SFF specifications are available at http://www.snia.org/sff/specifications
or ftp://ftp.seagate.com/sff

This specification was developed by the SFF Committee prior to it becoming the SFF TA (Technology Affiliate) TWG (Technical Working Group) of SNIA (Storage Networking Industry Association).

The information below should be used instead of the equivalent herein.

POINTS OF CONTACT:

Chairman SFF TA TWG
Email: SFF-Chair@snia.org

If you are interested in participating in the activities of the SFF TWG, the membership application can be found at:
http://www.snia.org/sff/join

The complete list of SFF Specifications which have been completed or are currently being worked on can be found at:
http://www.snia.org/sff/specifications/SFF-8000.TXT

The operations which complement the SNIA's TWG Policies & Procedures to guide the SFF TWG can be found at:
http://www.snia.org/sff/specifications/SFF-8032.PDF

Suggestions for improvement of this specification will be welcome, they should be submitted to:
http://www.snia.org/feedback

SFF Committee documentation may be purchased in electronic form.
SFF specifications are available at ftp://ftp.seagate.com/sff

SFF Committee

SFF-8553 Specification for

Form Factor of 5 1/4" Optical Drives with SATA Interface

Rev 1.3 July 19, 2012

Secretariat: SFF Committee

Abstract: This specification defines the dimensions for 5 1/4" 7mm and 8.5mm height optical drives with SATA Interface.

This specification provides a common specification for systems manufacturers, system integrators, and suppliers of optical drives. This is an internal working document of the SFF Committee, an industry ad hoc group.

This specification is made available for public review, and written comments are solicited from readers. Comments received by the members will be considered for inclusion in future revisions of this document.

Support: This specification is supported by the identified member companies of the SFF Committee.

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EXPRESSION OF SUPPORT BY MANUFACTURERS

The following member companies of the SFF Committee voted in favor of this industry specification.

Foxconn
Fujitsu CPA
Hewlett Packard
HGST
IBM
Panasonic
Panduit
Pioneer
Pioneer NewMedia
Sun Microsystems
TE Connectivity

The following member companies of the SFF Committee voted to abstain on this industry specification.

3M
AMCC
Amphenol
Arista Networks
Cinch
Dell Computer
EMC
Emulex
ETRI
FCI
Finisar
LSI
Luxshare-ICT
MGE
Molex
NetApp
Oclaro
Sandisk
Seagate
Toshiba
Volex

Change History

Rev 1.1
- Add 7mm height

Rev 1.2
- Revised to current template

Rev 1.3
- Minor editorial corrections

Foreword

The development work on this specification was done by the SFF Committee, an industry group. The membership of the committee since its formation in August 1990 has included a mix of companies which are leaders across the industry.

When 2 1/2" diameter disk drives were introduced, there was no commonality on external dimensions e.g. physical size, mounting locations, connector type, connector location, between vendors.

The first use of these disk drives was in specific applications such as laptop portable computers and system integrators worked individually with vendors to develop the packaging. The result was wide diversity, and incompatibility.

The problems faced by integrators, device suppliers, and component suppliers led to the formation of the SFF Committee as an industry ad hoc group to address the marketing and engineering considerations of the emerging new technology.

During the development of the form factor definitions, other activities were suggested because participants in the SFF Committee faced more problems than the physical form factors of disk drives. In November 1992, the charter was expanded to address any issues of general interest and concern to the storage industry. The SFF Committee became a forum for resolving industry issues that are either not addressed by the standards process or need an immediate solution.

Those companies which have agreed to support a specification are identified in the first pages of each SFF Specification. Industry consensus is not an essential requirement to publish an SFF Specification because it is recognized that in an emerging product area, there is room for more than one approach. By making the documentation on competing proposals available, an integrator can examine the alternatives available and select the product that is felt to be most suitable.

SFF Committee meetings are held during T10 weeks (see www.t10.org), and Specific Subject Working Groups are held at the convenience of the participants. Material presented at SFF Committee meetings becomes public domain, and there are no restrictions on the open mailing of material presented at committee meetings.

Most of the specifications developed by the SFF Committee have either been incorporated into standards or adopted as standards by EIA (Electronic Industries Association), ANSI (American National Standards Institute) and IEC (International Electrotechnical Commission).

If you are interested in participating or wish to follow the activities of the SFF Committee, the signup for membership and/or documentation can be found at:

www.sffcommittee.com/ie/join.html

The complete list of SFF Specifications which have been completed or are currently being worked on by the SFF Committee can be found at:

ftp://ftp.seagate.com/sff/SFF-8000.TXT

If you wish to know more about the SFF Committee, the principles which guide the activities can be found at:

ftp://ftp.seagate.com/sff/SFF-8032.TXT

Suggestions for improvement of this specification will be welcome. They should be sent to the SFF Committee, 14426 Black Walnut Ct, Saratoga, CA 95070.

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FIGURES

TABLES

SFF Committee --

Form Factor of 5 1/4" Optical Drives with SATA Interface

Scope

SFF-8553 defines the configuration characteristics associated with 7mm and 8.5mm Height 5 1/4" Optical Drives. *Note: By naming convention, the 5 1/4" width dimension is used however these drives are actually closer to 5" wide but use the same media as 5 1/4" drives.*

The purpose of the 85xx suite is to define the external characteristics of drives such that products from different vendors may be used in the same mounting configurations.

The set of specifications provide external dimensions, connectors, connector placement, mounting holes and interface pinouts to assist manufacturers in the systems integration of small form factor drives.

- SFF-8500 contains general information regarding connector space, mounting considerations and measurement requirements.
- SFF-8501 defines the dimensions of 5 1/4" disk drives.
- SFF-8551 defines the dimensions of 5 1/4" CD-ROM drives.
- SFF-8552 contains information on the mechanical form factor of 5 1/4" 9.5mm and 12.7mm height drives with Parallel ATA Interface including dimensions, connector location, and mounting considerations
- SFF-8553 contains information on the mechanical form factor of 5 1/4" 7mm and 8.5mm height drives with SATA Interface including dimensions, connector location, and mounting considerations
- Other specifications in the 85xx family define the location of connectors on 5 1/4" drives.

1.1 Revision History

Rev.	Revision Description	Date
1.0	Initial Release for 7mm height drive	2/27/09
1.1	Add 8.5mm height drive and its Bezel Attachment Specification	5/30/12
1.3	Editorial update to match current template Deleted invalid references in 6.4.2 Deleted invalid reference in 6.4.3.1	7/19/12

References

1.2 Industry Documents

The following interface standards are relevant to many SFF Specifications.

- X3.221-1995 ATA (AT Attachment) and subsequent extensions
- X3T10/0948 ATA-2 (ATA Extensions)
- Serial ATA Revision 3.1, Serial ATA International Organization

1.3 SFF Specifications

There are several projects active within the SFF Committee. The complete list of specifications which have been completed or are still being worked on are listed in the specification at ftp://ftp.seagate.com/sff/SFF-8000.TXT

1.4 Sources

Those who join the SFF Committee as an Observer or Member receive electronic copies of the minutes and SFF specifications (http://www.sffcommittee.com/ie/join.html).

Copies of ANSI standards may be purchased from the InterNational Committee for Information Technology Standards (http://www.techstreet.com/incitsgate.tmpl).

1.5 Conventions

If there is a conflict between text and tables on a feature described as optional, the table shall be accepted as being correct.

Certain terms used herein are the proper names of signals. These are printed in

uppercase to avoid possible confusion with other uses of the same words; e.g., ATTENTION. Any lower-case uses of these words have the normal American-English meaning.

A number of conditions, commands, sequence parameters, events, English text, states or similar terms are printed with the first letter of each word in uppercase and the rest lower-case; e.g., In, Out, Request Status. Any lower-case uses of these words have the normal American-English meaning.

The ISO convention of numbering is used i.e., the thousands and higher multiples are separated by a space and a period is used as the decimal point. This is equivalent to the English/American convention of a comma and a period.

American	**French**	**ISO**
0.6	0,6	0.6
1,000	1 000	1 000
1,323,462.9	1 323 462,9	1 323 462.9

1.6 Definitions
For the purpose of SFF Specifications, the following definitions apply:

Optional: This term describes features which are not required by the SFF Specification. However, if any feature defined by the SFF Specification is implemented, it shall be done in the same way as defined by the Specification.

PUM: Pickup Assembly Module or Traverse Assembly.

SATA (Serial AT Attachment) describes a device with built-in SATA protocol electronics.

General Description

The application environment for the 5 1/4” 7mm / 8.5mm Height (slimline) Optical Drive Form Factors is any computer, cabinet, or enclosure connecting to one or more drives in a restricted packaging environment. Slimline Optical Drives are widely-used where low power and small size are important configuration parameters.

This specification defines the dimensions, mounting considerations, and connector location for slimline optical drives. The purpose of an SFF Specification is to provide information that will assist vendors to design products that can fit the same packaging envelope.

5 1/4" 7mm Height Optical Drive SATA Form Factor

This section of the specification defines the configuration characteristics associated with 5 1/4" 7mm height optical drives that uses 5mm height Slimline SATA connector. Table 4-1 lists the dimensions associated with Figure 4-1, which is a detail of the form factor. Tolerances are shown in the table.

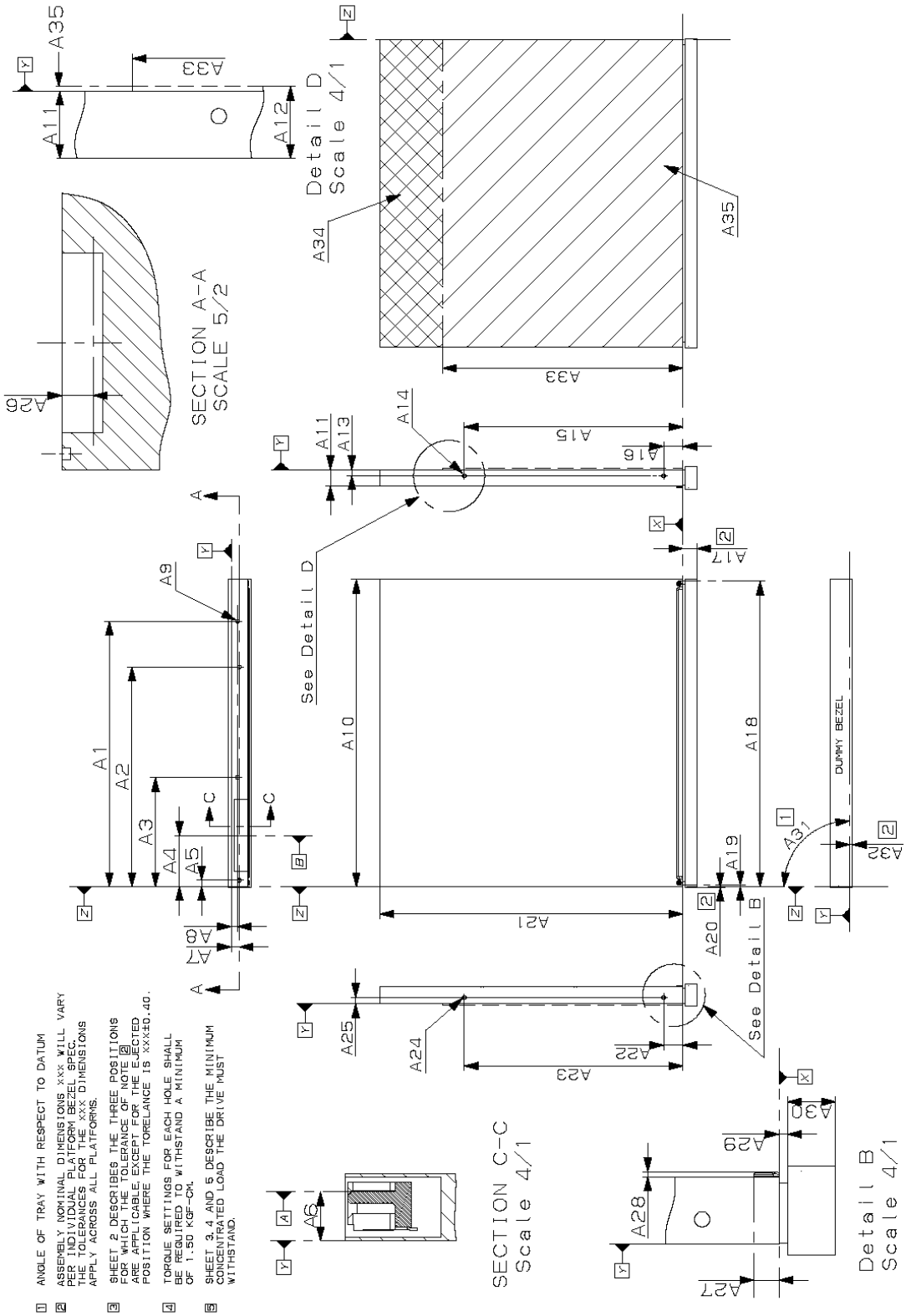


FIGURE 0-1 SHEET 1- 7MM HEIGHT OPTICAL DRIVE SATA FORM FACTOR

The three views in Figure 4-2 describe the positions where the tolerance(s) of the dimension(s) from the table are applicable, except for the ejected position where the tolerance for the dimension changes to ±0.4mm.

