



Yosemite V3: E1.S Faceplate Reference Design Specification

Version 1.1

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1 OCP

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2 Scope

This specification describes the design of the E1.S faceplate used on Facebook server platforms including Yosemite V3.

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4 Overview

This document describes the E1.S faceplate design used in Facebook server and storage products. The intent of this document to provide a reference design for system designers to leverage, as they design systems with E1.S modules. While the designs described in this document meet the needs of Facebook's infrastructure, Facebook does not guarantee any performance numbers, testing standards, or reliability metrics related to the design defined herein.

This document will describe two different faceplate designs intended for:

1. 1U short form factor with optional symmetric enclosure (as defined in section 5.4 of SFF-TA-1006)
2. 1U short form factor with optional asymmetric (25mm) enclosure (as defined in section 5.5 of SFF-TA-1006)

In figure 5-1 below, you can see the E1.S faceplate design for optional 25mm asymmetric enclosure.

In figure 5-2 below, you can see the E1.S faceplate design for optional 9.5mm symmetric enclosure.

Note that these two form factors share all parts in common except the die cast front covers (BOM Item #1 in Figure 6-2).

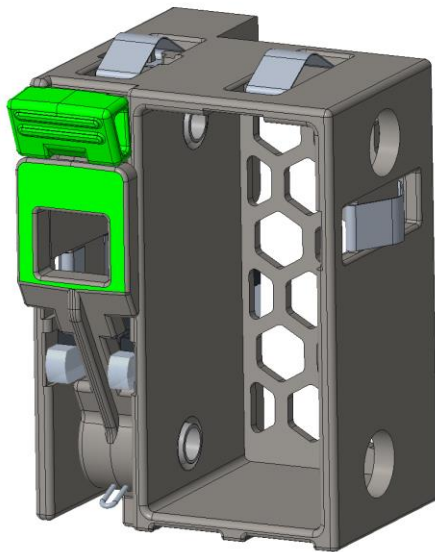


Figure 4-1 – Faceplate design for Optional 25mm Asymmetric Enclosure

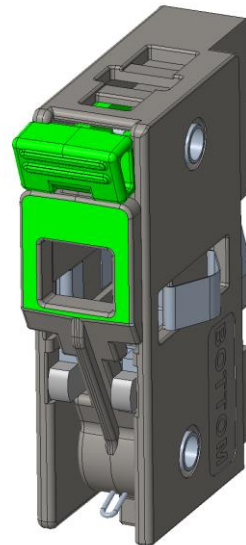


Figure 4-2 – Faceplate design for Optional 9.5mm Symmetric Enclosure

E1.S Faceplate Reference Design

The faceplates described in this specification define the following features:

1. The ejector and latch release mechanism
2. The light pipe design
3. The EMI containment provisions

In figure 5-3, you can see a reference implementation of the E1.S faceplates in a server design.

