C. BECHSTEIN
Digital

C. BECHSTEIN VARIO Stop Rail
Installation instructions for pianos

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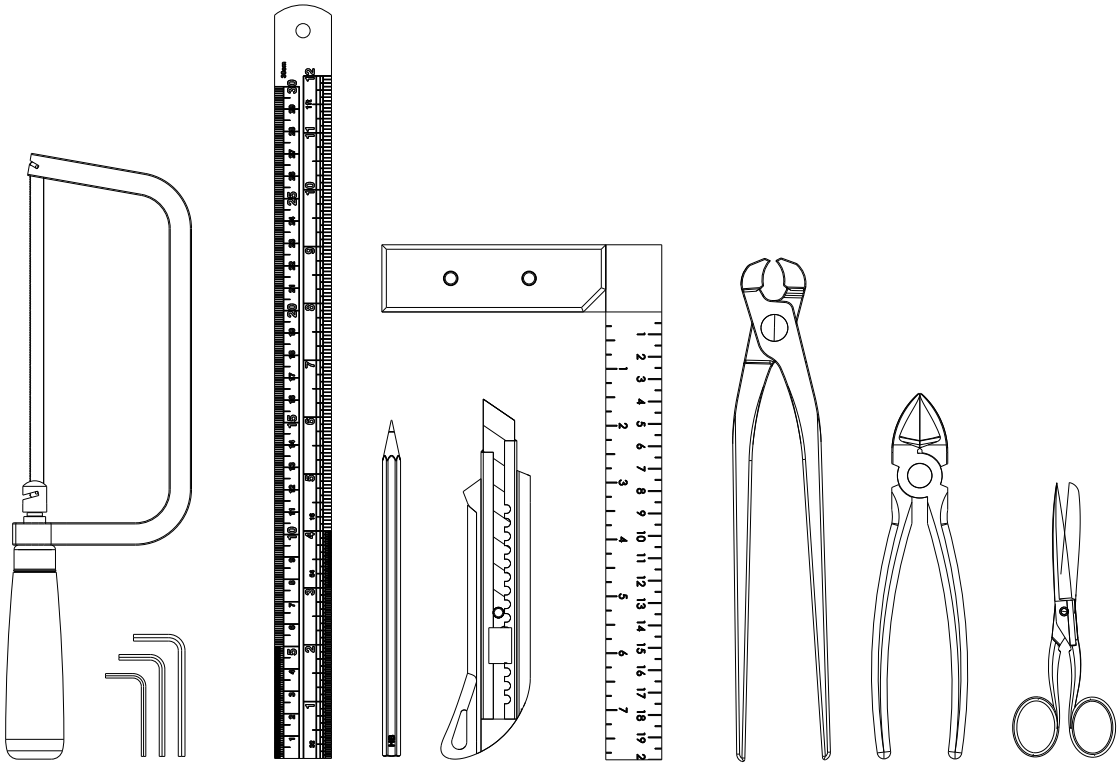
This document is available in the current version
and in other languages as a PDF file.

CONTENTS

REQUIRED TOOLS



① Metal saw

② Hexagon wrench
1.5 mm/ 2.0 mm/ 2.5 mm

③ Meter ruler

④ Pencil

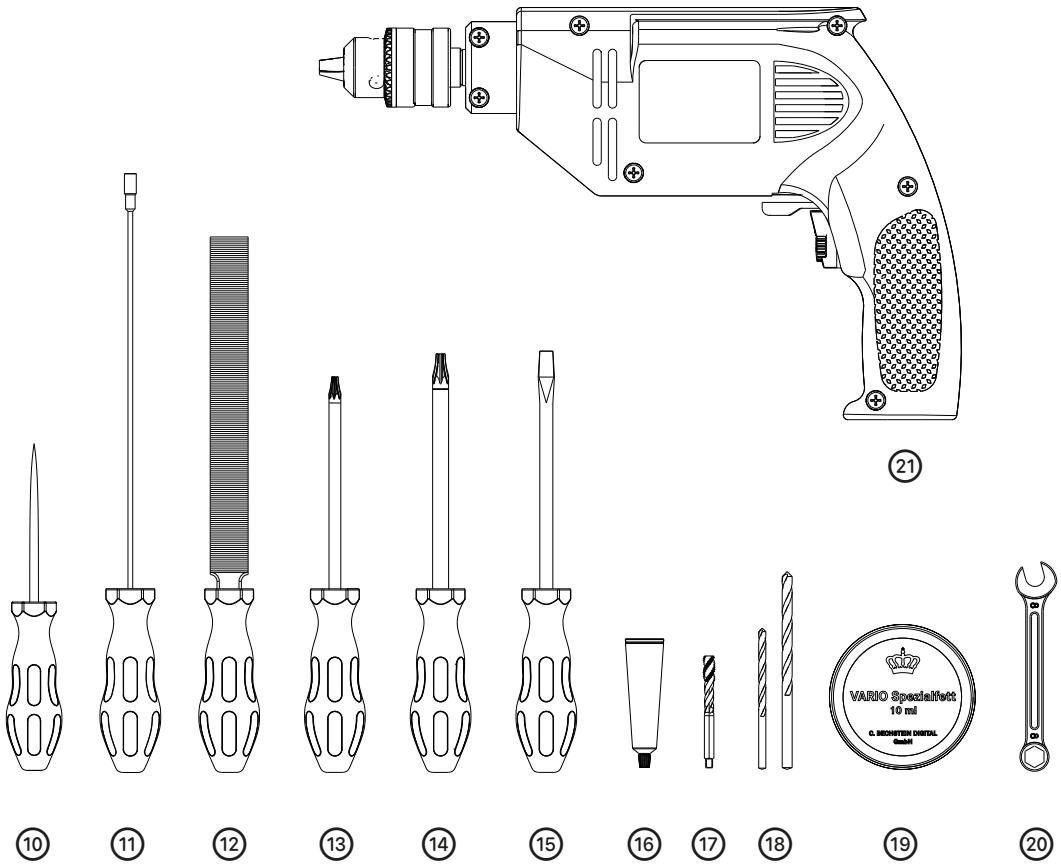
⑤ Cutter

⑥ Right angle

⑦ Pincers

⑧ Side cutter

⑨ Scissors



⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑

⑩ Scriber

⑪ Let-off tool

⑫ Metal file

⑬ Torx screwdriver/ Bits T10

⑭ Torx screwdriver/ Bits T20

⑮ Slot screwdriver 5.5 mm (1/4“)

⑯ Power adhesive

⑰ Tap M5

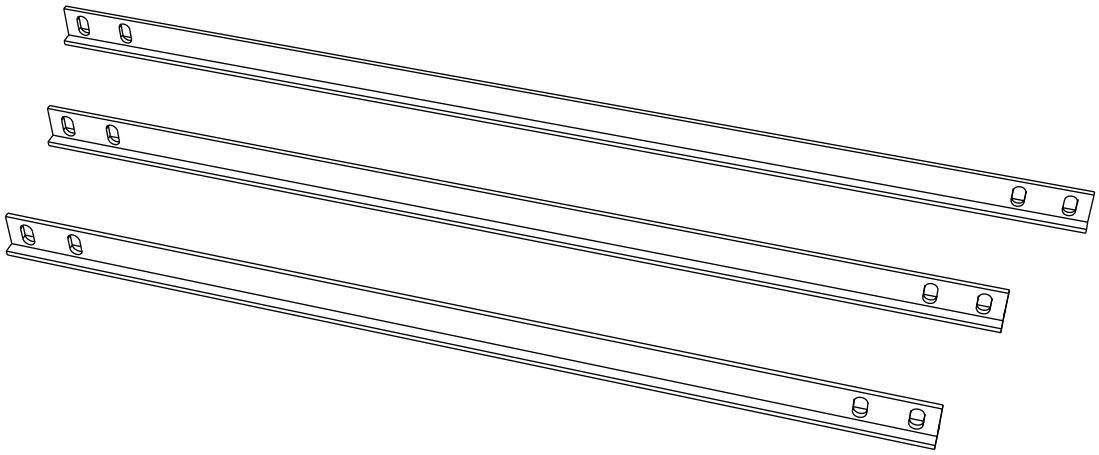
⑱ Drill Ø 2.5 mm/ 4.3 mm

⑲ C. Bechstein VARIO Special Grease (CBD-00244)

⑳ Spanner 8 mm (0.3“)

