

REVISION AND HISTORY

REV.	DESCRIPTION	PUB. DATE
-	Initial Release	09-21-10
A	Revised, rearranged, and added text to nearly all sections of document. Revised & renumbered figures. Added requirements on mechanical soft capture, soft capture sensors, HCS seals, hook stiffness, separation system, electrical bonding, environments, and materials. Added Docking Performance section, and Appendix A.	05-13-11
B	Document Hard Capture System parameter values, figure updates, separation system force addition, editorial correction and updates.	11-15-12
C	Document the narrow ring Soft Capture System (SCS) geometric parameters and update applicable figures. Added Appendix B on Magnetic Soft Capture.	11-20-13
D	<p>Revision D is the first version of the document under NASA configuration control and released by NASA ERU. Revision D includes the following DCNs:</p> <p>DCN 001 DCN 002 DCN 003 DCN 004C DCN 005 DCN 006 DCN 007 DCN 008A DCN 009B DCN 010 DCN 011 DCN 012 DCN 013</p>	08-04-15
E	<p>Revision E includes the following DCNs:</p> <p>DCN 014 DCN 015A DCN 017 DCN 018 DCN 020 DCN 021</p>	01-04-17

REVISION AND HISTORY

REV.	DESCRIPTION	PUB. DATE
	DCN 022 DCN 023 DCN 024 DCN 025 DCN 027A DCN 029 DCN 032 DCN 033 DCN 037 DCN 038 DCN 039 DCN 041A	

FROM:

3.2.2.4 MECHANICAL CAPTURE LATCH SYSTEM

The IDSS SCS interface includes three mechanical latch strikers to accommodate mechanical latching systems as shown in Figures 3.2.2-1 and 3.2.2-2. The mechanical latches and strikers shall conform to the definition of the Latch Striker for Mechanical Systems shown in Figures 3.2.2.4-1, Cross Sectional View through Centerline of Mechanical Latch Striker; 3.2.2.4-2, Radial View; and 3.2.2.4-3, Top View; and Figure 3.2.2.4-4, Active Mechanical Soft Capture Latch Interface.

TO:

3.2.2.4 MECHANICAL CAPTURE LATCH SYSTEM

The IDSS SCS interface includes three mechanical latch strikers to accommodate mechanical latching systems as shown in Figures 3.2.2-1 and 3.2.2-2. The mechanical latches and strikers shall conform to the definition of the Latch Striker for Mechanical Systems shown in Figures 3.2.2.4-1, Cross Sectional View through Centerline of Mechanical Latch Striker; 3.2.2.4-2, Radial View; and 3.2.2.4-3, Top View; and Figure 3.2.2.4-4, Active Mechanical Soft Capture Latch Interface. Interpretation of the dimensional parameters describing the mechanical capture latch striker is critical in terms of its performance. The ability of a visiting vehicle to achieve successful capture is highly dependent upon the implementation of the parameters as defined in the noted figures. A detailed explanation of the relationship between the interface dimensions defined in Figure 3.2.2.4-1 can be found in section 3.2.2.4.1.

FROM:

