

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 040A	

**ADD:**

**APPENDIX A - ACRONYMS, ABBREVIATIONS AND SYMBOLS DEFINITION**

GSE	Ground Support Equipment
RTH	Ready To Hook

**FROM:**

**D.1.1 HARD CAPTURE SYSTEM HERITAGE STRIKER ZONES**

To maintain simplicity for the standard, a set of generic zones, called the HCS Component Striker Zones, are defined on the HCS mating flange (shown in Figure 3.2.3-1) as striker zones for various peripheral components and sensors. These zones are the passive flat surface that a docking system designer may choose to use as striker areas for the corresponding devices.

The HCS Component Striker Zones are nine identical segments around the circumference of the HCS. A reference numbering scheme for the segments is shown in Figure D.1.1-1, HCS Component Striker Zone Reference Numbers. Each segment consists of a Free Area and a Reserved Area.

For both the Free Area and the Reserved Area, the striker area is a flat surface with a few local exceptions. These exceptions are various small holes used for the underlying subsystems (such as attach points for the Latching System), and for other purposes. Many times, these small holes will not interfere with the striking device. The details of these small holes and other features are provided herein for a designer to consider when utilizing the striker zone.

In the Free Area, the same small exceptions occur repeatedly, and these features should be easier to work around to place striking components. The Reserved Area is where legacy systems, such as APAS or NDS, have already located components which will be difficult to work around in some locations, and the use of these areas will require careful, detailed coordination with those designs to assure no interference. These features within the striker zones are shown in Figure D.1.1-2, APAS Features within Striker Zones, and Figure D.1.1-3, NDS Features within Striker Zones.

In summary, using the Free Areas is recommended, though the locations of some small holes must be considered. Using the Reserved Areas will require collaboration with the relevant legacy system and/or mission specific information.

