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Severity: Information

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Building a Slot Bay

Introduction

Slot board – the one which you connect MSX cartridges to – comes with the silkscreen labels at the component side only, and after you assemble it, it looks like shown on figure 1. One of the questions – the orientation of the cartridges when inserting them – is addressed in **KBOOO3** "Slot Keying for the Slot Board" by Jan Wilmans, however another question is still outstanding – how to mount



Figure 1. Assembled slot board – solder side

slot board into the ATX chassis for the most convenient cartridge insertions?



We do not pretend that the slot bay assembly described in this article is the best possible from the design and/or easiness of assembly points of view. We encourage you to review the article, make it through using your way if you have one, and let us and Community know about it. Thank you!

Whatever slot bay device you design and make, it should satisfy the following conditions:

- Cartridge should get inserted with proper orientation;
- You should be able to easily insert and remove the cartridge without damaging or scratching it;
- Assembly should not short-circuit anything in the system, including conductors on the GR8BIT slot board;
- Assembly should firmly mount into the ATX chassis, preferably into the storage device bay.

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The purpose of this article

This article will show you how you can build a bay for slot board installable into the storage bay of the standard ATX chassis. Assembly will occupy space of two units in the storage bay.



Warning: article discusses aspects of, and asks you to perform specific steps of woodworking and metalworking. Safety is our, and your, top priority, thus please do not perform steps which you think you are not skilled enough to keep you safe, and ask assistance or supervision of the skilled person. Remember – there's nothing wrong in asking for help. Once you see how skilled person does the job, and get advice from this person, you, taking required care into consideration, will be able to do the job yourself.

1. The end result: how device will look like

Figure 2 shows the result we got: fully assembled and installed slot bay. Front panel is made of plywood sheet – you can draw on it and then coated it with lacquer; Slot guide assembly is made of thin tinplate processed and cut in specific shape to guide cartridge insertion, four mounting brackets to mount front panel (2) and slot board (another 2), and some fasteners. It is worth saying that guide assembly is not required, but highly recommended.



Figure 2. Fully assembled slot bay

2. Tools and materials you will need

There is a set of tools we recommend you to have before you start making the device. Please review fig.3 and fig.4 for the details. Pictures show the tools we used, your tools may look a little different, but fulfilling the same functions as described in the specific chapter of this article.



Figure 3. Set of tools, image 1.



Figure 4. Set of tools, image 2.

Brush (which is not shown or mentioned in the how-to chapter of article) is used to brush off the wooden and metallic chips – in the end and at every stage. Do not allow chips to remain in the assembly (and between assembled parts if you fasten them together).

Trammel is useful to precisely measure the size of objects where it is recommended – for example, the width and height of the front panel.

Not shown are: saw (fig. 11) and bow-saw. As a workaround you can use hacksaw instead of saw to cut wooden blank (front panel).

Materials required for assembly are shown on the following pictures:

- Fig. 6 for front panel;
- Fig. 23 for slot guide assembly;
- Fig. 39 for mounting brackets.

Please note that all dimensions in this article are in <u>millimeters</u> unless specified otherwise.

3. The front panel

Front panel involves two rectangular holes of 110mm * 20mm each for cartridges. Material of front panel could be metallic or wooden. We selected plywood 9mm thick – it has appropriate physical properties – ruggedness (does not bend when inserting cartridges) and easiness of cutting and processing.

Better one time seen than seven times told, so let's look at the pictures below.

- 1. Look at the figure 5 the drawing of the plate with all required dimensioning. You will need to find plywood of dimensions not less than 148mm * 86mm (the height of 2U and width of storage bay window). In further steps you will see how to format and process it. **Note**: storage bay's internal width is 146mm, however its front (plastic frame "window") width may be a little wider. In our case (fig. 2a) window width is 148mm. Before starting, please check that your storage bay's window is 148mm width. In any case, if you will make you front panel plate 148mm, but window will appear 146mm, you will just file 1mm down from front panel's left and right dimensions.
- 2. Format the plate:
 - a. Use ruler to draw straight line at one of the sides of the piece (fig. 6). It will be one of the straight sides of the plate. The use triangle to match one of its sides with line and draw another straight line at 90 degrees to the first line.
 - b. Use triangle to mark two points of the opposite side of the plate (fig. 7) at the distance of 86 mm as far as 110 mm from each other (farer the points more accurate line will be in terms of being parallel to line you measure these points from) and draw straight line through these marks (fig. 8). Depending on the precision you've made it, the angle between this new line and first line will be very close to 90 degrees.
 - c. Use triangle to mark another two points from the first line at the distance of 110 mm, and draw straight line (fig. 9). Now you have got the true rectangle of required size to cut from the raw plywood.
 - d. Taking four drawn sides of the rectangle as basis, format it as shown on the fig. 5. Use pencil, which will be easily removed by sandpaper when finishing the plate processing. Do not put red lines from fig. 5 (slot board dimensions they are for reference). Check twice with ruler (fig. 10).
- 3. After checking, carefully cut the plate out of the plywood sheet (fig. 11). Cut <u>outside the dimensions</u> you drew, otherwise you are risking having

