



## **Dealer4 Maintenance, Adjusting and Cleaning Manual ver: 1.0**

Version information:

Ver 1.0: First issue : 14/04/2008

- use word "Board" instead of "Card Box"
- combine with "Delaer4 Adjusting Manual 1V0"

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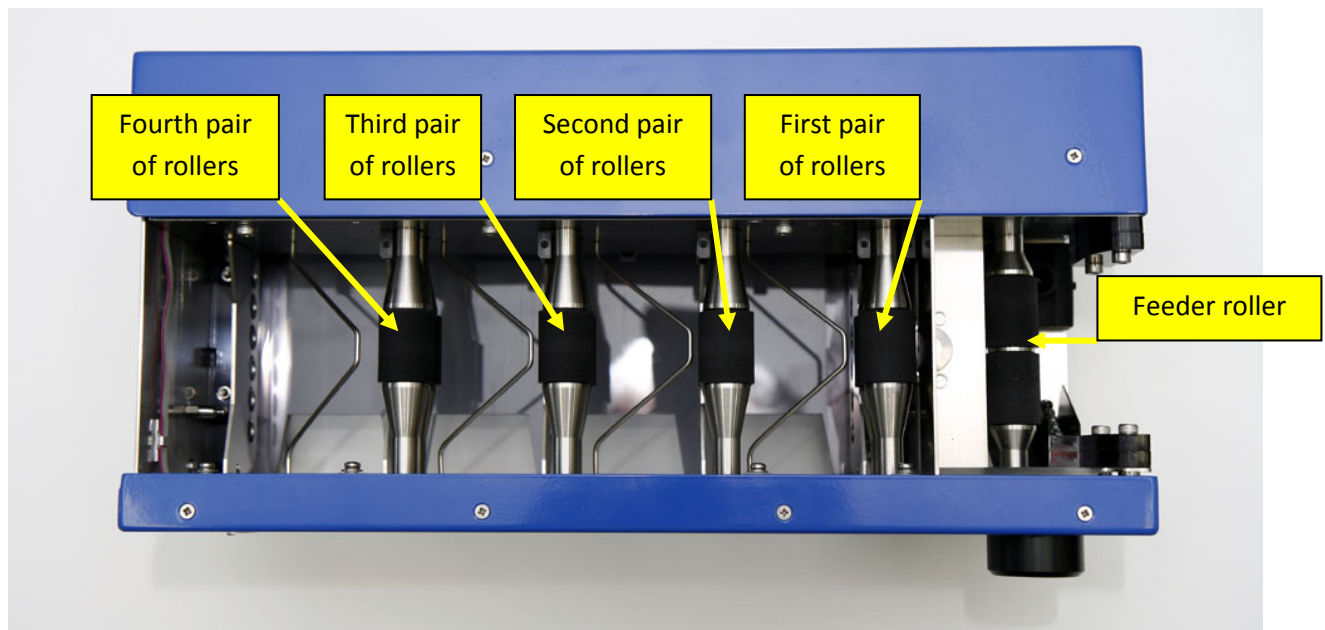
# 1 Dealer4 Maintenance.

The Dealer4 is designed to operate without any special maintenance. Apart from the cleaning and adjusting when required (see chapter 3) there is no other regular maintenance required. The Dealer4 does not require any lubrication, there are no belts, seals or any other elements which have to be replaced on a regular basis.

Despite that the Dealer4 is virtually maintenance free it is recommended that the machine be serviced by an authorized Service Center at least once per year or every 50000 dealt boards. During these services the machine will be disassembled, accurately cleaned, all parts will be checked and replaced if required. Then the machine will be adjusted and tested. Serviced machines will provide correct, reliable operation and decrease probability of malfunction.

The only elements which are subject to wear during normal operation are the rubber rollers. There are two types of rollers used in the machine

- black rubber rollers used as a feeder and a driving rollers for all machines manufactured before April 2008.
  - green polyurethane rollers using as a driving rollers for the machine manufactured after April 2008.
- Please note that for the Feeder rollers black, rubber ones are always used.



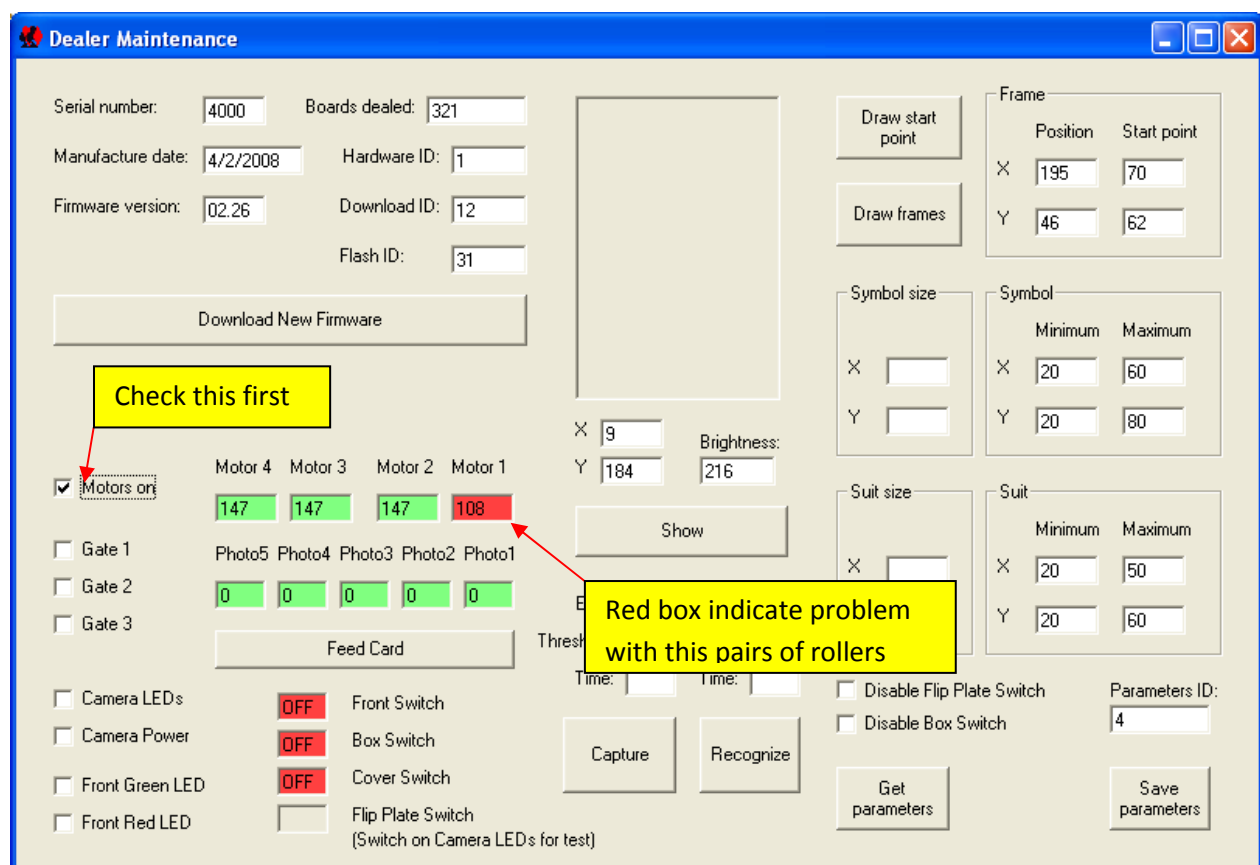
Black rubber driving rollers should last for 8000-20000 but it is practically impossible to define the exact number. These rollers deteriorate because of the chemicals (fat, cosmetics) transferring from peoples' hands through card and onto the rollers. How often the rollers require replacement will depend on how clean peoples' hands are. For example it depends on what type of people are playing (rollers are worn

more quickly for women clubs) or can even depend on the country (different countries using different type of cosmetics or soaps etc.).

The first symptom of roller problems is the slowing down of the dealing process. The machine will still operate correctly but dealing one board may take 10s or more. If there is no other reason for the slowing down of the dealing process, the condition of the rollers should be checked.

To do this, please go to the “Maintenance” section of the Dealer4 PC software, and check the “Motors ON” box: There are four text boxes under Motor4-1 labels. Each box represents the motor speed for each pair of rollers. Normally the number is 147-149 and the box is green. If number is below 130 and the box is red that means that this particular pair of rollers is operating slowly and this is a typical symptom of worn rollers. Typically the first pair of rollers is worn the quickest because every card goes through this pair. The machine can still be used in such condition but the dealing process will be slowing up to the point where dealing will become impossible – so it is recommended that when used rollers are discovered – the machine should be sent in for service at the first opportunity.

Please note that motors slowing down may be the cause of another fault. First thing to check is if the rollers are clean – please refer to chapter 2. Also there can be other problems: such as issues with the motor itself, or the control electronics. Your Service Centre can verify this and takes proper action.



Feeder Rollers usually do not produce any problems and should last for at least 40000 boards. It is sufficient to replace them during recommended annual service.

New green polyurethane rollers are resistant to most chemicals and will last much longer. They should last for the at least 40000 dealt boards. Deteriorating mechanism for these rollers is different than the black ones – they will wearing off so after some time they will have a smaller diameter up to the point when a card will not longer have proper grip. A typical symptom of this is a repeatable “Feed Card Error” (Error 55 or 56).

Because green rollers last much longer then the black ones in normal conditions there should be no problem with them between annual services.

## 2 Dealer4 Cleaning

Dealing cards is a dirty process. Cards during play collect dust, sweat, cosmetics and other chemicals from player’s hands. This dirt is transferred to the machine parts. When a machine is too dirty the dealing process can be slowed down or will become impossible. So regular cleaning is required for long and reliable operation of the Dealer4. There are four parts that require cleaning which are described in detail in the following paragraphs.

### 2.1 Cleaning tools

To clean the Dealer4 the following tools are required:



- cotton gloves - it is best and most convenient to use gloves. If cotton gloves are not available any other cloth can be used.

- AirDuster - pressurized air in can (E.g. EAD from Electrolube).

- Cleaning agent –cleaning agent can be:

- clean water – not the best but simplest and easily available.

- methylated or ethylated spirits (methanol or ethanol alcohol), may be not available in all countries.

- propanol or isopropanol – special kind of alcohol commonly used as solvent for electronic industries. (E.g. IPA from Electrolube)

**Do not use:** soap or another detergents, any solvent, turpentine, any hydrocarbons (like petrol or WD40), rubber cleaners (rubber rejuvenator) .

**Important:** **1. Alcohols are flammable liquids. Disconnect Dealer4 from mains before use. Do not use in the presence of open fire. Use only in well ventilated areas.**

**2. Alcohols can be irritated for the sensitive skin. In such cases it recommended to use rubber gloves during cleaning process.**

- small brush

These things together with other tools required for adjusting the machine should be available in the “Cleaning and Maintenance Kit” available from your local distributor.

