

Evolution of the spacesuit



▶ **1961. SK-1 pressure suit:** Worn by Soviet cosmonaut **Yuri Gagarin** – first person to journey into space

▶ **1963. Project Mercury full-body vacuum suit:** Made by **B.F. Goodrich**, pressure suit uses “closed-loop” breathing system



▶ **1965. Berkut suit:** **Aleksei Leonov** makes first ever spacewalk during **Voskhod 2**. Vacuum of space causes spacesuit to inflate like balloon. Leonov vents his vital oxygen supply to lower pressure and make suit small enough to re-enter airlock



▶ **1966. Gemini Astronaut Manoeuvring Unit:** Helmet is equipped with gold-plated visor to shield astronaut from unfiltered sun rays.

System is composed of life-support pack worn on chest and jet-powered unit worn on the back.

Manoeuvring Units are not used during spacewalks until **Space Shuttle** programme



▶ **1969. Apollo A7-L: Edwin “Buzz” Aldrin** stands on surface of Moon during **Apollo 11** mission. **A7-L** spacesuits – made by Collins Aerospace – feature pressure garment and backpack containing life-support system to allow astronauts to walk untethered on lunar surface



▶ **1971. A7-LB:** Used on **Apollo 15-17** lunar missions, **Skylab** and **Apollo-Soyuz**. Made by **International Latex Corp.**, suit can be worn for up to 115 hours with Liquid Cooling Garment, or for 14 days in an unpressurised environment



▶ **1994-2011. Advanced Crew Escape Suit: Pumpkin Suit** used during Shuttle flights.

New version being considered for deep space travel to Moon and Mars

▶ **2019. SpaceX:** 3D printed space-suit helmet for flights of **Crew Dragon** to ISS



▶ **1981. Extravehicular Mobility Unit (EMU):** Currently used by crew on International Space Station (ISS) to perform extravehicular activity, together with Russian **Orlan-M** suits

▶ **2008. China's Feitian:** Spacesuit worn by **Zhai Zhigang** during first Chinese spacewalk. Based on Russian **Orlan-M** suit. Feitian means “flying in the sky”



▶ **1973. Sokol suit:** Used by all who fly on Soyuz spacecraft.

Following **Soyuz 11** disaster in June 1971 – when spacecraft depressurises during re-entry, killing three-man crew – **NPP Zvezda** bureau develops series of **rescue suits** still in use today