smaller plate as a result. $\stackrel{>}{\sim}$ Be extremely careful not to harm yourself with the saw. Do not put fingers or any other parts of the body at the path of the saw. Do not hurry. Hold sheet tight while cutting, but at the safe distance from the saw, or alternatively clamp the sheet into vice.

4. Now you have a plate like shown on fig. 12. Now it's time to smooth edges cut with files to have its dimensions exactly fitting into the storage bay (fig. 13a), and surfaces free of fins (fig. 13b).

remove fins, you risk getting very painful splinters on the later stages.

- 5. Finally check that with resulting physical dimensions the plate fits into the storage bay window horizontally and vertically (fig. 14). If it does not, return to the previous step and work with files a little more.
- 6. Now there're two options you may take:
- *6a. Use drill to make series of the holes and then cut out the internals:*
 - a. Put plate onto the wooden underlayer, and start drilling with hand drill or electrical one (fig. 15). Important things you should consider:
 - i. Drill from the front side, otherwise front side of the plate may appear damaged as on fig. 17;
 - ii. Drilled hole dimensions should appear strictly inside the dimensions of the slot holes, as close to these dimensions as possible;
 - iii. Fig. 18 shows what happens to underlayer after drilling and what may happen to the surface of your workplace if you'll not use underlayer;
 - iv. Do not push the drill towards drilling direction. Just fix its position, and rotate. No high speed required it's wood which is soft. If you will drill at high speed, plywood may become black and eventually burn at the drilling point. If you apply force to the drill, it will drill faster, but damages shown on the fig. 17 may appear more severe.
 - v. At the end of this uneasy operation you should get something like shown on the fig. 16.
 - b. Cut the bridges between drilled holes as explained in fig. 19. Remove remainders from the slot holes.
- *6b. Use fretsaw and bow saw, note that you will need a special workplace to use it, and special skills to use it properly and safely (proposed by Raymond van der Meulen):*
 - a. Drill one hole inside the boundaries of each slot holes;

- b. Pass fretsaw through the hole, and fasten it at both ends of bow saw;
- c. Carefully move bow saw up and down vertically and cut internals of the slot hole by its <u>internal</u> perimeter, eventually returning back to drilled hole;
- d. Take internals of the hole out and disassemble bow saw.
- 7. Use <u>flat</u> files to adjust inner dimensions of the slot holes to those you formatted earlier. Take the cartridge and test if it fits into the resulting holes. There should be about 1 mm around the cartridge when you insert it into the hole.
- 8. Drill remaining mounting holes (7 per each slot) with drill of 3 mm diameter. Expand these holes carefully from the front side with drill of 8 mm diameter (fig. 20), 2 mm depth, for the countersunk heads of the

screws. $\overset{\otimes}{\times}$ Do not breathe wooden dust in. Use respirator.



Figure 5. Slot front panel plate. Red is the slot board and its position how it should appear at the back of assembly. Dimensions are in millimeters. Notes to the drawing: (a) Front panel plate dimensions are shown solid thick black lines; (b) Slot holes are located NOT at the horizontal center of the slot front panel plate assembly; (c) Slot front panel plate is mounted to the storage bay brackets by the side holes; (d) Slot board is shown dashed red as it should appear behind the plate; (e) Guide assembly mounting holes (14 items) are located at 5 mm distance from respective slot hole edge; (f) Storage bay width is 146mm (green horizontal dimensions), front panel is shown 148mm wide; (g) Green horizontal dimensions are dimensions of the storage bay internals (146mm).



Figure 6. Draw straight line using ruler (here – at the right side of piece, and use triangle to draw line at 90 degrees



Figure 7. After you drawn 90° angle, rse the same triangle to make two marks at the distance of 86 mm from the second line to draw third line through.