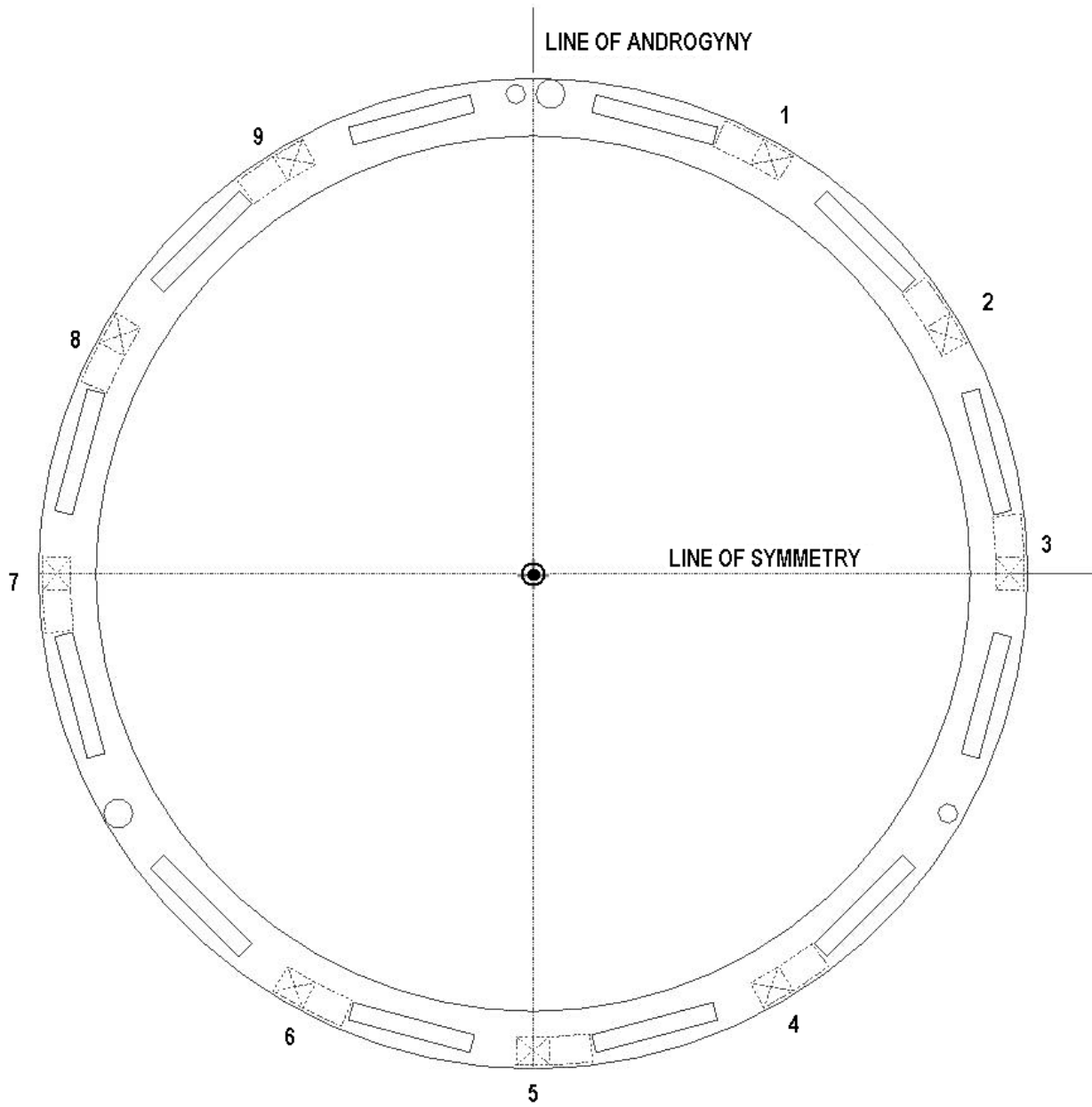
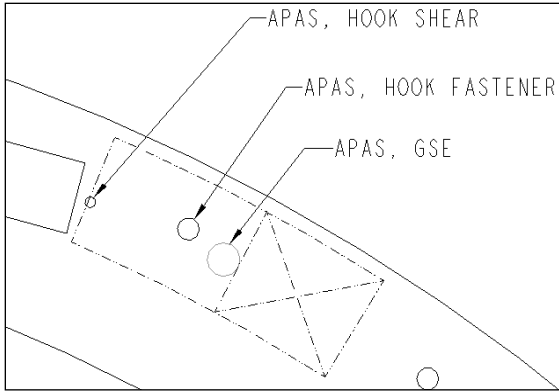
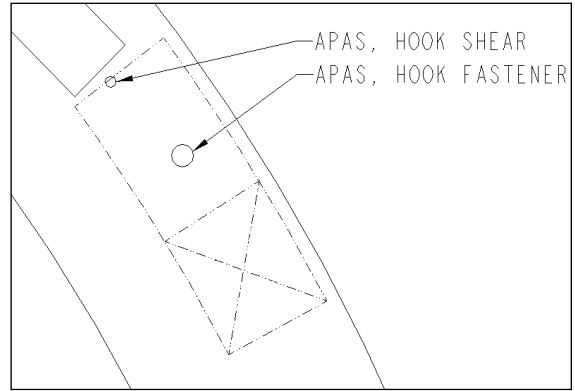


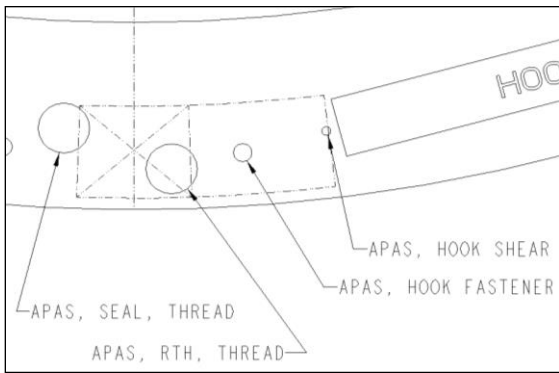
FIGURE D.1.1-1 HCS COMPONENT STRIKER ZONE REFERENCE NUMBERS



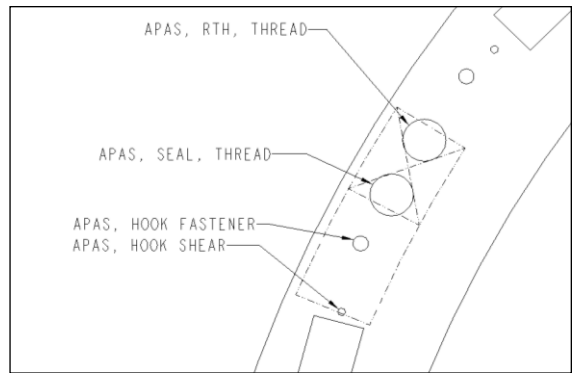
Detail applies at the following locations:  
1, 3, 4, 7, 9



