



# Motor Starting Autotransformers

# Motor Starting Autotransformers

HPS 2A and 3A motor starting autotransformers have been an industry standard for many years. Autotransformers are a significant component of a motor controller. In its simplest form, motor starters start and stop a motor and protect against overvoltage and undervoltage. In most applications, a simple full-voltage magnetic starter places full voltage across the motor's windings on startup and maintains full voltage at the motor during the run mode.

For larger motors, or motors where the load is connected, the effect of motor-starting inrush can stress the electrical system with significantly lower currents in the distribution network. This can cause all manner of disruption to the system with subsequent interruption in the facility. In these cases, reduced-voltage starting must be applied. The addition of a motor starting autotransformer during the startup sequence limits the starting inrush current.

The 2A and 3A product line is designed for Medium Duty service including applications for drive loads such as pumps, compressors, conveyers and fans. Units are manufactured in accordance with NEMA Industrial Controls and Systems, Publication No. ICS-1970.

2A Motor Starting Autotransformer: Three phase, 2 coil, suitable for motor starters with 2 contacts, connected in an open 'V' configuration. Phase voltage across the open 'V' tends to be slightly out of balance when compared to the other two phases.

3A Motor Starting Autotransformer: Three phase, 3 coil, suitable for motor starters with 3 contacts, connected in a three phase 'Wye' configuration. This provides balanced voltages across each phase.

Special Motor Starting Autotransformers. For applications requiring heavy duty service with frequent starts or jogging, high inertia loads such as paper or steel mill drives, medium voltage or other unusual demands, HPS can offer specially designed units to meet your requirements. Please consult our sales offices.

## TWO COIL

20 to 1600 HP



## THREE COIL

25 to 1600 HP



# Specifications & Drawings

## COPPER WOUND STANDARD SPECIFICATIONS



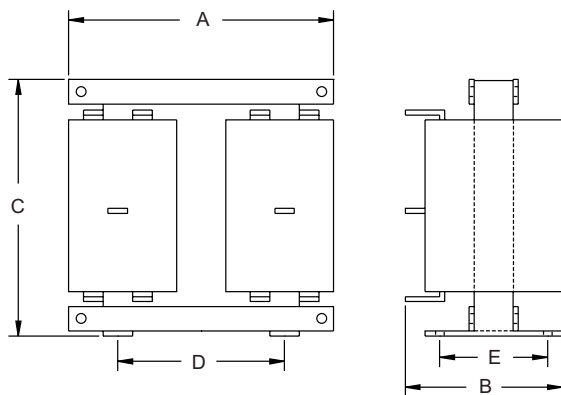
### TWO COIL 20 to 1600 HP

### THREE COIL 25 to 1600 HP

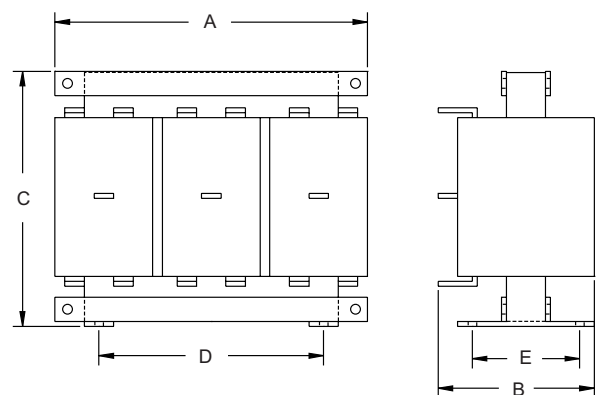
<b>UL Listed:</b>	File: E61431	File: E61431
<b>CSA Certified:</b>	File: LR3902	File: LR3902
<b>Frequency:</b>	60 Hz	60 Hz
<b>Insulation System:</b>	220°C	220°C
<b>Standard Design:</b>	Three Phase, 2 Coil, using economical open core and coil construction.	Three Phase, 3 Coil, using economical open core and coil construction.
<b>Standard Taps:</b>	All units have taps at 50%, 65% and 80%.	All units have taps at 50%, 65%, 80%
<b>Termination:</b>	Heavy solid copper lugs with holes, provide reliable termination.	Heavy solid copper lugs with holes, provide reliable termination.
<b>Thermostats:</b>	1 or 2 optional thermostats are available.	1, 2 or 3 optional thermostats are available.

