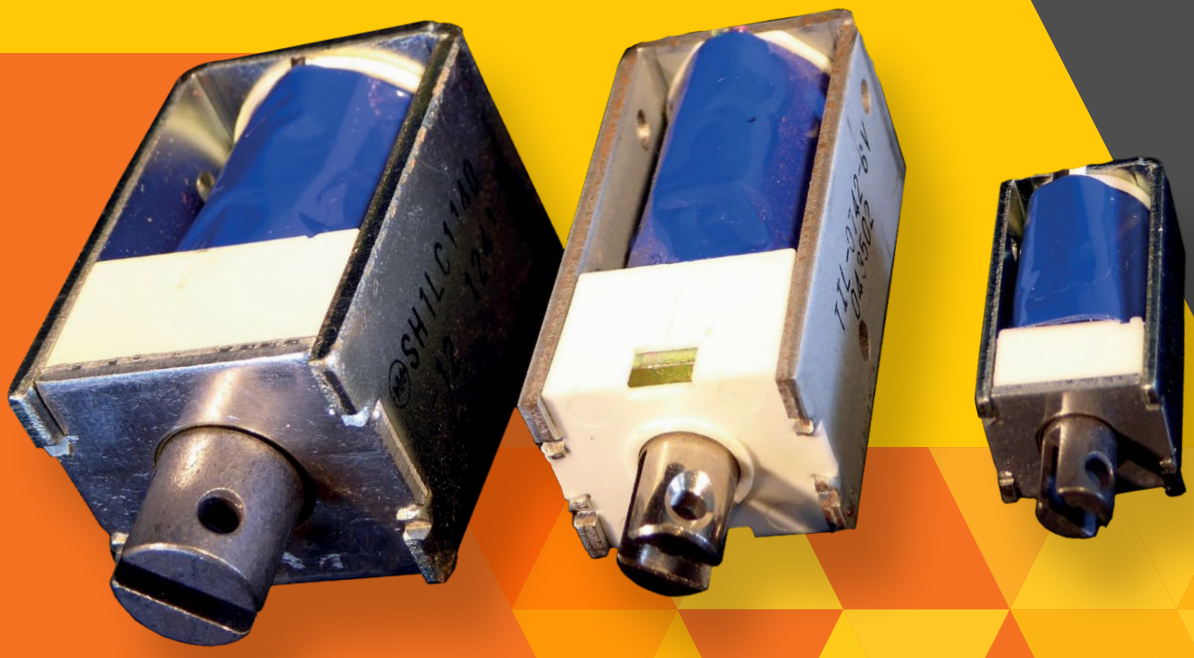
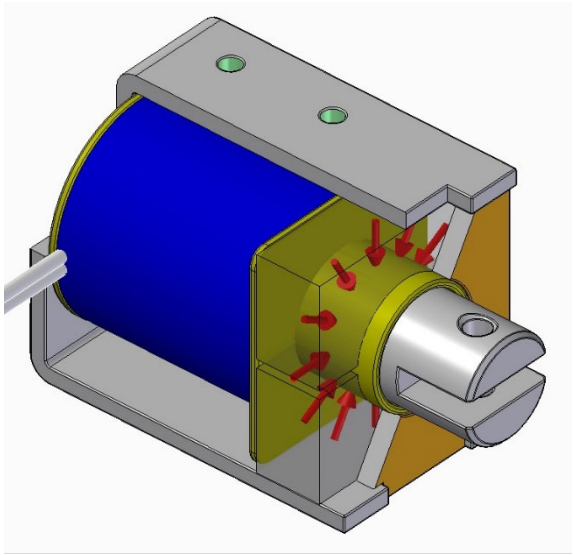
LATCHING SOLENOIDS



Single Latching Solenoid

A latching solenoid of open frame single coil construction is illustrated with a section to show how it differs from other parts.



The end-frame is non-magnetic and has no impact on behaviour.

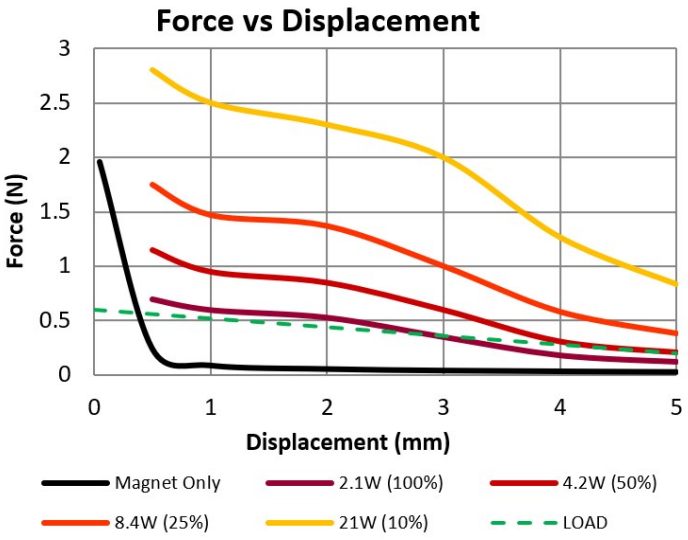
Permanent magnets are incorporated (shown transparent), in the de-energised condition these drive magnetic flux around the magnetic circuit of the solenoid to develop latching force with no power applied.

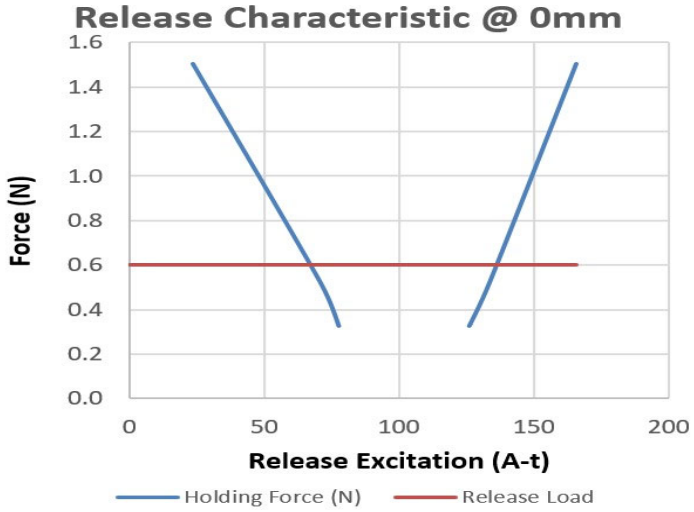
When energised in a forward direction, the coil reinforces the field driven by the magnets to develop a higher force

When energised in a reverse direction, the coil opposes the field driven by the magnets, as the current is increased the magnetic flux reduces until flux and force approaches zero. If the reverse current is increased further, flux is driven in the reverse direction, and the solenoid again develops an attraction force – this is in the same direction as when forward-energised.

Force Characteristic

Characteristic force curves for a single coil latching solenoid are shown, and a return spring curve LOAD is included.





- The top graph shows force curves in the de-energised and forward-energised conditions.

In the de-energised condition, a high holding force is developed which reduces rapidly as displacement increases. This is greater than the spring curve for displacement <0.5mm and will hold this position, for displacement >0.5mm the spring force is larger, and the solenoid will move to an extended position.

As excitation power increases, the 'pull-in' force increases, and the solenoid will try to move to the 0mm position.

With reverse (Release) excitation the magnetic attraction force will decrease as current increases, when this becomes less than the Release Load the solenoid will release. As excitation increases further, the flux will eventually be driven in the opposite direction, and the solenoid will again develop force to pull in towards the 0mm position.

GEEPLUS S1L-0211-4v

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

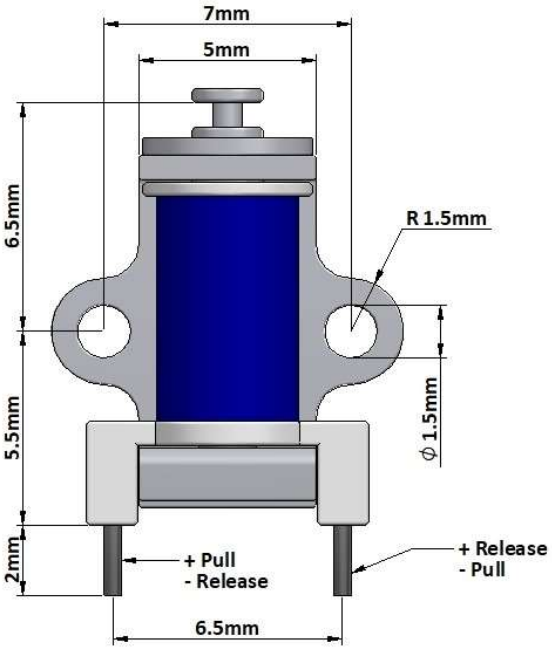
Maximum "on" time in seconds	7*
Watts at 20°C	2.67
Ampere-Turns at 20°C	285

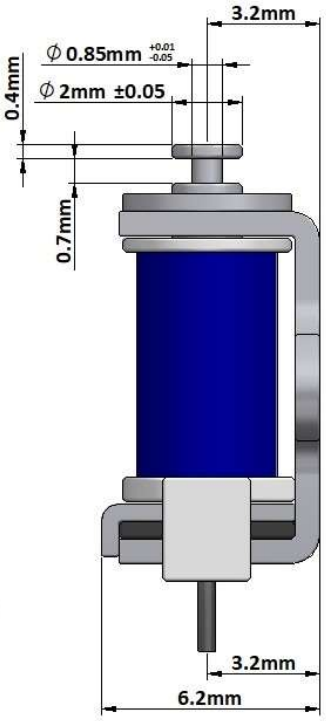
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
S1L-0211-4v	24.0 Ω	725	4	167 mA

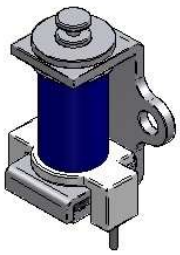
*With Solenoid mounted on a massive heatsink

General Parameters

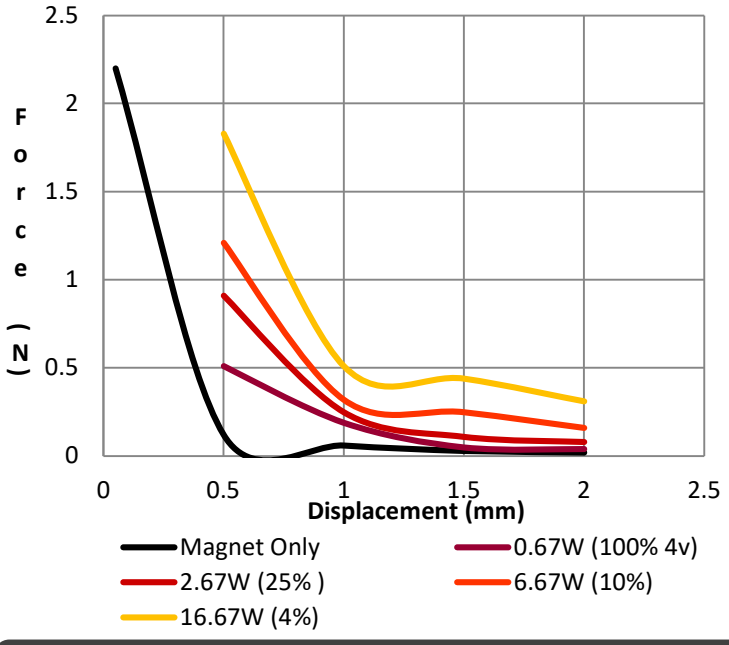
Life Expectancy (Cycles)	100,000
Mass	1.45 grammes
Plunger Mass	0.3 grammes
Board pins for termination	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	