Detail Applies at the following locations:  
2, 6

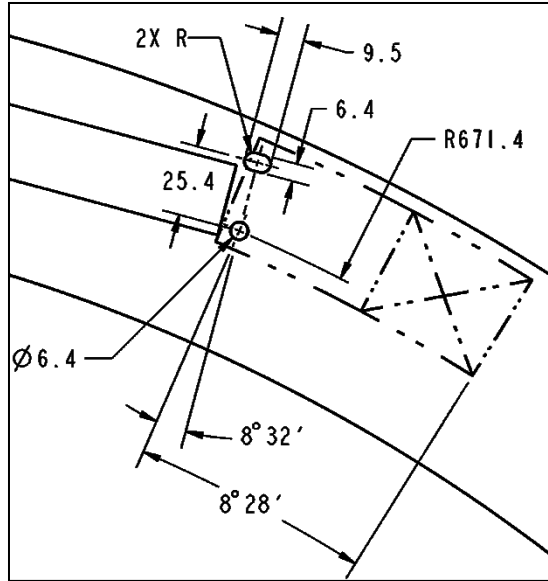


Detail applies at the following location:  
5



Detail Applies at the following location:  
8

**FIGURE D.1.1-2 APAS FEATURES WITHIN STRIKER ZONES**



Detail applies at all locations.

**FIGURE D.1.1-3 NDS FEATURES WITHIN STRIKER ZONES**

**TO:**

**D.1.1 HARD CAPTURE SYSTEM HERITAGE STRIKER ZONES**

To maintain simplicity for the standard, a set of generic zones, called the HCS Component Striker Zones, are defined on the HCS mating flange (shown in Figure 3.2.3-1) as striker zones for various peripheral components and sensors. These zones are the passive flat surface that a docking system designer may choose to use as striker areas for the corresponding devices.

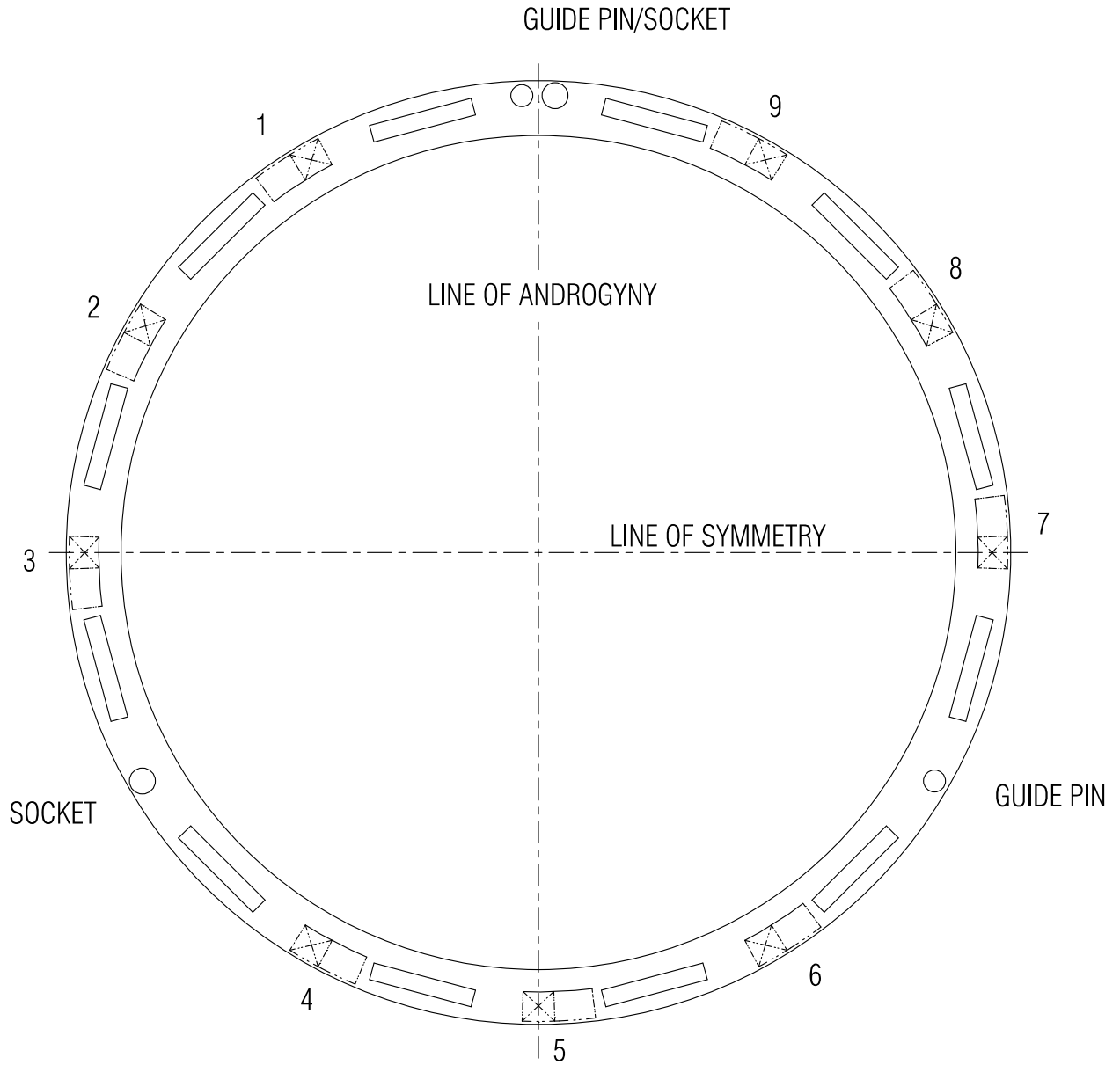
The HCS Component Striker Zones are nine identical segments around the circumference of the HCS. A reference numbering scheme for the segments is shown in Figure D.1.1-1, HCS Component Striker Zone Reference Numbers. Each segment consists of a Free Area and a Reserved Area.