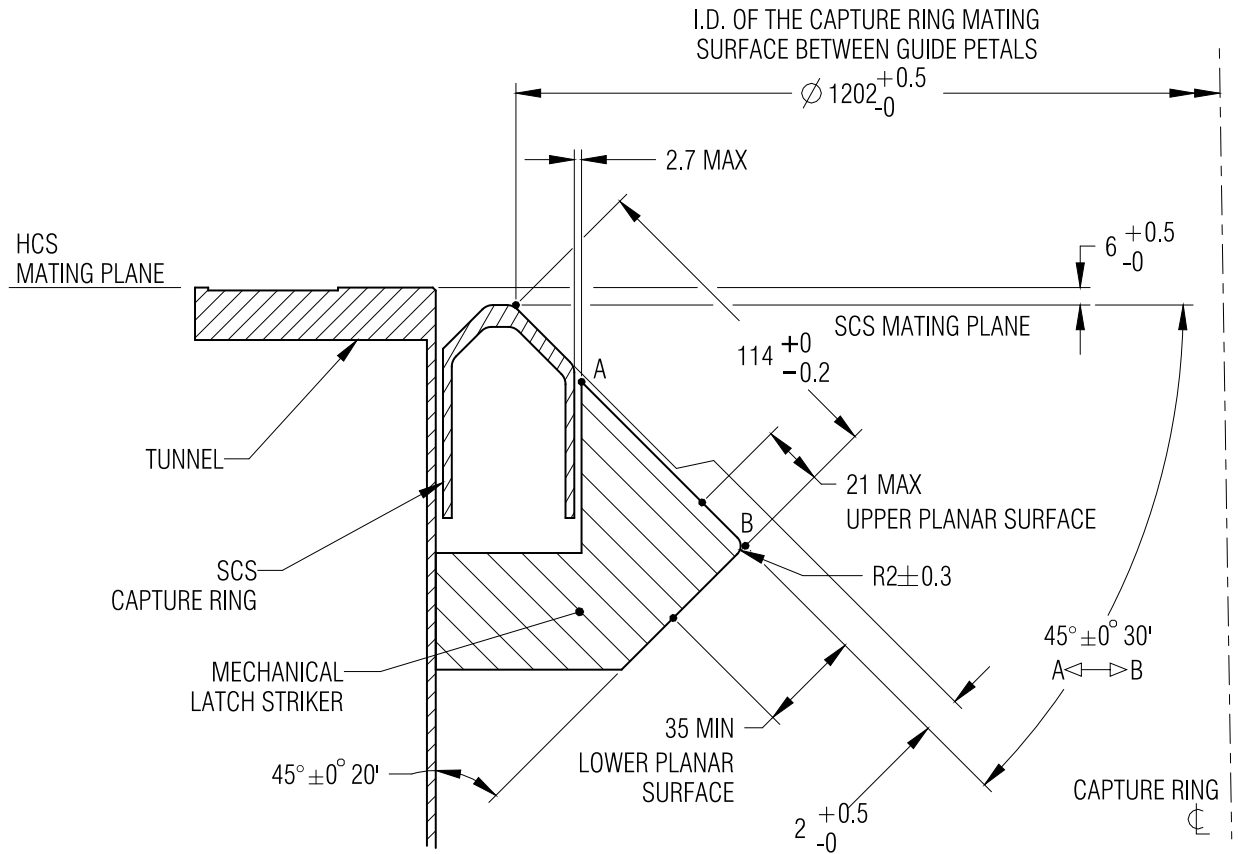


FIGURE 3.2.2.4-1 CROSS SECTIONAL VIEW THROUGH CENTERLINE OF MECHANICAL LATCH STRIKER

TO:

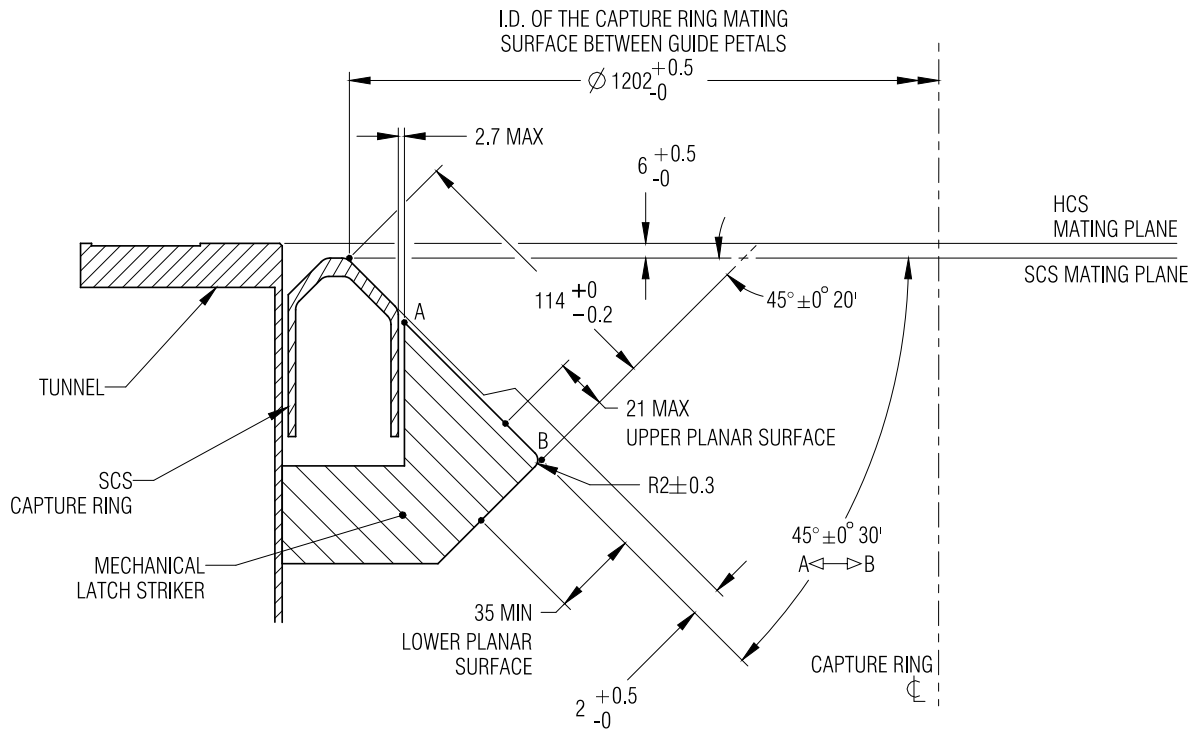
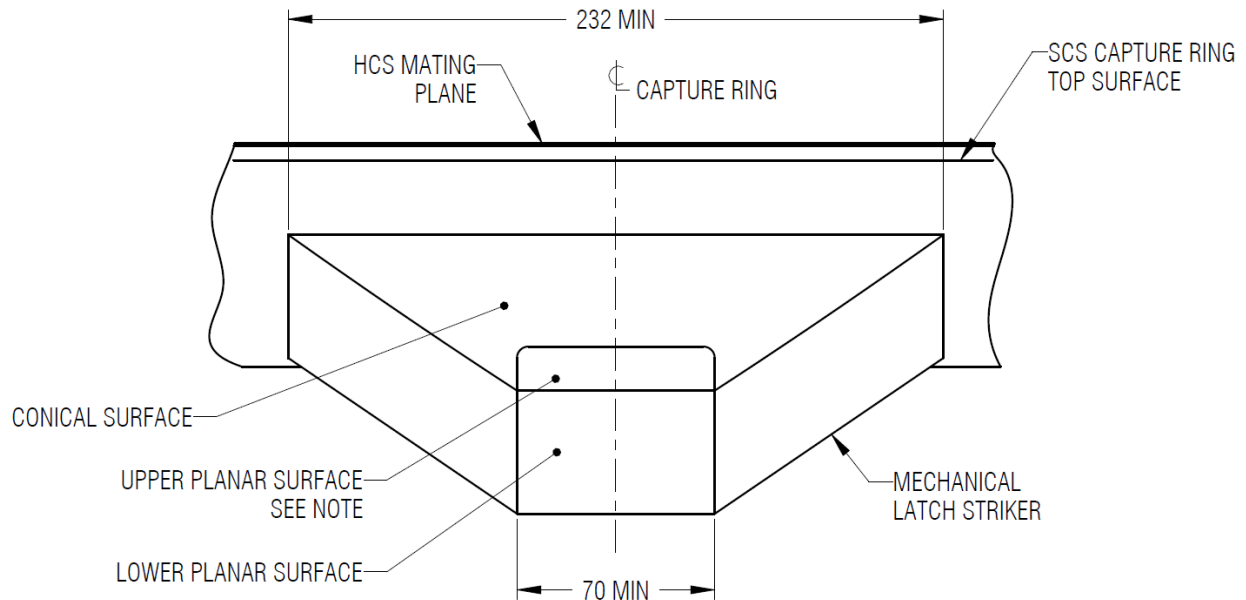


FIGURE 3.2.2.4-1 CROSS SECTIONAL VIEW THROUGH CENTERLINE OF MECHANICAL LATCH STRIKER

FROM:

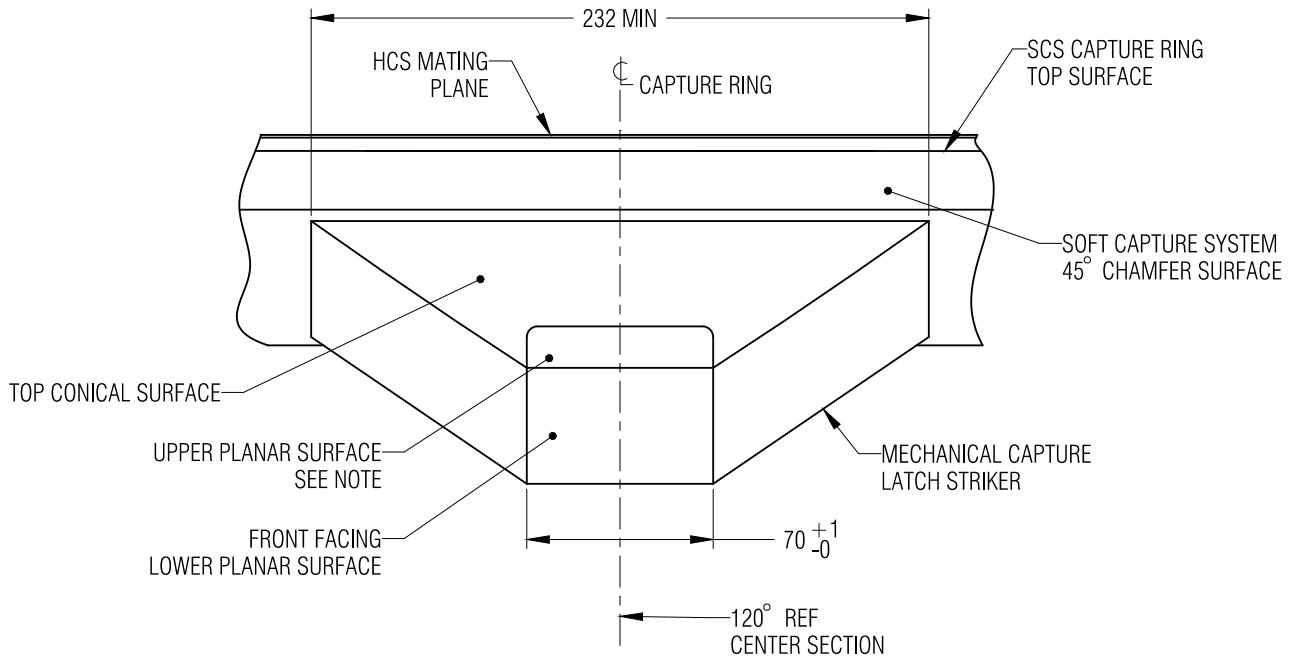


Notes:

1. All dimensions are linear dimensions.
2. Two orthogonal planar surfaces are required to form a straight edge at nose. The upper planar surface transitions into the Striker conical surface as required in such a way that the upper planar surface is either flush or slightly recessed below the conical surface. This will ensure there is no obstruction on the striker during SCS capture.

FIGURE 3.2.2.4-2 RADIAL VIEW

TO:



Notes:

1. All dimensions are linear dimensions.
2. Two orthogonal planar surfaces are required to form a straight edge at nose. The upper planar surface transitions into the mechanical capture latch striker conical surface as required in such a way that the upper planar surface is either flush or slightly recessed below the conical surface. This will ensure there is no obstruction on the striker during SCS capture.

FIGURE 3.2.2.4-2 RADIAL VIEW

ADD:

3.2.2.4.1 MECHANICAL CAPTURE LATCH STRIKER DIMENSIONS DESCRIPTION

The dimensional parameters that describe the mechanical capture latch striker and its location as shown in Section 3.2.2.4 and Figures 3.2.2.4-1, 3.2.2.4-2, 3.2.2.4-3, and 3.2.2.4-4 may be implemented in a variety of ways. In order to achieve the desired performance characteristics for soft capture, it is necessary to establish a common interpretation of the parameters in order to maintain a consistent set of interfaces. Systems that implement the mechanical capture latch striker feature as part of the design of the soft capture system shall adhere to the following interpretation of parameters.

3.2.2.4.1.1 INTERPRETATION OF PARAMETERS

The key parameters that define the critical mechanical capture latch striker interfaces are identified below. Reference designations are assigned to each of the dimensions (noted as **A** through **F**) and each is used in establishing the critical features (Ref. Figure 3.2.2.4.1.1-1, Mechanical Capture Latch Striker Parameter Explanation - Part 1, and Figure 3.2.2.4.1.1-2, Mechanical Capture Latch Striker Parameter Explanation - Part 2):

1. Define/Locate point **X** as follows (Refer to Figure 3.2.2.4.1.1-1):
 - a. Detect/define the center section of the mechanical capture latch striker. Note: Center sections are referenced at 120 degree intervals relative to primary datum as shown in Figure 3.2.2.4-2.
 - b. Detect/define SCS 45 degree chamfer surface at the center section of the mechanical capture latch striker (step a.).
 - c. Point **X** is established as being the intersection of the three planes: SCS mating plane that is local to the mechanical capture latch striker, the SCS 45 degree chamfer surface (conic surface), and the plane formed by the center section of mechanical capture latch striker (step a.).