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Figure 8. Match triangle to the two marks you have drawn, and draw the straight line <u>through</u> them.



Figure 9. Mark two points and draw fourth straight line through them – you will get a rectangle of required size



(a) Start formatting the piece



(b) And after done, check that you did not miss any size



(c) Check from every angle that cartridges will fit into the dimensions you formatted

Figure 10. Finish formatting the plate. Check you did it properly – visually and with ruler



Figure 11. Use the saw (hand saw, fretsaw, hacksaw) suitable for woodworking to cut plywood sheet by one of its sides. **Important**: cut <u>outside of the lines</u> you drew. **Important**: cut the sheet from the <u>front</u> side.



Figure 12. The plate how it looks like after cutting out of the plywood sheet



plate's sides to the drawn dimensions. Work from the front of the plate to bottom.

(a) Put plate into vice, and use wide flat file to adjust (b) Use smaller file to remove fins from every edge. Not doing it creates risk of splinters.

Figure 13. Adjust and smooth edges with files.





(a) Check #1: does it fit horizontally?

(b) Check #2: does it fit vertically together will all filler panels to be installed?

Figure 14. Check for plate fitting into the storage bay front space.



Figure 15. Start drilling the plate. **Important**: drill from the front. Keep plate firmly applied to the underlayer.



Figure 16. Drilled from the front, drills are relatively accurate with no adjacent severely damaged surface of the plate



Figure 17. How it looks like from the rear side – drilling action may damage adjacent surface of the plate from the rear – that's why you should drill from the front



Figure 18. And this is what happens to underlayer. Do not drill on your floor!



(a) Use small round or square file to join several drilled hole together so that hacksaw's flat can be inserted



(b) And then insert the flat and carefully cut the bridges between nearby drilled holes down the row. Do the same for all sides of both slot holes, and remove inner pieces of the plywood from both slot holes

Figure 19. Making big hole out of a set of small drilled holes

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Figure 20. Slot board plate finished.

4. The cartridge guide assembly

The function of this assembly is to ensure that cartridge is inserted in strictly horizontal way and it guides cartridge horizontally until it touches slot edge connector and inserts into it.

As a material we chosen thin tinplate because it is easy to bend, process and it is durable in terms of application of some extra force when inserting and completing insertion of the cartridge. However, you should know that this guide assembly does not assume any excessive tension in any direction (vertical, horizontal, or in depth).

Look at the drawing on fig. 21. Guide assembly is made from tinplate of 280*40 mm size. Dashed lines assume 90° bending action, thick lines – dimensions or holes. Figure 22 shows the "end product" (deliverable) of the cartridge guide assembly process.

Please read and think through the following described process thoroughly, as quality of end product will much depend on how well you understand what exactly you are going to do beforehand.

- 1. Choose source material and blank (fig. 23). We have chosen thin C-shape tinplate, having it bought from *Leroy Merlin* shop.
- 2. Now we need a piece of 280 mm length. Mark the dimension (fig. 24) throughout the perimeter of the blank.
- 3. There're two ways how to cut a required plate from the blank using scissors (fig. 25), or using hacksaw (fig. 26). Latter way requires more tools, but will save you some time on the future steps when finishing the plate. You will get the blank as shows on fig. 27.
- Use hacksaw from both sides to cut one of the sides of the blank (fig. 28). This side will become a source plate.
- 5. Dimension the plate to have width of 280 mm (fig. 29). This dimension is very important, of you will make mistake on this step, guide assembly may not become rectangular. Height of the plate may vary from 40 mm (as shown on fig. 21) down to 35 mm, and this height consists of 10 mm of mounting sections (those we will bend 90° later) and cartridge guide surface.
- 6. Format the plate (fig. 30). Ensure you clearly mark two short 20 mmwidth sections 2 mm below others (with their bending lines, and hole).
- 7. Kern holes, drill them (fig. 31). Remove fins from holes with small round file.

- 8. Finish dimensions (fig. 32).
- Start bending mounting sections of the guide assembly short sections (fig. 33), long sections (fig. 34ab), and dimension short sections (fig. 34c, remember about 2 mm). Bend these short sections (fig. 35). Be very careful not to hit long sections you bent previously.
- 10. Bend the plate to form guide assembly (fig. 36 and 37).
- 11. Connect edges of the assembly with two screws (fig. 38ab), ensure internal surface of the guide assembly is totally smooth so that cartridges are not scratched when inserted or removed. Put assembly onto the screws inserted into front panel plate (fig. 38c). If it does not fit, correct drilled holes in guide assembly (not in front panel) using small round file (fig. 38de).



