FPU Service Life Data

The service life refers to the average expected service life of a components until faults or failures occur when used as intended and in compliance with the specifications and operating manual. A failure is as soon as the basic function of the FPU is no longer available.

- Service life of FPU governed by service life of internal valves.
- Service life of internal valves is 500 000 000 cycles.
- Number of internal valve cycles for one cycles of FPU varies with controller settings such as valve frequency, speed of actuation and gain of controller.

Service life of FPU in number of cycles can be calculated using the following formula:

$$Service\ life\ of\ FPU = 500\,000\,000 * \frac{l}{v * f}$$

This is for an cycle where the movement is a length l in one direction, and then back the same distance. This with a speed v with valve frequency of internal valves of f.

	50 mm/s	100 mm/s	200 mm/s	300 mm/s	500 mm/s	1 m/s
100 mm	5 million	10 million	20 million	30 million	50 million	100 million
200 mm	2.5 million	5 million	10 million	15 million	25 million	50 million
400 mm	1.3 million	2.5 million	5 million	8 million	13 million	25 million
500 mm	1 million	2 million	4 million	6 million	10 million	20 million
1 000 mm	0.5 million	1 million	1.3 million	3 million	5 million	10 million

Note that there is a number of settings that can be done to improve life length of FPU:

- Activation of the function Full speed controlled stop.
- Use FPU with valve size where valve can be open fully during movement.

If function full speed controlled stop is activated, for most applications, it's possible to set controller so that valve is fully open for all of the movement with the exception of the last 15 mm of movement. The service life of the FPU can then be calculated with the following formula.

$$Service\ life\ of\ FPU = 500\,000\,000 * \frac{15\ mm}{v * f}$$

	50 mm/s	100 mm/s	200 mm/s	300 mm/s
100 mm	25 million	50 million	100 million	150 million
200 mm	25 million	50 million	100 million	150 million
400 mm	25 million	50 million	100 million	150 million
500 mm	25 million	50 million	100 million	150 million
1 000 mm	25 million	50 million	100 million	150 million

For more exeact estimation of service life, it's recommended to use the PC application to measure the number of valve cycles for the specific application. For assistance, contact staccato support.

To optimize the life length of the FPU the following steps should be taken into consideration:

- Use FPU with valve size where valve can be open fully during movement.
- Activate the function Full speed controlled stop, if suitable for the application.
- Avoid using higher accuracy then necessary. If a high accuracy is set, the controller will need more valve cycles to get desired accuracy.
- Avoid and maintain air leakage in the system, the FPU will activates valves to counter act the leakage and will give a negative impact on the life length.

For more exact estimation of service life, it's recommended to use the PC application to measure the number of valve cycles for the specific application. For assistance, contact staccato support.