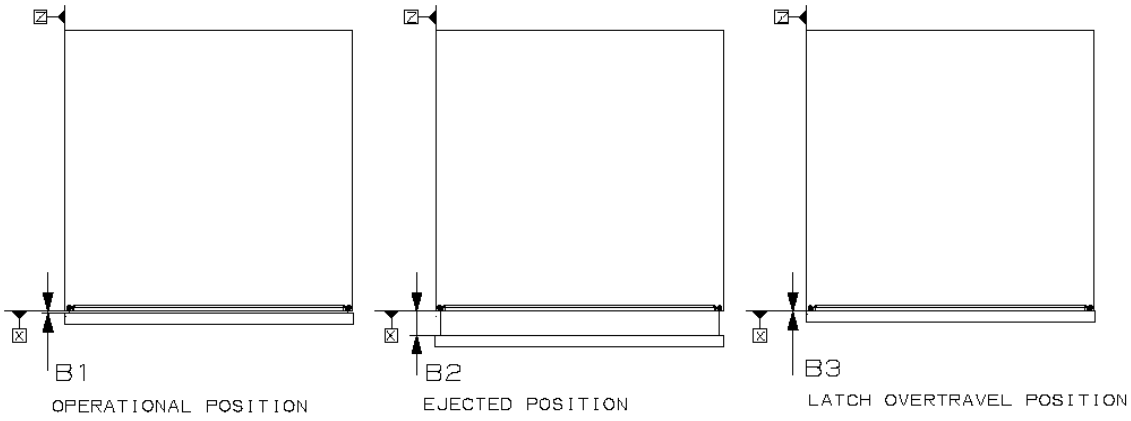
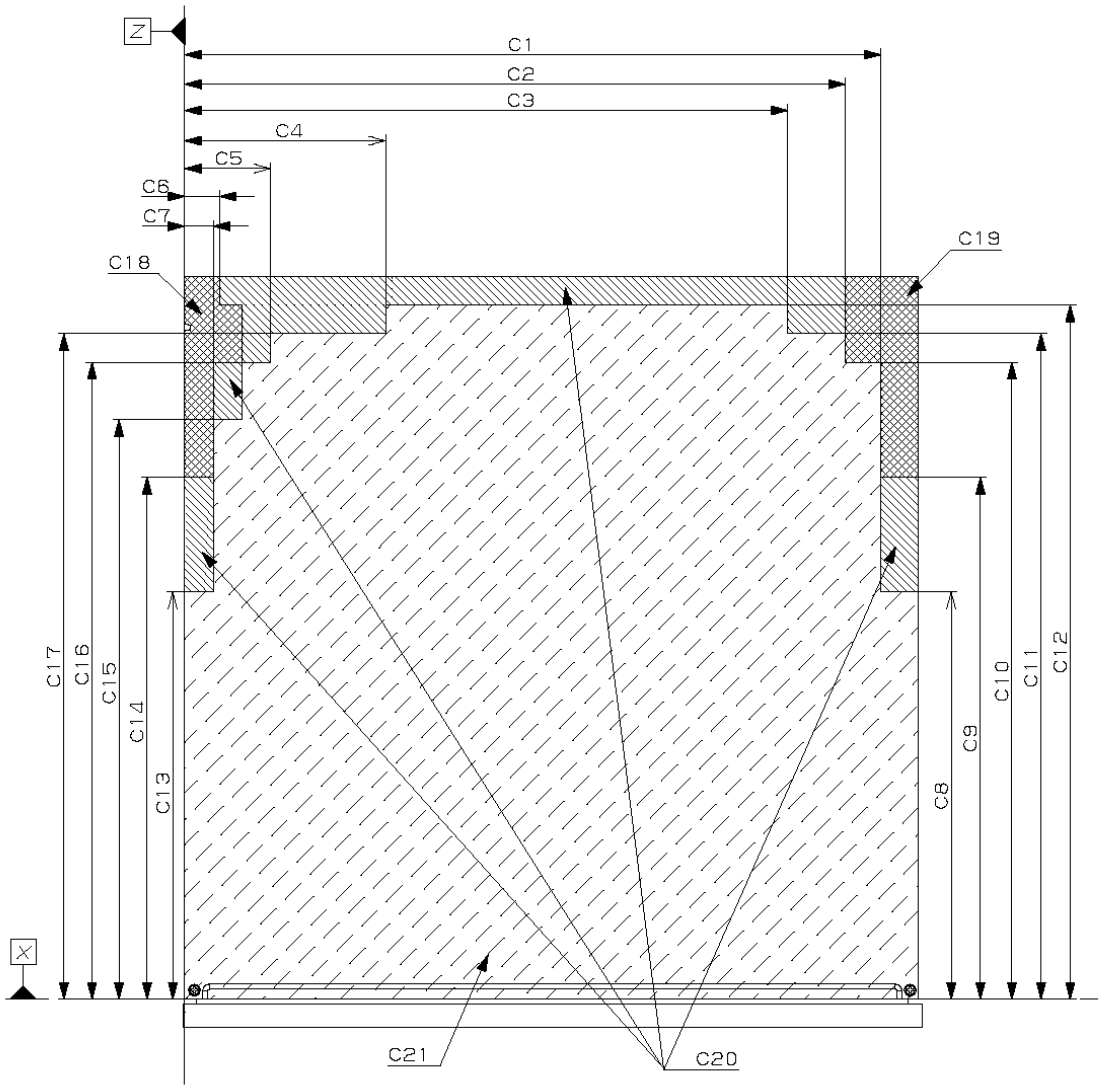
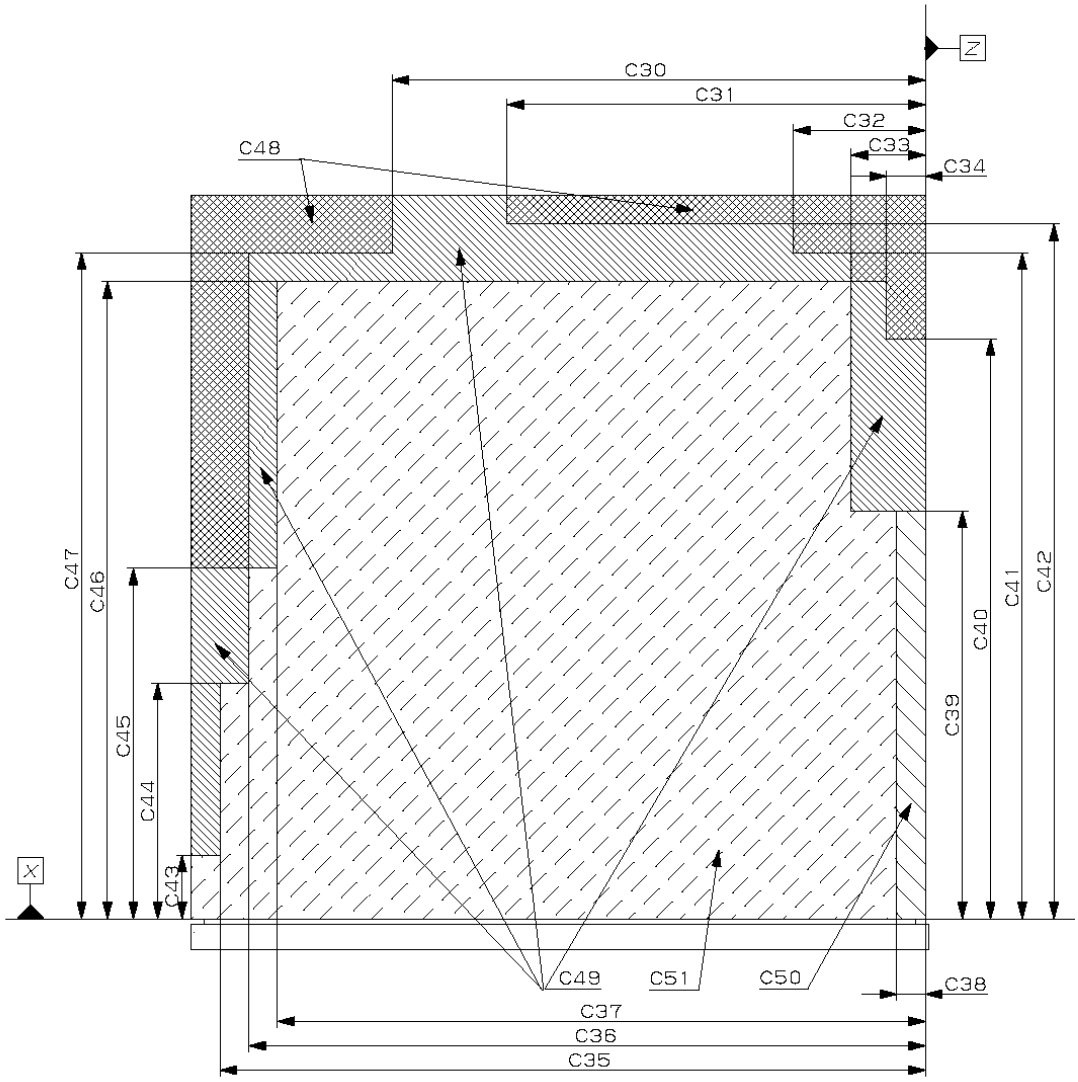


FIGURE 0-2 SHEET 2- 7MM TRAY POSITIONS



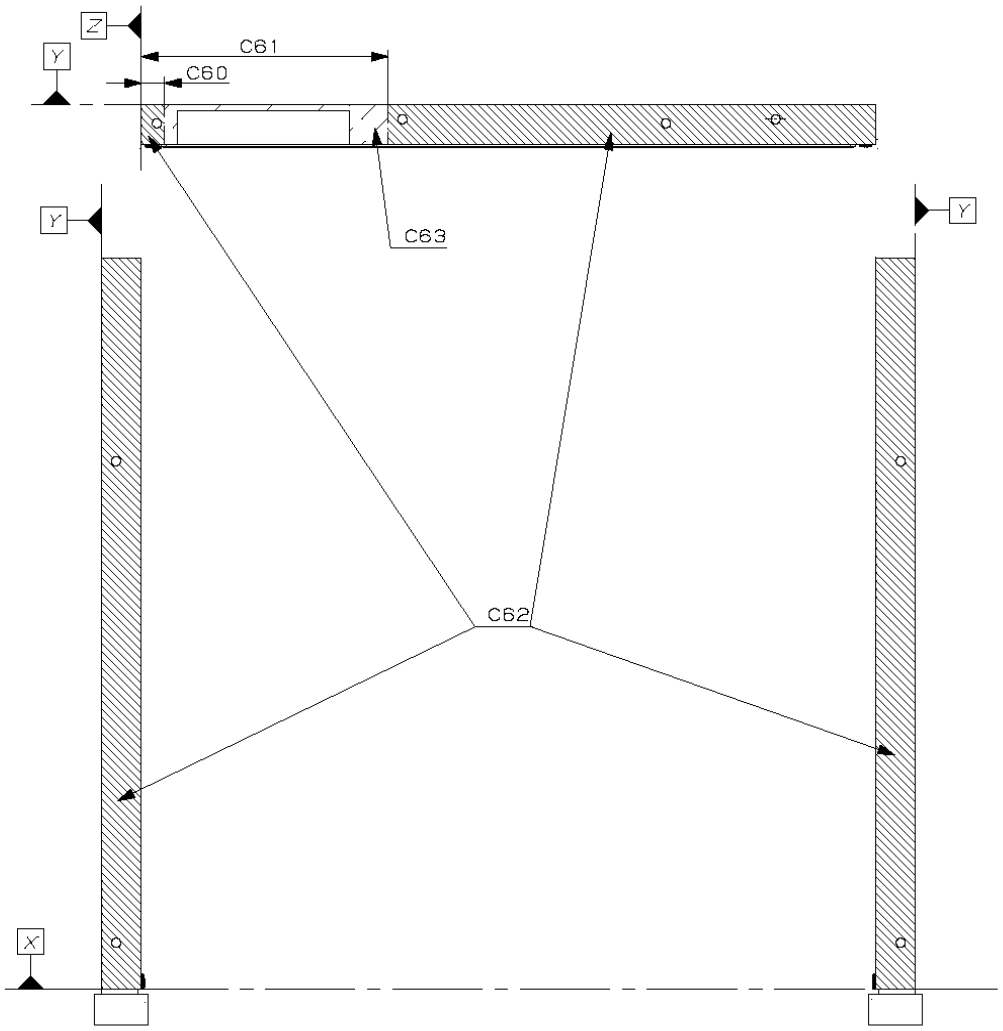
Minimum concentrated loads the drive shall be able to withstand.