Sections marked with ① have top formatting at the height of 2mm
 less than adjacent sections. When bending, these ① sections mounting surfaces should appear 2mm lower than adjacent ones

Angles of cants at the right and left sides of the drawing should be minimal to (a) prevent bent sections from obstructing each other, and (b) to allow easy drilling and reliable mounting of the assembly with the mounting hole located nearby

Figure 21. Drawing for the cartridge guide assembly; use plate of 280 mm * 40mm of the thin metal (e.g. thickness of 0.4 mm). Important note: bent parts (at the top of the dashed lines) should not exceed 10mm in their vertical size otherwise these mounting surfaces will protrude outside of front panel plate. Vertical size of card guide surface (30 mm on the drawing) can be less down to 20 mm – it is required to support and guide cartridge so that cartridge is inserted into the slot connector properly.



(a)



(b)

Figure 22. The deliverable: front panel plate and guide assembly mounted (a) back side and (b) front side





Figure 23. Blank to start making guide assembly from. You can buy such from building hardware shop. These can be called "C-shape rail" or similar, and is used to build support structures for light home-related constructions (e.g. ducts) or serve as support and level when applying tiles to the wall.



Figure 24. Mark width of 280 mm throughout outer perimeter of the blank to cut at on the next step



(a) Cutting with scissors





(a) Cutting the "rail" at its bottom by the drawn line



(b) now it is cut



(c) Using scissors to cut one side of the (d) and then cutting another side of C-C-shape up to hacksaw cut area



shape and cracking it

Figure 26. Using hacksaw and scissors



Figure 27. The blank of 280 mm width after cutting as shown on fig. 23



(a) cutting a plate off the blank



(c) bend side of the blank apart, and snap it off



(b) cutting from another side of blank



(d) how plate looks like after separation from the blank

Figure 28. Separating metallic plate



(a) file off the initially marked dimensions



(b) you may do the perimeter in parts



(c) and use corner of the file to make the edge saw-like first, and then use file's flat surface to finish surface flat



(d) file the corners of the plate



(f) and remove fins throughout perimeter of the plate



(e) and remove fins off the corners



(g) and then it will look this way, with required dimensions, and safe for further processing

Figure 29. Finishing dimensions of the slot guide plate



(a) You have cut and finished two sides of the plate, other two are sides of original blank. Start formatting using longest of original sides because it should be straight (while the one you processed may not be as straight)



(b) Use the same method of formatting perpendicular and parallel lines on the guide plate. Format as shown on the fig. 19.



(c) this is how it may look like. You can format using pencil, or construction knife. If you use knife, be extremely careful not to put your fingers on its way.

Figure 30. Formatting guide plate

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(a) Use puncher to stipple formatted holes. Do not hit puncher excessively – the aim of this exercise not to punch the plate through, but to mark the place for drilling. If you hit puncher too much, plate may deform.



(c) It may look like this way. Note that we have made a mistake in the location of punching (yellow circle).





(e) use round and flat files to finish edges of the holes, and remove fins from the inside of holes and from their edges

(d) Drill

Figure 31. Making holes in the guide plate

Figure 32. Finishing dimensions



(a) now cut the dimensions



(b) and cut by the solid lines (see fig. 19). Do not cut by the dashed lines as dashes designate bending lines, not cutting lines.



(a) Use vice for bending. Put the surface to bend between jaws, with line to bend by exactly at the level of the jaws



(b) First action is carefully bend the protruding part of the plate towards desired direction – just about 30°



(c) and then finish by carefully knocking with hammer towards 90° angle. You can use wooden bar between plate and hammer (no direct strikes to the plate – no dents on its surface)

Figure 33. The technique of bending the plate (90°)



(a) Next bending line is the middle section of the plate As you can see this section is long enough, so we will use several steps – bend left side a little, then move vice to right side and bend right side, then back to left side

(b) So we did it for left side, we moved vice to right side and use fingers to bend right side a little

(c) All three long sections were bent, now we go to two short sections. Cut 2mm off them, preparing for bending

Figure 34. Bending long sections, and preparing short ones (two of them)



(a) Bending short sections is not as easy as long ones – short sections should be bent 2mm lower than long ones. You see the trick: we use wide flat file to clutch plate between this file and one of jaw. Level the file so that it appear 2mm lower than already bent sections, then clutch.



