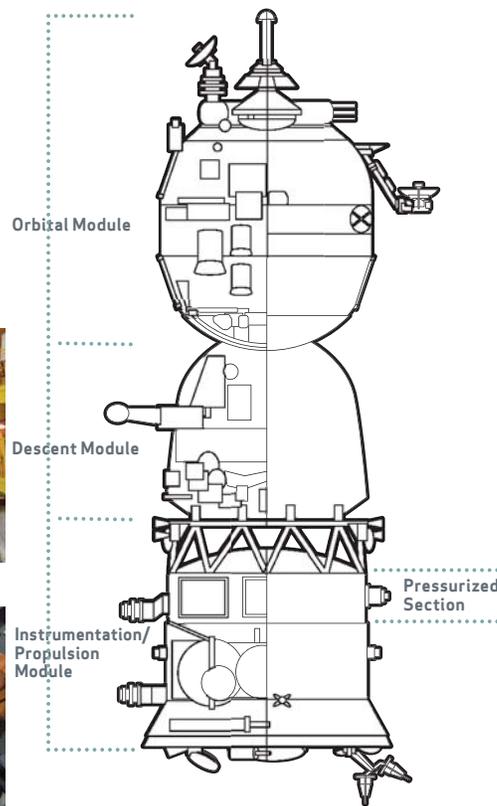
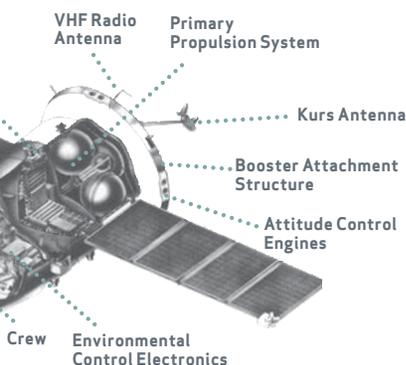
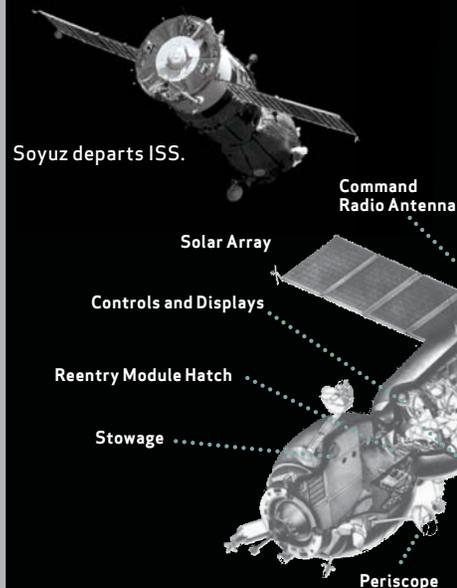
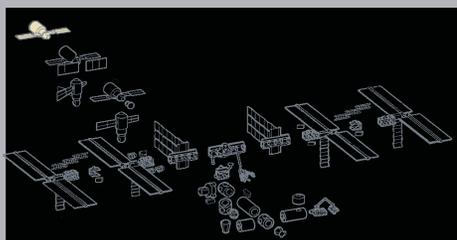




# Soyuz

Russian Federal Space Agency (Roscosmos)/ S.P. Korolev Rocket and Space Corporation Energia (RSC Energia)

Soyuz spacecraft have been in use since the mid-1960s and have been upgraded periodically. Soyuz can support three suited crewmembers for up to 3 days. A nitrogen/oxygen atmosphere at sea level pressure is provided. The vehicle has an automatic docking system and may be piloted automatically or by a crewmember. The Soyuz TMA used for the ISS includes changes to accommodate larger and smaller crewmembers, an improved landing system, and digital electronic controls and displays.



Launch mass	6,441 kg (14,200 lb)
Descent module	2,630 kg (5,800 lb)
Orbital module	1,179 kg (2,600 lb)
Instrumentation/propulsion module	2,360 kg (5,200 lb)
Delivered payload (with three crewmembers)	30 kg (66 lb)
Returned payload	50 kg (110 lb)
Length	7 m (22.9 ft)
Maximum diameter	2.7 m (8.9 ft)
Diameter of habitable modules	2.2 m (7.2 ft)
Solar array span	10.7 m (35.1 ft)
Volume of orbital module	6.5 m <sup>3</sup> (229.5 ft <sup>3</sup> )
Volume of descent module	4 m <sup>3</sup> (141.3 ft <sup>3</sup> )
Descent G-loads	3-4 g
Final landing speed	2 m/s (6.6 ft/s)



Soyuz being prepared for launch.



Soyuz descent module interior.

## Mission Sequence



### Launch and Aborts

- 1 Launch
- 1A Abort using escape rocket
- 2 Escape rocket jettison, nose shroud separation (160 seconds in full)
- 3 Staging (186 seconds)
- 3A Abort by separation of Soyuz
- 4 Orbital velocity (526 seconds)

### Return

- 5 Soyuz retrofire, orbital module separation, reentry module separation
- 6 Pilot parachute deploys
- 7 Drogue parachute deploys
- 7A Main parachute reefed
- 8 Main parachute fully deployed
- 9 Reentry heatshield jettison
- 10 Landing, retro rocket firing