FIGURE 0-3 SHEET 3- 7MM LOADING SPECIFICATIONS (TOP SURFACE)



Minimum concentrated loads the drive shall be able to withstand.

FIGURE 0-4 SHEET 4- 7MM LOADING SPECIFICATIONS (BOTTOM SURFACE)



Minimum concentrated loads the drive shall be able to withstand.

FIGURE 0-5 SHEET 5- 7MM LOADING SPECIFICATIONS (SIDE SURFACE)

TABLE 0-1 7MM HEIGHT OPTICAL DRIVE SATA FORM FACTOR DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
A1	110.60	±.20	
A2	91.50	±.20	
A3	45.50	±.20	
A4	21.25	±.30	Distance to centerline of SATA connector Datum-B
A5	2.70	±.20	
A6	5.10	±.38	Distance to SATA connector Datum-A
A7	2X 3.30	±. 20	Distance to centerline of screw hole
A8	2X 2.60	±. 20	Distance to centerline of screw hole
A9	4X M2	Depth 1.4 Min	Min screw engagement: 1.1mm. Max Screw engagement 1.4mm. Torque settings for each hole shall be required to withstand a minimum of 1.50 KGF-CM at engagement 1.1mm.
A10	128.00	±.20	
A11	7.00	+.50/-.20	Drive height from Datum-Y
A12	-		Drive thickness 7mm +1.0/-0.2 is made by A11 and A35. This is measured at drive body construction plate, does not include partial sheet/label.
A13	2X 2.60	±.20	
A14	2X M2	Depth 1.4 Min	Min screw engagement: 1.1mm. Max screw engagement 1.4mm. Torque settings for each hole shall be required to withstand a minimum of 1.50 KGF-CM at engagement 1.1mm.
A15	91.00	±.20	
A16	8.00	±.20	
A17	XXX	±.30	Assembly nominal dimensions XXX may vary. The tolerances for the XXX dimensions apply across all platforms.
A18	127.50	Max	Protrusion region includes screws which are adjacent to protrusion.
A19	0.50	Min	
A20	XXX	±.30	Assembly nominal dimensions XXX may vary. The tolerances for the XXX dimensions apply across all platforms.
A21	126.10	±.20	
A22	8.00	±.20	
A23	91.00	±.20	
A24	2X M2	Depth 1.4 Min	Min screw engagement: 1.1mm. Max Screw engagement 1.4mm. Torque settings for each hole shall be required to withstand a minimum of 1.50 KGF-CM at engagement 1.1mm.
A25	2X 2.60	±.20	
A26	5.20	±.30	The insertion depth of connector inner wall.
A27	3.00	Max	
A28	1.00	Max	Protrusion
A29	0.90	±.20	
A30	2.0 Min		Recommended minimum thickness of bezel attachment. Partial thin part is available.
A31	90.0 degrees	±3.0 degrees	Angle of tray with respect to Datum Z
A32	XXX	±.30	Assembly nominal dimensions XXX may vary. The tolerances for the XXX dimensions apply across all platforms.
A33	100.00	±.30	
A34	-		Datum-Y region
A35	-	+0.5/- 0	Flatness of bottom surface except datum-Y region (A34).

Designator	Dimension (mm)	Tolerance (mm)	Notes
B1	0.90		Assembly nominal dimensions XXX may vary. The tolerances for the XXX dimensions apply across all platforms. Figure 4-2 describes the three positions for which the tolerances are applicable, except for the ejected position where the tolerance is XXX ± 0.40.
B2	10.0 Min		
B3	0.00		
Designator	**Dimension (mm)**		
C1	121.20		
C2	115.00		
C3	105.00		
C4	35.00		
C5	15.00		
C6	6.10		
C7	5.00		
C8	70.90		
C9	90.90		
C10	110.90		
C11	115.90		
C12	120.90		
C13	70.90		
C14	90.90		
C15	100.90		
C16	110.90		
C17	115.90		
Designator	**Load**	**Unit**	**Notes**
C18	Less than 2	Newton	The drive is horizontally fixed with four screws on both sides. Also the drive own weight is excluded.
C19	Less than 2	Newton	
C20	Less than 1	Newton	
C21	0.00	Newton	
Designator	**Dimension (mm)**		
C30	93.00		
C31	73.00		
C32	23.00		
C33	13.00		
C34	6.80		
C35	123.00		
C36	118.00		
C37	113.00		
C38	5.00		
C39	71.10		
C40	101.10		
C41	116.10		
C42	121.10		
C43	11.10		
C44	41.10		
C45	61.10		
C46	111.10		
C47	116.10		

Designator	Load	Unit	Notes
C48	Less than 2	Newton	The drive is horizontally fixed with four screws on both sides as normal operational position. Also the drive own weight is excluded.
C49	Less than 1	Newton	
C50	Less than 0.50	Newton	
C51	0.00	Newton	
Designator	**Dimension (mm)**		
C60	4.00		
C61	43.00		
Designator	**Load**	**Unit**	**Notes**
C62	Less than 1	Newton	In the case of side load measurement, the drive is horizontally fixed with two screws on the opposite side and the drive bottom surface is supported. In the case of back load measurement, the drive is horizontally fixed with four screws on both sides.
C63	0.00	Newton	

5 1/4" 8.5mm Height Optical Drive SATA Form Factor

This section of the specification defines the configuration characteristics associated with 5 1/4" 8.5mm height optical drives that uses 5.4mm height Slimline SATA connector. Table 5-1 lists the dimensions associated with Figure 5-1, which is a detail of the form factor. Tolerances are shown in the table.

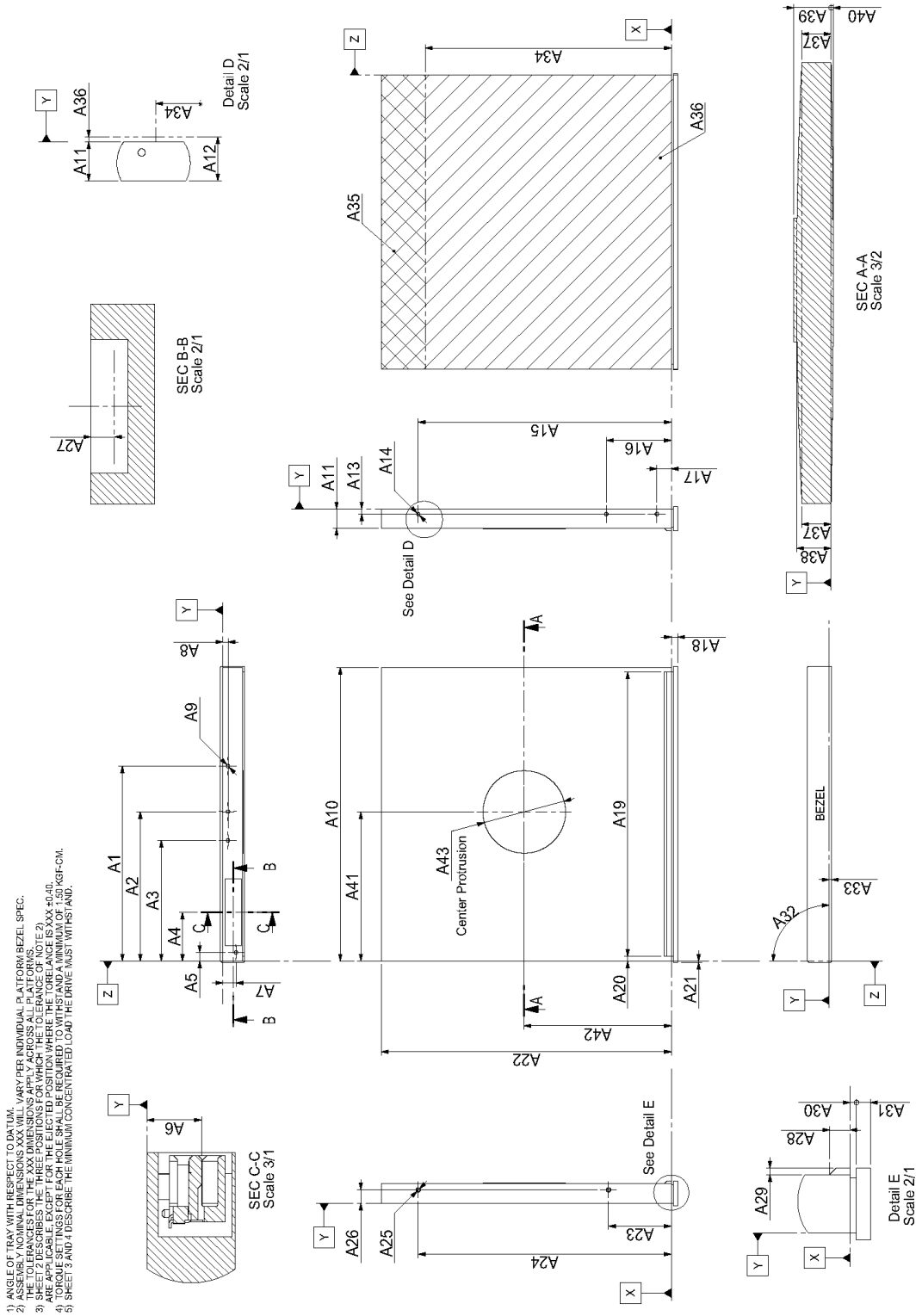


FIGURE 0-1 SHEET 1- 8.5MM HEIGHT OPTICAL DRIVE SATA FORM FACTOR

The three views in Figure 5-2 describe the positions where the tolerance(s) of the dimension(s) from the table are applicable, except for the ejected position where the tolerance for the dimension changes to ±0.4mm.

