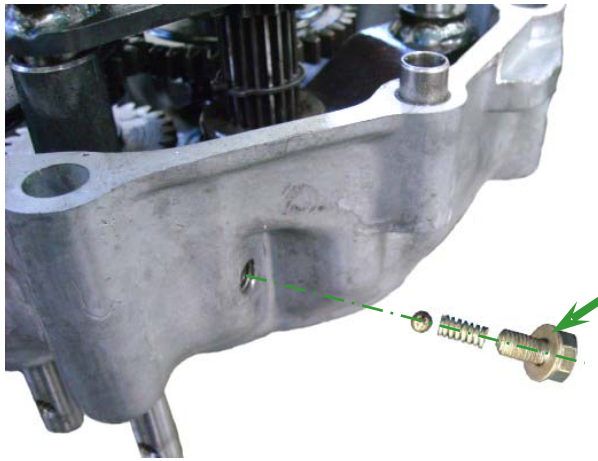




- Check the shafts are snug in the bearing seats (photo 3)



- Fit spring and ball bearing, as shown in a photo



Important:
If the 1st and reverse speed do not stay selected, try removing the washer

- Fit the washer (photo 1) and drive sprocket (photo 2)

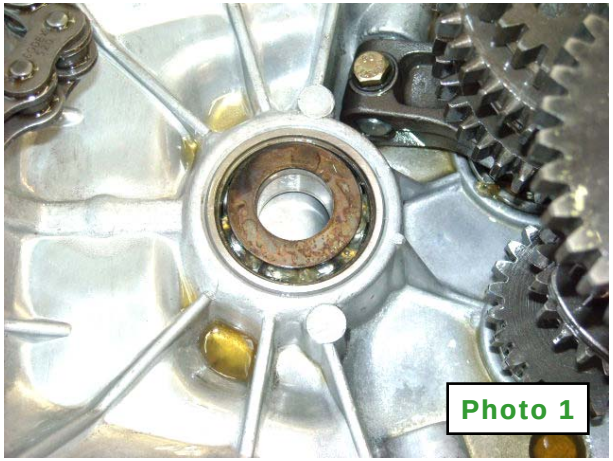


Photo 1

Photo 2

- Fit spacer (photo 1) and drive sprocket (photo 2)

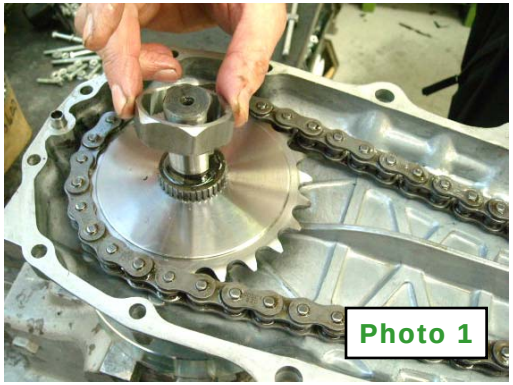


Photo 1

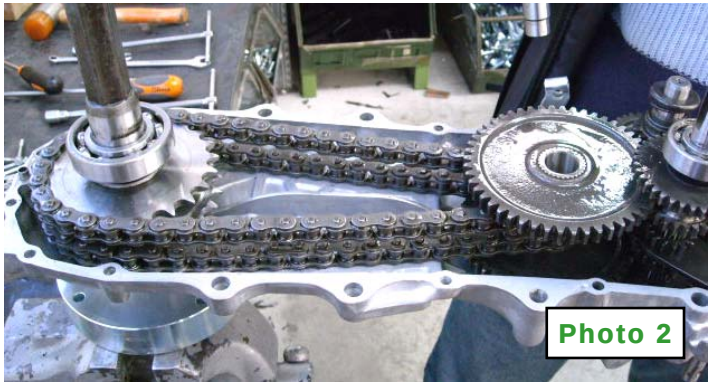
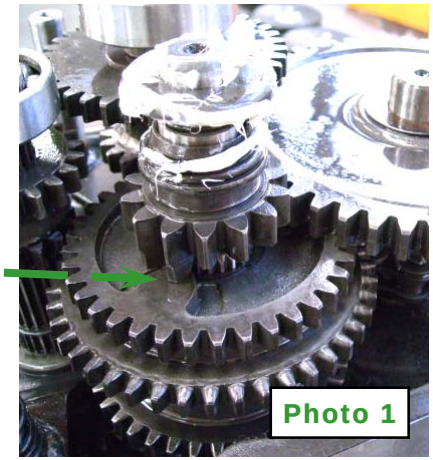


Photo 2

- Slide in shaft aligning the drive gears and sprockets and the bearing spacer

- Fit locking differential gear, spring, spring seat and grease to hold in position