Note: Point **X** should lie within the limits of diameter **A**.

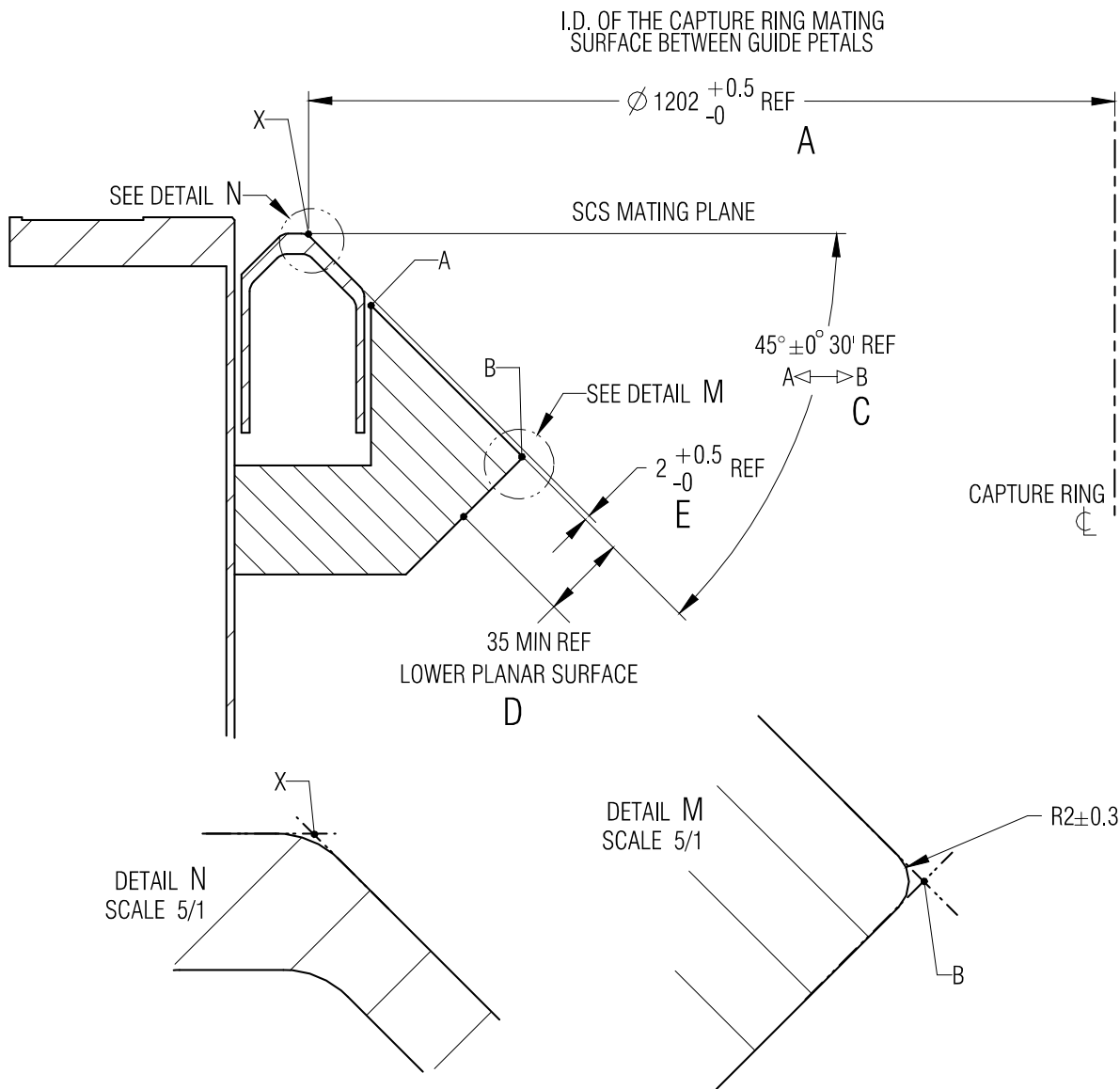


FIGURE 3.2.2.4.1.1-1 MECHANICAL CAPTURE LATCH STRIKER PARAMETER EXPLANATION - PART 1

2. Establish **E** dimension ($2^{+0.5}/-0$) as follows (Refer to Figure 3.2.2.4.1.1-1):
 - a. Locate the lines formed by the center section of the mechanical capture latch striker and its intersection with both the top conical surface and upper planar surface of the mechanical capture latch striker as defined by dimension **C**.

- b. Locate the point at the intersection of the three planes: center section of the mechanical capture latch striker, the front facing lower planar surface defined by dimension **D**, and the upper planar surface defined by dimension **C**.
 - c. Verify dimension **E** by confirming lines and point defined in step a and b fall within the acceptable combined dimension **E** and **C** tolerance zones.