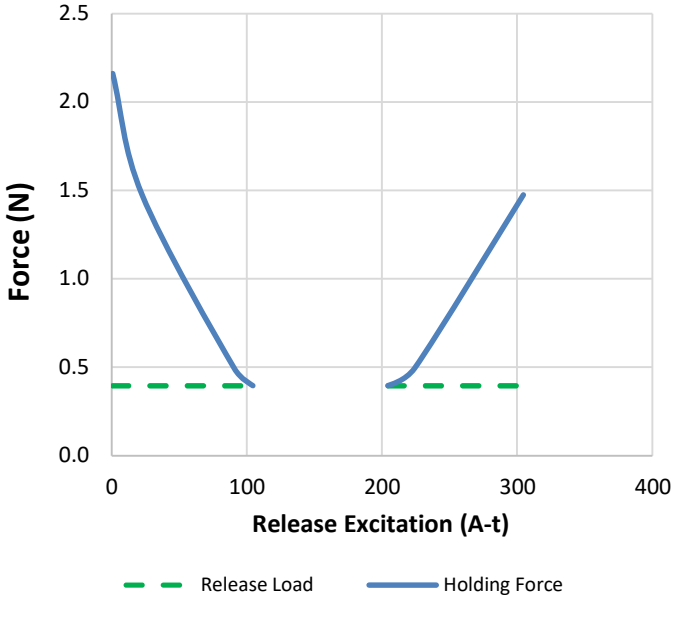




Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



GEEPLUS SH1LC-0524-xx

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds — 5

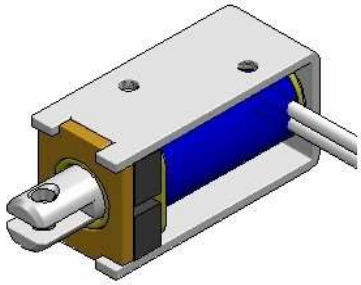
Watts at 20°C — 8.4

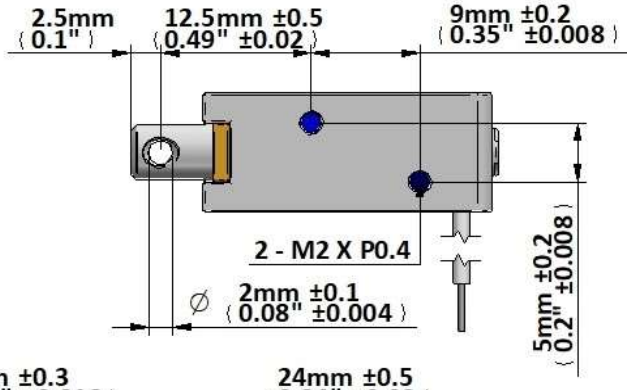
Ampere-Turns at 20°C — 452

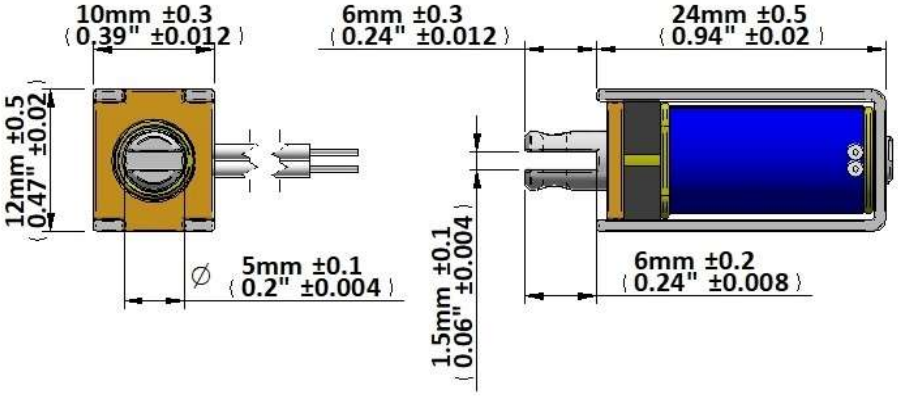
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
SH1LC-0524-06	4.3 Ω	340	6	360 mA
SH1LC-0524-12	17.1 Ω	630	12	200 mA
SH1LC-0524-24	68.6 Ω	1260	24	100 mA

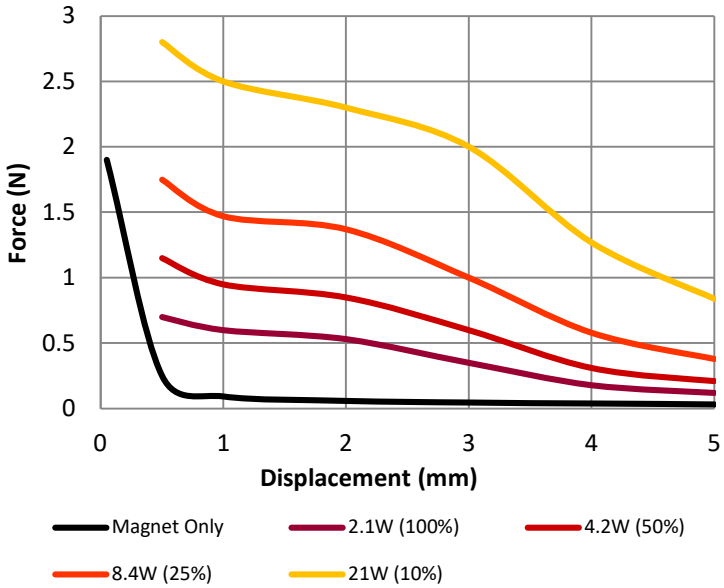
General Parameters

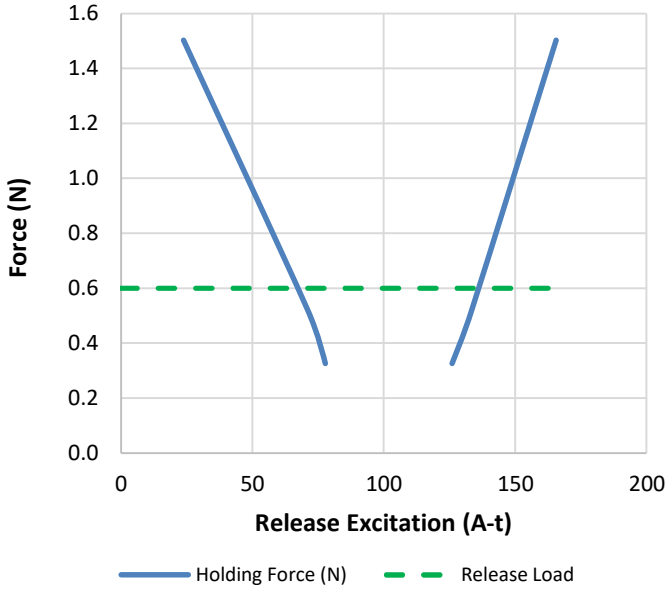
Life Expectancy (Cycles)	200,000
Mass	14.0 grammes
Plunger Mass	3.3 grammes
Leadwires 250mm (10")min, UL1007, AWG28	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	











GEEPLUS SH1LC-0730-xx

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds — 10

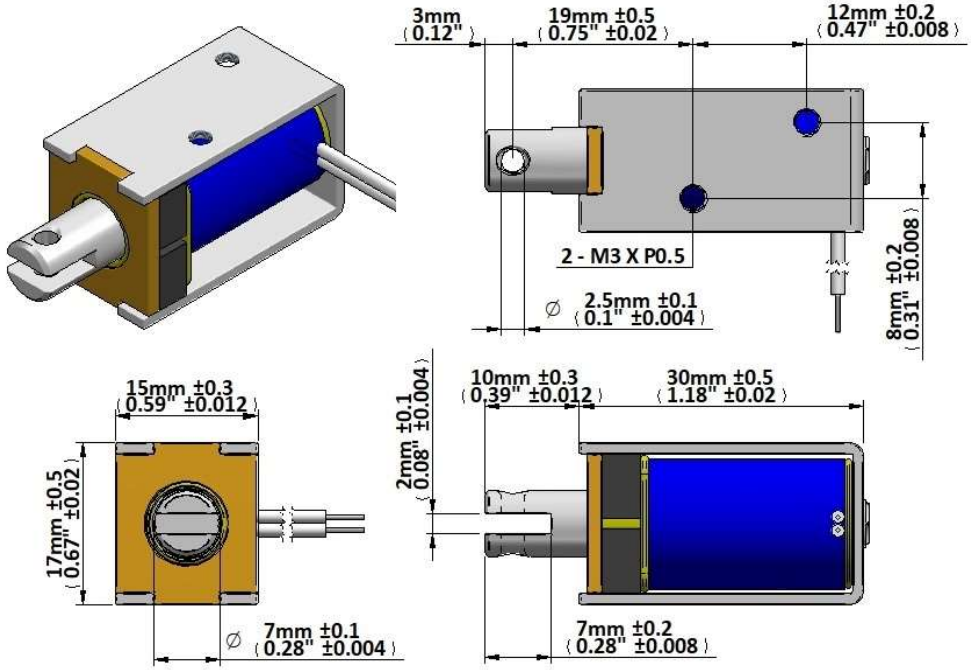
Watts at 20°C — 9.6

Ampere-Turns at 20°C — 614

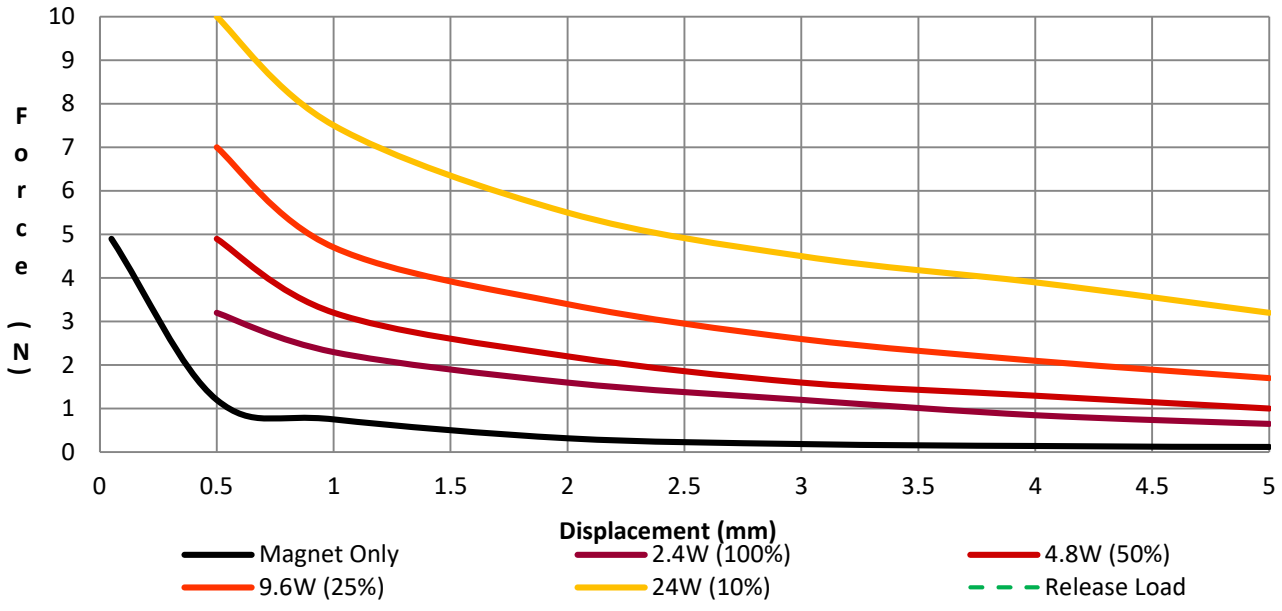
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
SH1LC-0730-06	3.8 Ω	385	6	650 mA
SH1LC-0730-12	15.0 Ω	780	12	320 mA
SH1LC-0730-24	60.0 Ω	1530	24	160 mA

General Parameters

Life Expectancy (Cycles)	200,000
Mass	38.0 grammes
Plunger Mass	9.2 grammes
Leadwires 250mm (10")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds — 20

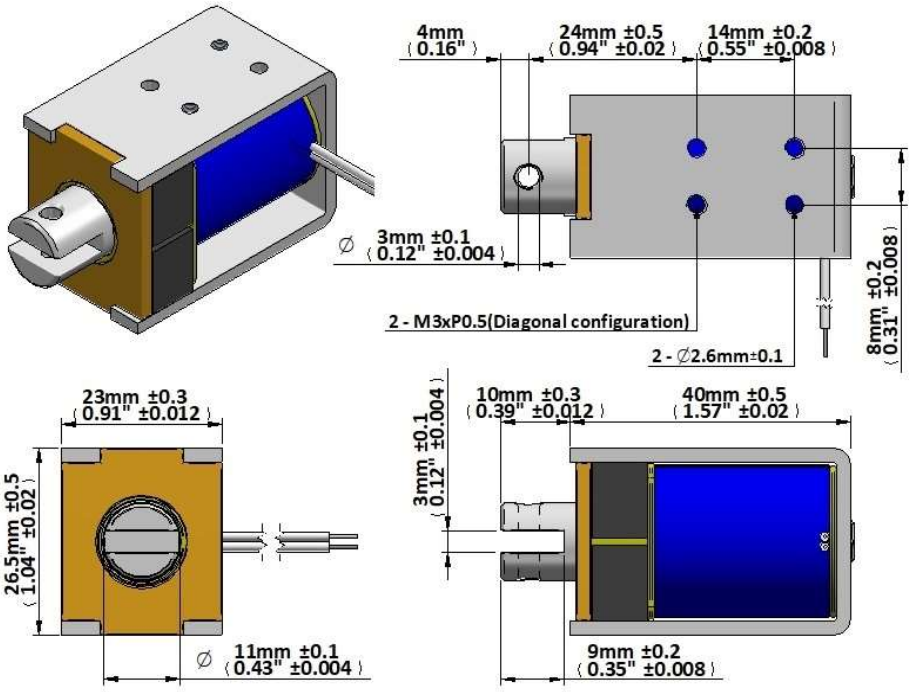
Watts at 20°C — 17.6

Ampere-Turns at 20°C — 968

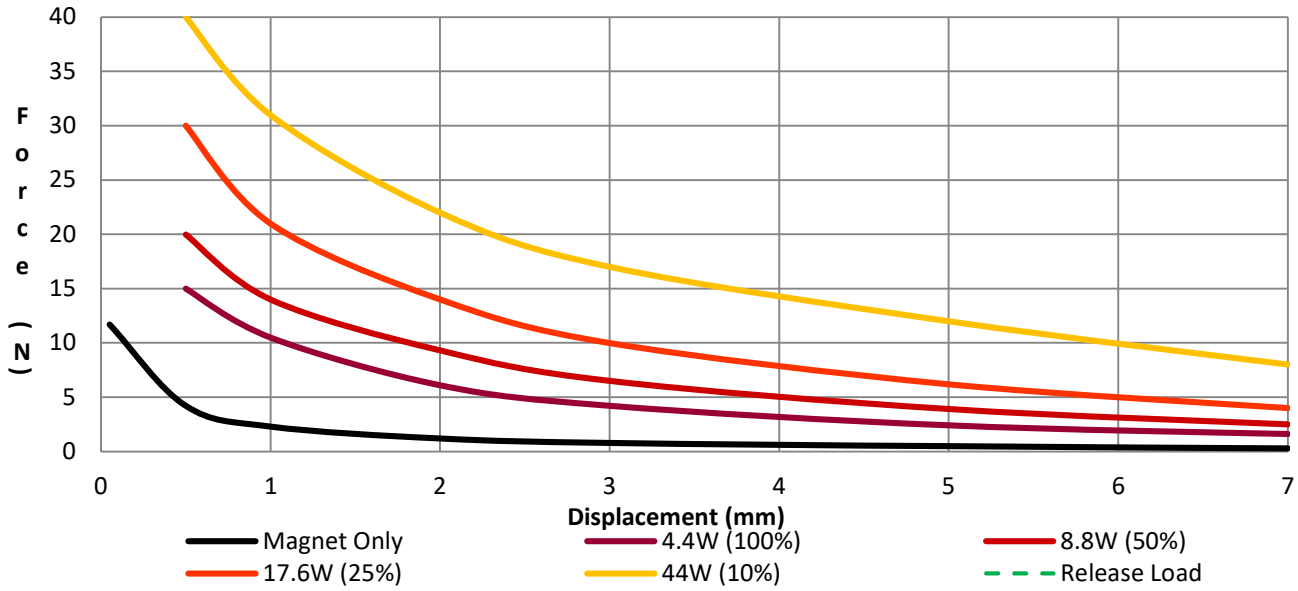
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
SH1LC-1140-06	2.1 Ω	340	6	1060 mA
SH1LC-1140-12	8.2 Ω	640	12	560 mA
SH1LC-1140-24	32.7 Ω	1360	24	260 mA