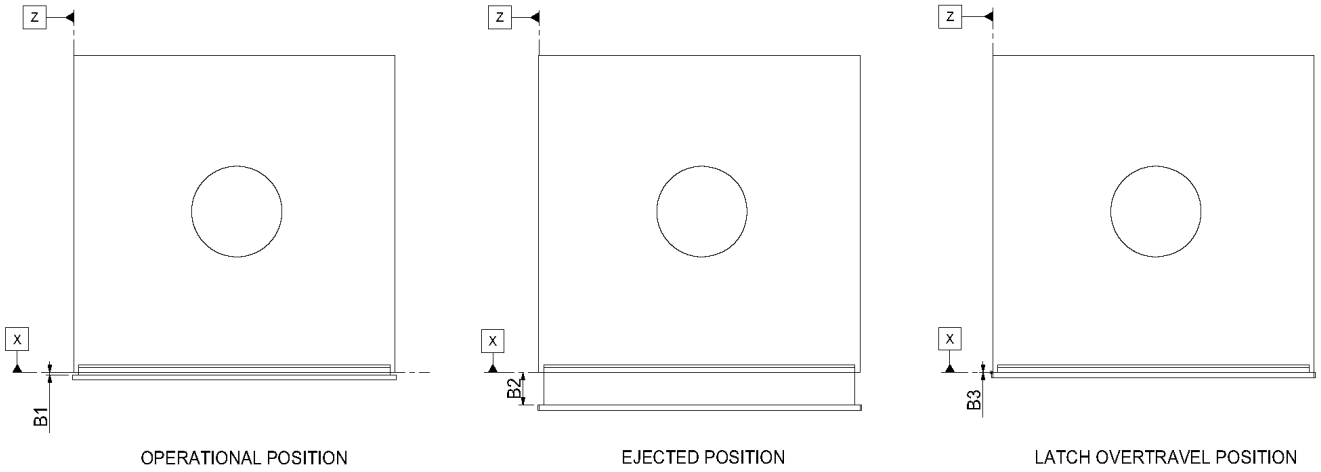
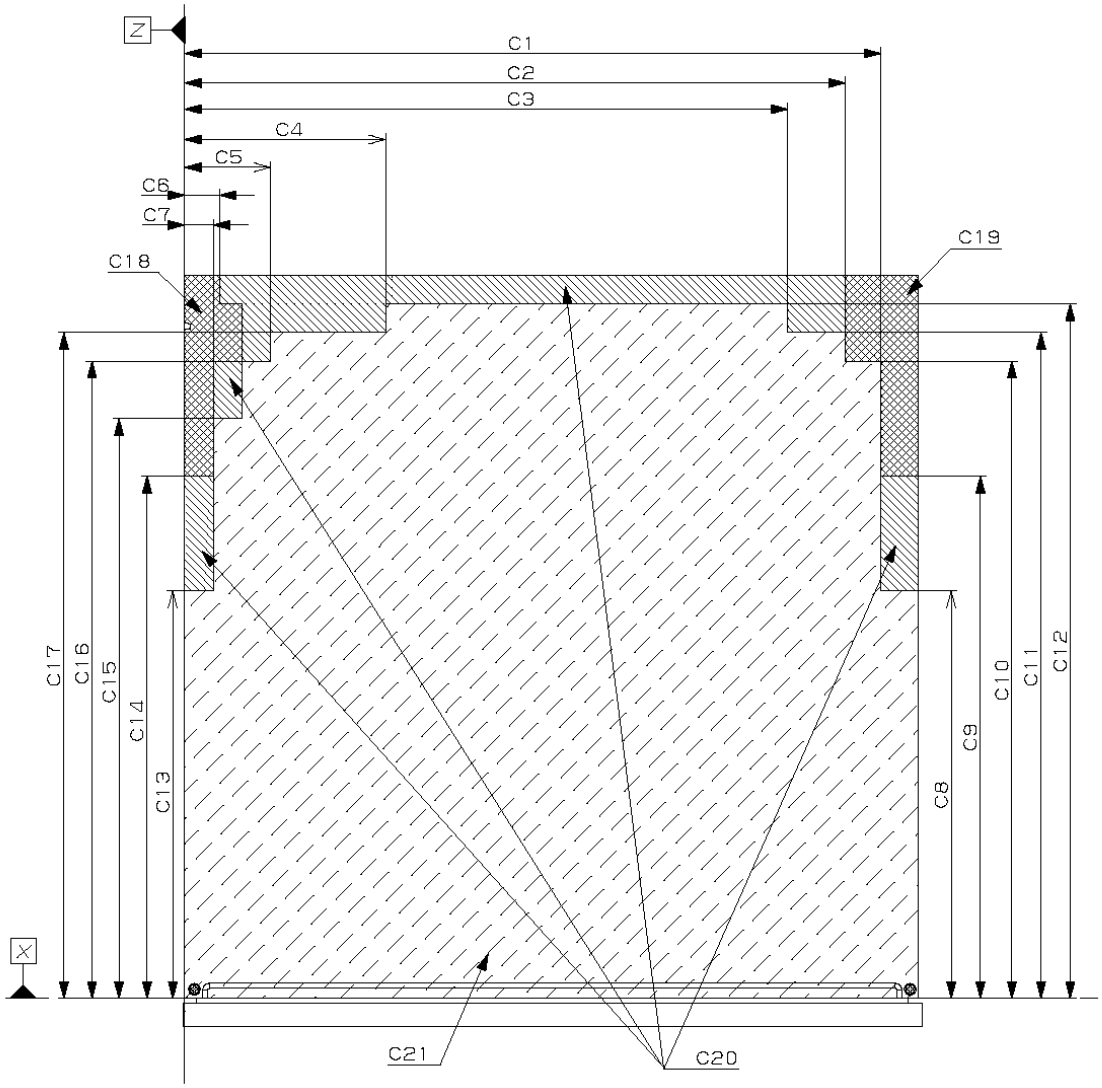
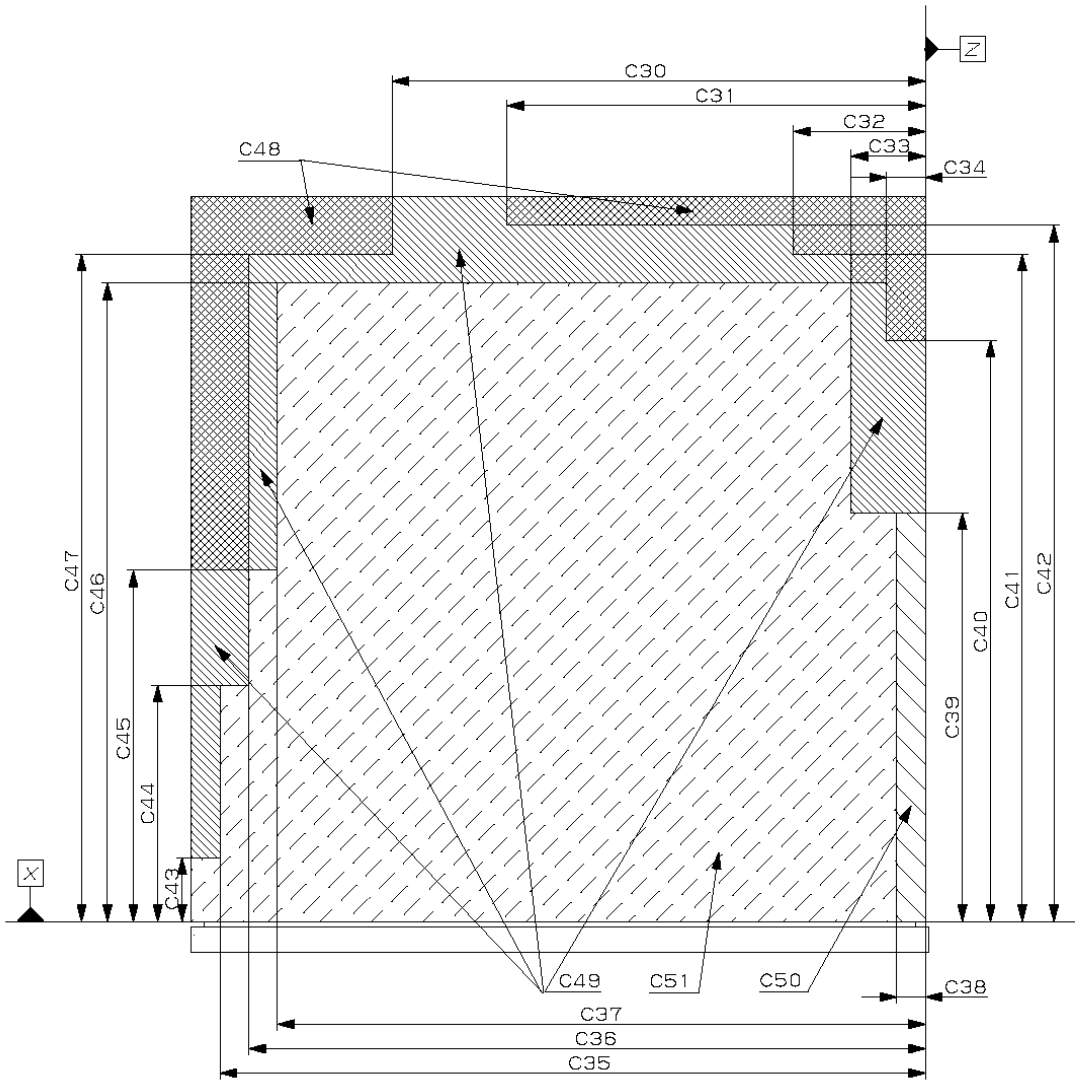


FIGURE 0-2 SHEET 2- 8.5MM TRAY POSITIONS



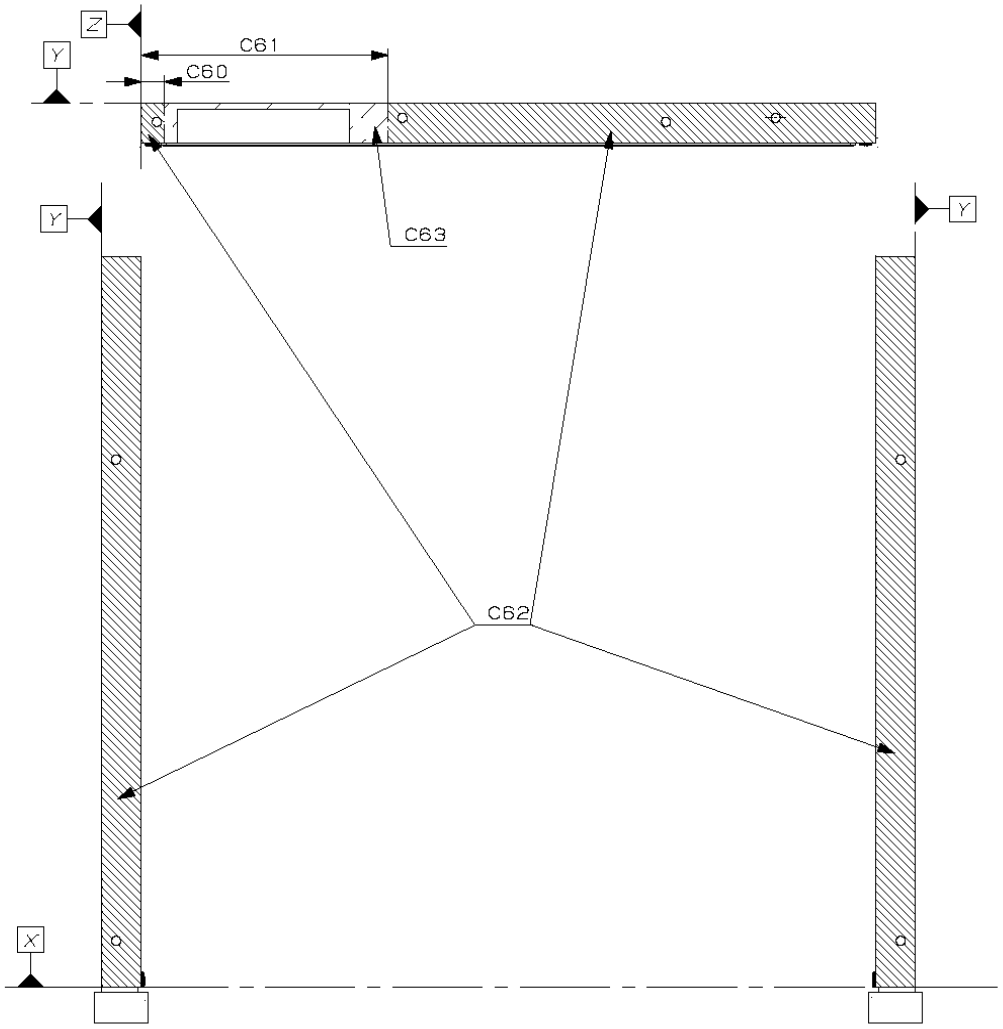
Minimum concentrated loads the drive shall be able to withstand.

FIGURE 0-3 SHEET 3- 8.5MM LOADING SPECIFICATIONS (TOP SURFACE)



Minimum concentrated loads the drive shall be able to withstand.

FIGURE 0-4 SHEET 4- 8.5MM LOADING SPECIFICATIONS (BOTTOM SURFACE)



Minimum concentrated loads the drive shall be able to withstand.

FIGURE 0-5 SHEET 5- 8.5MM LOADING SPECIFICATIONS (SIDE SURFACE)

TABLE 0-1 8.5MM HEIGHT OPTICAL DRIVE SATA FORM FACTOR DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
A1	85.00	±.20	
A2	65.10	±.20	
A3	52.60	±.20	
A4	21.25	±.30	Distance to centerline of SATA connector
A5	3.80	±.20	
A6	5.30	±.38	Distance to SATA connector
A7	5.00	±.20	Distance to centerline of screw hole
A8	3X 2.3	±.20	Distance to centerline of screw hole
A9	4X M2	Depth 1.4Min	Min screw engagement: 1.1mm. Max Screw engagement 1.4mm. Torque settings for each hole shall be required to withstand a minimum of 1.50 KGF-CM at engagement 1.1mm.
A10	128.00	±.20	
A11	8.50	+.50/-.20	Drive height from Datum-Y
A12	-	-	Drive thickness 8.5mm +0.7/-0.2 is made by A11 and A40. This is measured at drive body construction plate, does not include partial sheet/label and the center protrusion.
A13	3X 2.3	±.20	
A14	3X M2	Depth 1.4Min	Min screw engagement: 1.1mm. Max Screw engagement 1.4mm. Torque settings for each hole shall be required to withstand a minimum of 1.50 KGF-CM at engagement 1.1mm.
A15	110.10	±.20	
A16	28.30	±.20	
A17	6.30	±.20	
A18	XXX	±.30	Assembly nominal dimensions XXX may vary. The tolerances for the XXX dimensions apply across all platforms
A19	127.50	Max	
A20	0.50	Min	
A21	XXX	±.30	Assembly nominal dimensions XXX may vary. The tolerances for the XXX dimensions apply across all platforms
A22	126.10	±.20	
A23	27.30	±.20	
A24	110.10	±.20	
A25	2X M2	Depth 1.4Min	Min screw engagement: 1.1mm. Max Screw engagement 1.4mm. Torque settings for each hole shall be required to withstand a minimum of 1.50 KGF-CM at engagement 1.1mm.
A26	2X 5.8	±.20	
A27	5.20	±.30	The insertion depth of connector inner wall.
A28	3.00	Max	
A29	1.00	Max	Protrusion
A30	0.90	±.20	
A31	2.00	Min	Recommended minimum thickness of bezel attachment. Partial thin part is available.
A32	90.0 degrees	±3.0 degrees	Angle of tray with respect to Datum Z.
A33	XXX	±.30	Assembly nominal dimensions XXX may vary. The tolerances for the XXX dimensions apply across all platforms
A34	107.00	±.30	
A35	-	-	Datum-Y region