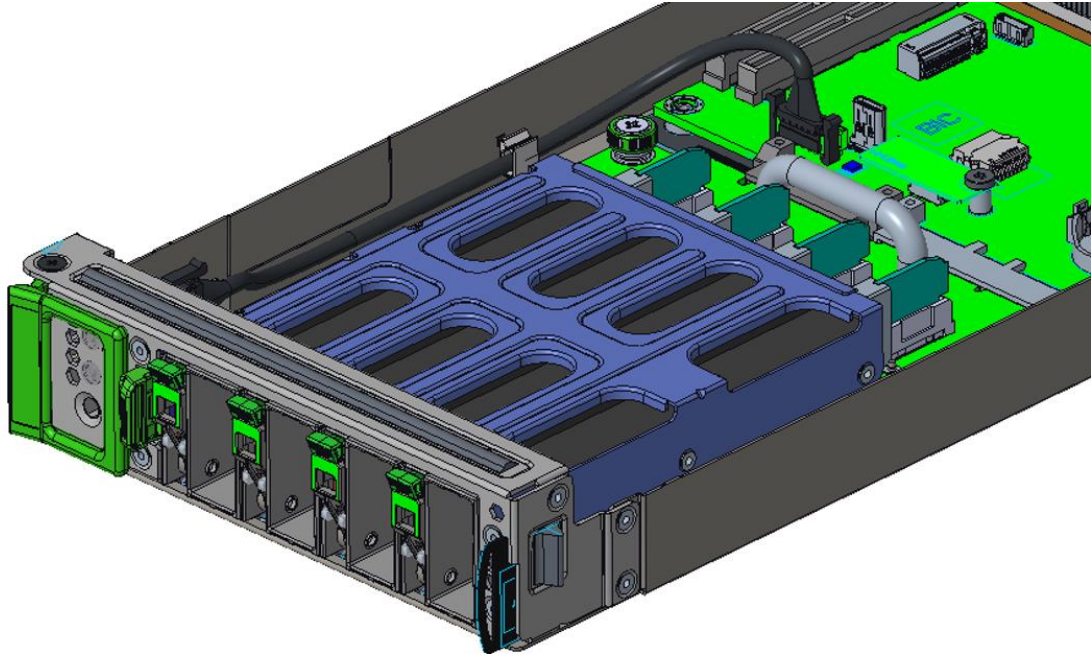


Figure 4-3 Example Implementation of E1.S Faceplate in System

4.1 Reference Documents

SFF-TA-1002: Protocol Agnostic Multi-Lane High Speed Connector (SNIA)

SFF-TA-1006: Enterprise and Datacenter 1U Short SSD Form Factor (E1.S) (SNIA)

SFF-TA-1009 – Enterprise and Datacenter SSD Pin and Signal Specification (SNIA)

Facebook Indicator Specification Version 1.0 (Facebook)

Yosemite V3: Facebook Multi-Node Server Platform Design Specification (Facebook)

Yosemite V3: Yosemite V3: Delta Lake 1S Server Design Specification (Facebook)

Yosemite V3: Generic Expansion Design Specification (Facebook)

5 Mechanical

5.1 Assembly Drawings

Figure 6-1 shows an exploded view of the E1.S faceplate assembly. Each component is noted in the BOM in figure 6-2. Note that the faceplate assembly is attached to the E1.S drive with two M2.5 screws not shown in this BOM or document. The faceplate assembly dimensions and tolerances can be found in Figure 6-3.

The subsequent sections contain part drawings and descriptions of all major components. It is recommended that the latest CAD be used for part creation, and that the drawings contained within this document be used for tolerance definition and reference. The latest CAD can be found in the OCP storage group wiki. (←Verify this intended destination, consider adding link)

It is recommended that an assembly tool resembling a cylindrical rod is used to locate the springs (6 & 7) to the ejector (3) and latch button (4) while installing them to the front cover (1). The assembly tool is to be extracted from the right side as the pin (8) is installed from the left side.

Note that the mylar (5) is attached to the light pipe assembly (2) with adhesive and that its primary function is to reduce light noise and light pipe cross talk.

