Table 1.A Drive Rating and Derating Guidelines

Voltage Rating	Catalog Number IP30 (NEMA Type 1)	Motor Rating					
		Three-Phase Input			Single-Phase Input		
		HP	kW	Output ①② Current (A)	HP	kW	Output ①② Current (A)
200-230V 50/60 Hz	1305-AA02A	0.5	0.37	2.3	0.25	0.19	1.2
	1305-AA03A	0.75	0.55	3	0.5	0.37	2.3
	1305-AA04A	1	0.75	4.5	0.75	0.55	3
	1305-AA08A	2	1.5	8	1	0.75	4.5
	1305-AA12A	3	2.2	12 ③	2	1.5	8 ③
380-460V 50/60 Hz	1305-BA01A	0.5	0.37	1.3	Not Available		
	1305-BA02A	0.75	0.55	1.6			
	1305-BA03A	1	0.75	2.3			
	1305-BA04A	2	1.5	4			
	1305-BA06A	3	2.2	6 ④			
	1305-BA09A	5	4.0	9 ⑤			

In general:

① *Motor Full Load Amps (FLA) should not exceed the drive output current rating.*

② *If the **[PWM Frequency]** is set above 4kHz, the output current must be derated per the chart on page 5-20.*

When operating the drive in an ambient temperature at or near the maximum operating temperature (50°C), the following derating guidelines are recommended to guard against overheating depending on application and operating conditions.

③ *Output current value listed for 200V input voltage. At 230V input voltage, output current is 9.6A for 3 phase and 6.8A for single phase.*

④ *Output current value listed for 380V input voltage. At 415V input voltage, output current is 5.3A. At 460V input voltage, output current is 4.8A.*

⑤ *Output current value listed for 380V input voltage. At 415V input voltage, output current is 8.4A. At 460V input voltage, output current is 7.6A.*

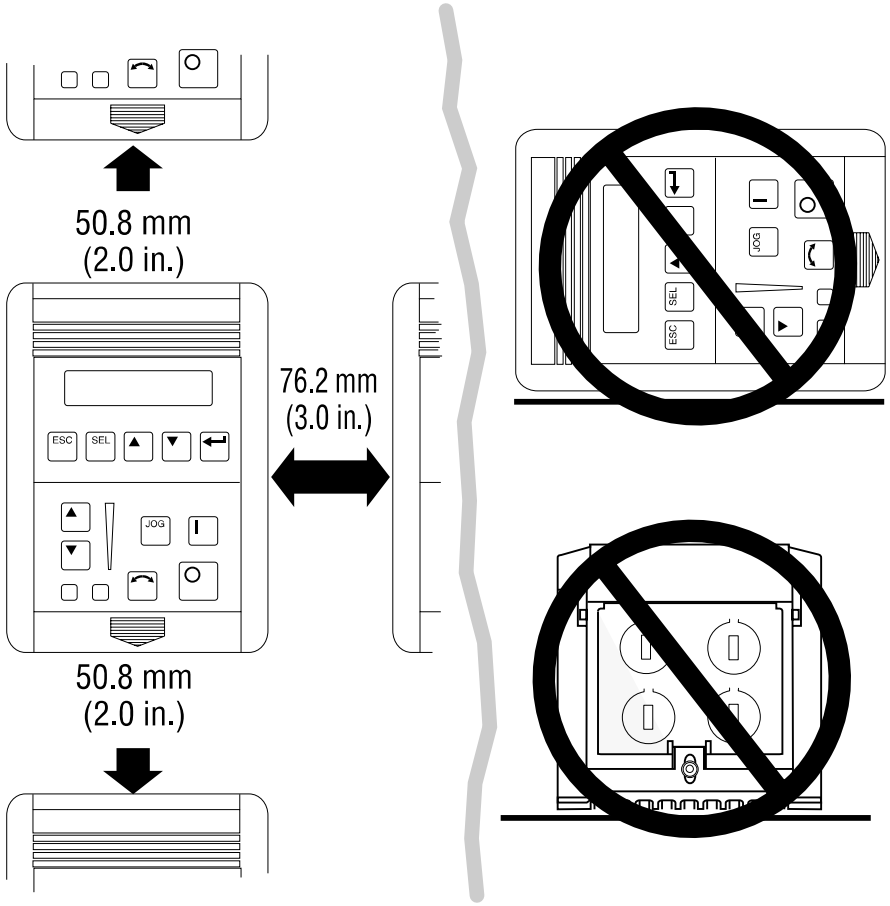
For derating guidelines at ambient temperatures between 40°C and 50°C, consult Allen-Bradley.