(b) First with fingers, and then use small side of hammer to bend the section up to file's surface. Do it very carefully not to hit long sections nearby

Figure 35. Bending short sections

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Figure 36. Starting bending the assembly



(a) bend the edge section – important: it should be bent into the direction mounting sections are bent

(b) again by fingers first, and then carefully with hammer

(c) and then go to do the same to another part of the plate. You can see here that another part does already have edge section bent. It actually does not matter in which order you bend sections – but you should ensure that if you bend a section, it will not hinder binding of other sections. If you've made a mistake and have difficulties bending further sections – you can unbend section involved, however you probably can make it only once, otherwise plate will crack.

Figure 37. Finishing bending the guide



Figure 38. Finishing guide plate – into guide assembly

5. Mounting brackets



Figure 39. Source materials

There are four mounting brackets in the form of angle bars within slot bay assembly (fig. 39, top), one pair is attaching front panel to the storage bay walls, and another pair is attaching slot board to these walls through first pair. The size of the angle bars we took is 40*80*80 (in millimeters, side*side*height). You will see further how we process bars.

In addition you will need fasteners screws of 16mm length and 3mm in diameter. The order of the fastening is shown on the bottom picture of the figure 39: first you take a screw, and pass it through the wide washer. It is needed because some holes may be wider than 3mm. Then you pass screw with washer through the parts you are going to mount together (small pliers are symbolize the parts). Then you put another wide washer from another size, then you put spring washer in, and finish with the nut. Spring washer is highly recommended prevent from to nut unscrewing, and, what's more important, allow a degree of movability to the parts being

attached to compensate excessive and unwanted tensions in the assembly and storage bay. Note that such fastening construction needs no strong tightening.

Please refer to fig. 40 and fig. 41 which display drawings of the brackets for both front panel and slot board respectively. You can format brackets according to these drawings at the beginning of the process, or may on-the-fly dimensioning and formatting as shown in further steps.

- Stage I: making front panel brackets.
 - Use ruler or triangle (fig. 42ab) to format and draw lines perpendicular to the brackets' outer surfaces. The issue of using ruled in the scenario of fig. 42a is that bending place of the bracket may be chamfered and you will not be able to apply ruler's 0 point to the dimension reliably. At the end of this step you will get as shown on fig. 42c.
 - Cut by the drawn lines as shown on fig. 42cd. Note than you do not have to cut whole piece at once from single side – you may cut a part from one end, and then finish cutting from another end.

- Dimension the brackets' cut surfaces (fig. 42e), remove fins (fig. 42f).
- Apply prepared brackets to their seats (fig. 43ab). They should the aflush to the bottom of the front panel, because they are going to stand on the storage bay's guides. Keep in mind that width of front panel may differ from slot bay's internal dimensions (148mm versus 146mm), thus bracket's outer surfaces are not necessarily aflush with dimensions of the front panel. Mark the place for the holes (if you do it on-the-fly, fig. 43c). Use puncher to point the place for drilling, and drill (fig. 43de). Remove fins (fig. 43f).
- > Assemble front panel. Check dimensions (fig. 44).
- Stage II: making slot board bracket.
 - Format another pair of brackets as shown on fig. 41 using similar method to as shown on fig. 42ab.
 - Start with left bracket you will make it the same way as you did with brackets for front panel.
 - Right bracket has sophisticated shape because there're conductors and components at the right side of the slot board (fig. 45a). First, you cut the largest dimension (20mm), then from "top" side cut 15mm till the stop line (see fig. 41). Then cut perpendicular to the bent edge of the angle bar, smooth with flat file and get the shape shown on fig. 45b.
 - Then you process hollow section as shown on fig. 45cd the toughest operation here is using pliers bar is relative thick (2mm of metal) and you will need some force to nip and move these small sections up and down until they crack. At the end of process you will get fig. 45e. Use small flat file to smooth and dimension inner space of the hollow space.
 - Now it's time to make mounting holes. Unless you formatted them previously, match slot board and bracket's bottoms at the distance of 9.5mm, and ensure outer dimensions of the resulting assembly will be 142mm (fig. 45f). Drill holes, file them, getting fig. 45g.
 - Mount brackets to slot board (fig. 46). Re-check all dimensions, and perform corrective actions if needed for the assembly to fit inside them front panel assembly.



