

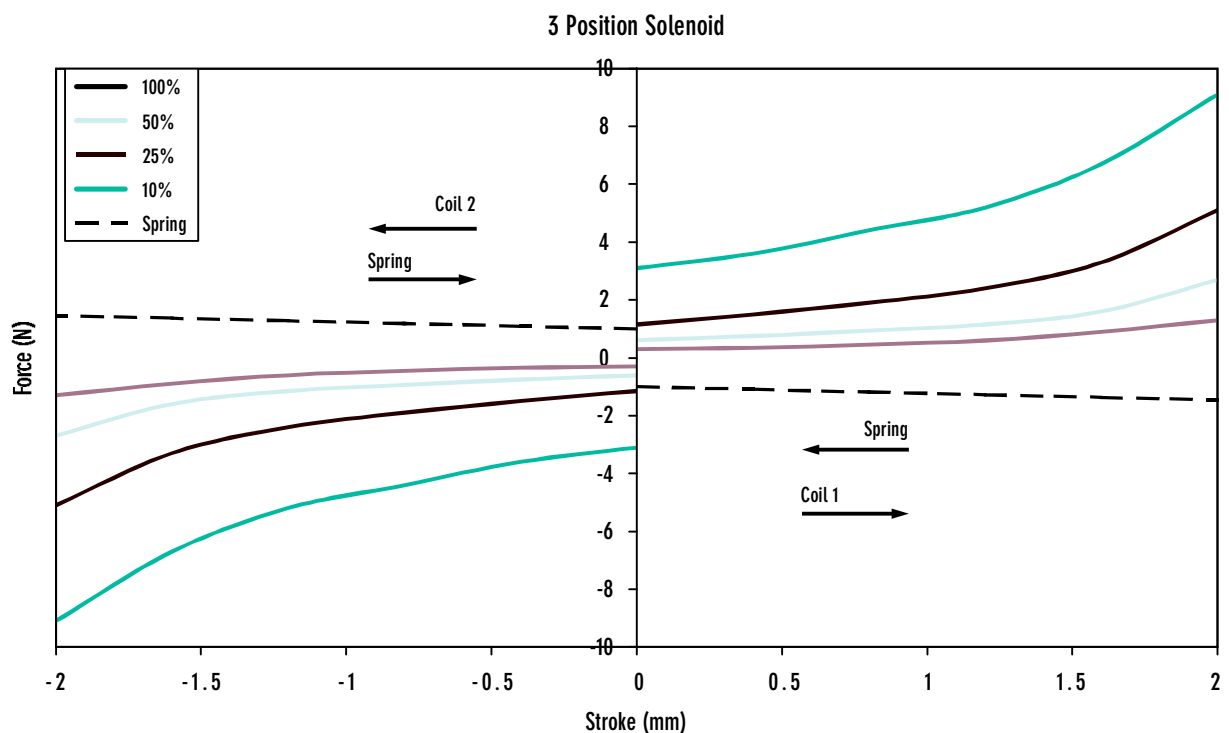
[3 - Position solenoid]

The 3-position solenoid allows a mechanism to be moved accurately to 3 stable points. For selection mechanism, this permits higher functionality to be achieved within a restricted space. The most common (standard) configuration is center-neutral type which is described.

In the de-energised condition the armature is moved to the center position by springs. If Coil 1 is energised, the armature moves out to the maximum extension, if Coil 2 is energised the armature moves in to the minimum extension. Because all 3 positions are controlled by mechanical stops, they are highly repeatable.

The solenoid comprises of two separate coil assemblies mounted end-to-end which move the armature to either end-position when energised, and a spring operated centering mechanism. The centering mechanism provides a positive center position from which the armature will not move until deflection force exceeds the spring preload, thus it will not shift with small changes in load.

Control of the solenoid requires only two switches to regulate power applied to either coil. To achieve similar function with a conventional solenoid, two solenoids would be required, plus a complex spring and linkage mechanism. To use a motor to achieve the same function, gearing and position sensing would be required, plus a more complex drive circuit. The 3-position solenoid provides a compact, robust, and elegant solution to such positioning requirements, with



[3 - P o s i t i o n s o l e n o i d]

The 3-position solenoid can be produced in open-frame construction, or in tubular construction. Three different spring options are offered for most types. Option A is standard and will work with any duty cycle. Options B and C have stronger springs and will generally only work at intermittent duty cycle, refer to graphs for details.