CHAPTER OBJECTIVES

Chapter 2 provides the information needed to properly mount and wire the drive. Since most start-up difficulties are the result of incorrect wiring, every precaution must be taken to assure that the wiring is done as instructed. All items must be read and understood before the actual installation begins.

ATTENTION: The following information is merely a guide for proper installation. The National Electrical Code and any other governing regional or local code will overrule this information. The Allen-Bradley Company cannot assume responsibility for the compliance or the noncompliance to any code, national, local or otherwise for the proper installation of this drive or associated equipment. A hazard of personal injury and/or equipment damage exists if codes are ignored during installation.

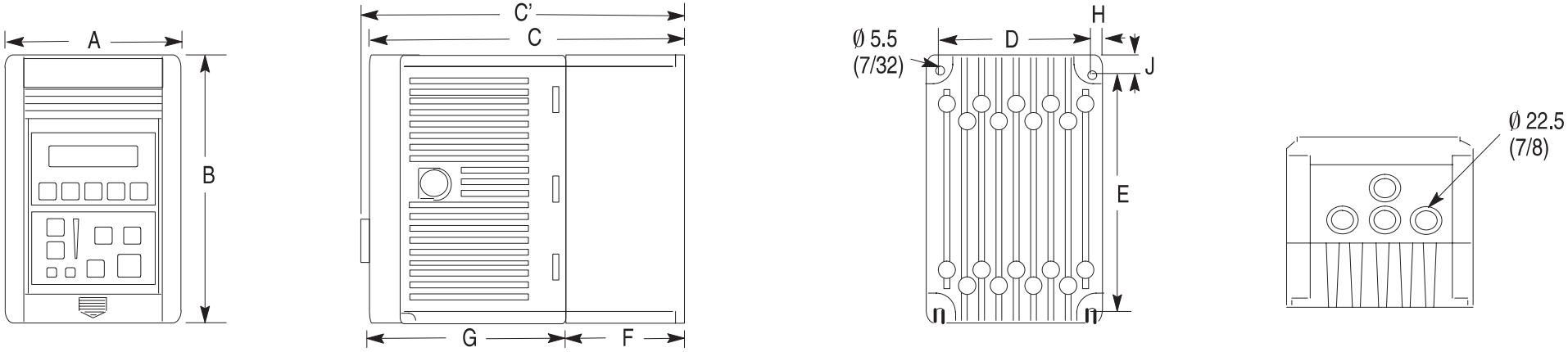
Figure 2.1 Mounting Requirements



Important: The drive must be mounted to a metallic surface.

Figure 2.2 Bulletin 1305 Approximate Dimensions

Dimensions shown are in millimeters (inches). Shipping weights are in kilograms (pounds).



