

HYBRID PIANO

**AVANTGRAND
N3, N2, N1**

NU1

MAINTENANCE HANDBOOK

INTRODUCTION

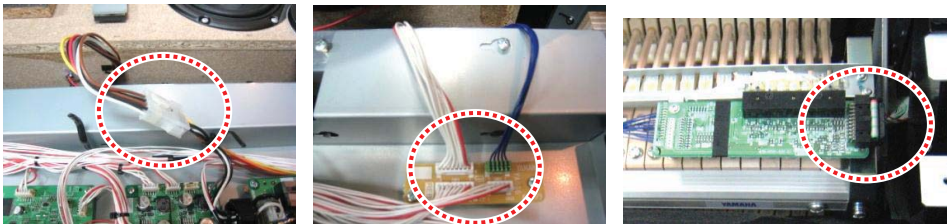
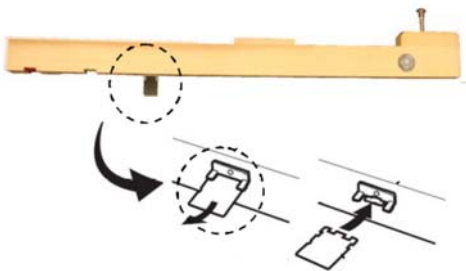
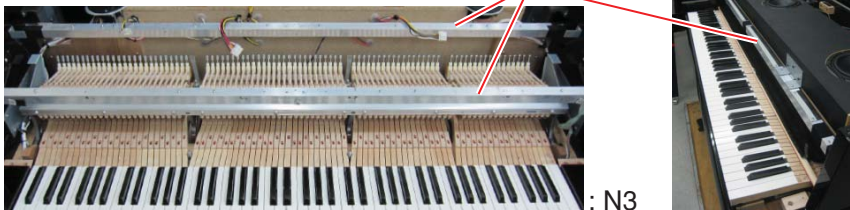
This booklet is the service technician manual for the AvantGrand N3, N2, N1 and NU1. It contains technical service information needed for providing product after-service mainly by piano service personnel.

Please also refer to the service manual if there any areas not covered by the service information in this manual.

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SERVICE CHECK POINTS

CATEGORY	CHECKPOINT	MODELS
During assembly	During reassembly after servicing, check that wiring bundle connectors for all electrical circuits are securely connected inside. 	N3, N2, N1, NU1
During assembly-disassembly	Be careful not to damage the key shutter when removing the keys. Scratch marks on the shutter might cause faulty operation. 	N3, N2, N1, NU1
During assembly-disassembly	Do not touch the key shutter with bare hands when removing or installing it. Touching it with bare hands will cause fingerprint stains and debris to adhere and possibly cause faulty operation. 	N3, N2, N1
During assembly	Never remove the center rails. Center rails 	N3, N2
During assembly-disassembly	Be careful not to bend the angle of hardware for the TW speaker or crush or dent the TW speaker itself. 	N3, N2
Other	The upper unit and lower unit on the N1 each have their own separate production No. When contacting us about them, report each of their production No. on the following sections (upper unit: shelf-lower switch box lower-surface; lower unit: speaker box lower-surface, inner-left).	N1

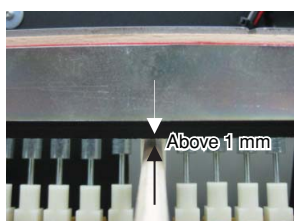
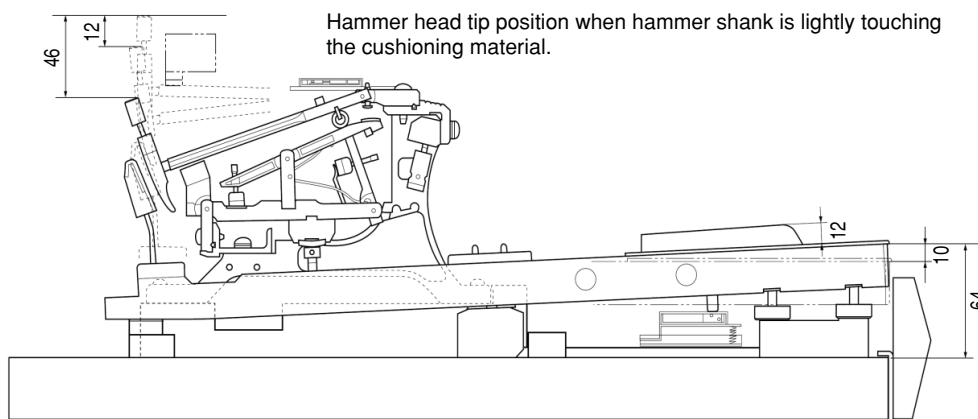
CATEGORY	CHECKPOINT	MODELS
During assembly	Check and set the DIP switches on the board when replacing the DM circuit board, and always execute the factory set of the test program.	N3, N2, N1, NU1
During disassembly	Never remove the NU1 side boards and arms. 	NU1

PIANO ACTION ADJUSTMENT POINTS & STANDARD DIMENSIONS

The N3, N2, N1, and NU1 have the same piano action as an acoustic piano but utilize shank stoppers instead of strings.

The shank stoppers are positioned so that the timing that the hammer shank contacts the stopper matches the timing that the hammer head would contact the string in an acoustic piano. Methods for finding if dimensions match standard criteria for the shank stopper such as hammer let-off and hammer stop are given below. Other standard dimensions and techniques for making adjustments are the same as for a typical acoustic piano.

N3 N2 N1



○ Hammer let-off 1 mm

Check the gap between the shank and shank stopper via Silent let-off.



○ Hammer stop 12 mm

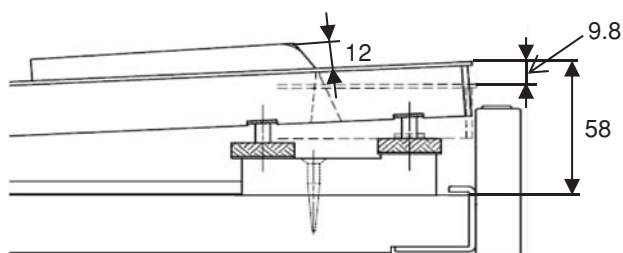
Use a ruler or scale to measure the distance in standard units from the top of the hammer head with the hammer shank lightly contacting the cushioning material, to the top of the hammer head when caught by the back check after tapping the key. Space is limited here so after finding the dimensions remove the hammer sensor unit and shank stopper if necessary.



○ Hammer leveling (striking distance) 46 mm

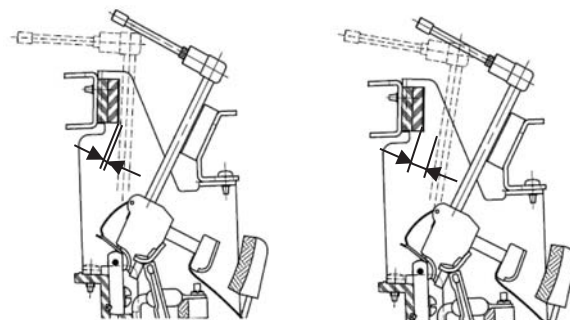
Set the striking distance to about 46 mm after checking the movement strength. With the hammer shank lightly contacting the cushioning material the same as for checking the hammer stop, use a ruler or scale to measure the distance from the top of the hammer head and find the dimensions in standard units. The shank stopper moves in a straight line so a hammer height with a low pitch will be the same for other pitch ranges.

NU1



○ Hammer let-off 1 mm

○ Hammer stop 8 mm



The distance from hammer let-off to hammer stop is the distance between the shank stopper lower edge and the hammer shank.

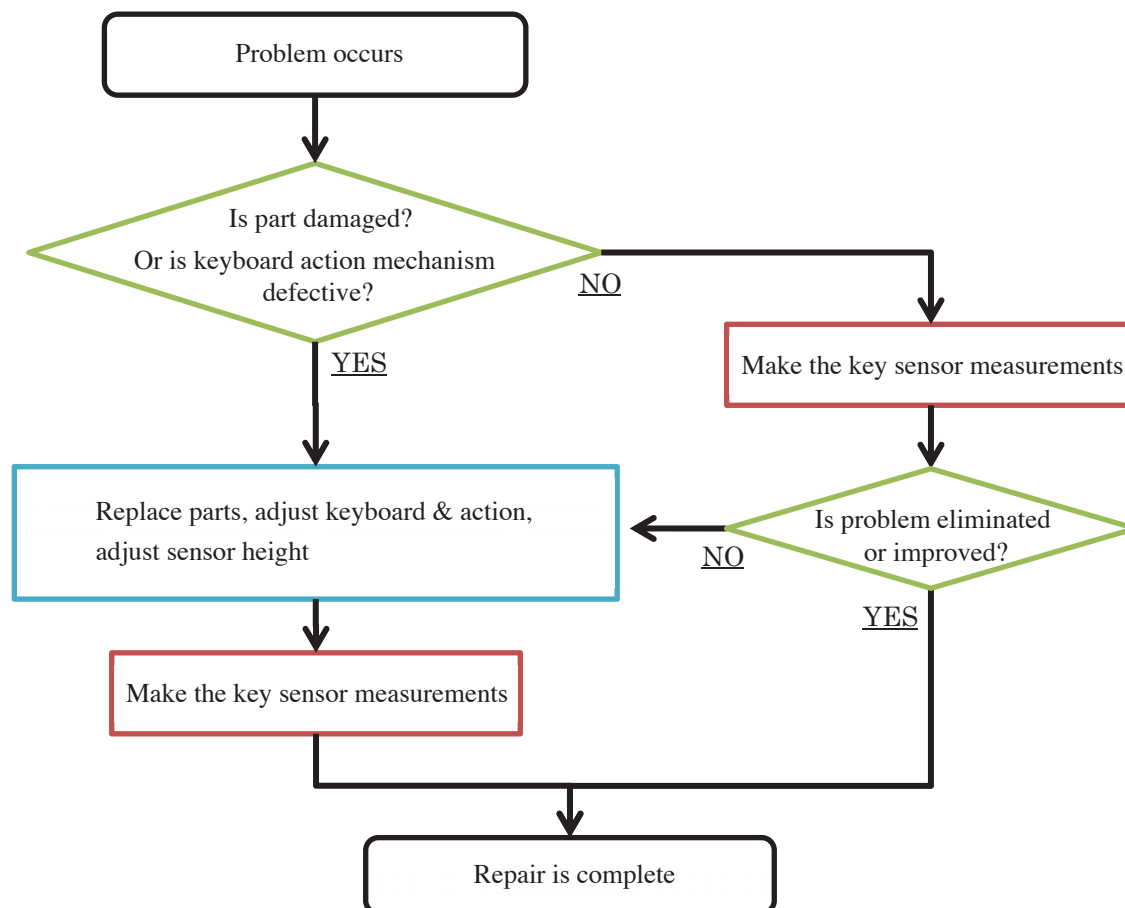
KEY SENSOR MEASUREMENT & SENSOR HEIGHT ADJUSTMENT

The following cases require N3, N2, N1, and NU1 keyboard and action adjustment.

1. When playing performance is not satisfactory due to lack of evenness of action/keyboards movement and control.
2. When a problem was found in generation of electronic sounds and required to be checked along with other problems.
3. When the keyboard or key action has been damaged.

Always perform key sensor measurement after making these repairs and adjustments.

KEYBOARD RELATED PROBLEM REPAIR FLOW: HYBRID PIANOS



Sensor system overview

The AvantGrand N3, N2, N1 detect keyboard play information via key sensors and hammer sensor, and on the NU1 only via key sensors. Pedal play information is detected in all cases by pedal sensors. Keyboard movement data detected by each sensor is converted into keyboard speed (volume) & sounding timing data & muting timing data on the sensor circuit board and then sent to the DM circuit board as an electronic sound source to produce music sounds.

Sensor unit overview and adjustment methods

Though constant height adjustments are not normally required, if the sensor unit was replaced or if the sensor and keyboard positions have drastically changed due to key or keyboard adjustments then the sensor unit height must be checked and adjusted.

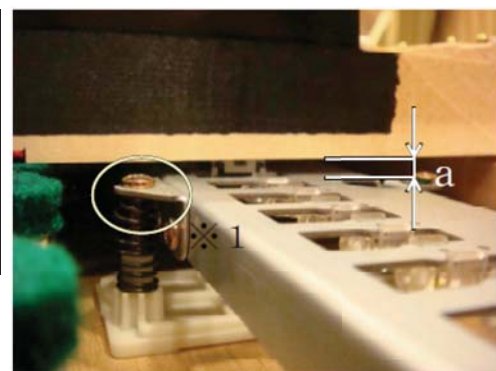
Definition of term

- REST : Position when the keyboard is not pressed.
- END : Position when the keyboard is lightly pressed to the bottom of the key.
- K1/K2/K3/K4 : Four threshold values between the REST position and END position when a key is pressed. While the value of the END is 10 mm, the threshold values are K1 = 2.7 mm, K2 = 4.5 mm, K3 = 6.3 mm and K4 = 8.1 mm.
- M1/M2 : Two threshold values between the REST position and END position when a hammer is in motion. The distance between the M1 and M2 is 10 mm while that between the M2 and END is 1 mm.

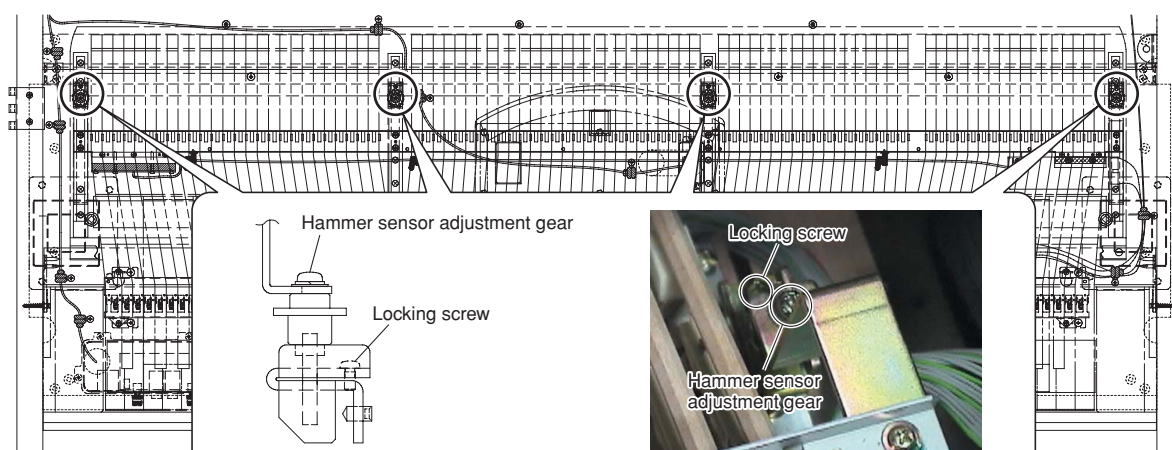
Key sensor unit adjustment (N3, N2)

Position check	Gap between the lower edge of key and the upper edge of key sensor unit chassis, when a black key is depressed to the bottom
Reference dimensions	Gap of 3.8 mm to 4.0mm (a)
Adjustment method	Adjust the back-and-forth adjustment screws (1 each) for the 4 bracket positions on the sensor unit. (※ 1)

* On the N1 and NU1 there is no need to adjust the key sensor unit height.

**Hammer sensor adjustment (N3, N2, N1)**

Position check	M2 ON timing in hammer sensor test mode (check buzzer tone sound)
Reference dimensions	Gap between hammer shank and stopper at M2 ON timing: 0.5 mm to 1.75 mm
Adjustment method	On the N2, N3: adjust by using the hammer sensor adjustment gear

**<Adjustment procedure>**

1. Loosen the hammer sensor adjustment gear and loosen the locking screw.
2. Adjust the height with the hammer sensor adjustment gear.
3. Tighten the locking screw and then tighten the hammer sensor adjustment gear.

N1: Adjust by adding hammer sensor height adjuster spacers

Spacer locking screw

Spacer

Bracket locking screw

Wider than 1.75 mm

- ① Loosen the spacer locking screw.
- ② Loosen the bracket locking screw.
- ③ Add one spacer.
- ④ Tighten the bracket locking screw.
- ⑤ Tighten the spacer locking screw.

Narrower than 0.5 mm

- ① Loosen the spacer locking screw.
- ② Loosen the bracket locking screw.
- ③ Remove one spacer.
- ④ Tighten the bracket locking screw.
- ⑤ Tighten the spacer locking screw.

* The NU1 has no hammer sensor unit.

Key sensor measurement (keyboard measurement or key sensor calibration) (N3, N2, N1, NU1)**[Setup]**

- 1) Check that the cables and power cords are connected
- 2) Turn off the power
- 3) Wear headphones
- 4) Startup the maintenance mode
 - While in this state, check on the headphones that sound is emitted in “C chord” for 2 seconds each time showing the maintenance mode has started.
 - * In the NU1, no alarm tone is generated but “AG1” is displayed on the LED screen.
- 5) Let stand idle for 30 seconds to 1 minute (aging for sensor calibration)

[Key sensor measurement]

- 6) Measure the “rest value” and “end value” on all keys from 1key to 88key in the following measurement sequence.

Measure the “rest value”	Measure the “end value”
	

[Key sensor measurement start-up method]

Key sensor measurement consists of 2 types. One type is “All key measurement” that rewrites all key measurement values; and the other type “1 key measurement” that rewrites measurement values only for a specific key.

All key measurement mode	N3, N2, N1	10[F#0]+12[G#0]+14[A#0]+[POWER ON](release key after about 7 seconds)
	NU1	[DEMO/SONG]+[+]+[PLAY/STOP]+[POWER ON]
1 key measurement mode	N3, N2, N1	9[F0]+11[G0]+[POWER ON] (release key after about 7 seconds)
	NU1	[DEMO/SONG]+[PIANO/VOICE]+[PLAY/STOP]+ [POWER ON]

Key sensor measurement mode operating procedures**[All key measurement mode]**

	Content	Task Description (N3,N2,N1)	Operating guide tones (N3,N2,N1)	Task Description (NU1)	Screen display (NU1)
1	Refer to start-up methods	Start measurement mode	Chord; 1 time/2 seconds	Start measurement mode	Displays "AG1"
2	Do not touch anything (sensor aging)	Let stand 30 seconds to 1 minute		Let stand 1 minute to 2 minutes	Displays "AG1"
3	Start measurement	Depress damper pedal 1 time	Chord: Change to 2 taps	Not necessary (Auto)	Change to display "rSt"
4	Measure the “rest value”	Set in state where all keys are not up and are depressed	Chord: 2 taps	Set in state where all keys are not up and are depressed	Displays "rSt"
5	Load data into RAM	Depress damper pedal 1 time	Chord: Change to 3 taps	Push the [PLAY/STOP] button	Change to display "En"
6	Measure the “end value”	Play keys 1 – 88 to the end value	Chord: 3 taps	Play keys 1 – 88 to the end value	Displays "En"
7	Load data into RAM	Depress damper pedal 1 time	Chord: Change to 1 time/ 2 seconds	Push the [PLAY/STOP] button	Change to display "n_y"
8	Save data and write into Flash memory	Depress soft pedal 1 time	76[C] tone, sounds at consecutive taps	Push the [PLAY/STOP] button	Displays "PAS"
9	End measurement	Power OFF		Power OFF	

* The operating guide tones in the NU1 are generated electronically, and an operating guide appears on the panel LED screen.

* If measurement fails, then the 78[D4] and 76[C4] keys are trilled and the tone for the applicable error key is generated (*NU1: key no. displayed).

[1 key measurement mode]

	Content	Task Description (N3,N2,N1)	Operating guide tones (N3,N2,N1)	Task Description (NU1)	Screen display (NU1)
1	Refer to start-up methods	Start measurement mode	Chord; 2 taps	Start measurement mode	Displays "1Ky"
2	Do not touch anything (sensor aging)	Let stand 30 seconds to 1 minute		Let stand 1 minute to 2 minutes	Displays "1Ky"
3	Make measurement key setting and start measurement	Play only keys measured	Change measurement key tone to 2 taps	Play only keys measured	Displays key no.
	Set measurement key	Not necessary (Auto)		Push the [PLAY/STOP] button	Change to display "rSt"
4	Measure the "rest value"	Set in state where all keys are not up and are depressed	2 tap measurement key tone	Set in state where all keys are not up and are depressed	Displays "rSt"
5	Load data into RAM	Depress damper pedal 1 time	Change to 3 taps	Push the [PLAY/STOP] button	Change to display "En"
6	Measure the "end value"	Play measurement key to the end value	3 taps	Play measurement key to the end value	Displays "En"
7	Load data into RAM	Depress damper pedal 1 time	Change to 1 time/2 second tone	Push the [PLAY/STOP] button	Change to display "n_y"
8	Save data and write into Flash memory	Depress soft pedal 1 time	76[C] tone, sounds at consecutive taps	Push the [PLAY/STOP] button	Displays "PAS"
9	End measurement	Power OFF		Power OFF	

* The operating guide tones in the NU1 are generated electronically, and an operating guide appears on the panel LED screen.

* If measurement fails, then the 78[D4] and 76[C4] keys are trilled and the tone for the applicable error key is generated (*NU1: key no. displayed).

Sensor test mode**Definition of term**

- REST : Position when the keyboard is not pressed.
- END : Position when the keyboard is lightly pressed to the bottom of the key.
- K1/K2/K3/K4 : Four threshold values between the REST position and END position when a key is pressed. While the value of the END is 10 mm, the threshold values are K1 = 2.7 mm, K2 = 4.5 mm, K3 = 6.3 mm and K4 = 8.1 mm.
- M1/M2 : Two threshold values between the REST position and END position when a hammer is in motion. The distance between the M1 and M2 is 10 mm while that between the M2 and END is 1 mm.

