Allen-Bradley

PowerFlex®

PowerFlex 70 and 700 Packages for Fan & Pump Applications

Installation Instructions

Rockwell Automation

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at **http://www.rockwellautomation.com/literature**) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary we use notes to make you aware of safety considerations.

WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

Important: Identifies information that is critical for successful application and understanding of the product.

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:

- identify a hazard
- avoid the hazard
- recognize the consequences

Shock Hazard labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present.

Burn Hazard labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be at dangerous temperatures.

Table of Contents

Overview

The purpose of this manual is to provide basic information needed to install, start-up and troubleshoot PowerFlex® 70 and 700 Packages for Fan & Pump Applications.

User documentation for the PowerFlex 70 and 700 Packages for Fan & Pump Applications includes these Installation Instructions and the PowerFlex 70 *User Manual*, Publication 20A-UM001 or the PowerFlex 700 *User Manual*, Publication 20B-UM001. These manuals are required to properly install and operate the PowerFlex 70 and 700 Packages for Fan & Pump Applications.

Who Should Use this Manual?

This manual is intended for qualified personnel. You must be able to program and operate Adjustable Frequency AC Drive devices. In addition, you must have an understanding of the parameter settings and functions.

What Is Not in this Manual

The PowerFlex 70 and 700 Packages for Fan & Pump Applications *Installation Instructions* is designed to provide only basic installation and operation information. For this reason, the following topics have not been included:

- Specifications
- Troubleshooting
- Start-Up
- Programming and Parameters

Please refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual* for detailed drive information.

Reference Materials

The following manuals are recommended for general drive information:

Title	Publication	Available Online at …
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives	DRIVES-IN001…	**www.rockwellautomation.com/literature**
Preventive Maintenance of Industrial Control and Drive System Equipment	DRIVES-TD001…	
Safety Guidelines for the Application, Installation and Maintenance of Solid State Control	SGI-1.1	
A Global Reference Guide for Reading Schematic Diagrams	0100-2.10	
Guarding Against Electrostatic Damage	8000-4.5.2	

For detailed PowerFlex 70 or PowerFlex 700 information including drive parameters, programming, start-up, troubleshooting, specifications:

Title	Publication	Available Online at …
PowerFlex 70 User Manual	20A-UM001…	**www.rockwellautomation.com/literature**
PowerFlex 700 User Manual	20B-UM001…	
PowerFlex Reference Manual.	PFLEX-UM001…	

For Allen-Bradley Drives Technical Support:

Title	Online at …
Allen-Bradley Drives Technical Support	**www.ab.com/support/abdrives**

Manual Conventions

- To help differentiate parameter names and LCD display text from other text, the following conventions will be used:
  - Parameter Names will appear in [brackets]. For example: [DC Bus Voltage].
  - Display Text will appear in “quotes.” For example: “Enabled.”
- The following words are used throughout the manual to describe an action:

Word	Meaning
Can	Possible, able to do something
Cannot	Not possible, not able to do something
May	Permitted, allowed
Must	Unavoidable, you must do this
Shall	Required and necessary
Should	Recommended
Should Not	Not recommended

General Precautions

ATTENTION: This drive contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference A-B publication 8000-4.5.2, "Guarding Against Electrostatic Damage" or any other applicable ESD protection handbook.

ATTENTION: An incorrectly applied or installed drive can result in component damage or a reduction in product life. Wiring or application errors, such as, undersizing the motor, incorrect or inadequate AC supply, or excessive ambient temperatures may result in malfunction of the system.

ATTENTION: Only qualified personnel familiar with adjustable frequency AC drives and associated machinery should plan or implement the installation, start-up and subsequent maintenance of the system. Failure to comply may result in personal injury and/or equipment damage.

ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before performing any work on the drive. Measure the voltage at the drive (Refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual* for test point locations). The voltage must be zero.

Catalog Number Explanation

The PowerFlex 70 and 700 Packages for Fan & Pump Applications catalog numbering scheme is shown below.