## DIMENSIONAL DRAWINGS

TWO COIL



THREE COIL



# Selection Tables

## Two Coil

### COPPER WOUND, THREE PHASE, TWO COIL

#### Two Coil - 240 Volts



60 Hz

HP	Voltage	Catalog Number	Dimensions in Inches [mm]			Mtg. Width D	Mtg. Depth E	Approx. Weight Lbs. [kg]
			A	B	C			
20/25	240	<b>2909B.2</b>	11.50 [292.10]	6.00 [152.40]	10.25 [260.35]	9.00 [228.60]	4.00 [101.60]	45.0 [20.3]
30/40	240	<b>2909B.4</b>	11.50 [292.10]	6.25 [158.75]	10.75 [273.05]	9.00 [228.60]	4.00 [101.60]	65.0 [29.3]
59	240	<b>2909B.5</b>	11.50 [292.10]	7.25 [184.15]	11.00 [279.40]	9.00 [228.60]	6.00 [152.40]	75.0 [33.8]
60/75	240	<b>2909B.75</b>	13.50 [342.90]	8.00 [203.20]	11.50 [279.40]	9.00 [228.60]	6.00 [152.40]	120 [54.0]
100	240	<b>2909B1.</b>	13.50 [342.90]	9.25 [234.95]	11.50 [279.40]	9.00 [228.60]	7.50 [190.50]	150 [68.0]
125/150	240	<b>2909B1.5</b>	14.50 [368.30]	10.00 [254.00]	12.75 [323.85]	9.00 [228.60]	7.50 [190.50]	190 [86.0]
200	240	<b>2909B2.</b>	14.50 [368.30]	10.50 [266.70]	12.75 [323.85]	9.00 [228.60]	7.50 [190.50]	220 [99.0]
250	240	<b>2909B2.5</b>	14.50 [368.30]	11.75 [298.45]	13.25 [336.55]	9.00 [228.60]	9.00 [228.60]	230 [104]
300	240	<b>2909B3.</b>	14.50 [368.30]	12.00 [304.80]	14.00 [355.60]	9.00 [228.60]	9.00 [228.60]	260 [117]
400	240	<b>2909B4.</b>	17.00 [431.80]	12.50 [317.50]	15.75 [400.05]	9.00 [228.60]	9.00 [228.60]	330 [149]
500	240	<b>2909B5.</b>	17.00 [431.80]	13.00 [330.20]	16.25 [412.75]	9.00 [228.60]	9.00 [228.60]	375 [169]
600	240	<b>2909B6.</b>	23.00 [584.20]	16.00 [406.40]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	550 [248]
800	240	<b>2909B8.</b>	25.00 [635.00]	17.00 [431.80]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1000	240	<b>2909B10.</b>	26.00 [660.40]	18.00 [457.20]	22.00 [558.80]	12.00 [304.80]	9.00 [228.60]	800 [360]
1200	240	<b>2909B12.</b>	29.00 [736.60]	19.00 [482.60]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1050 [470]
1600	240	<b>2909B16.</b>	32.00 [812.80]	20.00 [508.00]	26.00 [660.40]	12.00 [304.80]	12.00 [304.80]	1350 [610]

#### Two Coil - 480 Volts

60 Hz

HP	Voltage	Catalog Number	Dimensions in Inches [mm]			Mtg. Width D	Mtg. Depth E	Approx. Weight Lbs. [kg]
			A	B	C			
20/25	480	<b>2909C.2</b>	11.50 [292.10]	6.00 [152.40]	10.25 [260.35]	9.00 [228.60]	4.00 [101.60]	45.0 [20.3]
30/40	480	<b>2909C.4</b>	11.50 [292.10]	6.25 [158.75]	10.75 [273.05]	9.00 [228.60]	4.00 [101.60]	65.0 [29.3]
50	480	<b>2909C.5</b>	11.50 [292.10]	7.25 [184.15]	11.00 [279.40]	9.00 [228.60]	6.00 [152.40]	75.0 [33.8]
60/75	480	<b>2909C.75</b>	13.50 [342.90]	8.00 [203.20]	11.50 [279.40]	9.00 [228.60]	6.00 [152.40]	120 [54.0]
100	480	<b>2909C1.</b>	13.50 [342.90]	9.25 [234.95]	11.50 [279.40]	9.00 [228.60]	7.50 [190.50]	150 [68.0]
125/150	480	<b>2909C1.5</b>	14.50 [368.30]	10.00 [254.00]	12.75 [323.85]	9.00 [228.60]	7.50 [190.50]	190 [86.0]
200	480	<b>2909C2.</b>	14.50 [368.30]	10.50 [266.70]	12.75 [323.85]	9.00 [228.60]	7.50 [190.50]	220 [99.0]
250	480	<b>2909C2.5</b>	14.50 [368.30]	11.75 [298.45]	13.25 [336.55]	9.00 [228.60]	9.00 [228.60]	230 [104]
300	480	<b>2909C3.</b>	14.50 [368.30]	12.00 [304.80]	14.00 [355.60]	9.00 [228.60]	9.00 [228.60]	260 [117]
400	480	<b>2909C4.</b>	17.00 [431.80]	12.50 [317.50]	15.75 [400.05]	9.00 [228.60]	9.00 [228.60]	330 [149]
500	480	<b>2909C5.</b>	17.00 [431.80]	13.00 [330.20]	16.25 [412.75]	9.00 [228.60]	9.00 [228.60]	375 [169]
600	480	<b>2909C6.</b>	23.00 [584.20]	16.00 [406.40]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	550 [248]
800	480	<b>2909C8.</b>	25.00 [635.00]	17.00 [431.80]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1000	480	<b>2909C10.</b>	26.00 [660.40]	18.00 [457.20]	22.00 [558.80]	12.00 [304.80]	9.00 [228.60]	800 [360]
1200	480	<b>2909C12.</b>	29.00 [736.60]	19.00 [482.60]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1050 [470]
1600	480	<b>2909C16.</b>	32.00 [812.80]	20.00 [508.00]	26.00 [660.40]	12.00 [304.80]	12.00 [304.80]	1350 [610]