[Key sensor test mode (N3, N2, N1, NU1)]

Startup method N3, N2, N1: [A-1]+[B-1]+[C0]+Power ON → release keys after 7 seconds NU1: [METRONOME]+[RECORD]+[PLAY/STOP]+Power ON Select Test mode No. 27 with [+]/[-] and execute [PLAY/STOP] Checking method Check that the K1 through K4 key positions detected by the key sensor are heard as a sine wave (A5) tone on the headphones.	
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[Hammer sensor test mode (N3, N2, N1)]

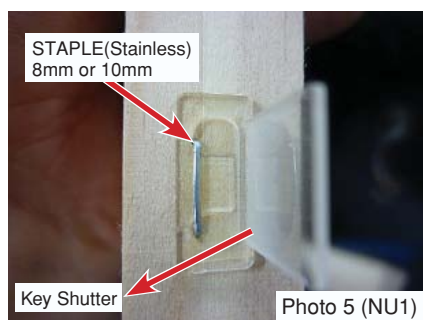
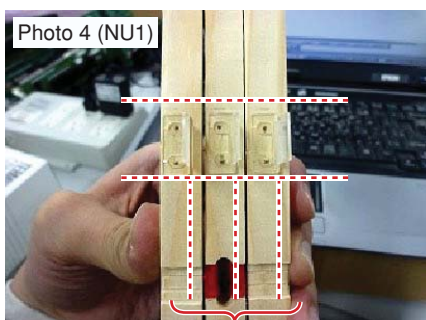
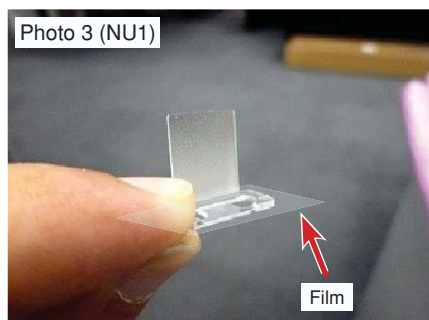
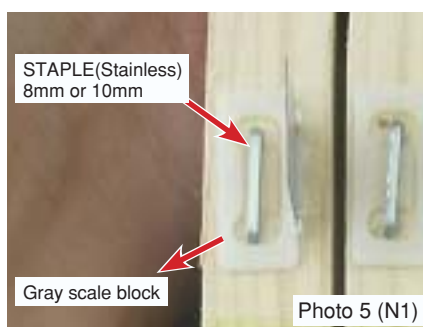
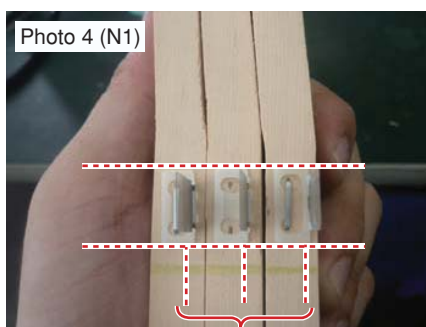
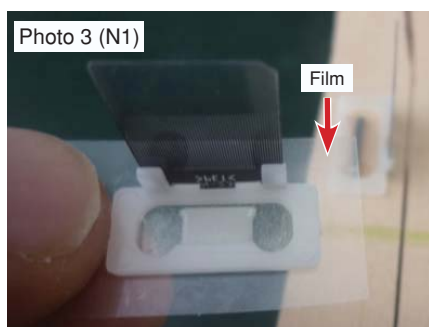
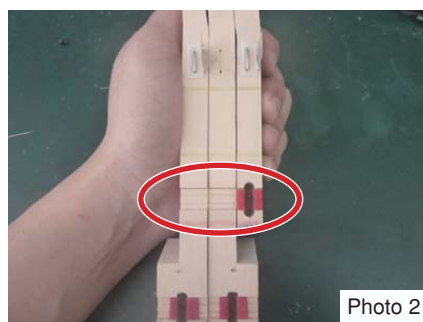
Startup method N3, N2, N1: [A-1] + [B-1] +Power ON → release keys after 7 seconds Check that the M1 ON and M2 ON positions detected by the hammer sensor are heard as a sine wave (A5) tone on the headphones. * The NU1 has no hammer sensor unit.	
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N1 AND NU1 KEY SHUTTER INSTALLATION PROCEDURE

※ Installation with a staple gun (shown below) is needed only for keyboard replacement of N1. The gray scale shutter can individually be replaced, in the same way as N3 and N2, for the key shutter replacement.

※ Be sure to perform related keyboard and action adjustments and key sensor measurement, in addition to shutter installation, when you repair or replace the keyboard.

1. Remove the key and both adjacent keys from the piano. (Photo 1) When exchanging the highest note key or the lowest note key of the keyboard, the key and the two closest keys are also removed.
2. Take the replacement keys in hand, turn them over, and align the front and back position of the key on the 3 keys by way of the key grooves. (Photo 2)
3. Peel the film from the key shutter part. (Photo 3) Pay attention to prevent dirt and damage to the key shutter.
4. Put the key shutter onto the key. The key shutter should be placed at even intervals between each of the 3 key shutters. (Photo 4)
5. Use the staple gun to lock the key shutter in place. (Photo 5) Check that the staples are securely mated to the key shutter.
6. Reinstall the key onto the piano.
7. After replacing the keys, repeatedly tap and release each key several times, and check that the key shutter does not bind on the key sensor bracket.
8. Execute the maintenance program 'Key Measurement'. Make sure to inspect that the key works properly using the key sensor test mode.



Place at even intervals.

Place at even intervals.

View of using the staple gun

STAPLE GUN : TP-M (TX500250: Piano Service Parts)

STAPLE : MAX8080FC 8x8mm (TX500330: Piano Service Parts)



EXTERIOR PART FINISHING LIST

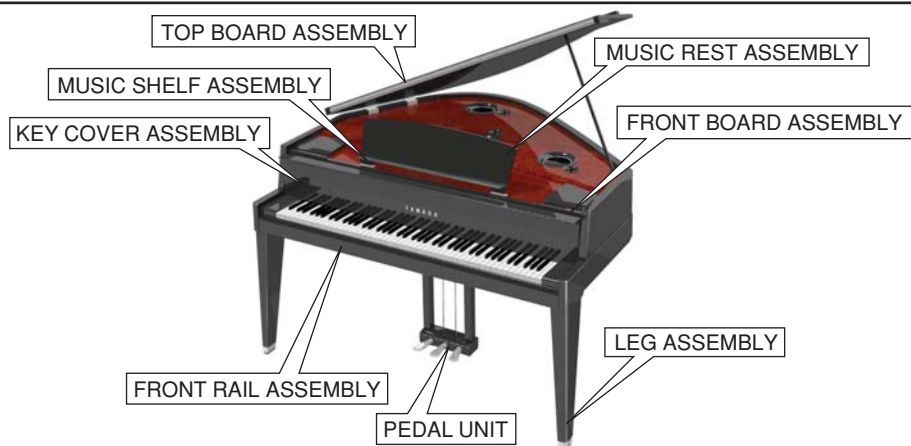
Surface finishing of main exterior parts is summarized by model in the tables below.

Repair coatings can be applied to polyester coated parts needing refinishing. Other part sections should simply be replaced.

The parts finished with asterisk (*) polyester paint can be repaired by painting as well in the same way as the other parts with normal polyester paint. However, there could be slight difference in the shine of the finish between the paint currently supplied as a service parts and the original paint because these paints were produced in different locations. In this reason, replacing the part is recommended when it is possible. Refer to the parts list (page 14 for N1 and page 15 for NU1) for replaceable parts.

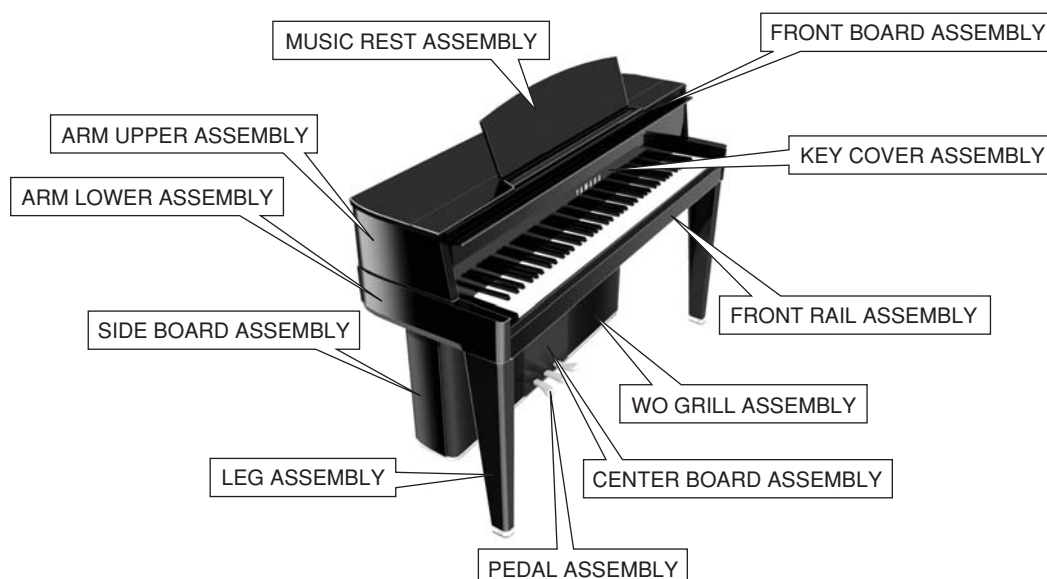
N3	Part	Surface treatment types
	TOP BOARD REAR	Polyester coating
	TOP BOARD FRONT	Polyester coating
	TOP BOARD FRONT RAIL	Polyester coating
	TOP STICK	Polyester coating
	FRONT TOP RAIL	Polyester coating
	BACK TOP RAIL	Polyester coating
	MUSIC REST	Polyester coating
	MUSIC STOPPER	UV coating
	MUSIC SHELF	Polyester coating
	FRONT RAIL	Polyester coating
	KEY COVER	Polyester coating
	KEY BLOCK	Polyester coating
	LEG (FRONT, REAR)	Melamine baking finish
	PEDAL UNIT	Polyester coating
N2	Part	Surface treatment types
	TOP BOARD REAR	Polyester coating
	TOP BOARD FRONT	Polyester coating
	FRONT TOP RAIL	Polyester coating
	MUSIC REST	Polyester coating
	MUSIC SHELF	Acrylic urethane coating
	FRONT RAIL	Polyester coating
	KEY COVER	Polyester coating
	KEY BLOCK	Polyester coating
	CENTER BOARD	Polyester coating
	ARM UPPER	Polyester coating
	ARM LOWER	Polyester coating
	SIDE BOARD	PET film attached
	LEG	Melamine baking finish
N1	Part	Surface treatment types
	TOP BOARD	Polyester coating
	FRONT BOARD	Polyester coating
	MUSIC REST	Polyester coating
	MUSIC STOPPER	Lacquer coating
	FRONT RAIL	Polyester coating *
	KEY COVER	Polyester coating
	KEY BLOCK	Uncoated ABS resin
	LEG (FRONT)	Polyester coating
	LEG (REAR)	Urethane coating
	REAR LEG ANGLE	Electro-deposition coating
	PEDAL BOX	Side surface: PVC sheeting, upper surface: lacquer coating
NU1	Part	Surface treatment types
	TOP BOARD	Polyester coating
	SIDE BOARD	Polyester coating *
	ARM	Polyester coating *
	UPPPER BOARD	Polyester coating
	KEY COVER	Polyester coating *
	MUSIC REST	Lacquer coating
	KEY STOPPER RAIL	Polyester coating
	FRONT RAIL	Polyester coating *
	KEY BLOCK	Uncoated ABS resin
	LOWER BOARD	Polyester coating
	LEG	Polyester coating *
	END RAIL	Polyester coating *

N3 PARTS LIST



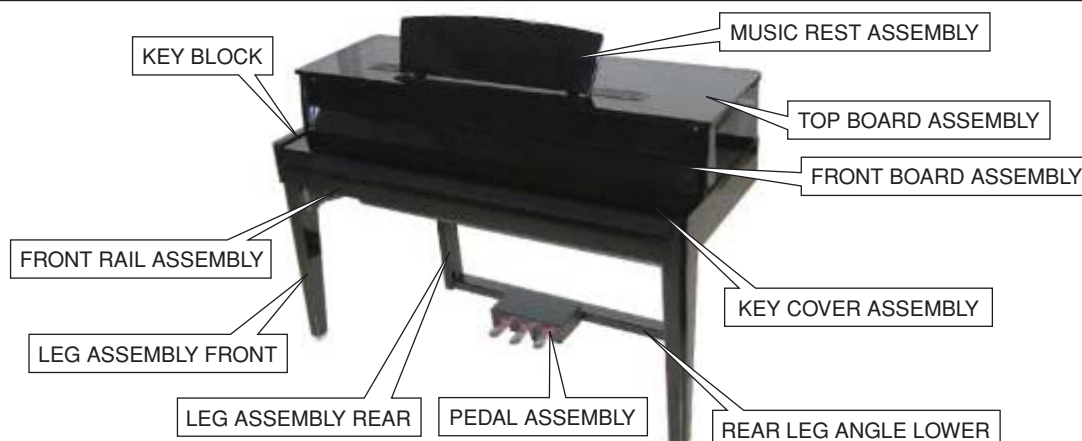
	DESCRIPTION	PART NO.	REMARKS
Exterior	TOP BOARD FRONT ASSEMBLY	ZE082300	Replacement set (service parts kit)
	TOP BOARD FRONT replacement adjuster part set	ZE082400	Replacement set (service parts kit)
	TOP STICK ASSEMBLY	WQ253000	
	FRONT TOP RAIL ASSEMBLY	WQ249200	
	MUSIC REST ASSEMBLY	WQ249600	Including music sheet retainer to Prod No. JAQI01000
	MUSIC REST ASSEMBLY	WQ249601	Including music sheet retainer Prod No. JAQI01000 onwards
	MUSIC SHELF ASSEMBLY L	WQ249400	
	MUSIC SHELF ASSEMBLY R	WQ249500	
	FRONT RAIL ASSEMBLY	WQ248900	
	KEY COVER ASSEMBLY	ZE082500	Replacement set (service parts kit)
	KEY COVER replacement adjuster part set	ZE082600	Must be simultaneously procured when replacing key cover
	NONWOVEN KEYBOARD	WQ824700	
	ROTARY DAMPER L	WQ253300	
	ROTARY DAMPER R	WQ253400	
	LEG ASSEMBLY L	WQ255700	
	LEG ASSEMBLY R	WQ255800	
	LEG ASSEMBLY REAR	WQ255900	
	LEG SCREW SET	WR724300	
	CASTER	WQ256100	
	PEDAL UNIT	WQ266700	
Interior	PEDAL LEVER UNIT L	WQ256200	For SOFT PEDAL
	PEDAL LEVER UNIT R	WQ256300	For DAMPER PEDAL
	KEY ASSEMBLY KEY #1	WR824800	With shutter
	KEY ASSEMBLY KEY #88	WR833500	With shutter
	HAMMER SHANK ASSEMBLY A1	WR822400	K1 - K8 All come with shutter
	HAMMER SHANK ASSEMBLY A2	WR822500	K9 - K16
	HAMMER SHANK ASSEMBLY A3	WR822600	K17 - K24
	HAMMER SHANK ASSEMBLY A4	WR822700	K25 - K32
	HAMMER SHANK ASSEMBLY A5	WR822800	K33 - K40
	HAMMER SHANK ASSEMBLY A6	WR822900	K41 - K48
	HAMMER SHANK ASSEMBLY A7	WR823000	K49 - K56
	HAMMER SHANK ASSEMBLY A8	WR823100	K57 - K64
	HAMMER SHANK ASSEMBLY A9	WR823200	K65 - K72
	HAMMER SHANK ASSEMBLY A10	WR823300	K73 - K80
	HAMMER SHANK ASSEMBLY A11	WR823400	K81 - K88
	SUPPORT ASSEMBLY FELT A1	WR823900	K1 - K30
	SUPPORT ASSEMBLY FELT A2	WR824000	K31 - K60
	SUPPORT ASSEMBLY FELT A3	WR824100	K61 - K88
	KEY SHUTTERS GRAY SCALE	V797780R	
	KEY SHUTTERS BLOCK	V797790R	
Electrical Section	HAMMER SENSOR UNIT	WB492500	
	HAMMER SENSOR CIRCUIT BOARD	WS316400	
	HAMMER EMISSION CIRCUIT BOARD	VZ14190R	
	KEY SENSOR UNIT	WQ531300	
	KEY SENSOR CIRCUIT BOARD	WQ532300	
	DM CIRCUIT BOARD	WN854300	to Prod No. JAQH01000
	DM CIRCUIT BOARD	WN854301	Prod No. JAQH01001 onwards *with SW5
	ACDC CIRCUIT BOARD	WP946500	
	DCDC CIRCUIT BOARD	WM942900	
	MAD CIRCUIT BOARD	WP942500	to Prod No. JAPO01000
	MAD CIRCUIT BOARD	WT608700	Prod No. JAQH01001 onwards

N2 PARTS LIST



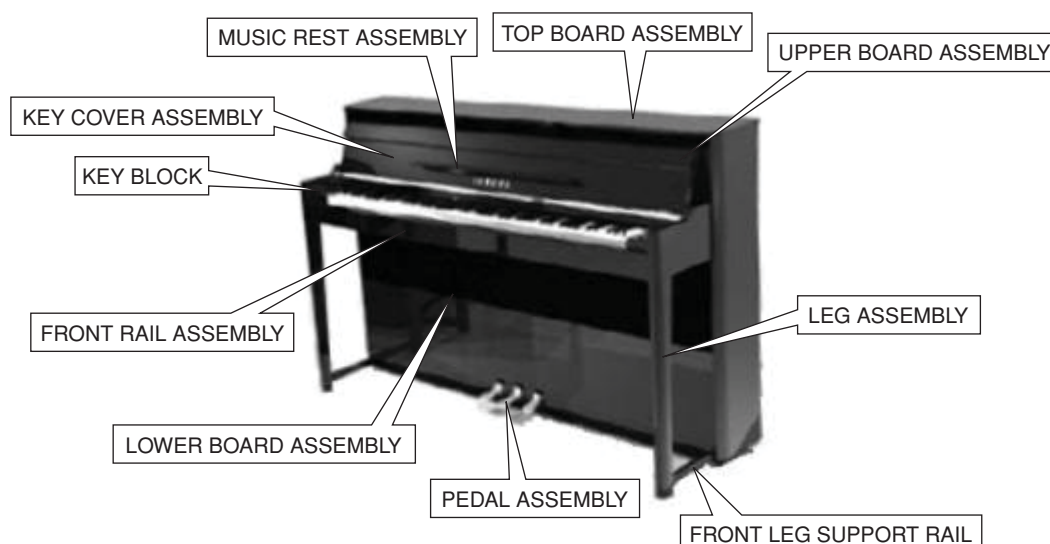
	DESCRIPTION	PART NO.	REMARKS
Exterior	FRONT TOP RAIL ASSEMBLY	WQ976700	
	MUSIC REST ASSEMBLY	WQ976800	
	FRONT RAIL ASSEMBLY	WQ248900	
	KEY COVER ASSEMBLY	ZE082500	Replacement set (service parts kit)
	KEY COVER replacement adjuster part set	ZE082600	Must be simultaneously procured when replacing key cover
	NONWOVEN CLOTH KEY	WR261800	
	ROTARY DAMPER L	WQ253300	
	ROTARY DAMPER R	WQ253400	
	CENTER BOARD ASSEMBLY	WR118600	
	SIDE BOARD L ASSEMBLY	WR118700	
	SIDE BOARD R ASSEMBLY	WR118800	
	WO GRILL L ASSEMBLY	WR128100	
	WO GRILL R ASSEMBLY	WR128200	
	LEG ASSEMBLY L	WQ946300	
	LEG ASSEMBLY R	WQ946400	
	PEDAL ASSEMBLY	WP009900	
Interior	KEY ASSEMBLY Key #1	WR824800	With shutter
	KEY ASSEMBLY Key #88	WR833500	With shutter
	HAMMER SHANK ASSEMBLY A1	WR822400	K1 - K8 The following all come with hammer shutter
	HAMMER SHANK ASSEMBLY A2	WR822500	K9 - K16
	HAMMER SHANK ASSEMBLY A3	WR822600	K17 - K24
	HAMMER SHANK ASSEMBLY A4	WR822700	K25 - K32
	HAMMER SHANK ASSEMBLY A5	WR822800	K33 - K40
	HAMMER SHANK ASSEMBLY A6	WR822900	K41 - K48
	HAMMER SHANK ASSEMBLY A7	WR823000	K49 - K56
	HAMMER SHANK ASSEMBLY A8	WR823100	K57 - K64
	HAMMER SHANK ASSEMBLY A9	WR823200	K65 - K72
	HAMMER SHANK ASSEMBLY A10	WR823300	K73 - K80
	HAMMER SHANK ASSEMBLY A11	WR823400	K81 - K88
	SUPPORT ASSEMBLY A1	WR823900	K1 - K30
	SUPPORT ASSEMBLY A2	WR824000	K31 - K60
	SUPPORT ASSEMBLY A3	WR824100	K61 - K88
	KEY SHUTTERS GRAY SCALE	V797780R	
	KEY SHUTTERS BLOCK	V797790R	
Electrical Section	HAMMER SENSOR UNIT	WB492500	
	HAMMER SENSOR CIRCUIT BOARD	WS316400	
	HAMMER EMISSION CIRCUIT BOARD	VZ14190R	
	KEY SENSOR UNIT	WQ531300	
	KEY SENSOR CIRCUIT BOARD	WQ532300	
	DM CIRCUIT BOARD	WR067700	
	ACDC CIRCUIT BOARD	WR135300	
	DCDC CIRCUIT BOARD	WM942910	
	MAD CIRCUIT BOARD	WT608700	