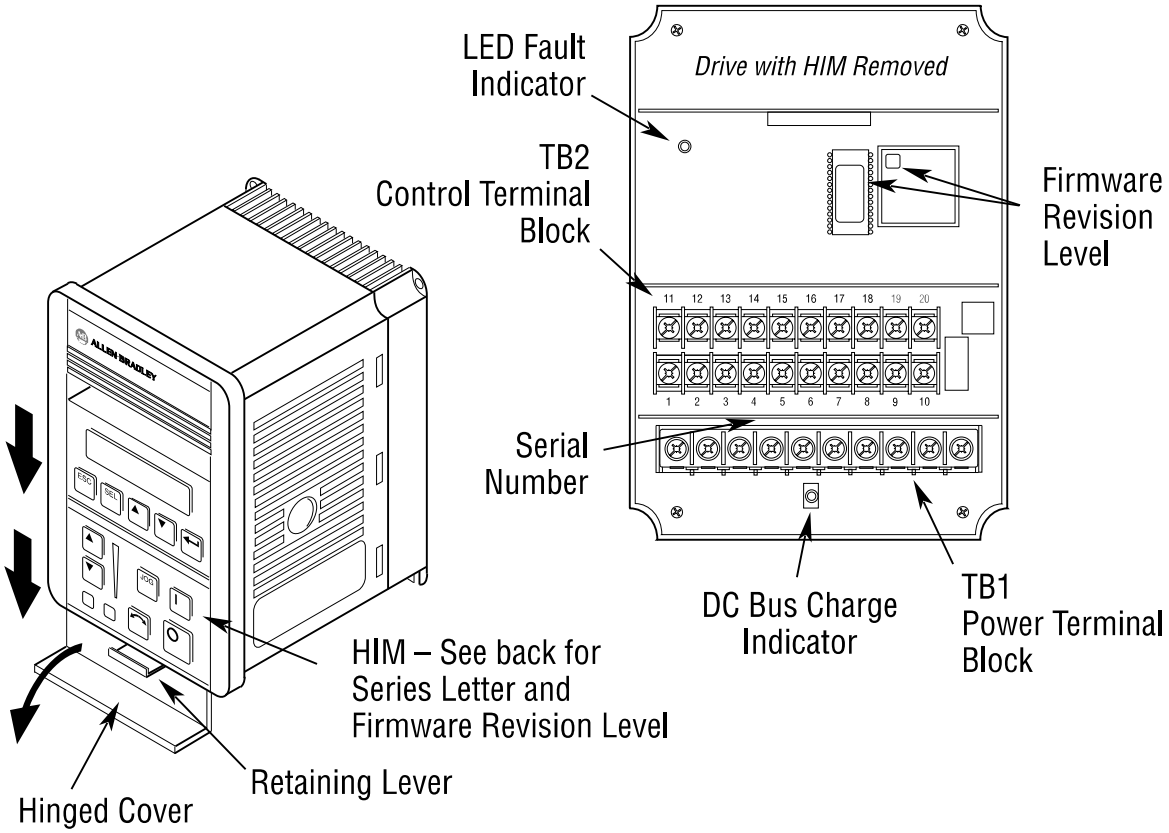
200/230 V Cat. No. 1305-. . .	380/460 V Cat. No. 1305-. . .	A Width	B Height	C Depth w/o Pot.	C' Depth w/ Pot.	D	E	F	G	H	J	Approx. Shipping Weight
AA02A **AA03A**		120 (4-23/32)	195 (7-11/16)	122 (4-13/16)	127.1 (5)	110 (4-11/32)	180 (7-1/16)	9 (11/32)	113 (4-7/16)	5 (7/32)	7.5 (5/16)	1.6 (3.5)
AA04A		120 (4-23/32)	195 (7-11/16)	140 (5-1/2)	145.1 (5-23/32)	110 (4-11/32)	180 (7-1/16)	27 (1-1/16)	113 (4-7/16)	5 (7/32)	7.5 (5/16)	1.9 (4.2)
AA08A	**BA01A** **BA02A** **BA03A** **BA04A** **BA06A**	170 (6-11/16)	195 (7-11/16)	179 (7-1/16)	184.1 (7-1/4)	160 (6-5/16)	180 (7-1/16)	66 (2-19/32)	113 (4-7/16)	5 (7/32)	7.5 (5/16)	3.6 (8.0)
AA12A	**BA09A**	210 (8-1/4)	195 (7-11/16)	179 (7-1/16)	184.1 (7-1/4)	200 (7-7/8)	180 (7-1/16)	66 (2-19/32)	113 (4-7/16)	5 (7/32)	7.5 (5/16)	4.2 (9.2)

TERMINAL BLOCK ACCESS

To access the power and control terminal blocks, perform the following procedure:

1. Remove power from the drive.
2. Lower the hinged panel located below the HIM or blank front panel.
3. For drives equipped with a blank front panel, slide the panel downward and remove it from the drive. Skip to Step 5.
4. For drives equipped with a HIM, press the retaining lever directly beneath the HIM and slide the HIM downward to remove it from drive.
5. Remove the drive front cover by grasping the upper corners of the cover and pulling at a 90-degree angle to the drive. Lift the cover off.