General Specifications

Insulation class	type E (120°C), type A (105°C) for leadwires
Isolation Voltage	1000 vAC, 50/60Hz, 1 minute
Insulation Resistance	>100M_ at 500vDC
Life Expectancy	>200,000 cycles

Product Designation

Part numbers for 3-position solenoids are constructed as follows:

C3PT-0712 A		
C3PT-07	12	A
Type designation	Voltage (@100% duty)	Spring Type

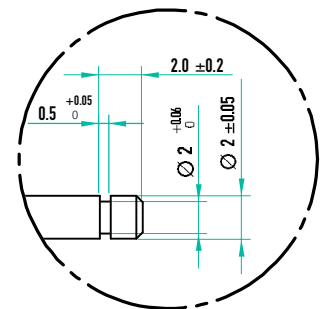
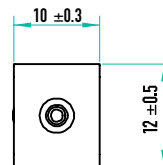
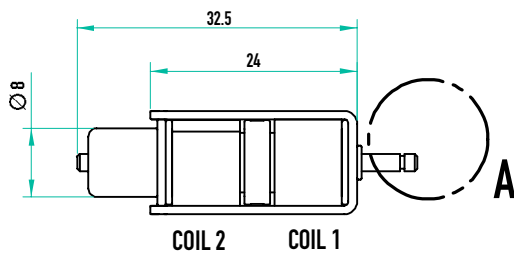
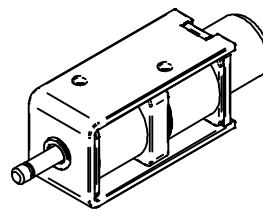
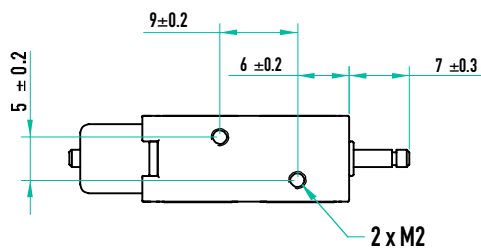
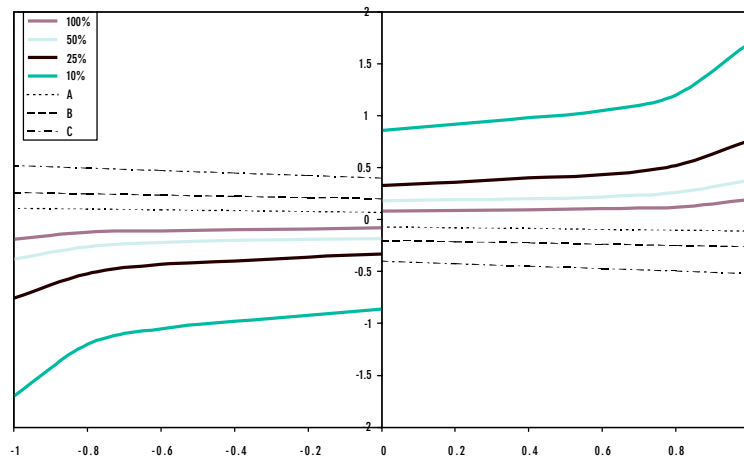
End-Neutral types

3-Position solenoids with end-neutral construction, where de-energized position is at one end

[3 - Position solenoid]