N1 PARTS LIST



	DESCRIPTION	PART NO.	REMARKS
Exterior	TOP BOARD ASSEMBLY	WU186200	Including music sheet retainer
	FRONT BOARD ASSEMBLY	WU184700	
	Front top rail height adjuster spacer 0.5mm	WU820400	1 spacer
	Front top rail height adjuster spacer 1,0mm	WU899200	1 spacer
	MUSIC REST ASSEMBLY	WU185000	
	FRONT RAIL ASSEMBLY	WU183800	
	KEY COVER ASSEMBLY	WY612200	Replacement set (service parts kit)
	ROTARY DAMPER L	WV422900	
	ROTARY DAMPER R	WV423000	
	ARM UPPER ASSEMBLY L	WY614000	
	ARM UPPER ASSEMBLY R	WY614100	
	ARM LOWER ASSEMBLY L	WU183600	
	ARM LOWER ASSEMBLY R	WU183700	
	KEY BLOCK L	WU327500	
	KEY BLOCK R	WU327600	
	FRONT LEG L ASSEMBLY	WU287600	
	FRONT LEG R ASSEMBLY	WU287700	
	REAR LEG L	WU312100	
	REAR LEG R	WU312200	
	REAR LEG ANGLE LOWER	WU312500	
Interior	PEDAL ASSEMBLY	WR624200	
	PEDAL ADJUSTER	WF05450R	
	KEY ASSEMBLY KEY #1	WW683100	Replacement set (comes packed with shutter)
	KEY ASSEMBLY KEY #88	WW691800	Replacement set (comes packed with shutter)
	HAMMER SHANK ASSEMBLY A1	WW691900	K1 - K8 All come with shutter
	HAMMER SHANK ASSEMBLY A2	WW692000	K9 - K16
	HAMMER SHANK ASSEMBLY A3	WW692100	K17 - K24
	HAMMER SHANK ASSEMBLY A4	WW692200	K25 - K32
	HAMMER SHANK ASSEMBLY A5	WW692300	K33 - K40
	HAMMER SHANK ASSEMBLY A6	WW692400	K41 - K48
	HAMMER SHANK ASSEMBLY A7	WW692500	K49 - K56
	HAMMER SHANK ASSEMBLY A8	WW692600	K57 - K64
	HAMMER SHANK ASSEMBLY A9	WW692700	K65 - K72
	HAMMER SHANK ASSEMBLY A10	WW692800	K73 - K80
	HAMMER SHANK ASSEMBLY A11	WW692900	K81 - K88
	SUPPORT ASSEMBLY A1	WW693000	K1 - K30
	SUPPORT ASSEMBLY A2	WW693100	K31 - K60
	SUPPORT ASSEMBLY A3	WW693200	K61 - K88
	KEY SHUTTERS	V797780R	V886890R (BLOCK)
Electrical Section	HAMMER SENSOR UNIT	WY575300	Comes packed with height adjuster spacer
	HEIGHT ADJUSTER SPACER	WV361400	1 spacer
	HAMMER SENSOR CIRCUIT BOARD	WU689000	
	HAMMER EMISSION CIRCUIT BOARD	WU689200	
	KEY SENSOR UNIT	WU108500	
	KEY SENSOR CIRCUIT BOARD	WU688800	
	DM CIRCUIT BOARD	WU276500	
	DCDC1 CIRCUIT BOARD	WM942920	
	DCDC2 CIRCUIT BOARD	WR870510	
Tools	MAD CIRCUIT BOARD	WU366200	
	STAPLE GUN	TX500250	Handling is same as acoustic parts
	STAPLE	TX500330	8X8 mm Handling is same as acoustic parts

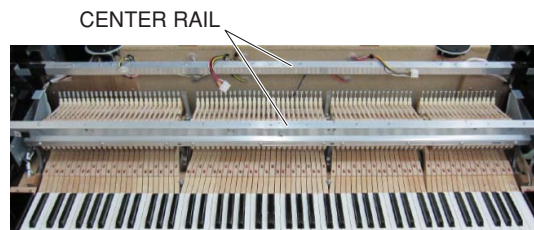
NU1 PARTS LIST



	DESCRIPTION	PART NO.	REMARKS
Exterior	TOP BOARD ASSEMBLY	WZ051900	
	UPPER BOARD ASSEMBLY	WZ051300	
	Upper front plate height adjuster spacer 0.5mm	WU820400	1 spacer
	Upper front plate height adjuster spacer 1.0mm	WU899200	1 spacer
	KEY COVER ASSEMBLY	WZ051200	
	MUSIC REST ASSEMBLY	WZ056700	
	KEY STOPPER RAIL ASSEMBLY	WZ051100	
	FRONT RAIL ASSEMBLY	WZ052500	
	ROTARY DAMPER L	23678100	
	ROTARY DAMPER R	23678000	
	ROTARY DAMPER SEAL	23732100	Same on L/R
	KEY BLOCK ASSEMBLY L	WZ050800	
	KEY BLOCK ASSEMBLY R	WZ050900	
	LOWER BOARD ASSEMBLY	WZ051600	
	LEG ASSEMBLY L	WZ082800	
	LEG ASSEMBLY R	WZ082900	
	FRONT LEG SUPPORT RAIL	WZ058500	
	FRONT LEG SUPPORT RAIL ANGLE L	WZ127500	
	FRONT LEG SUPPORT RAIL ANGLE R	WZ127600	
Interior	PEDAL ASSEMBLY	WZ799800	
	PEDAL ADJUSTER	WF05450R	
	KEY ASSEMBLY KEY #1	ZC133400	Replacement set (comes packed with shutter)
	KEY ASSEMBLY KEY #88	ZC142100	Replacement set (comes packed with shutter)
	HAMMER BUTT ASSEMBLY A1	ZC142200	K1 - K21
	HAMMER BUTT ASSEMBLY A2	ZC142300	K22 - K37
	HAMMER BUTT ASSEMBLY A3	ZC142400	K38 - K54
	HAMMER BUTT ASSEMBLY A4	ZC142500	K55 - K73
	HAMMER BUTT ASSEMBLY A5	ZC142600	K74 - K88
	WHIPPEN ASSEMBLY	WZ094700	K1 - K88
Electrical Section	PLASTIC SCALE (KEY SENSOR)	WY895200	
	SHUTTER-TAPE	V3792700	
	KEY SENSOR UNIT	WY782000	
	KEY SENSOR CIRCUIT BOARD	WY782500	
	DM CIRCUIT BOARD	WU925600	
Tools	ACDC CIRCUIT BOARD	WU924100	
	MAD CIRCUIT BOARD	WY926900	
	STAPLE GUN	TX500250	Handling is same as acoustic parts
	STAPLE	TX500330	8X8 mm Handling is same as acoustic parts

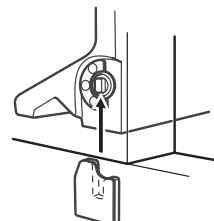
N3 DISASSEMBLY PROCEDURE

CAUTION: Make sure not to remove the center rail from the N3. It is impossible to reinstall it once it is removed.



1. Key Cover

Open the keyboard lid (also called the fall board) the same as on an acoustic grand piano (GP), raise and remove.



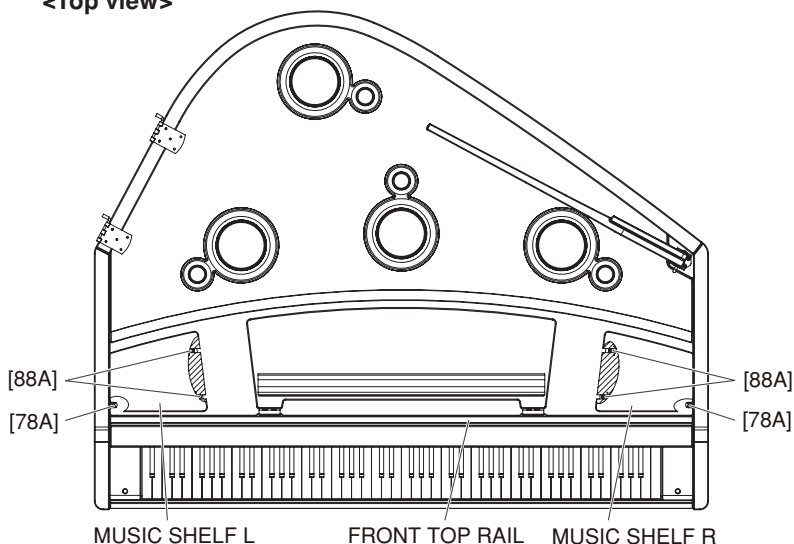
2. Music Shelf and Front Top Rail

2-1 Remove the music shelf (L/R).

Remove the two left/right screws [88A] and remove the music shelf.



<Top view>



2-2 Remove the front top rail.

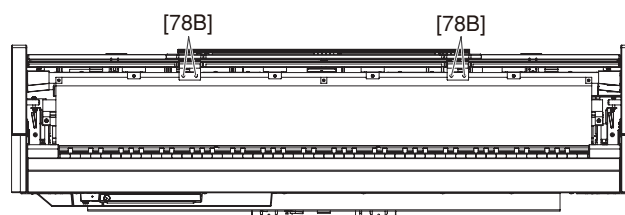
Remove the left/right screws [78A] (one each), grip and raise the front top rail, and the remove it towards yourself.



3. Music Rest

3-1 Remove the four (4) screws marked [78B].

<Front view>



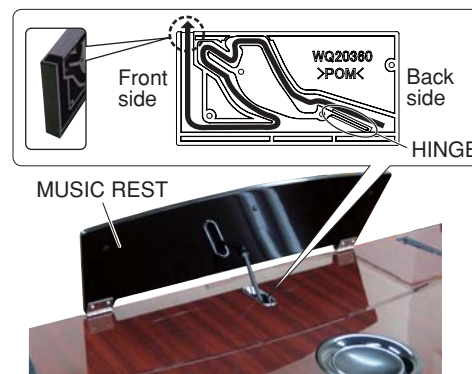
- 3-2 Rotate the music rest 90 degrees and remove it.



Tip contour on stay assembly

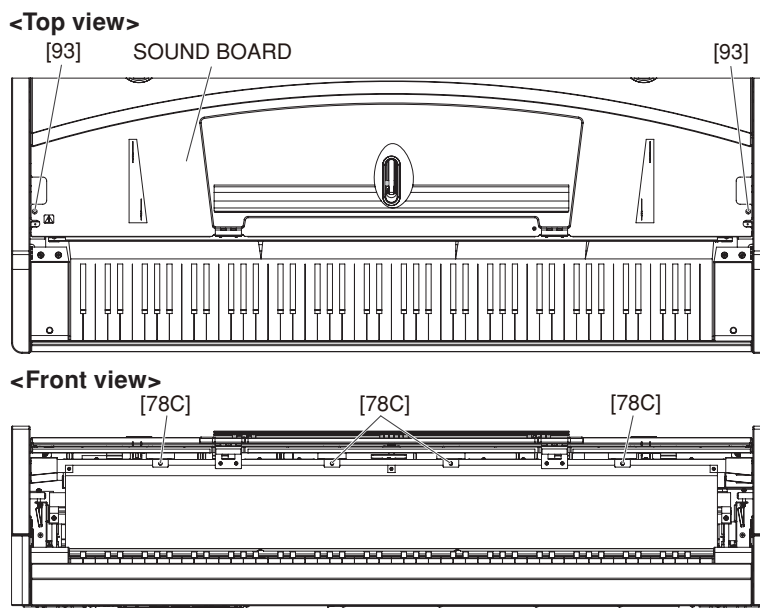
WARNING: Applying too much force while rotating it at this time may cause the hinge to break.

* The following is another way for removing the music rest. Shift the stay assembly as shown in the figure below from the music rest guide to remove the music rest.

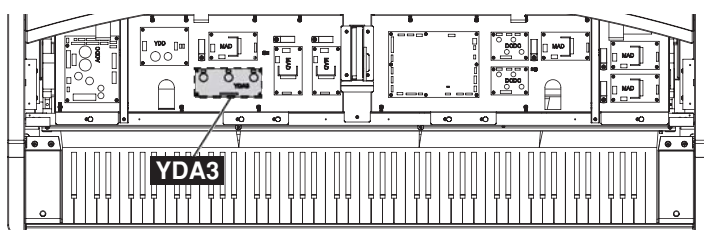


4. Sound Board Assembly

- 4-1 Remove the four (4) screws marked [78C] and two (2) screws marked [93].

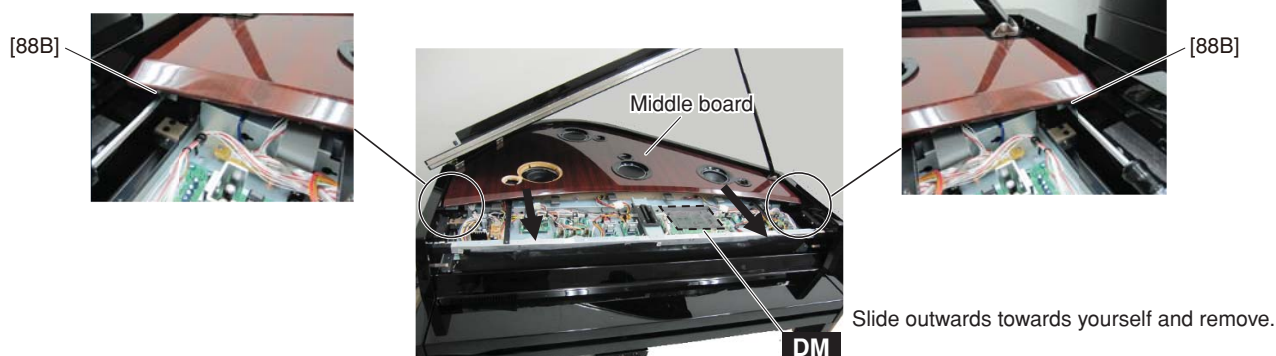


- 4-2 Raise up the sound board assembly, and remove the connector (CN202) for the YDA3 circuit board.



5. Middle Board

Remove the left/right screws [88B] (one each), and remove the middle board towards you.



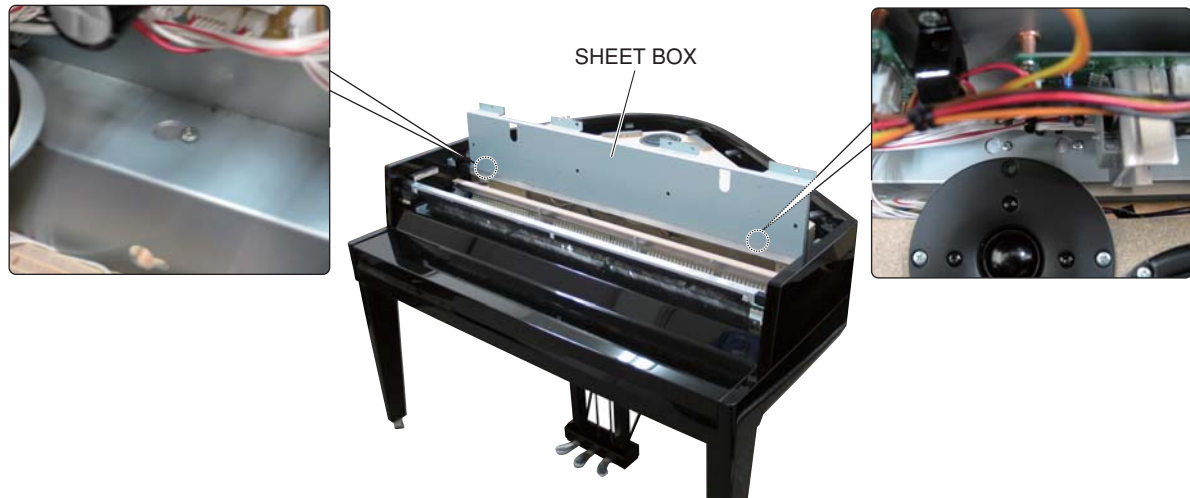
* The DM circuit board is now accessible for servicing, etc.

6. Sheet Box

6-1 When sheet box is set vertical:

Loosen the 14 screws [78G], slide the sheet box to the left, and then stand it up 90 degrees over the center rail.

* *Secure the sheet box assembly with screws for safety after raising it vertically.*



6-2 How to remove Sheet Box:

6-2-1 Remove the music shelf angles L/R.

Remove the screw marked [78D] and loosen the screw marked [78E]. The music shelf angles L/R can then be removed toward you.

6-2-2 Remove the music rest guide.

Remove the three (3) screws marked [78F]. The music rest guide can then be removed.

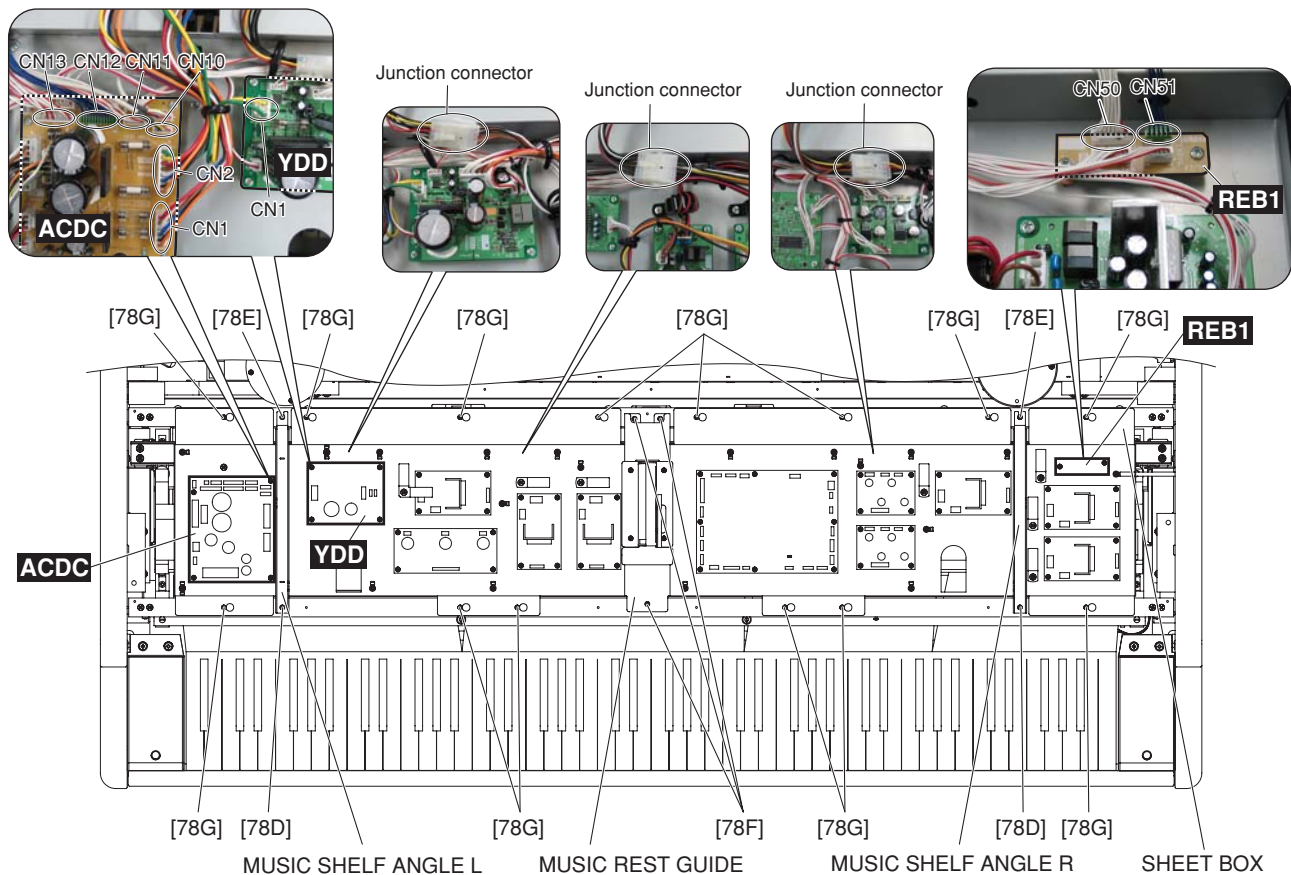
6-2-3 Remove each connector. (total of 12 locations)

Disconnect the six (6) connectors of the ACDC circuit board, the connector of the YDD circuit board, two (2) connectors of the REB1 circuit board and three (3) junction connectors.

6-2-4 Remove the sheet box.

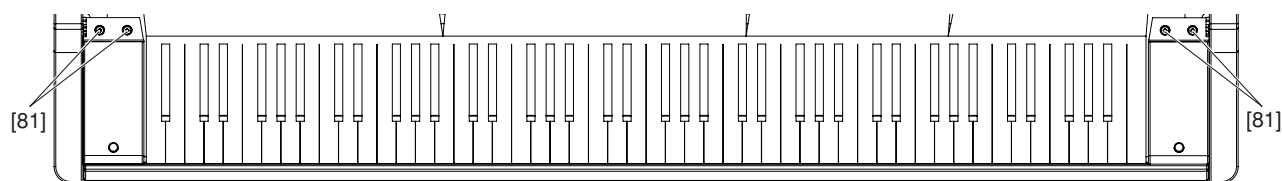
Loosen the fourteen (14) screws marked [78G] and slide the sheet box leftward. Then, lift it to remove it.

<Top view>



7. Key Block

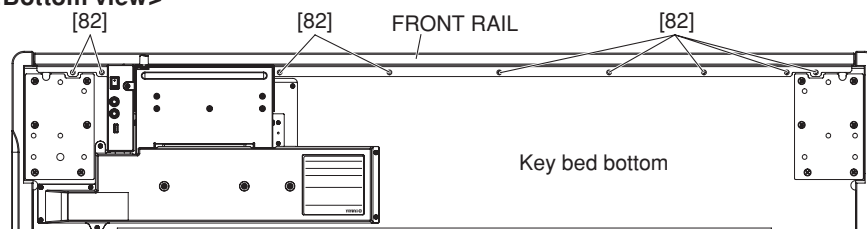
Remove the two left/right screws [81], and remove the key block.



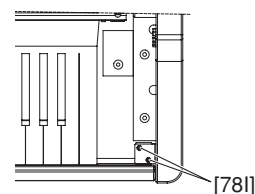
8. Front Rail

Remove the nine [82] screws, remove the two left/right screws [78], and remove the key slip.

<Bottom view>



<Top view> Right side



9. Key Stop Rail

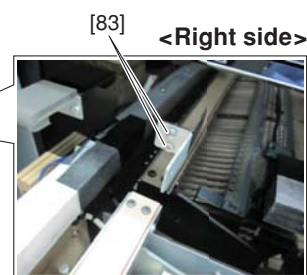
A key nonwoven fabric (black) is attached to the key stop rail so take care not to tear it during removal.