For both the Free Area and the Reserved Area, the striker area is a flat surface with a few local exceptions. These exceptions are various small holes used for the underlying subsystems (such as attach points for the Latching System), and for other purposes. Many times, these small holes will not interfere with the striking device. The details of these small holes and other features are provided herein for a designer to consider when utilizing the striker zone.

In the Free Area, the same small exceptions occur repeatedly, and these features should be easier to work around to place striking components. The Reserved Area is where legacy systems, such as APAS, NDS, and IDA have already located components which will be difficult to work around in some locations, and the use of these areas will require careful, detailed coordination with those designs to assure no interference. These features within the striker zones are shown in Figure D.1.1-2, APAS Features within Striker Zones, and Figure D.1.1-3, NDS Features within Striker Zones, and Figure D.1.1-4, IDA Features within Striker Zones.

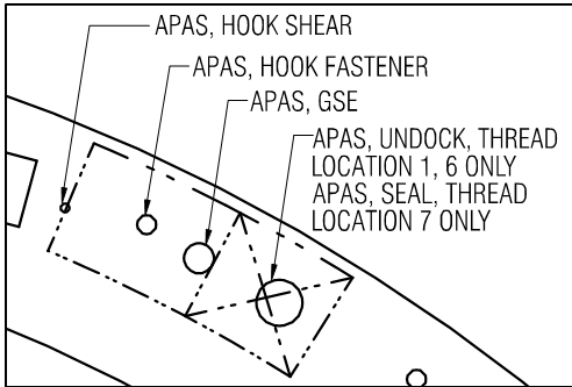
The International Docking Adapter implementation of spring pusher separation devices lies within areas noted as being “reserved” legacy zone regions. Verification of docking operations with visiting vehicles equipped with both current and future implementations of IDSS compliant systems has been performed and it has been determined that there is no impact to performance. The locations of the separator devices within the “reserved” zones are shown in Figure D.1.1-5, Radial and Angular Locations of IDA Separator Installations Within Striker Zones, and Figure D.1.1-6, IDA Separator Installation Cutout Details.

In summary, using the Free Areas is recommended, though the locations of some small holes must be considered. Using the Reserved Areas will require collaboration with the relevant legacy system and/or mission specific information.