Position	1-3	4	5-7	8	9	10	11	12	13	14	15	16	17	18	19
	21V	D	2P1	A	3	A	Y	N	A	R	C	0	B	N	- LR
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o

a

Drive	
Code	**Type**
21V	PowerFlex 70 Drive
21W	PowerFlex 700 Drive

b

Voltage Rating		
Code	**Voltage**	**Ph.**
X	208V ac	3
D	480V ac	3
E	600V ac	3

c1

ND Rating			
208V, 60Hz Input			
Code	**Amps**	**Frame**	**kW (HP)**
4P2	4.8	B	0.75 (1.0)
6P8	7.8	B	1.5 (2.0)
9P6	11	B	2.2 (3.0)
015	17.5	C	4.0 (5.0)
022	25.3	D	5.5 (7.5)
028	32.2	D	7.5 (10)
042	43	D	11 (15)

c2

ND Rating			
480V, 60Hz Input			
Code	**Amps**	**Frame**	**kW (HP)**
2P1	2.1	B	0.75 (1.0)
3P4	3.4	B	1.5 (2.0)
5P0	5.0	B	2.2 (3.0)
8P0	8.0	B	4.0 (5.0)
011	11	C	5.5 (7.5)
014	14	C	7.5 (10)
022	22	D	11 (15)
027	27	D	15 (20)
034	34	D	18.5 (25)
040	40	D	22 (30)
052	52	E	30 (40)
065	65	E	37 (50)
077 §	77	4	45 (60)
096 §	96	5	55 (75)
125 §	125	5	75 (100)
156 §	156	6	90 (125)
180 §	180	6	110 (150)
248 §	248	6	132 (200)

§ PowerFlex 700 options only.

c3

ND Rating			
600V, 60Hz Input			
Code	**Amps**	**Frame**	**kW (HP)**
3P9	3.9	B	2.2 (3.0)
6P1	6.1	B	4.0 (5.0)
9P0	9.0	C	5.5 (7.5)
011	11	C	7.5 (10)
017	17	D	11 (15)
022	22	D	15 (20)
027	27	D	18.5 (25)
032	32	D	22 (30)
041	41	E	30 (40)
052	52	E	37 (50)
062 §	62	4	45 (60)
077 §	77	5	55 (75)
099 §	99	5	75 (100)
125 §	125	6	90 (125)
144 §	144	6	110 (150)

§ PowerFlex 700 options only.

d

Enclosure	
Code	**Enclosure**
A	IP 20, NEMA Type 1

e

HIM	
Code	**Operator Interface**
0	Blank Cover
2	Digital LCD
3	Full Numeric LCD
5	Prog. Only LCD

f

Documentation	
Code	**Type**
A	User Manual

g

Brake IGBT	
Code	**w/Brake IGBT ❄**
Y	Yes
N §	No

❄ Brake IGBT is standard on PowerFlex 70 Frames B, C, D and E, and optional on PowerFlex 700 Frames 4, 5 and 6.

§ PowerFlex 700 options only.

h

Internal Brake Resistor	
Code	**w/Resistor**
Y	Yes∗
N	No

∗ Brake resistor only available for PowerFlex 70: 208V Frames B, C & D, 480V Frames B, C & D, 600V Frames B and C.

i

Emission	
Code	**CE Filter**
A	Yes
N∗	No

∗ PowerFlex 70 600V ratings only.

j

Comm Slot	
Code	**Version**
B	BACnet®
C	ControlNet™ (Coax)
D	DeviceNet™
E	EtherNet/IP™
H	RS-485 HVAC
I	Interbus™
L	LonWorks™
P	PROFIBUS™ DP
Q	ControlNet™ (Fiber)
R	Remote I/O
S	RS-485 DF1
N	None

k

Control & I/O		
Code	**Control**	**I/O Volts**
A∗	Standard	24V dc/ac
C❄	Enhanced	24V dc

∗ PowerFlex 700 options only.

❄ PowerFlex 70 options only.

l

Feedback	
Code	**Feedback**
0	None

m

Package	
Code	**Description**
A	Main Input Disconnect
B	3 Contactor Full Feature Bypass with Disconnect
C	3 Contactor Basic Bypass with Disconnect

n

Reserved

o

Options	
Code	**Description**
LR	Input Line Reactor ∗

∗ Only available with Package Code A and B drives 1.0…10 HP @ 208V, 1.0…25 Hp @ 480V and 3.0…25 HP @ 600V.