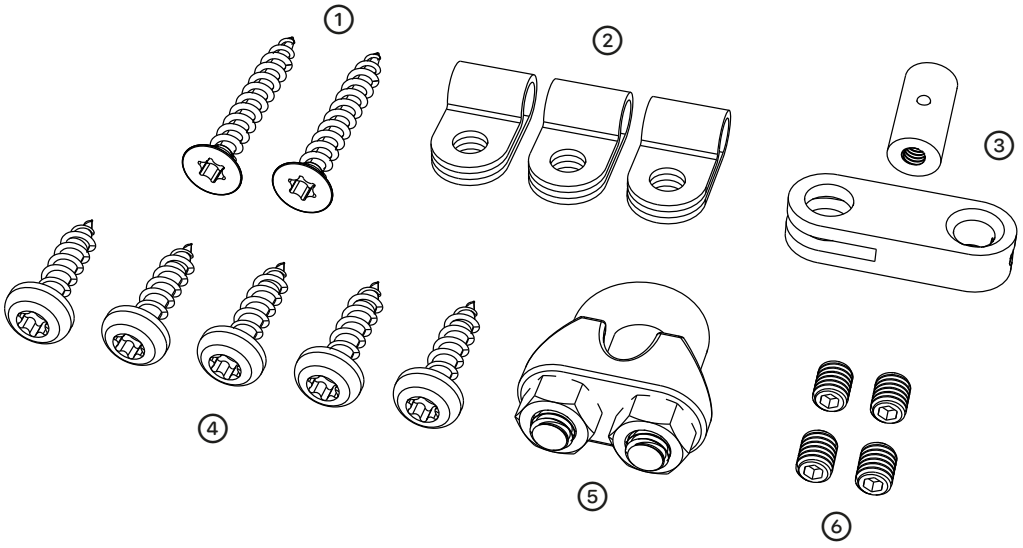
㉑ Drilling machine

STOP RAIL SET



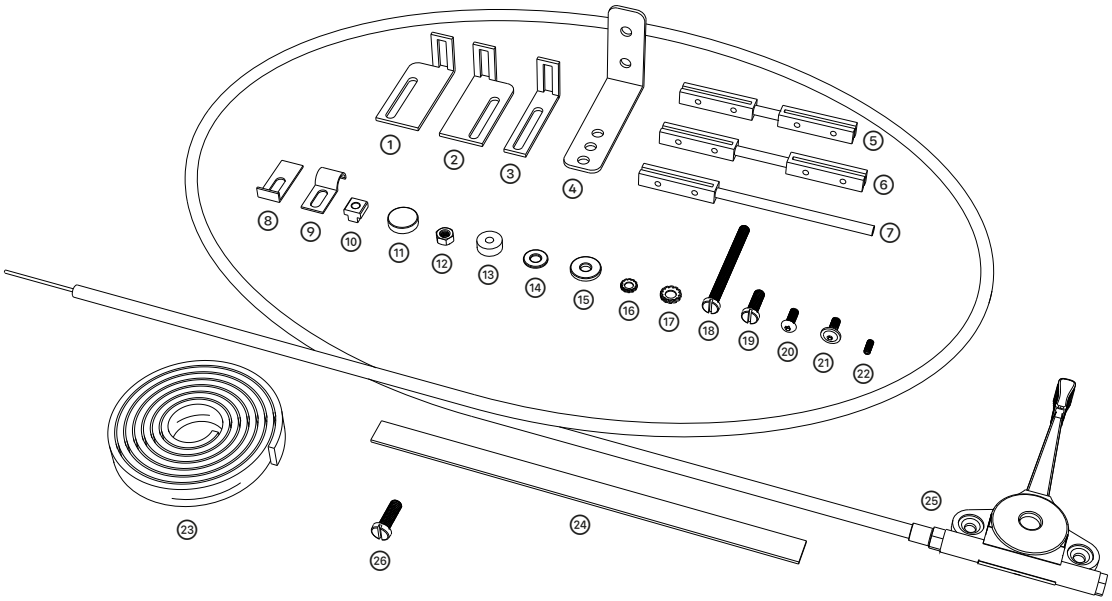
①	**CBD-00086**	Stop rail division X mm (Bass, Middle, Treble)	3

MOUNTING SET FOR BOWDEN CABLE



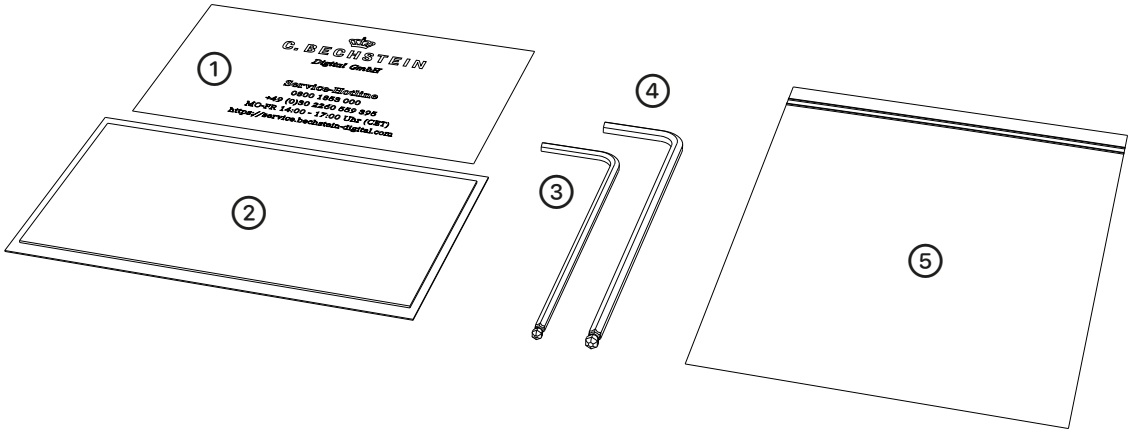
①	**CBD-00090**	Sink head screws RW/ TX20 5 x 25 mm	2
②	**CBD-00091**	Cable clamp	3
③	**CBD-00094**	Bowden cable joint incl. Shaft	1
④	**CBD-00092**	Half-round head screws RW/ TX20 4 x 16 mm	5
⑤	**CBD-00093**	Wire rope clamp	1
⑥	**CBD-00095**	Set screw hexagonal, ISK2, M4 x 5 mm	4

FURTHER MOUNTING MATERIAL



①	**CBD-00087-L**	Fixing bracket left	1-3
②	**CBD-00087-R**	Fixing bracket right	1-3
③	**CBD-00088**	Fixing bracket straight	1
④	**CBD-00089**	Angle for fixing the bowden cable short or long	1
⑤	**CBD-00097**	Shaft connector middle - treble short	1
⑥	**CBD-00096**	Shaft connector bass - middle long	1
⑦	**CBD-00098**	Shaft connector edge	2
⑧	**CBD-00099**	Fixing bracket lower part	4
⑨	**CBD-00100**	Fixing bracket upper part	4
⑩	**CBD-00103**	T-nut M4 x 5 mm	4
⑪	**CBD-00115**	Spacer leather Ø 15 mm	1
⑫	**CBD-00113**	Nut M5, DIN 934 (SIL)	1
⑬	**CBD-00116**	Rubber spacers	6
⑭	**CBD-00108**	Washers M4 4.3 x 12 x1 mm	4
⑮	**CBD-00109**	Washers M5 5.3 x 15 x 2 mm	3
⑯	**CBD-00110**	Small serrated lock washers M4 x 4.3 mm	16
⑰	**CBD-00111**	Big serrated lock washers M5 x 5.3 mm	7
⑱	**CBD-00112**	Spacer slot screw M5 x 55 mm	1
⑲	**CBD-00106**	Spacer slot screw M5 x 16 mm	3
⑳	**CBD-00104**	Lense head hexagon screw ISK 2.5 M4 x 10 mm	12
㉑	**CBD-00105**	Flat head hexagon screw ISK 2.5 M4 x 10 mm	4
㉒	**CBD-00114**	Additional set screw hexagonal socket ISK1.5 M3 x 6 mm	6
㉓	**CBD-00102**	Self-adhesive foam rubber	130 cm
㉔	**CBD-00101**	Self-adhesive felt	15 cm
㉕	**CBD-00122 - black**	VARIO bowden cable with lever	1
or	**VS00001000002 - white**		
㉖	**CBD-00107 (Concert 8)**	Slot screw with little head, M5 x 16 mm	1

BUSINESS CARD SET



①	**CBD-00121**	Business card, printed, 85 x 55 mm	1
②	**CBD-00117**	Business card pouch, 95 x 60 mm	1
③	**CBD-00120**	Hexagon socket wrench ISK 2	1
④	**CBD-00119**	Hexagon socket wrench ISK 2.5	1
⑤	**CBD-00118**	Pressure seal bag, 80 x 120 mm	1

PREPARING THE INSTRUMENT

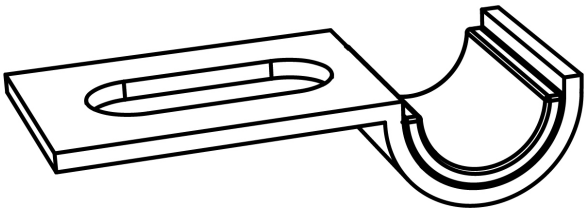
Remove the upper panel, lower panel, fall board, key slip, cheek-blocks and the action bolts.

Prepare the regulation for the installation.

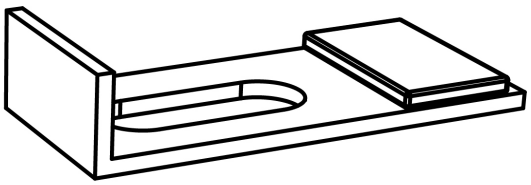
Extend the let-off to **4-5 mm** (0.16-0.2“).

The let-off can be left narrower, but this is associated with the risk that individual hammers will touch the string when playing strongly (fortissimo). We therefore set the let-off to **4-5 mm** (0.16-0.2“) at the factory and reduce the key dip by **0.2 mm** if necessary in order to adjust the aftertouch.

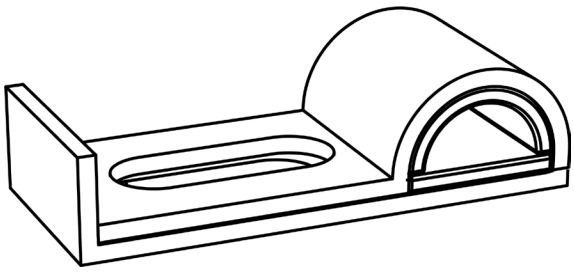
Before you start fitting the stop rail, cover the four axle brackets with the enclosed self-adhesive felt. The garnish must be applied as shown in the illustration and must not protrude; the two parts of the bracket must fit together without any gaps.



Connecting the axle bracket:
Fixing bracket, upper part (CBD-00100)



Axle bracket, lower part (CBD-00099)



Correct bushing

MOUNTING THE STOP RAIL

Clean the stop rail elements (CBD-00086).