* There are 3 setscrews on the center rail front panel above the nonwoven fabric (black).

10. Action

10-1 Remove the middle board bracket.

Remove the two left/right screws [83], and remove the middle board bracket.



10-2 Remove the action bracket.

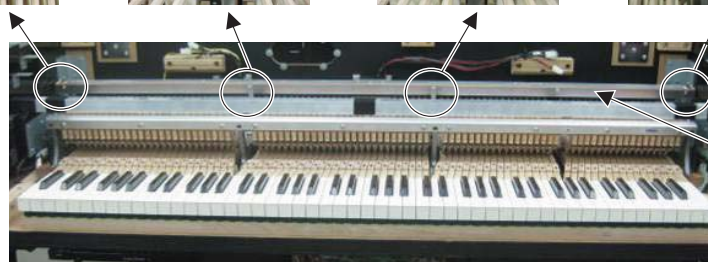
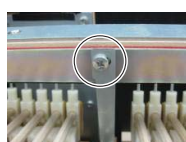
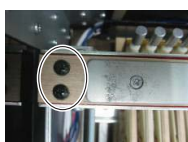
Remove the action bracket installation screws and remove the action while gripping the lower sound part of the shank stopper and the next high sound part of the shank rail as shown in the photo (right).

* We recommend you use a screwdriver with long shaft to remove the screws for the action bracket.



11. Shank Stopper

Remove a total of 6 screws at the four locations in the photos, and remove the shank stopper.



SHANK STOPPER

12. Hammer Sensor Unit

Removal of the hammer sensor unit is the same as for the GP-SG Silent.

N2 DISASSEMBLY PROCEDURE

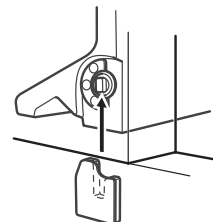
CAUTION: Make sure not to remove the center rail from the N2.
It is impossible to reinstall it once it is removed.



CENTER RAIL

1. Key Cover

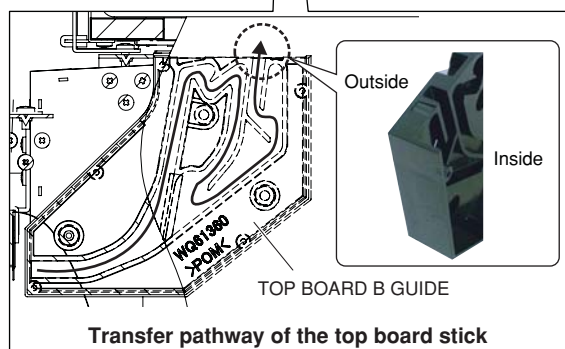
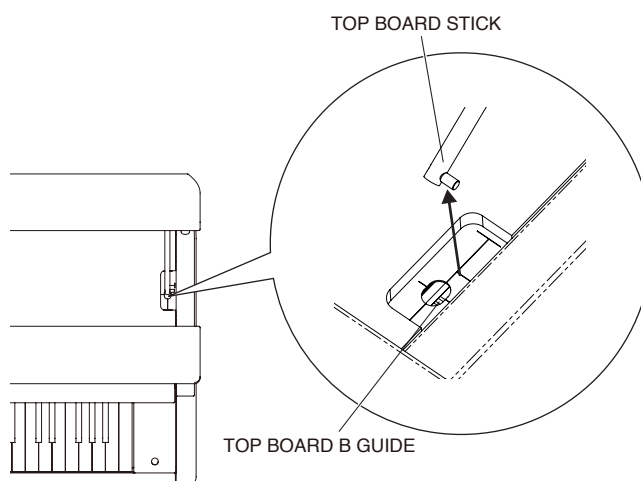
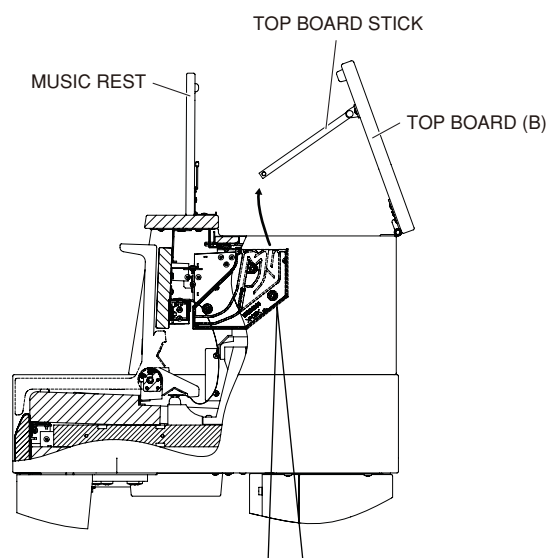
Open the key cover (also called the fall board) the same as on an acoustic grand piano (GP), raise and remove.



2. Top board

2-1 Raise the music rest.

2-2 Open the top board (B). Remove the top board stick assembly from the top board (B) guide and open the top board (B) guide.

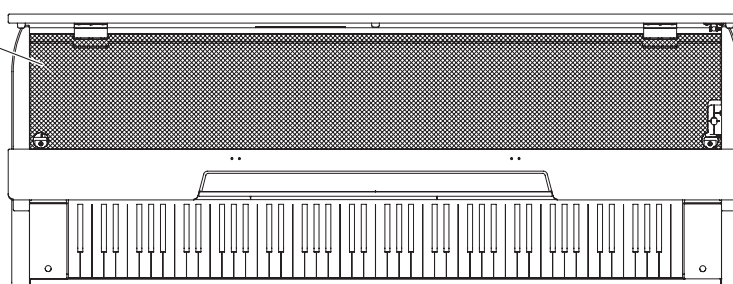
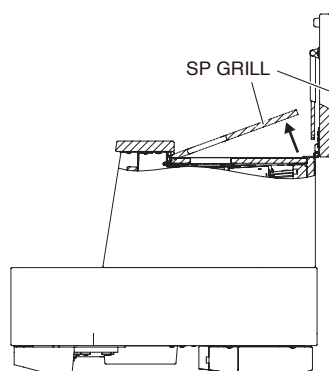


* Shifting the top board support within the guide as shown by the arrow in the figure on the left allows extraction.

* Do not open the top board (B) assembly by 90 degrees or more or damage may be caused.

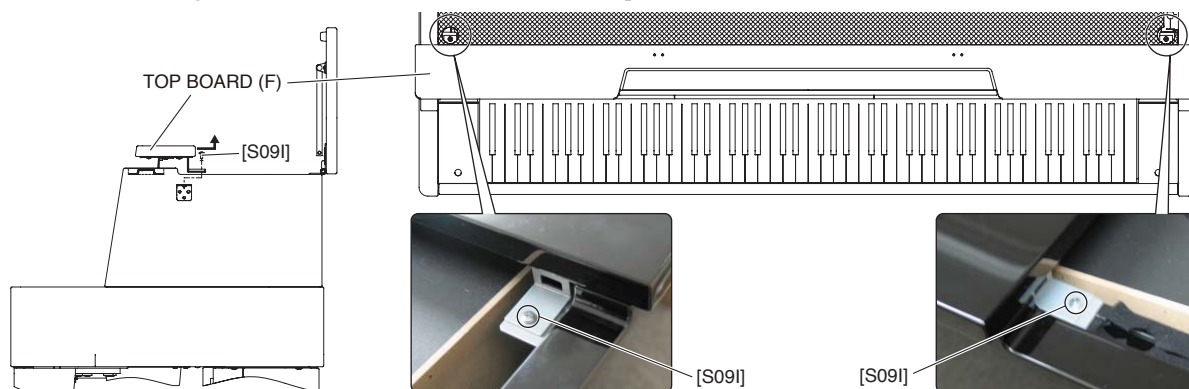
2-3 Remove the SP grill.

Grip the SP grill from the rear side and pull upward to remove the fastening tape, lift and remove.



2-4 Remove the top board (F).

Remove the left/right screws [S09I] (one each) and slide the top board (F) to the rear, lift and remove.



3. SP Box

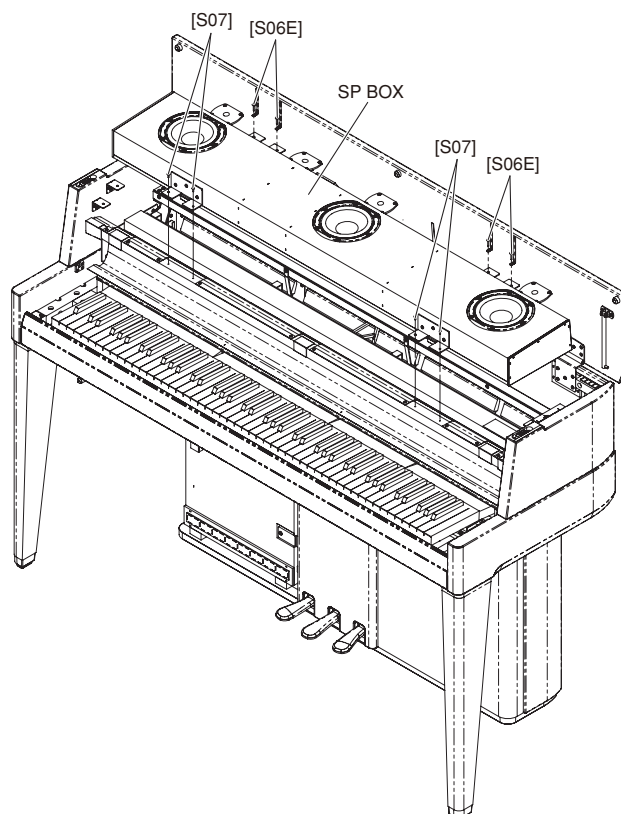
3-1 Remove the SP box connector.

Remove the connectors (3 locations each on left & right) on the rear of the SP box.

* After removing the connectors, secure them with cable bands so as not to interfere with servicing tasks.



The photo of connectors

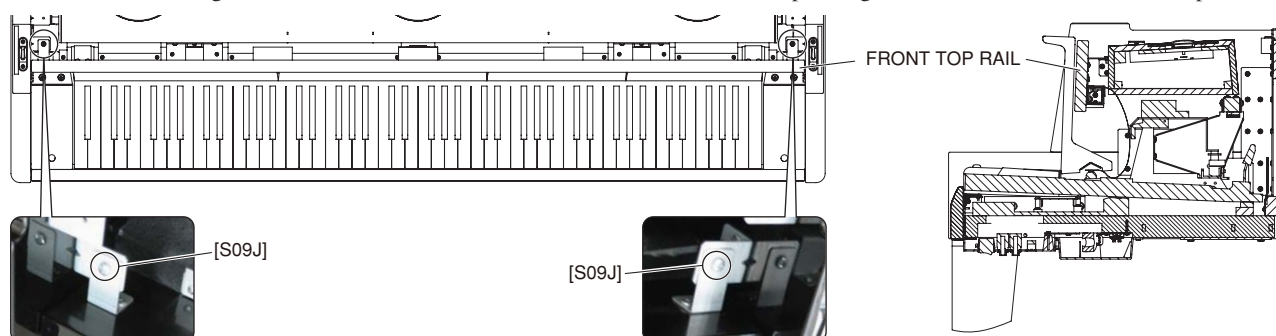


3-2 Remove the SP box.

Remove the four screws [S06E] and the four screws [S07] in the figure on the right and remove the SP box.

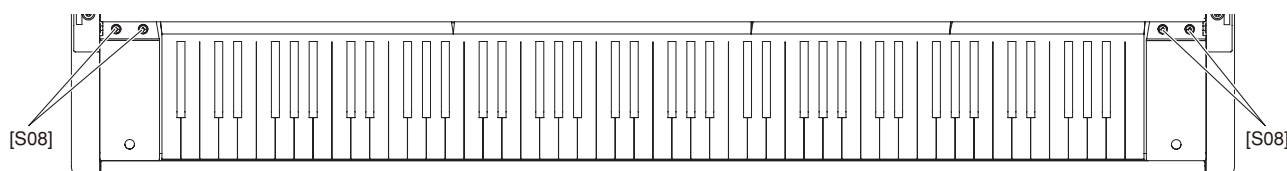
4. Front Top Rail

Remove the right/left screws [S09J] (one each), and lift and remove while pressing to the rear side above the front top rail.



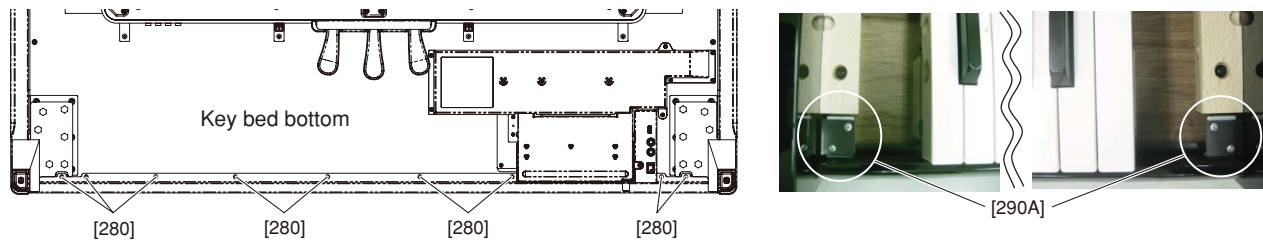
5. Key Block

Remove the two left/right screws [S08], and remove the key block.



6. Front Rail

Remove the nine key bed bottom screws [280] and the four key bed upper screws [290A], and remove the key slip.



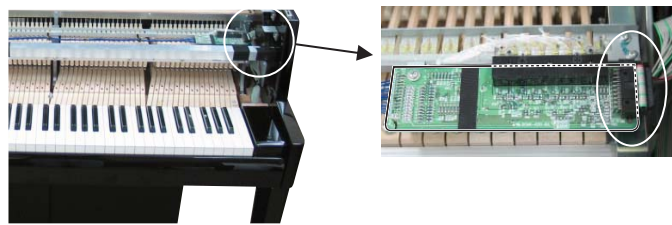
7. Key Stop Rail

A key nonwoven fabric (black) is attached to the key stop rail so take care not to tear it during removal.

** There are 10 setscrews on the center rail top panel above the nonwoven fabric (black).*

8. Action

8-1 Remove the hammer sensor connector.



8-2 Remove the action.

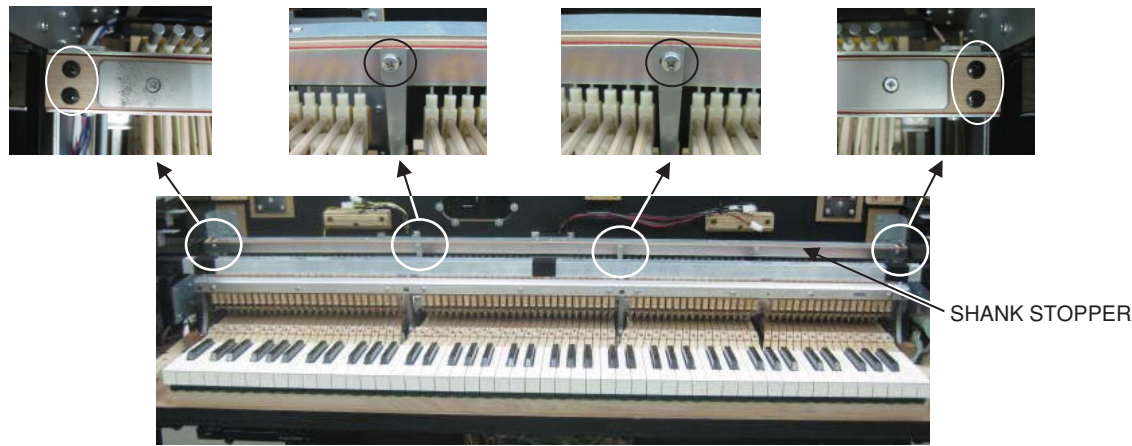
Remove the action bracket installation screws and remove the action while gripping the lower sound part of the shank stopper and the next high sound part of the shank rail as shown in the photo (right).

** We recommend you use a screwdriver with long shaft to remove the screws for the action bracket.*



9. Shank Stopper

Remove a total of 6 screws at the four locations in the photos, and remove the shank stopper.



10. Hammer Sensor Unit

Removal of the hammer sensor unit is the same as for the GP-SG Silent.

11. Bottom unit section (access to main circuit board)

11-1 Remove the Wo Grill (L, R).

Remove the key bed bottom screws [S05A], [S05B] (two each).

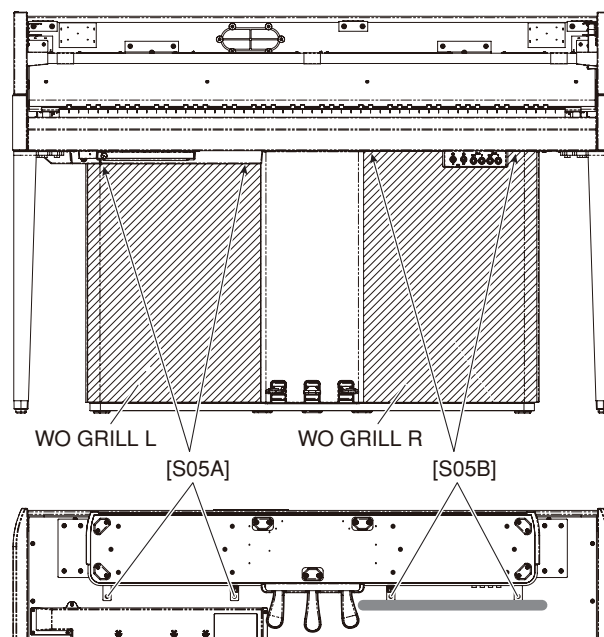
Pull out the outer side towards you while holding down the inner side of the Wo grill and remove the fastening tape, then remove the Wo grill.



Wo Grill L



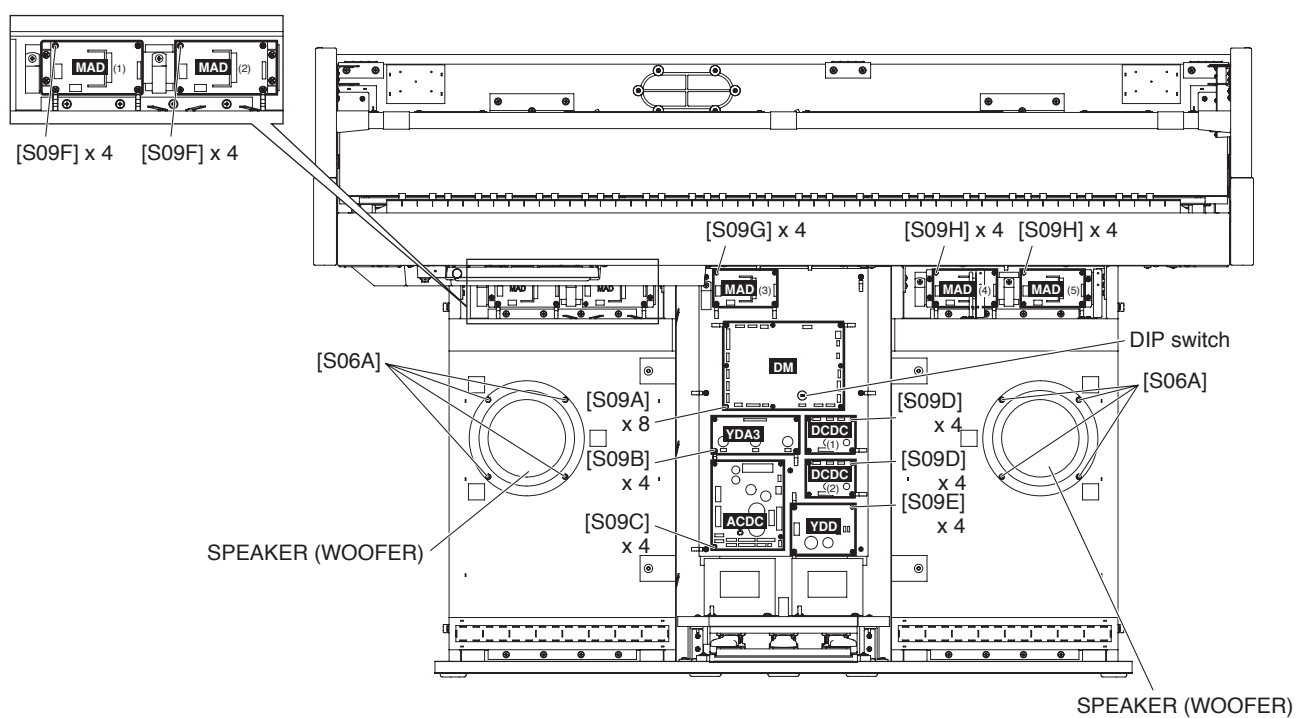
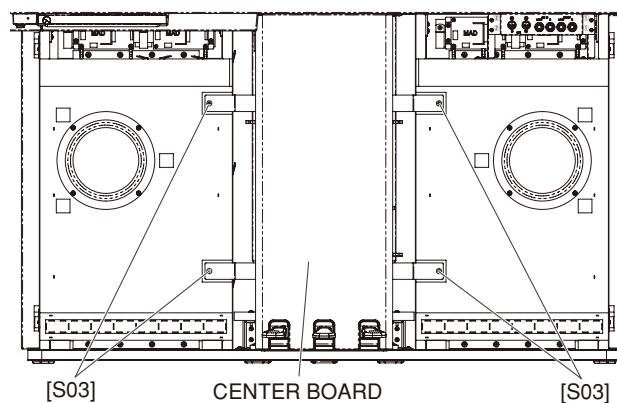
Wo Grill R



11-2 Remove the center board assembly.

Remove the four front panel screws [S03], and remove the center board assembly.

* The main circuit board is now accessible. (See lower drawing)



N1 DISASSEMBLY PROCEDURE

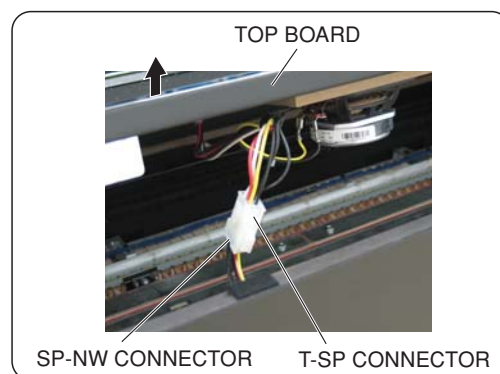
CAUTION: Make sure to never remove both the front board assembly and the back rail assembly from the N1 at the same time.