Figure 40. Front panel mounting brackets (front view). Notes: (a) Front panel plate of 148mm width is shown in red; it protrudes 1mm from both left and right sides; (b) Distance between outer surfaces of the brackets is equal to width of storage bay, 146mm; (c) Thickness of angle bars (hatched black) shown is 2mm; (d) Front panel plate and angle bars are aflush at the bottom. Angle bars with their bottom edge are standing at the storage bay's guides (if there're any).



Figure 41. Slot board mounting brackets (edge connector view). Notes: (a) Slot board is 9.5mm above the bottom of the mounting brackets; (b) Right bracket has polygonal shape because of slot board's onboard conductors and CN2/CN3 connectors; (c) Left bottom mounting hole is 0.1" higher than right bottom; (d) Distance between outer surfaces of the brackets is equal to width of inner surfaces of the front panel brackets and is equal to 142mm.

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(a) measuring from the outer surface



(b) or measuring from the side



(c) Right: 12mm from outer surface, left: 27mm (refer to fig. 3)



(d) Put in vice, start cutting



(f) Use large-meshed file to smooth Figure 42. Processing mounting brackets for front panel



(e) You can cut from both ends





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Figure 43. Making mounting holes



(a) Mount brackets. They should be aflush to bottom

(b) View from the bottom

(c) Ensure distance between outer surfaces of the brackets is 146mm. If not, you will need to file down previously cut edges (if distance is larger than 146mm) and/or use small round file to move previously drilled mounting holes to match holes in front panel

Figure 44. Mounting brackets to the front panel

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(a) angle bar versus board layout



(c) saw hollow section as thick as possible



(e) it will look this way – use small flat file to dimension hollow section



(b) three cuts gets you to shape shown



(d) put bar into the vice and use flat-nosed pliers to crack sections (nip and move up-



(f) mark holes to drill, keeping outer width of the slot bracket assembly (142mm)



(g) and then drill holes. Brackets will look the way shown Figure 45. Making brackets for slot board



(a) Mount brackets to the slot board

(b) Re-check assembly's outer dimensions to be 142mm. If it is not the case, you will need to use small round file to move previously drilled mounting holes to match holes in slot board

(c) Slot-board's horizontal dimension is less than 142mm, and the assembly will horizontally fit into previously assembled front panel assembly

Figure 46. Mounting brackets to the slot board

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6. Assembling the slot bay

Now we have all the components ready for assembly, we just need to properly mount them into the storage bay.

- Match two assemblies as it would have cartridge inserted (fig. 47a). Both assemblies should firmly stand on the table with their bottom edges (as they will be standing on the storage bay's guides). Draw the delimiting line.
- Put front panel assembly into the storage bay, and mark mounting holes. Drill them (fig. 47bc). Then mount front panel assembly, ensuring it is standing on storage bay's internal guides (fig. 48a). If you missed mounting holes, you can correct them as shown on fig. 48b.
- If front panel assembly mounted well, match front panel assembly with slot assembly again (fig. 47a) and mark the holes to drill in the slot assembly's brackets with pencil through front panel mounting holes. Drill the holes. File them.
- Mount both assemblies into the storage bay using 4 fasteners in the order shown on the fig. 39. We hope you complete the whole process without serious issues and achieved something similar to shown on fig. 2.



(a) Put slot board assembly inside the front panel assembly. You may use inserted cartridge as a measure, but normally the distance between front panel face and slot board is about 40mm. Look at our mistake (circled red) – these holes are unsuitable to mount both front panel assembly and slot board assembly. Those circled yellow are ok. Draw the delimiting line (dashed black on the picture), mounting holes will have to be placed behind this line to have both assemblies mounted with single screw (two screws per assembly side).





(b) As soon as you have drawn the delimiting line, put front panel assembly inside the storage bay, ensuring it is standing on storage bay's guides, and mark holes from both sides of the storage bay, two per side (top and bottom of each bracket).

(c) and drill the holes, then remove fins with small flat and round files

Figure 47. Drilling mounting holes to mount front panel assembly to storage bay



(a) mount the front panel assembly, ensuring it is standing on bay's guides



(b) if you have made a mistake in location of holes, you can enlarge or move them, or drill others in right locations

Figure 48. Mounting front panel into storage bay, and correcting if you missed the holes' locations

Sources and information for further reading:

 SFF Committee (1995) SFF-8501 Specification for Form Factor of 5.25" Disk Drives, available online at ftp://ftp.seagate.com/pub/sff/SFF-8501.PDF (accessed on 30-May-2013)

End of KB0012 "Building a Slot Bay".