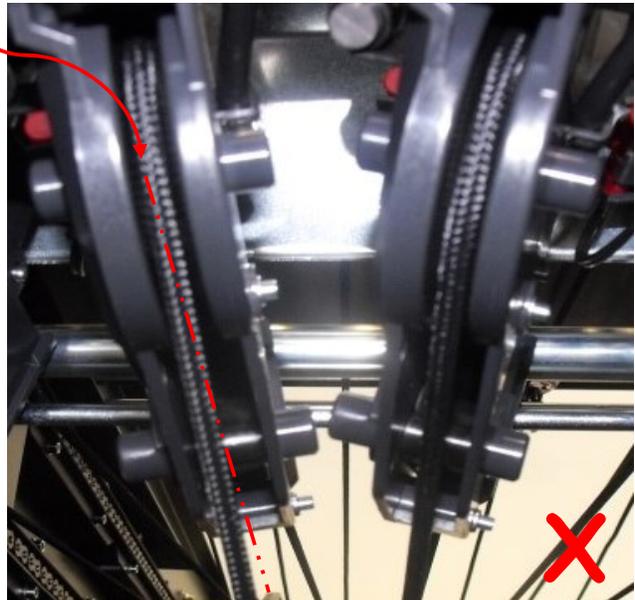
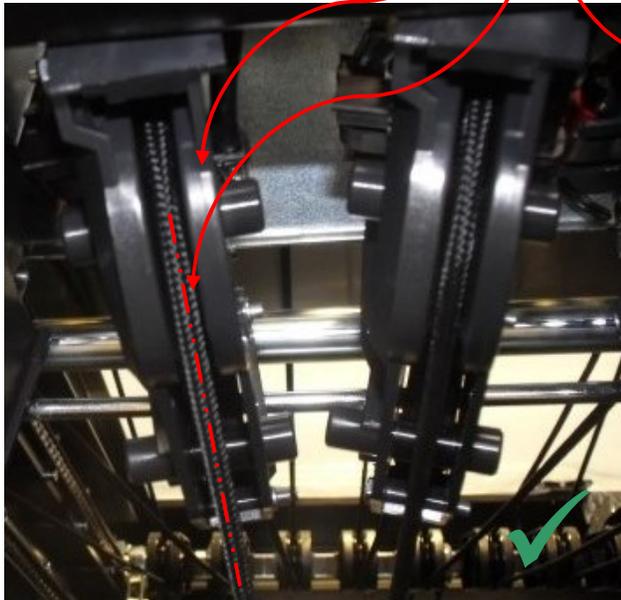


- 1. Check the position of the PMI's** (Pin Motion Interface = String Brake Unit).
Do not touch factory setting. This is required only after replacing the PMI. The string must be on the center line of the PMI. See Figures 1 & 2.

Figure 1 = **CORRECT**

Figure 2 = **INCORRECT**

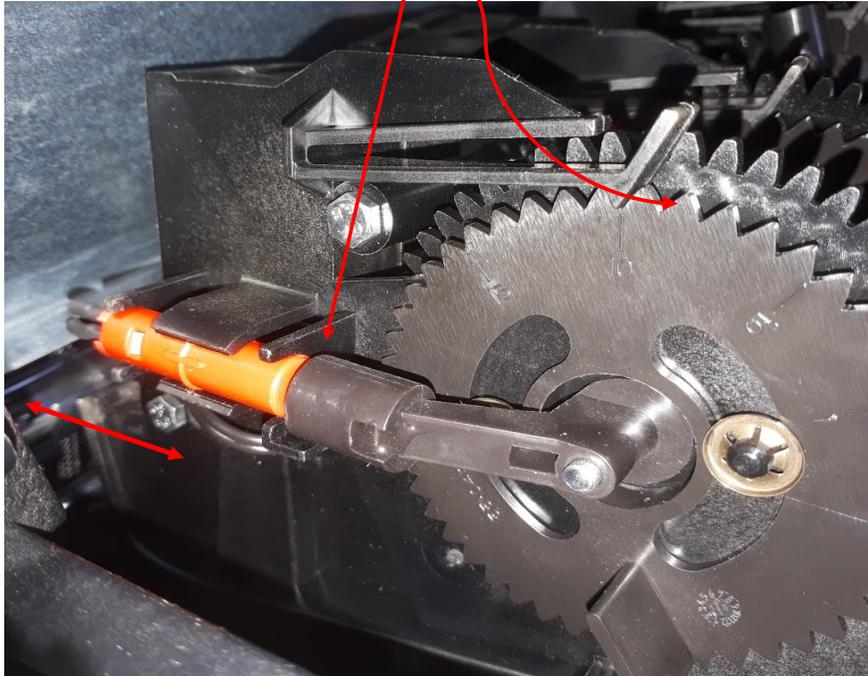


2. Adjusting String Sensitivity

This might be need incase of PMI replacement or pin moved after the ball but not sensed by the electronic.

