RUAG has developed a family of adapters and separation systems compatible with the Evolved Expendable Launch Vehicles (EELV) developed by Boeing and by Lockheed Martin.

The Payload Adapter Systems (PAS) are compatible with industry standard forward interfaces of 937 mm, 1194 mm and 1666 mm diameter (circular ring section) and with the BSS702 four (4) bolt interface at a 65 inch diameter. The aft interface of all the systems is the EELV standard 1575 mm (62 inch). All systems are delivered with adapter, release mechanism, clamp band and retention devices, separation spring set, electrical umbilical hardware, and required wiring harness. The adapter structures are designed and manufactured from aluminium ring forgings and CFRP shell structures using the experience gained in previous space programs and in Saab Aerospace programs.

**High load capability**
The EELV family of Payload Adapter Systems has exceptionally high load carrying capability, to cover anticipated market needs while substantially reducing interface shock levels.

**Low shock at separation**
The PAS 37S, PAS 47S and PAS 66VS systems are qualified with the low shock Clamp Band Opening Device (CBOD) release mechanism from Starsys Research that greatly reduces the interface shock environment relative to classical bolt cutter designs. Spacecraft manufacturers and their customers appreciate the reduced risk for shock impact to components mounted close to the interface.

**Heritage and reliability**
The EELV systems have the RUAG space heritage and experience in separation systems dating back to 1970. RUAG Space separation systems ensure high reliability and optimum performance at low cost. More than 460 in-orbit separations have been carried out, all with 100% success. Today the company offers a wide variety of systems for space applications, used in the Ariane, Atlas, Delta, Proton, Sea Launch, Taurus and other programs.
## Main characteristics of the Payload Adapter Systems

<table>
<thead>
<tr>
<th>Payload Adapter System</th>
<th>Material</th>
<th>Separation System</th>
<th>Upper dim. [mm]</th>
<th>Lower dim. [inch]</th>
<th>Typical total weight [kg]</th>
<th>Typical shock output [g]</th>
<th>Load capability on EELV</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAS 66VS</td>
<td>Aluminium</td>
<td>Low Shock Clamp Band</td>
<td>1666</td>
<td>62&quot;-EELV</td>
<td>40</td>
<td>1000</td>
<td>6000 kg @ 1.9 m</td>
</tr>
<tr>
<td>PAS 702</td>
<td>Aluminium</td>
<td>3/4&quot; Bolts</td>
<td>1663</td>
<td>62&quot;-EELV</td>
<td>70</td>
<td>3000</td>
<td>6000 kg @ 1.75 m</td>
</tr>
<tr>
<td>PAS 47VS</td>
<td>Aluminium</td>
<td>Low Shock Clamp Band</td>
<td>1194</td>
<td>62&quot;-EELV</td>
<td>40</td>
<td>1000</td>
<td>8000 kg @ 2.2 m</td>
</tr>
<tr>
<td>PAS 37S</td>
<td>Aluminium or CFRP</td>
<td>Low Shock Clamp Band</td>
<td>937</td>
<td>62&quot;-EELV</td>
<td>70</td>
<td>1000</td>
<td>4700 kg @ 1.5 m</td>
</tr>
</tbody>
</table>

### Typical SRS of CBOD low shock separation

![Shock Response Spectrum](image)

Measured 25 mm above Separation Plane on Payload Simulator.

- 1000 VS Red Hat, 400 kN
- 1000 VS Red Hat, 500 kN
- 500 VS Red Hat, 300 kN
- Classical Requirement