General Parameters

Life Expectancy (Cycles)	200,000
Mass	120 grammes
Plunger Mass	28 grammes
Leadwires 250mm (10")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds — 20

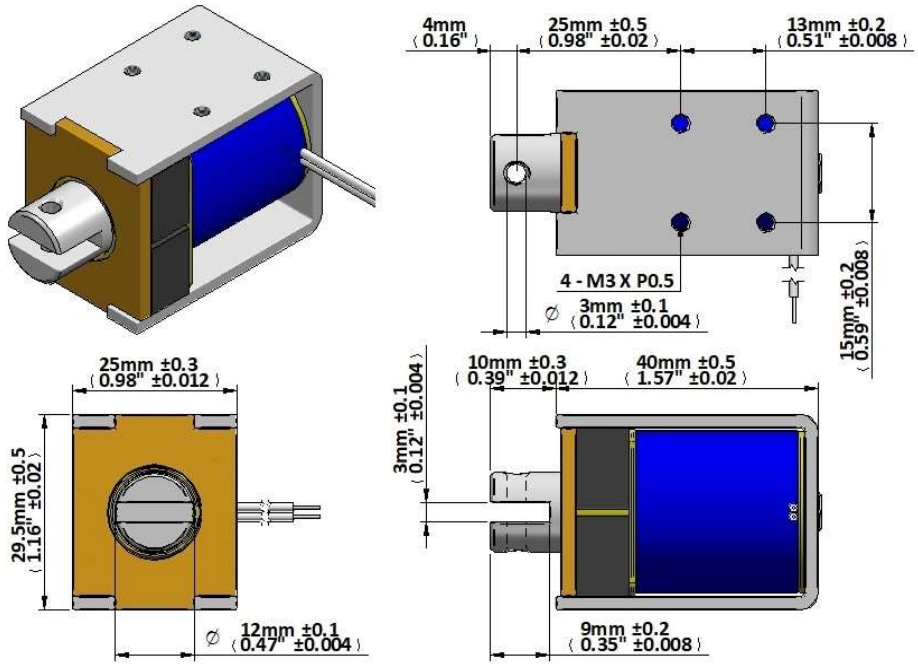
Watts at 20°C — 18.4

Ampere-Turns at 20°C — 979

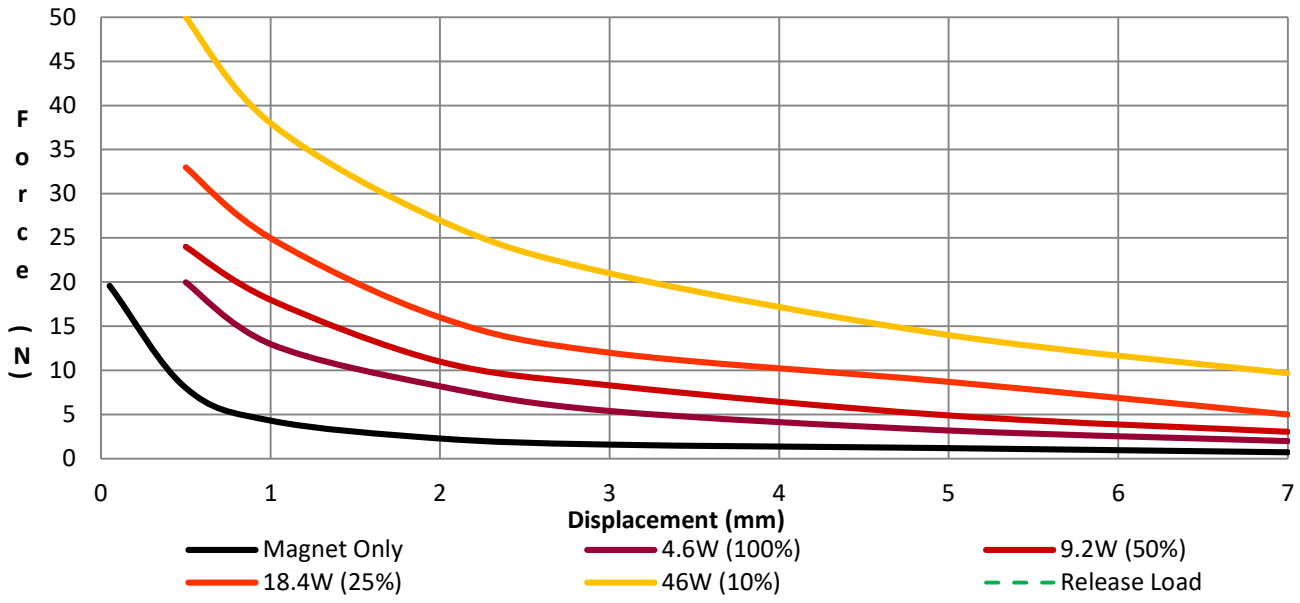
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
SH1LC-1240-06	2.0 Ω	320	6	1620 mA
SH1LC-1240-12	7.8 Ω	630	12	820 mA
SH1LC-1240-24	31.3 Ω	1315	24	400 mA

General Parameters

Life Expectancy (Cycles)	200,000
Mass	145 grammes
Plunger Mass	34 grammes
Leadwires 250mm (10")min, UL1007, AWG24	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds — 5

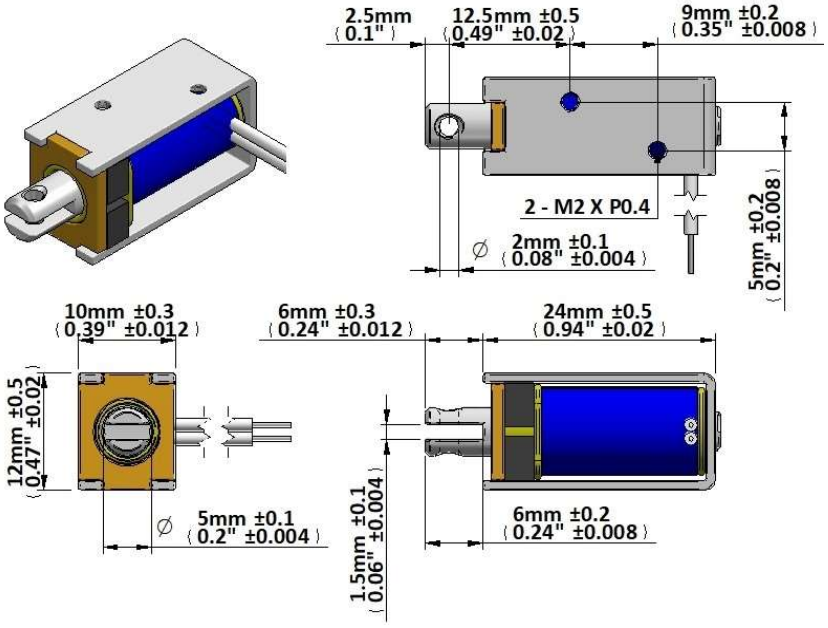
Watts at 20°C — 8.4

Ampere-Turns at 20°C — 452

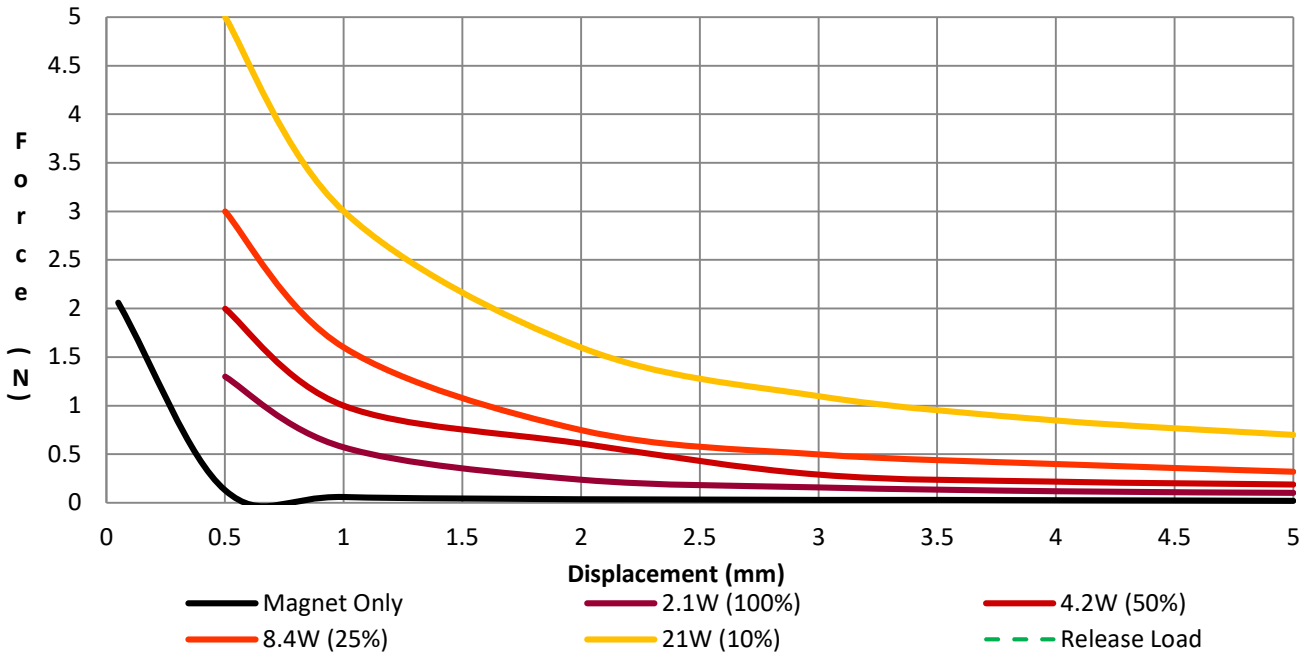
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
SH1LF-0524-06	4.3 Ω	340	6	360 mA
SH1LF-0524-12	17.1 Ω	630	12	200 mA
SH1LF-0524-24	68.6 Ω	1260	24	100 mA

General Parameters

Life Expectancy (Cycles)	200,000
Mass	14.0 grammes
Plunger Mass	3.3 grammes
Leadwires 250mm (10")min, UL1007, AWG28	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Coil Data

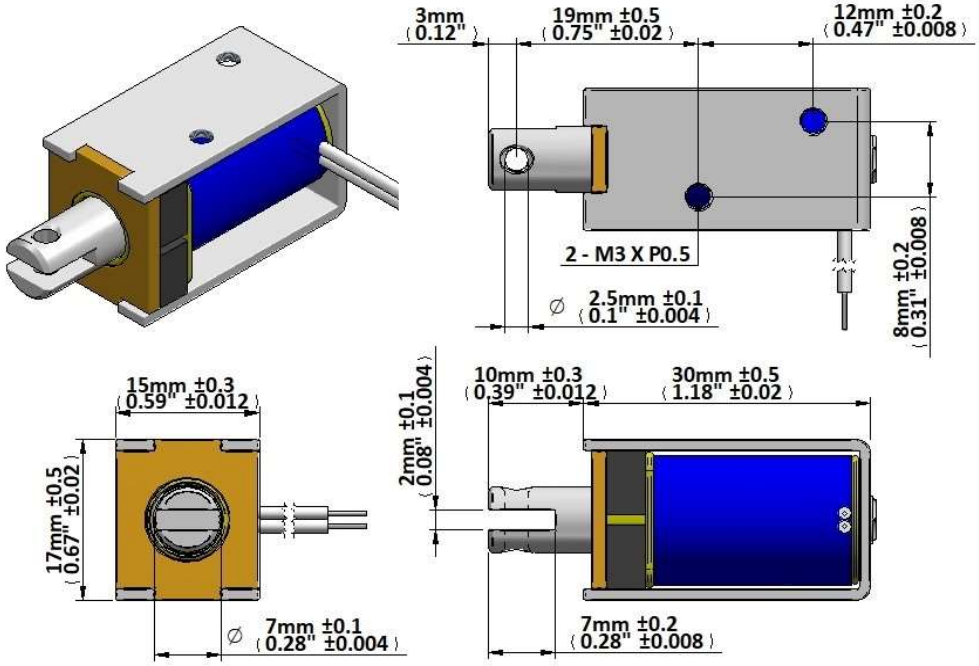
Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds	10
Watts at 20°C	9.6
Ampere-Turns at 20°C	614