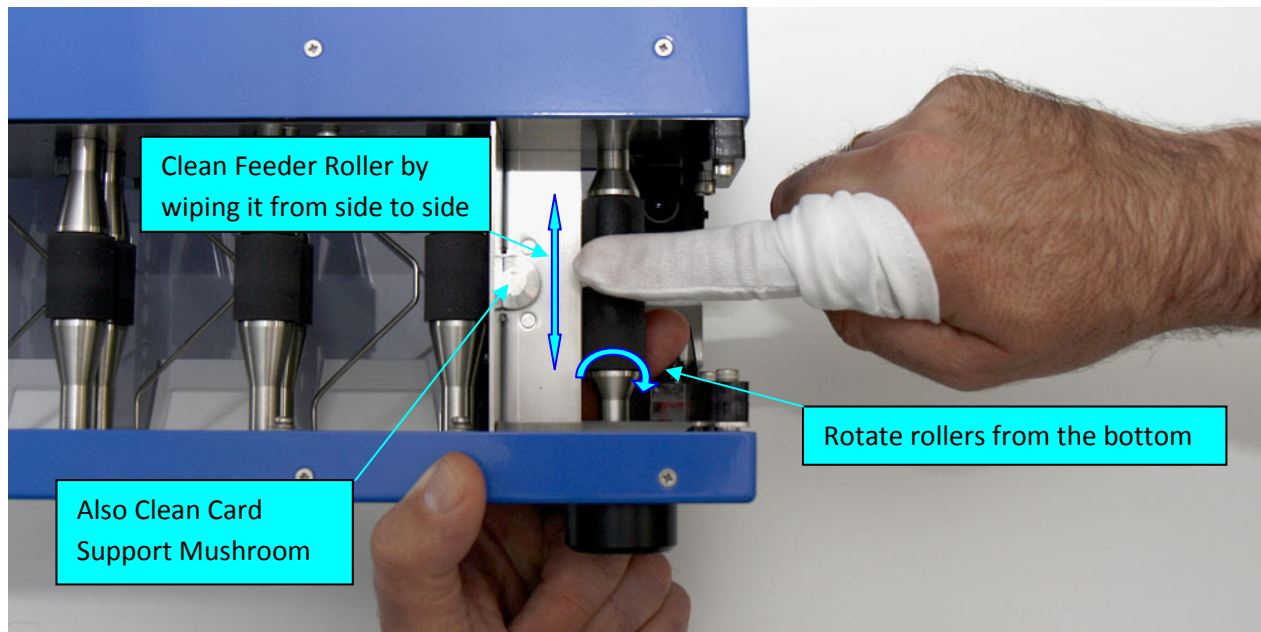
## 2.2 Cleaning Feeder Rollers

Feeder rollers are the parts which require the most frequent cleaning. When they become dirty the grip to the card decreases and it cannot feed the card correctly. The result will be a slowing down of the dealing process and “Card Feeding Error” (Error 55 or 56). Cleaning of the Feeder roller is usually required every 200-500 dealt boards and will depend on the card condition. It is a good habit to clean the feeder roller daily after finishing dealing for the day no matter how many boards were dealt.

To clean Feeder Roller please follow following steps:

1. Put the cotton gloves on the right hand index finger and damp it with a cleaning agent. The cotton should not be too wet. If cotton is too wet the cleaning agent can get under the rubber which is not recommended. Do not spray cleaning agent directly onto the roller. Be sure that cleaning agent does not drop on the camera (can happened if cotton is too wet).

2. Put the left hand finger under the roller and rotate it slowly. The right hand finger with the cotton glove should clean the roller by rubbing it side to side as shown on the picture below:



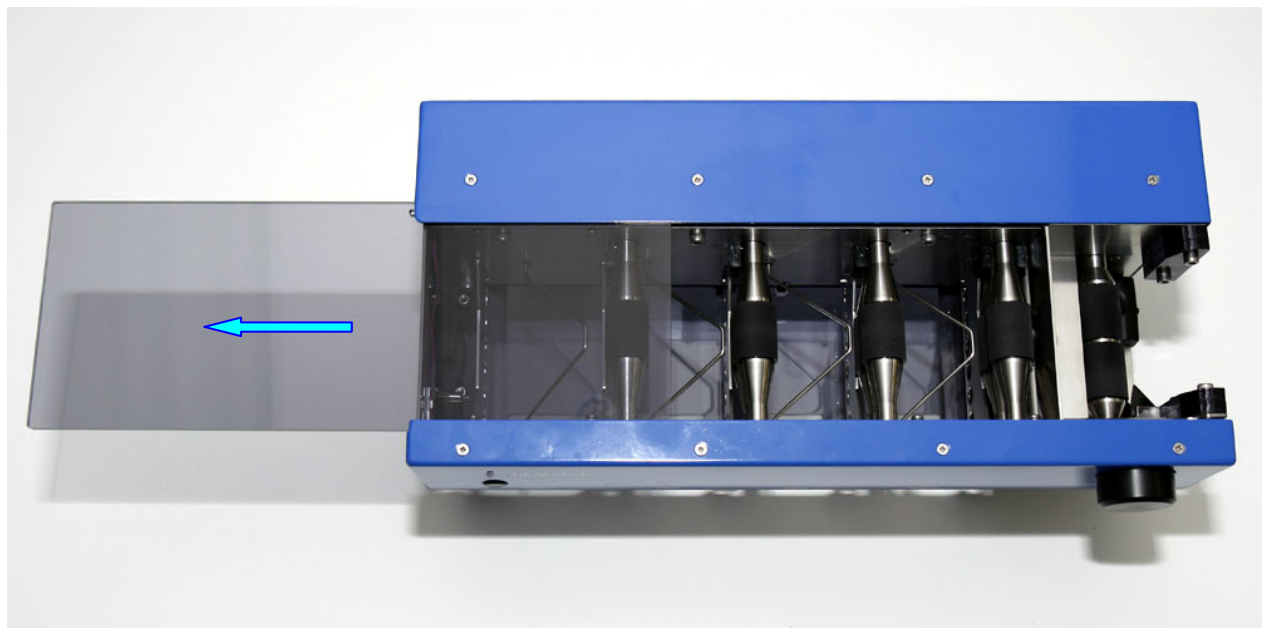
3. Also clean the Card Support Mushroom by wiping it with a wet cloth or glove.

4. After cleaning leave the machine to dry before starting to deal again.

## 2.3 Cleaning Driving Rollers

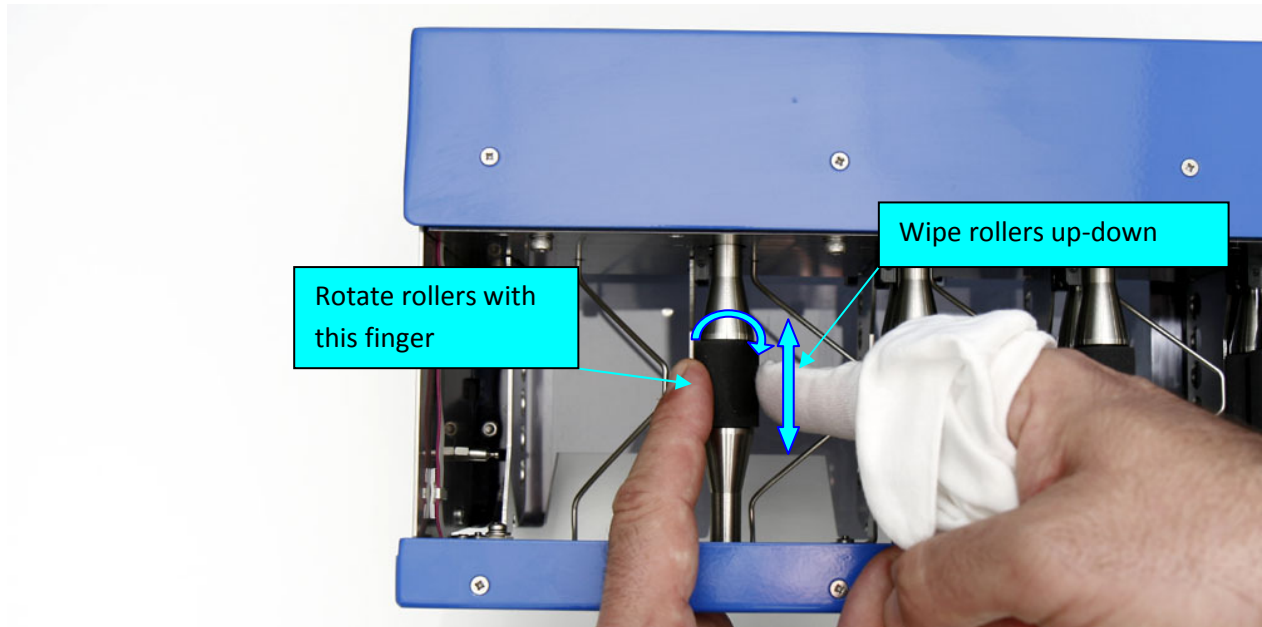
Driving rollers should to be cleaned every 1000 – 2000 dealt boards. If these rollers become too dirty it may slow down machine operation and in extreme cases make dealing impossible. To clean rollers please:

1. Take out the Machine cover by sliding it out to the left as shown:



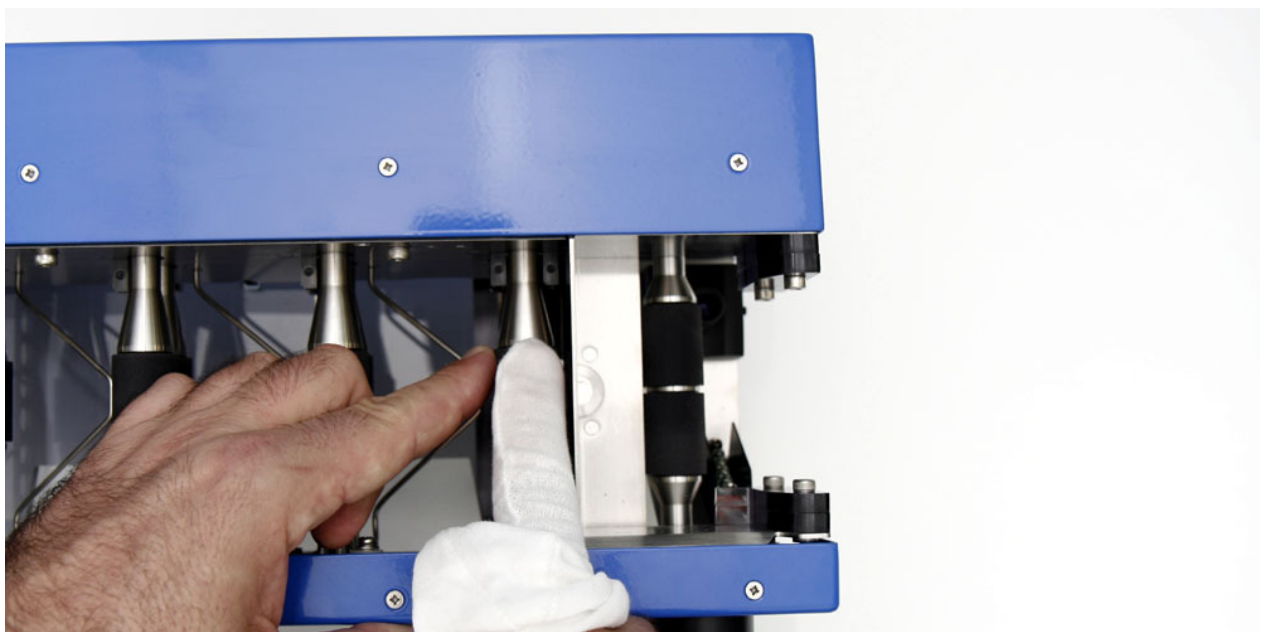
2. Put the cotton gloves on the right hand index finger and dampen it with a cleaning agent. The cotton should not be too wet. If cotton is too wet the cleaning agent can get under the rubber which is not recommended. Do not spray cleaning agent directly onto the roller.

3. With one hand slowly rotate the top roller and wipe it with the damp cotton glove.



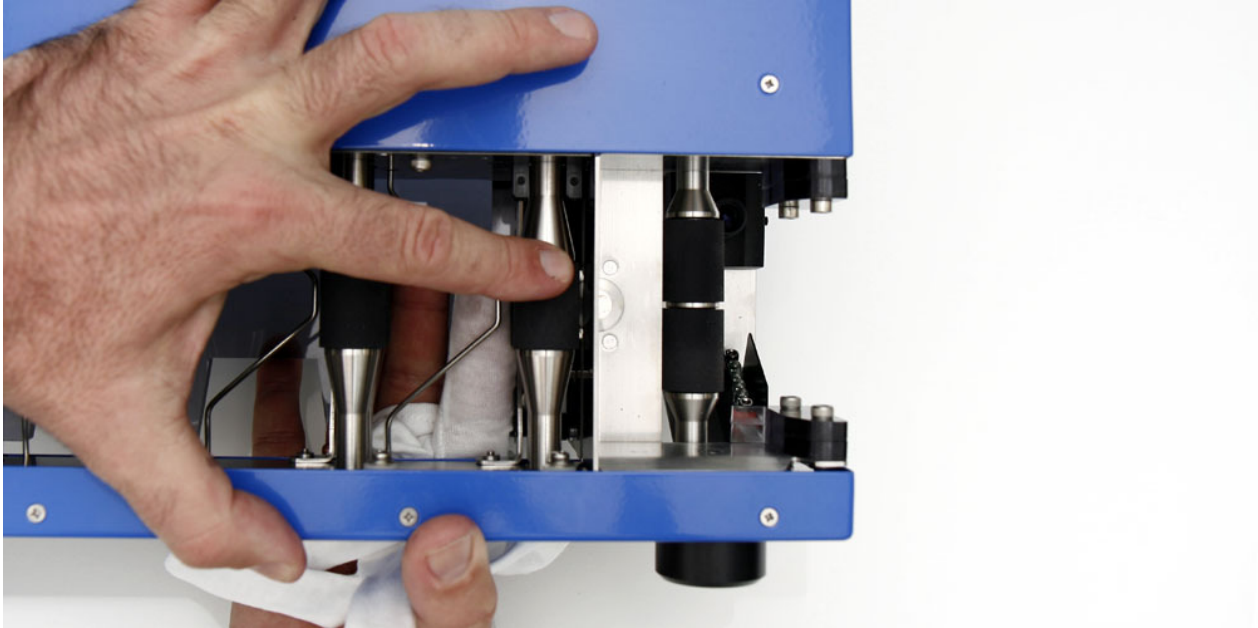
4. Similarly clean the bottom roller. When the top roller is rotated the bottom will rotate also, so during cleaning it is easier to rotate the bottom roller by rotating the top one.