FRONT BOARD BACK RAIL

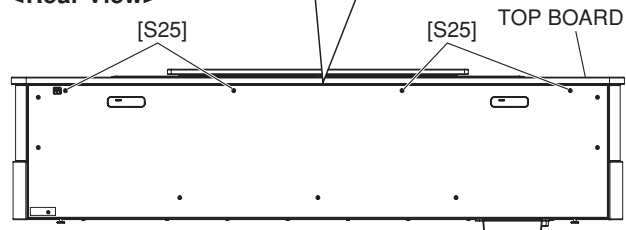


1. Top Board

- 1-1 Remove the four (4) screws marked [S25] and slide the top board unit forward.
- 1-2 Disconnect the SP-NW connector assembly (8P) and T-SP connector assembly (8P). The top board unit can then be removed by lifting up.



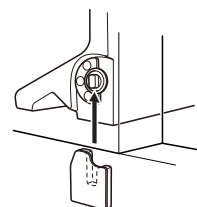
<Rear View>



* The DM circuit board is now accessible for servicing, etc.

2. Key Cover

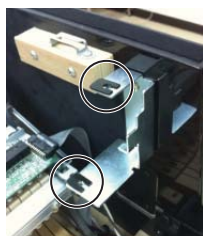
Open the key cover (also called the fall board) the same as on an acoustic grand piano (GP), raise and remove.



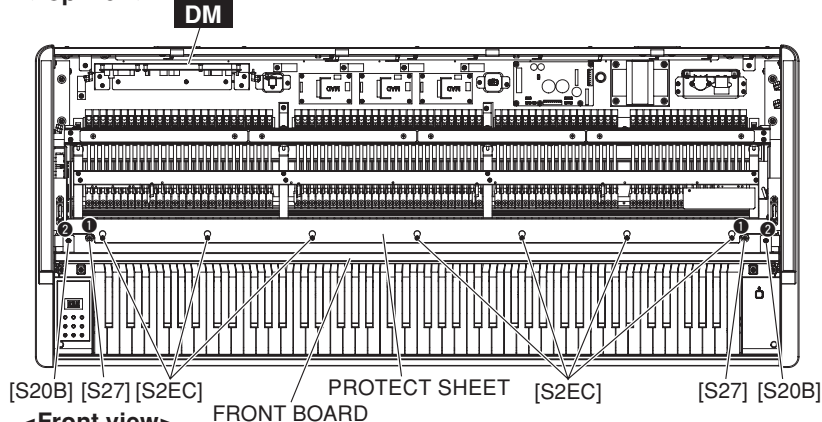
3. Front Board

- 3-1 Loosen the four (4) screws marked [S0A] and seven (7) screws marked [S2EC]. The protect sheet assembly can then be removed.
- 3-2 Remove the front board.
Remove the two (2) screws marked [S20B] and two (2) screws marked [S27]. Pull the front board assembly toward you and then lift it to remove it.

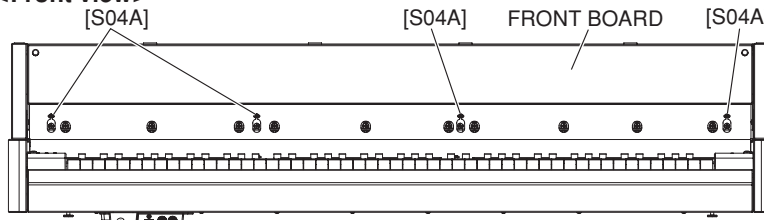
* In some cases spacers have been inserted as shown in the photo so do not forget how many spacers there are.



<Top view>



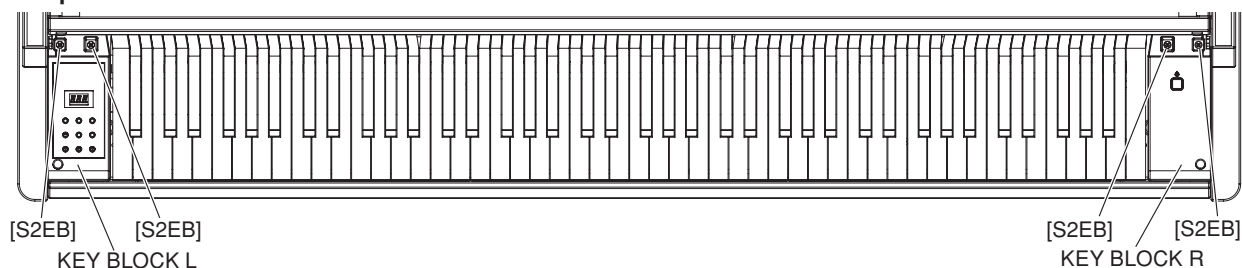
<Front view>



4. Key Block

Remove the two left/right screws [S2EB], and remove the key block.

<Top view>

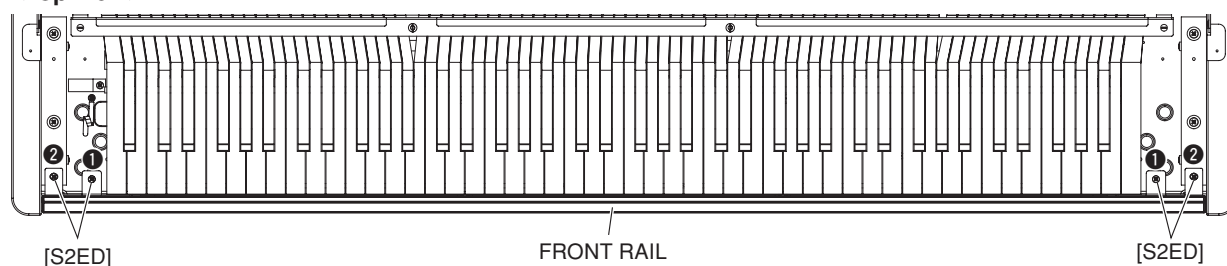


5. Front Rail

Remove the two left/right screws [S2ED] (2 each), and remove the key slip.

* Tighten the screws in the numerical order of ❶ and ❷ in the figure during installation of the front rail assembly.

<Top view>

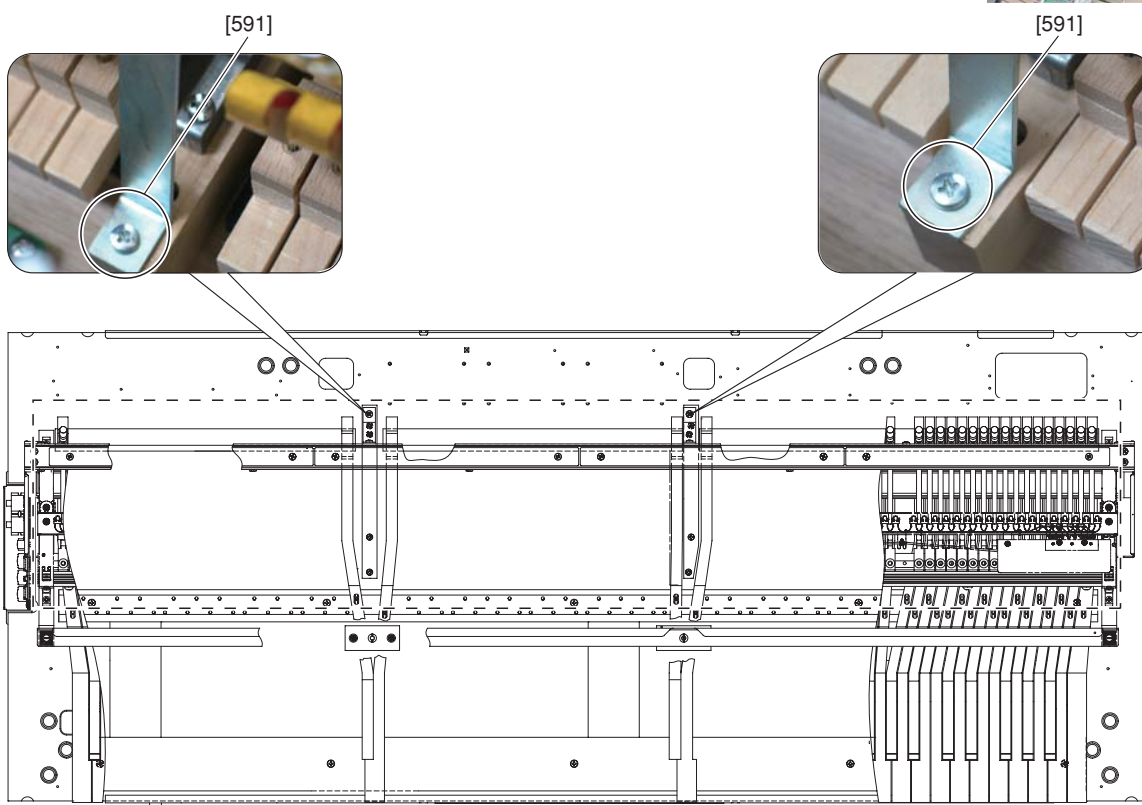


6. Action * Change the step sequence in No. 6 through No. 9 according to the task contents.

6-1 Remove the two (2) screws marked [591].

6-2 Remove the eight action bracket installation screws, and then remove the action while gripping the shank stopper lower sound part and the shank rail next high sound side as shown in the photo (right).

* We recommend you use a screwdriver with long shaft to remove the screws for the action bracket.



7. Key Stop Rail

The key stop rail is integrated into one piece with the protective sheet.

* See 3-1 for information about the procedure to remove the protective sheet.

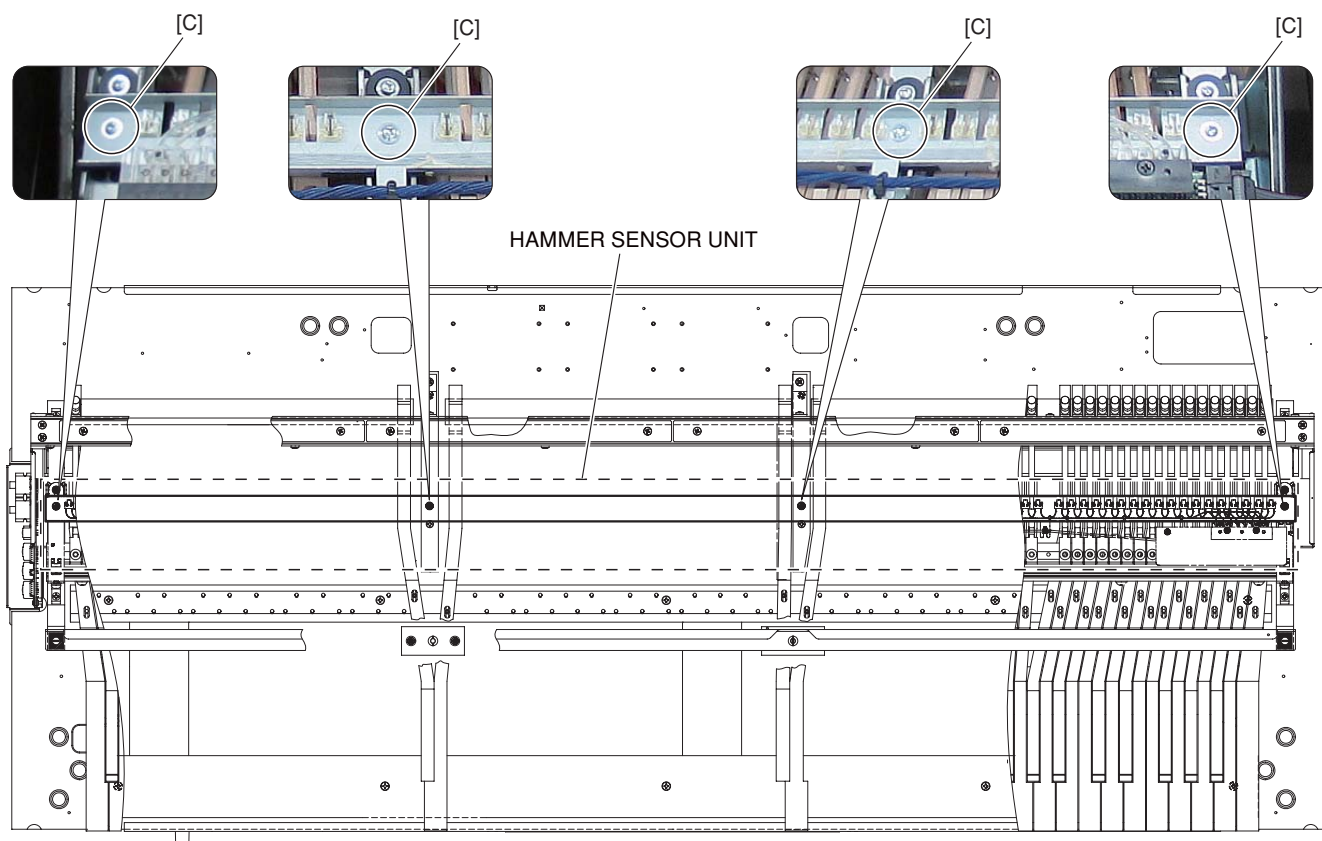
8. Shank Stopper

Remove a total of four screws on the left/right at the 2 locations in the photos and remove the shank stopper.



9. Hammer Sensor Unit

Remove the screws [C] at the 4 locations shown below and remove the hammer sensor unit.



NU1 DISASSEMBLY PROCEDURE

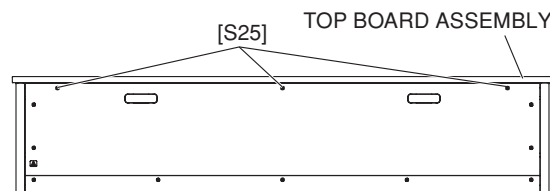
CAUTION: Make sure to never remove the side board assembly (L, R) and the arm assembly (L, R) from the NU1.

These parts should not be repaired by replacing with service parts.



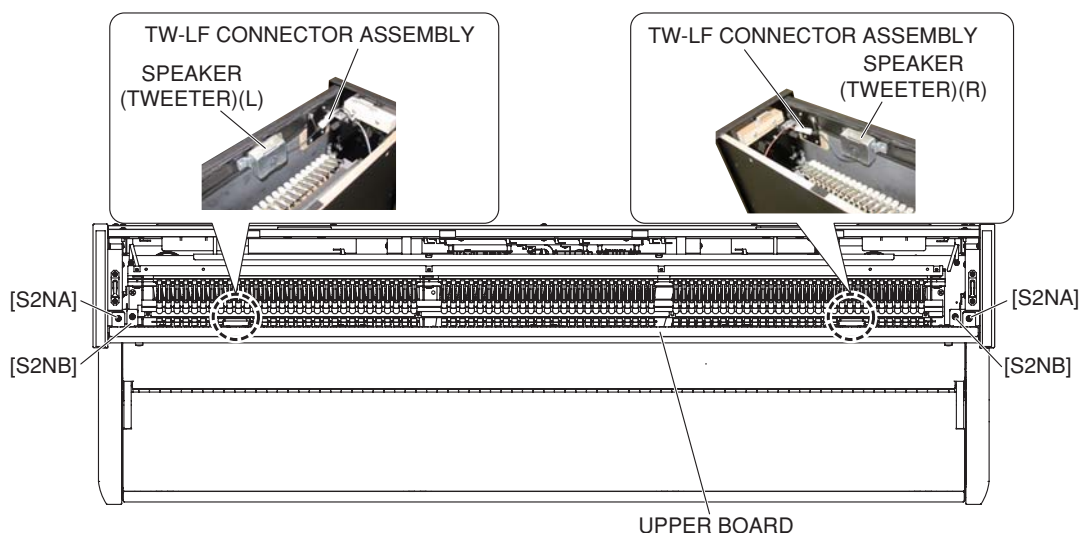
1. Top Board

- 1-1 Close the key cover unit.
- 1-2 Remove the three (3) screws marked [S25], slide the top board assembly forward and lift it to remove it.



2. Speaker (Tweeter)

Disconnect the TW-LF connector assembly (2P) from the speaker (tweeter) (L/R).



3. Upper Board

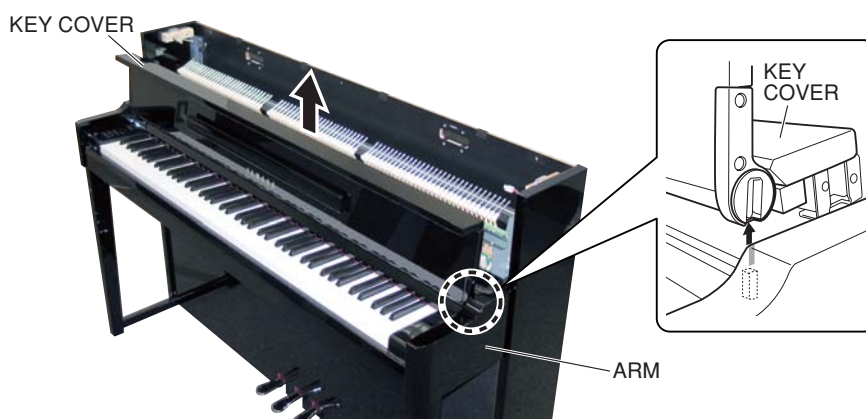
Remove the left/right screws [S2NA] (one each), lift the upper board upward and remove.

* When removing the screw be careful not to let the upper board drop.

4. Key Cover

Remove the left/right screws [S2NB] (one each), open the key cover lift upward and remove.

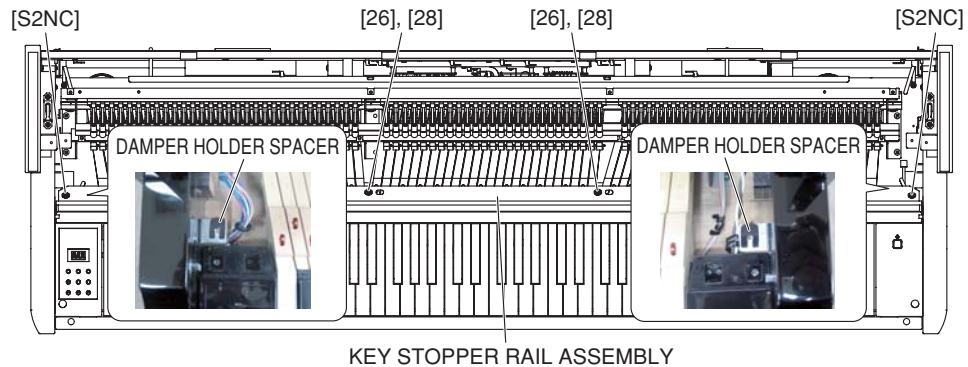
* Pay attention not to damage the arm when removing the key cover unit.



5. Key Stopper Rail

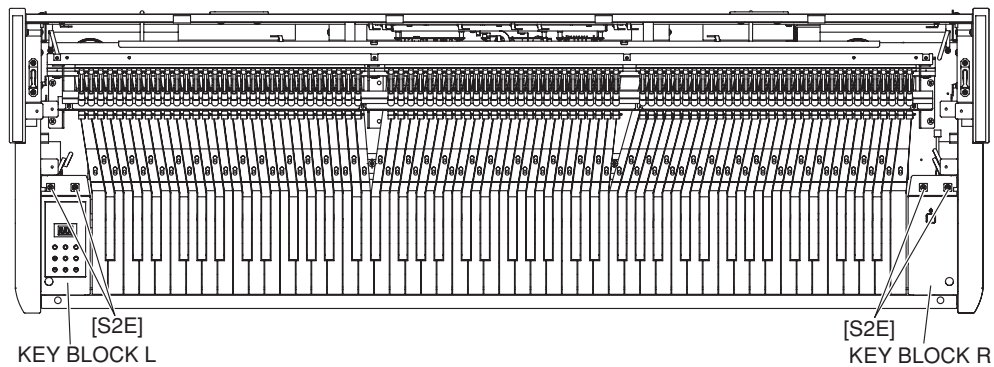
Remove the left/right screws [S2NC] (one each) and the two hex nuts [28], and the two plastic washers [26], and remove the key stop rail.

- * Be careful not to lose any of the damper holder spacers when attaching or removing the key stop rail.
- * Adjust the height of the key stop rail assembly by increasing or decreasing the number of damper holder spacers.



6. Key Block

Remove each of the two screws [S2E], and remove the L and R key blocks.



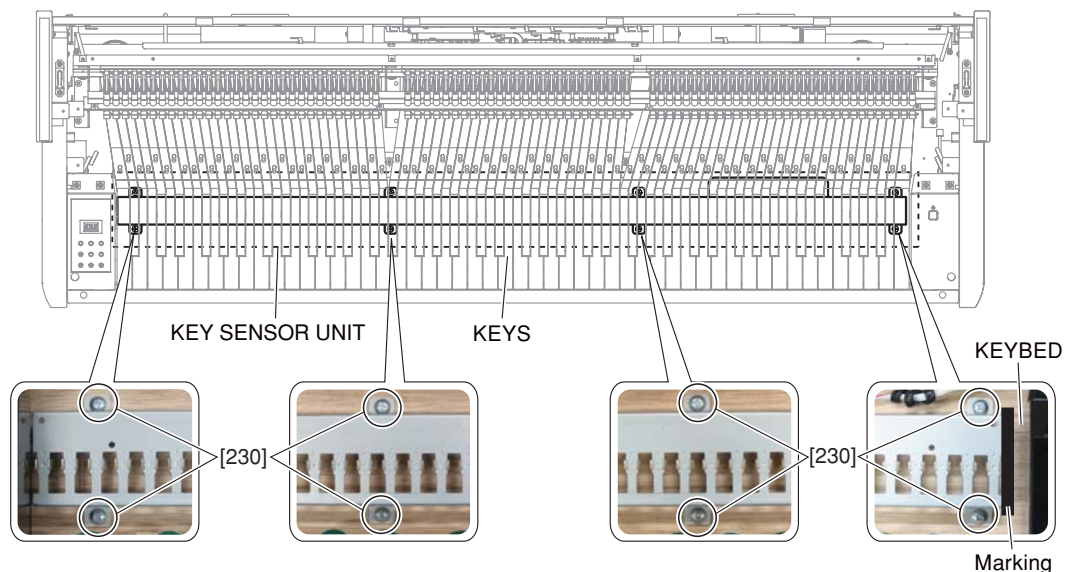
7. Key Sensor

7-1 Remove all the keys.