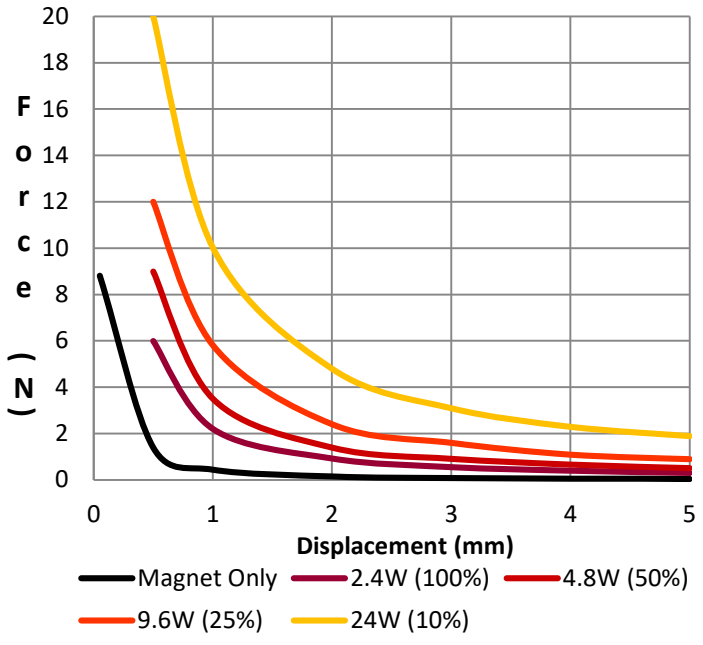
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
SH1LF-0730-06	3.8 Ω	385	6	650 mA
SH1LF-0730-12	15.0 Ω	780	12	320 mA
SH1LF-0730-24	60.0 Ω	1530	24	160 mA

General Parameters

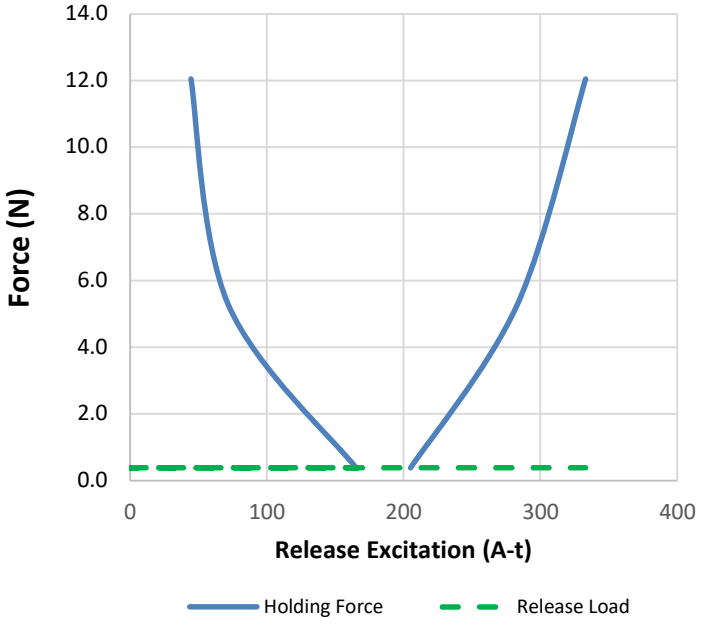
Life Expectancy (Cycles)	200,000
Mass	38.0 grammes
Plunger Mass	9.2 grammes
Leadwires 250mm (10")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



GEEPLUS SH1LF-1140-xx

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds — 20

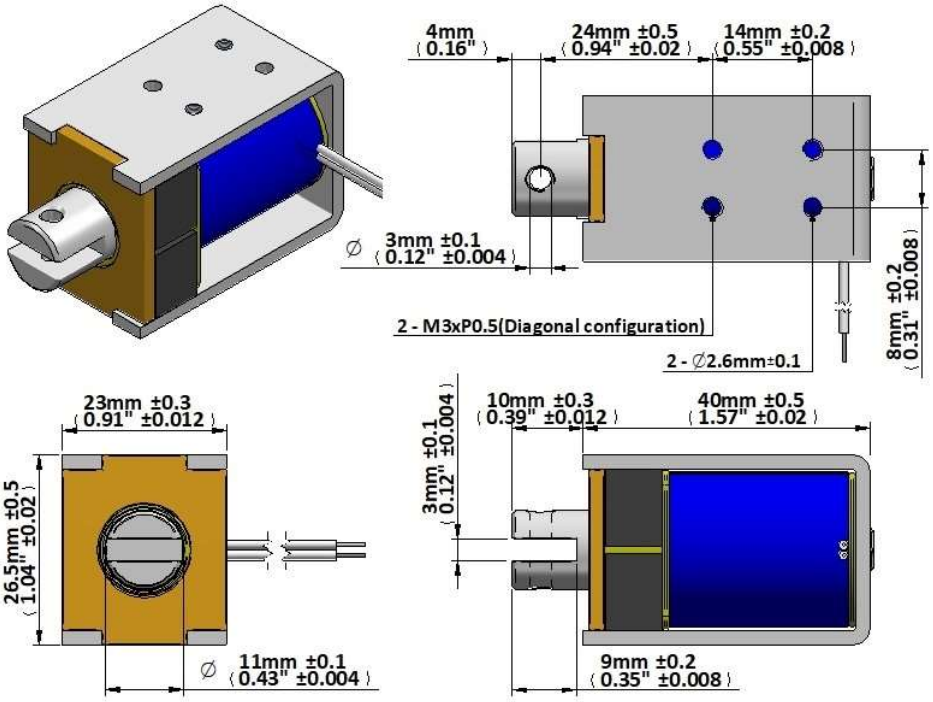
Watts at 20°C — 17.6

Ampere-Turns at 20°C — 968

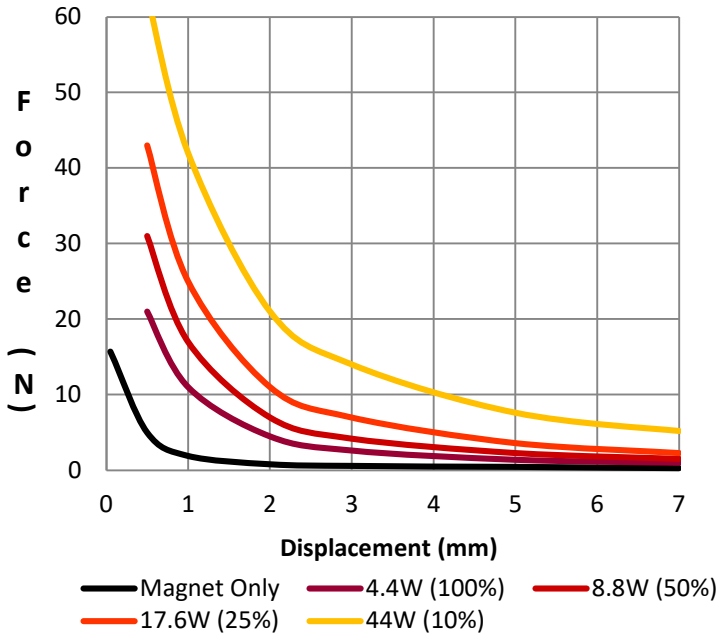
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
SH1LF-1140-06	2.1 Ω	340	6	1060 mA
SH1LF-1140-12	8.2 Ω	640	12	560 mA
SH1LF-1140-24	32.7 Ω	1360	24	260 mA

General Parameters

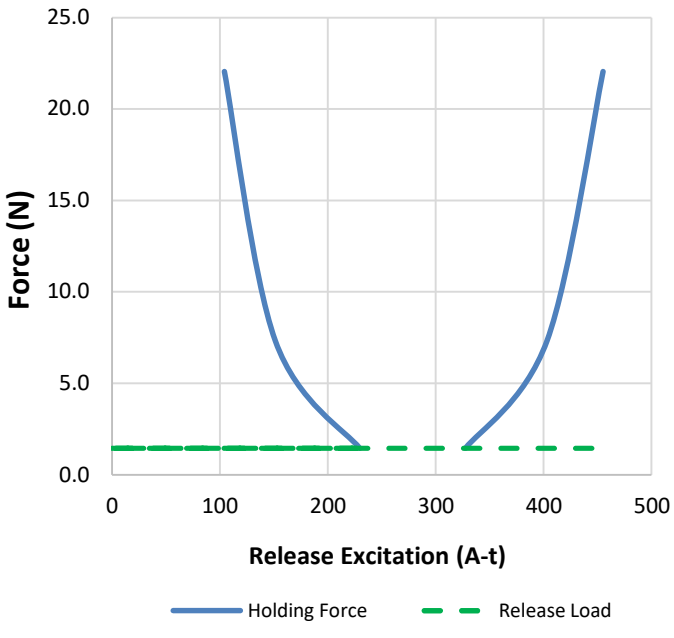
Life Expectancy (Cycles)	200,000
Mass	120 grammes
Plunger Mass	28 grammes
Leadwires 250mm (10")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



GEEPLUS SH1LF-1240-xx

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds — 20

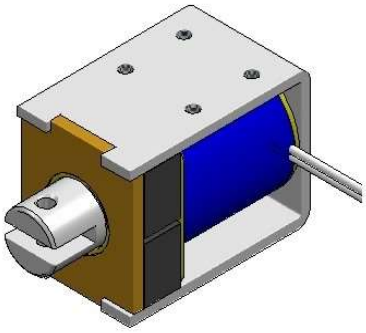
Watts at 20°C — 18.4

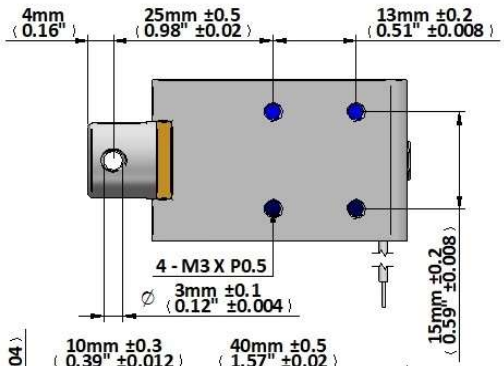
Ampere-Turns at 20°C — 979

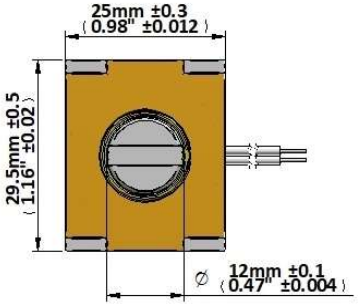
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
SH1LF-1240-06	2.0 Ω	320	6	1620 mA
SH1LF-1240-12	7.8 Ω	630	12	820 mA
SH1LF-1240-24	31.3 Ω	1315	24	400 mA

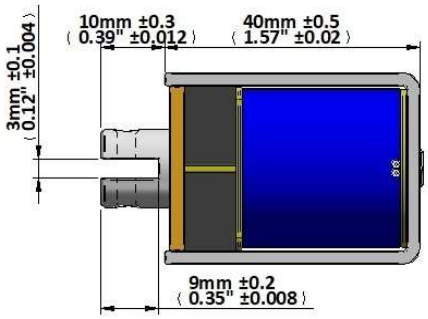
General Parameters

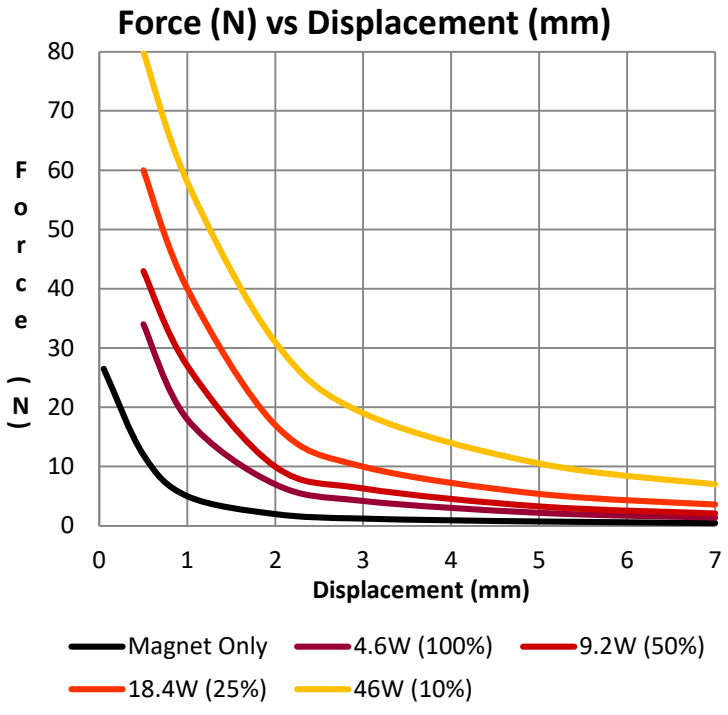
Life Expectancy (Cycles)	200,000
Mass	145 grammes
Plunger Mass	34 grammes
Leadwires 250mm (10")min, UL1007, AWG24	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger	