C3PF-05

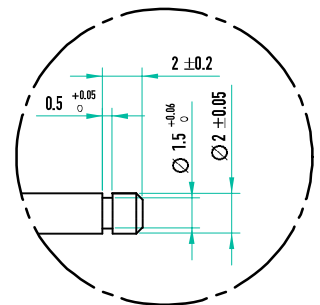
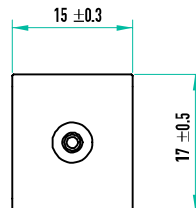
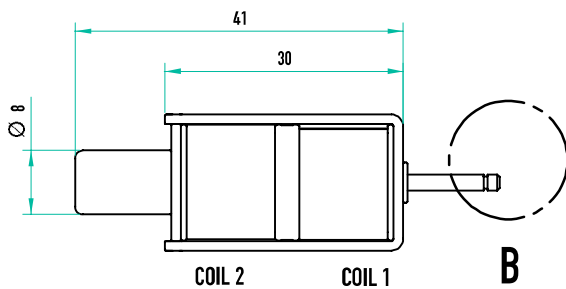
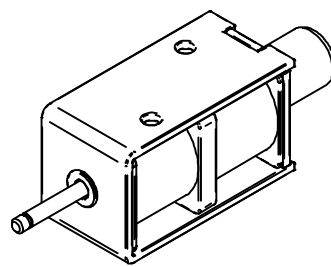
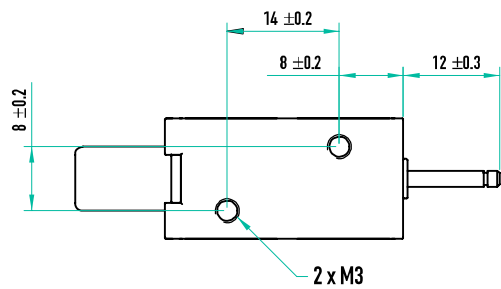
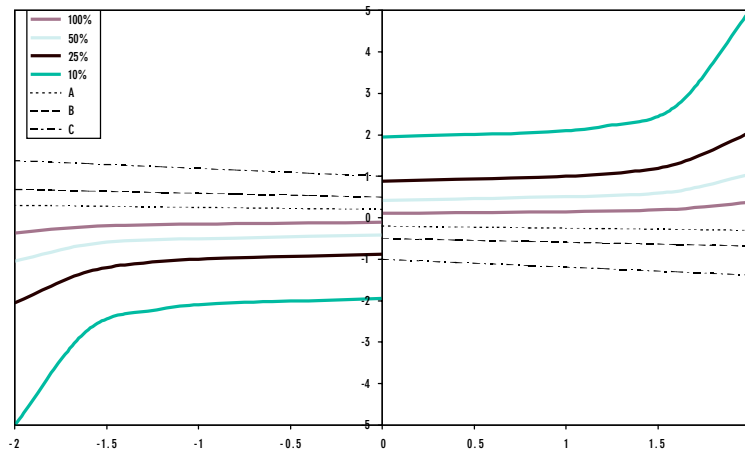
	Duty Cycle		100%	50%	25%	10%
			Continuous	Intermittent		
	Maximum 'ON' time (seconds)		∞	20	5	1
	Power dissipation at 20°C (W)		1.6	3.2	6.4	16
	Ampere-turns		130	184	260	411
	Speed of operation [no load] (ms)		13	9	7	5
Part Number	Coil resistance at 20°C (Ω) +/-10%	Turns				
C3PF-0503	6	280	3	4.2	6	9.5
C3PF-0506	24	530	6	8.5	12	19
C3PF-0512	90	1020	12	17	24	38
C3PF-0524	360	1900	24	34	48	76



[3 - Position solenoid]