5. In the same way clean the third and second pair of rollers. The first pair has no access from the right side so it has to be cleaned from the top.

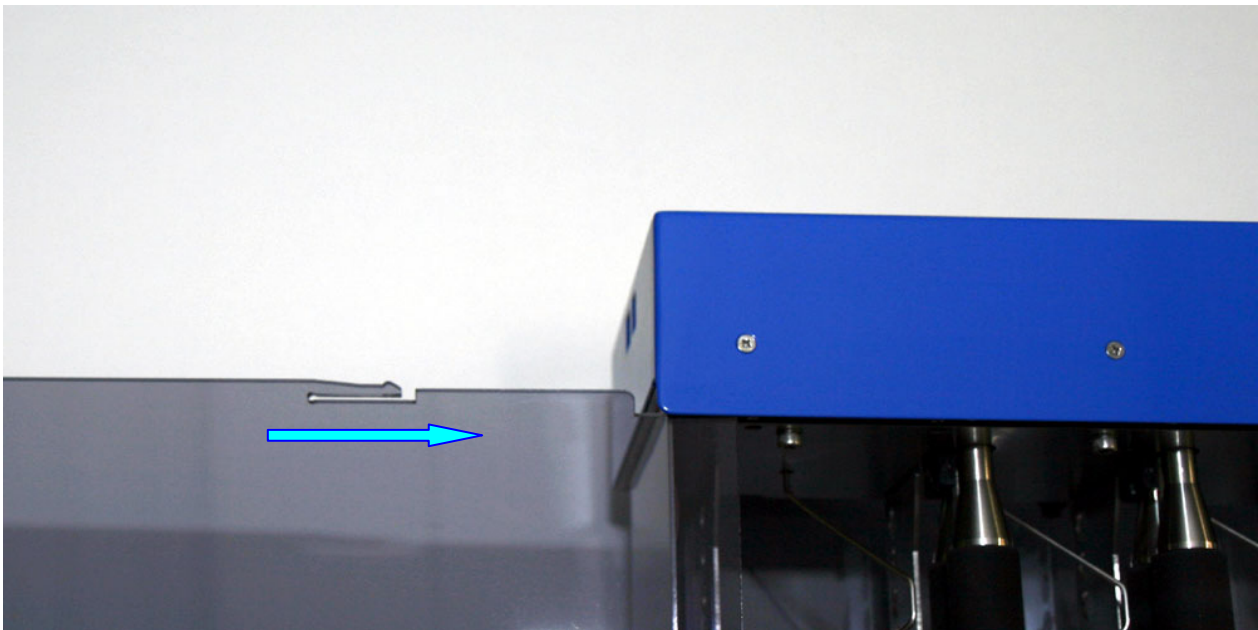




6. Cleaning the first bottom roller is the most difficult part. Rotate the top roller and clean the bottom one from the left side. Be careful do not bend the wire gate which directs cards into the “South” pocket.

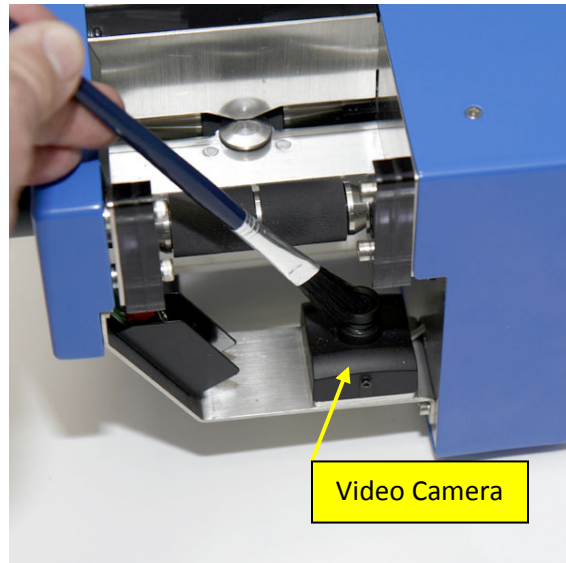
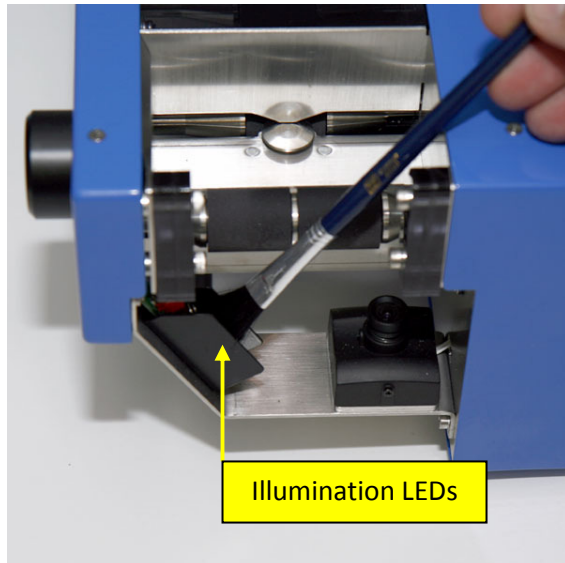


7. After cleaning leave machine to dry, slide Top Cover back (please notice that Top Cover is not symmetrical so needs to be put back in the right direction). The machine is now ready to go.



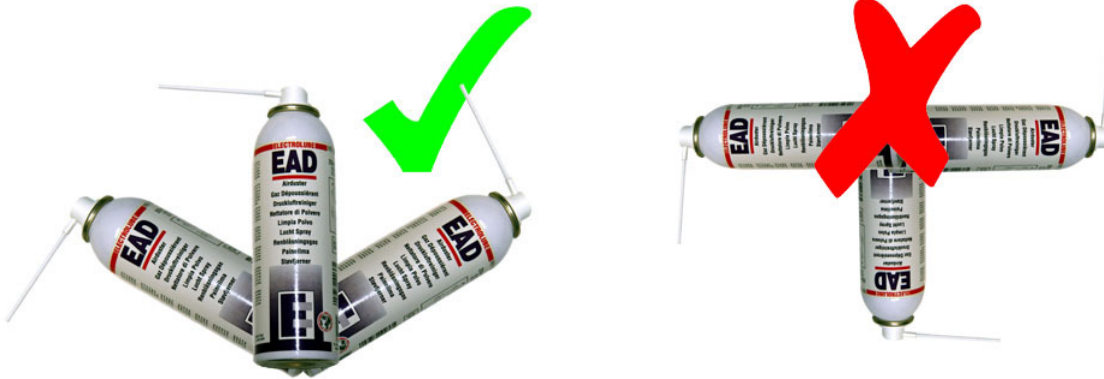
## 2.4 Camera and illumination LEDs cleaning

Dust on the camera lens can block the card picture and make card recognition impossible. The camera lens and also the illumination LEDs should be cleaned at the same time as the driving rollers. To do this use the AirDuster or a small brush:



There are a couple of important rules when using AirDuster:

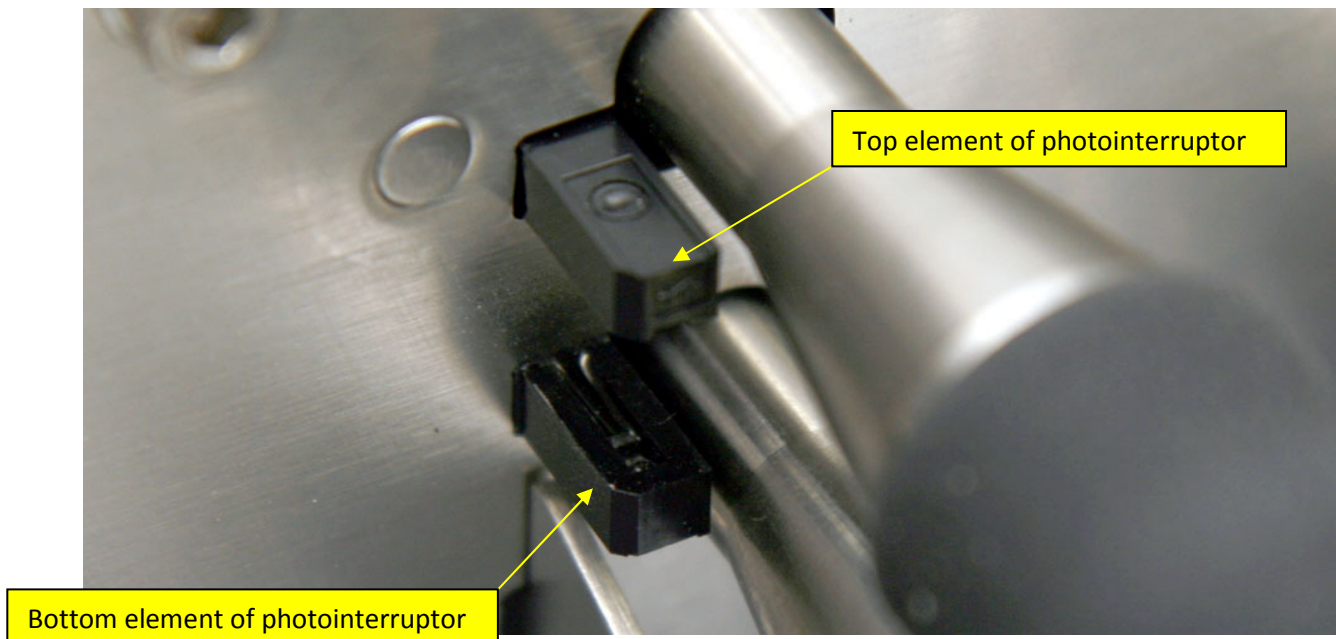
1. Usually Airduster is not pressurized air – it is liquid gas which evaporates when it leaves the can. The can should be operated only from the up-right position to a maximum of 60 deg down. If angle is bigger liquid can come out from the can and because it evaporates very quickly, it can freeze Dealer4 parts and leave some residue on them.



2. Use only short burst of air and do not put the end of the nozzle too close to the part being cleaned. This will prevent the part to getting too cold. Try to keep the nozzle a couple centimeters from the parts.