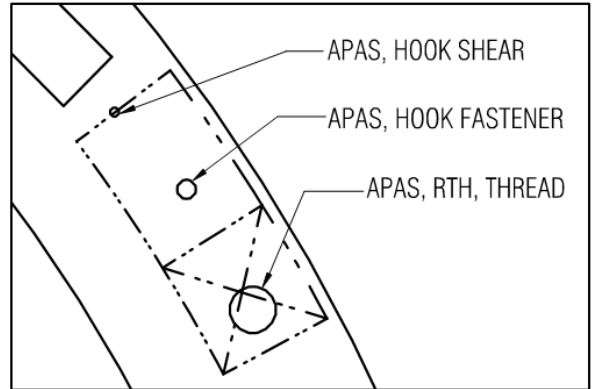


**FIGURE D.1.1-1 HCS COMPONENT STRIKER ZONE REFERENCE NUMBERS**

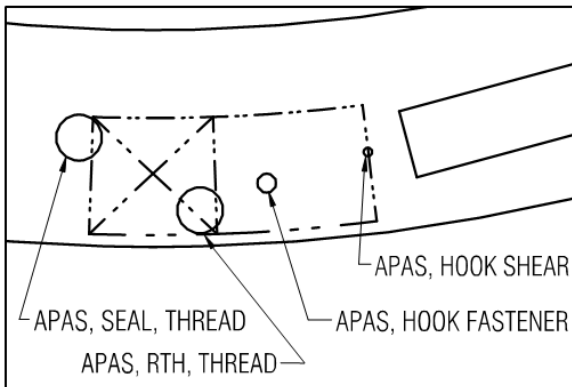




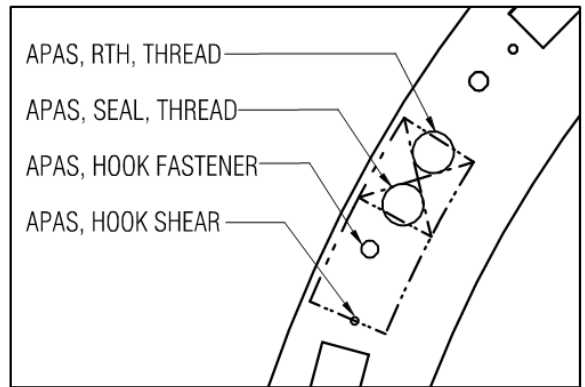
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 1, 6, 7



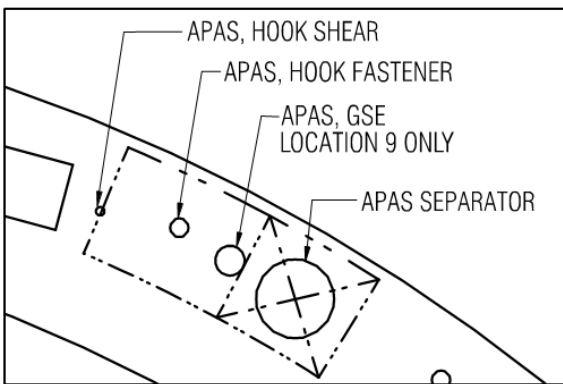
Detail applies at the following location:  
 8



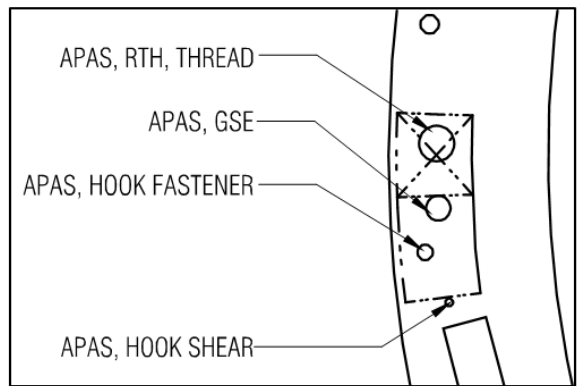
Detail applies at the following location:  
 5



