

Solenoid selection guide

To help you get the actuator system you want you can draw on our 50+ years experience. We offer you an unmatched end-to-end service: from tailor-made designs, testing and prototyping to the manufacture of your mechanism.

Get a detailed quote or buy now

Email us at sales@magnetschultz.co.uk or call +44(0)1483 757 298

Minimum requirements

The following are needed as a minimum to enable solenoid selection

Function required:	Pull / push / rotary/ latching / locking / etc	
Stroke movement:	Travel in:	mm / inches
Force needed:	Newtons / Kgf / Pounds / etc	
Duty cycle:	On time / off time ratio	
Power supply voltage:	Voltage:	AC or DC

Additional information to assist in making a solenoid selection

Operating life:	How many cycles
Environment:	Ambient temperature / wet or dry / clean or dusty/ vibration / etc
Installation factors:	Space envelope / mounting preference / plunger design
Power supply factors:	Any power (Watts) or current (Amps) limitations in the system

Minimum requirements

When selecting a solenoid it is useful to know something about the basic features and characteristics :

- A solenoid is a linear actuator in which, when the coil is energised, the armature (plunger) is **Pulled** in to the pole piece (stop).
- If a **Push** function is wanted, then a non-magnetic push-rod is required – see Fig 1.
- Rotary solenoids are selected in much the same way, except that instead of a linear stroke, there is an arc of rotation.
- Generally the force **increases** as the armature closes on the pole piece – see Fig 2.
- The Duty Rating (%) defines the power of the coil in the solenoid and is the ratio of the ON time to the total time per cycle of operation.

$$\text{Duty Cycle} = \frac{\text{time ON}}{(\text{time ON} + \text{time OFF})} \times 100\%$$

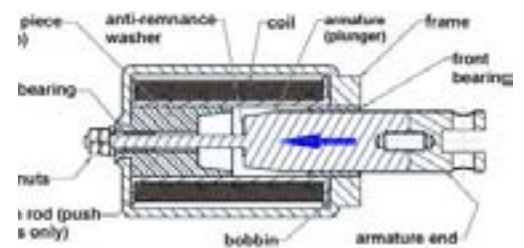


Fig 1. Linear solenoid, bearing construction

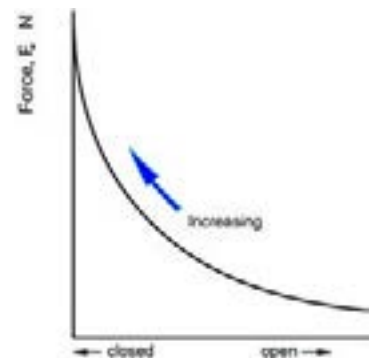


Fig 2. Force Characteristic

AC solenoid vs DC solenoid? Pro's & cons :

AC solenoids

When selecting a solenoid it is useful to know something about the basic features and characteristics :

- have an in-rush current, providing high initial stroke force
- can utilise longer strokes than DC solenoids for the above reason
- may hum in operation, according to the application conditions
- the armature (plunger) must always be allowed to seat, otherwise over-heating of the coil may occur.

DC solenoids

When selecting a solenoid it is useful to know something about the basic features and characteristics :

- are generally quieter in operation
- have longer operating life (bearing construction versions)
- any DC Solenoid can be operated from an AC supply via a simple bridge-rectifier, also available from us – ask for details.

Other solenoid types

There are many other variations in solenoid design which may incorporate features such as

- 2 coils & 2 pole pieces
- permanent magnets
- different force/stroke characteristics ; proportional, decreasing

Details on these and many others can be found in the product-specific data sheets or contact us on 01483 794700 or sales@magnetschultz.co.uk

Need more information or advice?

Email one of our technical experts at sales@magnetschultz.co.uk or call +44(0)1483 757 298 now