Figure 2.3 Terminal Block Access



ATTENTION: Proceed with caution. A DC Bus Voltage may be present at the Power Terminal Block (TB1) even when power is removed from the drive.

Table A.1 Specifications

Drive	Bulletin 1305 Drive Rated 200-230 V AC					Bulletin 1305 Drives Rated 380-460 V AC					
	-AA02A	-AA03A	-AA04A	-AA08A	-AA12A	-BA01A	-BA02A	-BA03A	-BA04A	-BA06A	-BA09A
OUTPUT RATINGS											
Three-Phase Motor Rating kW (HP)	0.37 (0.5)	0.55 (0.75)	0.75 (1)	1.5 (2)	2.2 (3)	0.37 (0.5)	0.55 (0.75)	0.75 (1)	1.5 (2)	2.2 (3)	4.0 (5)
Output Current (A) ①②	2.3	3.0	4.5	8.0	12.0 ③	1.3	1.6	2.3	4.0	6.0 ④	9.0 ⑤
Output Voltage	Adjustable from 0 V to Input Voltage										
Output Frequency (Hz)	0.00 to 400.00 Hz Programmable										
SCANport Load	250 mA maximum (all adapters combined)										
INPUT RATINGS											
Input Voltage & Frequency	200/230V Three Phase, 50/60 Hz					380/460V Three Phase, 50/60 Hz					
Operational Range (V)	180-265V, 47-63 Hz					340V-500V, 47-63 Hz					
Input kVA	0.9	1.3	1.7	3.1	4.6	0.9	1.3	1.7	3.1	4.6	7.0
Power Factor (Displacement)	0.8 (Lagging)										
Efficiency (%)	97.5 % (Typical)										
Power Dissipation (W)	27	34	46	76	108	21	27	34	52	73	107

In general:

① *Motor Full Load Amps (FLA) should not exceed the drive output current rating.*

② *If the **[PWM Frequency]** is set above 4kHz, the output current must be derated per the chart on page 5-20.*

When operating the drive in an ambient temperature at or near the maximum operating temperature (50° C), the following derating guidelines are recommended to guard against overheating depending on application and operating conditions.

③ *Output current value listed for 200V input voltage. At 230V input voltage, output current is 9.6A for 3 phase and 6.8A for single phase.*

④ *Output current value listed for 380V input voltage. At 415V input voltage, output current is 5.3A. At 460V input voltage, output current is 4.8A.*

⑤ *Output current value listed for 380V input voltage. At 415V input voltage, output current is 8.4A. At 460V input voltage, output current is 7.6A.*

For derating guidelines at ambient temperatures between 40° C and 50° C, consult Allen-Bradley.