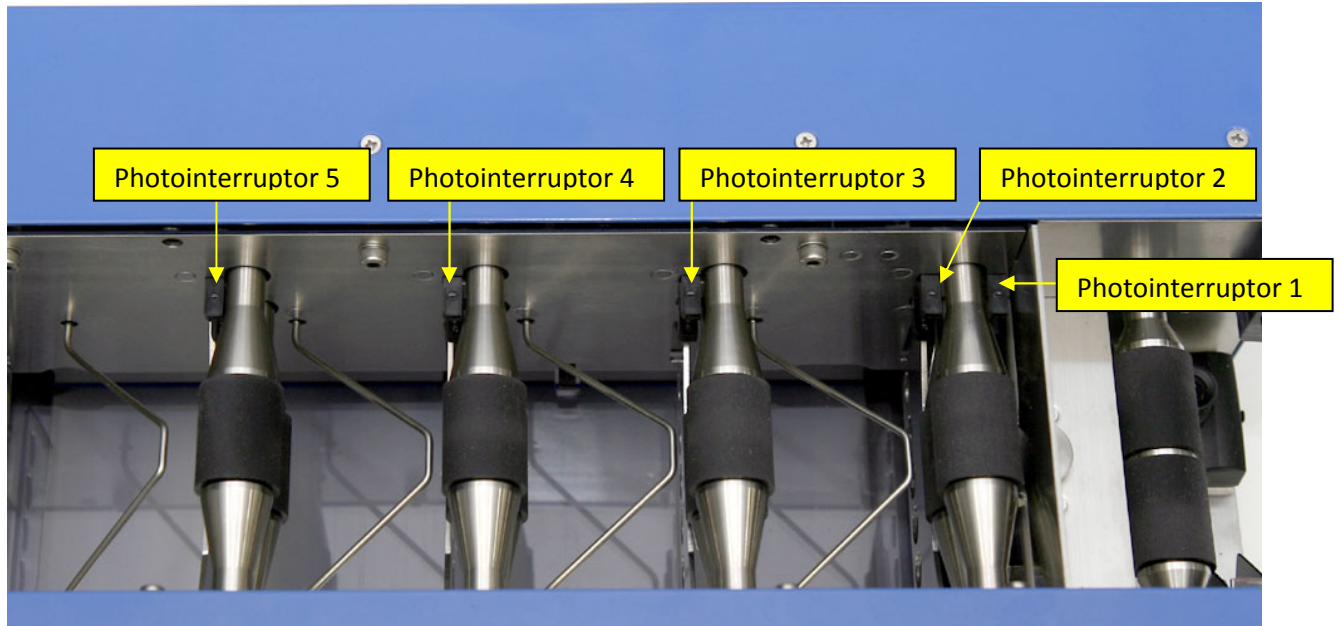
## 2.5 Cleaning photointerruptors

Photointerruptors are the small plastic parts located near the rollers. In the top part is the infrared light source and in the bottom part there is light sensing element. When card is located between these two elements the light beam is interrupted and this fact allows Dealer4 to find the actual card position.

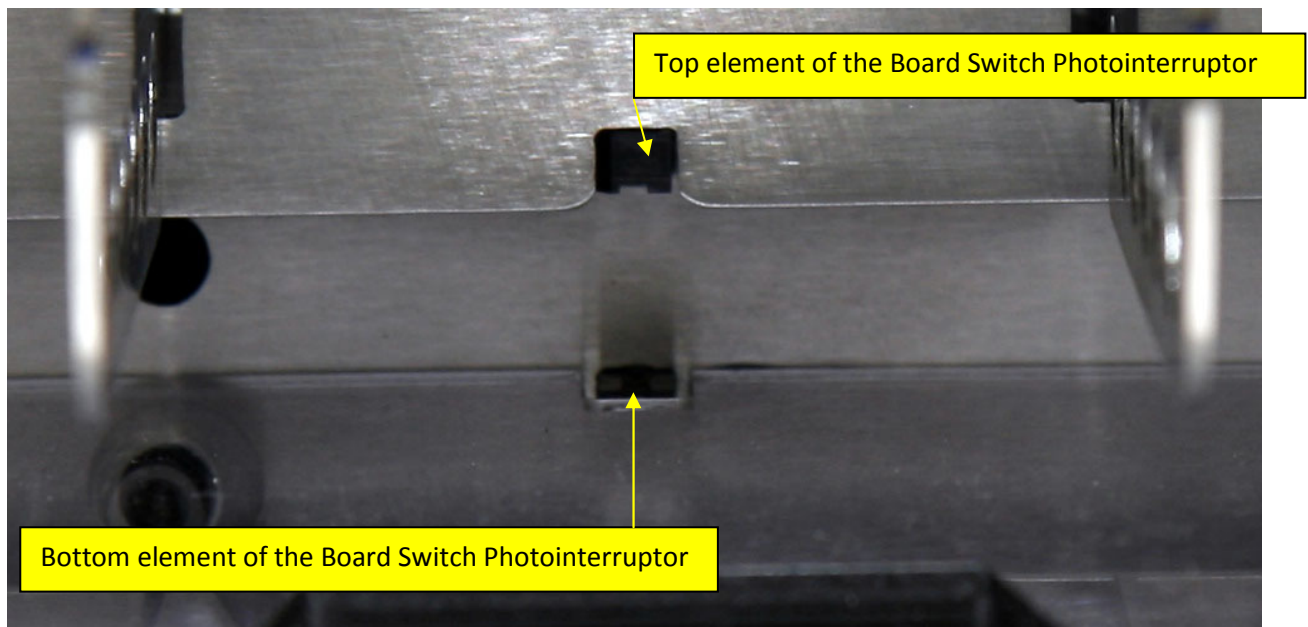




The photointerruptors play an important role in the dealing process. There are five photointerruptors in the machine on the left side of each roller pair and one more on the right side of the first roller.



Also for Dealer4 with serial numbers from 4053 similar photointerruptor is used as a Board Switch – to find if the Board is inserted into the machine. This photointerruptor is located on the bottom of the machine at the back of the Board Pocket:



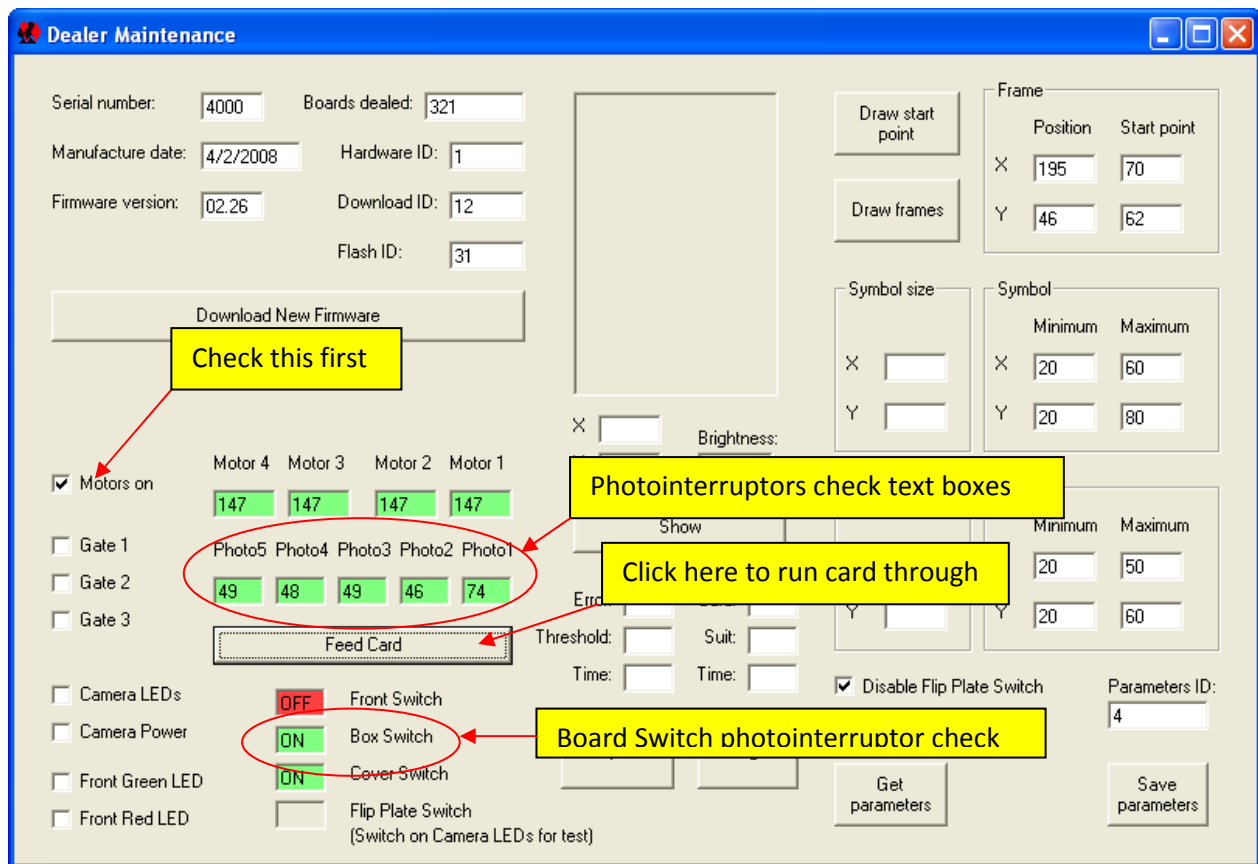
If any of the photointerruptors are too dirty the light beam can be blocked and Dealer4 will not operate correctly.

Operation of the photointerruptor can be checked on the “Maintenance”: section of the Dealer4 software:

After entering the “Maintenance” window look at the five text boxes under Labels Photo5-1. With no card inside the machine all these boxes should be green. Then check “Motor On”, put a deck of cards in the feeder and click “Feed Card”. The card will go through the machine. The Photo boxes become red for the moment when the card passes through them and should then be green again. If any of the boxes stay red after this operation that particular photointerruptor is dirty and requires cleaning.

Board Switch photointerruptor operation can be checked by observing the Board Switch text box when inserting and removing the board. When the board is inside the machine this text box should be green with ON text, when out of the machine – text box should be red with OFF text.

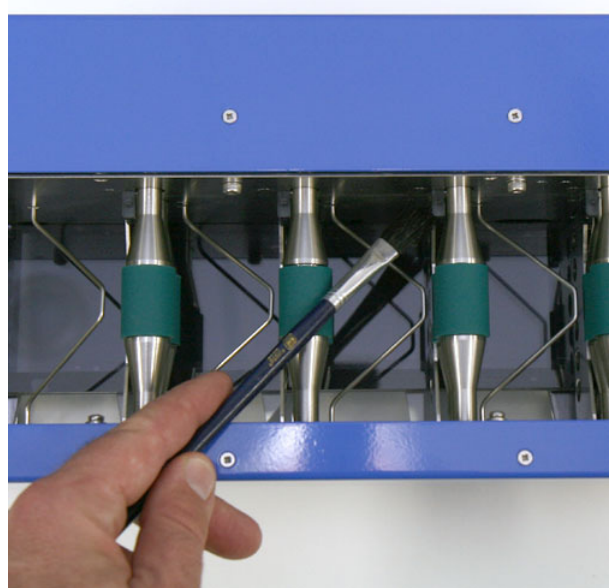
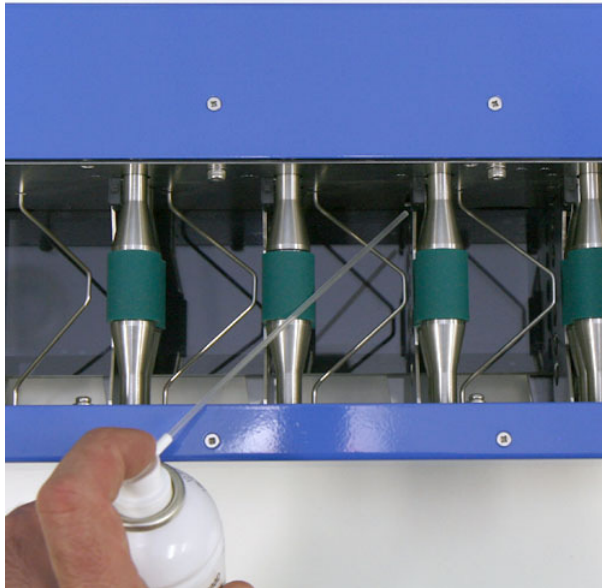
(In the revision 4.15 of the PC software this text box is called “Box Switch”, in later addition this name will be changed to “Board Switch”).