C3PF-07

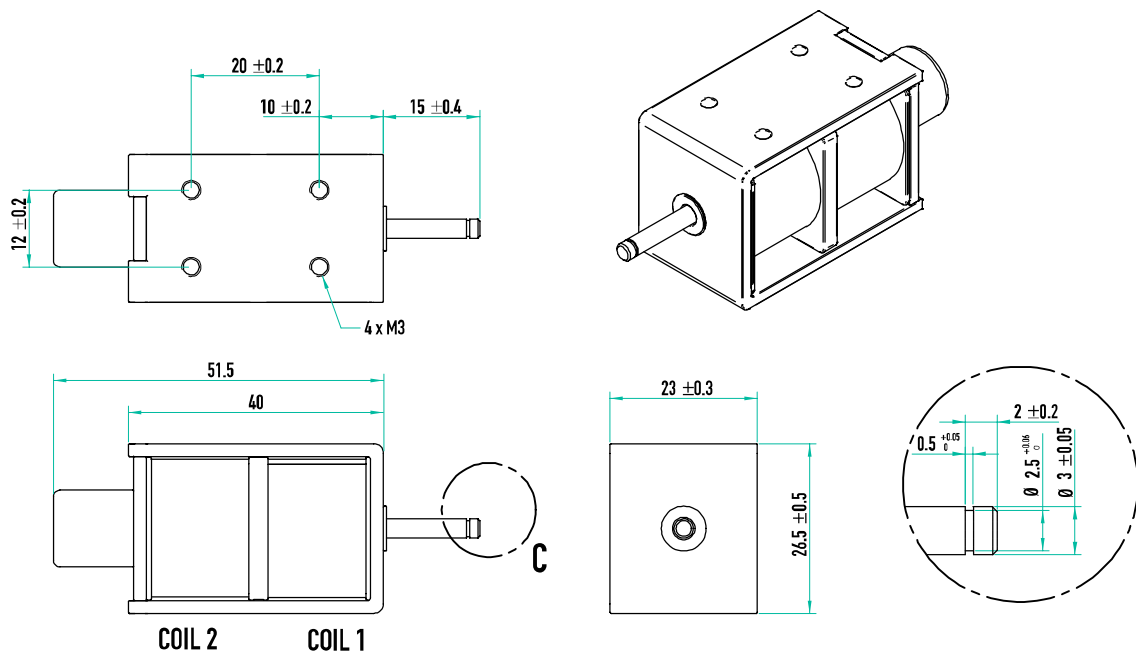
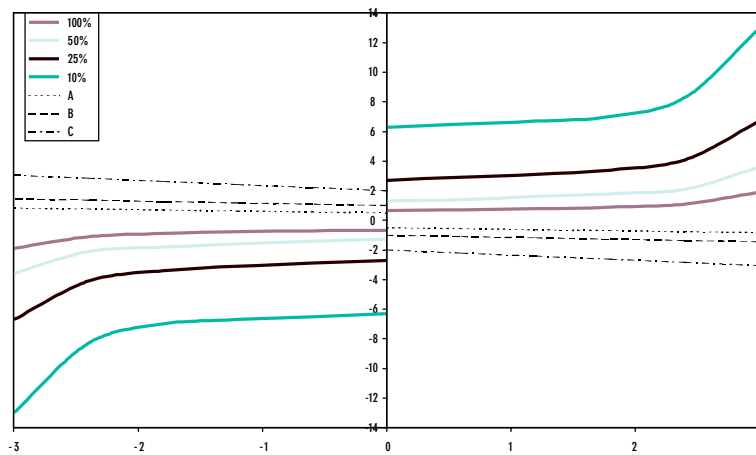
	Duty Cycle	100%	50%	25%	10%	
		Continuous	Intermittent			
	Maximum 'ON' time (seconds)	∞	20	5	1	
	Power dissipation at 20°C (W)	2.4	4.8	9.6	24	
	Ampere-turns	220	311	440	696	
	Speed of operation [no load] (ms)	16	10	6.5	4.8	
Part Number	Coil resistance at 20°C (Ω) +/-10%	Turns				
C3PF-0703	4	300	3	4.2	6	9.5
C3PF-0706	16	600	6	8.5	12	19
C3PF-0712	60	1120	12	17	24	38
C3PF-0724	240	2200	24	34	48	76



[3 - Position solenoid]

