

# Astronauts have trouble with repair work at Hubble

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In this image from NASA TV astronauts Mike Good, left, and Mike Massimino work to upgrade the Hubble Space Telescope during a spacewalk, Friday, May 15, 2009. (AP Photo/NASA TV)

(AP) -- Spacewalking astronauts had to install a refurbished pair of gyroscopes in the Hubble Space Telescope on Friday after one of the brand new ones refused to go in.

The struggle had [NASA](#) on edge for about two hours. The gyroscopes are needed to point the 19-year-old observatory, and getting them in was the top priority of the repair mission.

It was the second spacewalk in as many days for the Atlantis [astronauts](#).

On Thursday, another two-man team installed a powerful new camera and a computer data unit, after struggling with a stubborn bolt. NASA had hoped for an easier, less stressful spacewalk, but instead had to endure more drama.

Michael Massimino, who was working from inside Hubble, and his partner, Michael Good, had no problem removing all six of Hubble's 10-year-old gyroscopes. They easily plugged in the first new set of two gyroscopes, but despite repeated efforts, could not get the second set properly mounted.

Mission Control instructed them to go get the next box of gyroscopes to see if that one would fit. It did and the astronauts cheered.

But when the spacewalkers tried to tuck in the last set of gyroscopes, it wouldn't fit properly. Mission Control instructed the men to go get a spare box of gyroscopes from the shuttle, and put that one in. The spare is refurbished; it was returned from Hubble in 1999.

After repeated efforts, the astronauts managed to install the refurbished set, which one Hubble scientist said was almost as good as the brand new ones. By then, however, five hours of the [spacewalk](#) had passed and the spacewalkers had yet to start on the other major chore of the day.

But the gyroscopes were the No. 1 task. Three of the old [gyroscopes](#) no longer worked, and two others had been acting up. The other had seen a lot of use.

"My friend Leonidas has a couple of words for you guys that are appropriate right now," shuttle commander Scott Altman told the spacewalkers, referring to the Spartan king who died in battle in 480 B.C. "Remember this day, men, for it will be yours for all time." Then Altman laughed.

"We've got a little more work to do, but thanks," replied Massimino.

Good drove in the bolts for the gyroscope boxes as Massimino, a returning Hubble mechanic who is over 6-feet tall, worked from inside the telescope, where he had wedged himself in head first.

"Trained my whole life for this," Massimino said.

He had a brief fright when his communication system fouled up. For a minute or two, no one could not hear him. "That was scary," said one of the astronauts inside when the problem cleared up. "A little bit," Massimino replied.

In all, five spacewalks are planned so that the observatory - beloved by astronomers and many others for its breathtaking views of the universe - is at its apex while living out its remaining years.

Space is particularly littered in this 350-mile-high orbit, and Atlantis and its crew face a greater than usual risk of being slammed by a piece of junk. As a precaution, NASA has a rescue shuttle on standby, ready to launch in just three days if necessary.

The spacewalkers were scheduled to change out Hubble's batteries later Friday.

Hubble's old batteries, original 20-year-old parts, had been used even longer. The hefty, nickel hydrogen batteries coming out were built before the telescope was launched in 1990.

The astronauts planned to put in three new batteries - they come three to a pack - and the final three early next week. Each pack is about the size of a big TV set.

NASA hopes to get another five to 10 years of use out of Hubble, once the [Atlantis](#) astronauts plug in all the new equipment. They also will take a crack at fixing two broken science instruments this weekend.

The mission cost NASA more than \$1 billion, one-tenth of what has been spent on Hubble over the decades.

Massimino, who worked on Hubble during the last visit in 2002, is known among the Twittering crowd as Astro-Mike. He's been sending down tweets during spare moments since Monday's launch, but said before the flight that his spacewalks would be off limits for texting.

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On the Net:

NASA: <http://www.nasa.gov/mission-pages/hubble/main/index.html>

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