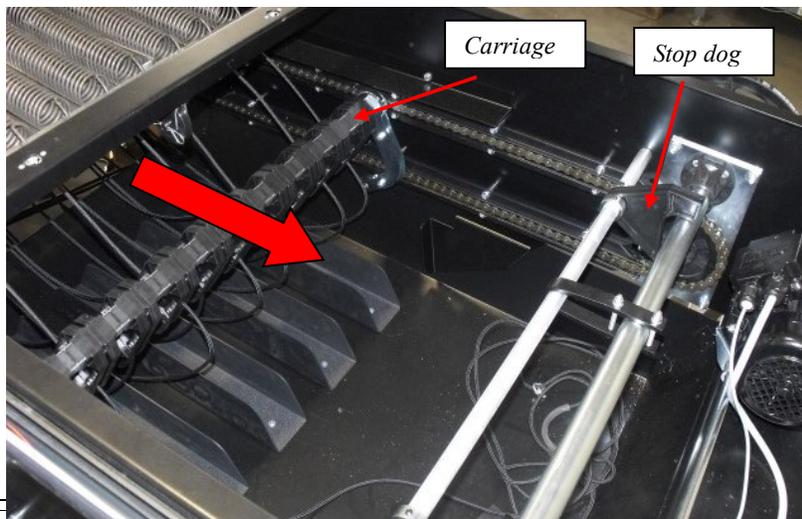
- > Check the String Adjustment Gear on the PMI (55-040433-004).
- > The gap between the Reed Relay (movable) and magnet must be 3mm.
- > Adjust the sensitivity to 10. See Figure 3.

Figure 3



3. CHECKING THE ROTATION OF THE DRIVE MOTOR (in case of motor or cable change)

- > The carriage position has to be as the picture below shows.
- > Switch off the On/Off switch on the rear side of the machine.
- > The Controller has to be in Diagnostic mode.
- > Switch on the rear On/Off switch for a second.
- > The carriage has to start to move backwards.

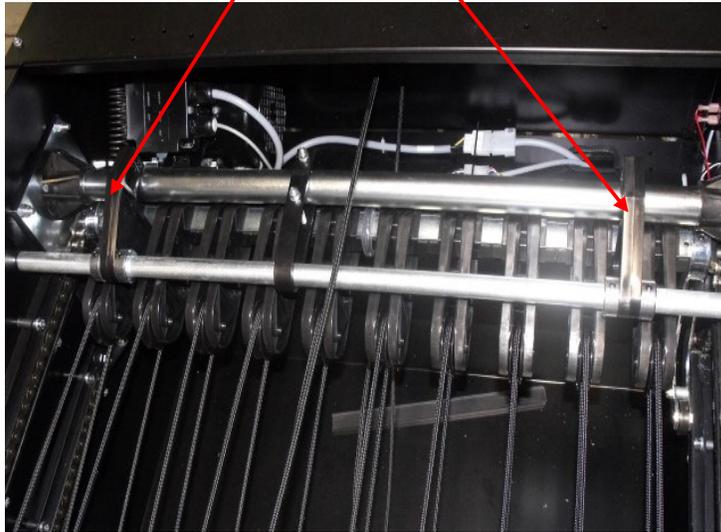


4. CARRIAGE REAR STOP-POSITION

This might be needed when pins are lifted but dropped back on the pindeck.