Designator	Dimension (mm)	Tolerance (mm)	Notes
A36	-	+.20/-.00	Flatness of bottom surface except datum-Y region(A35)
A37	8.50	+.30/-.20	Height from Datum-Y to the edge of drive
A38	9.00	Max	Height from Datum-Y except the edge and center protrusion
A39	9.30	Max	Height from Datum-Y to the center protrusion
A40	0.20	Max	Protrusion from Datum-Y
A41	65.00	±.50	Center Protrusion
A42	64.00	±.50	Center Protrusion
A43	ϕ 36.00	Max	Center Protrusion
B1	0.90		Assembly nominal dimensions XXX may vary. The tolerances for the XXX dimensions apply across all platforms. Figure 5-2 describes the three positions for which the tolerances are applicable, except for the ejected position where the tolerance is XXX ± 0.40.
B2	10.00	Min	
B3	0.00		
Designator	**Dimension (mm)**		
C1	121.20		
C2	115.00		
C3	105.00		
C4	35.00		
C5	15.00		
C6	6.10		
C7	5.00		
C8	70.90		
C9	90.90		
C10	110.90		
C11	115.90		
C12	120.90		
C13	70.90		
C14	90.90		
C15	100.90		
C16	110.90		
C17	115.90		
Designator	**Load**	**Unit**	**Notes**
C18	Less than 2	Newton	The drive is horizontally fixed with four screws on both sides. Also the drive own weight is excluded.
C19	Less than 2	Newton	
C20	Less than 1	Newton	
C21	0.00	Newton	

Designator	Dimension (mm)		
C30	93.00		
C31	73.00		
C32	23.00		
C33	13.00		
C34	6.80		
C35	123.00		
C36	118.00		
C37	113.00		
C38	5.00		
C39	71.10		
C40	101.10		
C41	116.10		
C42	121.10		
C43	11.10		
C44	41.10		
C45	61.10		
C46	111.10		
C47	116.10		
Designator	**Load**	**Unit**	**Notes**
C48	Less than 2	Newton	The drive is horizontally fixed with four screws on both sides as normal operational position. Also the drive own weight is excluded.
C49	Less than 1	Newton	
C50	Less than 0.50	Newton	
C51	0.00	Newton	
Designator	**Dimension (mm)**		
C60	4.00		
C61	43.00		
Designator	**Load**	**Unit**	**Notes**
C62	Less than 1	Newton	In the case of side load measurement, the drive is horizontally fixed with two screws on the opposite side and the drive bottom surface is supported. In the case of back load measurement, the drive is horizontally fixed with four screws on both sides.
C63	0.00	Newton	

Informative: Optional 8.5mm Height Optical Bezel Attachment

1.7 Content
The content of this section was contributed by Dell Computer Corporation and companies that attended the SFF-8553 SSWGs.

1.8 Purpose/Objective
This clause defines the interface between a 8.5mm Height optical bezel and 8.5mm Height optical drives.

1.9 Bezel Side Specifications

1.9.1 Bezel Alignment Pin

1.9.1.1 Alignment Pin Dimensions

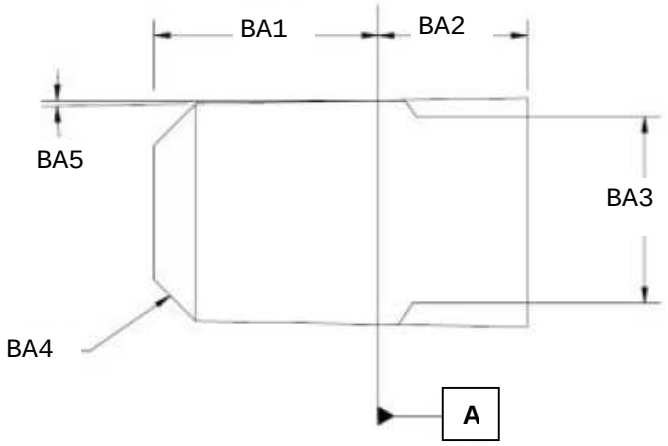


FIGURE 0-1 BEZEL ALIGNMENT PIN

TABLE 0-1 BEZEL ALIGNMENT PIN DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BA1	1.50	±.10	
BA2	X		
BA3	1.50	+.00/-.05	Diameter
BA4	C0.3		
BA5	1.0°		Degrees

1.9.1.2 Location of Alignment Pin

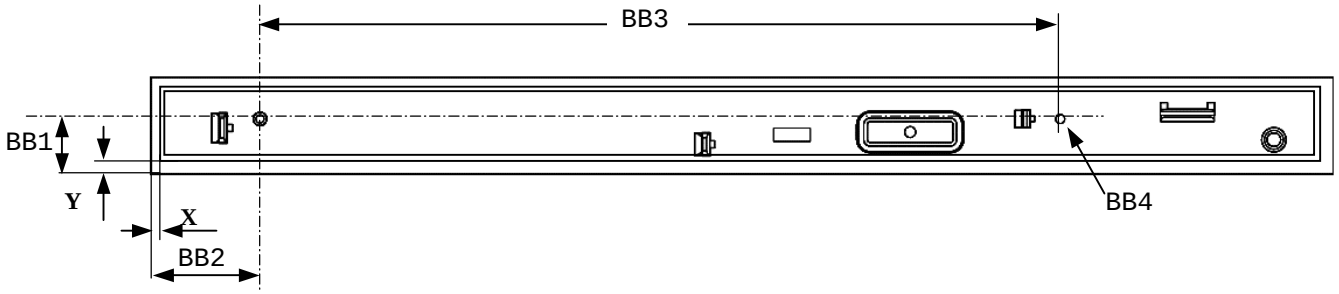


FIGURE 0-2 BEZEL ALIGNMENT PIN LOCATION

TABLE 0-2 BEZEL ALIGNMENT PIN LOCATION DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BB1	Y+5.1	±.05	
BB2	X+11.0	±.05	
BB3	88.00	±.10	Reference Mark
BB4	1.00		Diameter Min: Reference Mark

1.9.2 Bezel Snap Number 1 Definition

1.9.2.1 Snap 1 Dimensions

Snap number one shall be a cantilever snap connector. Datum A represents the back surface of the bezel. This surface makes contact with the surface of the tray. Dimension X is a variable dimension. It may scale from 0.0mm in the case where the bezel is not cored, to value X where the bezel is cored.

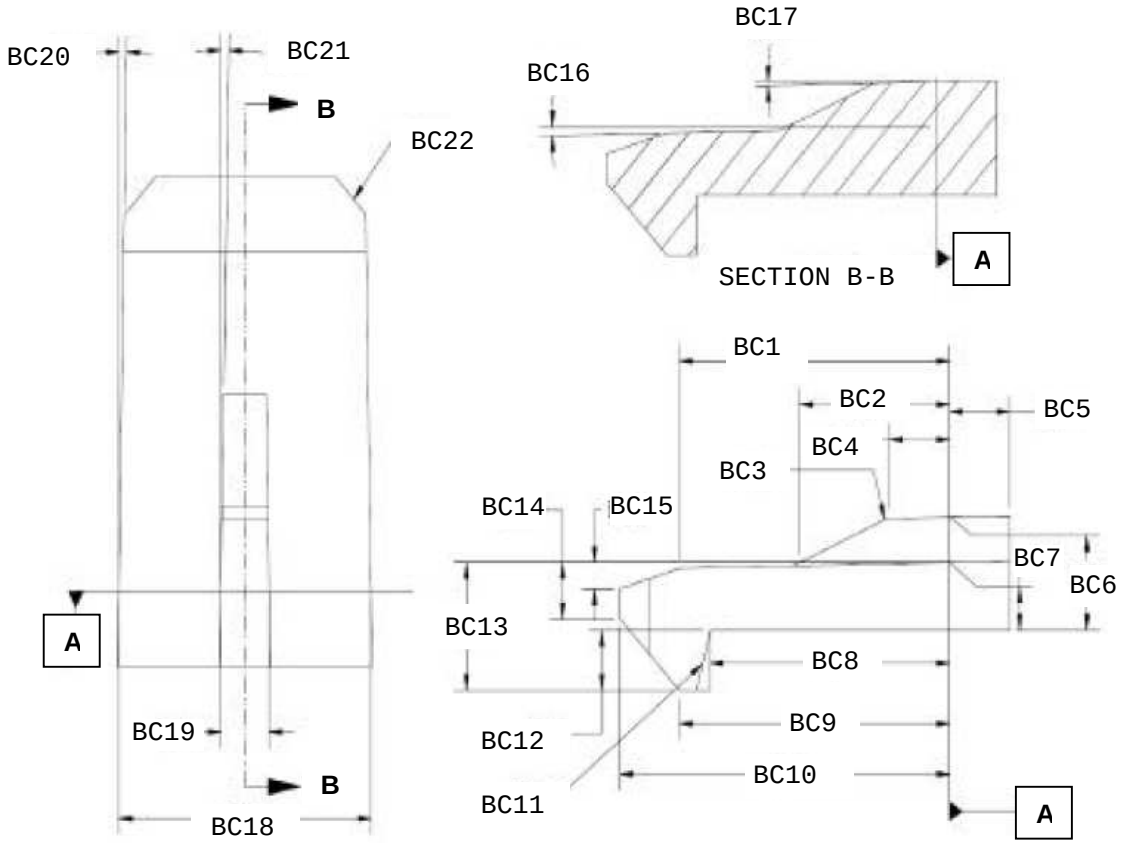


FIGURE 0-3 SNAP 1 CANTILEVER CONNECTOR

TABLE 0-3 SNAP 1 CANTILEVER CONNECTOR DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BC1	4.50	± .10	
BC2	2.50	± .10	
BC3	0.50		Radius
BC4	1.00	± .10	
BC5	X		see text
BC6	1.50	+.00/-.10	
BC7	0.90	± .10	
BC8	4.00	+.10/-.00	
BC9	4.50	± .10	
BC10	5.50	± .10	
BC11	0.5°		Max Degrees
BC12	0.80	± .05	
BC13	(1.7)		Reference
BC14	0.75	± .10	
BC15	0.35	± .10	
BC16	1.0°		Degrees
BC17	1.0°		Degrees
BC18	3.40	± .10	
BC19	0.80	± .10	
BC20	1.0°		Degrees
BC21	1.0°		Degrees
BC22	2 - 45° X .50		Degrees

1.9.2.2 Snap 1 Location

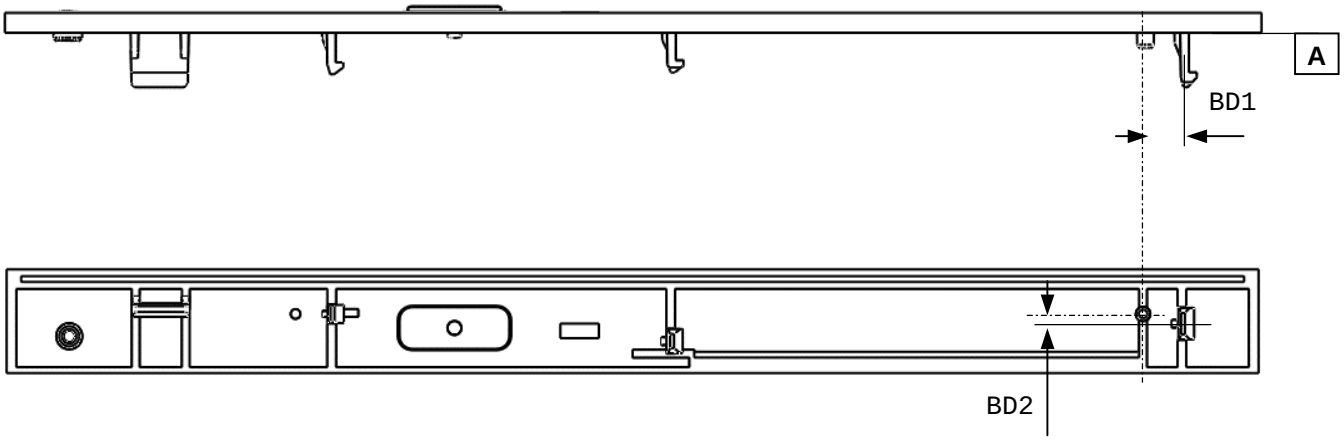


FIGURE 0-4 SNAP 1 LOCATION

TABLE 0-4 SNAP 1 LOCATION DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BD1	4.50	+.00/-.10	
BD2	1.00	± .10	

1.9.3 Bezel Snap Number 2 Definition

1.9.3.1 Snap 2 Dimensions

Snap number one shall be a cantilever snap connector. Datum A represents the back surface of the bezel. This surface makes contact with the surface of the tray.

Dimension X is a variable dimension. It may scale from 0.0mm in the case where the bezel is not cored, to value X where the bezel is cored.