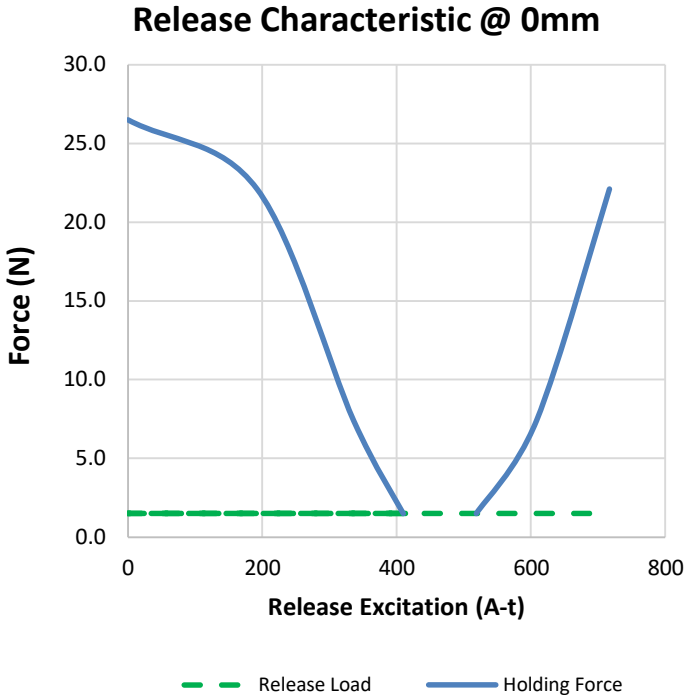












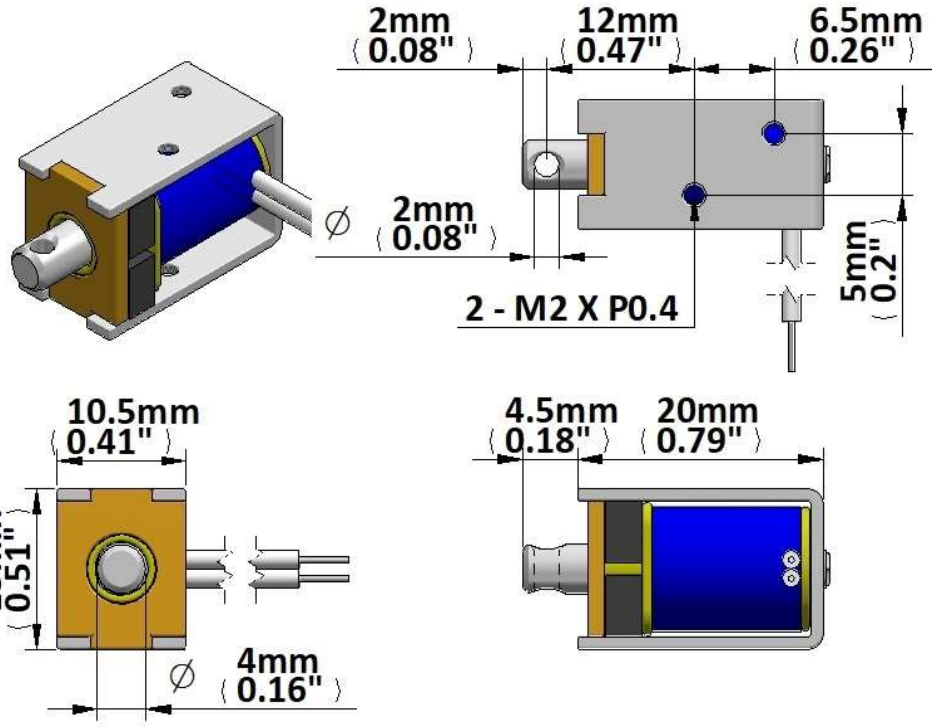
GEEPLUS T1L-0420-xxV

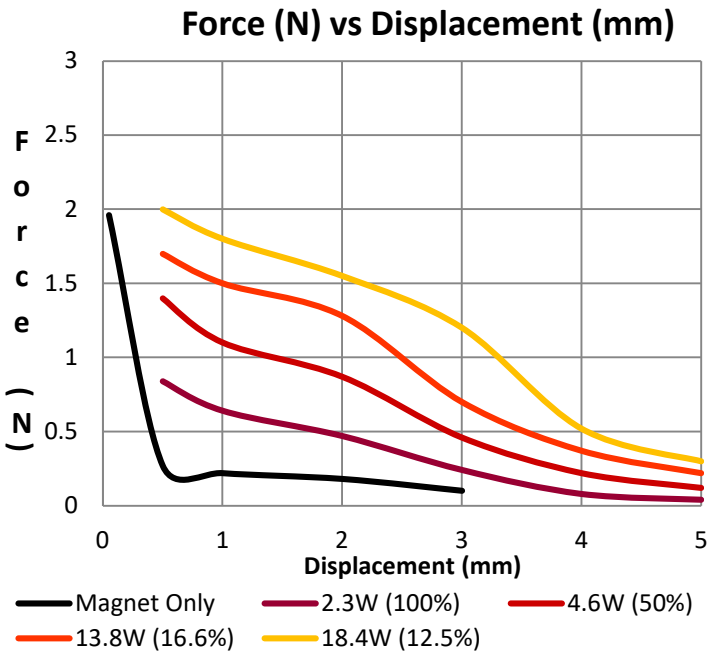
Coil Data

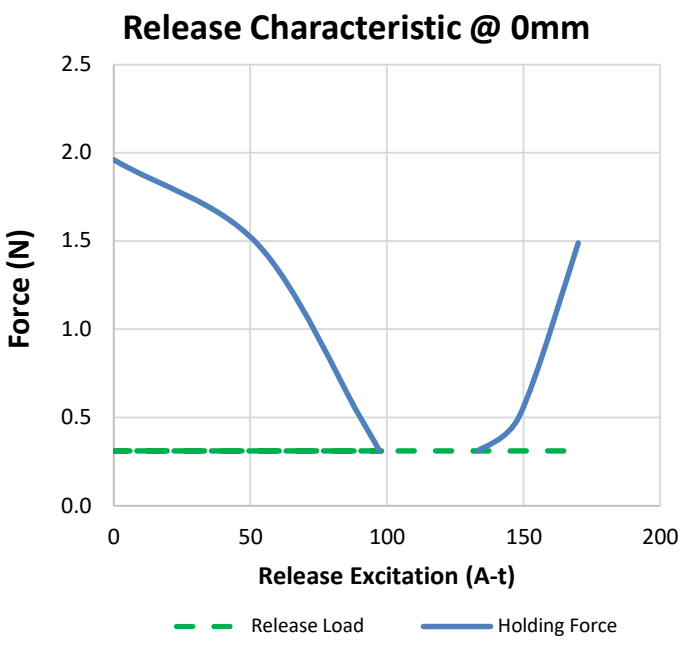
	Duty Cycle = "on" time / ("on" time + "off" time) x 100%			100% ED
	Maximum "on" time in seconds			∞
	Watts at 20°C			2.3
	Ampere-Turns at 20°C			340
P/N	**Resistance ±10% @ 20°C**	**Coil Turns**	**Volts DC**	**Release Current**
T1L-0420-6v	16.0 Ω	900	6	375 mA
T1L-0420-12v	63.0 Ω	1850	12	190 mA
T1L-0420-24v	250.0 Ω	3450	24	96 mA

General Parameters

Life Expectancy (Cycles)	200,000
Mass	13.5 grammes
Plunger Mass	1.7 grammes
Leadwires 200mm (7.87")min, UL1007, AWG28	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	







GEEPLUS T1L-0421-xxV

Coil Data

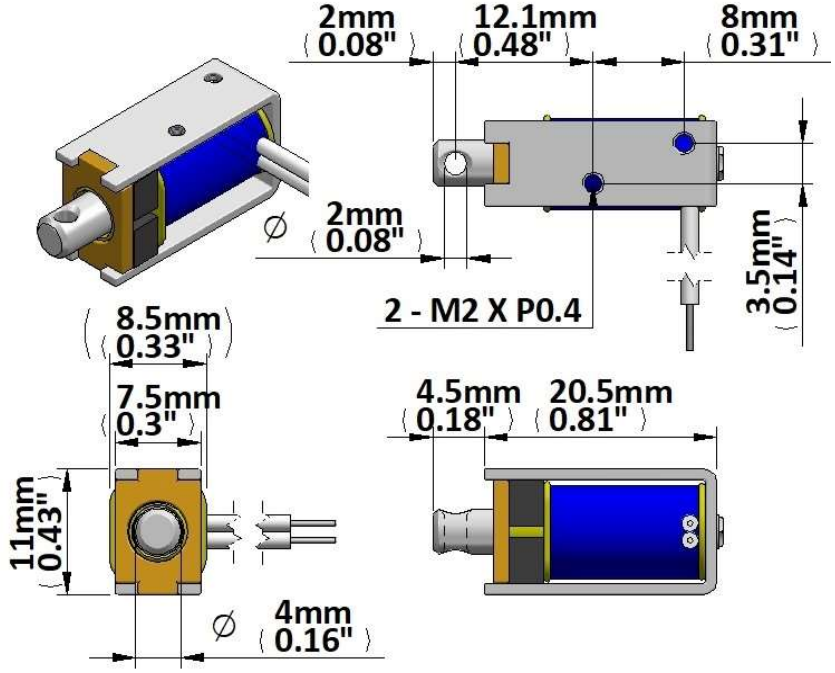
Duty Cycle = "on" time / ("on" time + "off" time) x 100%

	100% ED
Maximum "on" time in seconds	∞
Watts at 20°C	2.8
Ampere-Turns at 20°C	225

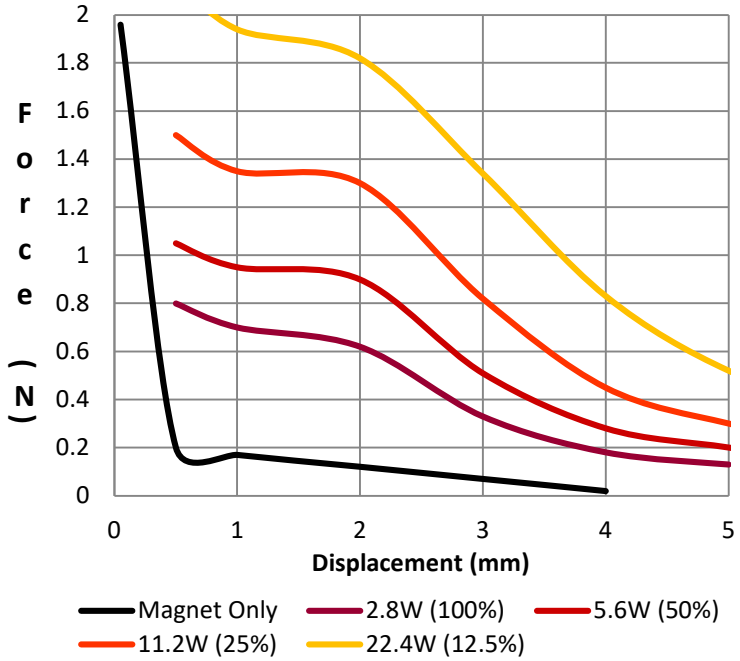
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
T1L-0421-6v	12.9 Ω	480	6	465 mA
T1L-0421-12v	51.4 Ω	940	12	233 mA
T1L-0421-24v	205.7 Ω	1890	24	117 mA

General Parameters

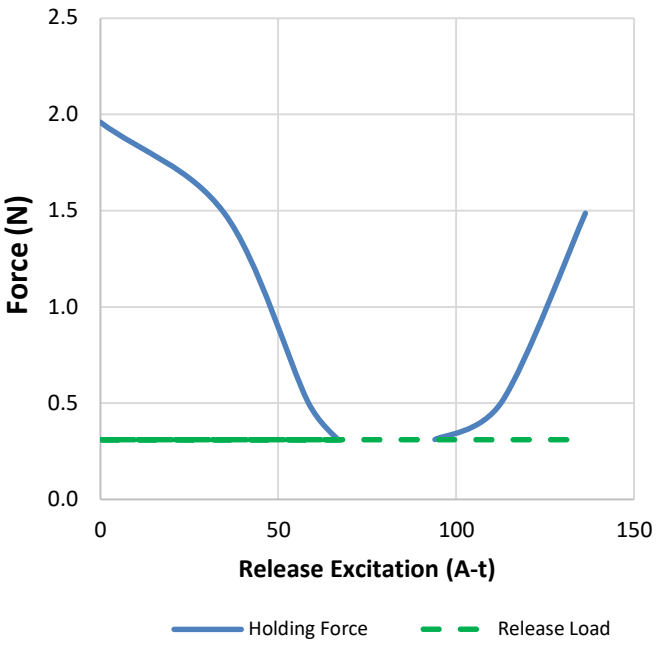
Life Expectancy (Cycles)	200,000
Mass	9.5 grammes
Plunger Mass	1.7 grammes
Leadwires 200mm (7.87")min, UL1007, AWG28	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