#### Two Coil - 600 Volts

60 Hz

HP	Voltage	Catalog Number	Dimensions in Inches [mm]			Mtg. Width D	Mtg. Depth E	Approx. Weight Lbs. [kg]
			A	B	C			
20/25	600	<b>2909D.2</b>	11.50 [292.10]	6.00 [152.40]	10.25 [260.35]	9.00 [228.60]	4.00 [101.60]	45.0 [20.3]
30/40	600	<b>2909D.4</b>	11.50 [292.10]	6.25 [158.75]	10.75 [273.05]	9.00 [228.60]	4.00 [101.60]	65.0 [29.3]
50	600	<b>2909D.5</b>	11.50 [292.10]	7.25 [184.15]	11.00 [279.40]	9.00 [228.60]	6.00 [152.40]	75.0 [33.8]
60/75	600	<b>2909D.75</b>	13.50 [342.90]	8.00 [203.20]	11.50 [279.40]	9.00 [228.60]	6.00 [152.40]	120 [54.0]
100	600	<b>2909D1.</b>	13.50 [342.90]	9.25 [234.95]	11.50 [279.40]	9.00 [228.60]	7.50 [190.50]	150 [68.0]
125/150	600	<b>2909D1.5</b>	14.50 [368.30]	10.00 [254.00]	12.75 [323.85]	9.00 [228.60]	7.50 [190.50]	190 [86.0]
200	600	<b>2909D2.</b>	14.50 [368.30]	10.50 [266.70]	12.75 [323.85]	9.00 [228.60]	7.50 [190.50]	220 [99.0]
250	600	<b>2909D2.5</b>	14.50 [368.30]	11.75 [298.45]	13.25 [336.55]	9.00 [228.60]	9.00 [228.60]	230 [104]
300	600	<b>2909D3.</b>	14.50 [368.30]	12.00 [304.80]	14.00 [355.60]	9.00 [228.60]	9.00 [228.60]	260 [117]
400	600	<b>2909D4.</b>	17.00 [431.80]	12.50 [317.50]	15.75 [400.05]	9.00 [228.60]	9.00 [228.60]	330 [149]
500	600	<b>2909D5.</b>	17.00 [431.80]	13.00 [330.20]	16.25 [412.75]	9.00 [228.60]	9.00 [228.60]	375 [169]
600	600	<b>2909D6.</b>	23.00 [584.20]	16.00 [406.40]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	550 [248]
800	600	<b>2909D8.</b>	25.00 [635.00]	17.00 [431.80]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1000	600	<b>2909D10.</b>	26.00 [660.40]	18.00 [457.20]	22.00 [558.80]	12.00 [304.80]	9.00 [228.60]	800 [360]
1200	600	<b>2909D12.</b>	29.00 [736.60]	19.00 [482.60]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1050 [470]
1600	600	<b>2909D16.</b>	32.00 [812.80]	20.00 [508.00]	26.00 [660.40]	12.00 [304.80]	12.00 [304.80]	1350 [610]