Detail applies at the following location:  
 2

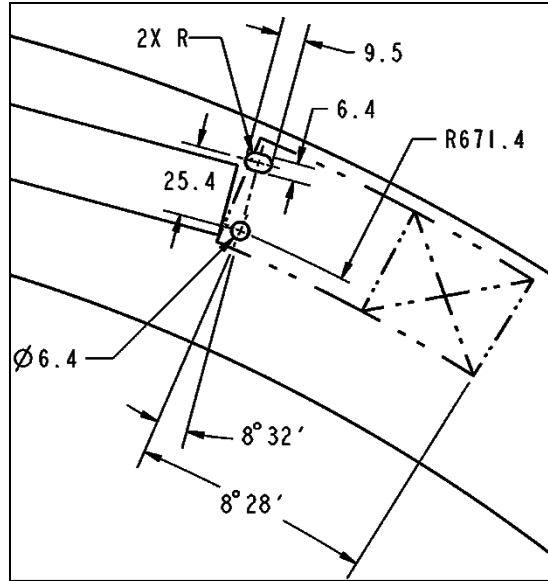


Detail applies at the following locations:  
 4, 9



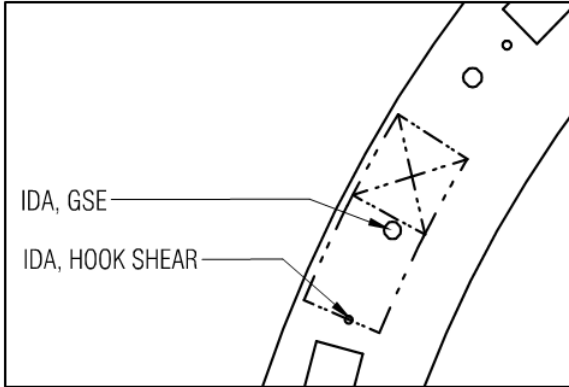
Detail applies at the following location:  
 3

**FIGURE D.1.1-2 APAS FEATURES WITHIN STRIKER ZONES**

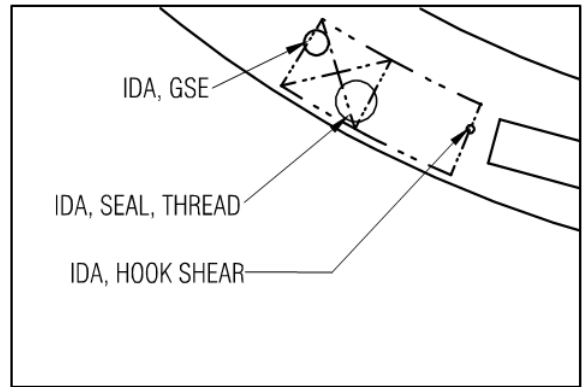


Detail applies at all locations.

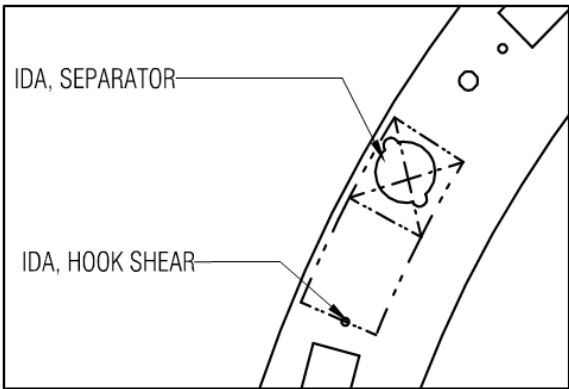
**FIGURE D.1.1-3 NDS FEATURES WITHIN STRIKER ZONES**



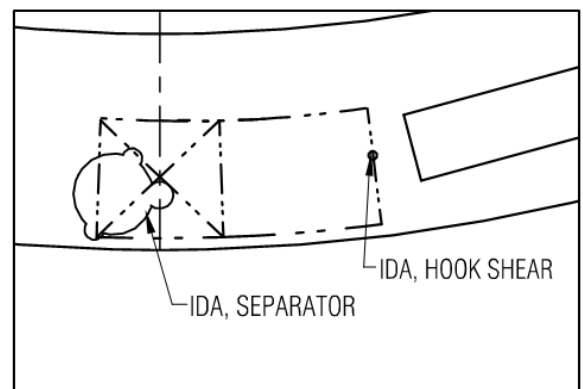
Detail applies at the following locations:  
 1, 6



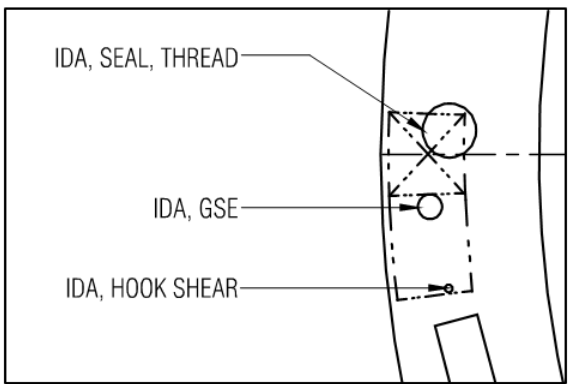
Detail applies at the following location:  
 4