Main Input Disconnect Package *(Style A)*

Chapter Objectives

This chapter describes the features and operation for the Main Input Disconnect Package (Style A).

Hardware Overview

The Main Input Disconnect Package (Style A) combines an Adjustable Frequency AC Drive with a means for disconnecting input power within a single package. Input power is connected to the PowerFlex drive through a door interlocked fuse disconnect switch.

Main Disconnect Switch (DS1)

An Allen-Bradley Bulletin 194R Fused Disconnect Switch with lockable rotary mounted operator handle is provided. The disconnect switch is designed to meet disconnect switch requirements for branch circuit protection. The door mounted handle accepts up to three (3) padlocks.

Main Fuses (FU1-FU3)

ATTENTION: Most codes require that upstream branch circuit protection be provided to protect input power wiring. Install the fuses recommended in Table 1.A. Do not exceed the fuse ratings. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

Input line branch circuit protection fuses must be used to protect the input power lines. If input fuses are not provided with your drive, recommended fuse values are shown in Table 1.A. The input fuse ratings listed in Table 1.A are applicable for one drive per branch circuit. No other load may be applied to that fused circuit.

The recommended fuse type for all PowerFlex 70 and 700 Packages for Fan & Pump Applications is UL Class J.

Table 1.A Fuse Recommendations

Drive Rating			Fuse Rating
Input Voltage	kW	HP	Amps
208V AC – 3-Phase	0.75	1.0	10
	1.5	2.0	15
	2.2	3.0	20
	4.0	5.0	20
	5.5	7.5	35
	7.5	10	40
	11	15	80
460V AC – 3-Phase	0.75	1.0	6.0
	1.5	2.0	10
	2.2	3.0	15
	4.0	5.0	15
	5.5	7.5	20
	7.5	10	20
	11	15	35
	15	20	35
	18.5	25	60
	22	30	70
	30	40	80
	37	50	100
	45	60	150
	55	75	175
	75	100	200
	90	125	250
	110	150	350
	132	200	400
600V AC - 3-Phase	2.2	3.0	10
	4.0	5.0	15
	5.5	7.5	20
	7.5	10	20
	11	15	35
	15	20	35
	18.5	25	60
	22	30	70
	30	40	80
	37	50	100
	45	60	150
	55	75	175
	75	100	200
	90	125	250
	110	150	350

Electrical Installation

Input Power Wiring

Refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about input power wiring recommendations and selection.

ATTENTION: Protect the contents of the options cabinet from metal chips and other debris while drilling the conduit openings. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

ATTENTION: Do not route signal and control wiring with power wiring in the same conduit. This can cause interference with drive operation. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

To connect AC input power to the drive package:

❑ **1.** Select the proper wire size according to NEC and all applicable local codes and standards. Note that you must punch openings in the Option Cabinet of the desired conduit size, following NEC and all applicable local codes and standards. Power terminal block specifications are listed in Table 1.B.

❑ **2.** Connect the three-phase AC input power leads (three-wire VAC) to the appropriate terminals. Connect the AC input power leads to terminals L1, L2, L3 on the fused disconnect switch.

❑ **3.** Tighten the AC input terminal power terminals to the proper torque according to drive type as shown in Table 1.B.

Table 1.B AC Input Power Terminal Block Specifications

Voltage Rating	kW	HP	Maximum Wire Size(1)	Minimum Wire Size	Recommended Torque
208V AC	0.75-3.7	1-5	8.4 mm^2 (8 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	5.5-7.5	7.5-10	16.0 mm^2 (4 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	11	15	33.6 mm^2 (2 AWG)	2.5 mm^2 (14 AWG)	17.5 N-m (155 lb.-in.)
460V AC	0.75-7.5	1-10	8.4 mm^2 (8 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	11-18.5	15-25	16.0 mm^2 (4 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	22-37	30-50	33.6 mm^2 (2 AWG)	2.5 mm^2 (14 AWG)	17.5 N-m (155 lb.-in.)
	45-75	60-100	(250 MCM)	10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)
	90-132	125-200	(2) (350 MCM)	(2) 10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)
600V AC	0.75-7.5	1-10	8.4 mm^2 (8 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	11-18.5	15-25	16.0 mm^2 (4 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	22-37	30-50	33.6 mm^2 (2 AWG)	2.5 mm^2 (14 AWG)	17.5 N-m (155 lb.-in.)
	45-75	60-100	(250 MCM)	10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)
	90-110	125-150	(2) (350 MCM)	(2) 10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

Output Power Wiring

Refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about output power wiring recommendations and selection.