- * Be careful not to damage the key shutters attached to the keys when installing or removing the keys.

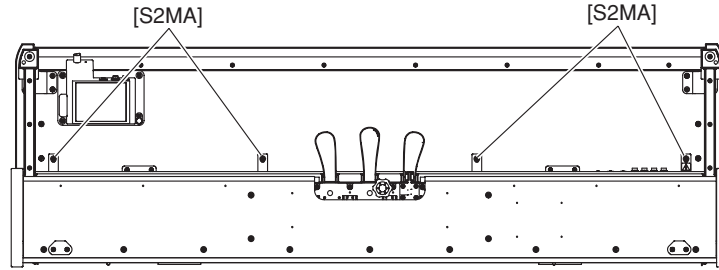
7-2 Remove the eight (8) screws marked [230]. The key sensor unit can then be removed.

- * Place a mark of the key sensor unit on the keybed before removal and make sure to install it at the original position.



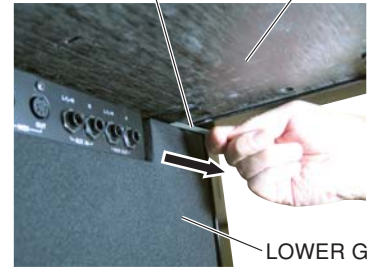
8. Lower-front speaker grille and lower board

8-1 Remove the four screws [S2MA] below the key bed.



8-2 Insert a hex wrench or similar tool into the gap between the lower-front speaker grille and the key bed unit. Pull towards you to remove the fastening tape, and remove the lower-front speaker grille.

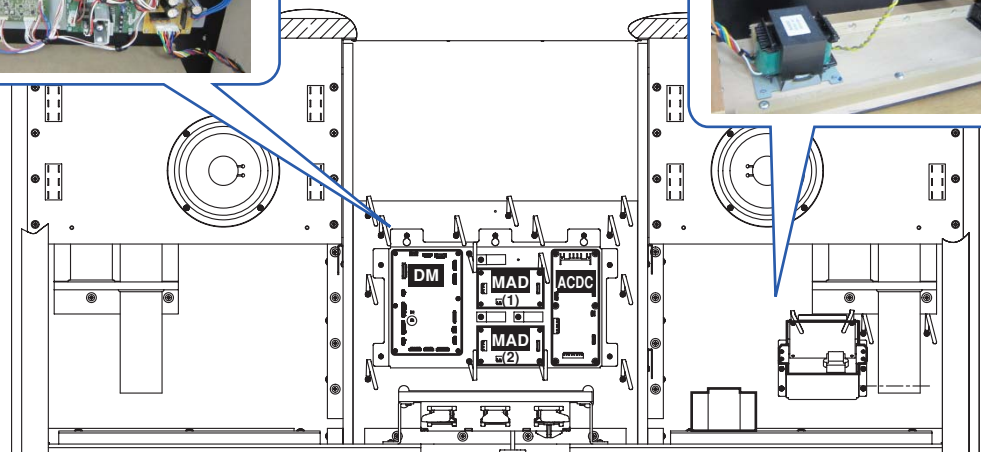
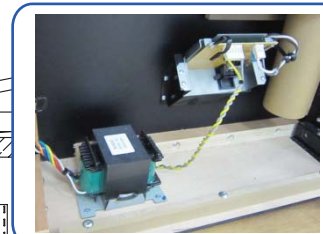
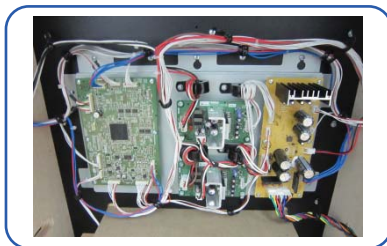
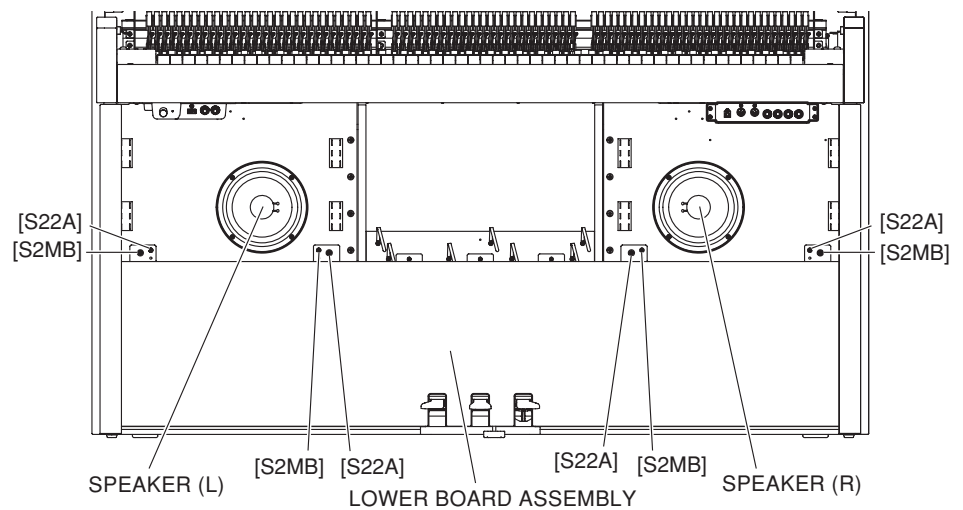
HEXAGONAL WRENCH KEYBED (B)



LOWER GRILLE ASSEMBLY

8-3 Remove the four (4) screws marked [S22A] and four (4) screws marked [S2MB], and lift the lower board to remove it.

8-4 Removing the lower-front panel allows access for replacing main electrical components such as the DM circuit board or pedal unit, etc.



N3, N2 KEY COVER ASSEMBLY-REPLACEMENT PROCEDURE

1. Required items for task

Service person shall possess the skill needed to replace the key cover in a grand piano.

2. Required parts

The task requires the usual tools, the key cover assembly (ZE082500), key cover adjuster part sets (ZE082600). The following parts are included in the key cover adjuster part sets (ZE082600).

• Damper spacers A and B	5 pieces each
• Rotation jig L/R (+1.0 mm, +2.0 mm)	1 piece each
• Music rest spacers	12 pieces
• Music shelf spacers	4 pieces
• Fall board rubber buttons (H=3.5/4.5/5.5 mm)	2 pieces each
• Key block felt A (t=1.0/1.5/2.0 mm)	2 pieces each
• Key block felt B (5 x 74 mm with tape)	2 pieces each

3. Replacement procedure

3-1. Remove the key cover assembly from the unit and fit a new key cover assembly on the unit.

--- If it does not fit then make the adjustment A.

3-2. If the new key cover fits with no problems in 3-1. then check the key cover assembly installation.

Fall board damper shall not easily separate from the damper holder on the unit

--- If it separates then perform adjustment A.

Shall be no contact between front top rail and key cover when opening/closing key cover (Fig. 1)

--- If there is contact then perform adjustment B.

Shall be no contact between key cover felt and keys when opening/closing fall board (Fig. 2)

--- If there is contact then perform adjustment C.

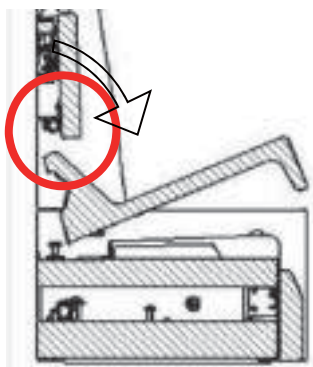


Fig. 1 When closing key cover



Fig. 2 Felt and key interrelation

Keys reflected onto key cover shall appear straight when viewed (Fig. 3A) --- If not then perform adjustment D.

N3 Shipping criteria: Angle between white keys and key cover shall be $90+1.5/-0.5^\circ$

N2 Shipping criteria: Angle between white keys and key cover shall be $90\pm 1^\circ$



Fig. 3 Keys reflecting onto key cover

Shall be no looseness/play in key cover when closed --- If there is looseness/play then perform adjustment E.

N2/3 Shipping criteria: Step (B) or (C) between upper edge of key cover while closed and upper edge of arm shall be $5+1/-4$ mm

N2/3 Shipping criteria: Approximate difference in step between upper edge of key cover while closed and upper edge of side shim 1B–C1 shall be within 2 mm

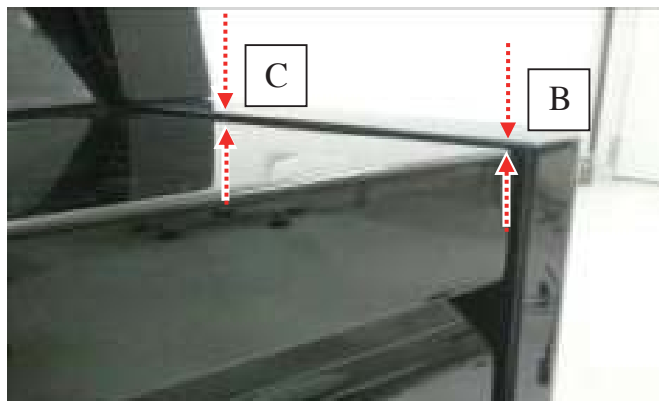


Fig. 4 Fall board adjustment

3-3. Adjustment A

Adjust the damper width by increasing or decreasing the number of damper spacers.

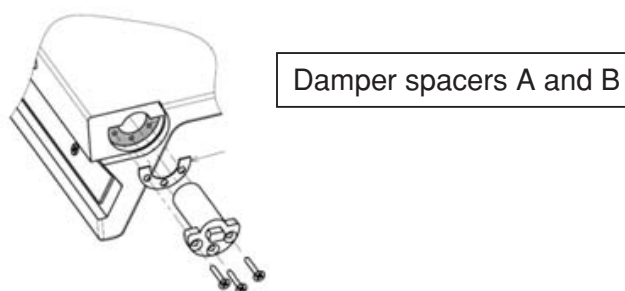


Fig. 5 Damper holder adjustment

3-4. Adjustment B

Insert the music rest spacers and music shelf spacers into the specified locations and change the height of the front top rail.

** In the case of N2, the front top rail can be adjusted up to 2 mm. Do not attempt to adjust beyond this dimension.*

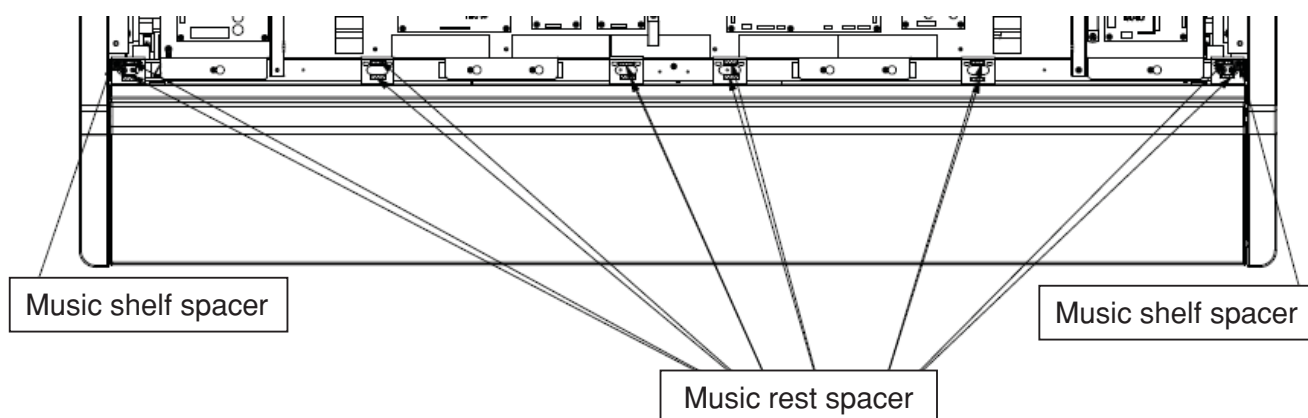


Fig. 6 N3 Music shelf spacer and music rest spacer installation locations

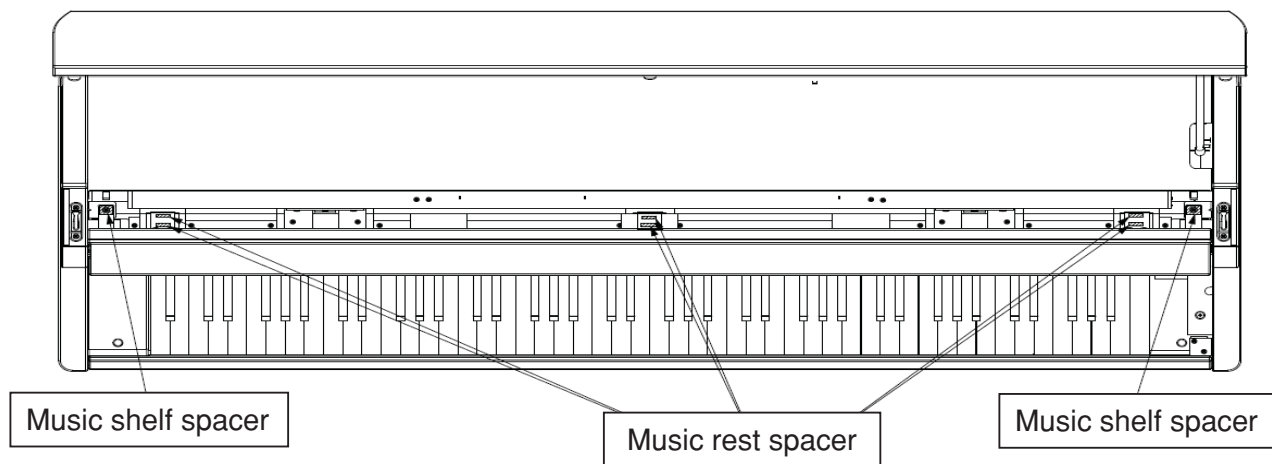


Fig. 6 N2 Music shelf spacer and music rest spacer installation locations

3-5. Adjustment C

Change the rotation hardware (encircled part in Fig. 7) on the left/right of unit to set a correct height (+1.0mm to 2.0mm), and obtain a gap between the key cover and keys.

** If the front top rail binds when opening/closing the key cover after changing the rotation hardware, then perform Adjustment B.*

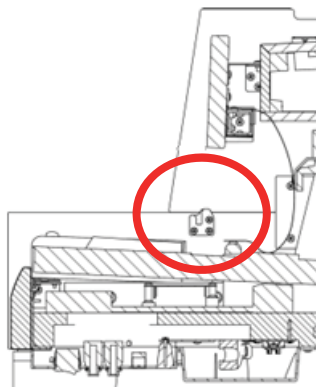


Fig. 7 Adjusting the rotation hardware

3-6. Adjustment D

Adjust the thickness (Fig. 5, A and B) of the felt attached to the key block.

To part A, the key block felt A in different thickness is applied, while as needed the key block felt B is applied to part B.

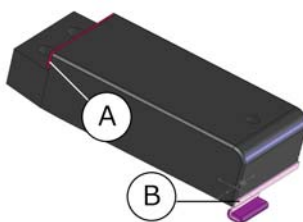


Fig. 8 Adjusting the key block felt

3-7. Adjustment E

Adjust the height by changing the rubber buttons attached to the left/right key blocks.

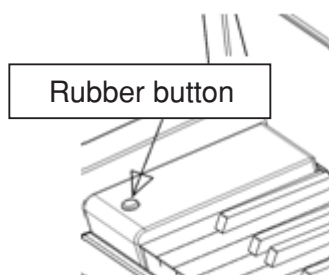


Fig. 9 Key block rubber button

N3 TOP BOARD (F) ASSEMBLY-REPLACEMENT PROCEDURE

1. Required items for task

Service personnel shall possess the physical strength needed to replace the top board in a grand piano.
To ensure safety, 2 or more persons shall perform this task.

2. Required parts

The task requires the usual tools, the top board (F) assembly dedicated service part (ZE082300), and the top board (F) adjuster part set (ZE082400). The following parts are included in the top board (F) adjuster part set.

- Fall board rubber buttons A thru C (H=3.5/4.5/5.5mm) 2 pieces each

3. Replacement procedure

- 3-1 Fold the top board (F), and remove the screws on the top board (F) side of the long hinge that clamp the top board (B) and top board (F).
 - Fold the top board (F) as shown below, and remove the 21 truss screws in the red-framed section (A) in the photo.
- 3-2 Dismantle the top board (F) and remove from the main unit. (Fig. 1)
- 3-3 Mount the top board (F) assembly dedicated service part (ZE082300) over the top board (B) so that the attached top board (F) fits over it.
- 3-4 Adjust left and right so that there is no dimensional difference between the top board (F) and top board (B) edges as aligned along the dotted yellow line (B). (Fig. 1)

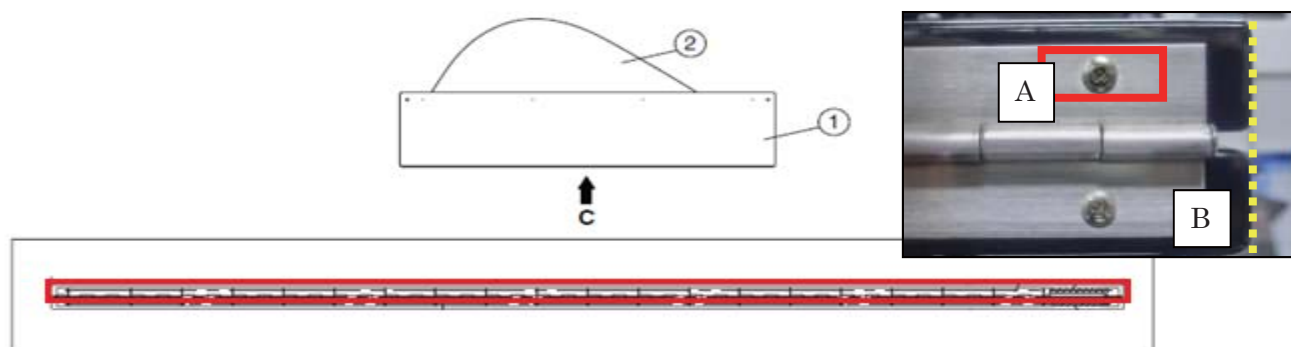


Fig. 1 Top board (F) and top board (B) relative positions

- 3-5 Align the long hinge on the top board (B), with the top board (F) assembly dedicated service part. Adjust the height difference between the top board (B) assembly and top board (F) assembly dedicated service part by inserting felt or a similar item in between to match the height of the long hinge.
- 3-6 Align with the hole positions in the hinge and drill pilot holes at the 21 positions in the top board front assembly service dedicated part.
- 3-7 Tighten up 21 truss-head screws on the pilot holes.

4. Adjustment Procedure

- 4-1 Using buttons with an optimal shape, install the fall board rubber buttons A thru C at the top board (F) assembly dedicated service part (C) positions.
- With the top board (F) closed, select the most suitable one so that there is no more than 1 millimeter deviation in the gap between the front beam and the rubber button (E).

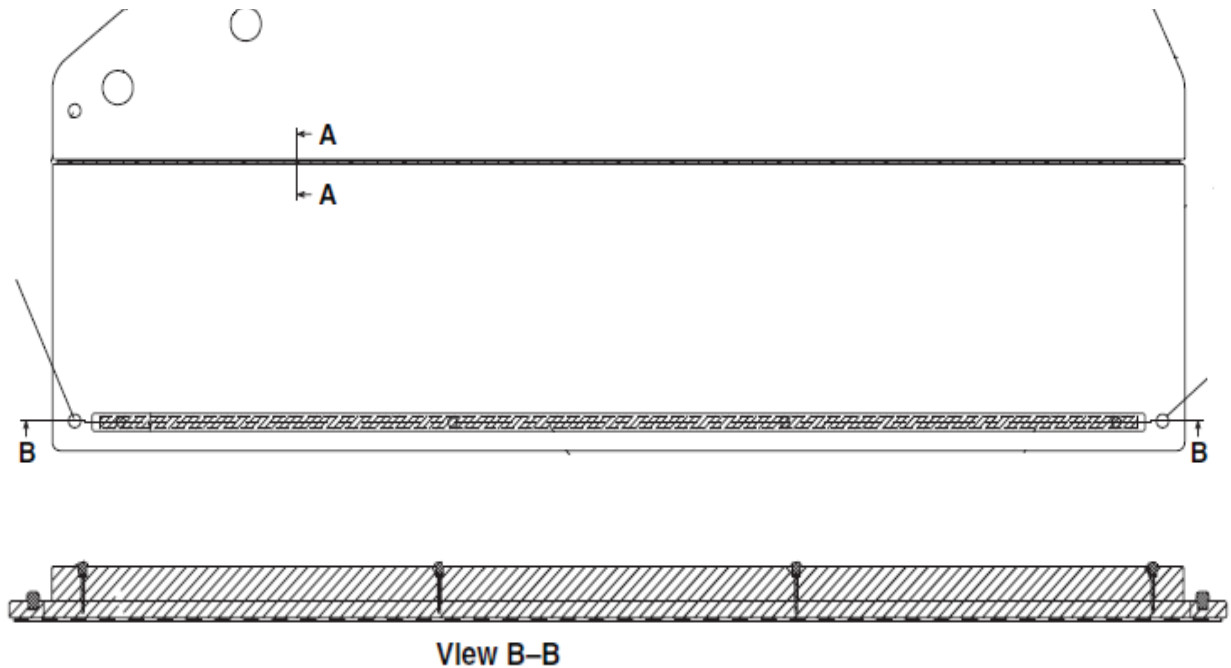


Fig. 2 Rubber installation positions

- 4-2 Close the top board (F) and check that the top board front is not unseated upwards.
(Shipping criteria: (E) Within 1 mm)
- If unseated upwards then reselect the rubber as in 4-1.