Table A.1 Specifications *(continued)*

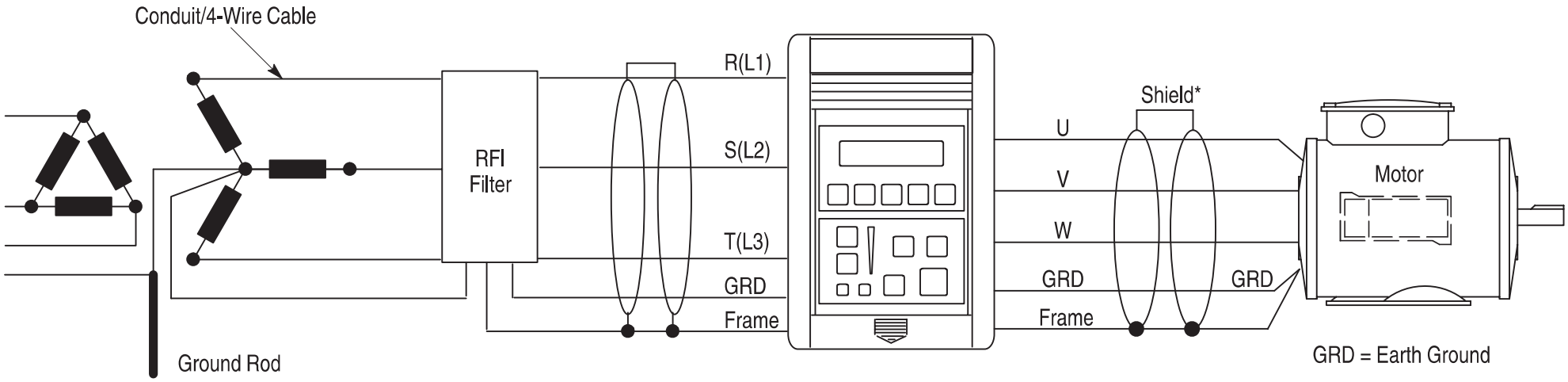
ENVIRONMENTAL SPECIFICATIONS	
Enclosure	NEMA 1 (IP30) standard
Ambient Temperature	0 to 50°C; Optional Enclosures: 0 to 40°C
Storage Temperature	-40°C to 70°C
Relative Humidity	0 to 95% (non condensing)
Vibration	1.0 G Operational
Cooling Method	Natural Convection (no fans)
Altitude	Above 1,000 m (3,300 ft), derate at 6% of drive rated amps per 1000 m
CONTROL INPUTS	
Control Input Type	Contact closure (Internal 5V supply) DO NOT ground or apply external voltage
Start Stop Forward/Reverse	Configurable Inputs for 2 or 3 wire control
Jog	Momentary (non-maintained) Input
SW1 SW2 SW3	Configurable Inputs for control of 7 Preset speeds and 2 Accel/Decel times
Enable	Interlock Input to enable drive operation
External Speed Potentiometer	10 K Ohms, 1 Watt
Analog Input (4 to 20mA)	Input Impedance 250 Ohms (Non-Isolated), 10 bit resolution
Analog Input (0 to 10 V DC)	Input Impedance 100 K Ohms (Non-Isolated), 10 bit resolution

Table A.1 Specifications *(continued)*

CONTROL OUTPUTS											
Programmable Output 1	Form A Relay Contact: Resistive Rating 115V AC/ 30V DC, 5A; Inductive Rating 115V AC/ 30V DC, 2A										
Programmable Output 2	Open Collector (Sink): 24V DC, ±20%, 50 mA maximum (User supplied source voltage)										
Analog Output (0 to 10V DC)	Load Impedance ≥ 4,000 Ohms, 8 bit resolution										
PWM Algorithm	Sine Weighted PWM Output										
Switching Device 3-Phase Output	IGBT Intelligent Power Module										
V/Hz Ratio	Programmable										
Carrier Frequency	Adjustable in 100Hz Increments from 2 kHz to 8 kHz. Output Current Derating applies above 4 kHz.										
DC Boost	Adjustable single point or full custom – Start and Run boost available										
CONTROL FEATURES											
Drive	**Bulletin 1305 Drive Rated 200-240 V AC**					**Bulletin 1305 Drives Rated 380-460 V AC**					
	-AA02A	**-AA03A**	**-AA04A**	**-AA08A**	**-AA12A**	**-BA01A**	**-BA02A**	**-BA03A**	**-BA04A**	**-BA06A**	**-BA09A**
AC Dynamic Braking Torque - Estimated - Actual value will depend on motor characteristics											
W/0 External Resistor	100%	100%	100%	50%	50%	100%	100%	100%	50%	50%	20%
With External Resistor	N/A	N/A	N/A	150%	100%	150%	150%	150%	150%	100%	100%
Current Limiting	Trip Free Operation, Co-ordinated for Drive and Motor Protection Programmable from 20% to 150% of Drive Rated Current										
Overload	200%, Fixed by hardware, based on drive rating 150% for 60 seconds										