ATTENTION: Unused wires in conduit must be grounded at both ends to avoid a possible shock hazard caused by induced voltages. Also, if a drive sharing a conduit is being serviced or installed, all drives using this conduit should be disabled to eliminate the possible shock hazard from cross-coupled motor leads. Failure to observe these precautions could result in bodily injury.

ATTENTION: Do not route signal and control wiring with power wiring in the same conduit. This can cause interference with drive operation. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

To connect AC output power wiring from the drive to the motor:

❑ **1.** Wire the three-phase AC output power motor leads by routing them according to the drive option type. Note that you must punch openings in the option cabinet of the desired conduit size, following NEC and all applicable local codes and standards. Power terminal block specifications are listed in Table 1.C.

Do not route more than three sets of motor leads through a single conduit. This will minimize cross-talk that could reduce the effectiveness of noise reduction methods. If more than three drive/motor connections

per conduit are required, shielded cable must be used. If possible, each conduit should contain only one set of motor leads.

❑ **2.** Connect the three-phase AC output power motor leads to terminals U, V, W (T1, T2, T3) on the power terminal block located on the drive.

❑ **3.** Tighten the three-phase AC output power terminals to the proper torque according to drive type as shown in Table 1.C.

Table 1.C AC Output Power Terminal Block Specifications

Voltage Rating	kW	HP	Maximum Wire Size(1)	Minimum Wire Size	Recommended Torque
208V AC	0.75-4.0	1-5	3.5 mm^2 (12 AWG)	0.3 mm^2 (22 AWG)	0.6 N-m (5 lb.-in.)
	5.5-11	7.5-15	8.4 mm^2 (8 AWG)	0.8 mm^2 (18 AWG)	1.4 N-m (12 lb.-in.)
460V AC	0.75-7.5	1-10	3.5 mm^2 (12 AWG)	0.3 mm^2 (22 AWG)	0.6 N-m (5 lb.-in.)
	11-22	15-30	8.4 mm^2 (8 AWG)	0.8 mm^2 (18 AWG)	1.4 N-m (12 lb.-in.)
	30-37	40-50	25.0 mm^2 (3 AWG)	2.5 mm^2 (14 AWG)	2.71 N-m (24 lb.-in.)
	45	60	35 mm^2 (1/0 AWG)	10 mm^2 (8 AWG)	4.0 N-m (35 lb.-in.)
	55	75	50 mm^2 (1/0 AWG)	2.5 mm^2 (14 AWG)	(2)
	75	100	70 mm^2 (2/0 AWG)	25 mm^2 (4 AWG)	(2)
	90-132	125-200	120 mm^2 (4/0 AWG)	2.5 mm^2 (14 AWG)	6 N-m (52 lb.-in.)
600V AC	0.75-7.5	1-10	3.5 mm^2 (12 AWG)	0.3 mm^2 (22 AWG)	0.6 N-m (5 lb.-in.)
	11-22	15-30	8.4 mm^2 (8 AWG)	0.8 mm^2 (18 AWG)	1.4 N-m (12 lb.-in.)
	30-37	40-50	25.0 mm^2 (3 AWG)	2.5 mm^2 (14 AWG)	2.71 N-m (24 lb.-in.)
	45	60	35.0 mm^2 (1/0 AWG)	10.0 mm^2 (8 AWG)	4.0 N-m (35 lb.-in.)
	55	75	50.0 mm^2 (1/0 AWG)	2.5 mm^2 (14 AWG)	(2)
	75	100	70.0 mm^2 (2/0 AWG)	25.0 mm^2 (4 AWG)	(2)
	90-110	125-150	120 mm^2 (4/0 AWG)	2.5 mm^2 (14 AWG)	6 N-m (52 lb.-in.)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

(2) Refer to terminal block label inside drive.

