

## COIL DERATING TABLE - 740 Series Low-Power Coils

For operation at higher ambient temperatures

Ambient Temperature		Minimum response coil voltage % (see note)	Duty cycle % at minimum coil voltage (85%)	Duty cycle % at nominal coil voltage	Duty cycle % at maximum coil voltage (110%)	Duty cycle % at maximum coil voltage (115%)
°C	°F					
-30	-22	68.1	100	100	100	100
-20	-4	70.2	100	100	100	100
-10	14	72.2	100	100	100	100
0	32	74.3	100	100	100	100
10	50	76.4	100	100	100	100
20	68	78.5	100	100	100	100
30	86	80.7	100	100	100	100
40	104	82.8	100	100	100	100
50	122	85	100	100	100	100
60	140	87.2	100	100	100	100
70	158	89.4	100	100	100	100
75	167	90.5	100	100	100	100
80	176	91.6	100	100	100	100
90	194	93.8	100	100	100	100
100	212	96.1	100	100	100	100
110	230	98.3	100	100	100	96
120	248	100.6	100	100	91	84
130	266	102.8	100	93	77	71
140	284	105.1	100	76	63	58
150	302	105.7	97	59	49	45
160	320	105.7	69	42	35	32

Duty cycle is the percentage of time power is applied to the coil. With 100% duty cycle, power is applied 100% of the time.

Typical heat rise is approximately one hour for the coils at 100% duty cycle. With an 85% duty cycle, the coil can be energized a maximum 85% of the time and de-energized a minimum of 15% of the time. In this example, after being energized for 51 minutes, the coil would need to be de-energized for nine minutes.

As shown in the 740 Series Low-Power Derating Table, at 100°C, the coils can operate at 100% duty cycle from minimum coil voltage (85%) to the maximum coil voltage (115%).

Above 100°C, coil derating occurs, as shown in the table.

To address coil derating at higher ambient temperatures, consider the following actions:

- Add air flow across the coils to reduce the temperature of the coils.
- Reduce the coil voltage.
- Reduce coil duty cycle to stay within the range indicated in the green area of the derating table at left.
- Provide additional heatsink area such as a larger manifold.

**Note:** The minimum response coil voltage is the minimum amount of coil voltage needed to generate valve movement.

This table is provided as an application reference only and does not include other variables that can affect the performance of the coils.

## COIL DERATING TABLE - 740 Series High-Power Coils

For operation at higher ambient temperatures

Ambient Temperature		Minimum response coil voltage % (see note)	Duty cycle % at minimum coil voltage (85%)	Duty cycle % at nominal coil voltage	Duty cycle % at maximum coil voltage (110%)	Duty cycle % at maximum coil voltage (115%)
°C	°F					
-30	-22	70.4	100	100	100	100
-20	-4	72.2	100	100	100	100
-10	14	74	100	100	100	100
0	32	75.8	100	100	100	100
10	50	77.6	100	100	100	100
20	68	79.4	100	100	100	100
30	86	81.3	100	100	100	100
40	104	83.1	100	100	100	100
50	122	85	100	100	100	92
60	140	86.9	100	100	92	84
70	158	88.8	100	100	82	75
75	167	89.7	100	94	78	71
80	176	90.7	100	88	73	67
90	194	92.6	100	77	64	58
100	212	93.4	91	66	54	50
110	230	93.4	75	54	45	41

**Note:** The minimum response coil voltage is the minimum amount of coil voltage needed to generate valve movement.

This table is provided as an application reference only and does not include other variables that can affect the performance of the coils.

Duty cycle is the percentage of time power is applied to the coil. With 100% duty cycle, power is applied 100% of the time.

Typical heat rise is approximately one hour for the coils at 100% duty cycle. With an 85% duty cycle, the coil can be energized a maximum 85% of the time and de-energized a minimum of 15% of the time. In this example, after being energized for 51 minutes, the coil would need to be de-energized for nine minutes.

As shown in the derating table, at 40°C, the high-power coils can operate at 100% duty cycle from minimum coil voltage (85%) to the maximum coil voltage (115%).

Above 40°C, coil derating occurs, as shown in the table.

To address coil derating at higher ambient temperatures, consider the following actions:

- Add air flow across the coils to reduce the temperature of the coils
- Reduce coil voltage
- Reduce coil duty cycle to stay within the range indicated in the green area of the coil derating table at left.
- Provide additional heatsink area such as a larger manifold.