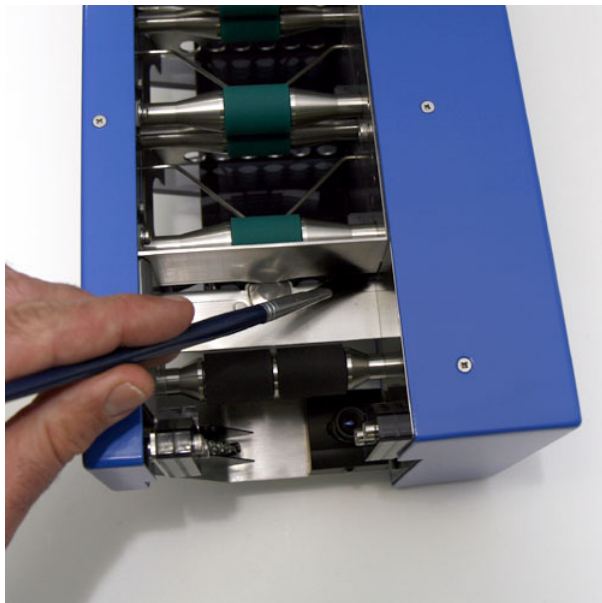
Not all cases of the dirty photointerruptors can be checked by the above procedure. Even if in the “Maintenance” screen shows everything as Ok but frequent Gates Errors (Error numbers : 1 to 8 or 17 to 24) or Card Jam Errors (Error numbers: 9 to 16) happened as a first thing photointerruptors should be cleaned.

Note: Some another faults in the machine may have the same symptoms as a dirty photointerruptor. If cleaning of the photointerruptor does not help please ask a Service Centre for help.

Cleaning photointerruptors can be done using the AirDuster or a small brush. Only bottom element of the photointerruptor needs to be cleaned.



The best access to clean the first photointerruptor is from the Feeder side:

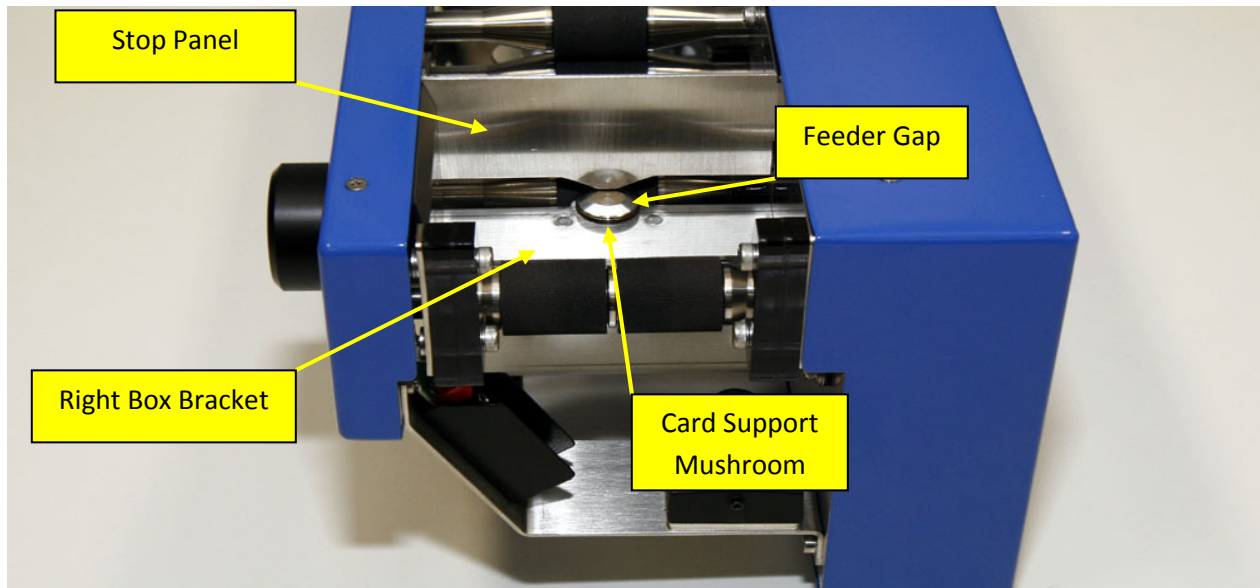


The same way clean the Board Switch photointerruptor.

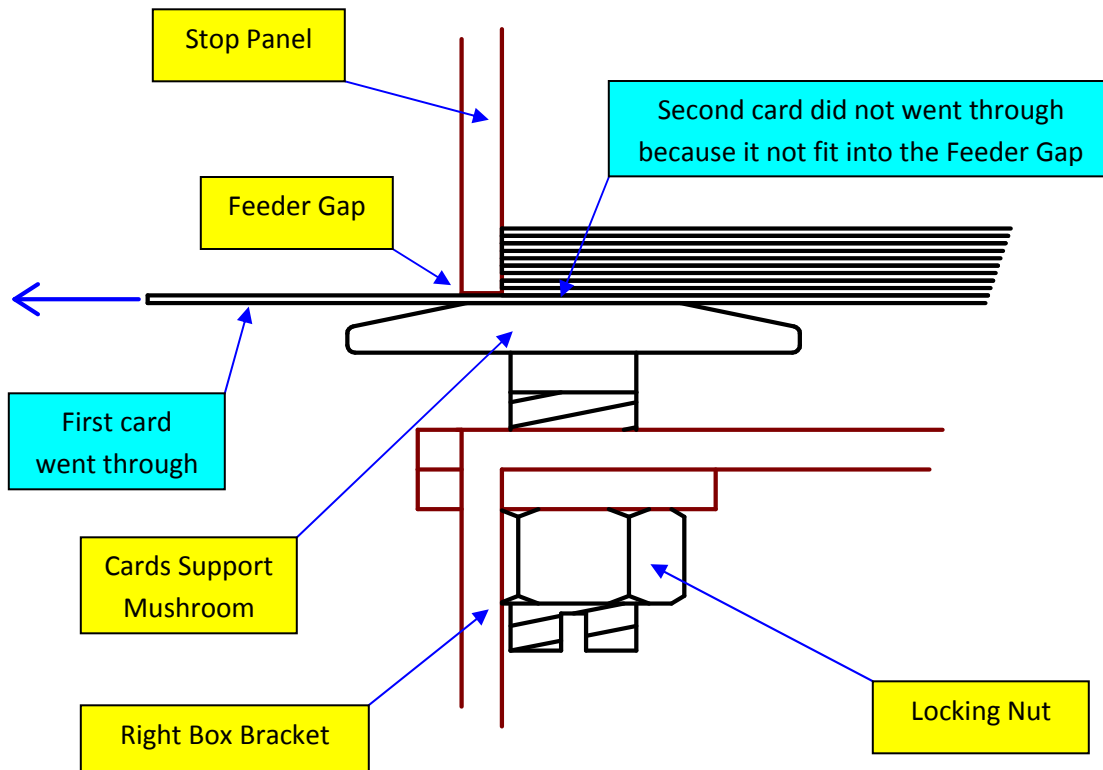
### 3 Dealer4 Adjustments

#### 3.1 Feeder Gap Adjustment.

Feeder Gap is a very important part of the Dealer4 card feeding mechanism. It allows only one card to be fed into the machine at any one time. The picture below shows the location of the Feeder Gap in the machine:



Drawing below shows how the Feeder Gap operates:



The correct Feeder Gap size is essential for proper Dealer4 operation. If the gap is too small it will be difficult to fit the cards through the gap or may even be impossible. If the gap is too large two cards can through at the same time or the second card can block the first card.

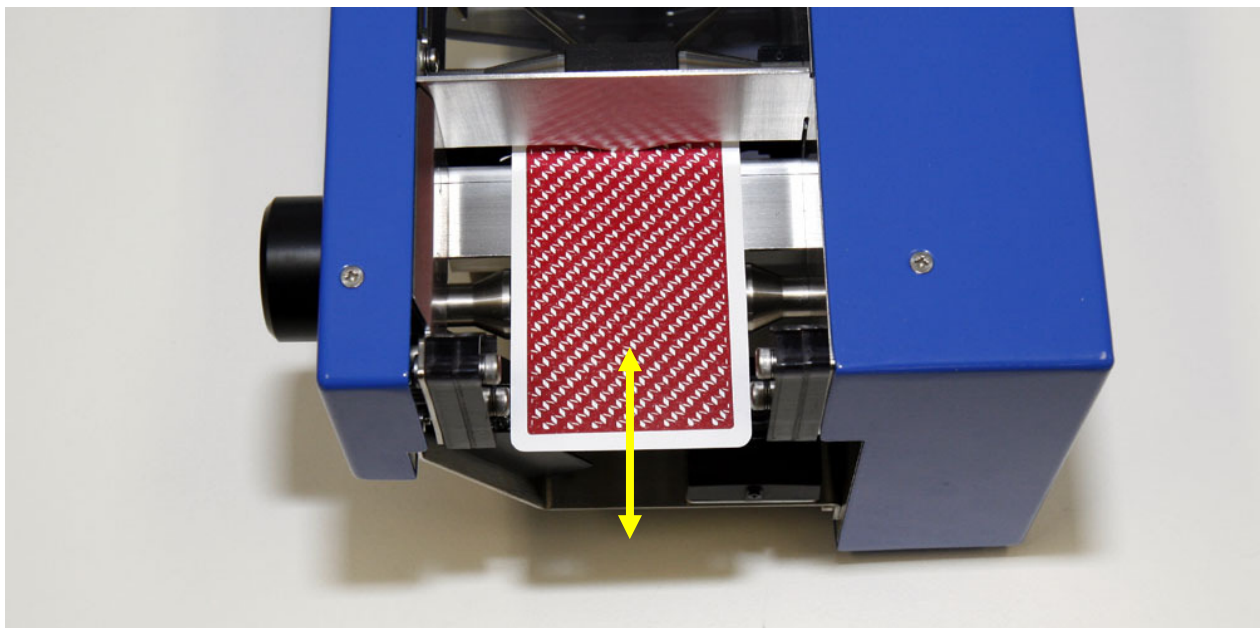
Most common errors reported that suggest wrong size of the Feeder Gap are: Card Feeding Error (Error 55 and 56), Gates errors (Errors 1 to 8 and 17 to 24), and also Duplicate Card Error (Error 54) in some special cases. Also a typical symptom of incorrect gap size is slow operation of the machine.

Feeder Gap is set during Dealer4 manufacturing and usually does not need to be adjusted. But some specific situations may require adjustment. There are:

- Using non standard cards (thicker or thinner then normal)
- After machine disassembly and assembly (usually during machine service)
- When for any another reason gap is changed (e.g. someone dropped machine on the floor)

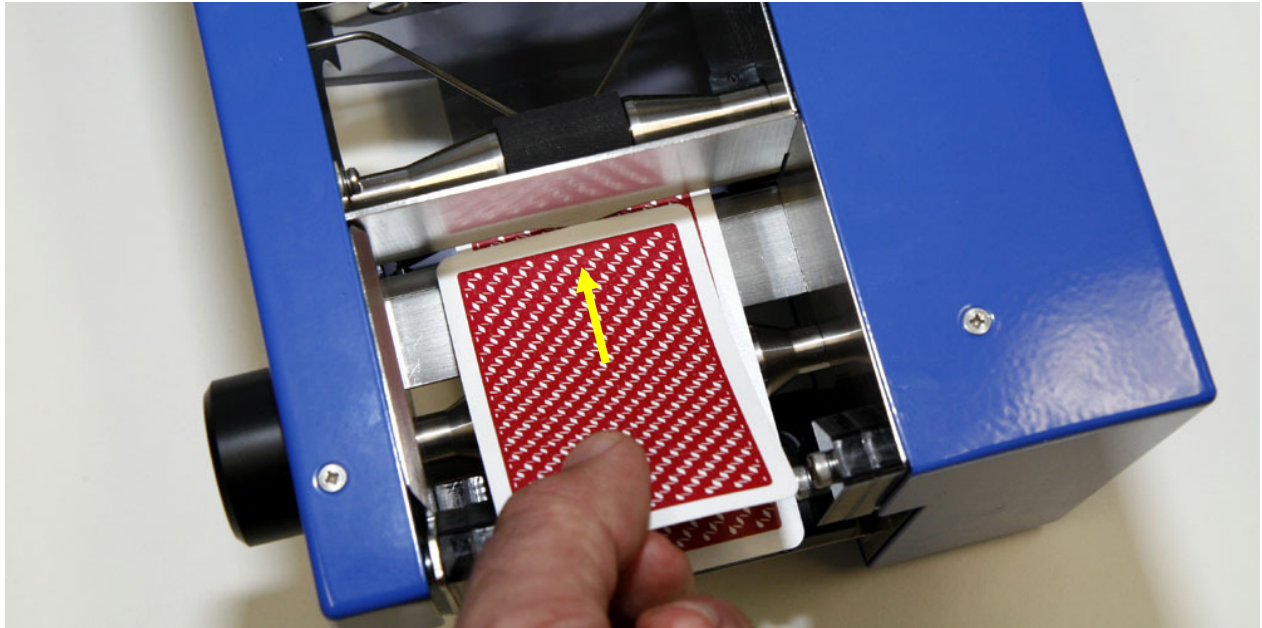
Feeder Gap size is depends on the card thickness and should be set to the 120%-140% of the card thickness. Most of the standard cards have thickness of 0.3mm – and for such cards gap should be set to 0.36-0.42mm (Factory setting is 0.40mm). The best method to check the gap is to measure it using Feeler Gauge (see chapter 3) but there is a simple test which should show if the gap is set correctly:

1. When machine is disconnected, fit one card into the Gap as shown on the picture below. Keep card horizontal (card should touch Feeder Roller) and move it back and forward. Card should be able to fit into Feeder Gap smoothly and should move without any resistance. (Do not fit the card too deep – if the card touches the first pair of driving rollers – some resistance will be felt which can be confusing). If any resistance is felt during card movement or if it is impossible to fit the card into the gap that means the Feeder Gap is too small.