Stick the self-adhesive foam rubber (CBD-00102) onto the T-profiles of the stop rail. The foam rubber must protrude evenly on both sides **(approx. 1-2 mm).**

Place the action on a table with the dampers pointing in your direction**.**

Sort the prepared stop rail parts according to the table below:

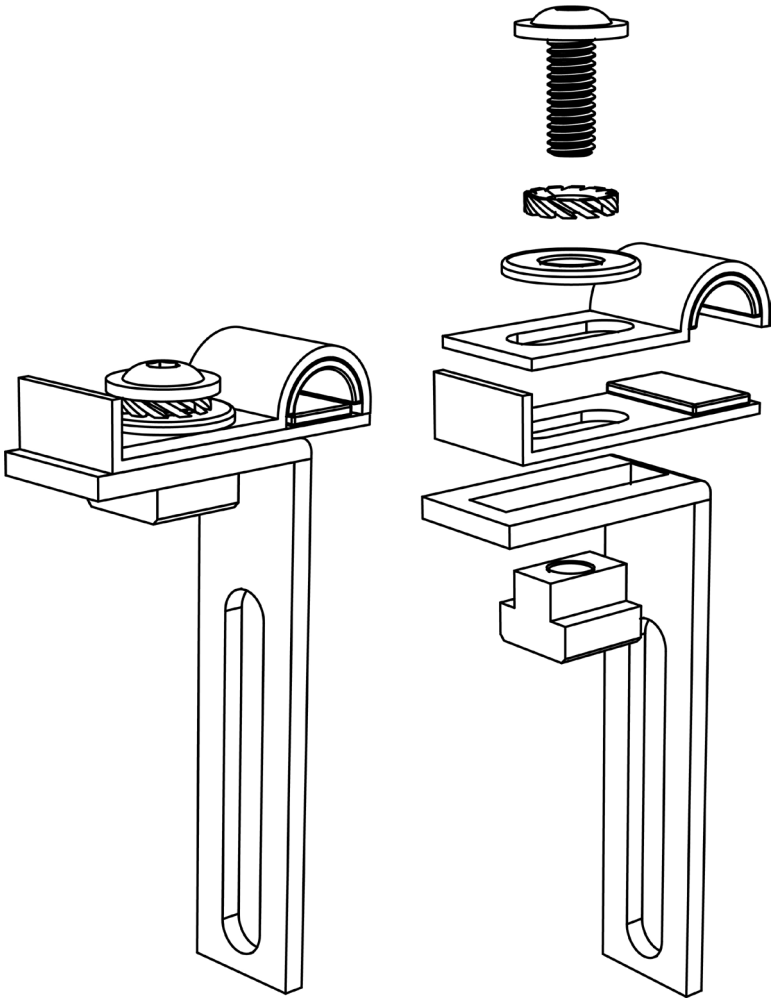
Stop rail lengths of current models in mm				**Bracket position of current models**			
	Bass (A)	Middle (B)	Treble (C)	Bass (A)	Transition (A/B)	Transition (B/C)	Treble (D)
C. Bechstein							
A 114 Chrome Art*	375	420	405	Left	Right	Straight	Left
A 2, R 2 Mil, R 2 Cro, A 2-M	440	365	390	Left	Right	Straight	Left
A 4, R 4 Cla, R 4 Con	420	390	390	Left	Left	Straight	Left
A 6, R 6 Cla, R 6 Sty, R 6 Ele	405	415	390	Left	Left	Straight	Left
C 6	405	415	390	Left	Left	Straight	Right
C 8	405	415	390	Left	Right	Straight	Right
Con 8**	375	420	405	Left	Right	Straight	Left
All current models	375	420	405	Left	Right	Straight	Left
W. Hoffmann							
P 126, V 120	420	390	405	Left	Right	Straight	Left
P 120, P 114, V 112	440	360	405	Left	Right	Straight	Left
T 128, V 126	375	440	385	Left	Right	Straight	Right
T 122	390	420	385	Left	Left	Straight	Right
V 131	375	420	405	Right	Right	Straight	Right
V 2	440	375	395	Left	Right	Straight	Left
Zimmermann							
Z 122 Classic, HZ 126 S 6	420	390	405	Left	Right	Straight	Left
HZ 120 S-2	440	360	405	Left	Right	Straight	Left
HZ 120 S-2 (from 2021)	440	375	405	Left	Right	Straight	Right
HK 122	420	385	405	Right	Right	Straight	Left
S 2	440	375	395	Left	Right	Straight	Left
S 4	420	395	390	Left	Left	Straight	Left
S 6	420	390	405	Left	Right	Straight	Left
S 8	405	415	390	Left	Right	Straight	Right

* Long bowden cable angle ** Second hole in the fixing brackets already included, + CBD-00107

Pre-assembly of the fixing brackets:

Put the parts of the fixing brackets ready:

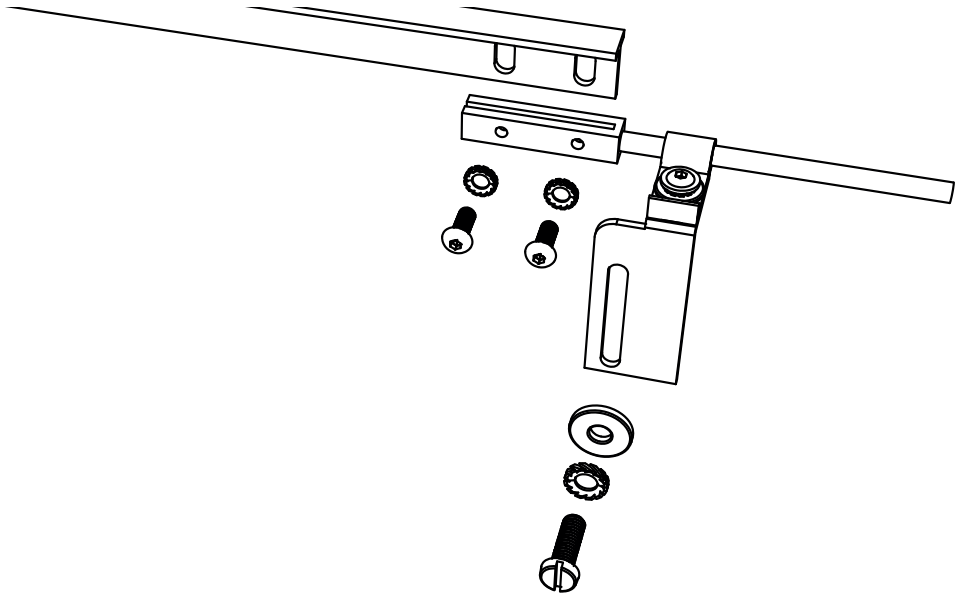
- Hexagon socket screws ISK2.5 M4 x 10 mm (CBD-00105)
- Small serrated lock washers M4 x 4.3 mm (CBD-00110)
- Small washers, M4 4.3 x 12 x 1 mm (CBD-00108)
- Axle bracket, lower part (CBD-00099)
- Axle bracket, upper part (CBD-00100)
- Fixing bracket left/ right (CBD-00087)
- Fixing bracket, straight (CBD-00088)
- T-Nut M4 x 5 mm (CBD-00103)
- Shaft connector bass - middle, long (CBD-00096)
- Shaft connector middle - treble, short (CBD-00097)



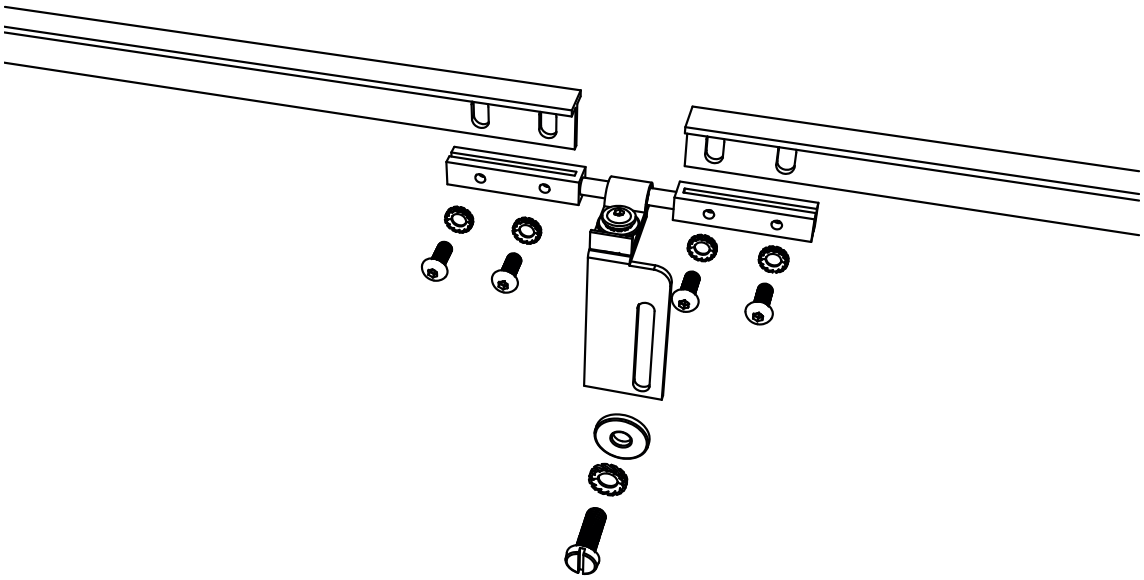
Mount according to the illustration.

