DAAV/DAAR/UPPA

KONGSBERG

KONGSBERG DAAV/DAAR/UPPA

Ariane Booster Attachment and Separation mechanism

FEATURES

The functions of the DAAV & DAAR are:

FD1 = to transmit loads between the EAP and the EPC throughout the launch vehicle's life, from assembly of the EPC onto the EAP up to EAP/EPC separation in flight.

FD2 = to assist in the EAP/EPC separation upon receipt of a pyrotechnical order (to release the EAP/EPC connection upon receipt of a pyrotechnical order).

FD3 = to connect and adjust the EAP and EPC during the launch vehicle integration.

Ariane 5 DAAV & DAAR

The Ariane 5 booster, more than 30 m high with 237,8 metric tons of propellant, delivering more than 90 % of the total thrust and burn for 130 seconds, is attached to the main stage by Kongsberg attachment and separation mechanisms DAAV&DAAR.

The DAAV high performance spherical bearings, included in a highly sophisticated mechanism, transmit the loads from the Ariane 5 booster motor (EAP) to the Ariane 5 main stage (EPC) throughout the booster life. The DAAR struts transfer the lateral loads between the main stage and the boosters. At separation pyrotechnical devices cuts the two forward attach DAAV and the six DAAR struts and the booster can separate from the main stage.

KDA is responsible for the design, production, test and delivery of the mechanisms. The development started in 1990 with qualification in 1995, all design and test activities including functional, structural, vibration and pyrotechnical cutting tests was performed at Kongsberg.

Since 1995 Kongsberg has had serial production of the DAAV and DAAR and more that 100 flight sets has been delivered and the deliveries are ongoing.

Ariane 6 UPPA

Ariane 6 is Europe's new launch vehicle. KDA is responsible for the design, production, test and delivery of the forward attachment mechanisms UPPA.

The UPPA is based on the successful DAAV design and modified according to Ariane 6 design requirements. The UPPA is in production.

DAAV, Forward attachment

DAAV TECHNICAL DATA

Mechanism

Flight limit load, vertical component:	3700 kN
Friction coefficient	0,03
Height adjustment	+ 30 mm
Mass	81-85 kg
Rotational angle	± 2 deg.
Separation time	5 msec

DAAR, Rear attachment strut

DAAR TECHNICAL DATA

Mechanism

Flight limit load:	507 kN
Stiffness:	3,9 x10E8 N/m
Length, Short strut	1250 mm
Length Long strut	2067 mm
Lenght adjustment	+/- 80 mm
Mass Short Strut	105 kg
Mass Long strut	190 kg
Separation time	5 msec

UPPA TECHNICAL DATA

Mechanism

Flight limit load, vertical component:	2700 kN
Friction coefficient	0,03
Height adjustment	+ 54 mm
Mass	72-75 kg
Rotational angle	± 2 deg

Kongsberg Space & Surveillance
P.O. Box 1003
N-3601 Kongsberg, Norway

Phone: +47 32 28 82 00

office.kda@kongsberg.com