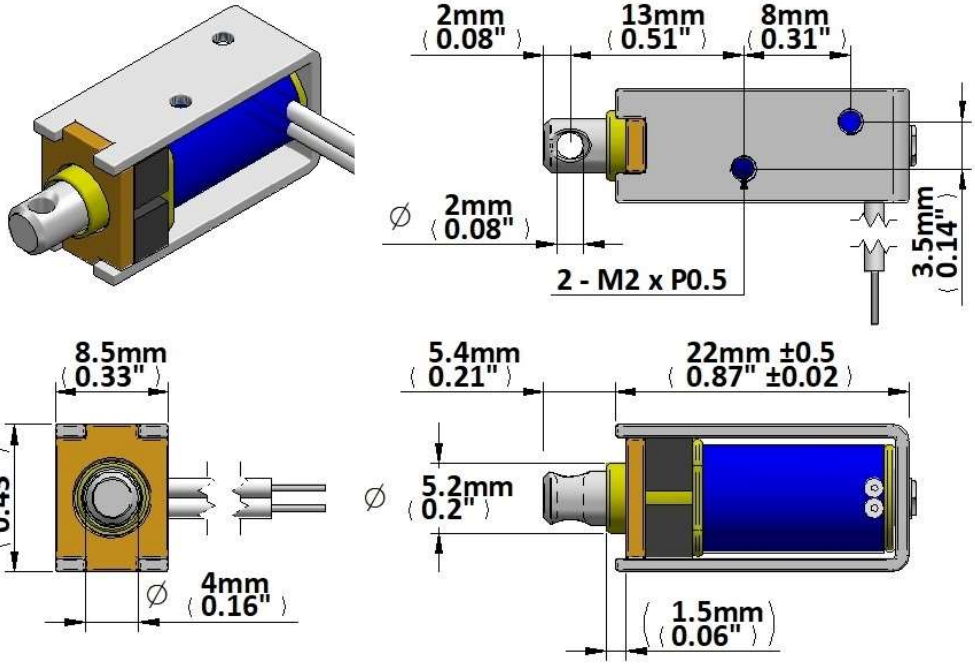
GEEPLUS T1L-0422-xxV

Coil Data

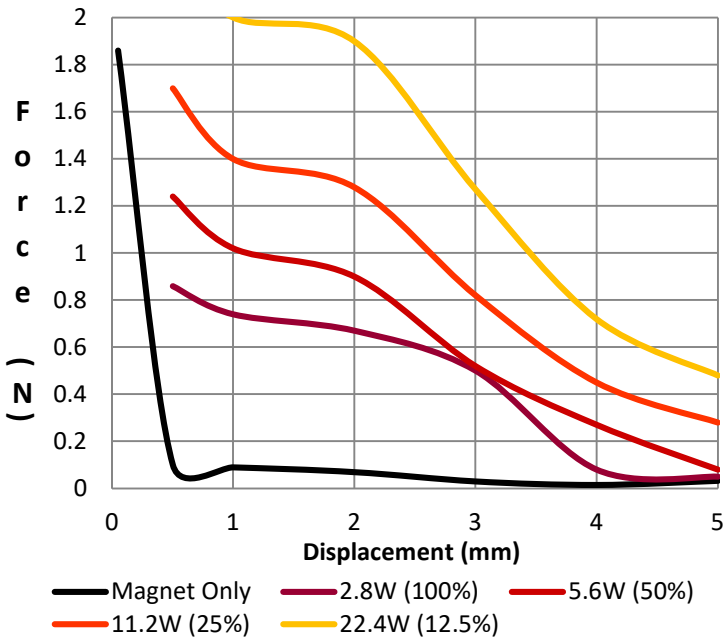
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
	Duty Cycle = "on" time / ("on" time + "off" time) x 100%			100% ED
	Maximum "on" time in seconds			∞
	Watts at 20°C			2.8
	Ampere-Turns at 20°C			225
T1L-0422-6v	12.9 Ω	480	6	465 mA
T1L-0422-12v	51.4 Ω	940	12	233 mA
T1L-0422-24v	206.0 Ω	1890	24	117 mA

General Parameters

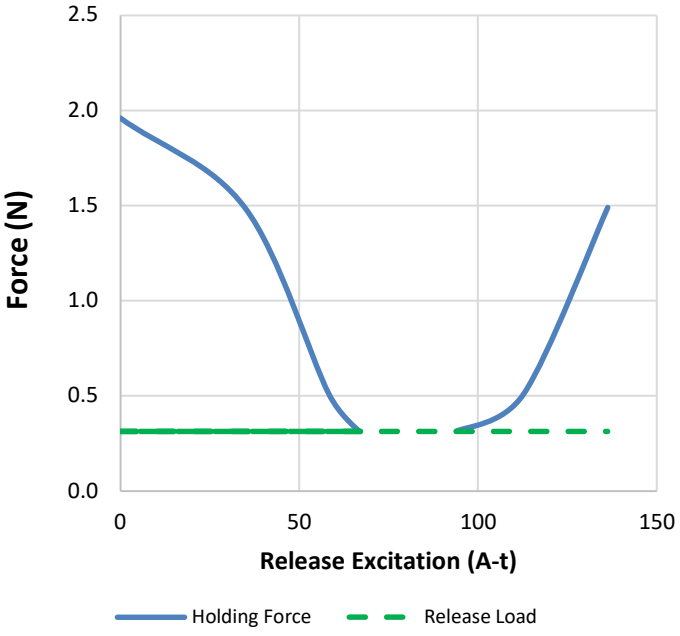
Life Expectancy (Cycles)	200,000
Mass	10.0 grammes
Plunger Mass	2.0 grammes
Leadwires 200mm (7.87")min, UL1007, AWG28	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



GEEPLUS T1L-0625-xxV

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 50% ED

Maximum "on" time in seconds — 8

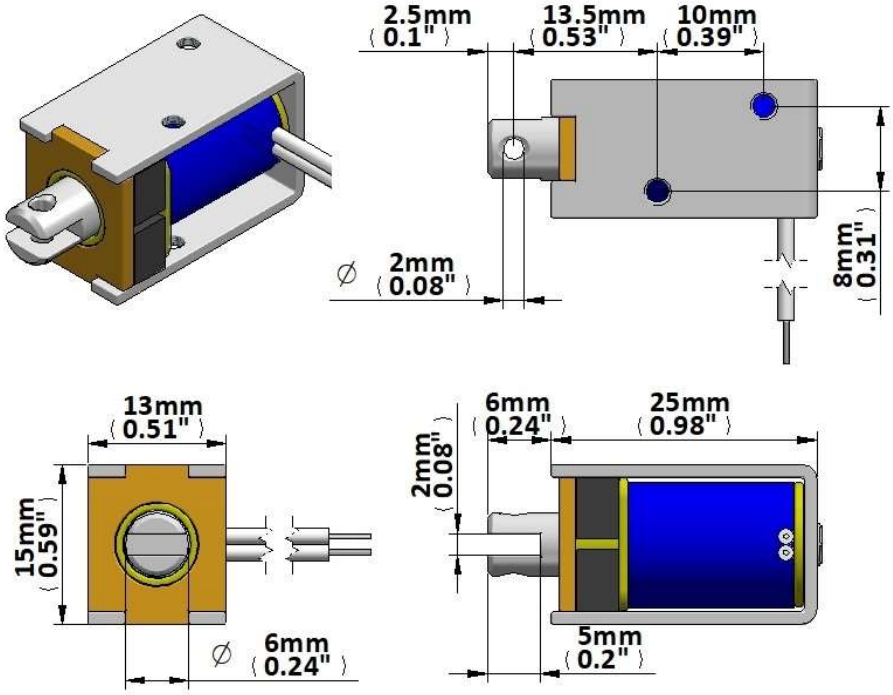
Watts at 20°C — 5.3

Ampere-Turns at 20°C — 402

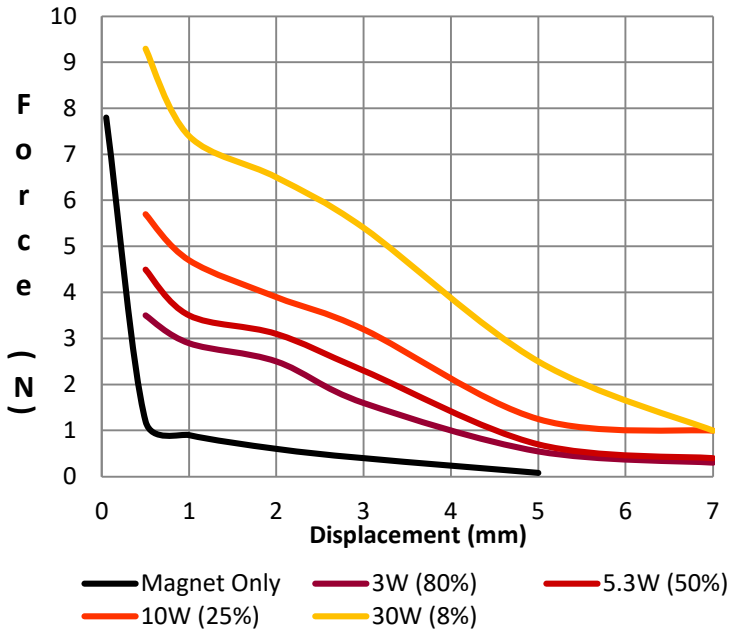
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
T1L-0625-6v	6.8 Ω	456	6	882 mA
T1L-0625-12v	27.0 Ω	896	12	444 mA
T1L-0625-24v	108.0 Ω	1790	24	222 mA

General Parameters

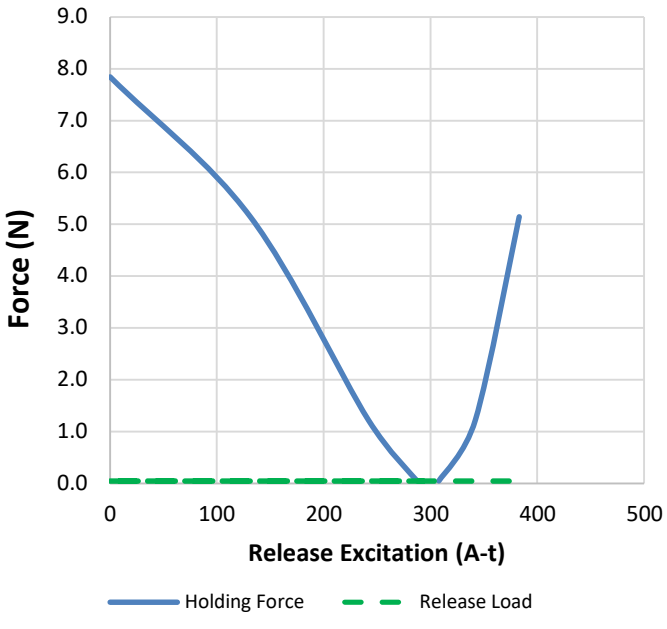
Life Expectancy (Cycles)	200,000
Mass	26 grammes
Plunger Mass	4.6 grammes
Leadwires 200mm (7.87")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