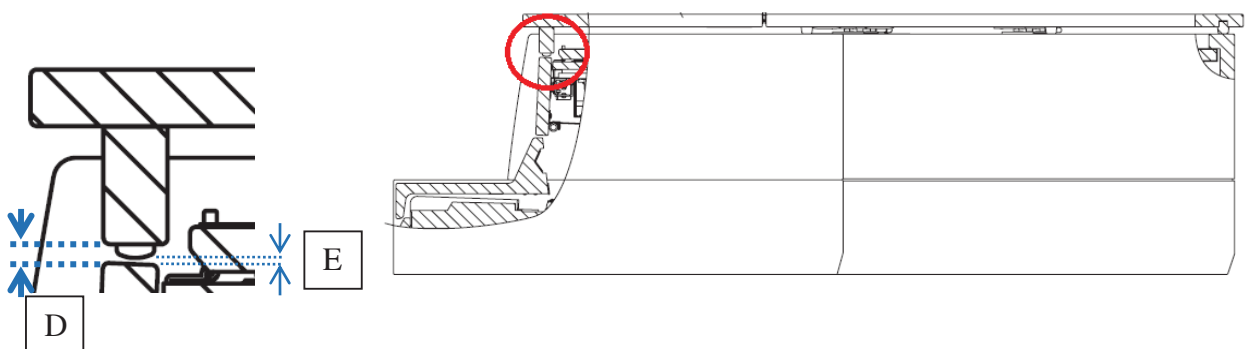
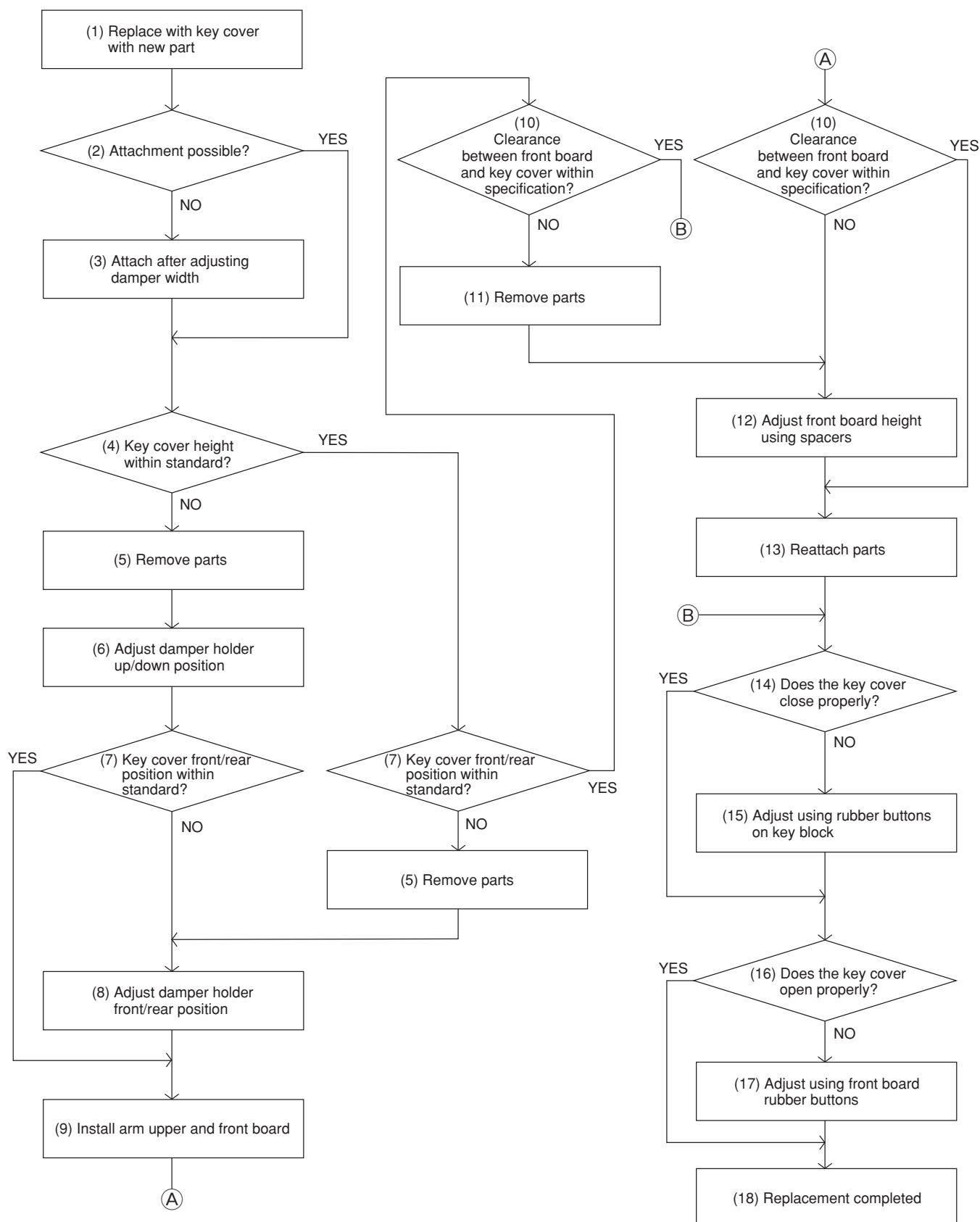


Fig. 3 Check points

- 4-3 Securely glue each of the rubber buttons while taking care so that the adhesive does not protrude out from the coated surfaces.

N1 KEY COVER REPLACEMENT PROCEDURE



• Parts to prepare

- Key cover set: WY612200

<< Contents of set >>

- Key cover: WU18480
- Damper holder L: WY158800
- Damper holder R: WY158900

- Damper holder spacer: WU82040, WU89920
- Rubber button: Z2681600, Z0061800, Z0062500

(1) Replace key cover with new part

Replace the key cover unit with the one prepared for replacement.

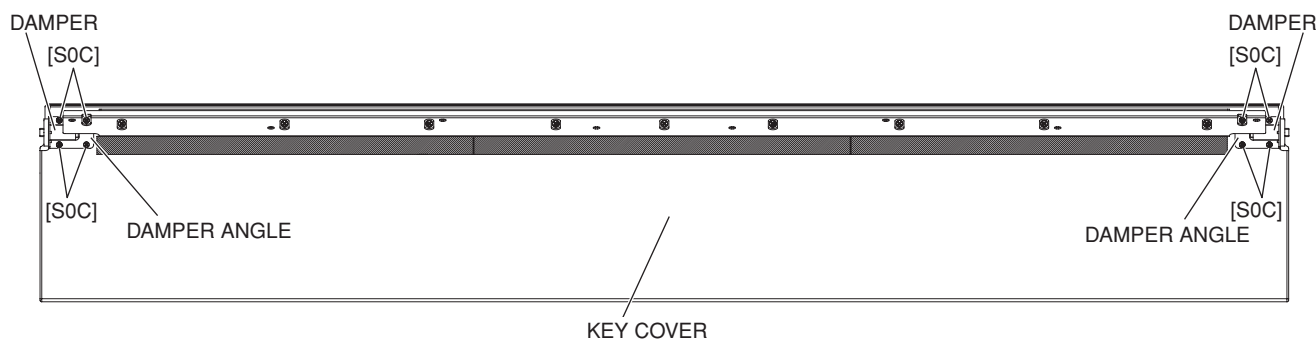
(2) Attachment possible?

- Standard 1 Make sure there is no danger of the key cover dampers coming off the damper holders.
- Standard 2 Make sure the key cover dampers fit between the left and right damper holder.

(3) Attach after adjusting damper width

- 3-1 Remove the eight (8) screws marked [S12] and remove the key cover back. (Fig. 1)
- 3-2 Loosen the four (4) screws marked [S0C] holding the damper angle to the key cover and adjust the width of the dampers. (Fig. 1)
- 3-3 Install the key cover back to the key cover and install to the main body. (Fig. 1)

<Top view>



<Bottom view>

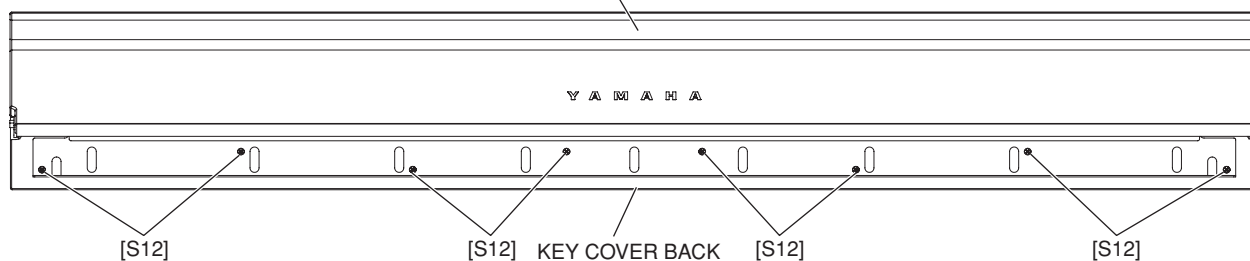


Fig. 1

(4) Key cover height within standard? (Check the left and right end.)

- Standard 1 Make sure the red felt does not rub against keys and is not rolled up when opening the key cover. (Fig. 2)
- Standard 2 Make sure the gap between the red felt and the keys is not too wide when the key cover is opened. (Fig. 2)

(Reference)

Standard value (A) (at shipment):

4.5 mm $\pm$ 1 mm, difference on the left and right within 1 mm (Fig. 2)

<Side view>

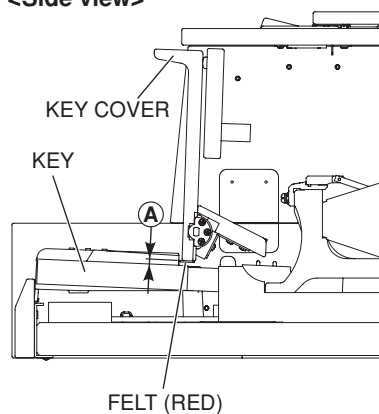


Fig. 2

(5) Remove parts

- 5-1 Remove the top board.
- 5-2 Remove the front board.
- 5-3 Remove the left and right arm upper.

(6) Adjust damper holder up/down position

- 6-1 Loosen the screw marked [S09] and the screw marked [S16] holding the damper holder to the arm. (Fig. 3)

- 6-2 Adjust the key cover height to the height standard given in (4) by changing the number of damper holder spacers below the damper holders as needed. (Fig. 3)
- 6-3 Tighten the two (2) screws holding the damper holder. (Fig. 3)

* *If necessary, the adjustment can be performed by not only loosening but also removing the screws holding the damper holder from the inside of the arm, however, this is not recommended as it will most likely require new pilot holes. If removal cannot be avoided and tightening of the screws is not possible in step "6-3", follow the instructions in section "Adjustment procedure by replacing damper holder".*

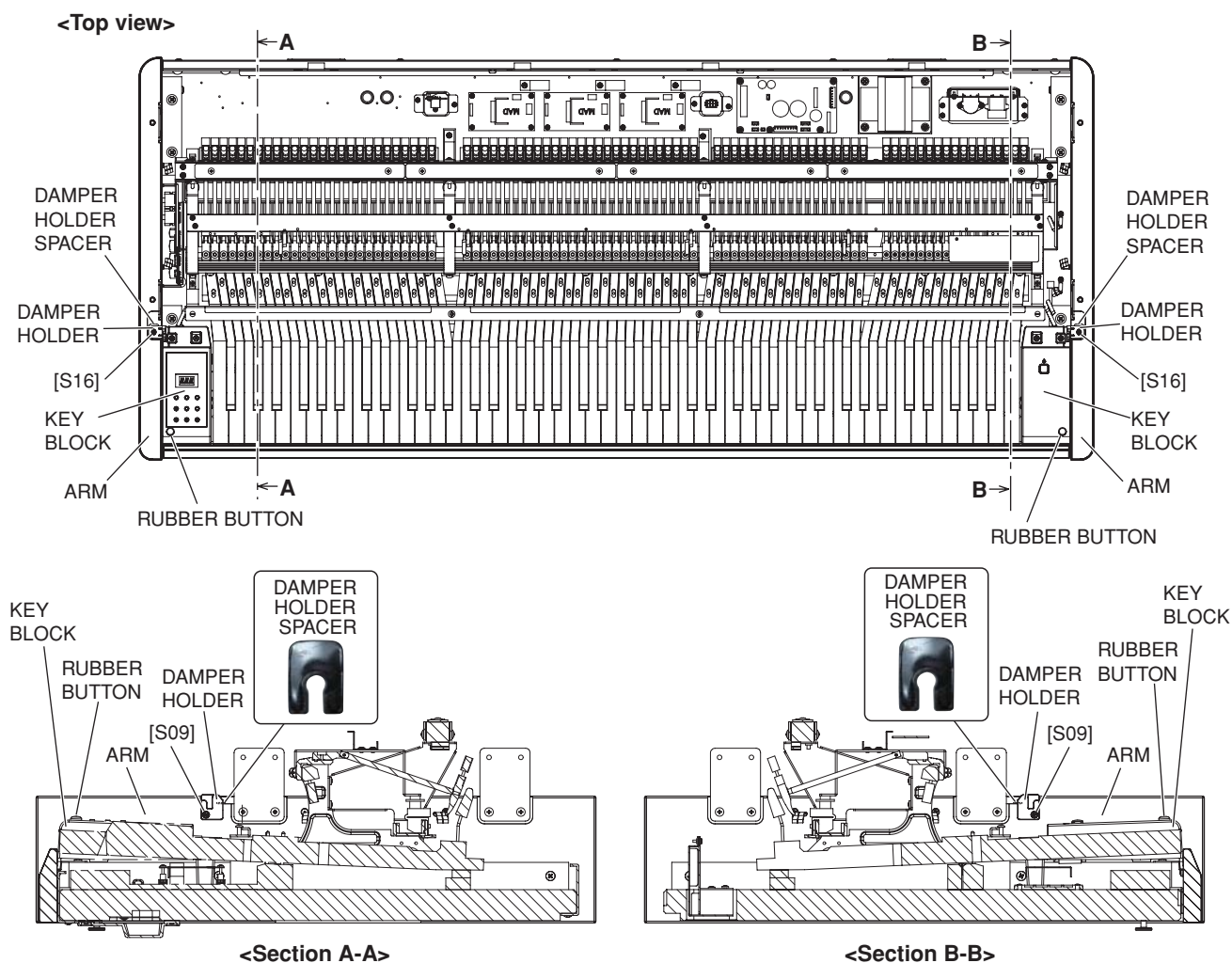


Fig. 3

(7) Key cover front/rear position within standard? (Check the left and right end.)

- Standard 1 Make sure that with the key cover opened the gap between the back of the black keys and the front surface of the key cover is within standard. (Fig. 4)

(Reference)

Standard value ② (at shipment):
3.3 mm +1.7 mm/-1.3 mm, difference on the left and right within 1 mm (Fig. 4)

- Standard 2 Make sure that with the key cover closed the difference in level between the front surface of the arm and the front of the key cover is within the standard (especially the difference on the left and right). (Fig. 5)

(Reference)

Standard value ③ (at shipment):
3.2 mm $\pm$ 2 mm, difference on the left and right within 2 mm (Fig. 5)

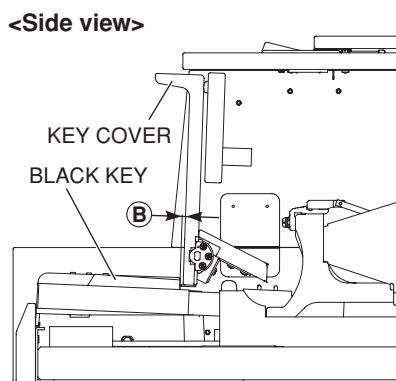


Fig. 4

(8) Adjust damper holder front/rear position

8-1 Loosen the screw marked [S09] and the screw marked [S16] holding the damper holder to the arm. (Fig. 3)

8-2 Adjust the key cover front/rear position to the front/rear standard 1 and 2 given in (7) by moving the damper holder forward or backward as needed. (Fig. 3)

8-3 Tighten the two (2) screws holding the damper holder. (Fig. 3)

* *If necessary, the adjustment can be performed by not only loosening but also removing the screws holding the damper holder from the inside of the arm, however, this is not recommended as it will most likely require new pilot holes. If removal cannot be avoided and tightening of the screws is not possible in step "8-3", follow the instructions in section "Adjustment procedure by replacing damper holder".*

(9) Install arm upper and front board

Install the arm upper and front board reversing the procedure described in section (5). However, do not fix the protect cover to the front board at this time.

(10) Clearance between front board and key cover within specification?

Standard 1 Make sure the front board and key cover do not touch when closing the key cover. (Fig. 6)

Standard 2 Make sure that with the key cover closed the clearance between the front board and the key cover is not too wide and the difference between the left and right side is not too large. (Fig. 6)

(Reference)

Standard value ④ (at shipment):

3.2 mm $\pm$ 3 mm, difference on the left and right within 2 mm (Fig. 6)

(11) Remove parts

11-1 Remove the top board.

11-2 Loosen the seven (7) screws marked [S2E] holding the protect cover to the front board cleat. (Fig. 7)

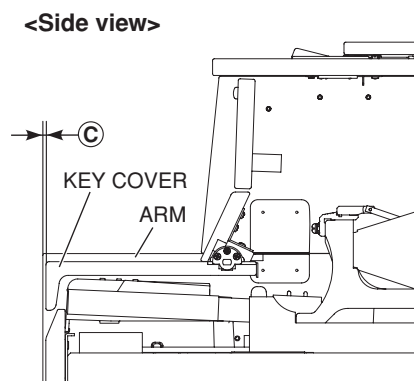


Fig. 5

(12) Adjust front board height using spacers

Adjust to the standard given in section (10) by inserting or removing damper holder spacers as necessary at the portions where the front board is held by screws (2 places each on the left and right side). (Fig. 7)

(13) Reattach parts

13-1 Attach the protect cover to the front board.

13-2 Attach the top board.

(14) Does the key cover close properly?

Standard 1 Make sure there is no looseness when closing the key cover.

Standard 2 Make sure the closed key cover is parallel with the arms. (Left and right side)

(Reference)

Standard value (at shipment):

Difference in level between the upper surface of the closed key cover and the upper surface of the arm (left and right) within 2 mm

(15) Adjust using key block rubber buttons

Adjust to the standard given in section (14) by replacing the rubber buttons with rubber buttons of appropriate size. (Fig. 3)

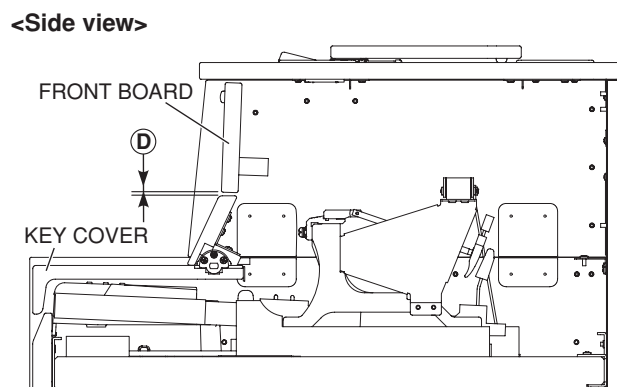


Fig. 6

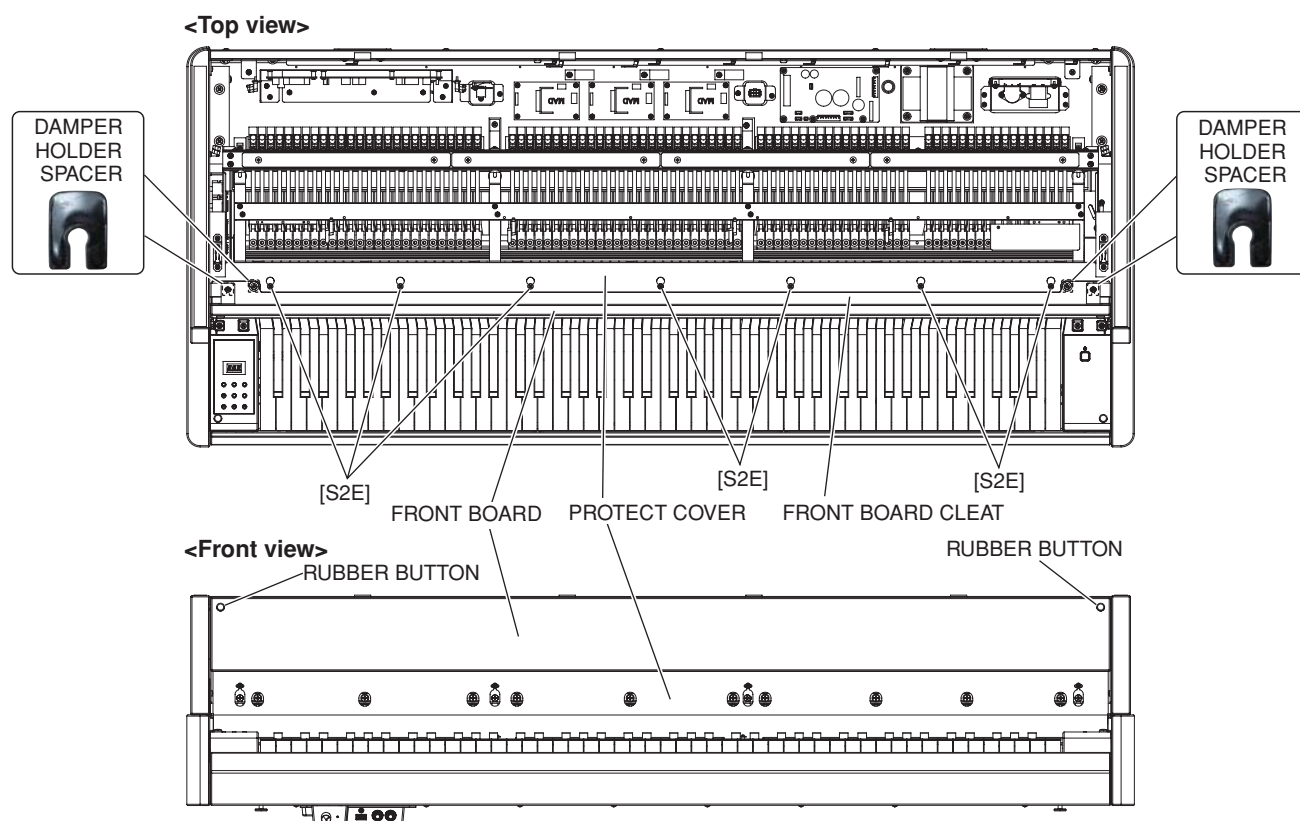


Fig. 7

(16) Does the key cover open properly?