ELECTRICAL CONFIGURATION

Figure D.1 Electrical Configuration



GROUNDING

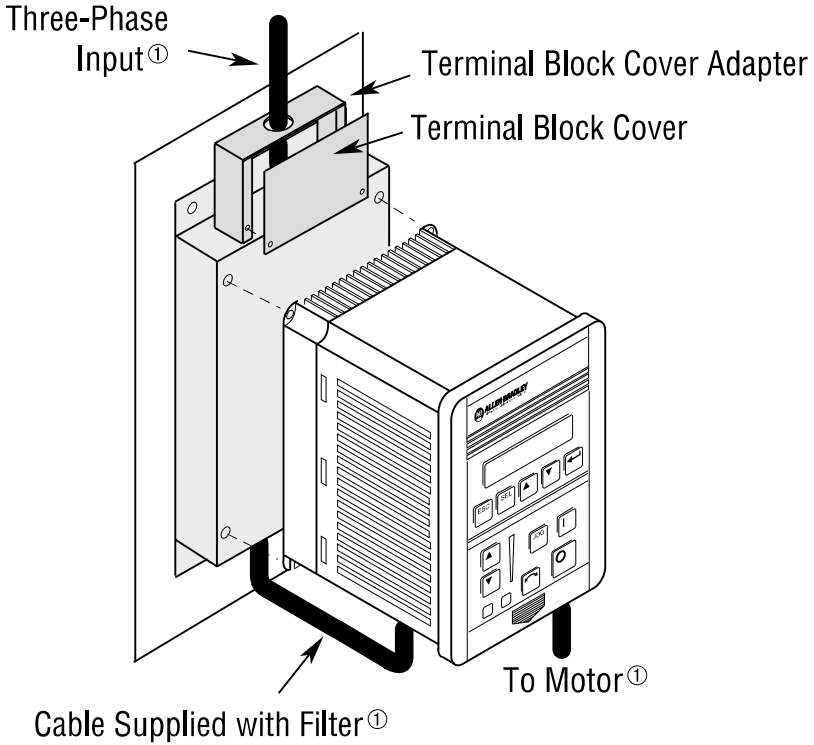
RFI Filter Grounding

Important: Shield must be terminated in cable clamp to frame. Ground wire must be connected to GRD terminal.

Important: For use with a 1305 drive with metal conduit entry panel (frame). Using an RFI filter may result in relatively high ground leakage currents. Therefore, the filter must be permanently installed and solidly grounded to the supply neutral. Grounding must not rely on flexible cables and should not include any form of plug or socket that would permit inadvertent disconnection. The integrity of this connection should be periodically checked. Refer to the instruction manual for RFI filters for CE compliance and for proper installation instructions.

MECHANICAL CONFIGURATION

Figure D.2 Mechanical Configuration

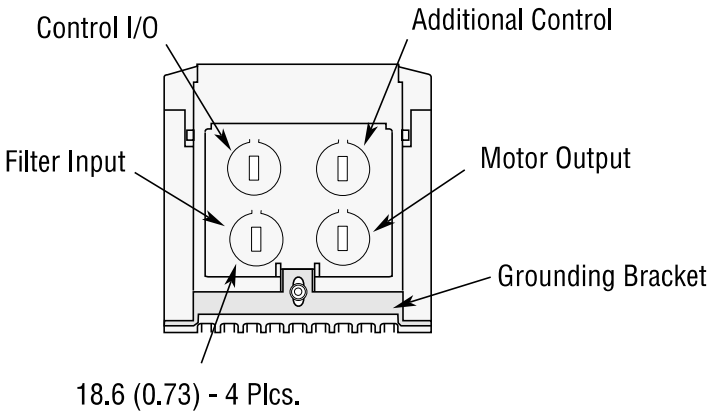


① Input power (source to filter) and output power (filter to drive and drive to motor) wiring must be in conduit or have shielding/armor with equivalent attenuation. Shielding/armor must be bonded to the metal conduit panel. See requirements 5 and 6 on page D-1 for details.

Figure D.3 Required Knockout Assignments

Frame A

(1305-AA02A, AA03A, AA04A)



Frames B and C

(1305-AA08A, AA12A, BA01A, BA02A, BA03A, BA04A, BA06A, BA09A)