- > Select 'Pins Up'- mode on the controller screen.
- > Check the position of the carriage when stopped.
- > The carriage has to stop at the stop dogs. *See Figure 5*

Figure 5

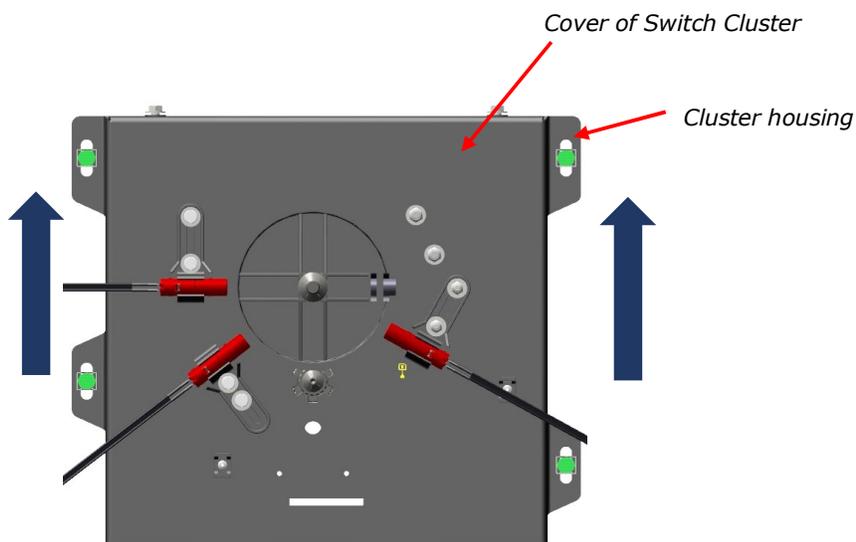


Adjusting is needed in the following cases:

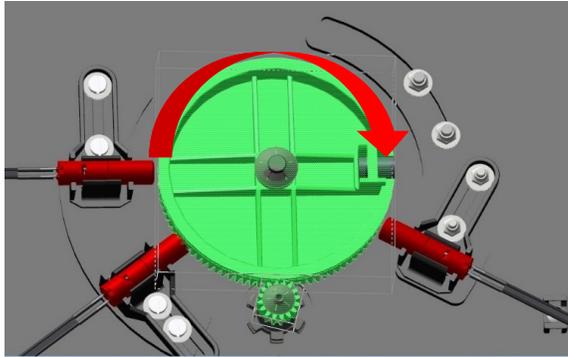
- a. If the carriage stops too early (it does not reach the stop dogs, the motor turns off and the pins fall down onto the pindeck).
- b. If the carriage passes the stop dogs (stops too late), it overshoots the stop dogs.

To adjust the proper rear stop-position follow the steps below:

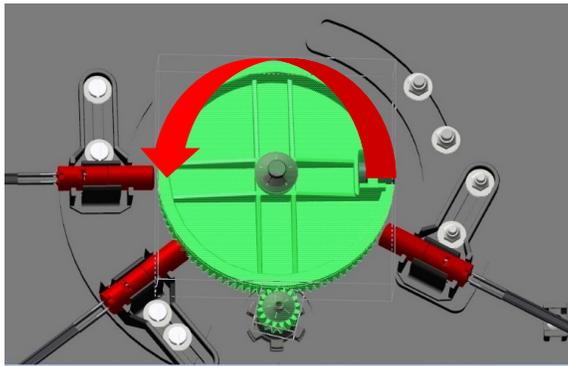
- > Remove the cover of the Switch Cluster ass'y.
- > Loosen the bolts (4x -green on the picture below).
- > Move upwards the Cluster Housing (shown by the blue arrows on picture below).
This creates a gap between the gears allowing the adjustment of the large gear.



> If the carriage stops **too early** – turn the large gear **clockwise**.



> If the carriage stops **too late** – turn the large gear **counterclockwise**.



> Move the Cluster Housing back (downwards) to its proper position and tighten the bolts. Make sure that there is a required gap/connection between the teeth of the gears.

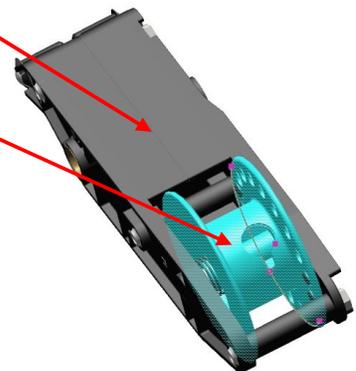
> Re-check if carriage stops at the proper rear position. If not, repeat adjusting process from point #4.

5. STRING TENSION ADJUSTING

This might be needed after string or pin replacement.

> Drive carriage to the stop dogs.

