

1.PSLV PROJECT

The Polar Satellite Launch Vehicle (PSLV) is the third generation launch vehicle of India. It is an expendable medium lift launch vehicle designed & operated by ISRO. It can carry remote sensing satellites into sun synchronous orbit (SSO) & small sized spacecraft into geostationary transfer orbit (GTO). It is the first Indian Launch vehicle to be equipped with liquid stage. The Height of the Vehicle is 44 M & it has lift off mass upto 320T. HAL Aerospace Division has successfully realised the following PSLV structures:

Sl. No.	NOMENCLATURE	Sl. No.	NOMENCLATURE
1	Heat Shield (HS)	12	PS2 Propellant Tank (PS2 PT)
2	Pay Load Adaptor (PLA)	13	PS2 Water Tank (PS2 WT)
3	Inter Stage $\frac{3}{4}$ (IS 3/4)	14	PS4 Propellant Tank (PS4 PT)
4	PS3 Adaptor (PS3 ADP)	15	Feed Line-U (PS2 FLU)
5	Inter Stage 2/3 U (IS 2/3U)	16	Feed Line-N (PS2 FLN)
6	Inter Stage 2/3 L (IS 2/3L)		
7	Inter Stage 1/2 U (IS 1/2U)		
8	Thrust Frame (TF)		
9	Inter Stage 1/2 L (IS 1/2L)		
10	Core Base Shroud (CBS)		
11	Aft End Closure (AECL)		



1.1 PSLV - STRUCTURES

HEAT SHIELD (HS) - PSLV

- ✦ Diameter: 3200mm.
- ✦ Height: 8300mm.
- ✦ Riveted Aluminum structure.
- ✦ The full structure is made in two halves. The assembly is made of detail components like Rings, Skins, Bulk heads Stiffeners & Bracketsetc.



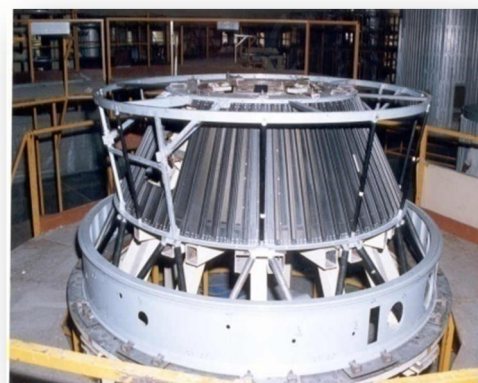
PAY LOAD ADAPTOR(PLA) - PSLV

- ✦ Diameter: 1390 mm
- ✦ Height : 500mm
- ✦ It is CFRP Conical Structure.
- ✦ The assembly is made up of two rings AE ring, FE ring and CFRP Panel.



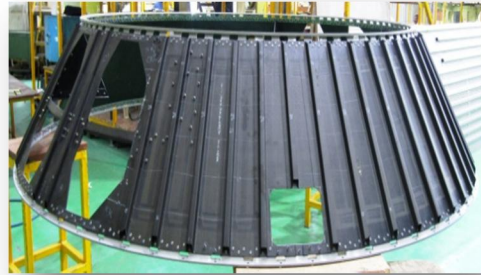
INTER STAGE 3/4 (IS 3/4) - PSLV

- ✦ Diameter: 2830mm
- ✦ Height: 1200mm
- ✦ It is CFRP Conical Structure.
- ✦ It Contains Propulsion Bay Ring, Fore End Ring, Middle Ring & EB Ring.



PS3 ADAPTOR (PS3 ADP) - PSLV

- ✚ Diameter:2736 mm.
- ✚ Height :578 mm.
- ✚ It is CFRP Conical Structure.
- ✚ The assembly is made up of two rings AE ring and FE ring.



INTER STAGE 2/3 UPPER (IS 2/3U) - PSLV

- ✚ Diameter : 2800mm
- ✚ Height:3700mm
- ✚ This is an inter stage structure between second & third stage of Launch vehicle.
- ✚ This Assembly is built using two Rings Six bulk head & eight panels it is an aluminium alloy structure.