C3PF-11

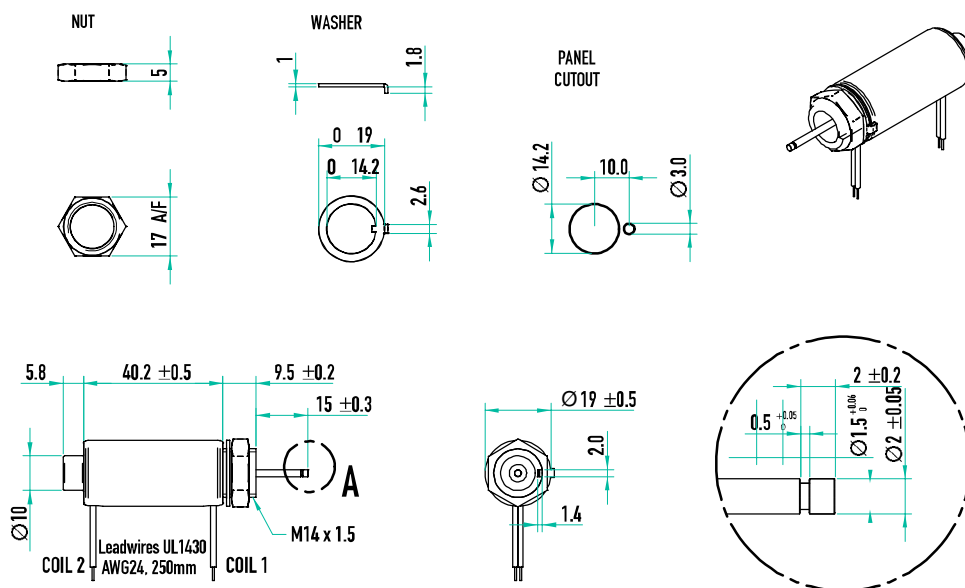
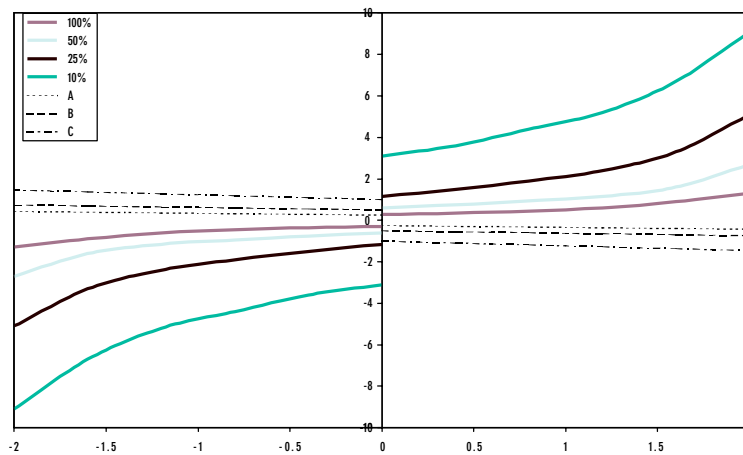
	Duty Cycle	100%	50%	25%	10%	
		Continuous	Intermittent			
	Maximum 'ON' time (seconds)	∞	40	10	2	
	Power dissipation at 20°C (W)	3.8	7.6	15.2	38	
	Ampere-turns	350	495	700	1107	
	Speed of operation [no load] (ms)	27	16	11	8	
Part Number	Coil resistance at 20°C (Ω) +/-10%	Turns				
C3PF-1103	2.5	300	3	4.2	6	9.5
C3PF-1106	10	590	6	8.5	12	19
C3PF-1112	38	1160	12	17	24	38
C3PF-1124	150	220	24	34	48	76



[3 - Position solenoid]