2. While the first card is still in the Feeder Gap try to fit a second one into it. This should be not possible to do. If the second card can fit into the gap even only slightly it means that gap is too large.

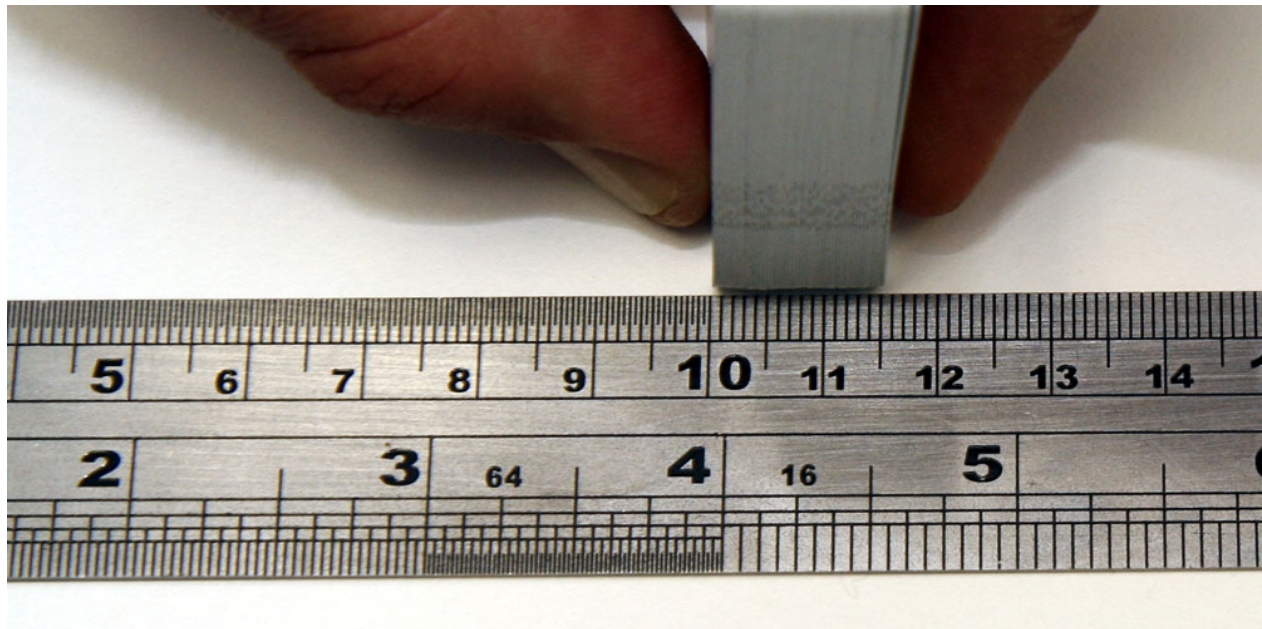


### **3.1.1 Define proper gap size**

If thicker or thinner cards are in use first it is needed to measure them to define what size of the gap is required. Use a vernier caliper to do this:



If a vernier caliper is not available it is possible to measure card thickness using standard ruler. To do it get full deck (52 cards), hold them together and measure thickness of all of them. Then divide results by 52. This gives the thickness of a single card.



If card thickness is known the correct gap size can be calculated by multiply card thickness by 1.2 to 1.4.

For example: Measure of the full deck gives result 15.5mm. Divide it by 52 gives thickness of the single card equal 0.298mm (rounded to 0.3mm). This value multiplied by 1.2 gives 0.36mm – this is minimum gap size, multiply by 1.4 gives 0.42mm – and this is maximum gap size. In this case use a 0.4mm gap. It is not necessary to set the gap with accuracy greater than 0.05mm. It is enough to use 0.25, 0.30, 0.35, 0.40, 0.45 or 0.50 sizes.

### ***3.1.2 Measure existing gap size***

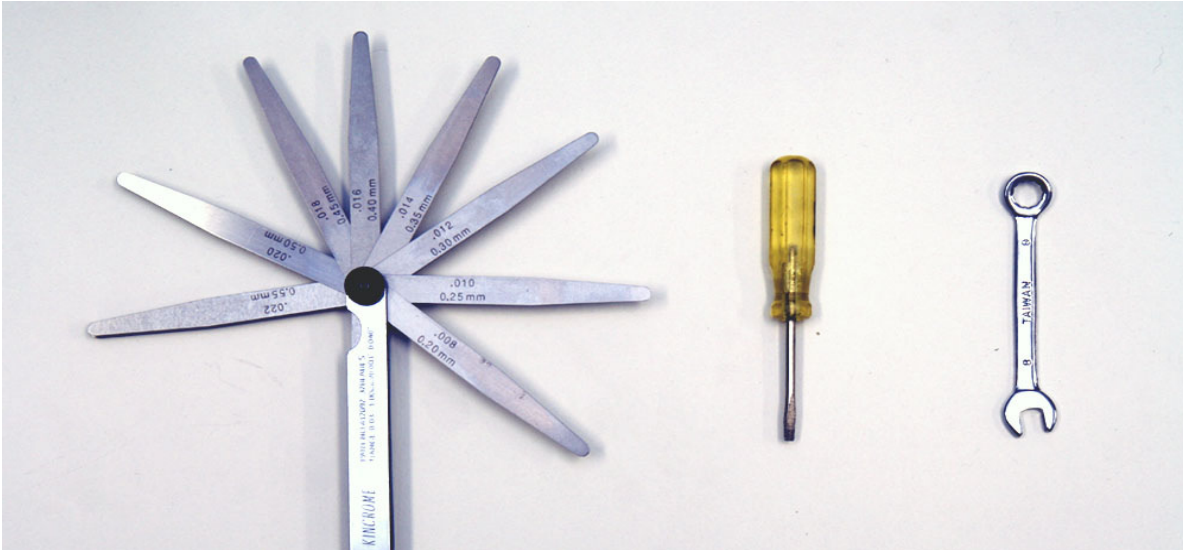
A Feeler Gauge is needed to measure the gap size. A Feeler Gauge can be purchased in any tool shop and is part of the “Cleaning and Maintenance Kit” which should be available from the local distributor. Feeler gauges can cost from \$4 to more the \$200 for the high precision, high quality one. For the gap measure and adjustment the cheapest one is absolutely enough. Feeler gauges should have blades with 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50mm sizes. Some cheaper ones have blades every 0.1mm (0.05, 0.10, 0.20, 0.30, 0.40, 0.50mm). Such feeler gauges are OK to use if they have a 0.05mm blade – then to get e.g. 0.35mm two blades need to be used together.

Note: New Feeler Gauges usually have blades covered by oil or grease to prevent rusting. Please wipe each blade with dry cloth to remove any oil or grease to prevent transfer to the machine parts.



### 3.1.3 Feeder gap adjusting

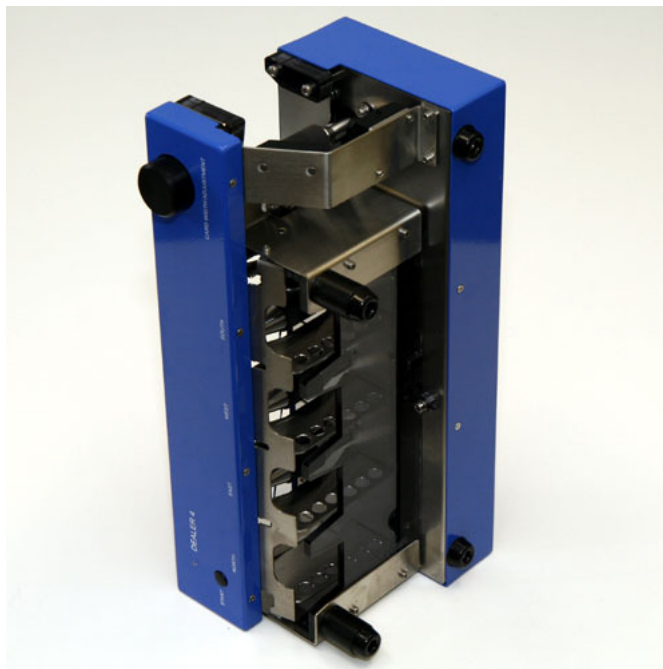
To adjust the Feeder Gap following tools are needed.



- Feeler Gauge
- Small flat screwdriver
- 8mm spanner

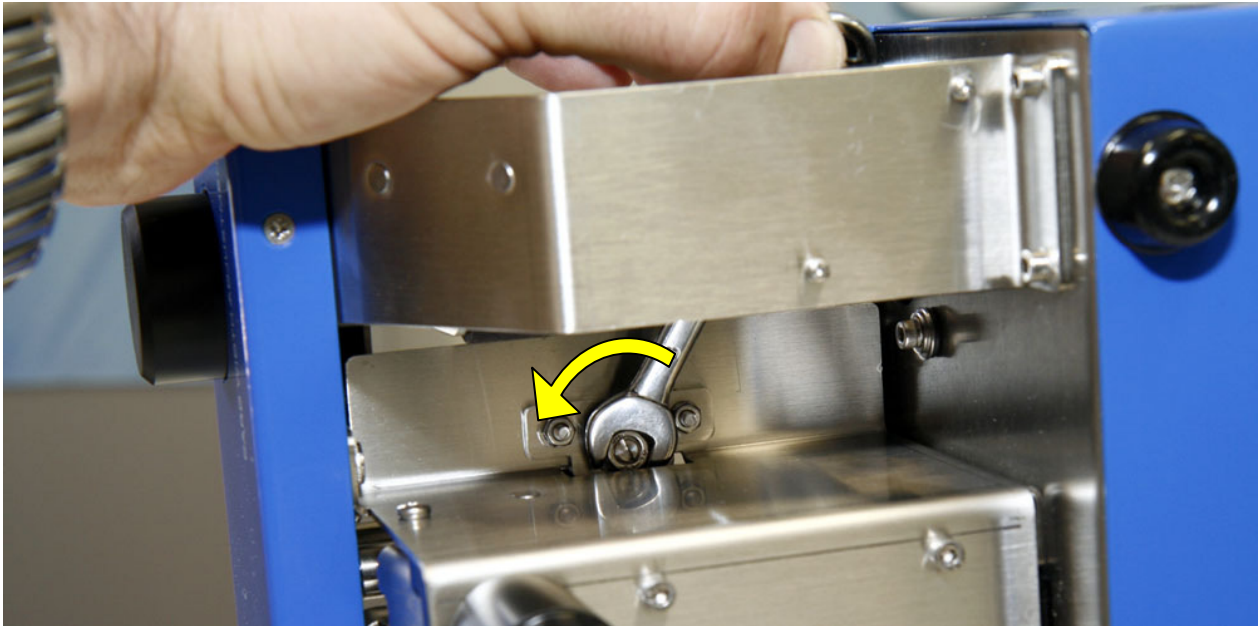
To adjust the Gap please follows the following steps:

