PAP104 Mk5 — Mine Hunting/Killing Vehicle
U.S. Lightship Museum (USLM)

The PAP104 Mk5 is a remotely operated sea mine disposal vehicle loaded into minesweepers that were developed and manufactured by ECA Group of France. Models available range from Mk2 to Mk6, and PAP104 vehicles are used in Europe, by the U.K. Royal Navy and French Navy, as well as in Japan, Singapore, and other Asian countries. The PAP Mark 5 was designed to identify and destroy sea bottom and tethered mines. More than 500 PAP underwater vehicles have been ordered by 20 navies throughout the world. This Remotely Operated Vehicle (ROV) has been deployed successfully during combat missions in the Red Sea, Falklands, Persian Gulf, etc., completing more than 45,000 runs so far.

When Paul McCartney penned the lyrics to "Yellow Submarine" in 1966, he says he was thinking of a happy place; a song for children about an old mariner reliving past tales. This carefree image was replaced by a somewhat more perilous one in the story of the Royal Navy's Yellow Submarine, officially known as the PAP 104 MK5. First introduced in the 1950s and known technically as ROV (Remotely Operated Vehicle). The Subsea Mine Identification System, the “Yellow Submarine”, was produced by engineering giants ECA Robotics. PAP Minesweepers operate by means of a guiderope, steered remotely to navigate through the water and identify the mines via camera or sonar. The mine is then destroyed by a controlled explosion or by severing the mooring cable. PAP vehicles have completed more than 45,000 operations including many successful combat missions and are still in service with around 20 navies across the globe. Credit: Timothy Oulton Studio, United Kingdom

The PAP ROV navigates at mid-water at a constant altitude above the seabed using its built-in camera and sonar for localization and identification of potential mines. The minesweeper vessel and the ROV remain connected by means of a wire. The underwater vehicle carries a single 130 kg NATO mine disposal charge. In addition to the explosive charge, the PAP can cut the mooring rope to dispose the mine. For enhanced survivability, the PAP ROV features low acoustic and magnetic signatures. The U.S. Navy has developed its own ROV minesweepers and continues to develop a number of specialized and advanced mine countermeasure ROV’s that incorporate state of the art technologies and advanced remotely operated (ROV) sea mine disposal vehicles. The U.S. Navy's use of underwater Remotely Operated Vehicles (ROVs) for mine countermeasure (MCM) operations, often described as "hunter-killer" operations, has evolved significantly over time. This technology aims to protect ships and personnel by allowing them to detect, locate, classify, and neutralize mines without entering dangerous minefields (scroll to specifications).

PAP104 Mk5 – Specifications

Dimensions:

Height: 1.3 meters (4.3 ft.)
Length: 3.2 meters (10.5 ft.)
Width: 1.2 meters (4 ft,)
Weight: 760 kilograms (1,676 lbs.)
Max Operating Depth: 300 meters (984 ft.) in recital
Max Range: 2,000 meters (6,562 ft