



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 & Accessories - Copper

TWO COIL

20 to 1600 HP

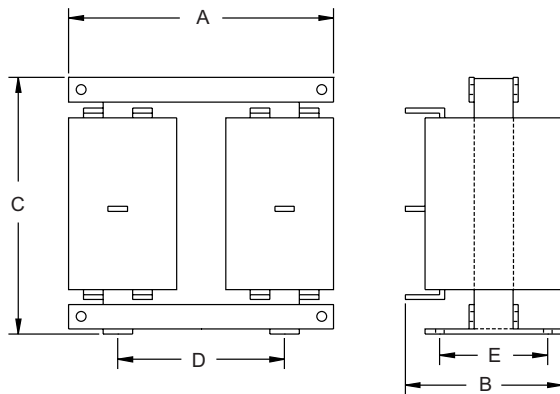
THREE COIL

25 to 1600 HP

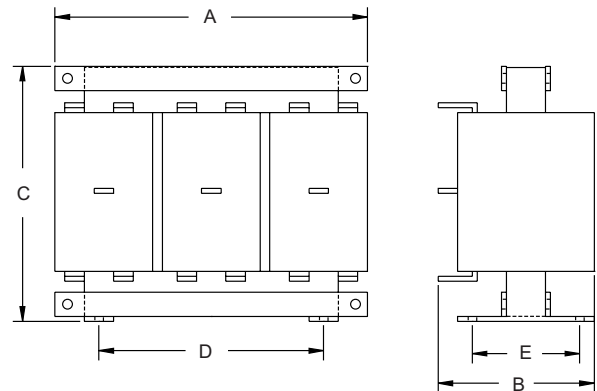
UL Listed:	File: E61431	File: E61431
CSA Certified:	File: LR3902	File: LR3902
Frequency:	60 Hz	60 Hz
Insulation System:	220°C	220°C
Standard Design:	Three Phase, 2 Coil, using economical open core and coil construction.	Three Phase, 3 Coil, using economical open core and coil construction.
Standard Taps:	All units have taps at 50%, 65% and 80%.	All units have taps at 50%, 65%, 80%
Termination:	Heavy solid copper lugs with holes, provide reliable termination.	Heavy solid copper lugs with holes, provide reliable termination.
Thermostats:	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 - 240 VOLTS

