**Soyuz-FG**

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| **Soyuz FG (Soyuz-FG/Fregat)** |
| The launch of Soyuz TMA-9 atop a Soyuz-FG rocket. |
| **Function** | Orbital carrier rocket |
| **Manufacturer** | TsSKB-Progress |
| **Country of origin** | Russia |
| **Size** |
| **Height** | 49.5 m for Soyuz-FG and 42.5 m for Soyuz-FG/Fregat |
| **Diameter** | 10.3 m |
| **Mass** | 305,000 kg (672,000 lb.) |
| **Stages** | 2 (Soyuz FG) or 3 (Soyuz-FG/Fregat) |
| **Capacity** |
| **Payload to LEO** | 7,100 kg for Soyuz-FG and 7,800 kg for Soyuz-FG/Fregat |
| **Payload to800km SSO(only for Soyuz-FG/Fregat)** | 4,500 kg (9,900 lb.) |
| **Associated rockets** |
| **Family** | R-7 (Soyuz) |
| **Launch history** |
| **Status** | Active |
| **Launch sites** | LC-1 (Soyuz-FG) & LC-31 (Soyuz-FG/Fregat), Baikonur |
| **Total launches** | 29 (**FG:** 20, **FG/Fregat:** 9) |
| **Successes** | 29 |
| **Maiden flight** | **Soyuz-FG:** May 20, 2001**Soyuz-FG/Fregat** June 2, 2003 |
| **Notable payloads** | Soyuz-TMAProgress spacecraft |
| **Boosters (Stage 0)** |
| **No boosters** | 4 |
| **Engines** | 1 RD-117 |
| **Thrust** | 1,021.097 kN |
| **Specific impulse** | 310 sec |
| **Burn time** | 120 seconds |
| **Fuel** | LOX/RP-1 |
| **First stage** |
| **Engines** | 1 RD-118 |
| **Thrust** | 999.601 kN (224,719 LBf) |
| **Specific impulse** | 311 sec |
| **Burn time** | 286 seconds |
| **Fuel** | LOX/RP-1 |
| **Second stage** |
| **Engines** | 1 RD-0124 |
| **Thrust** | 294 kN (66,093 LBf) |
| **Specific impulse** | 359 sec |
| **Burn time** | 300 seconds |
| **Fuel** | LOX/RP-1 |
| **Third stage (Optional) - Fregat** |
| **Engines** | 1 S5.92 |
| **Thrust** | 19.6 kN (4,406 LBf) |
| **Specific impulse** | 327 sec |
| **Burn time** | 877 seconds |
| **Fuel** | N2O4/UDMH |

The **Soyuz-FG** launch vehicle is an improved version of the Soyuz-U, from the R-7 family of rockets, designed and constructed by TsSKB-Progress in Samara. It made its maiden flight on May 20, 2001, carrying a Progress M1-6 cargo spacecraft to the International Space Station (ISS).

Since October 30, 2002 the Soyuz-FG has been the only vehicle used by the Russian Federal Space Agency to launch Soyuz-TMA manned spacecraft to the ISS. As of December 2009 Soyuz-FG has performed 20 flights, bringing to the ISS 3 Progress-M1 and 17 Soyuz-TMA spacecraft, with its last launch on December 20, 2009. All launches have been successful.

Another version of the Soyuz-FG is the **Soyuz-FG/Fregat** with Fregat as its 3rd stage, developed and produced by Lavochkin Association in Khimki. A European-Russian company Starsem owns all rights to launches using this version. As of April 2008 there have been 9 launches of Soyuz-FG/Fregat with commercial payloads. Its maiden flight occurred on June 2, 2003.

The analog control system of this spacecraft significantly limits its capabilities, however, and it will eventually be replaced by the Soyuz-2 launch vehicle.

The Soyuz-FG is launched from the Baikonur Cosmodrome, Launch site LC-1 for Soyuz-FG and LC-31 for Soyuz-FG/Fregat.

A Soyuz-FG is rolled out to the launch pad at Baikonur Cosmodrome.