Control and Signal Wiring

Refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about control and signal wiring.

The Control I/O Terminal Block located on the drives provide terminals for interfacing customer supplied control inputs and outputs. All analog and discrete control wiring will be made at these terminals. Typical customer control and signal wiring is shown on the Inter-Connect Drawings Figure 1.4, Figure 1.5 and Figure 1.6.

To connect control and signal wiring to the drive package:

❑ **1.** Wire the control and signal leads by routing them according to the drive option type. Note that you must punch openings in the option cabinet of the desired conduit size, following NEC and all applicable local codes and standards. I/O terminal block specifications are listed in Table 1.D.

Control and signal wires should be separated from power wires by at least 0.3 meters (1 foot).

❑ **2.** Connect the control and signal wiring to the I/O terminals located on the drive.

❑ **3.** Tighten the I/O terminals to the proper torque according to drive type as shown in Table 1.D.

Table 1.D I/O Terminal Block Specifications

Voltage Rating	kW	HP	Maximum Wire Size(1)	Minimum Wire Size	Recommended Torque
208V AC	0.75-11	1-15	1.5 mm^2 (16 AWG)	0.05 mm^2 (30 AWG)	0.5 N-m (4.4 lb.-in.)
460V AC	0.75-37	1-50	1.5 mm^2 (16 AWG)	0.05 mm^2 (30 AWG)	0.5 N-m (4.4 lb.-in.)
	45-132	60-1200	2.1 mm^2 (14 AWG)	0.30 mm^2 (22 AWG)	0.6 N-m (5.2 lb.-in.)
600V AC	0.75-15	1-20	1.5 mm^2 (16 AWG)	0.05 mm^2 (30 AWG)	0.5 N-m (4.4 lb.-in.)
	18.5-110	25-150	2.1 mm^2 (14 AWG)	0.30 mm^2 (22 AWG)	0.6 N-m (5.2 lb.-in.)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

Parameter Defaults Main Input Disconnect Package *(Style A)*

Parameter Name	Number	Default
Output Freq	001	Read Only
Commanded Freq	002	Read Only
Output Current	003	Read Only
Output Voltage	004	Read Only
Flux Current	005	Read Only
Output Voltage	006	Read Only
Output Power	007	Read Only
Output Powr Fctr	008	Read Only
Elapsed MWh	009	Read Only
Elapsed Run Time	010	Read Only
MOP Frequency	011	Read Only
DC Bus Voltage	012	Read Only
DC Bus Memory	013	Read Only
Elapsed kWh	014(1)	Read Only
Analog In1 Value	016	Read Only
Analog In2 Value	017	Read Only
Ramped Speed	022(1)	Read Only
Speed Reference	023(1)	Read Only
Commanded Torque	024(1)	Read Only
Speed Feedback	025(1)	Read Only
Rated kW	026	Read Only
Rated Volts	027	Read Only
Rated Amps	028	Read Only
Control SW Ver	029	Read Only
Motor Type	040	Induction
Motor NP Volts	041	Drive Rating Based
Motor NP FLA	042	Drive Rating Based
Motor NP Hertz	043	Drive Rating Based
Motor NP PRM	044	Drive Rating Based
Motor NP Power	045	Drive Rating Based
Mtr NP Pwr Units	046	Drive Rating Based
Motor OL Hertz	047	Motor NP Hz/3
Motor OL Factor	048	1.00
Motor Poles	049(1)	4
Motor Cntl Sel	053(2)	3 “FAN/Pump V/Hz”
Maximum Voltage	054	Drive Rated Volts
Maximum Freq	055	110.0 or 130.0 Hz
Compensation	056	Bits 0 - 6 0101111
Flux Up Mode	057	“Manual”
Flux Up Time	058	0.000 Secs
SV Boost Filter	059	500
Autotune	061	“Calculate”
IR Voltage Drop	062	Based on Drive Rating
Flux Current Ref	063	Based on Drive Rating
Ixo Voltage Drop	064	Based on Drive Rating
Autotune Torque	066(1)	50%
Inertia Autotune	067(1)	“Ready”