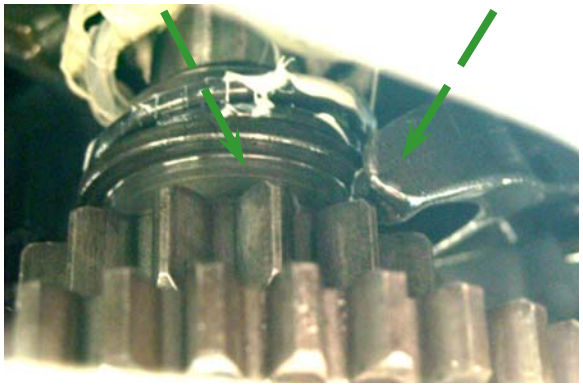
Fit the lower teeth of the gear onto the raised area of the drive gear of the half axles



- Fit gasket and half case, make sure the selector for the locking differential is inserted into the gear groove

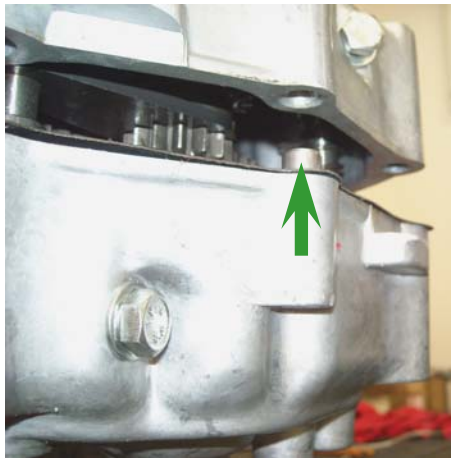
Gear groove

Selector



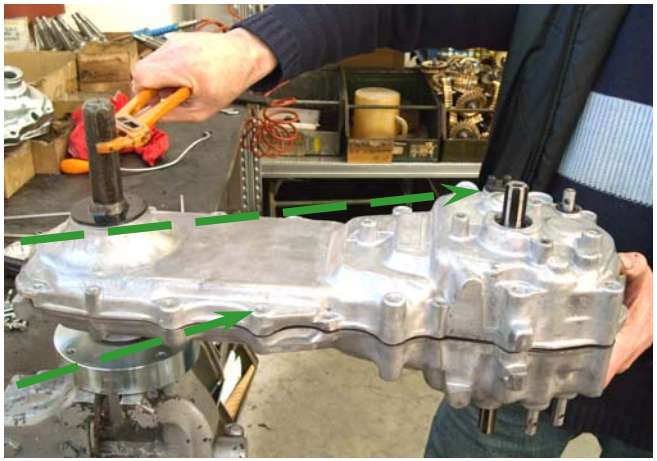
Check correct seating

- Close together the cases making sure the meet perfectly. With a plastic hammer.



- Before closing the screws make sure the gears are correctly positioned by turning the axles (the lower sprocket needs to move down from the raise area of the drive gear for the drive shafts, see photo 1 page precedent)
- Close screw in a cross fashion and fit the shaft guards

Attention:
After assembly fill the gear with 3,5 liter SAE 15W/40 engine oil



Tighten torque
screws-carter
1,06 Kgm (92 in lb)

4) Trouble shooting:

Symptoms	Causes	Remedies	Go to
1. The transporter does not movement	**1.a** The belt tension is not correct **1.b** Belt wear or brake	**1.a** Adjust the tension **1.b** Check and/or replace the belt	Section 2
2. The transporter does not turn	**2.a** The adjust of the axle locking lever or brake lever is not correct **2.b** Brake pads wear	**2.a** Adjust the axle locking lever or brake lever **2.b** Check and/or replace the brake pads	Section 1
3. In parking position the transporter move (motor turn on)	**3.a** Belt tension is not correct	**3.a** Adjust the tension belt	Section 2
4. In parking position the transporter move on slope (motor turn off)	**4.a** Adjust of the parking brake not correct or parking brake wear	**4.a** Check and/or replace the parking brake	Section 2
5. Transporter noise when start to move	**5.a** Tension of the cable clutch lever not correct	**5.a** Adjust the clutch lever	Section 1

Trouble shooting:

Symptoms	Causes	Remedies	Go to
6. Metallic noise when unlocking the axle	**6.a** Tension of the cable axle locking not correct	**2.a** Adjust the axle locking lever	Section 1
7. The bed does not lift or lift not correctly	**7.a** Tighten tube not correct **7.b** Level oil tank low	**7.a** Tighten the tube **7.b** Check level and add the oil	Section 2
8. When the transporter move the track touch the bed	**8.a** Tension of the track not correct	**8.a** Adjust the track tension	Section 1
9. The first and reverse speed does stay engage	**9.a** The ball does not lock in the seat of the shaft	**9.a** Take off the washer to the screw	Section 3
10. The speed does not engage	**10.a** Fork gear wear	**10.a** Check and/or replace the fork	Section 3