GEEPLUS T1L-0730-xxV

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 50% ED

Maximum "on" time in seconds — 10

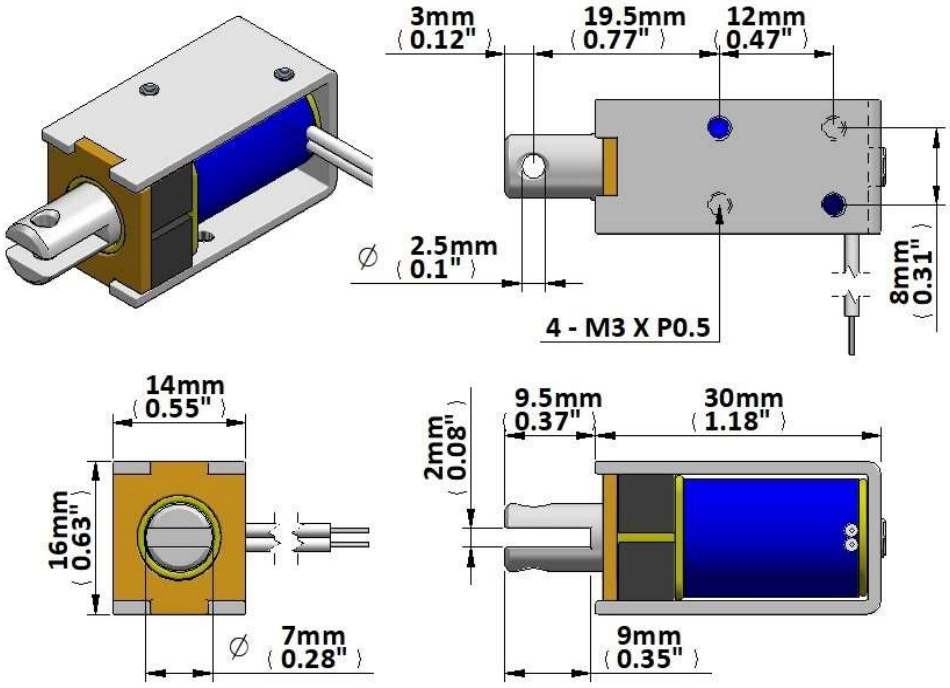
Watts at 20°C — 4.8

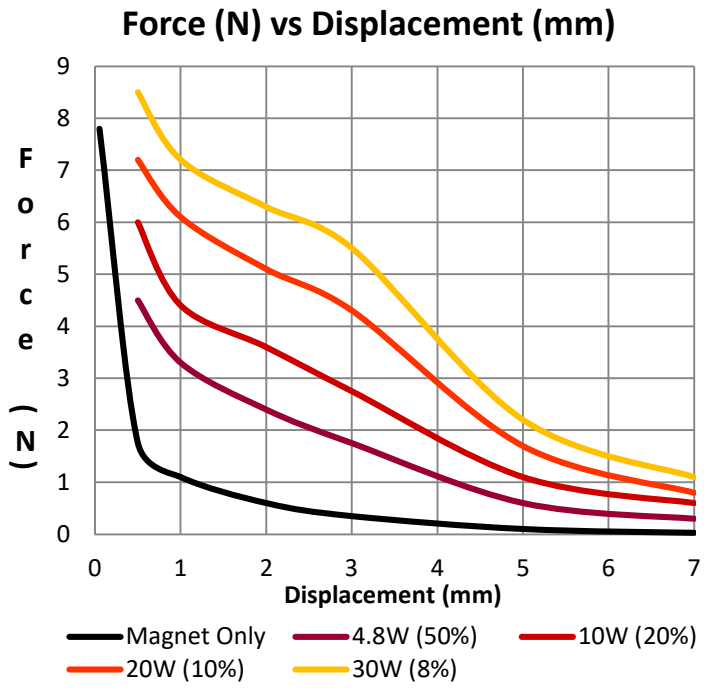
Ampere-Turns at 20°C — 360

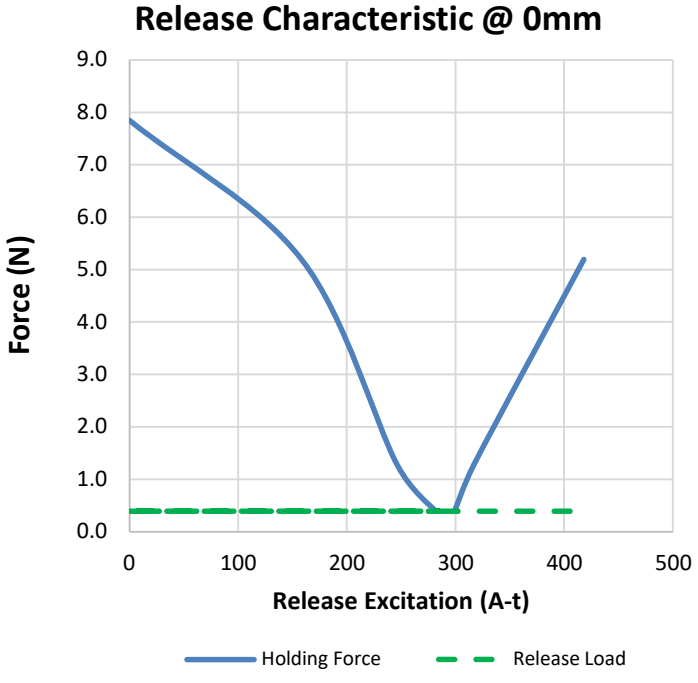
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
T1L-0730-6v	7.5 Ω	450	6	800 mA
T1L-0730-12v	30.0 Ω	880	12	400 mA
T1L-0730-24v	120.0 Ω	1860	24	200 mA

General Parameters

Life Expectancy (Cycles)	200,000
Mass	58 grammes
Plunger Mass	10.0 grammes
Leadwires 200mm (7.87")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	







GEEPLUS T1L-0742-xxV

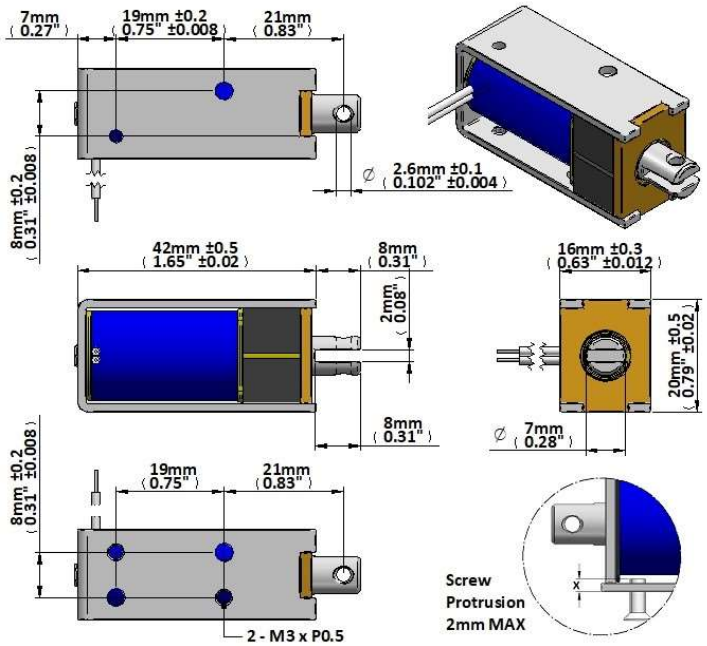
Coil Data

	Duty Cycle = "on" time / ("on" time + "off" time) x 100%	100% ED
	Maximum "on" time in seconds	∞
	Watts at 20°C	2
	Ampere-Turns at 20°C	363

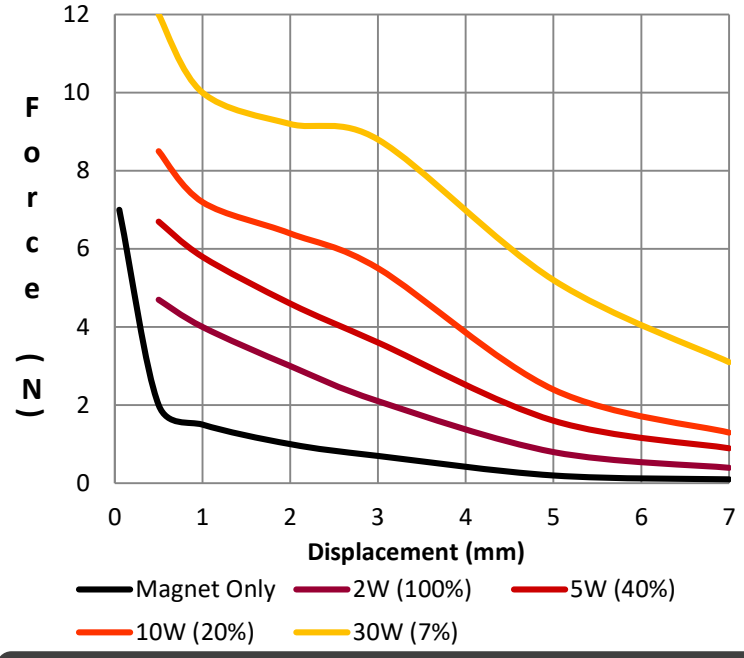
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
T1L-0742-6v	18.0 Ω	1090	6	333 mA
T1L-0742-12v	72.0 Ω	2080	12	167 mA
T1L-0742-24v	288.0 Ω	4086	24	83 mA

General Parameters

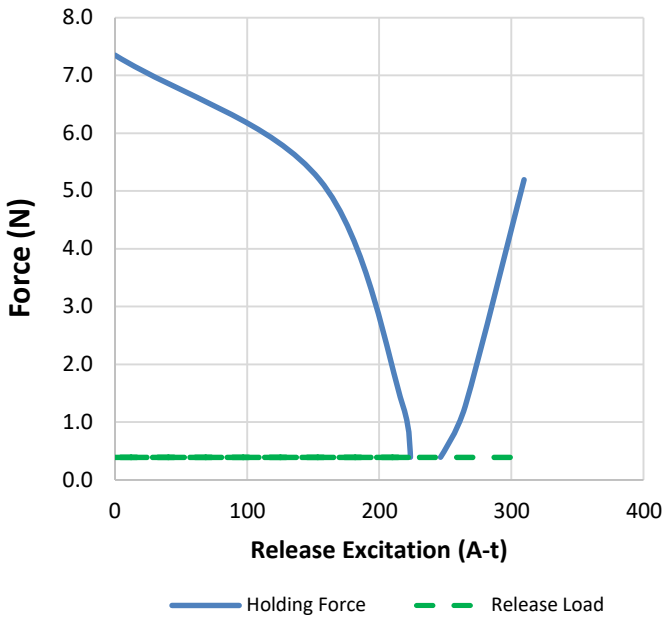
Life Expectancy (Cycles)	200,000
Mass	58 grammes
Plunger Mass	10.0 grammes
Leadwires 200mm (7.87")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



GEEPLUS T1L-1037-xxV

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 25% ED

Maximum "on" time in seconds — 7

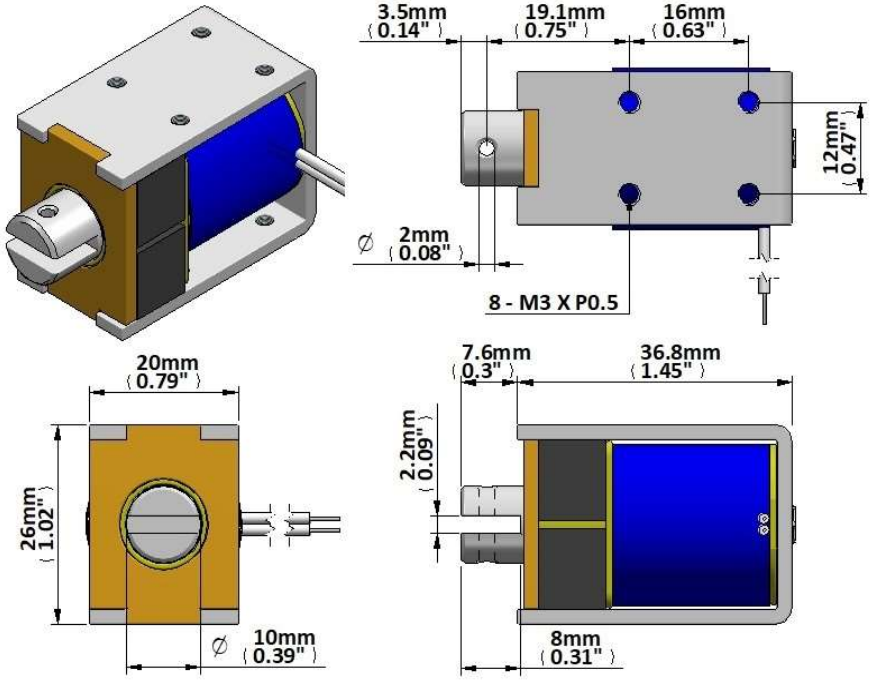
Watts at 20°C — 12

Ampere-Turns at 20°C — 675

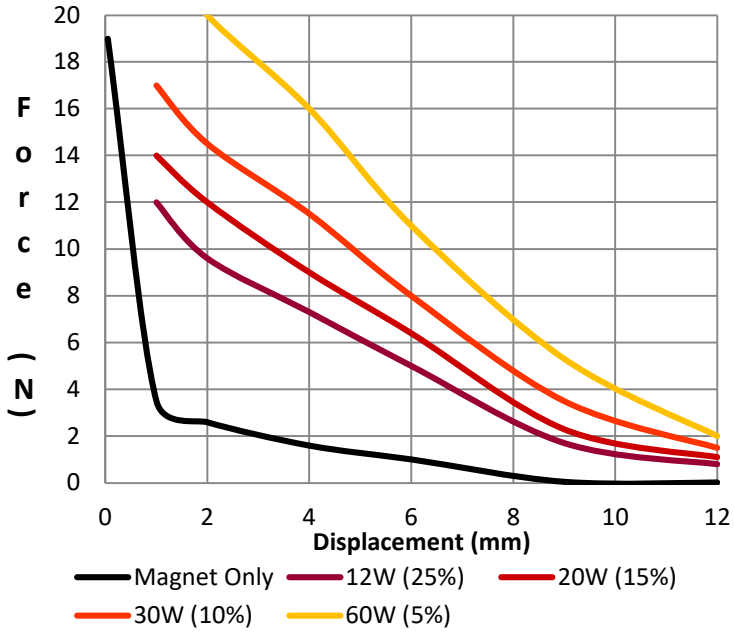
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
T1L-1037-6v	3.0 Ω	333	6	2000 mA
T1L-1037-12v	12.0 Ω	680	12	1000 mA
T1L-1037-24v	48.0 Ω	1350	24	500 mA