Distribute the prepared fixing brackets (CBD-00087/ CBD-00088):

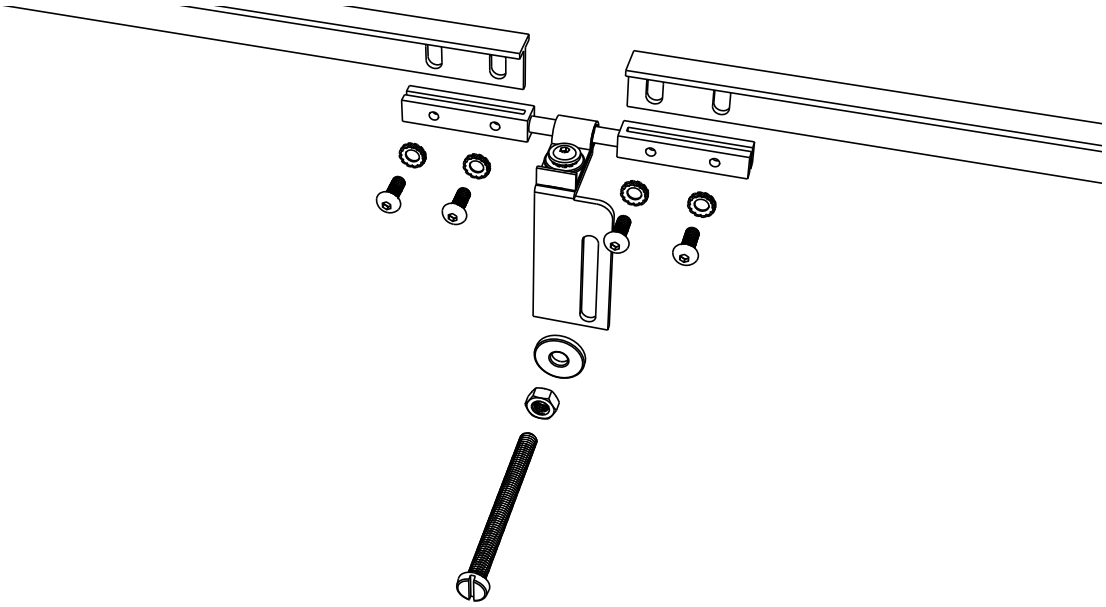
- Slotted screws M5 x 16 mm (CBD-00106)
  with serrated washers M4 x 4.3 (CBD-00110),
- Small washers M4 4.3 x 12 x 1 mm (CBD-00108),
- Big washers M5 x 5.3 mm (CBD-00111),
- Spacer slot screws M5 x 55 mm (CBD-00112)
  with nut M5 (CBD-00113),
- and fixing brackets (CBD-00099/ CBD-00100)
  according to the model in front of the respective fixing brackets.



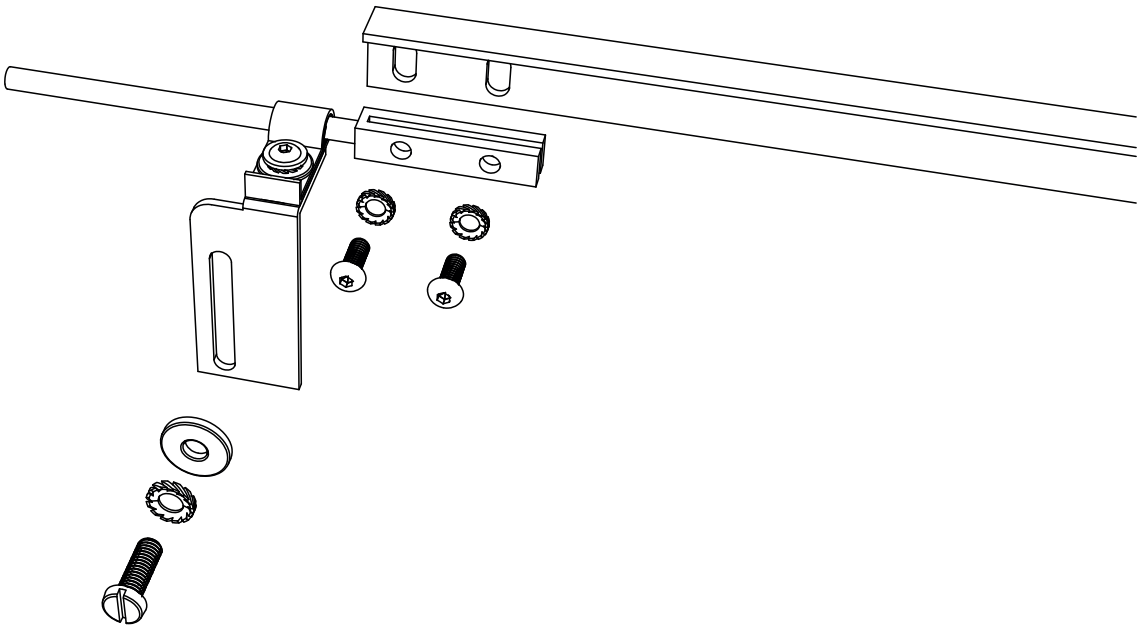
Bass



Transition Bass/ Middle



Transition Middle/ Treble



Treble

Make a note of the distance between the damper slap rail and the action.
Remove the damper slap rail.

Place the stop rail parts according to the pitch with foam rubber in the direction of the action.

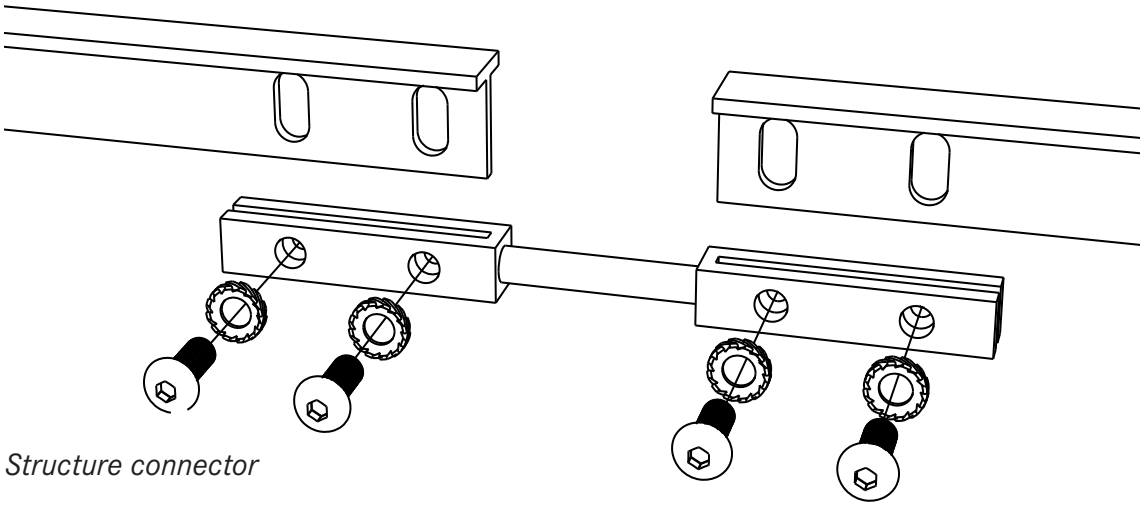
The shaft connectors (CBD-00098) are placed with the small threaded hole downwards, with the large hole upwards between them.

Insert the stop rail parts (CBD-00086) into the slot of the shaft connectors and center the slotted holes exactly with the holes.

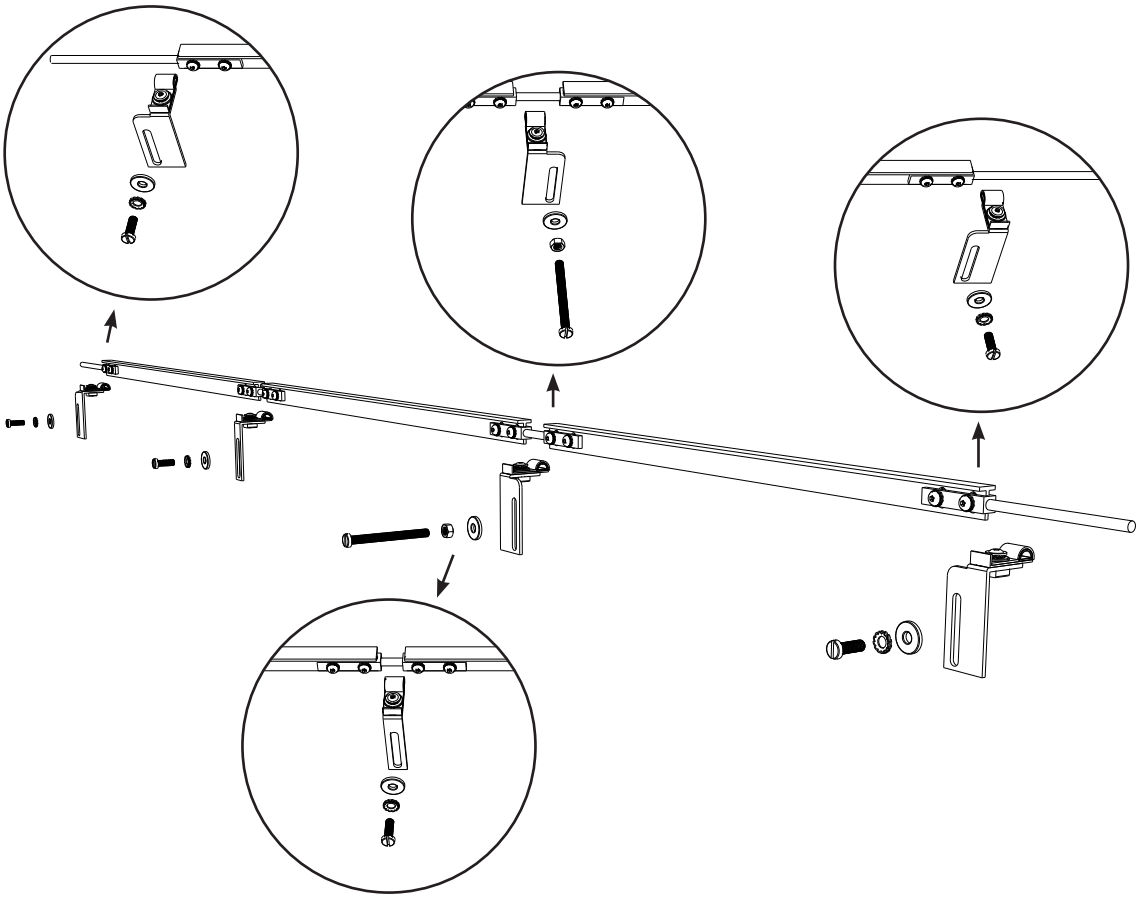
The shaft connectors (CBD-00098) are first screwed centrally onto the stop rail. When assembling, make sure that the ISK2.5 M4 x10 mm lense-head hexagon screws (CBD-00104) are not overtightened.