1. Put machine on the table left side down:

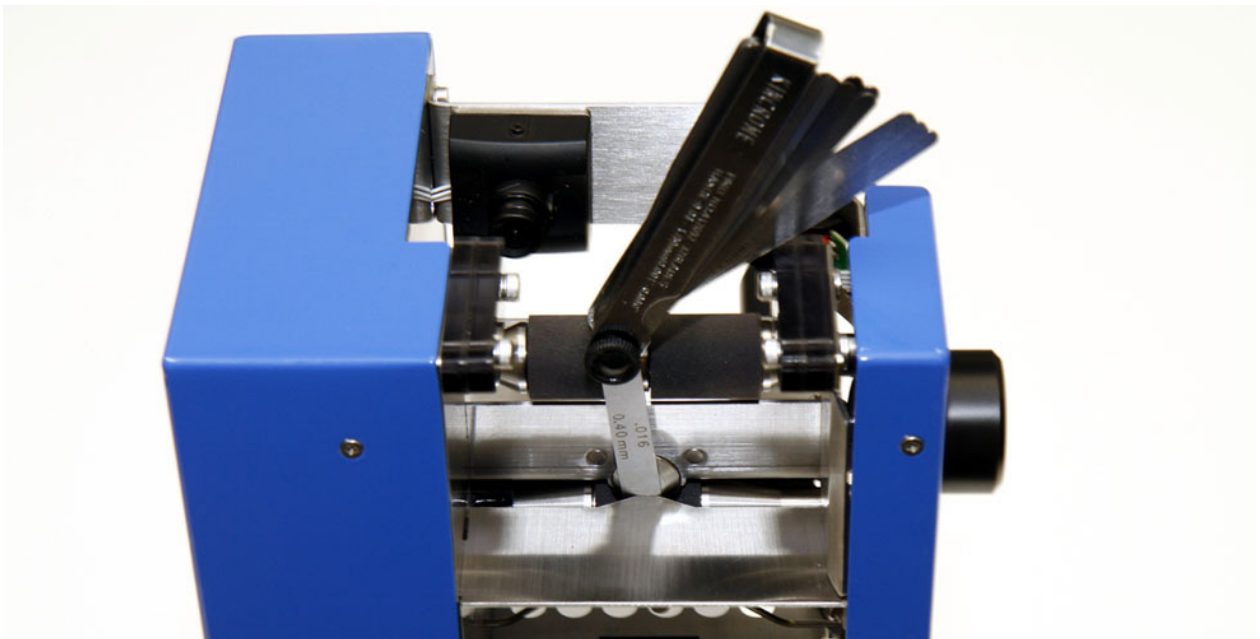




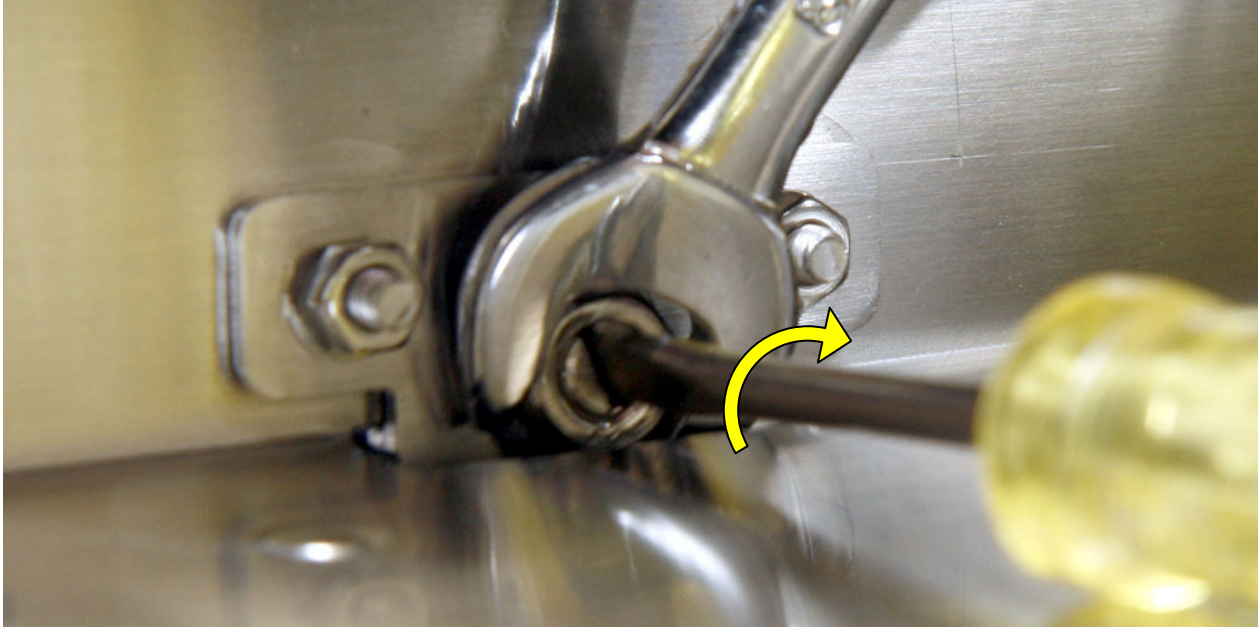
2. Unlock locking nut using 8mm spanner. It is required to turn the nut 1/4 turn to unlock.



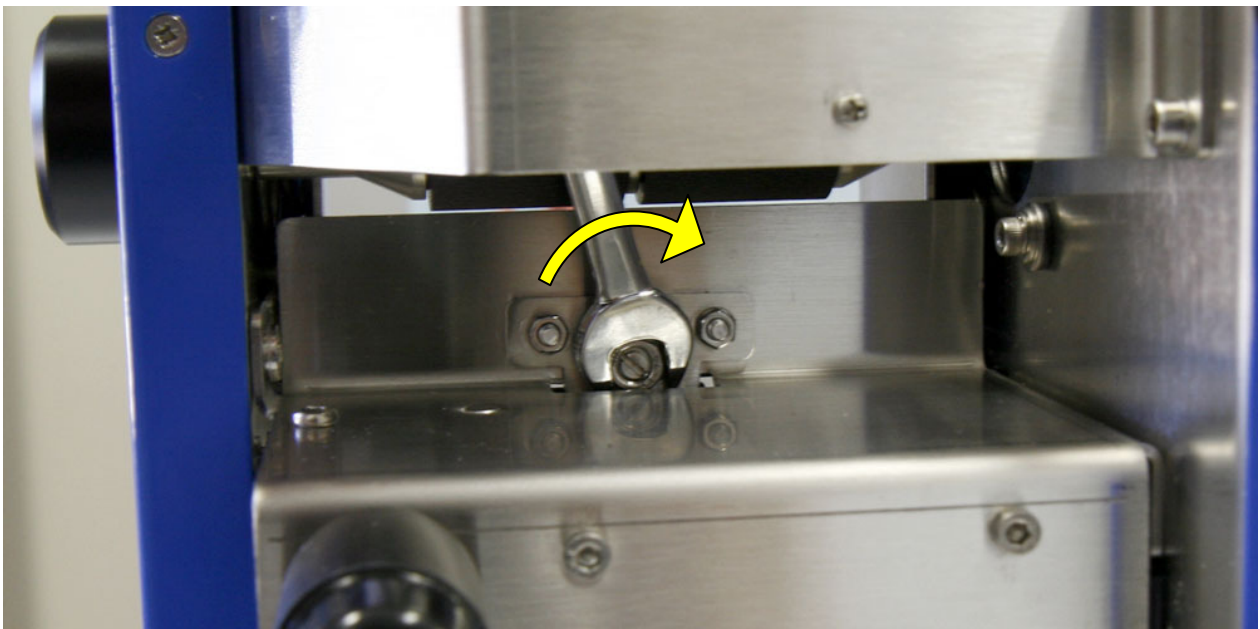
3. Put Feeler gauge blade with desired thickness into Feeder Gap. If blade will not fit (Feeder Gap is too small) rotate card support mushroom anticlockwise (when see from the bottom side) using small flat screwdriver. This makes gap bigger and will allow the Feeler Gauge blade to fit. Some early models (serial numbers from 4001 – 4012 are fitted with a card mushroom without slot for the screwdriver – in such case the mushroom has to be rotated by hand from the top side.



4. With Feeler Gauge blade in this position rotate the mushroom clockwise until it touches the blade. Do not use too much force in this step – when mushroom is rotated too much the Feeler Gauge blade may not be possible to remove. The Locking nut should be held by a spanner during this step to not disturb the rotation of the mushroom



5. Using the 8mm spanner lock the locking nut:



6. Take out Feeler Gauge blade – the blade should come out without much force but cannot be too loose. If it is too loose that means the gap is too big – if this happens - repeat steps 3-6.

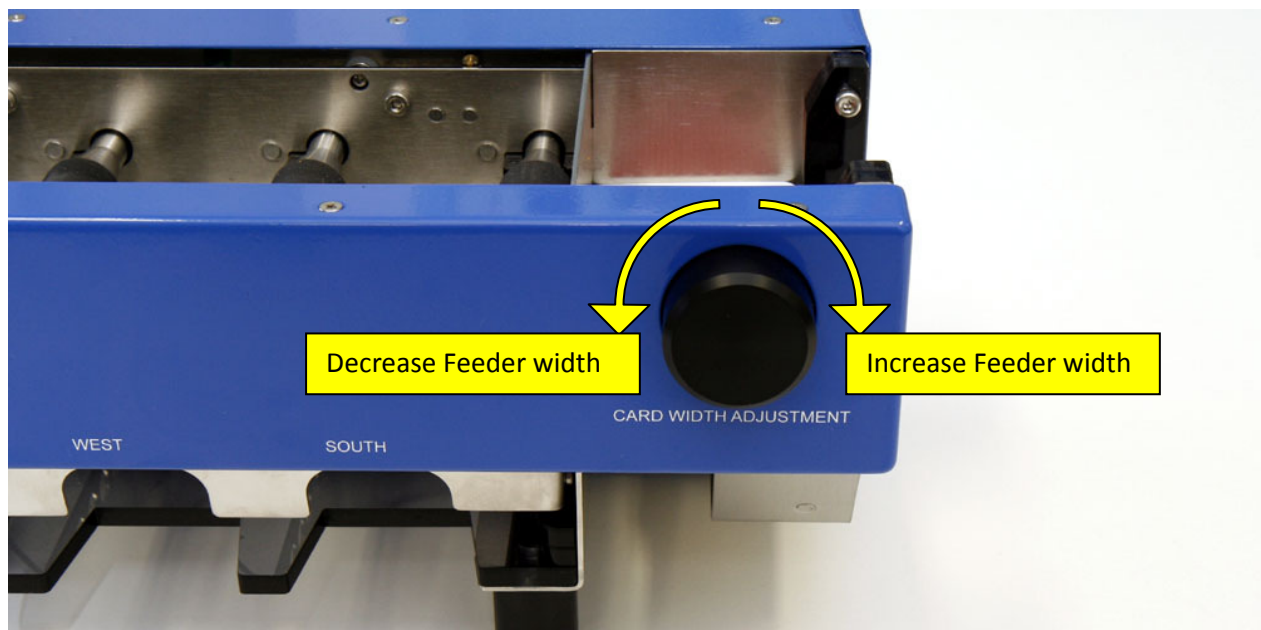
7. Put machine back in the normal position and try to deal.

### 3.2 Card Width Adjustment.

Having proper width of the Card Feeder is important for smooth and fast Dealer4 operation. Feeder width should always be set according to the card width. Too small a width can lead to problems with card feeding and even can make it impossible to fit cards into the Feeder. Too large a width makes the feeding process more difficult (a card can rotate slightly and block itself) and the card symbols can go outside the viewing boundary of the camera.

