To choose the correct PSU for your actuator:

There are many parameters that can influence the choice of power supply. But the main two parameters to be aware of are INDUCTIVE LOAD and BACK EMF capabilities. The inductive load you will experience when the actuator starts and the back emf you will experience when the actuator is stopping. Other parameters you should not neglect are “stall current” when the actuator meets a hard stop and normal continuous load.

Starting of DC Actuator

At the peak moment when an Actuator is started, the armature in the Dc-motor is stationary and there is no counter EMF being generated. The only component to limit starting current is the armature resistance, which, in most DC motors is a very low value (approximately one ohm or less), as shown in Equation.

$$I_a = \frac{E_t - E_{CEMF}}{R_a}$$

For a normal actuator the starting current is the same as the DC motors stall current and is for a normal Bansbach Actuator as follows:

easyE35-12V : 9.4 A
easyE35-24V : 5.2 A
easyE50-12V : 43.7 A
easyE50-24V : 31.2 A
easyE60-24V : 83.7 A

The inrush current will depend on load be applied for around 200ms. So the power supply need to be able to cope with this high current for a minimum of 200ms.

This can be that the power supply that is used, is able to supply the hole current or the power supply is built for high inductive loads. This can be a Boost function or blanking window.

Using actuator controllers:

One way to mediate much of the inductive load can be to use a controller to manage the actuators supply and current.

Adding a controller gives the possibility of slowly introducing the voltage and thereby also the current going into the actuator. This will highly reduce the needed of current from the PSU. The reduction from stall current to needed current can be as must 1/3 to 2/3 of the current.
ⓘBut important the PSU still need to be able to cope with inductive loads.

Stopping of DC Actuator

When stopping an actuator by removing the power from the DC motor in the actuator. The actuator will start to act as a generator. This generation of power is called EMF or electric motoric force. This power is now being send back to the power supply. The PSU will in the most cases see this as a to high current or shoot circuit and shot down.
In many cases this can also be mediated by using a controller, but sometimes it is necessary to use other means if the PSU is not able to cope with this. This could be an active break load controller.

How to choose the right PSU for your Bansbach actuator:

If assuming the use of either easyE-i or one of our other controllers for this project. And the use of an PSU that is designed for use with inductive loads.

For all controllers there are different reaction delays. This can be “max current delay” or “I-trip delay”. The purpose is for the not getting an over sensitive system that will stop on a very small current fluctuation. They can be from 100ms to 500ms “normally”, for this specific time, is where the current is allowed to rise over the normal, allowed value. This is specified as “Over current” or “I-trip” level.

So, to look at the normal maximum full loaded current for Bansbach actuators:
easyE35-12V : 3.8 A
easyE35-24V : 1.8 A
easyE50-12V : 16 A
easyE50-24V : 8 A
easyE60-24V : 11.5 A

These are the recommended values to set as “over current” or “I-trip” for the controllers.
So, for choosing the right PSU you need to take in account the inductive load and the over current delays.

Rule of thumb:
Choose an PSU that has ether 50% power boost or is 50% bigger than you need.

Example of a very good specification for an PSU:
This could be for easyE-i60.

Power Supply

- AC 100-240V Wide-range Input
- Width only 82mm
- Efficiency up to 93.9%
- ATEX and IECEx Approved (-A1 Version)
- -C1 Version with Conformal Coated PC-board
- 150% (720W) Peak Load Capability
- Safe Hiccup^{PLUS} Overload Mode
- Easy Fuse Tripping due to High Overload Current
- Active Power Factor Correction (PFC)
- Negligible low Inrush Current Surge
- Short-term Operation down to 60Vac and up to 300Vac
- Full Power Between -25°C and +60°C
- DC-OK Relay Contact
- Quick-connect Spring-clamp Terminals
- 3 Year Warranty

Here you can see that 150% peak load capacity – “So. It has boos function”.
And in the documentation, they have stated:

22.2. Peak Current Capability

Solenoids, contactors and pneumatic modules often have a steady state coil and a pick-up coil. The inrush current demand of the pick-up coil is several times higher than the steady-state current and usually exceeds the nominal output current (including the PowerBoost). The same situation applies when starting a capacitive load.

22.3. Back-feeding Loads

Loads such as decelerating motors and inductors can feed voltage back to the power supply. This feature is also called return voltage immunity or resistance against Back- E.M.F. (Electro Magnetic Force).

22.10. Inductive and Capacitive Loads

The unit is designed to supply any kind of loads, including unlimited capacitive and inductive loads.

So, this is an PSU with BOOST and is built for INDUCTIVE loads.
And this can handle back EMF.

Sum up:
Rule of thumb:
150% current capacity, or boost.
Made for Inductive load.
Made for handling of Back EMF. Especially important for bigger actuators like easyE-50 and easyE-60.