C3PT-07

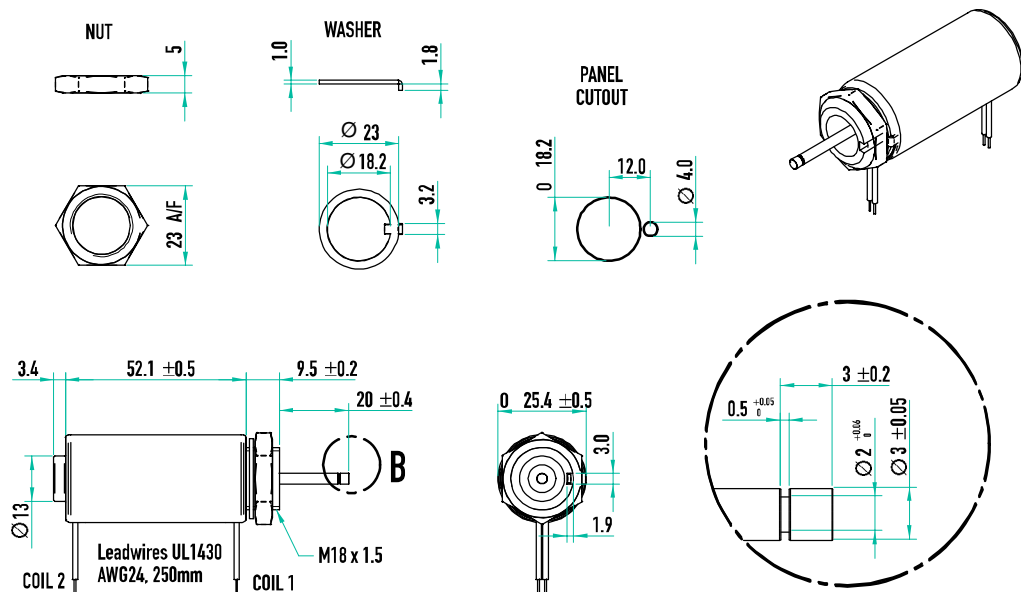
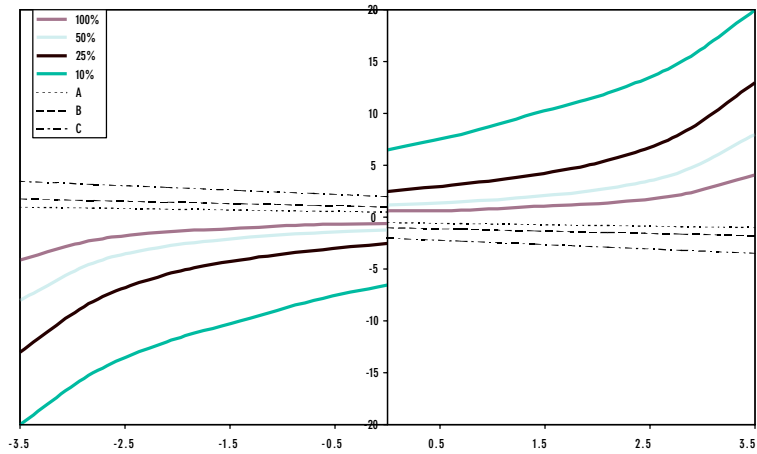
	Duty Cycle	100%	50%	25%	10%	
		Continuous	Intermittent			
	Maximum 'ON' time (seconds)	∞	20	5	1	
	Power dissipation at 20°C (W)	2.6	5.2	10.4	26	
	Ampere-turns	260	368	520	822	
	Speed of operation [no load] (ms)	13	9	7	5	
Part Number	Coil resistance at 20°C (Ω) +/-10%	Turns				
C3PT-0703	3.5	320	3	4.2	6	9.5
C3PT-0706	14	620	6	8.5	12	19
C3PT-0712	55	1200	12	17	24	38
C3PT-0724	220	2350	24	34	48	76



[3 - Position solenoid]

C3PT-10

	Duty Cycle	100%	50%	25%	10%
		Continuous	Intermittent		
	Maximum 'ON' time (seconds)	∞	40	10	2
	Power dissipation at 20°C (W)	4	8	16	40
	Ampere-turns	400	566	800	1265
	Speed of operation [no load] (ms)	20	14	10	7.5
Part Number	Coil resistance at 20°C (Ω) +/-10%	Turns			
C3PT-1003	2.3	310	3	4.2	6
C3PT-1006	9	600	6	8.5	12
C3PT-1012	35	1180	12	17	24
C3PT-1024	140	2300	24	34	48



[3 - Position solenoid]

C3PT-12

	Duty Cycle	100%	50%	25%	10%	
		Continuous	Intermittent			
	Maximum 'ON' time (seconds)	∞	40	10	2	
	Power dissipation at 20°C (W)	6	12	12	60	
	Ampere-turns	660	933	1320	2087	
	Speed of operation [no load] (ms)	26	18	13	10	
Part Number	Coil resistance at 20°C (Ω) +/-10%	Turns				
C3PT-1203	1.6	350	3	4.2	6	9.5
C3PT-1206	6	680	6	8.5	12	19
C3PT-1212	24	1330	12	17	24	38
C3PT-1224	95	2640	24	34	48	76