Shaft connectors screwed centrally.

Fit the small serrated lock washers M4 x 4.3 mm (CBD-00110) onto the hexagon socket screws ISK2 M4 x 10 mm and screw the shaft connectors (CBD-00099/ CBD-00100) together with the stop rail parts (CBD-00086).



Structure connector



Finished stop rail

Depending on the model, the position of the stop rails in the shaft connectors can be adjusted.

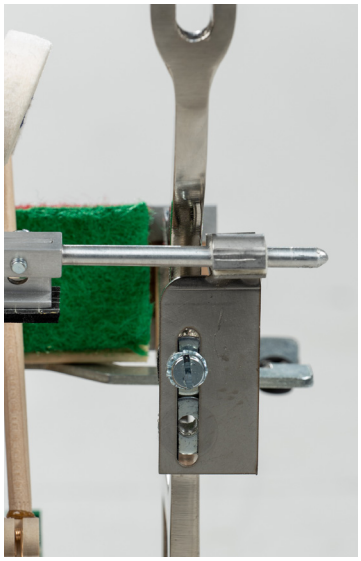
MOUNTING THE FIXING BRACKETS

When installing the fixing brackets (CBD-00087/CBD-00088), make sure that the upper hole of the action bracket is used to fasten the brackets.
The lower hole remains free for the damper slap rail.

Use the slotted screws M5 x 16 mm (CBD-00106) and the large serrated washers M5 x 5.3 mm (CBD-00111) for mounting. Screw the fixing brackets to the upper hole of the action brackets, as shown in the illustrations.

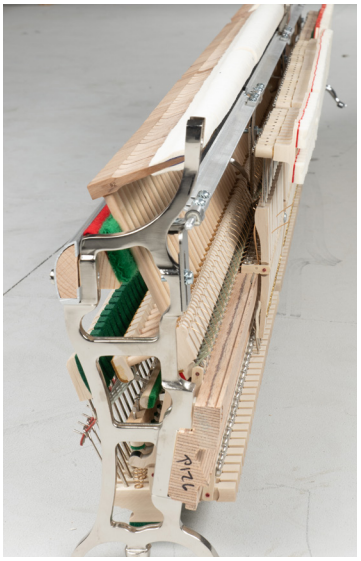
Distribute the fixing brackets according to the table under 'Mounting the stop rail'.

Hint: For pianos with a height of 121 cm (4.75") or more, washers M5 5.3 x 15 x 2 mm (CBD-00109) must be mounted under the fixing brackets (CBD-00087/ CBD-00088) in the transition from the middle to the bass and in the bass, between the fixing bracket and the action bracket (see illustration on the middle).
This is not necessary for pianos up to 120 cm (4.74") height.



Mounting the fixing brackets.

Washers between fixing bracket and action bracket.



Ready mounted stop rail.

MOUNTING THE DAMPER

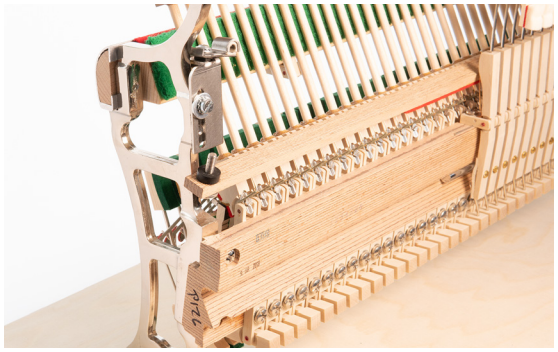
To prevent the damper drums from hitting the underside of the stop rail (CBD-00086), the slotted screws in the drums must be replaced with ISK1.5 M3 x 3 mm set screws (CBD-00114). For Hoffmann instruments the filing of the last two dampers in the bass towards the middle position, and also the first four dampers from the middle position towards the bass, is necessary.

Replace the slotted screws in the damper drums with the set screws.

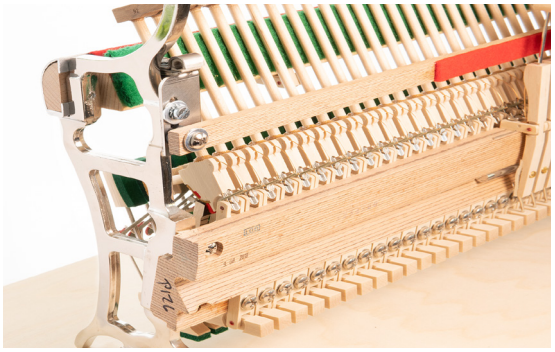
File off the last two dampers.

MOUNTING THE DAMPER SLAP RAIL

Slide the damper slap rail into the side of the action and turn it so that the screws can be easily tightened. Use the supplied spacers (CBD-00116) to increase the distance of the damper slap rail.



Sliding in the damper slap rail.



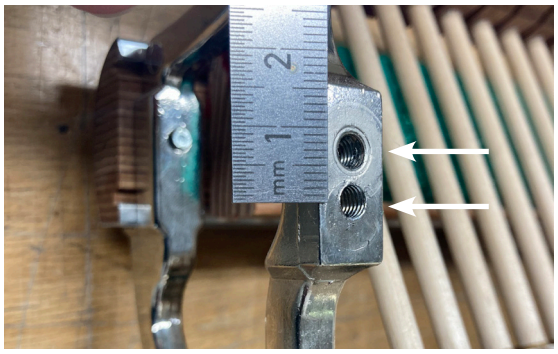
Turning the damper slap rail.

MOUNTING THE FIXING BRACKETS IN THE CONCERT 8

This chapter describes the installation of the stop rail (CBD-00086) for action brackets with a threaded hole for the damper slot rail and an additional hole without thread.

Hint: The mounting of the fixing brackets (CBD-00087/ CBD-00088) with only one hole is described in the next section „Mounting the fixing brackets for action brackets with only one hole“.

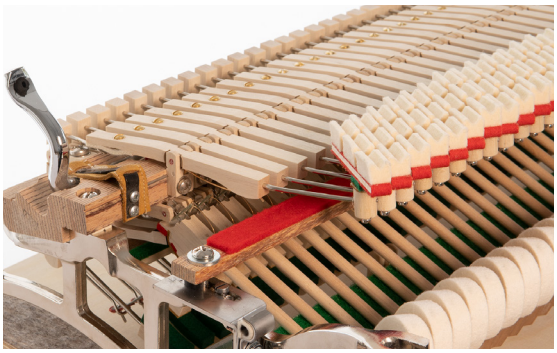
- Remove the damper slap rail from the action.
- Cut an M5 thread into the lower hole (see illustration).
- Due to the small distance between the two holes in the the action bracket the rubber spacer rubbers (CBD-00116) must be trimmed before installation between the damper slap rail and the action brackets.
- Fix the fixing brackets (CBD-00087/CBD-00088) to the upper hole with a flat head screw M5 x 16 mm. Once all the fixing brackets are in place, mount the damper slap rail. After all fixing brackets are in place, attach the damper slap rail.



Low hole spacing.

Cutting the M5 thread.

Cutting the rubber spacers.



Angle with damper slap rail.

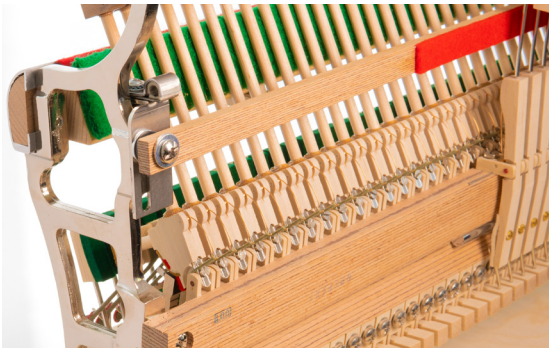
MOUNTING THE FIXING BRACKETS FOR ACTION BRACKETS WITH ONLY ONE HOLE

Mounting without additional thread

If no additional thread can be cutted into the action brackets, the fixing brackets (CBD-00087/ CBD-00088) can be fixed as follows:

- First remove the damper slap rail (CBD-00116) from the action.
- Attach the fixing brackets with the rubber spacers M5 5.3 x15 x 2 mm (CBD-00109), the damper slap rail and a serrated washer large M5 x 5.3 mm (CBD-00111) to the hole of the action brackets. The washers M5 5.3 x15 x 2 mm serve as replacement for the spacer rubbers.
- Carry out this step for all action brackets and adjust the distance of the damper slap rail using the washers M5 5.3 x 15 x 2 mm.

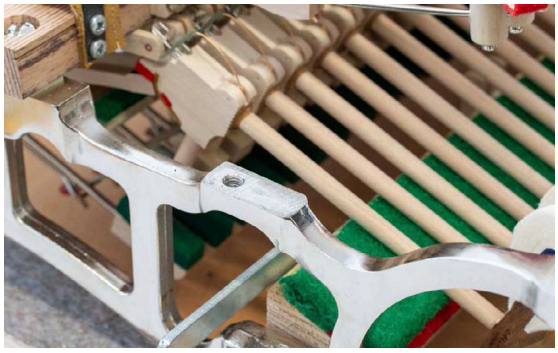
Removing the damper slap rail.