60 HZ

HP	Voltage	Catalog Number	Approx. Dimensions - Inches [mm]			Mtg. Width	Mtg. Depth	Approx. Weight Lbs [kg]
			A	B	C			
20/25	240	2909B.2	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	2909B.4	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	2909B.5	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	2909B.75	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	2909B1.	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	2909B1.5	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	2909B2.	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	2909B2.5	14.50 [368.30]	11.75 [298.45]	13.25 [336.55]	9.00 [228.60]	9.00 [228.60]	230 [104]
300	240	2909B3.	14.50 [368.30]	12.00 [304.80]	14.00 [355.60]	9.00 [228.60]	9.00 [228.60]	260 [117]
400	240	2909B4.	17.00 [431.80]	12.50 [317.50]	15.75 [400.05]	9.00 [228.60]	9.00 [228.60]	330 [149]
500	240	2909B5.	17.00 [431.80]	13.00 [330.20]	16.25 [412.75]	9.00 [228.60]	9.00 [228.60]	375 [169]
600	240	2909B6.	23.00 [584.20]	16.00 [406.40]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	550 [248]
800	240	2909B8.	25.00 [635.00]	17.00 [431.80]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1000	240	2909B10.	26.00 [660.40]	18.00 [457.20]	22.00 [558.80]	12.00 [304.80]	9.00 [228.60]	800 [360]
1200	240	2909B12.	29.00 [736.60]	19.00 [482.60]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1050 [470]
1600	240	2909B16.	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	Approx. Dimensions - Inches [mm]			Mtg. Width	Mtg. Depth	Approx. Weight Lbs [kg]
			A	B	C			
20/25	480	2909C.2	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	2909C.4	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	2909C.5	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	2909C.75	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	2909C1.	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	2909C1.5	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	2909C2.	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	2909C2.5	14.50 [368.30]	11.75 [298.45]	13.25 [336.55]	9.00 [228.60]	9.00 [228.60]	230 [104]
300	480	2909C3.	14.50 [368.30]	12.00 [304.80]	14.00 [355.60]	9.00 [228.60]	9.00 [228.60]	260 [117]
400	480	2909C4.	17.00 [431.80]	12.50 [317.50]	15.75 [400.05]	9.00 [228.60]	9.00 [228.60]	330 [149]
500	480	2909C5.	17.00 [431.80]	13.00 [330.20]	16.25 [412.75]	9.00 [228.60]	9.00 [228.60]	375 [169]
600	480	2909C6.	23.00 [584.20]	16.00 [406.40]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	550 [248]
800	480	2909C8.	25.00 [635.00]	17.00 [431.80]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1000	480	2909C10.	26.00 [660.40]	18.00 [457.20]	22.00 [558.80]	12.00 [304.80]	9.00 [228.60]	800 [360]
1200	480	2909C12.	29.00 [736.60]	19.00 [482.60]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1050 [470]
1600	480	2909C16.	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	Approx. Dimensions - Inches [mm]			Mtg. Width	Mtg. Depth	Approx. Weight Lbs [kg]
			A	B	C			
20/25	600	2909D.2	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	2909D.4	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	2909D.5	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	2909D.75	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	2909D1.	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	2909D1.5	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	2909D2.	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	2909D2.5	14.50 [368.30]	11.75 [298.45]	13.25 [336.55]	9.00 [228.60]	9.00 [228.60]	230 [104]
300	600	2909D3.	14.50 [368.30]	12.00 [304.80]	14.00 [355.60]	9.00 [228.60]	9.00 [228.60]	260 [117]
400	600	2909D4.	17.00 [431.80]	12.50 [317.50]	15.75 [400.05]	9.00 [228.60]	9.00 [228.60]	330 [149]
500	600	2909D5.	17.00 [431.80]	13.00 [330.20]	16.25 [412.75]	9.00 [228.60]	9.00 [228.60]	375 [169]
600	600	2909D6.	23.00 [584.20]	16.00 [406.40]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	550 [248]
800	600	2909D8.	25.00 [635.00]	17.00 [431.80]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1000	600	2909D10.	26.00 [660.40]	18.00 [457.20]	22.00 [558.80]	12.00 [304.80]	9.00 [228.60]	800 [360]
1200	600	2909D12.	29.00 [736.60]	19.00 [482.60]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1050 [470]
1600	600	2909D16.	32.00 [812.80]	20.00 [508.00]	26.00 [660.40]	12.00 [304.80]	12.00 [304.80]	1350 [610]

Other voltages and 50Hz units are available upon request.