General Parameters

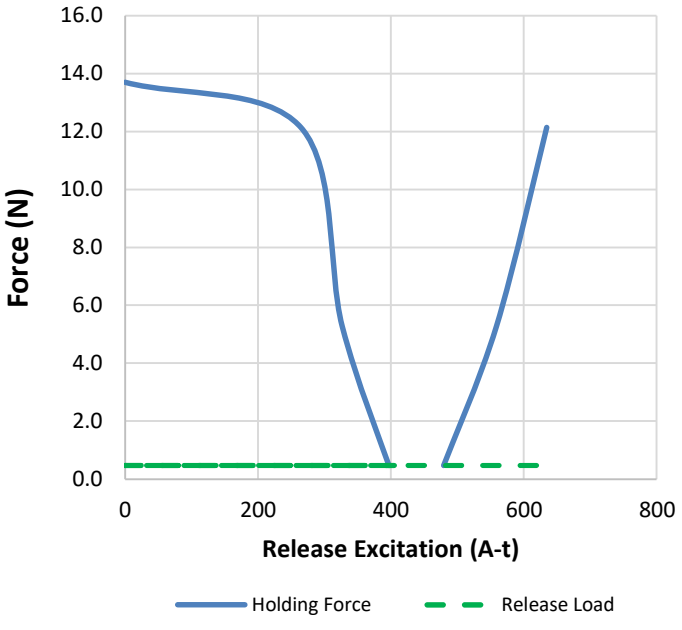
Life Expectancy (Cycles)	200,000
Mass	91 grammes
Plunger Mass	18.3 grammes
Leadwires 200mm (7.87")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	



Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 50% ED

Maximum "on" time in seconds — 15

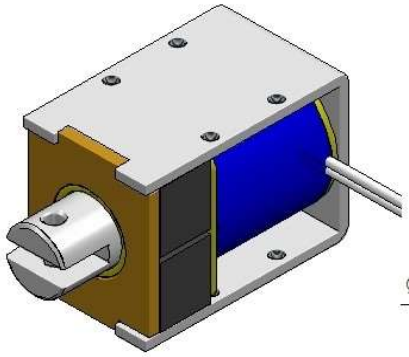
Watts at 20°C — 8

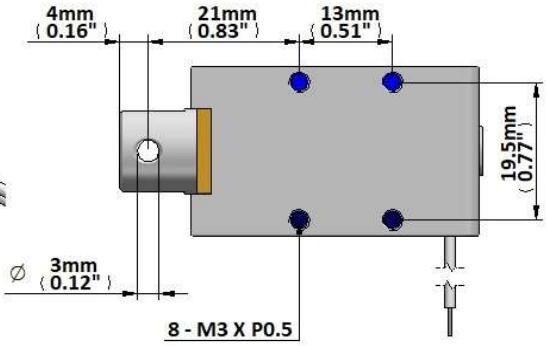
Ampere-Turns at 20°C — 620

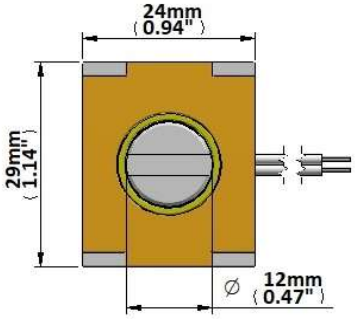
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
T1L-1240-6v	4.5 Ω	450	6	1333 mA
T1L-1240-12v	18.0 Ω	920	12	667 mA
T1L-1240-24v	72.0 Ω	1900	24	333 mA

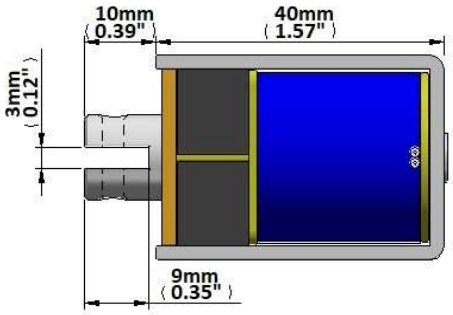
General Parameters

Life Expectancy (Cycles)	200,000
Mass	139 grammes
Plunger Mass	31.0 grammes
Leadwires 200mm (7.87")min, UL1007, AWG24	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	

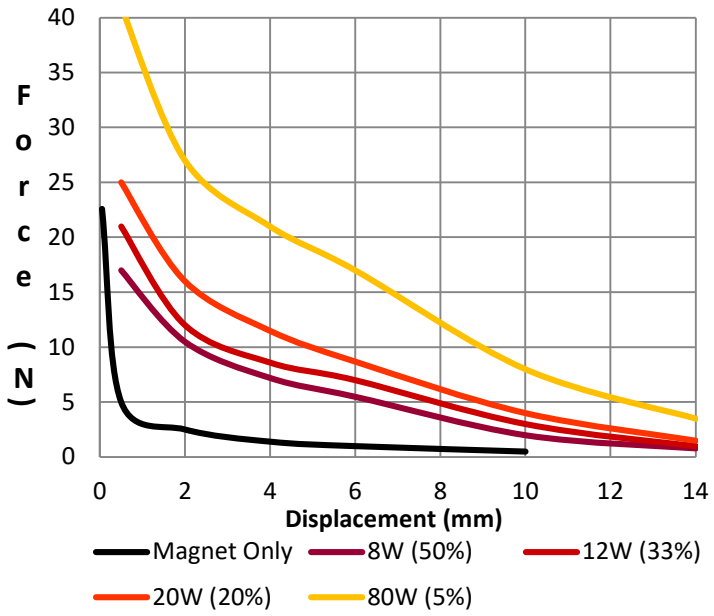




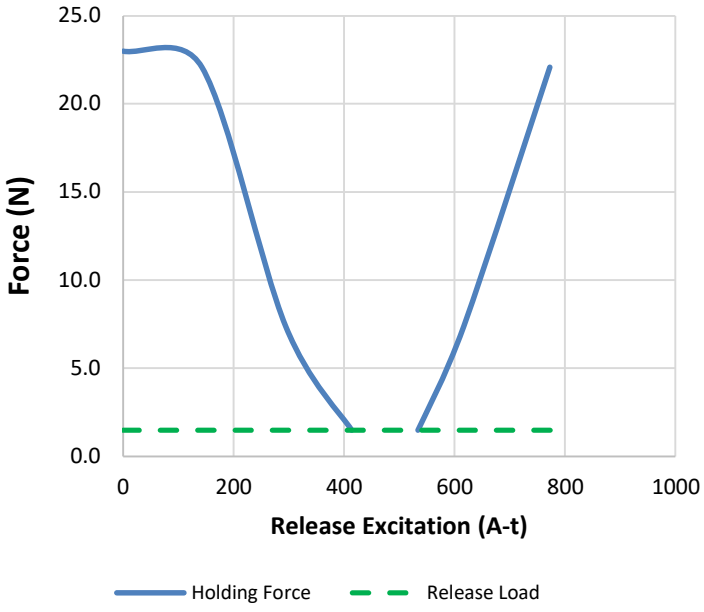




Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



GEEPLUS T1L-1253-xxV

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 50% ED

Maximum "on" time in seconds — 20

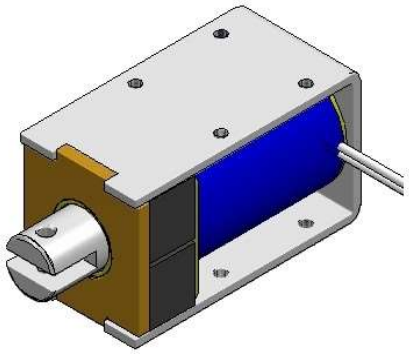
Watts at 20°C — 10

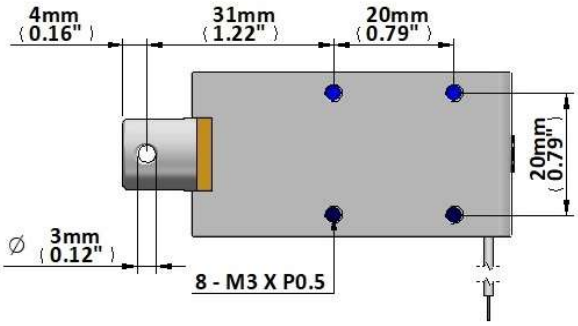
Ampere-Turns at 20°C — 840

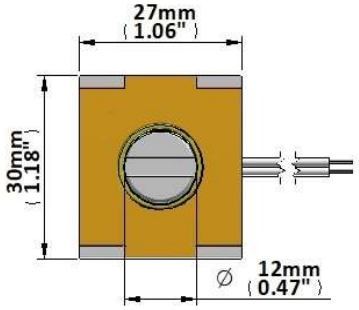
P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
T1L-1253-6v	3.6 Ω	515	6	1670 mA
T1L-1253-12v	14.4 Ω	1020	12	830 mA
T1L-1253-24v	57.6 Ω	2050	24	420 mA

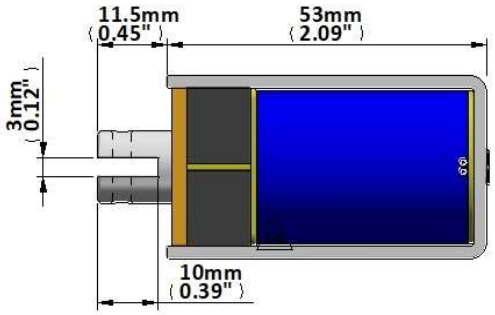
General Parameters

Life Expectancy (Cycles)	200,000
Mass	216 grammes
Plunger Mass	42.8 grammes
Leadwires 200mm (7.87")min, UL1007, AWG24	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >50MΩ, 500V DC Megger	

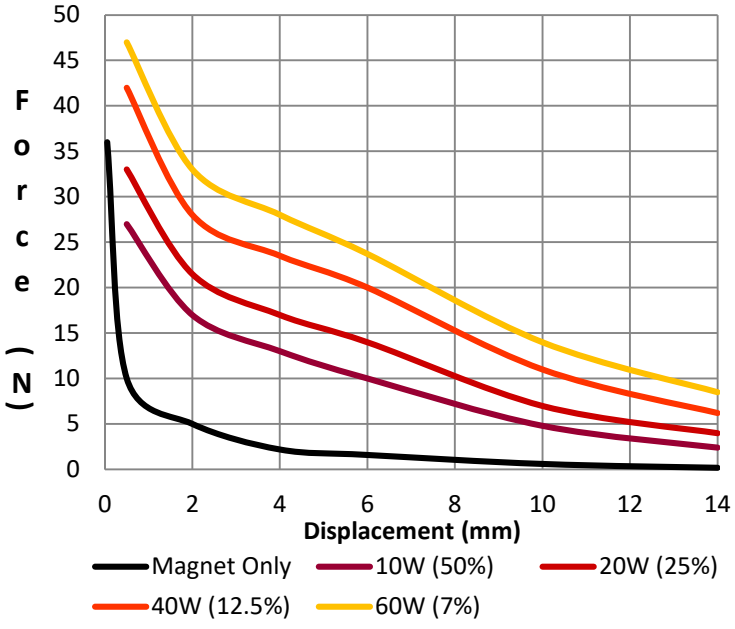




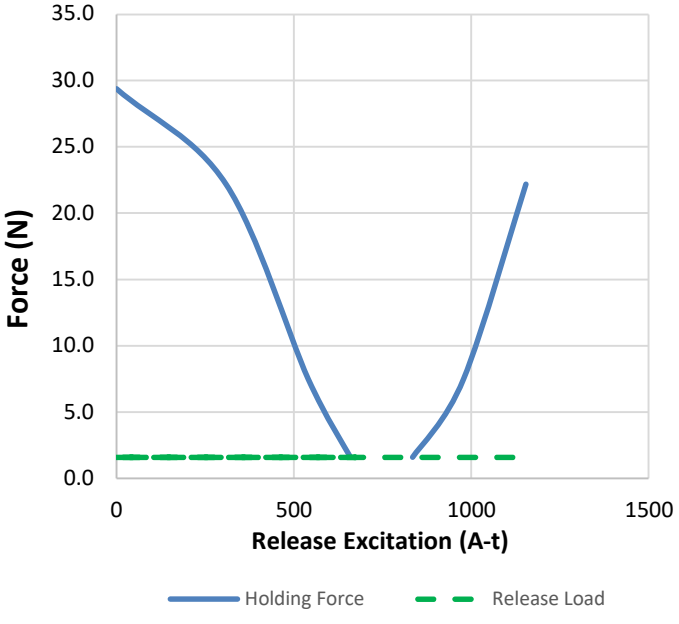




Force (N) vs Displacement (mm)



Release Characteristic @ 0mm



GEEPLUS RD-1LRE0625-xxV

Coil Data

Duty Cycle = "on" time / ("on" time + "off" time) x 100% — 5% ED

Maximum "on" time in seconds — 2

Watts at 20°C — 42

Ampere-Turns at 20°C — 350

P/N	Resistance ±10% @ 20°C	Coil Turns	Volts DC	Release Current
RD-1LRE0625-6V	0.7 Ω	219	6	8570 mA
RD-1LRE0625-12V	3.4 Ω	450	12	3520 mA
RD-1LRE0625-24V	16.0 Ω	950	24	1500 mA

General Parameters

Life Expectancy (Cycles)	200,000
Mass	37.0 grammes
Plunger Mass	4.0 grammes
Leadwires 300mm (11.81")min, UL1007, AWG26	
Insulation Class	A (105°C)
Dielectric Strength 1000V AC, 50/60Hz, 1min	
Insulation Res >100MΩ, 500V DC Megger