Ready fixing bracket.

Mounting with cutting an additional thread

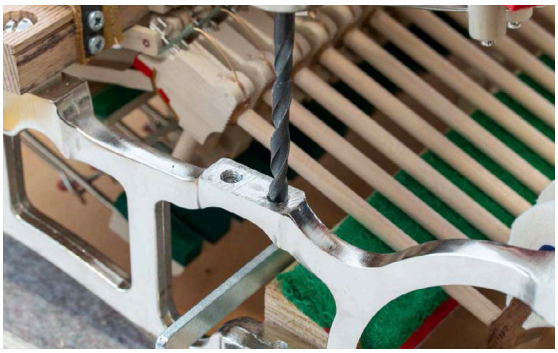
For action brackets with only one hole, a second hole can usually be drilled (a thread for the bracket fixing and a thread for the damper slap rail). Mark the position of the second hole at a distance of **15 mm (0.6“)** from the centre to centre of the holes.



Action bracket with only one hole.

Marking the distance of 15 mm.

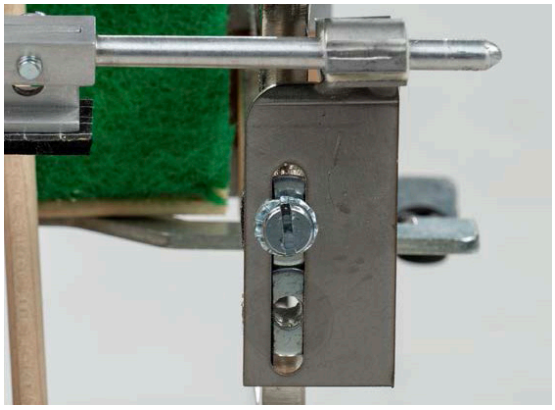
Drill Ø 4.3 mm at the mark through the support on the action bracket.
Cut an M5 thread into the hole.



Drilling Ø 4,3 mm.

Cutting an M5 thread.

Remove the drill chips and attach the bowden cable mounting bracket long/short (CBD-00089).



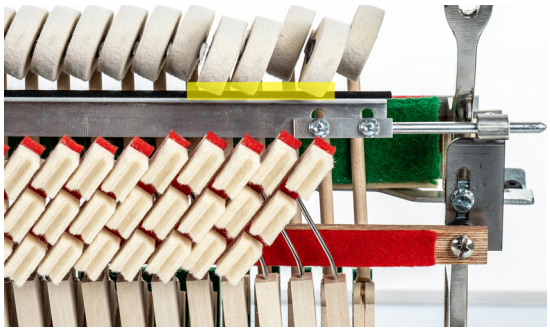
Mounting the angle.

ADJUSTING THE STOP RAIL OUTSIDE THE INSTRUMENT

Setting the distance between hammers and damper drums

Turn the stop rail (CBD-00086) so that the foam rubber spacer (CBD-00116) points upwards.
Continue with the adjustment of the stop rail parts in the bass.

Check the distance to the hammers running over it.
This distance should be kept as small as possible.

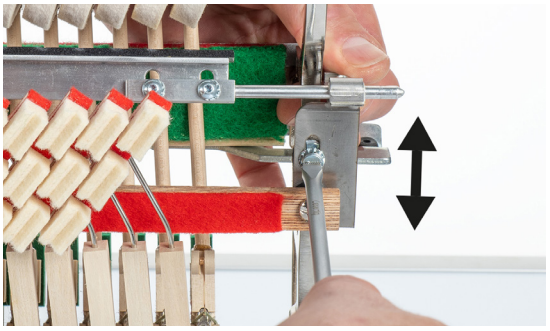


The hammer must not touch the stop rail.

Ideal distance to the hammers.

Observe the distance between the damper drums and the stop rail.
The damper drums should not touch the stop rail either when the mute function is activated or when the mute function is deactivated.

Distance between stop rail and damper drums.



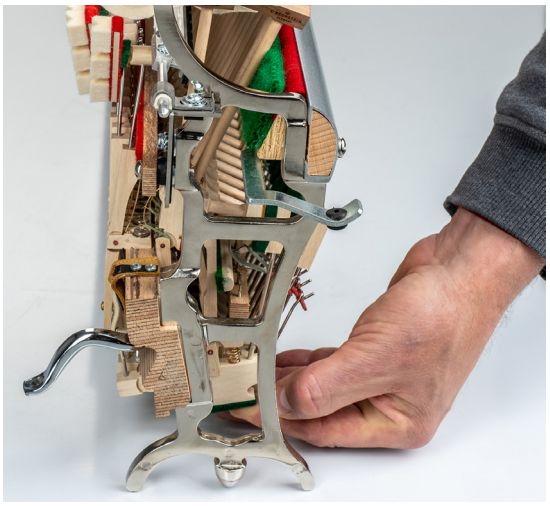
Adjusting the stop rail in vertical direction.

Checking the let-off

When adjusting the stop rail, also check the let-off. The stop rail must be turned so that it is at a right angle to the hammer shank and the entire surface of the hammer shank hits the foam rubber (CBD-00116).

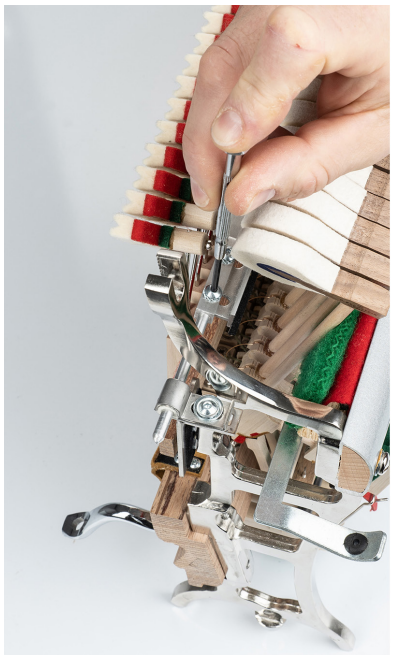
The let-off is checked by lifting the whippen.

Stop rail in a right angle to the hammer shank.

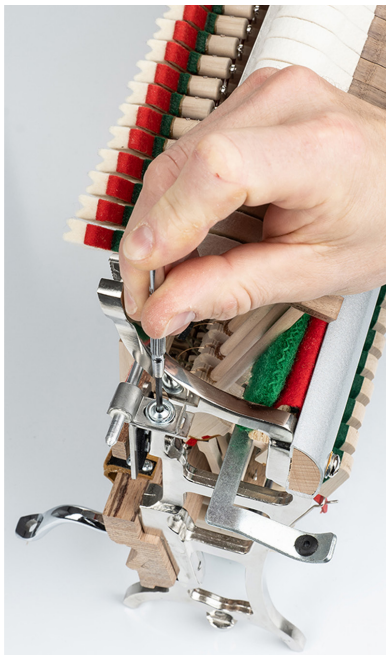


Checking the let-off.

Adjust the stop rail a little tighter so that you have to apply some pressure against the stop rail with the hammer shank to release the hammer.
There are two ways to adjust the stop rail horizontally, as shown in the illustration:



Adjustment at the stop rail.



Adjustment at the connecting piece.

Please note that a change to the stop rail parts also changes the distance to the hammer heads when the stop rail is switched off.

Work with the following parameters to achieve an optimum initial setting of the stop rail:

- Height adjustment of the fixing brackets (CBD-00087/ CBD-00088)
- Adjustment of the stop rail parts within the shaft connectors (CBD-00098)
- Horizontal adjustment of the shaft on the shaft connectors

Adjustment of the fixing bracket (CBD-00087/CBD-00088) taking into account these important points:

- **Distance stop rail to hammer head**
- **Distance to the damper drums**
- **Let-off**
- **Distance of the hammer shank to the stop rail in the bass**

Adjust the fixing brackets.

The stop rail parts must be in alignment.
The height from bass to treble rises slightly.

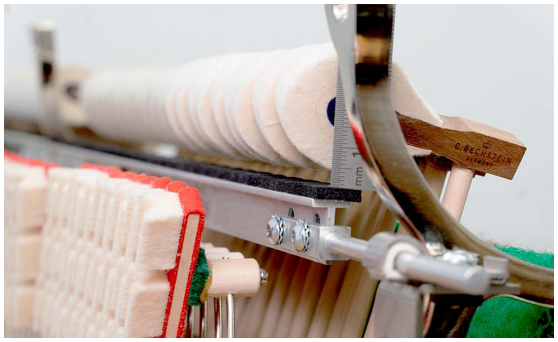
Correct alignment of the stop rail.

ADJUSTING THE STOP RAIL IN THE INSTRUMENT

Before checking this setting in the instrument and inserting the action, it is necessary to shorten the end piece in the treble so that it protrudes only 10 mm. Deburr the end of the shaft connector edge (CBD-00098).

Then remove the metal chips.

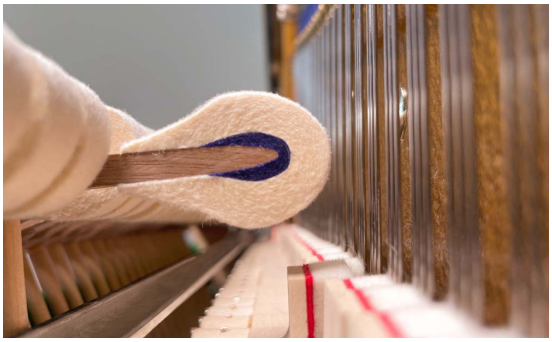
Now place the action into the instrument. The following four points must be taken into account before you can make the adjustment:



Distance hammer head - stop rail.

Distance damper drums - stop rail.

Setting the let-off.