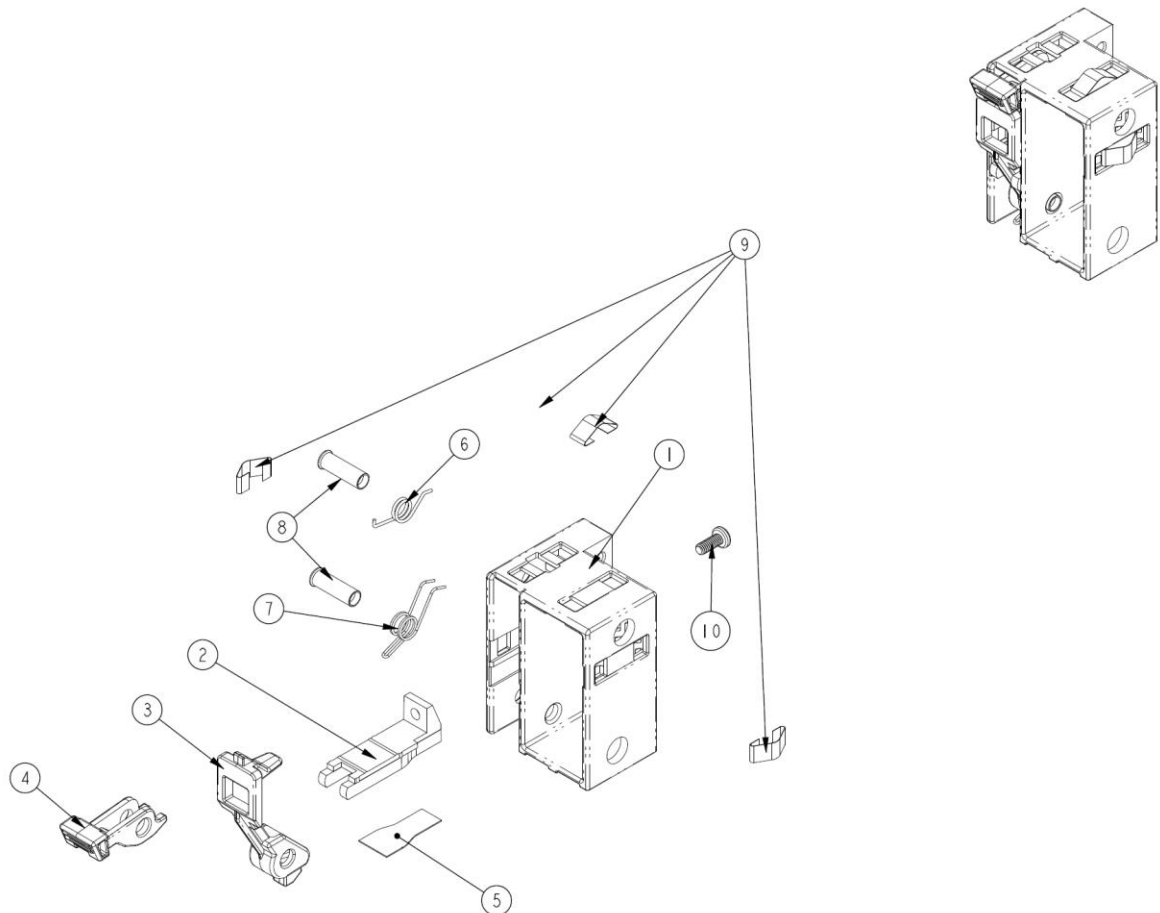


Figure 5-1 – Exploded View

E1.S Faceplate Reference Design

No.	Part Name	Material	Quantity
1	YOS_V3_EDSFF_FRONT_COVER	Zn	1
2	YOS_V3_EDSFF_LIGHT_PIPE_ASSY	Transparent:PC Black:PC+ABS	1
3	YOS_V3_EDSFF_LATCH_EJECTOR	Zn (Pantone 375C)	1
4	YOS_V3_EDSFF_LATCH_BUTTON	PC+ABS (Pantone 375C)	1
5	YOS_V3_EDSFF_FRONT_MYLAR	PC1860B+3M9448A (T=0.2mm)	1
6	YOS_V3_EDSFF_BUTTON_SPRING	Piano wire	1
7	YOS_V3_EDSFF_EJECTOR_SPRING	Piano wire	1
8	EDSFF-HANDLE_OPIN_STP	Pin	2
9	YOS_V3_EDSFF_EMI_SPRING_RE_V4	EMI Spring	4
10	YOS_V3_EDSFF_LIGHTPIPE_SCREW	Screw: M2xL5	1

