ISS Ammonia Pump Module  
[bruckner.pdf](https://esmats.eu/amspapers/pastpapers/pdfs/2014/bruckner.pdf)  
ISS Ammonia Pump Failure, Recovery, and Lesson Learned — A detailed analytical document explaining how a pump unit fails and is replaced on space missions.  
  
[Spacewalkers Complete Installation of Ammonia Pump Module - NASA](https://www.nasa.gov/missions/station/spacewalkers-complete-installation-of-ammonia-pump-module/)  
Spacewalkers Complete Installation of Ammonia Pump Module — NASA news item explains the installation of a backup ammonia pump module on the space station.  
  
[ATCS Team Overview:](https://www.nasa.gov/wp-content/uploads/2021/02/473486main_iss_atcs_overview.pdf)  
Active Thermal Control System (ATCS) Overview (PDF) — Explains the role of pumps in an outdoor thermal control system (EATCS) and heat exchangers.  
  
summary  
The **Ammonia Pump Module** is a core component in the ISS’s External Active Thermal Control System (EATCS). Its function is to pump liquid ammonia through the external cooling loops, transferring heat from the internal systems into heat exchangers and then to radiator panels, which reject the heat into space.

The module houses a **canned motor cartridge pump**, which avoids rotary seals (thus reducing leak risk), along with an accumulator and control valves in the Pump and Control Valve Package (PCVP). In case of failure, the unit is designed to be replaced via an Extravehicular Activity (EVA).

For example, in July 2023, astronauts installed a spare ammonia pump module on Loop A at the S1 truss. During the installation, they encountered difficulties disconnecting ammonia lines and had to manage ammonia freezing and contamination issues.

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