# Selection Tables

## Three Coil



Hammond  
Power Solutions

### COPPER WOUND, THREE PHASE, THREE COIL

#### Three Coil - 240 Volts



60 Hz

HP	Voltage	Catalog Number	Dimensions in Inches [mm]			Mtg. Width D	Mtg. Depth E	Approx. Weight Lbs. [kg]
			A	B	C			
25/30	240	<b>3009B.3</b>	11.50 [292.10]	6.50 [165.10]	8.75 [222.25]	9.00 [228.60]	4.00 [101.60]	65.0 [29.3]
40/50	240	<b>3009B.5</b>	11.50 [292.10]	7.75 [196.85]	9.00 [228.60]	9.00 [228.60]	6.00 [152.40]	80.0 [36.0]
60/75	240	<b>3009B.75</b>	13.50 [342.90]	8.00 [203.20]	10.25 [260.35]	9.00 [228.60]	6.00 [152.40]	125 [56.0]
100	240	<b>3009B1.</b>	13.50 [342.90]	8.75 [222.25]	10.25 [260.35]	9.00 [228.60]	6.00 [152.40]	140 [63.0]
125/150	240	<b>3009B1.5</b>	14.50 [368.30]	10.00 [254.00]	10.75 [273.05]	9.00 [228.60]	7.00 [177.80]	165 [74.0]
200	240	<b>3009B2.</b>	15.00 [381.00]	10.50 [266.70]	10.75 [273.05]	9.00 [228.60]	7.00 [177.80]	210 [95.0]
250	240	<b>3009B2.5</b>	15.75 [400.05]	12.00 [304.80]	11.50 [292.10]	9.00 [228.60]	8.25 [209.55]	245 [110]
300	240	<b>3009B3.</b>	15.75 [400.05]	12.25 [311.15]	12.00 [304.80]	9.00 [228.60]	8.25 [209.55]	275 [124]
400	240	<b>3009B4.</b>	17.00 [431.80]	12.50 [317.50]	14.00 [355.60]	9.00 [228.60]	8.25 [209.55]	320 [144]
500	240	<b>3009B5.</b>	17.00 [431.80]	12.50 [317.50]	14.50 [368.30]	9.00 [228.60]	8.25 [209.55]	345 [155]
600	240	<b>3009B6.</b>	21.00 [533.40]	14.00 [355.60]	16.00 [406.40]	12.00 [304.80]	9.00 [228.60]	450 [203]
800	240	<b>3009B8.</b>	23.00 [584.20]	15.00 [381.00]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	600 [270]
1000	240	<b>3009B10.</b>	24.00 [609.60]	16.00 [406.40]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1200	240	<b>3009B12.</b>	27.00 [685.80]	17.00 [431.80]	22.00 [558.80]	12.00 [304.80]	12.00 [304.80]	900 [405]
1600	240	<b>3009B16.</b>	30.00 [762.00]	18.00 [457.20]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1200 [540]

#### Three Coil - 480 Volts

60 Hz

HP	Voltage	Catalog Number	Dimensions in Inches [mm]			Mtg. Width D	Mtg. Depth E	Approx. Weight Lbs. [kg]
			A	B	C			
25/30	480	<b>3009C.3</b>	11.50 [292.10]	6.50 [165.10]	8.75 [222.25]	9.00 [228.60]	4.00 [101.60]	65.0 [29.3]
40/50	480	<b>3009C.5</b>	11.50 [292.10]	7.75 [196.85]	9.00 [228.60]	9.00 [228.60]	6.00 [152.40]	80.0 [36.0]
60/75	480	<b>3009C.75</b>	13.50 [342.90]	8.00 [203.20]	10.25 [260.35]	9.00 [228.60]	6.00 [152.40]	125 [56.0]
100	480	<b>3009C1.</b>	13.50 [342.90]	8.75 [222.25]	10.25 [260.35]	9.00 [228.60]	6.00 [152.40]	140 [63.0]
125/150	480	<b>3009C1.5</b>	14.50 [368.30]	10.00 [254.00]	10.75 [273.05]	9.00 [228.60]	7.00 [177.80]	165 [74.0]
200	480	<b>3009C2.</b>	15.00 [381.00]	10.50 [266.70]	10.75 [273.05]	9.00 [228.60]	7.00 [177.80]	210 [95.0]
250	480	<b>3009C2.5</b>	15.75 [400.05]	12.00 [304.80]	11.50 [292.10]	9.00 [228.60]	8.25 [209.55]	245 [110]
300	480	<b>3009C3.</b>	15.75 [400.05]	12.25 [311.15]	12.00 [304.80]	9.00 [228.60]	8.25 [209.55]	275 [124]
400	480	<b>3009C4.</b>	17.00 [431.80]	12.50 [317.50]	14.00 [355.60]	9.00 [228.60]	8.25 [209.55]	320 [144]
500	480	<b>3009C5.</b>	17.00 [431.80]	12.50 [317.50]	14.50 [368.30]	9.00 [228.60]	8.25 [209.55]	345 [155]
600	480	<b>3009C6.</b>	21.00 [533.40]	14.00 [355.60]	16.00 [406.40]	12.00 [304.80]	9.00 [228.60]	450 [203]
800	480	<b>3009C8.</b>	23.00 [584.20]	15.00 [381.00]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	600 [270]
1000	480	<b>3009C10.</b>	24.00 [609.60]	16.00 [406.40]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1200	480	<b>3009C12.</b>	27.00 [685.80]	17.00 [431.80]	22.00 [558.80]	12.00 [304.80]	12.00 [304.80]	900 [405]
1600	480	<b>3009C16.</b>	30.00 [762.00]	18.00 [457.20]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1200 [540]