Figure 5-2 – BOM

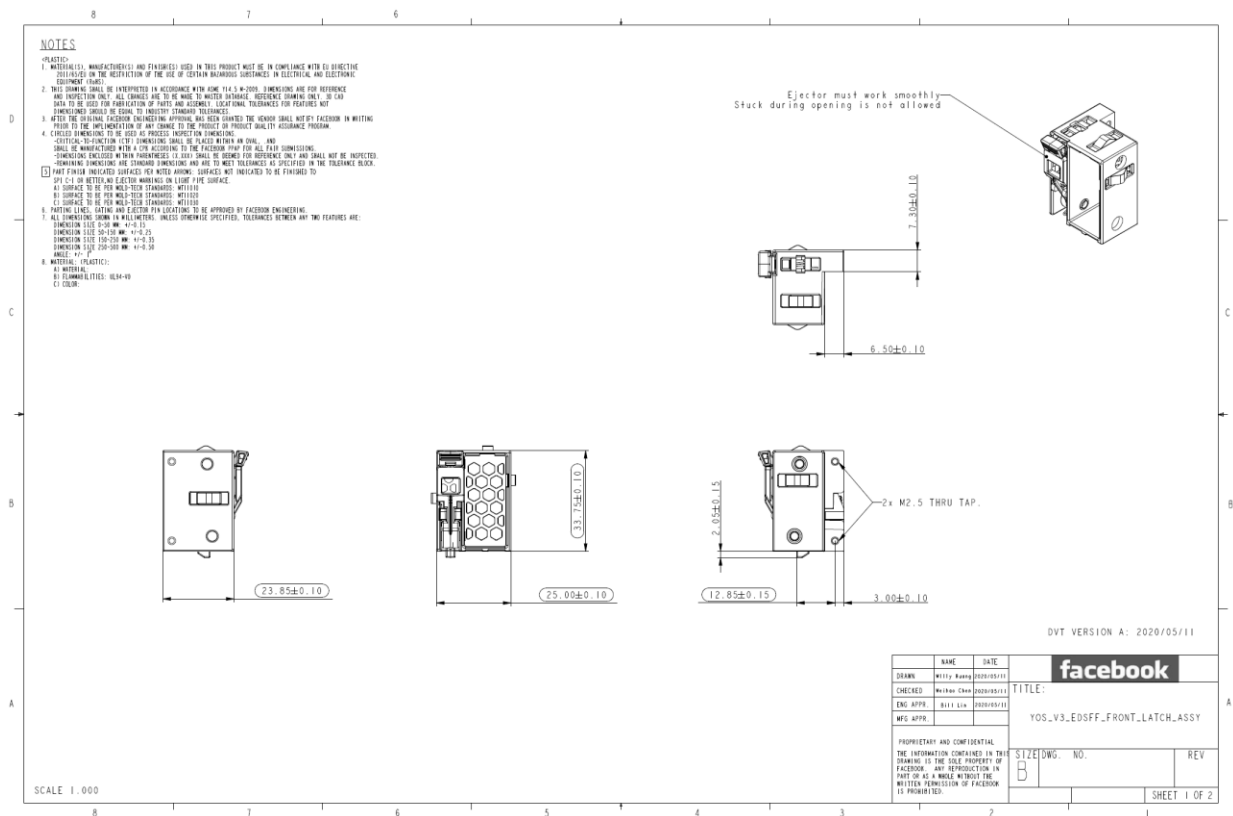


Figure 5-3 – Assembly Drawing

5.2 Front Cover

The 25mm asymmetrical faceplate can be seen in Figure 6-4. The 9.5mm symmetrical front cover can be seen in Figure 6-5. Since the 9.5mm drive is symmetrical, in some cases, it is helpful to add silkscreen to indicate drive orientation.