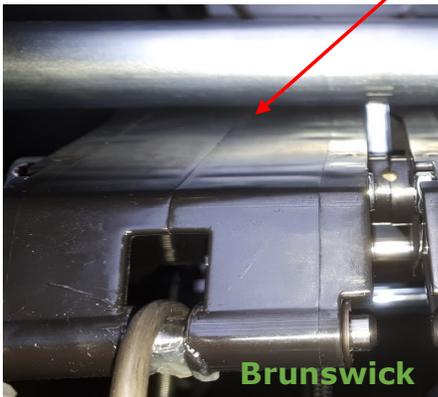
> Lift up every single pin by turning the Reels of the String Lever assemblies.



Note: There is significant difference compared to the SES machine.

Brunswick machine (black) needs less string tension. The String Lever assemblies has to just touch the rod (with transparent plastic tube) and then loosen one more hole on the Reels. (top view)

SES machines (grey) require the strings to be overtightened. A gap is needed between the String Lever ass'y and the rod.



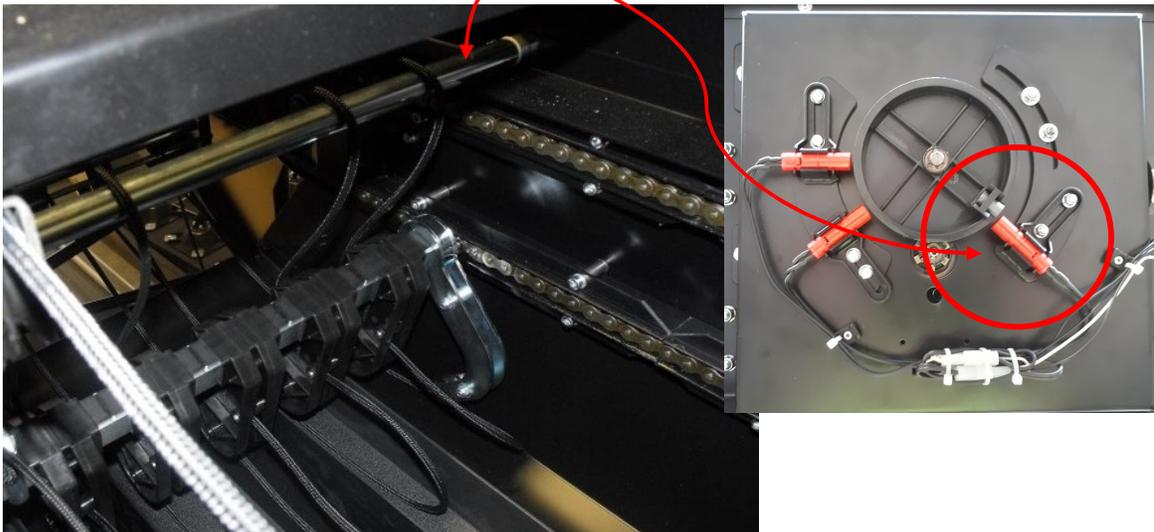
- > To achieve the the required adjustment the mechanics has to double check the position of the carriage after adjusting.
- > If necessary, repeat step #5.

6. CARRIAGE FRONT STOP-POSITION

We can adjust the free length of the string. Too long of strings might cause too many tanglings.

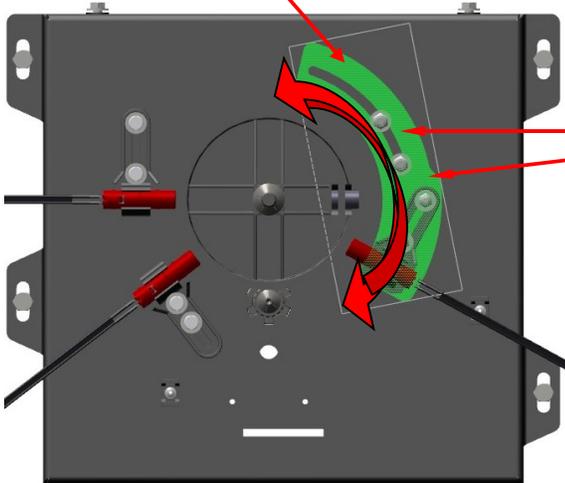
The carriage has to stop just under the Limiting bar.

The stop position is adjustable by the Reed switch marked with red circle and is located on the cluster housing. See Figures below.