INTER STAGE 2/3 LOWER (IS 2/3L) - PSLV

- ✚ Diameter : 2860mm
- ✚ Height : 1371mm
- ✚ This is an Al. alloy Riveted structure.
- ✚ Inter stage structure between second and third stage of launch vehicle.



INTER STAGE 1/2 UPPER (IS 1/2U) - PSLV

- ✚ Diameter : 3200mm
- ✚ Height : 8300mm
- ✚ This is an aluminum alloy inter stage structure between first & second stage of launch vehicle.
- ✚ This Assembly is built using two rings, two bulk heads, eleven panels, stiffeners and brackets.



THRUST FRAME (TF) - PSLV

- ✚ Diameter: 2800mm
- ✚ Height: 1726mm
- ✚ This Conical structure made up of Aluminium alloy and integrated with 1/2U Assembly.
- ✚ This structure is built using cylindrical part and Engine Mount Adaptor.



INTER STAGE ½ LOWER (IS 1/2L) - PSLV

- ✚ Diameter: 2800mm
- ✚ Height: 4100mm
- ✚ It is an aluminium alloy riveted structure.
- ✚ Interstage structure between first & second stage of PSLV launch vehicle. This Assembly is built using two rings, six bulk heads, seven panels, stiffeners and brackets.



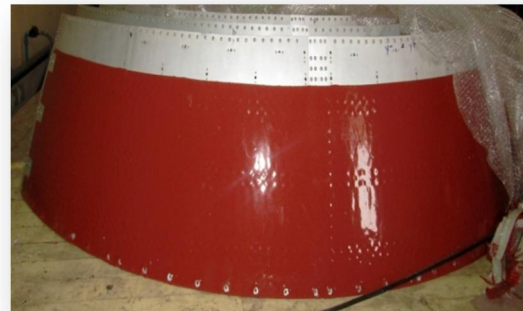
CORE BASE SHROUD (CBS) - PSLV

- ✚ Diameter: 2800mm.
- ✚ Height : 2600mm.
- ✚ It is an Aluminium alloy structure.
- ✚ This Assy is built using two Rings, 3Bulk head rings& eight Panel Critical parts like some Block, J-Section & Spring Thrust are involved in this structure.
- ✚ This is the bottom most structure of the launch Vehicle it has to withstand & carry load of 284 tonnes.



AFT END CLOSURE (AECL) - PSLV

- ✚ Diameter : 2504mm
- ✚ Height: 497mm
- ✚ It is aluminum Structure
- ✚ It Contains skin segment. Bulk head segment. Aft end ring Segment, fore end ring segment.



1.2. PSLV - TANKAGES

PS2 PROPELLANT TANK (PS2 PT) - PSLV

- ✦ Diameter : 2800mm
- ✦ Length:6850mm
- ✦ The PS2 propellant tank is a welded light alloy construction fabricated out of aluminium alloy AA2219.
- ✦ The tank has two chambers inside, separated by a dome, called common bulkhead dome. One chamber is filled with N₂O₄ and other with UDMH fuel.



PS2 WATER TANK (PS2 WT) - PSLV

- ✦ Diameter(M) : 2200mm
- ✦ Diameter(C) : 354mm
- ✦ The water tank is a torroidal shaped welded tank fabricated out of Al. (AA6061) for storing water and generating steam during flight.
- ✦ The tank consists of 8 torroidal shell segments connected by inter-connecting rings. The shells are welded to the rings by TIG welding process.



PS4 PROPELLANT TANK (PS4 PT) - PSLV

- ✚ Diameter : 1385mm
- ✚ Length:2500mm
- ✚ It is made up of Titanium TI6AL4V.
- ✚ Configuration: CBH, Elliptical Dome
- ✚ The PS4 propellant tank is a welded light alloy construction fabricated out Titanium. The tank has two chambers inside, MMH and N2O4 it consists of fore end dome, CBH dome and AFT end dome with three rings fore end ring CBH ring and AFT end ring.



1.3. PSLV – FEEDLINES

Feed Line-U (PS2 FLU)	Feed Line-N (PS2 FLN)
Diameter : 160mm Configuration : RFDS Material : Al. (AA6061) MEOP (bar)/Vol. : 18	Diameter : 160mm Configuration : RFDS Material : Al. (AA6061) MEOP (bar)/Vol. : 18