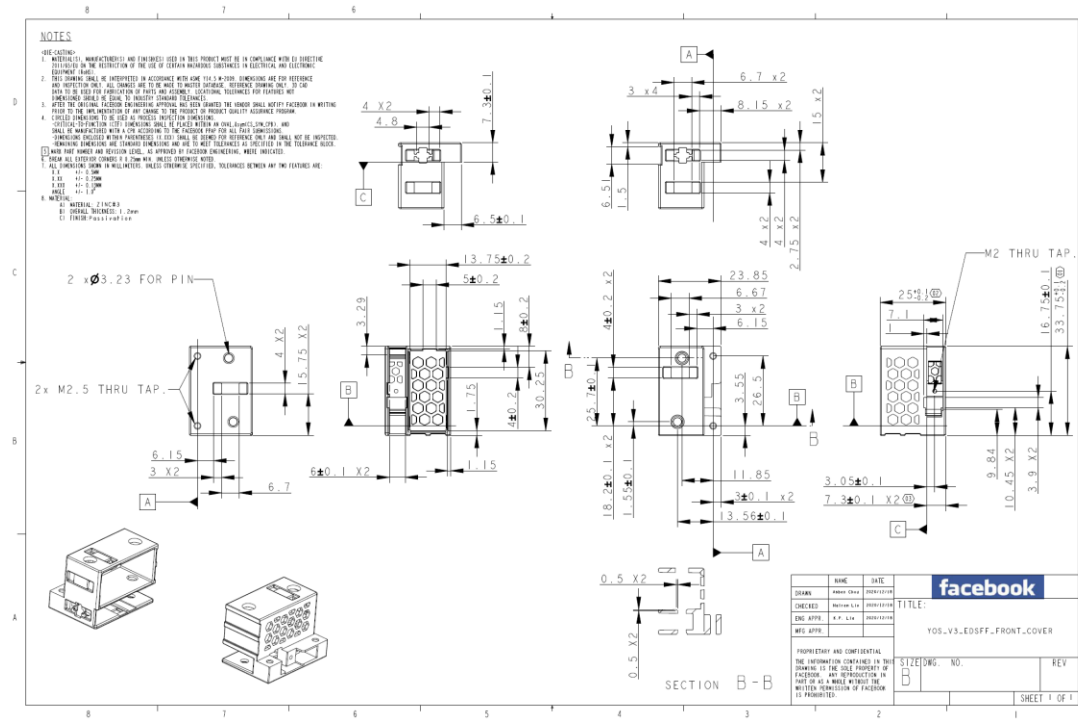


Figure 5-4 – 25mm Asymmetric Front Cover

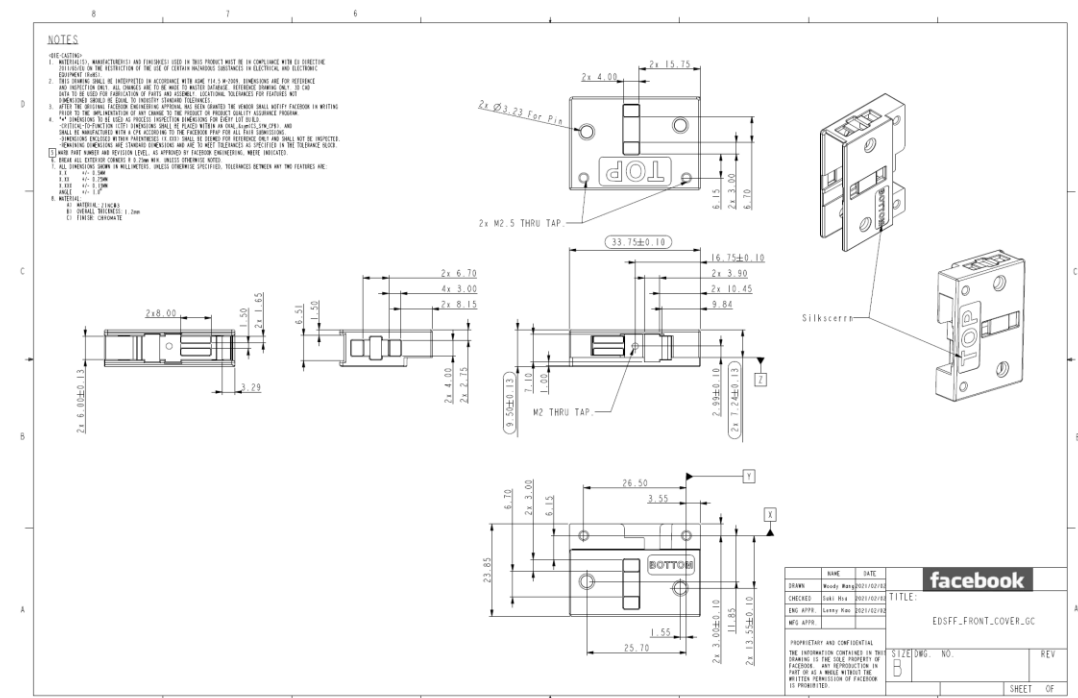


Figure 5-5 – 9.5mm Symmetric Front Cover

5.3 Light Pipe Assembly

The light pipe can be seen in Figure 6-6. Note that this design shows a 3-piece design where the clear polycarbonate light pipes are pressed into the black colored guide, which serves to hold the light pipes and keep the light separated. The surface polishing on the light intake side is needed to ensure adequate light brightness. The texture on the viewing surface improves the light uniformity.