If adjustment is needed:

- > Loosen the screws of the curved metal switch holder (highlighted with green).
- > Adjust the switch holder to its proper position.
- > Tighten the screws (2x)



Loosen the screws (2x)

If the carriage needs to adjust backwards,
– move the holder downwards.

If the carriage needs to adjust forward,
– move the holder upwards.

- > After the adjustment check the front stop position of the carriage. Does it stop under the limiting bar? (see above) If not repeat the steps of point #6.
- > If carriage stop position is proper make sure that the Gate (that comes down while pinsetter is cycling) is moving properly.

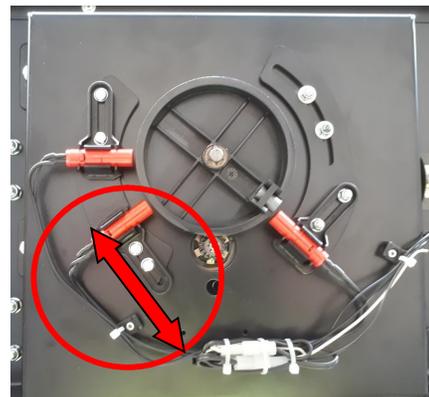
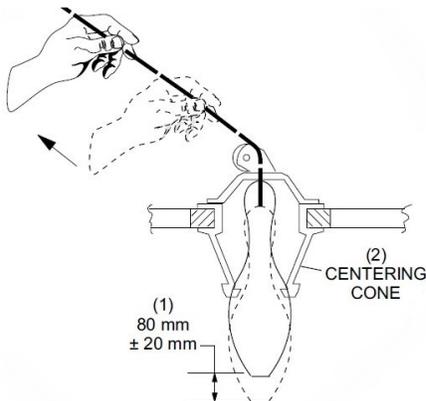
7. PINS UPPER POSITION

If the distance is too long pin movement may not settle in time and pin is still moving during pin setting. If the distance is too short the brake in the PMI is not able to release string. (pin setting issue)

Check the movement of a raised pin in the pin centering cone by pulling on its string. The travel distance of the pin should be **80 mm ± 20 mm**.

Adjust the String Brake switch (marked with red circle on the picture below) up or down as needed to obtain the appropriate pin movement but **DO NOT TOUCH THE REELS !!!**

1. Loosen the screws (2x) of the switch holder (plastic) shown in the image below.
2. Adjust the switch holder to its proper position (marked with red circle).
3. Tighten the screws (2x).
 - a. Increase the travel distance – move the switch downwards.
 - b. Reduce the travel distance – move the switch upwards.



The required (80 mm) travel distance:



Travel distance is too small (less than 60 mm)

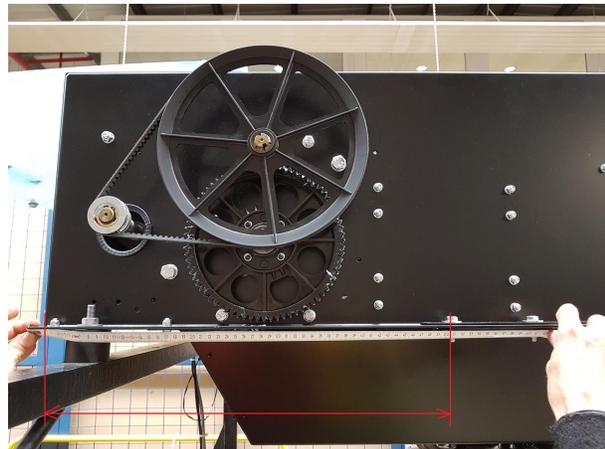
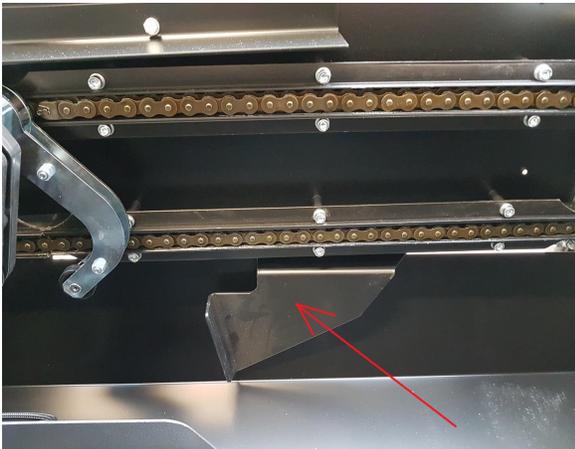