#### Three Coil - 600 Volts

60 Hz

HP	Voltage	Catalog Number	Dimensions in Inches [mm]			Mtg. Width D	Mtg. Depth E	Approx. Weight Lbs. [kg]
			A	B	C			
25/30	600	<b>3009D.3</b>	11.50 [292.10]	6.50 [165.10]	8.75 [222.25]	9.00 [228.60]	4.00 [101.60]	65.0 [29.3]
40/50	600	<b>3009D.5</b>	11.50 [292.10]	7.75 [196.85]	9.00 [228.60]	9.00 [228.60]	6.00 [152.40]	80.0 [36.0]
60/75	600	<b>3009D.75</b>	13.50 [342.90]	8.00 [203.20]	10.25 [260.35]	9.00 [228.60]	6.00 [152.40]	125 [56.0]
100	600	<b>3009D1.</b>	13.50 [342.90]	8.75 [222.25]	10.25 [260.35]	9.00 [228.60]	6.00 [152.40]	140 [63.0]
125/150	600	<b>3009D1.5</b>	14.50 [368.30]	10.00 [254.00]	10.75 [273.05]	9.00 [228.60]	7.00 [177.80]	165 [74.0]
200	600	<b>3009D2.</b>	15.00 [381.00]	10.50 [266.70]	10.75 [273.05]	9.00 [228.60]	7.00 [177.80]	210 [95.0]
250	600	<b>3009D2.5</b>	15.75 [400.05]	12.00 [304.80]	11.50 [292.10]	9.00 [228.60]	8.25 [209.55]	245 [110]
300	600	<b>3009D3.</b>	15.75 [400.05]	12.25 [311.15]	12.00 [304.80]	9.00 [228.60]	8.25 [209.55]	275 [124]
400	600	<b>3009D4.</b>	17.00 [431.80]	12.50 [317.50]	14.00 [355.60]	9.00 [228.60]	8.25 [209.55]	320 [144]
500	600	<b>3009D5.</b>	17.00 [431.80]	12.50 [317.50]	14.50 [368.30]	9.00 [228.60]	8.25 [209.55]	345 [155]
600	600	<b>3009D6.</b>	21.00 [533.40]	14.00 [355.60]	16.00 [406.40]	12.00 [304.80]	9.00 [228.60]	450 [203]
800	600	<b>3009D8.</b>	23.00 [584.20]	15.00 [381.00]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	600 [270]
1000	600	<b>3009D10.</b>	24.00 [609.60]	16.00 [406.40]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1200	600	<b>3009D12.</b>	27.00 [685.80]	17.00 [431.80]	22.00 [558.80]	12.00 [304.80]	12.00 [304.80]	900 [405]
1600	600	<b>3009D16.</b>	30.00 [762.00]	18.00 [457.20]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1200 [540]

# Optional Thermostats

All HPS Motor Starting Autotransformers are available with optional thermostats. Thermostats are supplied with normally closed contacts and will provide a corresponding signal when coil temperatures exceed safe operating conditions. Each thermostat installed is supplied with standard leads.

## Two Coil - Thermostat Options

Part Number	Description	Installation
T1	One Thermostat	Single thermostat installed in the left coil.
T2	Two Thermostats	One thermostat installed in both coils.



## Three Coil - Thermostat Options

Part Number	Description	Installation
T1	One Thermostat	Single thermostat installed in the center coil.
T2	Two Thermostats	One thermostat installed in the left hand coil and one installed in the right coil.
T3	Three Thermostats	One thermostat installed in each of the three coils.





## Notes



**CANADA**



**UNITED STATES**



**MEXICO**



**ASIA**

**CANADA**

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