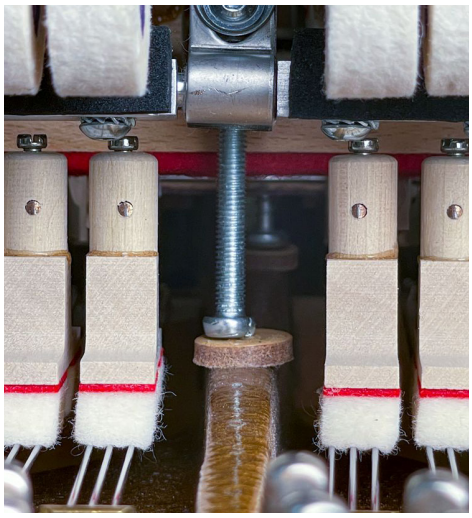
Distance hammer shank - stop rail when hammer strikes string.

Once you have adjusted and checked all four points, you can now remove the action from the instrument and adjust the damper slap rail to the desired position.

Tighten all screws M5 x 16 mm (CBD-00106) of the fixing brackets (CBD-00087/ CBD-00088) and the stop rail (CBD-00086).

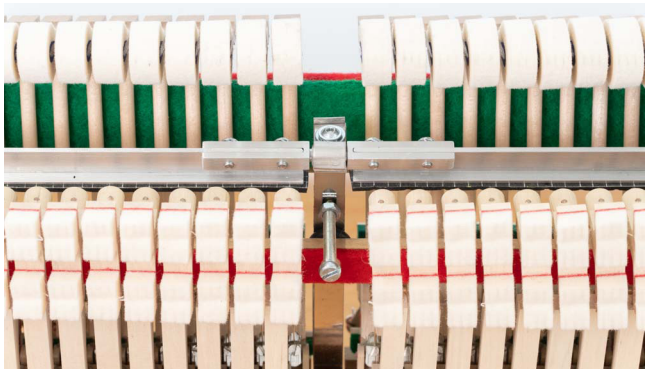
To stabilize the stop rail, put a support screw M5 x 55 mm (CBD-00112) to the small support (transition from middle to treble).

As a counterpart, place a spacer leather washer (CBD-000115) at the height of the M5 x 55 mm cylinder head screw (CBD-00112) with the M5 hex nut (CBD-00113) onto the iron frame.
Use power adhesive for this purpose:



Spacer leather washer on the iron frame.

Adjust the M5 x 55 mm cylinder head screw so that it presses lightly against the spacer leather washer (CBD-000115) and lock it with a nut. The let-off must then be checked.

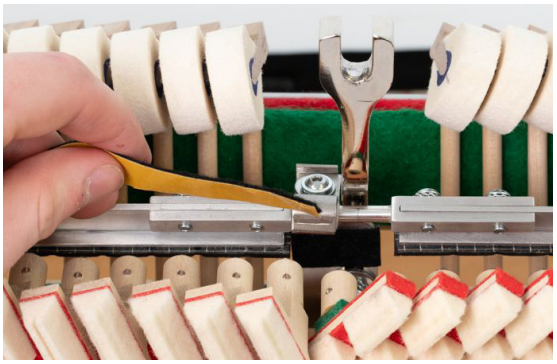


Adjusting the support screw to size.

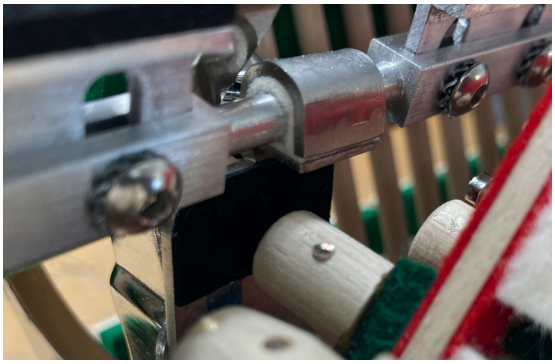
After tightening the screws M5 x16 mm (CBD-00106) check all four of the above points again and make sure that no hammer will strike through and touches the strings when the key is struck strongly.

No hammer should strike through when a key is struck strongly.

If there are still noises caused by the damper drums hitting the fixing bracket (CBD-00087/ CBD-00088), you can use the self adhesive felt (CBD-00101):



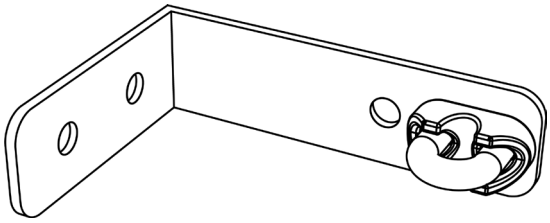
Preventive gluing of the fixing bracket (transition middle/ bass) with felt.



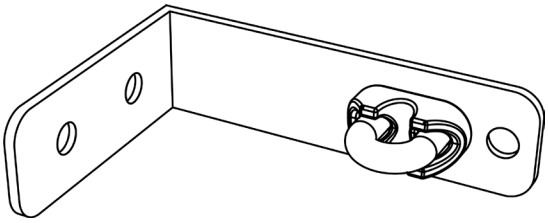
Noise caused by striking damper drums is thus avoided.

INSTALLATION OF THE BOWDEN CABLE

First mount the wire rope clamp (CBD-00093) on the fixing bracket (CBD-00087/ CBD-00088) depending on the piano model.



Pianos up to 120 cm (4.74“) height.



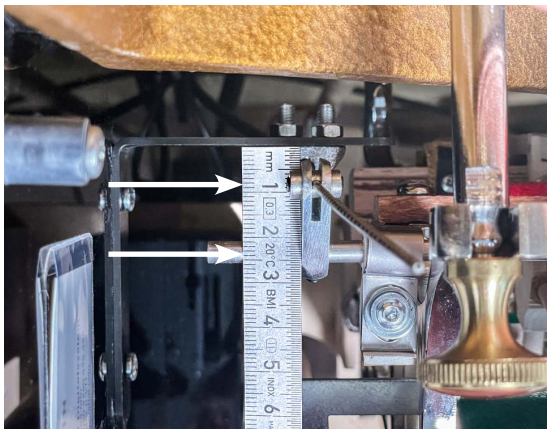
Pianos from 121 cm (4.75“) height.

Check that the bowden cable (CBD-00122) is firmly screwed to the lever clamp (CBD-00091).
If necessary, tighten with a size 8 open-end wrench. Proceed carefully to avoid cracking the lacquer.

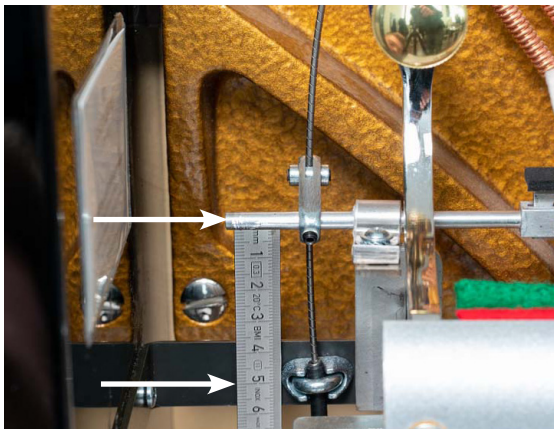
Careful tightening of the screw.

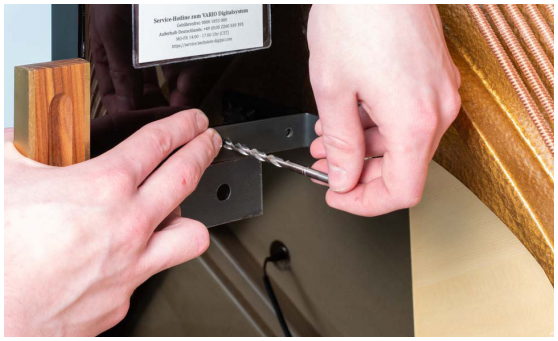
To determine the position of the angle (CBD-00087) on the left side wall, note two aspects:

1. Depth: The distance between the centre of the bowden cable and the centre of the stop rail shaft should be between 15 mm and 20 mm (0.6-0.8“).



2. The height: The distance between the centre of the angle and the centre of the stop rail shaft should be approx. 50 mm (2“).





Mark the position of the angle on the screw holes.

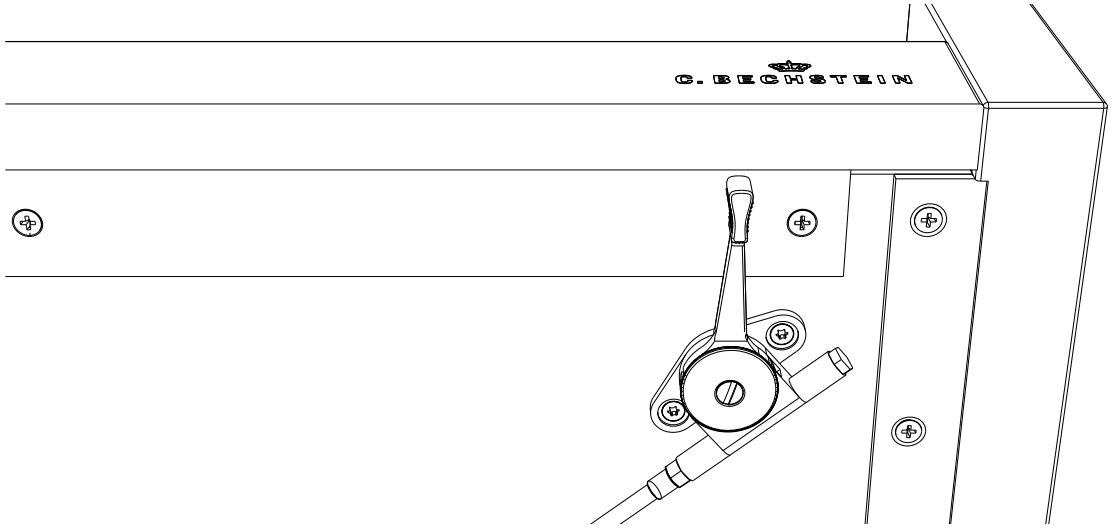
Now pre-drill with a 2.5 mm drill bit.