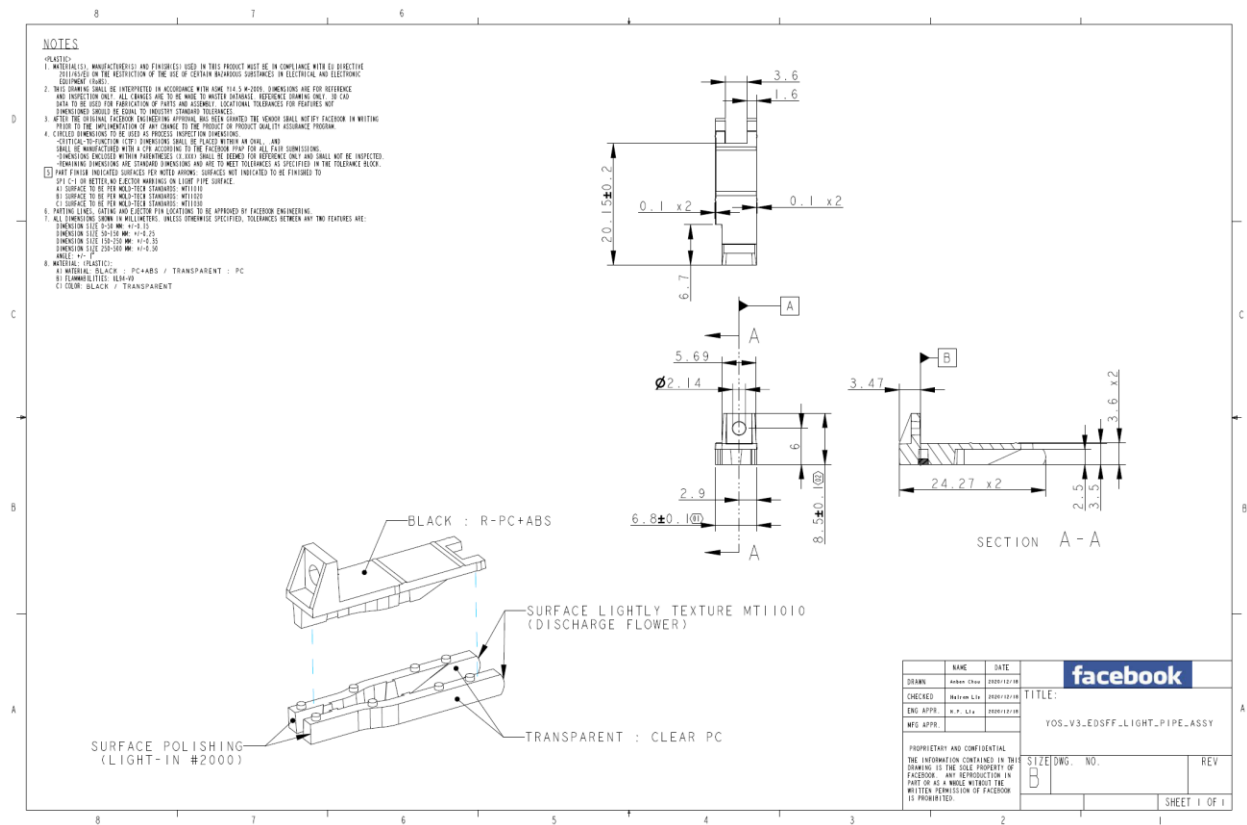


Figure 5-6 – Light Pipe Assembly

5.4 Ejector

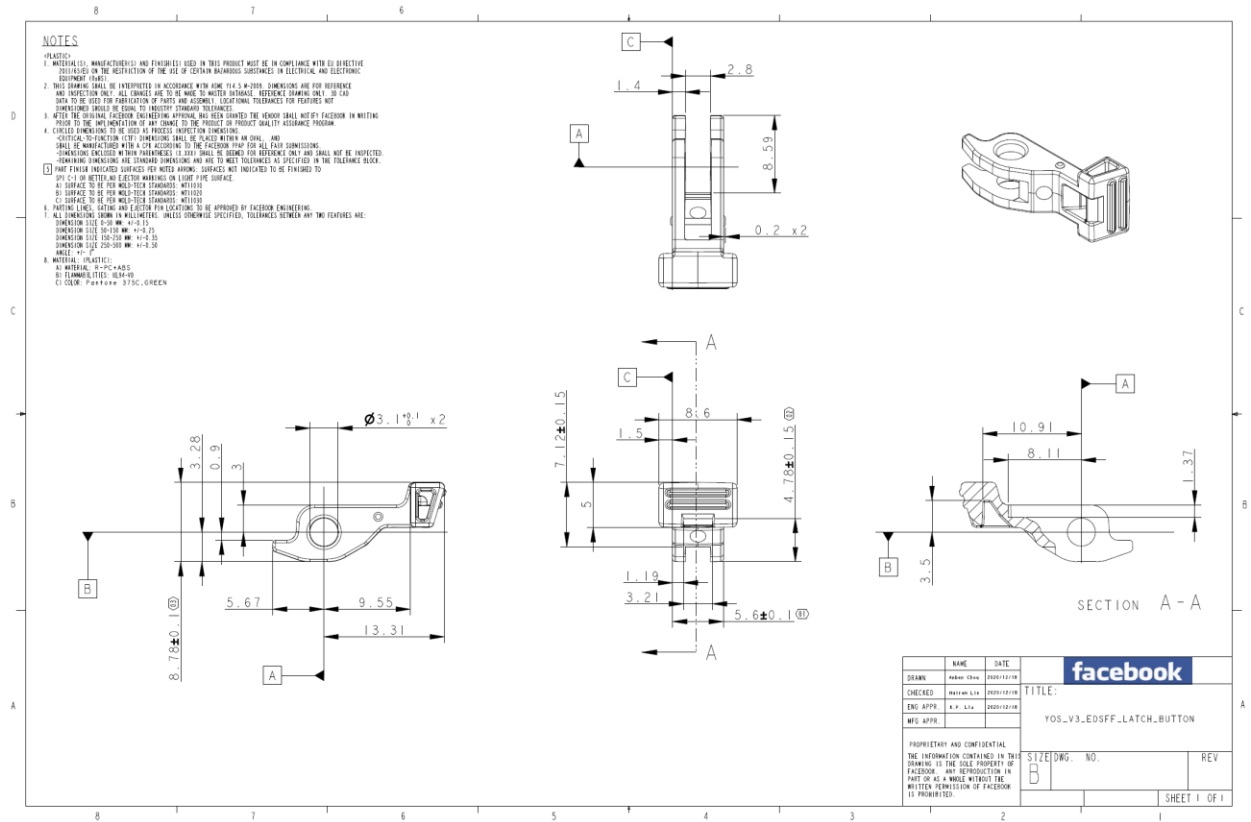
The ejector can be seen in figure 6-7. Only the top half of the ejector is painted while the bottom half is masked off to ensure no overspray, as the paint will affect the fit of the ejector in the front cover. Note that the ejector has two dimple features near the point of rotation. These features help define the fit of the ejector in the front cover. They can be easily modified in the tooling to achieve the desired 'tightness'.

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6 Revision History

Author	Description	Revision	Date
Michael Haken	▪ Initial draft	0.1	1/26/2021
Abe Garcia	▪ Minor phrasing updates	1.0	5/18/2021
Ross Stenfort	▪ Updated for publishing	1.1	7/29/2021

7 Appendix A

Requirements	Details	Link to which Section in Spec
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Did All the Contributors sign the appropriate license for this spec? Final Spec Agreement/HW License?	Yes	2 OCP
Which 3 of the 4 OCP Tenets are supported by	Efficiency	▪ Efficiency

E1.S Faceplate Reference Design

this Spec?	Scalability Openness Impact	Enables common design that can be used across multiple SKUs of E1.S devices and multiple SKUs of platforms. ▪ Scalability Enables easy front panel servicing. ▪ Openness Provides an open specification for and E1.S latch design to manage a standard E1.S device. This is the only open E1.S latch design FB is aware of. ▪ Impact This latch provides a standard building block for E1.S flash based storage boxes. This enables excellent thermals, servicing, scaling across device SKU's and platforms.
Is there a Supplier(s) that is building a product based on this Spec?	Yes	
Will Supplier(s) have the product available for GENERAL AVAILABILITY within 120 days?		