3. Establish **B** dimension ($114 +0/-0.2$) as follows (Figure 3.2.2.4.1.1-2):
- a. Detect/define the front facing surface of the mechanical capture latch striker as defined by the dimension **F** and the lower planar surface as defined by dimension **D**. **F** is defined as being 45 degree to a line located in the 120 degree center section and perpendicular to the SCS mating plane.
 - b. Locate the line formed by the intersecting two planes defined by the center section of the mechanical capture latch striker and the front facing surface of the mechanical capture latch striker (step a.).
 - c. Establish dimension **B** to be perpendicular to the line formed in step b and up to point **X**.

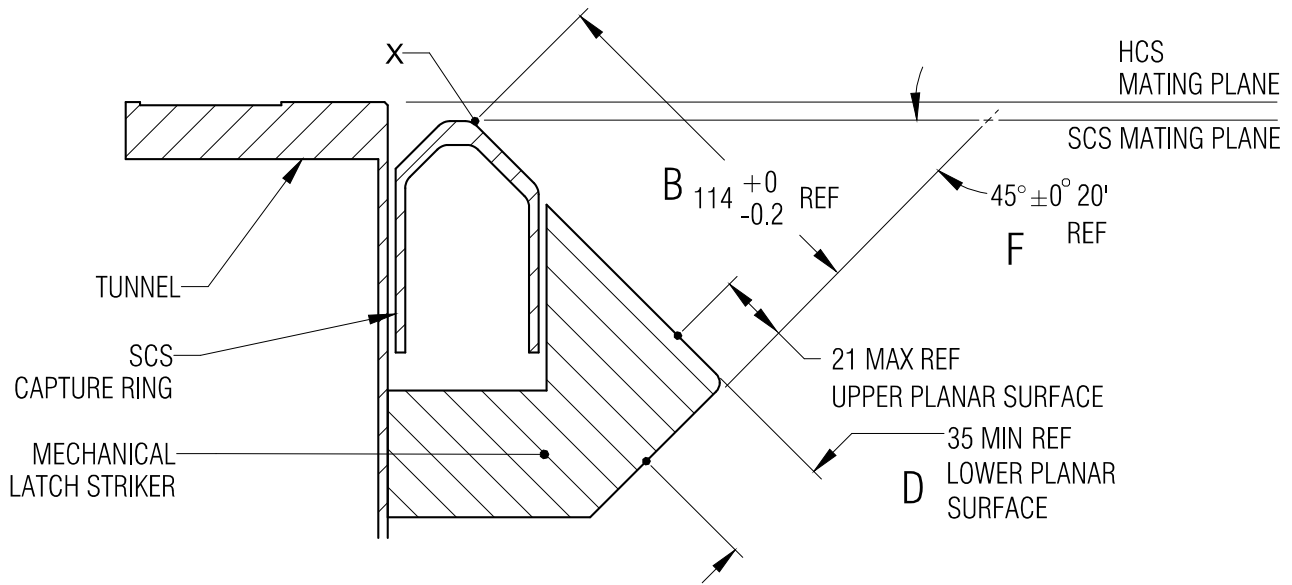


FIGURE 3.2.2.4.1.1-2 MECHANICAL CAPTURE LATCH STRIKER PARAMETER EXPLANATION - PART 2