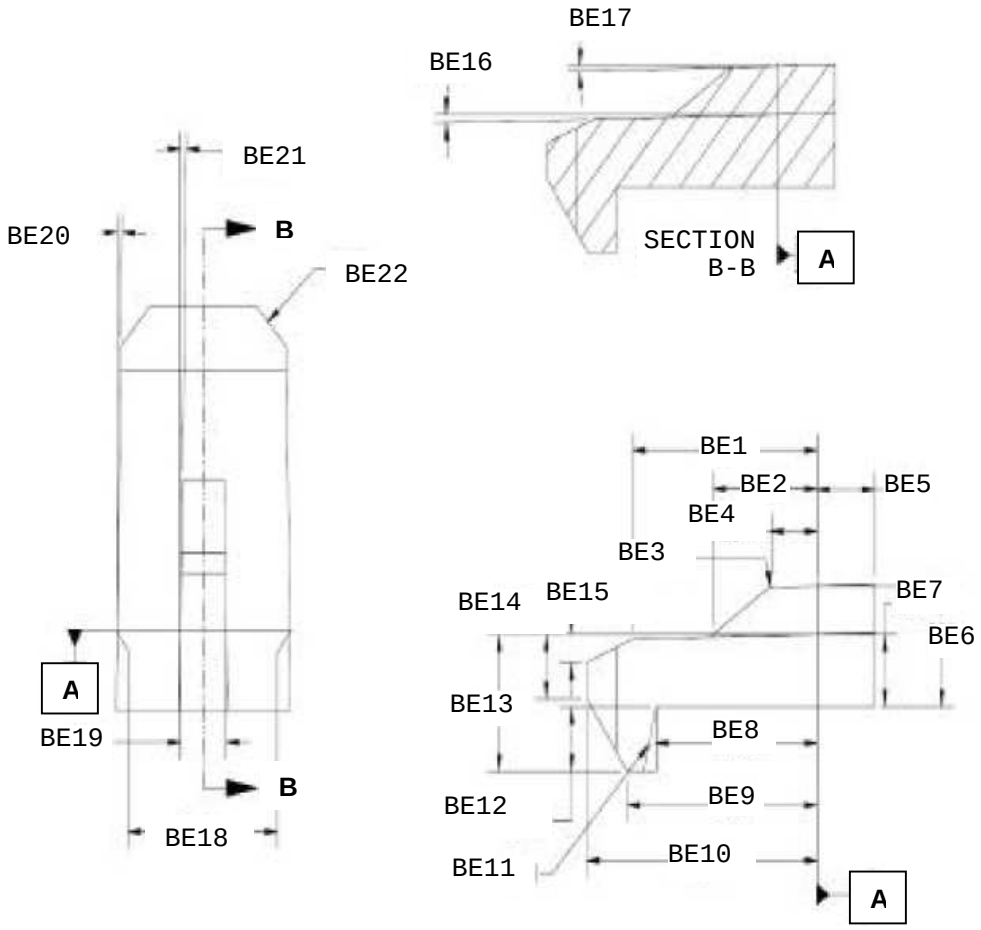


FIGURE 0-5 SNAP 2 CANTILEVER CONNECTOR

TABLE 0-5 SNAP 2 CANTILEVER CONNECTOR DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BE1	3.20	± .10	
BE2	1.80	± .10	
BE3	R0.5		Radius
BE4	0.80	± .10	
BE5	X		see text
BE6	1.40	+.00/-.10	
BE7	0.90	± .10	
BE8	2.80	+.10/-.00	
BE9	3.30	± .10	
BE10	4.00	± .10	
BE11	0.5°		Max Degrees
BE12	0.80	± .05	
BE13	(1.7)		Reference
BE14	0.80	± .10	
BE15	0.40	± .10	
BE16	1.0°		Degrees
BE17	1.0°		Degrees
BE18	2.60	± .10	
BE19	0.80	± .10	
BE20	1.0°		Degrees
BE21	1.0°		Degrees
BE22	2-45° ×0.5		Degrees

1.9.3.2 Snap 2 Location

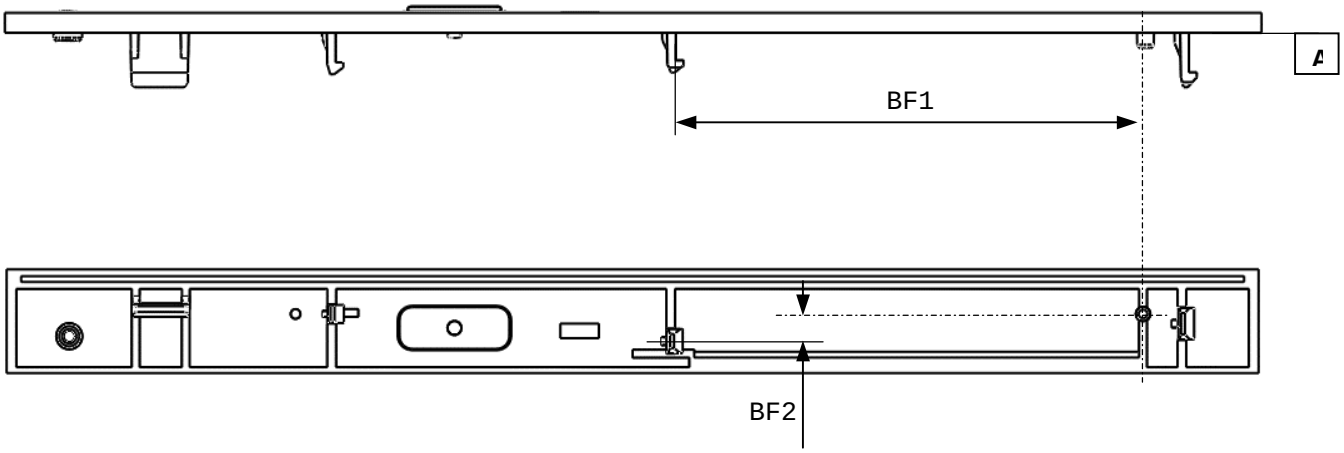


FIGURE 0-6 SNAP 2 LOCATION

TABLE 0-6 SNAP 2 LOCATION DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BF1	48.60	+.10/-.00	
BF2	2.80	± .10	

1.9.4 Bezel Snap Number 3 Definition

1.9.4.1 Snap 3 Dimensions

Snap number three shall be a cantilever snap connector. Datum A represents the back surface of the bezel. This surface makes contact with the surface of the tray. Dimension X is a variable dimension. It may scale from 0.0mm in the case where the bezel is not cored, to value X where the bezel is cored.

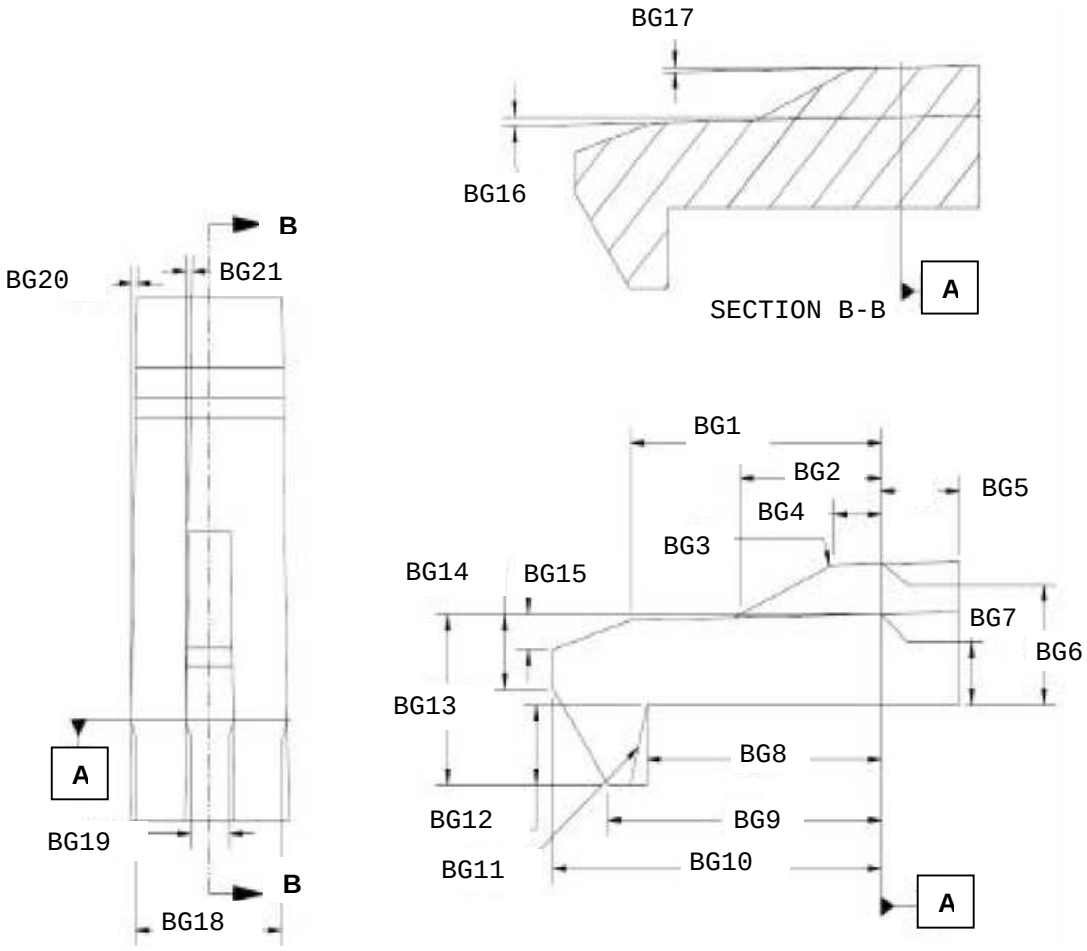


FIGURE 0-7 SNAP 3 CANTILEVER CONNECTOR

TABLE 0-7 SNAP 3 CANTILEVER CONNECTOR DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BG1	3.20	± .10	
BG2	1.80	± .10	
BG3	0.50		Radius
BG4	0.60	± .10	
BG5	X		see text
BG6	1.40	+.00/-.10	
BG7	0.90	± .10	
BG8	3.00	+.10/-.00	
BG9	3.50	± .10	
BG10	4.20	± .10	
BG11	0.5°		Max Degrees
BG12	0.80	± .05	
BG13	(1.7)		Reference
BG14	0.75	± .10	
BG15	0.35	± .10	
BG16	1.0°		Degrees
BG17	1.0°		Degrees
BG18	2.00	± .10	
BG19	0.60	± .10	
BG20	1.0°		Degrees
BG21	1.0°		Degrees

1.9.4.2 Snap 3 Location

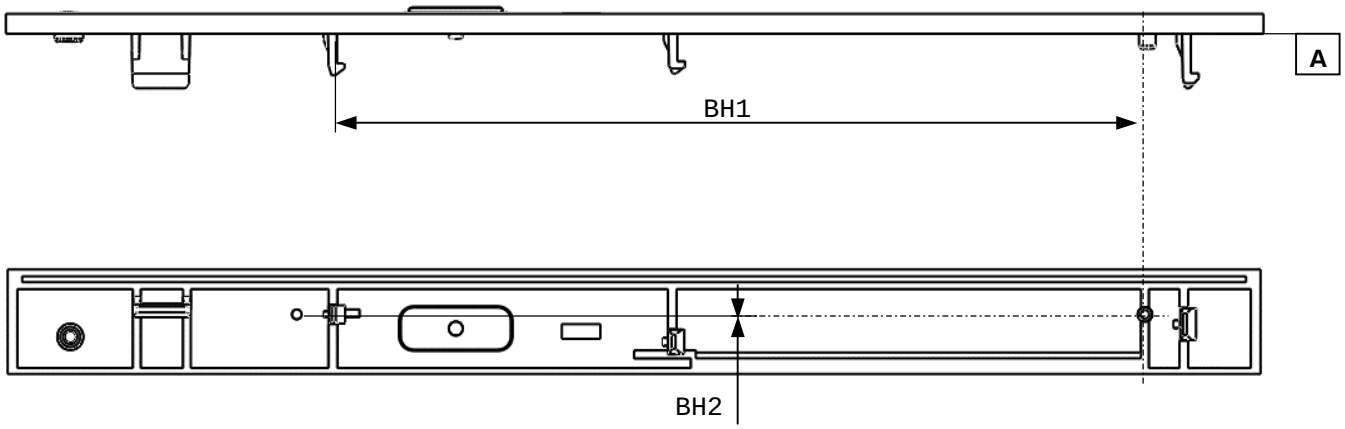


FIGURE 0-8 SNAP 3 LOCATION

TABLE 0-8 SNAP 3 LOCATION DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BH1	83.80	+.10/-.00	
BH2	0.00	± .10	

1.9.5 Bezel Snap Number 4 Definition

1.9.5.1 Snap 4 Dimensions

Snap number four shall be a cantilever snap connector.