Standard Make sure the keys and the reflections of the keys on the key cover run in a straight line.

(Reference)

Standard (at shipment):

90° ±1° angle with white keys

(17) Adjust using front board rubber buttons

Adjust to the standard given in section (16) by replacing the rubber buttons with rubber buttons of appropriate size. (Fig. 7)

(18) Replacement completed**● Adjustment procedure by replacing damper holder**

1) Replace the damper holders with parts for exclusive service use.

At this time, only use the screw from the top of the arm.

2) Adjust the damper holder height using damper holder spacers.

Standard 1 Make sure the red felt does not rub against keys and is not rolled up when opening the key cover. (Fig. 8)

Standard 2 Make sure the gap between the red felt and the keys is not too wide when the key cover is opened. (Fig. 8)

(Reference)

Standard value ① (at shipment):

4.5 mm ±1 mm, difference on the left and right within 1 mm (Fig. 8)

3) Determine the correct front/rear position of the damper holder and tighten the screw from the arm top surface.

Standard 1 Make sure that with the key cover opened the gap between the back of the black keys and the front surface of the key cover is within standard. (Fig. 9)

(Reference)

Standard value ② (at shipment):

3.3 mm +1.7 mm/-1.3 mm, difference on the left and right within 1 mm (Fig. 9)

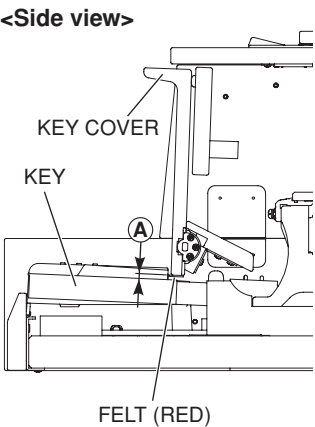


Fig. 8

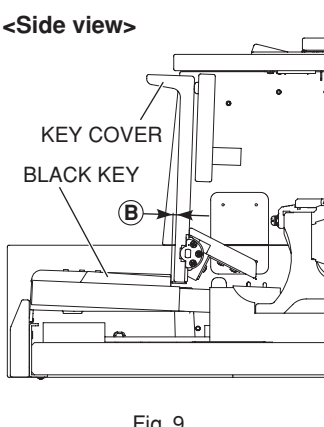


Fig. 9

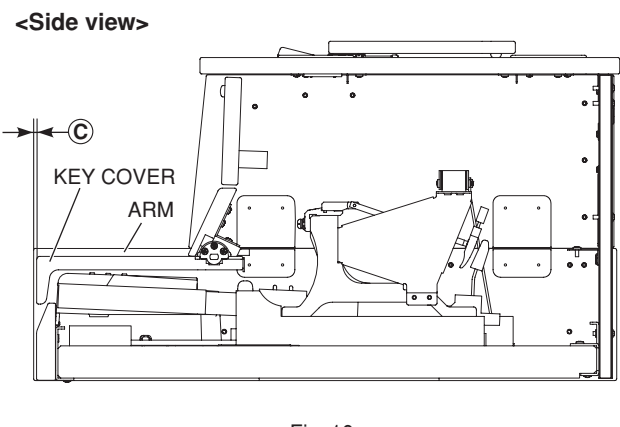


Fig. 10

Standard 2 Make sure that with the key cover closed the difference in level between the front surface of the arm and the front of the key cover is within the standard (especially the difference on the left and right). (Fig. 10)

(Reference)

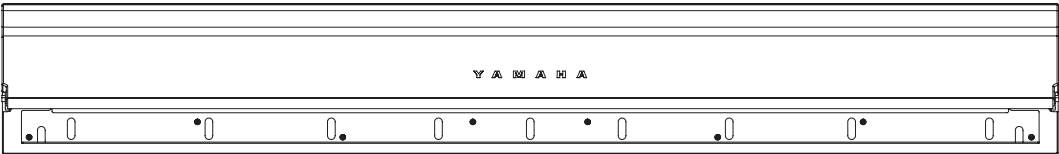
Standard value C (at shipment):
3.2 mm $\pm$ 2 mm, difference on the left and right within 2 mm (Fig. 10)

- 4) Drill a pilot hole in the inner surface of the arm matching the hole on the back side of the damper holder body.
Pilot hole: ϕ 2.1 mm $\pm$ 0.1 mm, depth 20 mm
- 5) Remove the damper holder and countersink the hole. ϕ 5 mm x 90°
- 6) Attach the damper holder, repeat step 3) for front/back position alignment, and tighten the screw of the damper holder.
- 7) Perform the key cover replacement procedure step "(9) Install arm upper and front board".

• Key cover set (WY612200)

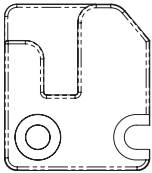
<< Contents of set >>

• Key cover



WU18480

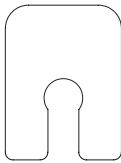
• Damper holder L



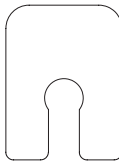
WY158800

※ The damper holder R (WY158900) shall be symmetrical to the other.

• Damper holder spacer

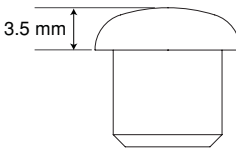


WU82040

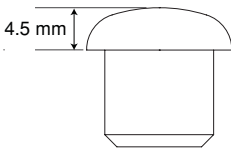


WU89920

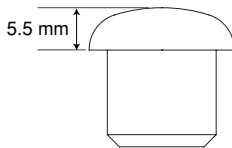
• Rubber button



Z2681600



Z0061800



Z0062500

N1 ARM LOWER ASSEMBLY REPLACEMENT PROCEDURE

* The following instructions describe the replacement of the arm lower assembly L.

Replacement of the arm lower assembly R is performed in the same way.

- 1) Remove the top board unit.
- 2) Remove the key cover unit.
- 3) Remove the key block assembly L.
- 4) Remove the front board assembly.
- 5) Remove the arm upper assembly L.
- 6) Remove the connector assembly from the arm lower assembly L.
- 7) Measure the difference in level between the front of the arm lower assembly L and the front rail.
- 8) Remove the four (4) screws marked [S32], replace the arm lower assembly L, and attach the connector assembly. (Fig. 1)
At this time, make sure to attach with the difference in level to the front rail measured in step 7).

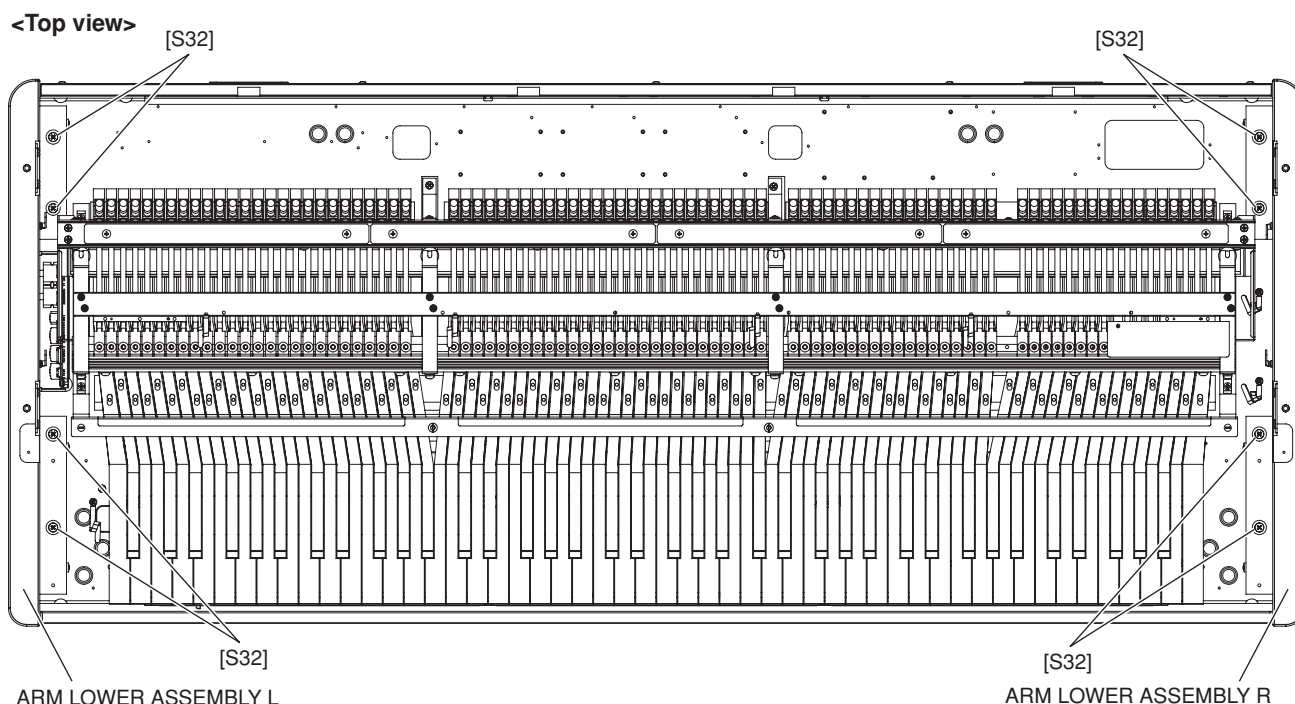


Fig. 1

- 9) Install the key block assembly L.
- 10) Adjust the damper holder height using damper holder spacers.
 - Standard 1 Make sure the red felt does not rub against keys and is not rolled up when opening the key cover. (Fig. 2)
 - Standard 2 Make sure the gap between the red felt and the keys is not too wide when the key cover is opened. (Fig. 2)
 - (Reference) Standard value ① (at shipment):
4.5 mm $\pm$ 1 mm, difference on the left and right within 1 mm. (Fig. 2)

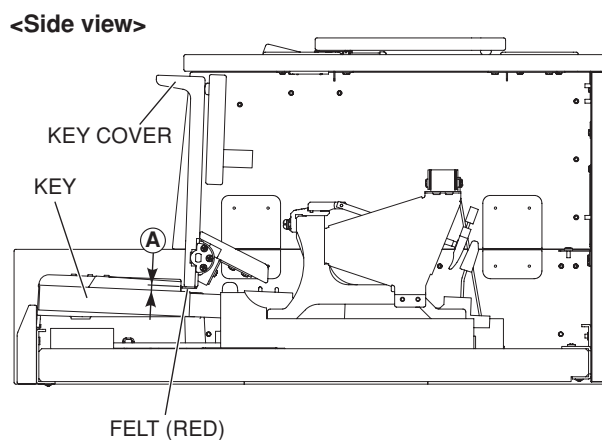


Fig. 2

- 11) Determine the correct front/rear position of the damper holder and tighten the screw from the arm top surface.

Standard 1 Make sure that with the key cover opened the gap between the back of the black keys and the front surface of the key cover is within standard. (Fig. 3)

(Reference) Standard value ③ (at shipment):
3.3 mm +1.7 mm/-1.3 mm, difference on the left and right within 1 mm. (Fig. 3)

<Side view>

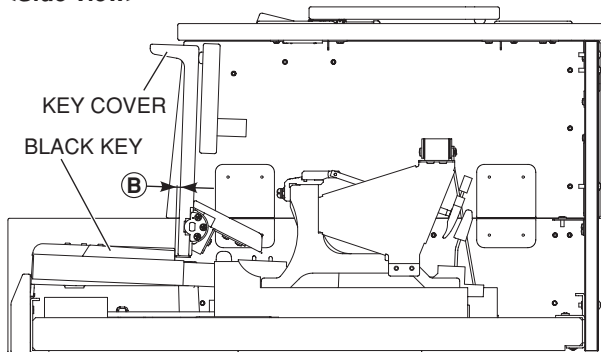


Fig. 3

Standard 2: Make sure that with the key cover closed the difference in level between the front surface of the arm and the front of the key cover is within the standard (especially the difference on the left and right). (Fig. 4)

(Reference) Standard value ④ (at shipment):
3.2 mm ± 2 mm, difference on the left and right within 2 mm. (Fig. 4)

<Side view>

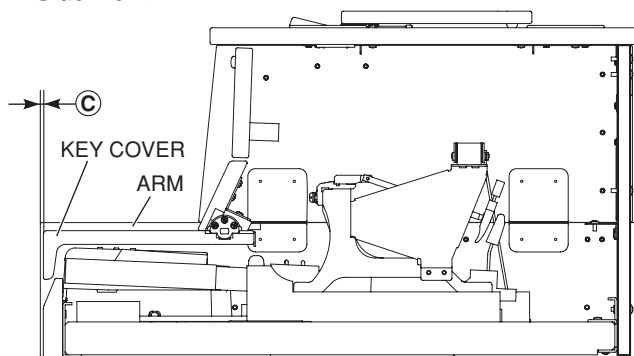


Fig. 4

- 12) Drill a pilot hole in the inner surface of the arm matching the hole in the damper holder.
Pilot hole: $\phi 2.1 \text{ mm} \pm 0.1 \text{ mm}$, depth 20 mm
- 13) Remove the damper holder and countersink the hole.
 $\phi 5 \text{ mm} \times 90^\circ$
- 14) Attach the damper holder, repeat step 11) for front/back position alignment, and tighten the screw of the damper holder.
- 15) Install the arm upper assembly L. At this time, make sure the distance between the front of the arm lower assembly L and the front of the arm upper assembly L is $159.6 \text{ mm} \pm 0.5 \text{ mm}$. (Fig. 5)

<Side view>

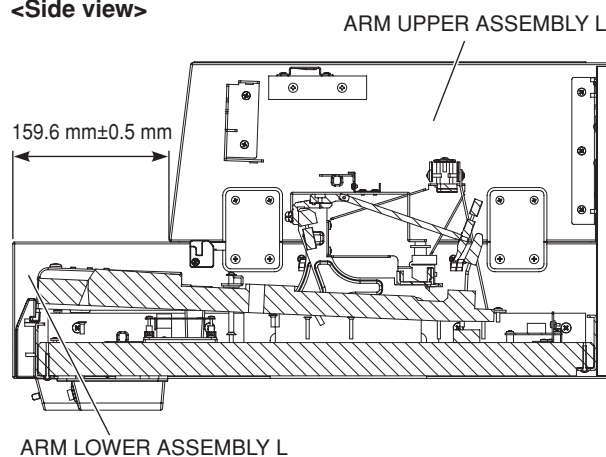


Fig. 5

- 16) Install the front board assembly. At this time, do not secure the protect cover to the front board assembly.
- 17) Perform step (10) of "Key Cover Replacement Procedure".

N1 ARM UPPER ASSEMBLY REPLACEMENT PROCEDURE

* The following instructions describe the replacement of the arm upper assembly L.

Replacement of the arm upper assembly R is performed in the same way.

- 1) Remove the top board unit.
- 2) Remove the key cover unit.
- 3) Remove the front board assembly.
- 4) Remove the four (4) screws marked [S14]. (Fig. 1)
Remove the three (3) screws marked [S2E] holding the arm upper assembly L and the back rail from the back board angle. Remove the arm upper assembly L with the back board angle still attached to the back rail side. (Fig. 1)
- 5) Install the arm upper assembly L. At this time, make sure the distance between the front of the arm lower assembly L and the front of the arm upper assembly L is $159.6 \text{ mm} \pm 0.5 \text{ mm}$. (Fig. 1)
- 6) Install the front board assembly. At this time, do not secure the protect cover to the front board assembly.
- 7) Perform step (10) of "Key Cover Replacement Procedure".

*** When removing and attaching the arm upper assembly L during servicing, the back board angle references the installation position of the arm upper assembly L.**

When removing the arm upper assembly L, never remove the back board angle from the back rail.

Replace the arm upper assembly L with a new service part.

*** The arm upper assembly L service part does not include back board angle.**

<Side view>

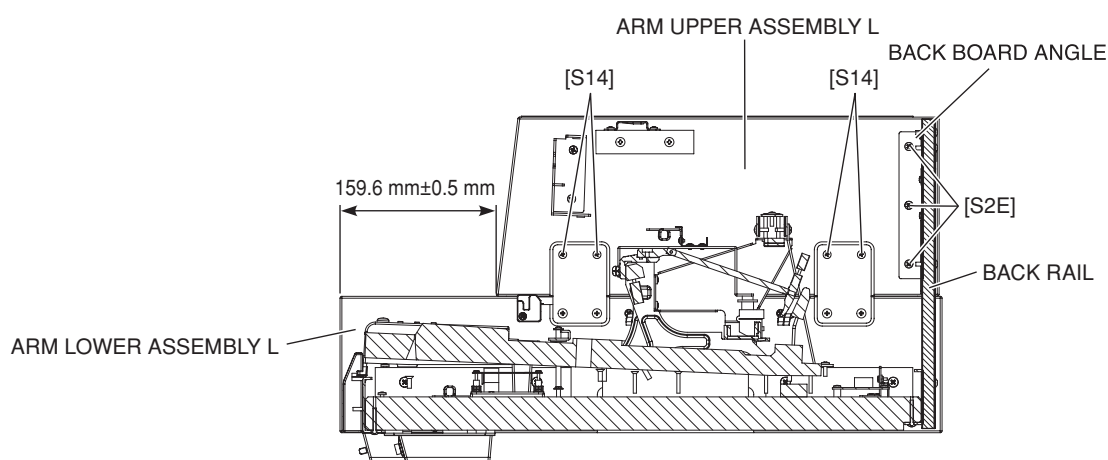
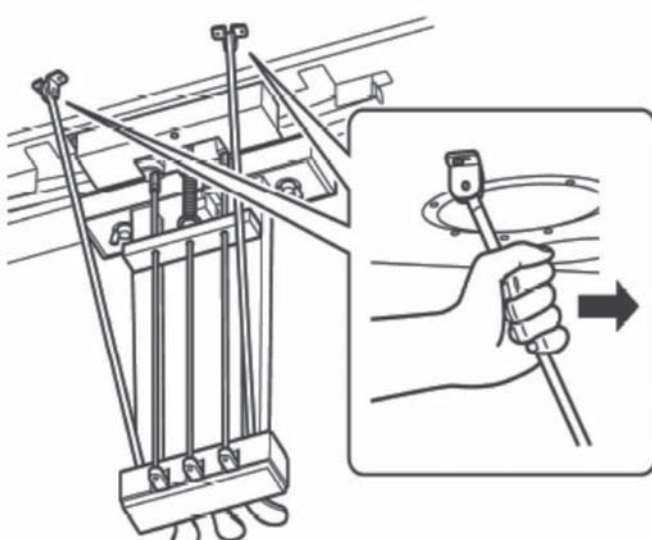


Fig. 1

Q & A

CATEGORY	QUESTION	REPLY	MODEL
HANDLING	What is the function switch used for?	Pressing the function switch along with the piano keys allows selecting the tone, switching the reverb types, selecting and setting transposing of notes and chords. Please refer to instruction manual.	N3, N2, N1, NU1
HANDLING	Even with the headphones connected, a small sound can be heard from the unit. Why is that?	If the TRS has been turned on then the piano unit will vibrate due to that TRS function and this vibration is heard as a noise. To eliminate this noise, turn the TRS off.	N3, N2
HANDLING	The pedal moves back and forth when depressed.	If the pedal is loose or shaky when depressed, then temporarily loosen the screw for the pedal support rod, and then retighten it while pushing the support rod towards the pedal side. 	N3
ADJUST	The key sensor unit has a height adjust function. Is this adjustment required?	There is normally no need to adjust the height. If the key sensor unit was replaced or there is a problem with the electronic sounds being generated then adjust by using the height adjustment method. Also always perform the key sensor measurement if the key sensor height was changed. On the N1 and NU1 there is no need to adjust the key sensor height.	N3, N2
ADJUST	The hammer sensor unit has a height adjust function. Is this adjustment required?	There is normally no need to make this adjustment. If the hammer sensor unit was replaced or there is a problem with the electronic sounds being generated then adjust by using the height adjustment method. The NU1 does not contain a hammer sensor.	N3, N2, N1
ADJUST	Can the pedal be adjusted?	Factors such as the damper impact effect are not adjustable. On the N3, the amount of play on the pedal can be adjusted the same as on a piano. The N2, N1, and NU1 utilize a pedal unit with the same mechanism as the Clavinova so this adjustment cannot be made.	N3, N2, N1, NU1

CATEGORY	QUESTION	REPLY	MODEL
ADJUST	Are adjustments required such as the tuning needed on acoustic pianos?	Tuning is not required. However these models do use the same wooden keys and action, and felt as acoustic pianos so adjustment (servicing) is required when the keyboard operation is stiff due to wear or due to environmental changes.	N3, N2, N1, NU1
HANDLING	Do these models require monitoring the humidity and temperature during usage/storage like an acoustic piano?	There are no strings so the tuning will not deviate and no large changes in sound being played will occur. However, the keyboard action uses wooden material the same as an acoustic piano so maintaining it in the same storage/usage environment as an acoustic piano is recommended.	N3, N2, N1, NU1
SPECS	Is the keyboard action on the DGP7, DGP5 the same as on the N3, N2?	They are not exactly the same. The N3 and N2 have an improved action which is a modified version of that used by the DGP7, DGP5. The service part numbers on the N3 and N2 are therefore all completely different numbers.	N3, N2
SPECS	Is the keyboard action on the N3, N2 the same as on the N1?	They are not exactly the same. The N3, N2 are produced at a different manufacturing plant than the N1 so the key shutter installation methods are different. Due to this, the service part numbers are all completely different.	N3, N2, N1
OTHERS	Does the N1 have two production numbers?	The upper unit and the lower unit are manufactured at different production plants so they each have different production numbers. On the upper unit, a production No. label is attached to the bottom of key bed lower switch box. On the lower unit, a production No. label is attached at the bottom inner left of the speaker box.	N1