

# Hubble Facts

National Aeronautics and  
Space Administration

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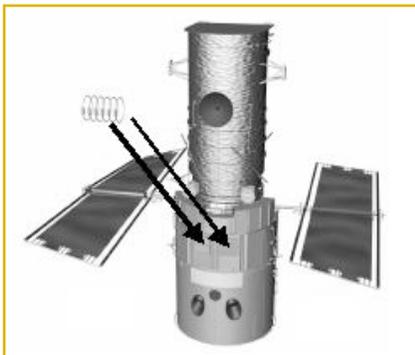
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## Hubble Space Telescope Servicing Mission 3A VOLTAGE/TEMPERATURE IMPROVEMENT KITS

Hubble Space Telescope circles the Earth at approximately 17,000 miles per hour, every 90 minutes. On the ground we see a day and a night every 24 hours. In space Hubble sees daylight and night every hour and a half. Hubble uses solar energy, collected by the solar arrays, to power its computers and science instruments. At night when there is no sun, Hubble uses its batteries for power. These batteries are then recharged during Hubble's next day.

### Charging Hubble's Batteries

An automobile has a voltage regulator to control the rate of charge into its car battery. Similarly, Hubble has charging regulators for its

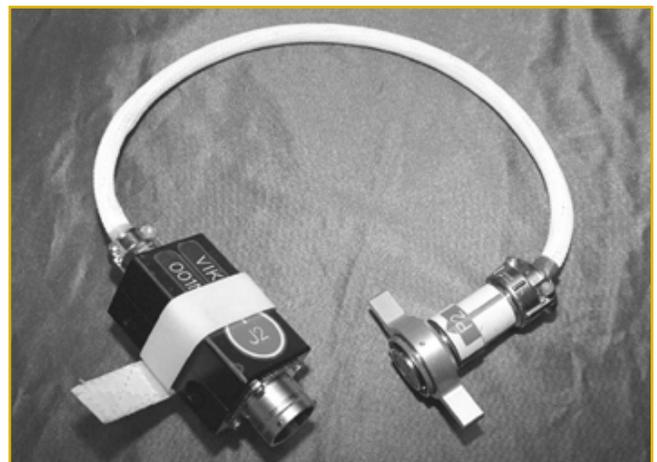


*Voltage/Temperature  
Improvement Kits  
will be placed in Bays 2 and 3*

batteries. Hubble's regulators use battery voltage and battery temperature to control the rate of charge into the batteries. The batteries aboard Hubble are almost 10 years old. They still do the job well but, as they age, they become more sensitive to the way they are charged and become susceptible to overheating. To compensate for the effects of aging, astronauts will install a battery Voltage/Temperature Improvement Kit (VIK) on each of Hubble's six

batteries. Hubble's batteries are fully charged each orbit by the Solar Arrays. Each battery is fully charged when its respective charge controller senses a specific charge cutoff voltage. The VIK modifies the charge cutoff voltage to a lower level to prevent battery overcharging and associated overheating. In the Telescope, the batteries are located in two compartments, called bays, three batteries to a bay.

The VIK is a simple device, about the size of a cell phone, weighing about three pounds.



*Voltage/Temperature Improvement Kit*

### FOR ADDITIONAL INFORMATION CONTACT

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