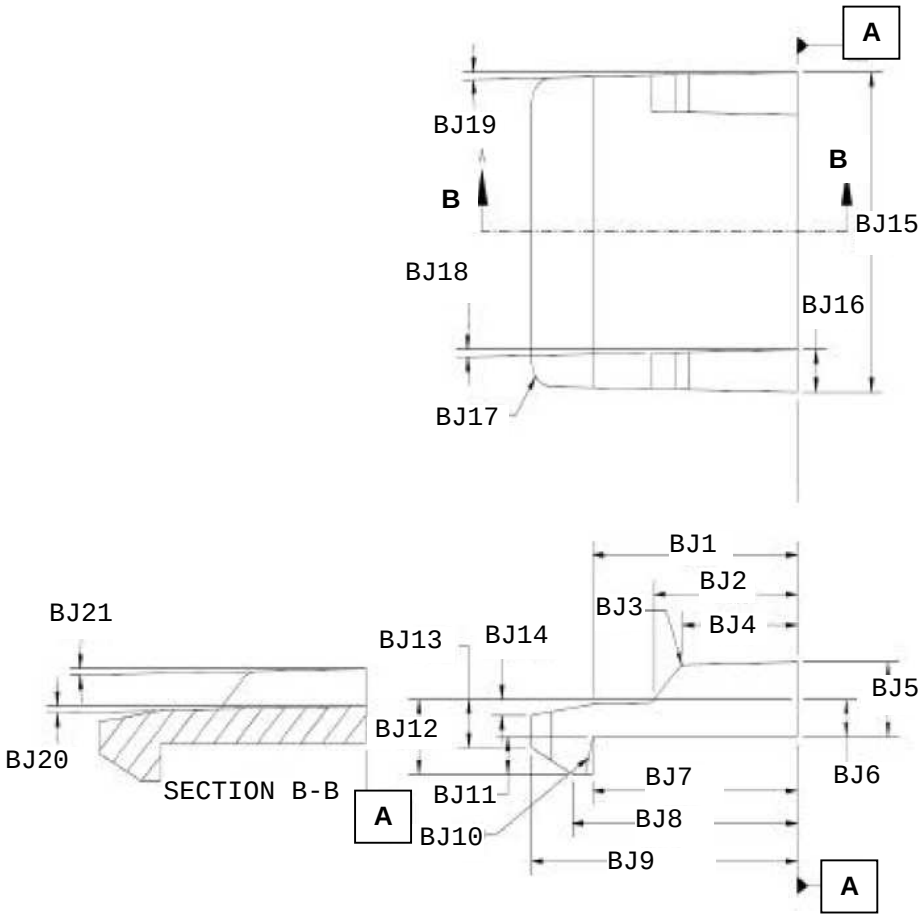


FIGURE 0-9 SNAP 4 CANTILEVER CONNECTOR

TABLE 0-9 SNAP 4 CANTILEVER CONNECTOR DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BJ1	4.00	± .10	
BJ2	2.50	± .10	
BJ3	2 – R.5		Radius
BJ4	1.80	± .10	
BJ5	1.40	+.00/-.10	
BJ6	(0.7)		Reference
BJ7	4.00	+.10/-.00	
BJ8	4.50	± .10	
BJ9	5.50	± .10	
BJ10	0.5°		Max Degrees
BJ11	0.70	± .05	
BJ12	1.40	± .10	
BJ13	0.90	± .10	
BJ14	0.30	± .10	
BJ15	6.00	± .10	
BJ16	2 - 0.80	± .10	
BJ17	2 - R0.5		Radius
BJ18	1.0°		Degrees
BJ19	1.0°		Degrees
BJ20	1.0°		Degrees
BJ21	1.0°		Degrees

1.9.5.2 Snap 4 Location

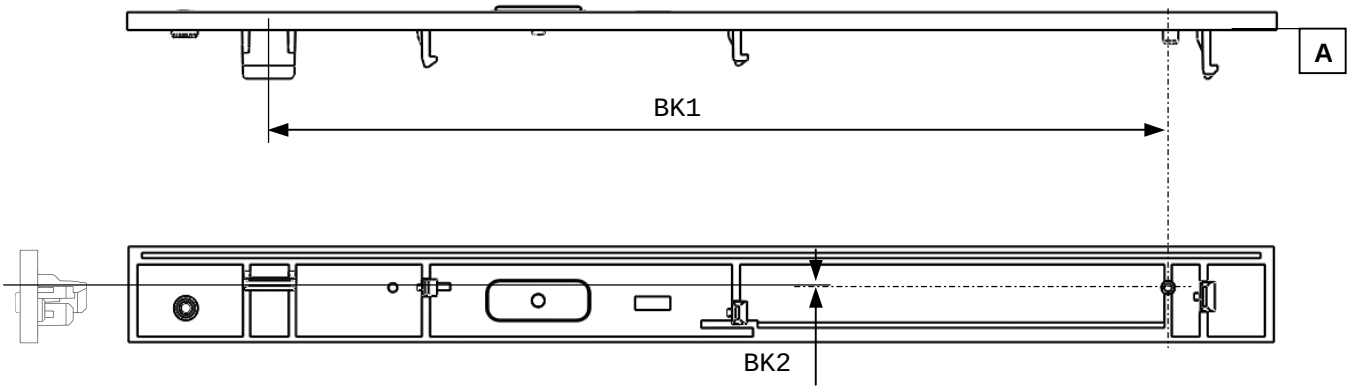


FIGURE 0-10 SNAP 4 LOCATION

TABLE 0-10 SNAP 4 LOCATION DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BK1	102.00	± .10	
BK2	0.40	± .10	

1.9.6 Datum A Definition

The plane, Datum A, may not have any feature break its plane from the bezel except for the features defined in this specification that are attached to the bezel.

1.9.6.1 Implementers Note

Flex cables are used to attach the LED and eject buttons. Dimension BL2 should be a minimum of 0.7mm for a compliant bezel so that the button may not cross Datum A when pressed. If a bezel supplier cannot meet dimension BL2 specification due to a thin bezel design (causes cosmetic issues, etc.), a bezel designed specifically to meet the drive requirements may needed.

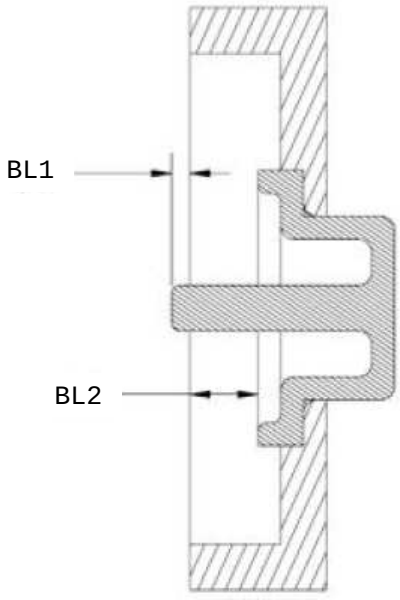


FIGURE 0-11 BL2

TABLE 0-11 BL2 DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BL1	0.40	+.00/-.10	
BL2	0.70	Min	

1.9.7 Button and LED

1.9.7.1 Button Position and LED

The button activation pin’s length is defined as 0.4 +0.0 /-0.1mm from the back plane of the bezel in Detail B.

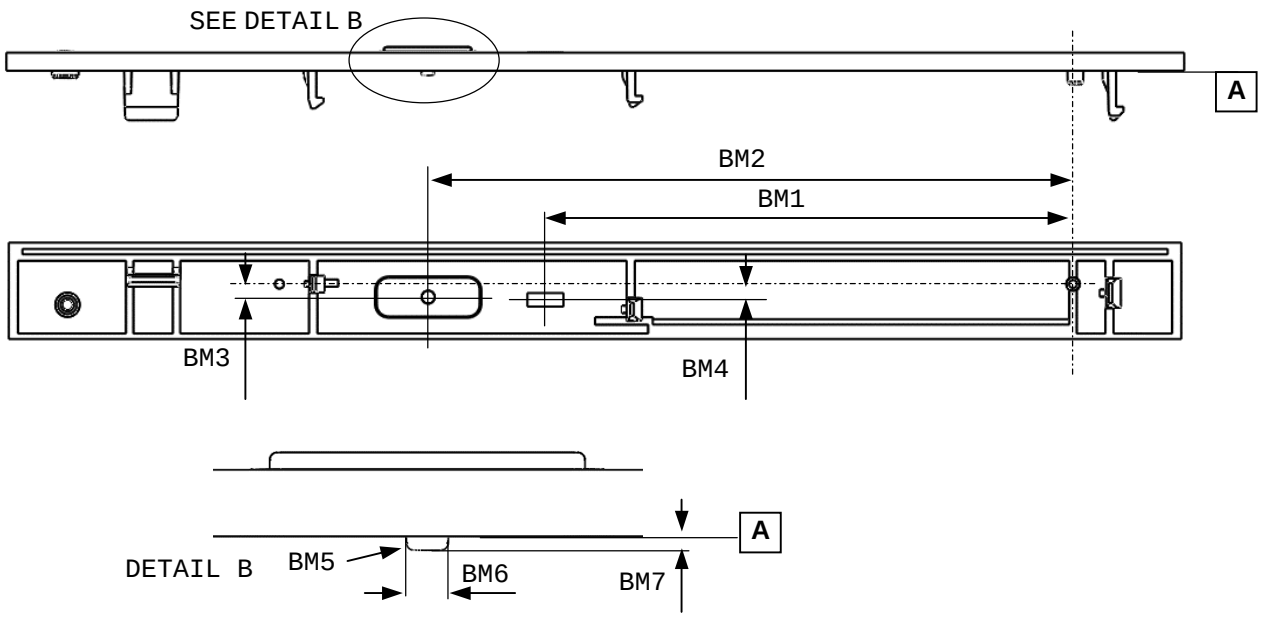


FIGURE 0-12 BUTTON POSITION

TABLE 0-12 BUTTON POSITION DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BM1	58.50	± .10	
BM2	71.50	± .10	
BM3	1.45	± .10	
BM4	1.75	± .10	
BM5	45° × 0.20	Min	Degrees
BM6	1.0 - 1.2		
BM7	.40	+.00/-.10	

1.9.8 Emergency Eject

1.9.8.1 Emergency Eject Hole Location

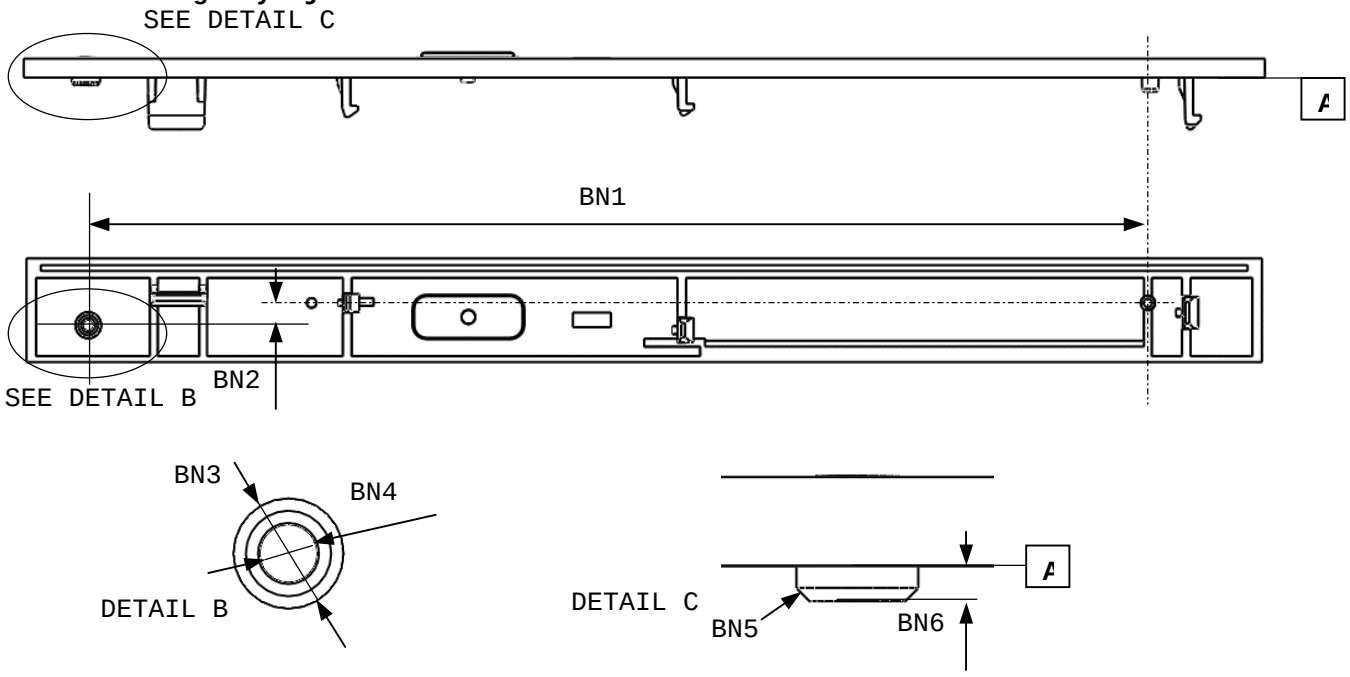


FIGURE 0-13 EMERGENCY EJECT HOLE LOCATION

TABLE 0-13 EMERGENCY EJECT HOLE LOCATION DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BN1	111.50	± .10	
BN2	2.30	± .10	
BN3	2.70	± .10	
BN4	1.50	± .10	
BN5	45° × 0.30		Degrees
BN6	.80	± .10	

1.9.8.2 Emergency Eject Tube

The emergency eject tube is defined as a cylindrical protrusion behind the emergency eject hole in the bezel to guide the emergency eject tool to the emergency eject mechanism. This tube’s inside diameter is defined to be as large as the emergency eject hole (1.50 +/- 0.1mm). The tube’s external diameter shall be 2.7 +/- 0.1mm as seen in Detail B of Figure 6-13. The Distance the tube extends from the back of the bezel shall be 0.8 +/- 0.1mm from the back plane of the bezel as seen in Detail C in Figure 6-13.