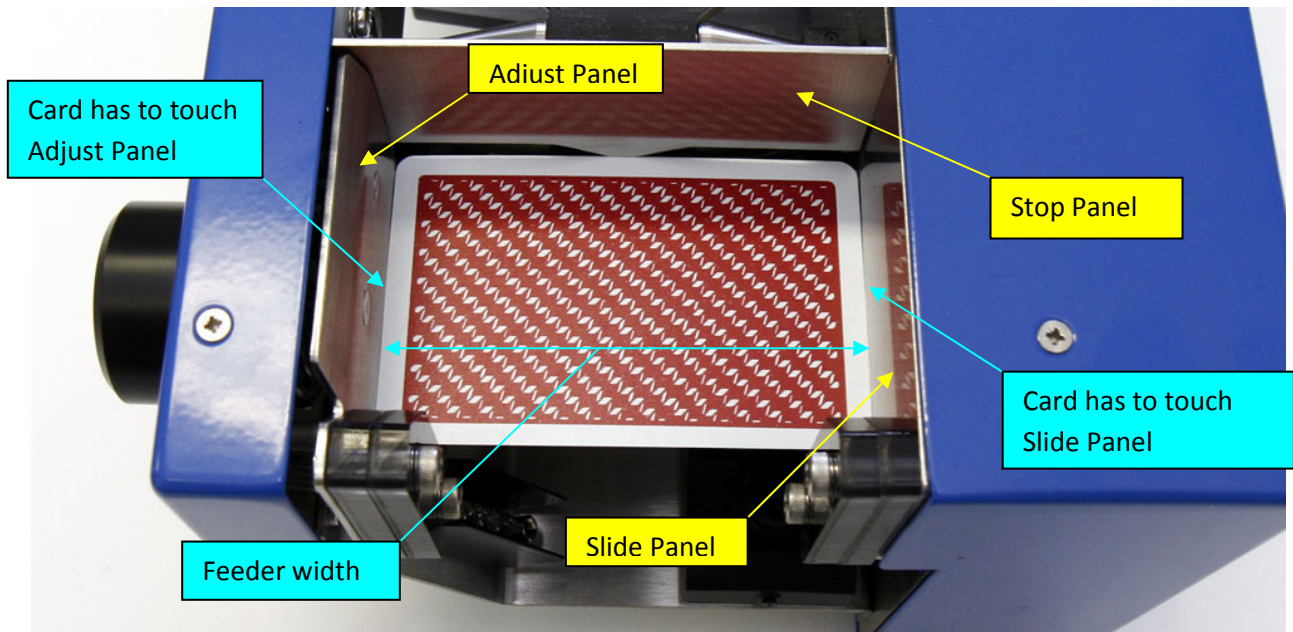
An incorrect Feeder width can result in a number of different errors but most commonly Card Feeding Error (Error 55 or 56) and Card Recognize Error (Error 25 to 53).

Card Feeder width should be set to be 1-2mm wider then the width of the card. It is adjusted by rotating the Card Width Adjustment Knob located on the front panel of the machine:

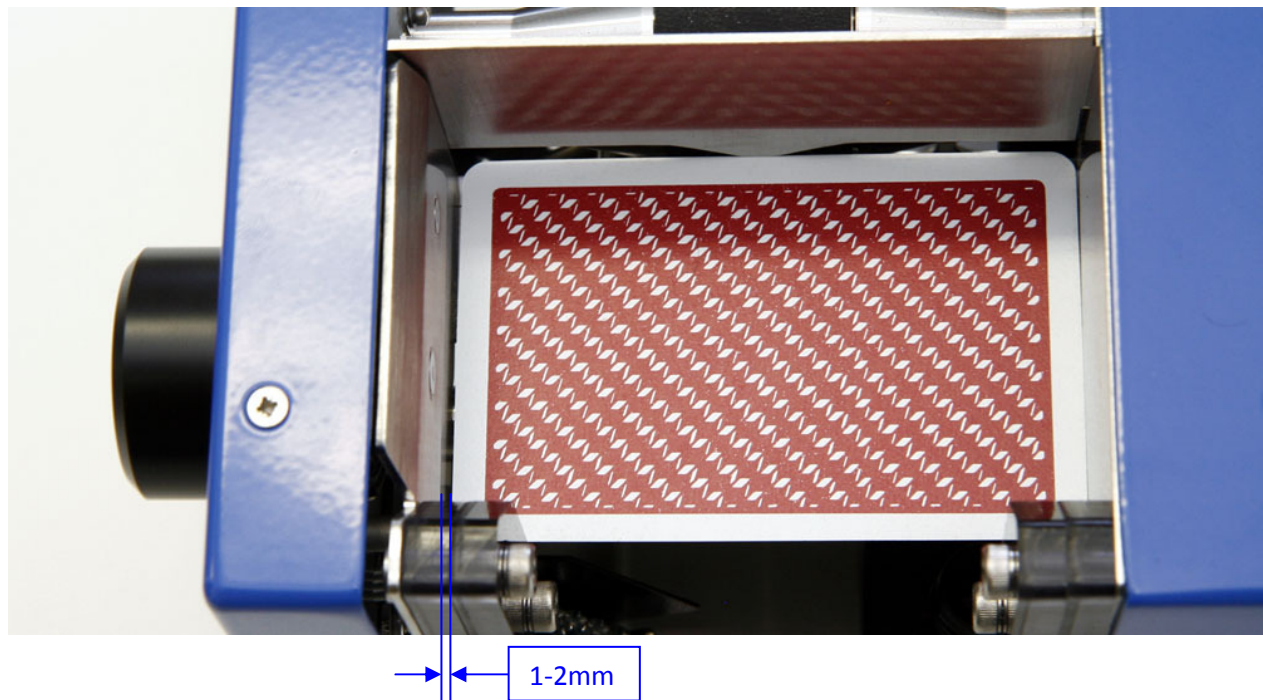


To adjust card width put one card into the Feeder and by turning adjustment knob set the adjust plate to touch the card on side:





Then rotate adjustment knob 1.5 turns clockwise. This move the adjust panel by around 1.6mm and provides proper Feeder width:

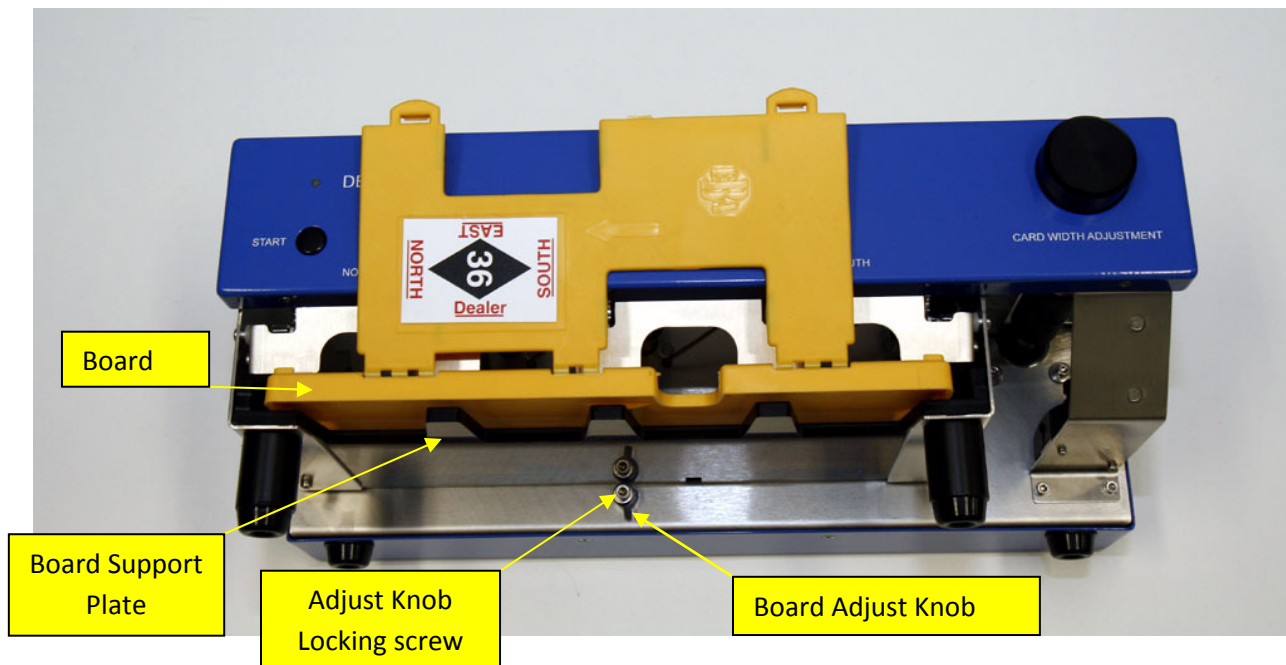


Feeder width adjustment may be required every time a new type (size) of card is being used.

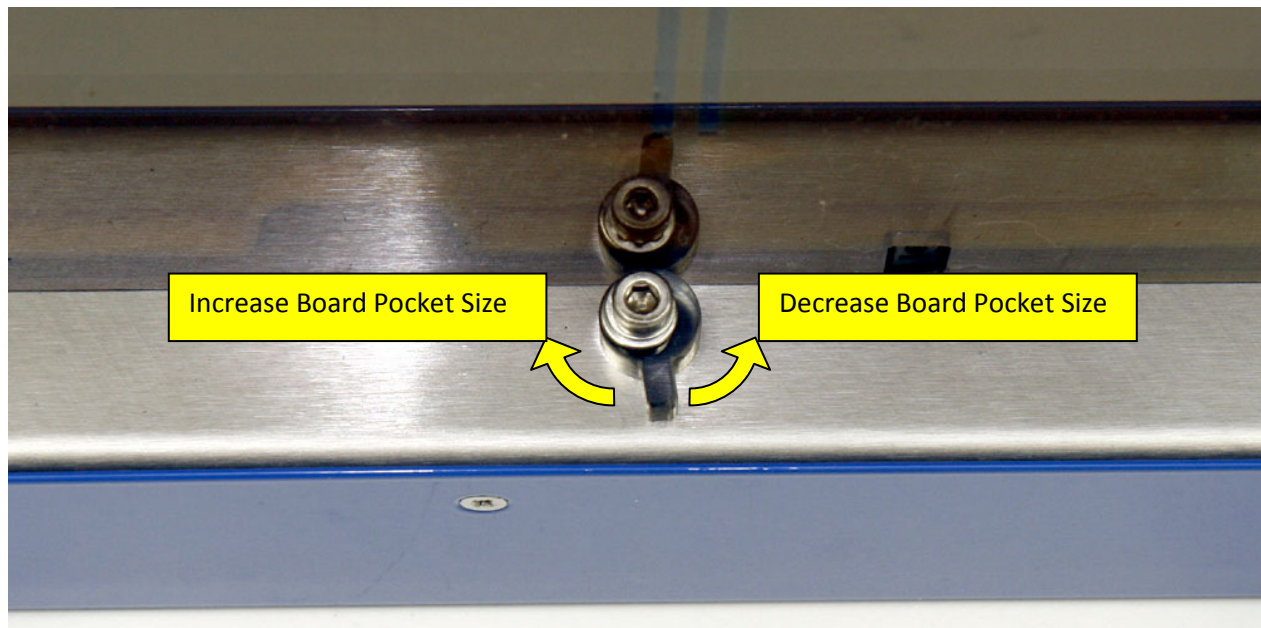


### 3.3 Board Pocket Adjustment.

The Board should slide inside the machine without much force but on another hand it cannot be too loose because cards can slide between compartments. If the Board Pocket size is too small it will be hard or impossible to slide the Board inside the machine:



To adjust Board Pocket, a 3.0mm Alan key is required. Board Pocket adjusting is done by rotating Board Adjust Knob located under the Board Support Plate:



To adjust please follow the following steps:

1. Unsecure Adjust Knob by unscrew locking screw using the 2.5mm Alan key.
2. Turn Adjust Knob to the left (clockwise).
3. Slide Board into pocket.
4. Turn Adjust Knob to the right (anticlockwise) as much as will be possible but without using too much force. Secure Adjust Knob by locking screw. Check if Board can be slide in and out smoothly. If is too hard to take out or put in – unlock the screw, turn the Adjust Knob a little bit to the left (clockwise) and lock the screw again.