

Joint Airlock Enhances International Space Station Spacewalk Capabilities

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Space Shuttle Mission STS-104, launched on July 12, delivered the Joint Airlock to the International Space Station (ISS). Prior to delivery of the Joint Airlock, extravehicular activity (EV's) were conducted from the Space Shuttle Orbiter airlock and were, therefore, restricted to its presence. During the STS-104 mission, the crew installed, activated, and performed the first EVA from the Joint Airlock. The Airlock provides the on-orbit crew continuous EVA capability in both NASA Extravehicular Mobility Unit's (spacesuits) and in Russian Orlan spacesuits.

ISS Expedition 2 crew member, Susan Voss, used the Space Station robot arm (Canadarm2) to lift the Airlock from the shuttle payload bay and install it on the Unity Module of ISS. When used to conduct an EVA, the airlock recovers over 90 percent of the gases that were previously lost when airlocks were vented to the vacuum of space. Two system racks and two stowage racks outfit the interior of the airlock, and it has a total pressurized volume of approximately 950 cubic feet.

Also delivered to orbit by this flight are four High Pressure Gas Tanks, two oxygen and two nitrogen. These pressure vessels were installed on the exterior of the Airlock during an EVA. Each tank is installed separately and is capable of recharge on-orbit. The tanks support EVA operations and augment the Service Module gas resupply system.



Figure 1: US Airlock prior to launch in the Space Station Processing Facility at Kennedy Space Center, Florida



Figure 2: One of the four high pressure gas tanks which will be mounted on the exterior of the Joint Airlock to support EVA operations.