SELECTION TABLES

THREE COIL

Copper Wound, Three Phase



THREE COIL - 240 VOLTS

60 HZ

HP	Voltage	Catalog Number	Approx. Dimensions - Inches [mm]			Mtg. Width	Mtg. Depth	Approx. Weight Lbs [kg]
			A	B	C			
25/30	240	3009B.3	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	3009B.5	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	3009B.75	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	3009B1.	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	3009B1.5	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	3009B2.	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	3009B2.5	15.75 [400.05]	12.00 [304.80]	11.50 [292.10]	9.00 [228.60]	8.25 [209.55]	245 [110]
300	240	3009B3.	15.75 [400.05]	12.25 [311.15]	12.00 [304.80]	9.00 [228.60]	8.25 [209.55]	275 [124]
400	240	3009B4.	17.00 [431.80]	12.50 [317.50]	14.00 [355.60]	9.00 [228.60]	8.25 [209.55]	320 [144]
500	240	3009B5.	17.00 [431.80]	12.50 [317.50]	14.50 [368.30]	9.00 [228.60]	8.25 [209.55]	345 [155]
600	240	3009B6.	21.00 [533.40]	14.00 [355.60]	16.00 [406.40]	12.00 [304.80]	9.00 [228.60]	450 [203]
800	240	3009B8.	23.00 [584.20]	15.00 [381.00]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	600 [270]
1000	240	3009B10.	24.00 [609.60]	16.00 [406.40]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1200	240	3009B12.	27.00 [685.80]	17.00 [431.80]	22.00 [558.80]	12.00 [304.80]	12.00 [304.80]	900 [405]
1600	240	3009B16.	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	Approx. Dimensions - Inches [mm]			Mtg. Width	Mtg. Depth	Approx. Weight Lbs [kg]
			A	B	C			
25/30	480	3009C.3	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	3009C.5	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	3009C.75	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	3009C1.	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	3009C1.5	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	3009C2.	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	3009C2.5	15.75 [400.05]	12.00 [304.80]	11.50 [292.10]	9.00 [228.60]	8.25 [209.55]	245 [110]
300	480	3009C3.	15.75 [400.05]	12.25 [311.15]	12.00 [304.80]	9.00 [228.60]	8.25 [209.55]	275 [124]
400	480	3009C4.	17.00 [431.80]	12.50 [317.50]	14.00 [355.60]	9.00 [228.60]	8.25 [209.55]	320 [144]
500	480	3009C5.	17.00 [431.80]	12.50 [317.50]	14.50 [368.30]	9.00 [228.60]	8.25 [209.55]	345 [155]
600	480	3009C6.	21.00 [533.40]	14.00 [355.60]	16.00 [406.40]	12.00 [304.80]	9.00 [228.60]	450 [203]
800	480	3009C8.	23.00 [584.20]	15.00 [381.00]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	600 [270]
1000	480	3009C10.	24.00 [609.60]	16.00 [406.40]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1200	480	3009C12.	27.00 [685.80]	17.00 [431.80]	22.00 [558.80]	12.00 [304.80]	12.00 [304.80]	900 [405]
1600	480	3009C16.	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	Approx. Dimensions - Inches [mm]			Mtg. Width	Mtg. Depth	Approx. Weight Lbs [kg]
			A	B	C			
25/30	600	3009D.3	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	3009D.5	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	3009D.75	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	3009D1.	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	3009D1.5	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	3009D2.	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	3009D2.5	15.75 [400.05]	12.00 [304.80]	11.50 [292.10]	9.00 [228.60]	8.25 [209.55]	245 [110]
300	600	3009D3.	15.75 [400.05]	12.25 [311.15]	12.00 [304.80]	9.00 [228.60]	8.25 [209.55]	275 [124]
400	600	3009D4.	17.00 [431.80]	12.50 [317.50]	14.00 [355.60]	9.00 [228.60]	8.25 [209.55]	320 [144]
500	600	3009D5.	17.00 [431.80]	12.50 [317.50]	14.50 [368.30]	9.00 [228.60]	8.25 [209.55]	345 [155]
600	600	3009D6.	21.00 [533.40]	14.00 [355.60]	16.00 [406.40]	12.00 [304.80]	9.00 [228.60]	450 [203]
800	600	3009D8.	23.00 [584.20]	15.00 [381.00]	18.00 [457.20]	12.00 [304.80]	9.00 [228.60]	600 [270]
1000	600	3009D10.	24.00 [609.60]	16.00 [406.40]	20.00 [508.00]	12.00 [304.80]	9.00 [228.60]	700 [315]
1200	600	3009D12.	27.00 [685.80]	17.00 [431.80]	22.00 [558.80]	12.00 [304.80]	12.00 [304.80]	900 [405]
1600	600	3009D16.	30.00 [762.00]	18.00 [457.20]	24.00 [609.60]	12.00 [304.80]	12.00 [304.80]	1200 [540]

Other voltages and 50Hz units are available upon request.

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 Thermostat	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 Thermostat	One thermostat installed in the left hand coil and one installed in the right coil.
T3	Three Thermostat	One thermostat installed in each of the three coils.



NOTES



CANADA

Hammond Power Solutions

595 Southgate Drive
Guelph, Ontario N1G 3W6
Tel: (519) 822-2441 | Fax: (519) 822-9701
Toll Free: 1-888-798-8882

sales@hammondpowersolutions.com



UNITED STATES

Hammond Power Solutions

1100 Lake Street
Baraboo, Wisconsin 53913-2866
Tel: (608) 356-3921 | Fax: (608) 355-7623
Toll Free: 1-866-705-4684

sales@hammondpowersolutions.com



MEXICO

Hammond Power Solutions Latin America S.

Av. No. 800,
Parque Industrial Guadalupe
Guadalupe, NL, Mexico, C.P. 67190.
Tel: (819) 690-8000

sales@hammondpowersolutions.com



ASIA

Hammond Power Solutions Pvt. Ltd.

Plot No 6A, Phase -1, IDA,
Pashamylaram, Patancheru (M)
Sangareddy, 502 307, India
Tel: +91-994-995-0009

marketing-india@hammondpowersolutions.com

EMEA (SALES OFFICE)

Hammond Power Solutions SpA

Tel: +49 (152) 08800468

sales-emea@hammondpowersolutions.com



hammondpowersolutions.com



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