Travel distance is too big (more than 100mm)



8. Adjusting of the Turn Cams

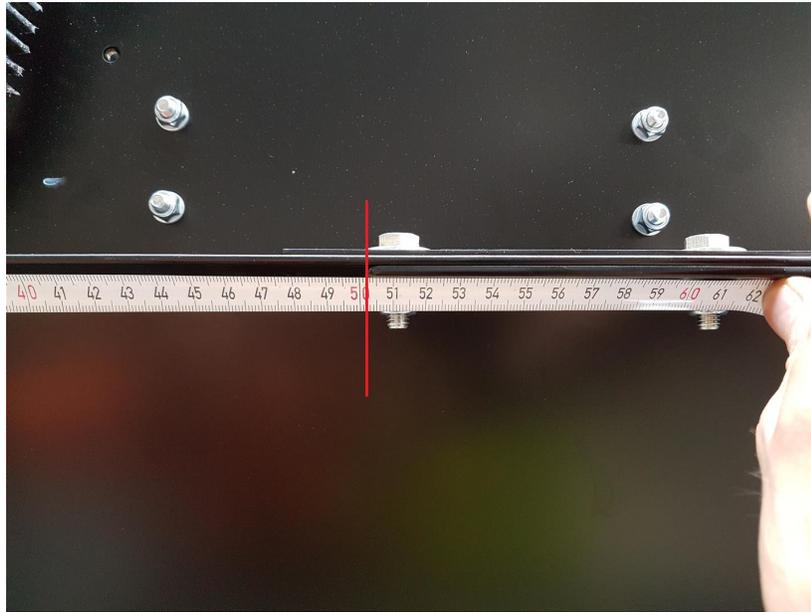
The role of the Turn Cams is to make sure there is a smooth (without knocking) setting of the pins. The turn cams slows down the carriage while it lets down the pins onto the pin deck. The machine sets firstly the pin #1, then the row #2 ... and finally the rear row (pins #7 – 10). The mechanics have to check the setting of the rear row to confirm it is okay.



StringPin – Adjusting

The factory adjustment is 500 mm from the end of the machine to the rear edge of the turn cams see picture above.

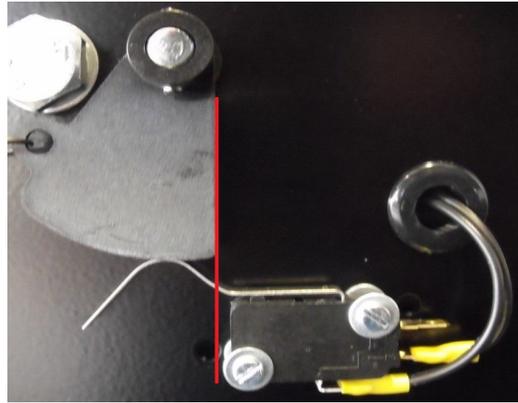
- Move the turn cams backwards if the machine sets the pins too fast, the pins are knocking on the pin deck, or the machine 'throws down' the pins.
- Move the turn cam forwards if the machine slows down the moving of the pins too early and after that it 'throws down' the pins.



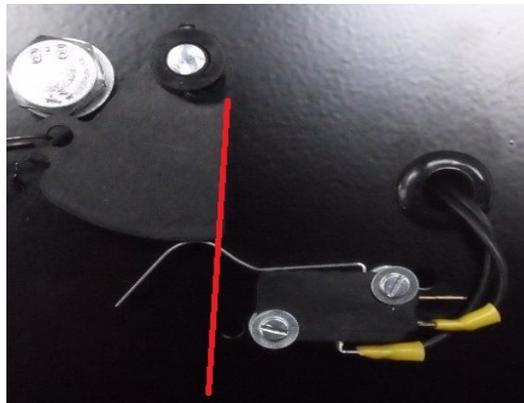
9. Tangling switch

This might be needed in case of microswitch replacement or pinsetter does untangling cycles too often.

The rear edge of the cam and the front edge of the microswitch must be parallel and the gap has to be 1 – 2 mm. The microswitch position is adjustable back and forth.



OK



Not OK