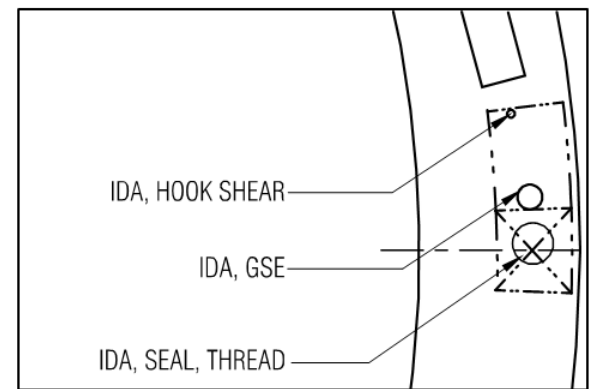
Detail applies at the following locations:  
 2, 8\*



Detail applies at the following location:  
 5\*



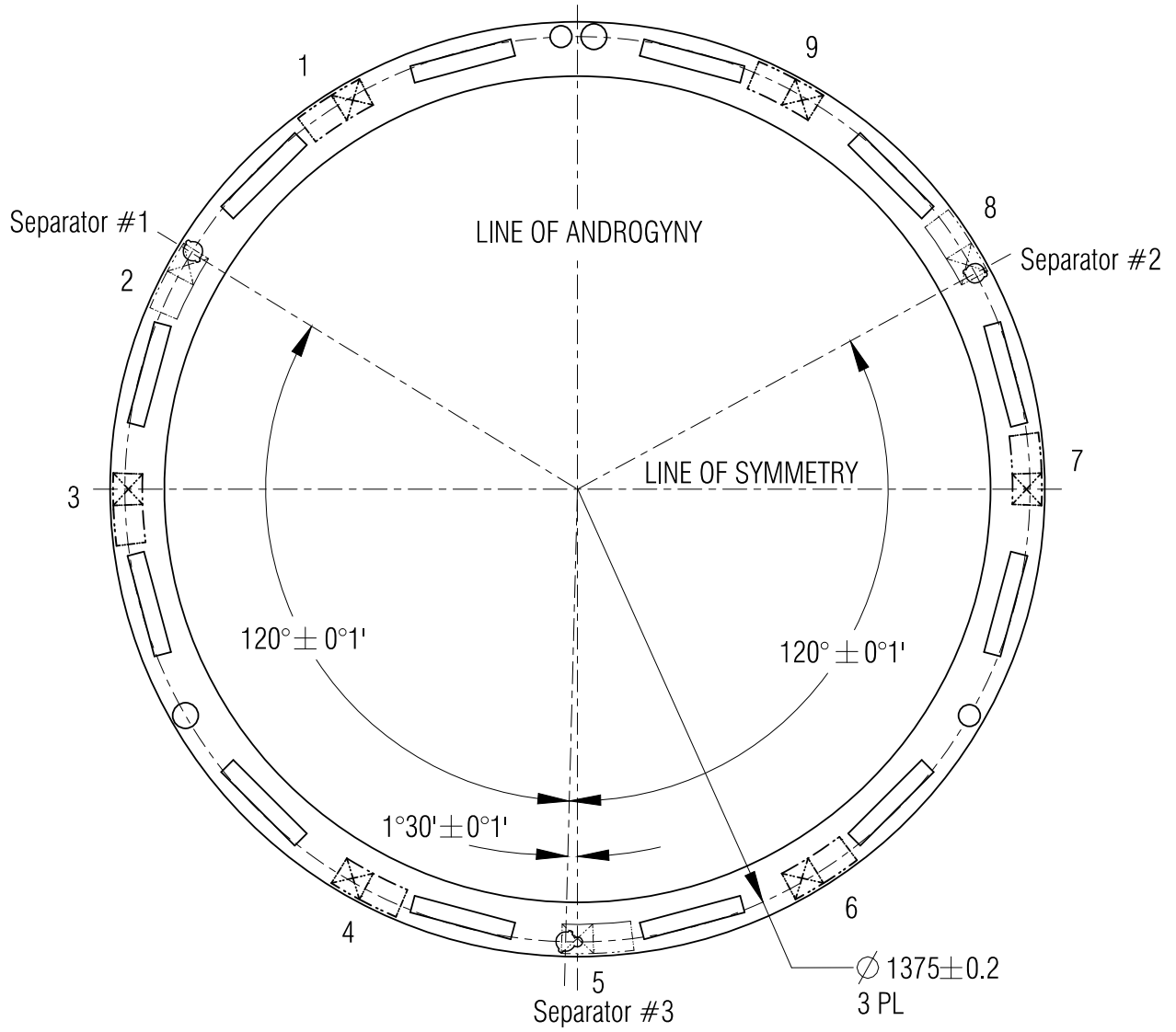
Detail applies at the following location:  
 3