Lowering the hole.

Screw on the bracket with 16 mm long half-round head screws (CBD-00092) with Torx 4.0.

Clean and vacuum the instrument.

The hand lever is mounted below the keybed on the right side using two sink head screws RW/ TX20 5 x 25 mm (CBD-00090).
Lay everything under the key bed without bends using cable clamps.



Flip lever forward (mute).

If the cable is routed using the cable clamps, guide it behind the keybed to the angle for fixing the bowden cable long/ short (CBD-00089).

Guide the bowden cable to the wire rope clamp and mark the final length on the bowden cable cover. Use a string cutter to remove the cover.

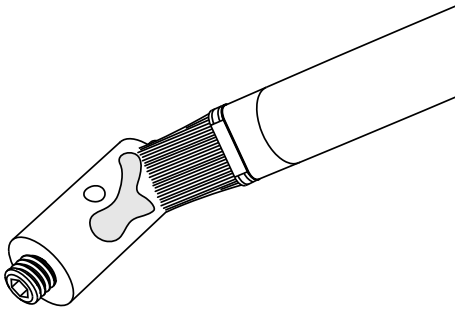
ATTENTION: Do not shorten the core of the bowden cable (CBD-00122).

Insert the bowden cable lever from below into the wire rope clamp (CBD-00093) and tighten it with the size 8 open-end wrench.

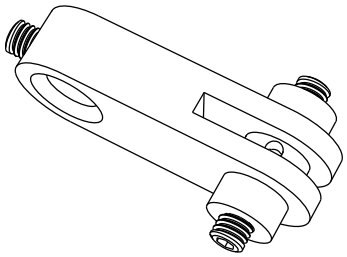
Fixing the wire rope damp.

Screw the setscrews ISK2, M4 x 5 mm (CBD-00095) into the bowden cable joint (incl. axle) (CBD-00094).

Before mounting the bowden cable joint, grease the joint shaft with the *C. Bechstein special grease* (CBD-00244).
It ensures permanent lubrication and prevents noise.



Lubricate joint axis with C. Bechstein VARIO special grease.



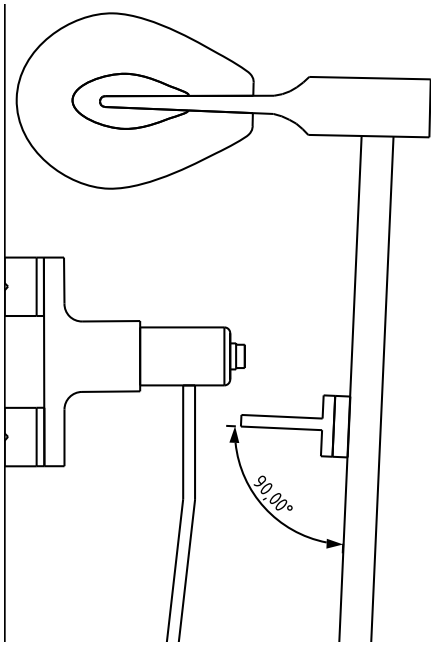
Bowden cable core with joint.

Put the bowden cable joint on the core of the bowden cable.

Put the action into the instrument.

Shorten the shaft connector edge (CBD-00098) as shown in the picture.

Shorten the stop rail shaft, deburr it and remove the metal chips.

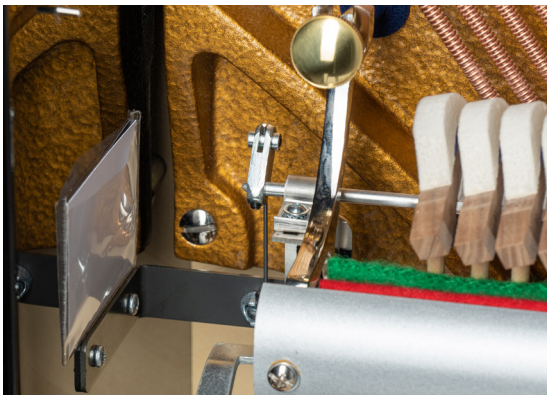


Align the stop rail again in right angle to the hammer shanks.

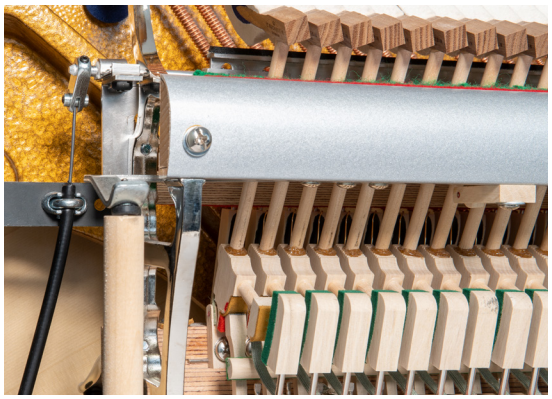
Now reattach the joint pointing approx. 45° upwards.
When tightening the screws ISK2, M4 x 5 mm (CBD-00095), on the bowden cable joint, keep the core of the bowden cable slightly under tension.

Hooking the joint.

Attach the bowden cable joint so that it is at the same angle to the fixing bracket (CBD-00089) when the stop rail is on and off, up and down respectively:

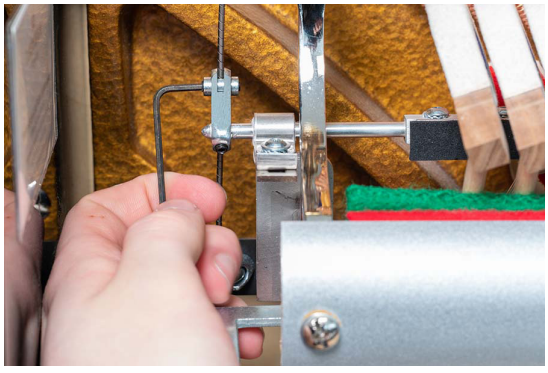


Stop rail switched on.



Stop rail switched off.

Use the ISK2 hex wrench (CBD-00120) to fasten the three set screws, ISK2, M4 x 5 mm.



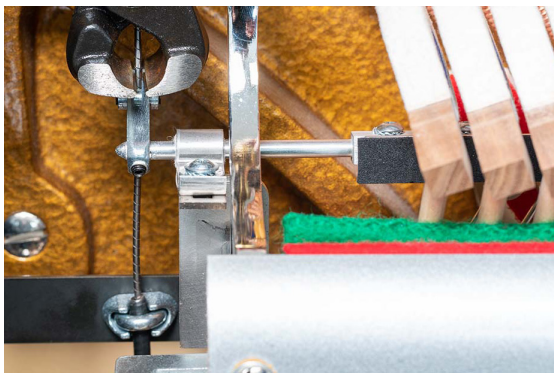
Tightening of the screws.

Check the function and position of the stop rail in mute mode.

Move the bowden cable lever approx. half way back until the bowden cable lever is at right angles to the core.

Position of the lever at 90°.

Cut the core as short as possible.
Now shorten the upper end of the bowden cable core flush with the upper edge of the joint (CBD-00094):



Cut the core.

Flip the lever.

After shortening the wire, move the lever further back in the same direction. The stop rail releases the hammers. There should be enough space between the hammer shank and the stop rail when the hammers strikes the strings.

Distance of the hammers to the stop rail.

Move the hand lever forward again. The stop rail should now be at a right angle to the hammer shanks.

The stop rail is activated.

Note that the stop rail may tilt slightly due to play in the bowden cable when the strike of the hammer is strong.

Check this by striking the keys strongly and, if necessary, adjust the stop rail elements.

After checking all settings, place the accessory bag on the inside of the left housing wall. It should contain the following parts:

- Business card pocket, 95 x 60 mm (CBD-00117)
- Pressure seal pouch 80 x 120 mm (CBD-00118)
- Hexagon socket wrench, ISK2.5 (CBD-00119)
- Hexagon socket wrench, ISK2 (CBD-00120)
- Printed business card, 85 x 55 mm (CBD-00121)

Business card set.

REGULATION

Adjusting the let-off

Before readjusting the let-off, check for striking through hammers. If individual hammers strike through, please correct the stop rail. In order to achieve a let-off as close as possible, you can, if necessary, in consultation with the customer, allow light striking through hammers in the fortissimo.
Please make sure that the let-off due to the moderator should not fall below **3 mm**, otherwise the hammer will jam at the moderator felt during the let-off.
You must not feel any resistance through the stop rail at the moment of let-off. Adjust the let-off so that the hammer shank does not touch the stop rail.
Now reduce the let-off again until you feel the resistance of the hammer on the stop rail slightly.

Increase the let-off slightly until you can no longer feel the stop bar when pressing the key. In this way you will achieve the closest possible let-off on the stop rail.

Correction of the after-touch via the key-dip

If the stop rail requires further let-off, you may have to reduce the increased after-touch by reducing the key-dip.
Do not reduce it further than the minimum of **9.8 mm (0.39“)**.

Adjusting the damper slap rail

To adjust the damper slap rail correctly, the damper movement with the right pedal should be identical to the movement with the key pressed.
Press down the first key of each range and carefully press the corresponding damper against the damper slap rail.

Stroke of the dampers.

Adjust the damper slap rail so that the damper wire still has approx. **1-2 mm** space to the damper slap rail when the key is pressed.

Use our service on the Internet:

- Manuals in other languages
- Current installation instructions
- Service requests
- Ordering spare parts

Under: service.bechstein-digital.com

Service phone:

+800 1853 0000 (free of charge)

We look forward to getting in touch with you -
Your service team from C. Bechstein Digital