**Launch history**

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| --- | --- | --- | --- | --- | --- | --- |
| **Date and Time****(GMT)** | **Configuration** | **Serial Number** | **Launch Site** | **Result** | **Payload** | **Remarks** |
| May 20, 200122:32 | Soyuz-FG | F15000-001 | LC-1, Baikonur | Success | Progress-M1 6 | ISS Logistics |
| November 26, 200118:24 | Soyuz-FG | F15000-002 | LC-1, Baikonur | Success | Progress-M1 7 | ISS Logistics |
| Kolibri 2000 |  |
| September 25, 200216:58 | Soyuz-FG | E15000-003 | LC-1, Baikonur | Success | Progress M1-9 | ISS Logistics |
| October 30, 200216:58 | Soyuz-FG | E15000-004 | LC-1, Baikonur | Success | Soyuz TMA-1 | Manned flight with 3 CosmonautsISS escape craft |
| April 26, 200303:53 | Soyuz-FG | 15000-006 | LC-1, Baikonur | Success | Soyuz TMA-2 | Manned flight with 2 CosmonautsISS Expedition 7 |
| June 2, 200318:24 | Soyuz-FG/Fregat | E15000-005/ST-11 | LC-31, Baikonur | Success | Mars Express[1] | Mars orbiter |
| Beagle 2 | Mars landerLaunched successfully but later failed |
| October 18, 200305:38 | Soyuz-FG | D15000-007 | LC-1, Baikonur | Success | Soyuz TMA-3 | Manned flight with 3 CosmonautsISS Expedition 8 |
| December 27, 200321:30 | Soyuz-FG/Fregat | D15000-008/ST-12 | LC-31, Baikonur | Success | AMOS-2 | Communications satellite |
| April 19, 200405:19 | Soyuz-FG | D15000-009 | LC-1, Baikonur | Success | Soyuz TMA-4 | Manned flight with 3 CosmonautsISS Expedition 9 |
| October 14, 200403:06 | Soyuz-FG | Zh15000-012 | LC-1, Baikonur | Success | Soyuz TMA-5 | Manned flight with 3 CosmonautsISS Expedition 10 |
| April 15, 200500:46 | Soyuz-FG | Zh15000-014 | LC-1, Baikonur | Success | Soyuz TMA-6 | Manned flight with 3 CosmonautsISS Expedition 11 |
| August 13, 200523:28 | Soyuz-FG/Fregat | Zh15000-011/ST-13 | LC-31, Baikonur | Success | Galaxy 14 | Communications satellite |
| October 1, 200503:54 | Soyuz-FG | Zh15000-017 | LC-1, Baikonur | Success | Soyuz TMA-7 | Manned flight with 3 CosmonautsISS Expedition 12 |
| November 9, 200503:33 | Soyuz-FG/Fregat | Zh15000-010/ST-14 | LC-31, Baikonur | Success | Venus Express | Venus orbiter |
| December 28, 200505:19 | Soyuz-FG/Fregat | Zh15000-016/ST-15 | LC-31, Baikonur | Success | GIOVE-A | Navigation satellite |
| March 30, 200602:30 | Soyuz-FG | P15000-018 | LC-1, Baikonur | Success | Soyuz TMA-8 | Manned flight with 3 CosmonautsISS Expedition 13 |
| September 18, 200604:08 | Soyuz-FG |  ?15000-023 | LC-1, Baikonur | Success | Soyuz TMA-9 | Manned flight with 3 CosmonautsISS Expedition 14 |
| April 7, 200717:31 | Soyuz-FG |  | LC-1, Baikonur | Success | Soyuz TMA-10 | Manned flight with 3 CosmonautsISS Expedition 15 |
| May 29, 200720:31 | Soyuz-FG/Fregat |  | LC-31, Baikonur | Success | Globalstar | Comsat |
| Globalstar | Comsat |
| Globalstar | Comsat |
| Globalstar | Comsat |
| October 10, 200713:22 [1] | Soyuz-FG |  | LC-1, Baikonur | Success | Soyuz TMA-11 | Manned flight with 3 CosmonautsISS Expedition 16 |
| October 20, 200720:12 | Soyuz-FG/Fregat |  | LC-31, Baikonur | Success | Globalstar | Comsat |
| Globalstar | Comsat |
| Globalstar | Comsat |
| Globalstar | Comsat |
| December 14, 200713:17 | Soyuz-FG/Fregat |  | LC-31, Baikonur | Success | RADARSAT-2 | Earth observation |
| April 8, 200811:16 | Soyuz-FG |  | LC-1, Baikonur | Success | Soyuz TMA-12 | Manned flight with 3 CosmonautsISS Expedition 17First South Korean in space. |
| April 26, 200822:16 | Soyuz-FG/Fregat |  | LC-31, Baikonur | Success | GIOVE-B | Navigation satellite |
| October 12, 200807:01 | Soyuz-FG |  | LC-1/5, Baikonur | Success | Soyuz TMA-13 | Manned flight with 3 CosmonautsISS Expedition 18 |
| March 26, 200911:49 | Soyuz-FG |  | LC-1/5, Baikonur | Success | Soyuz TMA-14 | Manned flight with 3 CosmonautsISS Expedition 19 |
| May 27, 200910:34[2] | Soyuz-FG |  | LC-1/5, Baikonur | Success | Soyuz TMA-15 | Manned flight with 3 CosmonautsISS Expedition 20 |
| September 30, 200907:14 | Soyuz-FG |  | LC-1/5, Baikonur | Success | Soyuz TMA-16 | Manned flight with 3 CosmonautsISS Expedition 21 |
| December 20, 200921:52 | Soyuz-FG |  | LC-1/5, Baikonur | Success | Soyuz TMA-17 | Manned flight with 3 CosmonautsISS Expedition 22 |

The [Soyuz TMA-13](http://en.wikipedia.org/wiki/Soyuz_TMA-13) spacecraft arrives at the launch pad at the [Baikonur Cosmodrome](http://en.wikipedia.org/wiki/Baikonur_Cosmodrome) in [Kazakhstan](http://en.wikipedia.org/wiki/Kazakhstan) October 10, 2008.

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