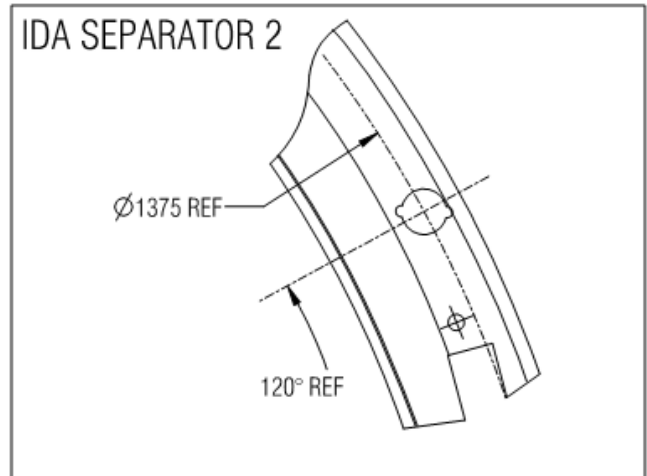
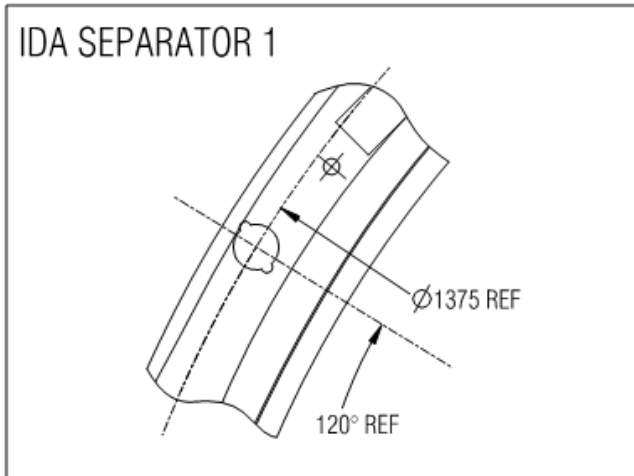
Detail applies at the following locations:  
 7, 9

\* For separator location and cutout details, see Figures D.1.1-5 and D.1.1-6

**FIGURE D.1.1-4 IDA FEATURES WITHIN STRIKER ZONES**

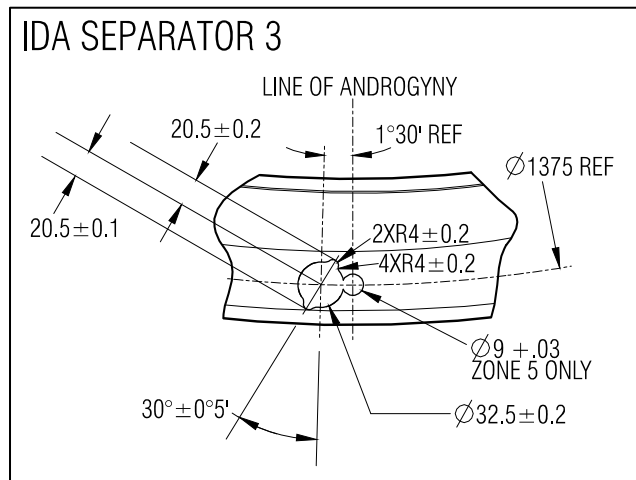


**FIGURE D.1.1-5 RADIAL AND ANGULAR LOCATIONS OF IDA SEPARATOR INSTALLATIONS WITHIN STRIKER ZONES**



Detail Applies at the following locations: 2

Detail Applies at the following locations: 8



Detail Applies at the following locations: 5

Note: Separator cutout details apply at zones 2, 5, and 8 except as noted

**FIGURE D.1.1-6 IDA SEPARATOR INSTALLATION CUTOUT DETAILS**