1.9.9 Clearance for Pickup Unit Module (PUM)

1.9.9.1 Location of Recessed Area

This is the area in the bezel where there is a defined recess for the PUM.

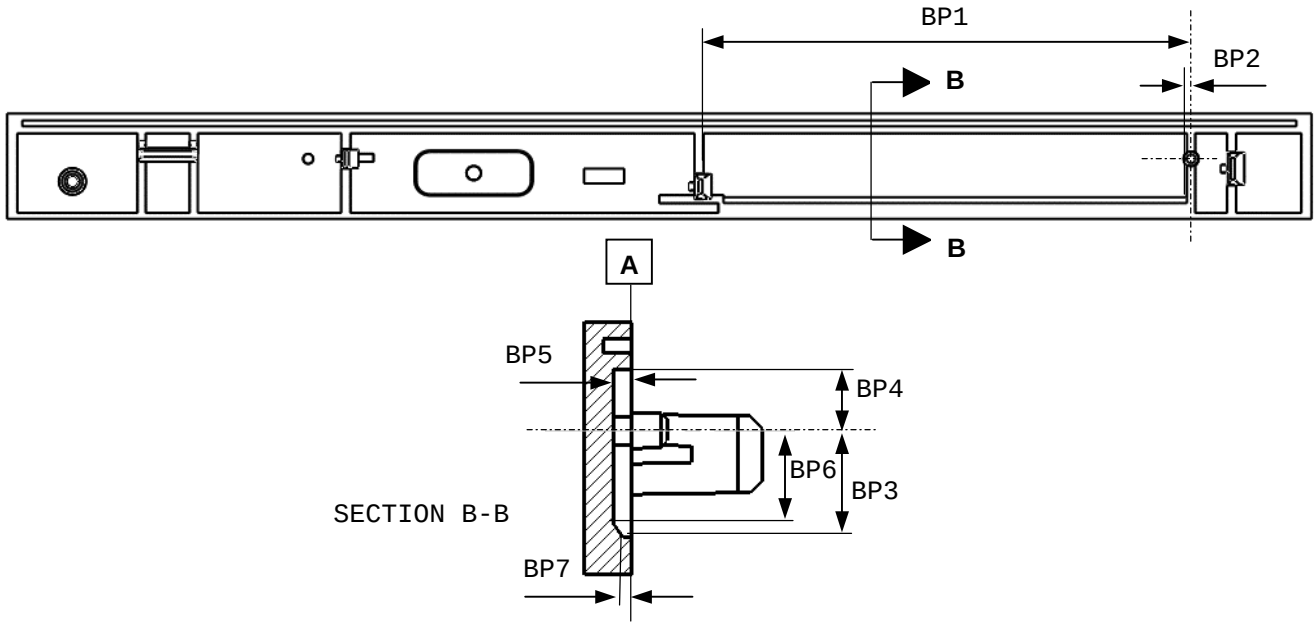


FIGURE 0-14 LOCATION OF RECESSED AREA

TABLE 0-14 LOCATION OF RECESSED AREA DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BP1	46.60	Min.	
BP2	1.60	Max.	
BP3	4.50	Min.	
BP4	2.60	Min.	
BP5	.80	Min.	
BP6	X	Min.	
BP7	X	Min.	

1.10 Tray Side Specifications

1.10.1 Grounding Touch point
The entire case of the optical drive shall provide a path to ground.

1.10.2 Tray Datum
Nothing except the LED from the tray side is allowed to cross Datum B.

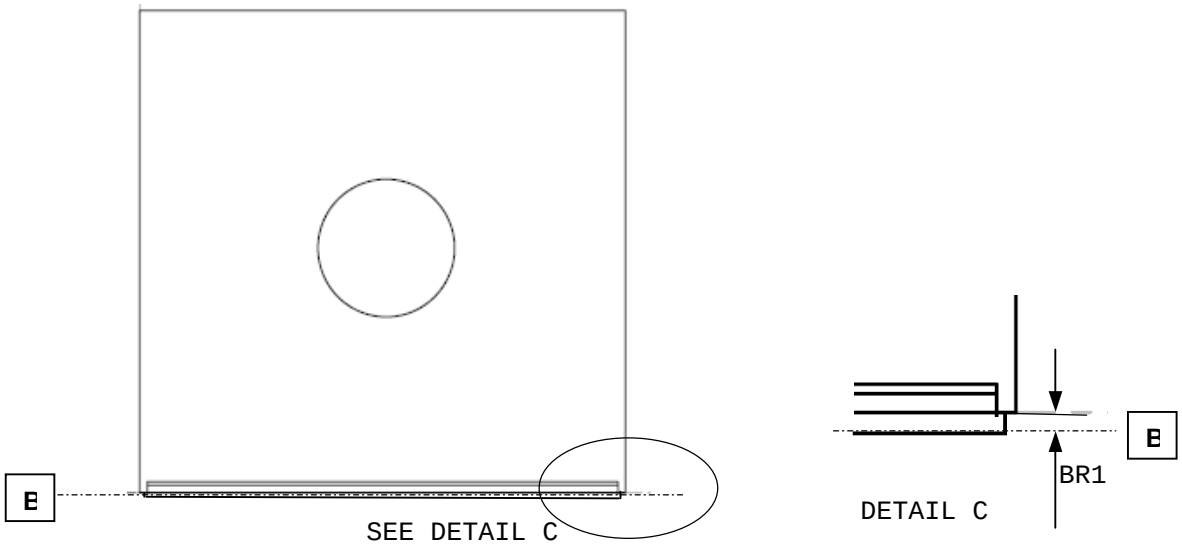


FIGURE 0-15 DATUM B

TABLE 0-15 DATUM B DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BR1	.90	± .20	

1.10.2.1 Tray Protrusion
The tray shall protrude out of the chassis of the drive 0.9mm +/–0.2mm.

1.10.2.2 Location of Alignment Pin Hole, Switch and LED
The crosshatched circle represents the switch, and the crosshatched rectangle represents the LED. The shapes are not intended to define the physical appearance of the switch and/or LED but are placeholders for reference.

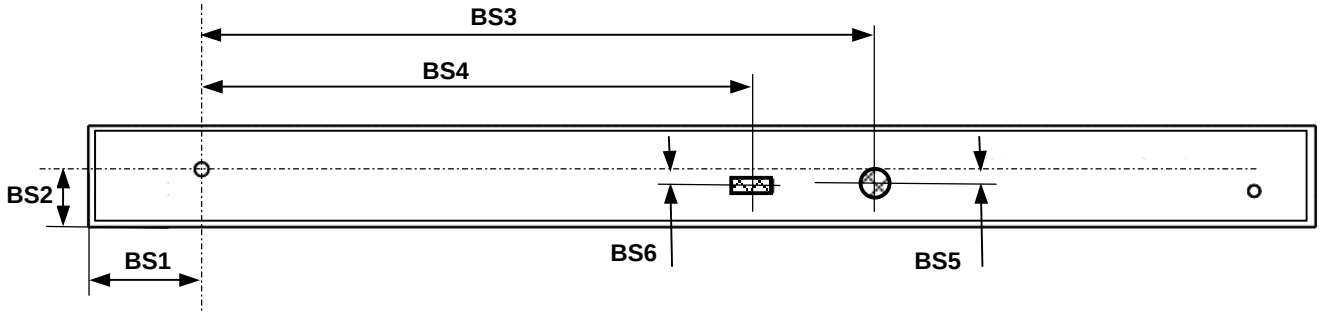


FIGURE 0-16 LOCATION OF ALIGNMENT PIN HOLE, SWITCH AND LED

TABLE 0-16 LOCATION OF ALIGNMENT PIN HOLE, SWITCH AND LED DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BS1	11.00	± .20	
BS2	5.10	± .20	
BS3	71.50	± .30	
BS4	58.50	± .30	
BS5	1.45	± .30	
BS6	1.75	± .30	

1.10.2.3 Button Position/Activation Points

Figure 6-12 defines the position of the button in the X and Y axis. For the Z-axis the button shall be sub-flush of Datum B by 0.6 +/- 0.15mm. The button shall activate when depressed within a range of 0.05mm to 0.35mm.

1.10.2.4 LED Position

Figure 6-12 defines the position of the LED in the X and Y axis. For the Z-axis the LED may only protrude a maximum of 0.2mm from the front plane of the tray, Datum B. The bezel shall allow for a LED that protrudes this far.

1.10.3 Rib Touch Points

1.10.3.1 Position of Touch Points

For cored bezels that need more stability, touch points are defined that guarantee areas on the tray that shall cause no issues when contacted by a rib or ribs on the bezel. Bezel rib contact is allowed in the areas without cross-hatching.

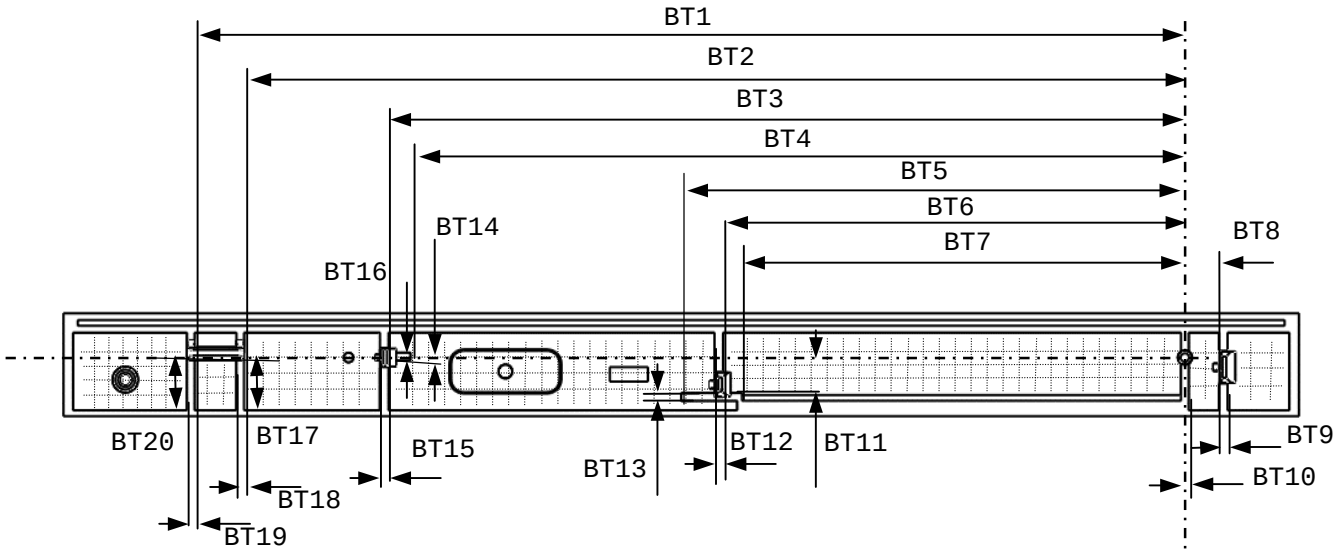


FIGURE 0-17 POSITION OF TOUCH POINTS

TABLE 0-17 POSITION OF TOUCH POINTS DIMENSIONS

Designator	Dimension (mm)	Tolerance (mm)	Notes
BT1	104.20		
BT2	99.00		
BT3	83.80		
BT4	81.50		
BT5	53.00		
BT6	48.60		
BT7	46.60		
BT8	3.60		
BT9	0.90	Min.	
BT10	0.80	Min.	
BT11	3.70		
BT12	0.90	Min.	
BT13	0.80		
BT14	0.30		
BT15	0.90	Min.	
BT16	0.80	Min.	
BT17	-		to edge
BT18	0.80	Min.	
BT19	0.80	Min.	
BT20	-		to edge