Parameter Name	Number	Default
St Acc Boost	069	Based on Drive Rating
Run Boost	070	Based on Drive Rating
Break Voltage	071	[Motor NP Volts] × 0.25
Break Frequency	072	[Motor NP Hz] × 0.25
Speed Units	079	0 “Hz”
Feedback Select]	080	0 “Open Loop”
Minimum Speed	081	0.0
Maximum Speed	082	50.0 or 60.0 Hz (volt class) [Motor NP RPM]
Overspeed Limit	083	10.0 Hz 300.0 RPM
Skip Frequency 1	084	0.0 Hz
Skip Frequency 2	085	0.0 Hz
Skip Frequency 3	086	0.0 Hz
Skip Freq Band	087(2)	1.0 Hz
Speed/Torque Mod	088(1)	1 “Speed Reg”
Speed Ref A Sel	090(2)	1 “Analog In 1”
Speed Ref A Hi	091	Maximum Speed
Speed Ref A Lo	092	0.0
Speed Ref B Sel	093(2)	18 “DPI Port 1”
Speed Ref B Hi	094	Maximum Speed
Speed Ref B Lo	095	0.0
TB Man Ref Sel	096	1 “Analog In 1”
TB Man Ref Hi	097	Maximum Speed
TB Man Ref Lo	098	0.0
Pulse Input Ref	099	Read Only
Jog Speed 1	100	10.0 Hz
Preset Speed 1	101	5.0 Hz
Preset Speed 2	102(2)	5.0 Hz
Preset Speed 3	103	20.0 Hz
Preset Speed 4	104	30.0 Hz
Preset Speed 5	105	40.0 Hz
Preset Speed 6	106	50.0 Hz
Preset Speed 7	107	6.0 Hz
Jog Speed 2	108	10.0 Hz
Trim % Setpoint	116(1)	0.0%
Trim In Select	117	2 “Analog In 2”
Trim Out Select	118	0 (Disable)
Trim Hi	119	60.0 Hz
Trim Lo	120	0.0 Hz
Slip RPM @ FLA	121	Based on [Motor NP RPM]
Slip Comp Gain	122	40.0
Slip RPM Meter	123	Read Only
PI Configuration	124	0 (Disable)
PI Control	125	0 (Disable)
PI Reference Sel	126	0 “PI Setpoint”
PI Setpoint	127	50.00%

Parameter Name	Number	Default
PI Feedback Sel	128	0 “PI Setpoint”
PI Integral Time	129	2.00 Secs
PI Prop Gain	130	1.0
PI Lower Limit	131	–[Maximum Freq] –100%
PI Upper Limit	132	+[Maximum Freq] 100%
PI Preload	133	0.0 Hz 100.0%
PI Status	134	Read Only
PI Ref Meter	135	Read Only
PI Fdback Meter	136	Read Only
PI Error Meter	137	Read Only
PI Output Meter	138	Read Only
PI BW Filter	139(1)	0.0 Radians
Accel Time 1	140(2)	20.0 Secs
Accel Time 2	141(2)	20.0 Secs
Decel Time 1	142(2)	20.0 Secs
Decel Time 2	143(2)	20.0 Secs
DB While Stopped	145(1)	0 “Disabled”
S Curve %	146(2)	20%
Current Lmt Sel	147	0 “Cur Lim Val”
Current Lmt Val	148	[Rated Amps] × 1.5 (Equation yields approximate default value.)
Current Lmt Gain	149	250
Drive OL Mode	150	3 “Both–PWM 1st”
PWM Frequency	151	4 kHz 2 kHz (Frames 4-6, 600/690VAC)
Droop RPM @ FLA	152(1)	0.0 RPM
Regen Power Limit	153(1)	–50.0%
Current Rate Limit	154(1)	400.0%
Stop Mode A	155(2)	0 “Coast”
Stop Mode B	156(2)	1 “Ramp”
DC Brake Lvl Sel	157	0 “DC Brake Lvl”
DC Brake Level	158	[Rated Amps]
DC Brake Time	159	0.0 Secs
Bus Reg Ki	160	450
Bus Reg Mode A	161	1 “Adjust Freq”
Bus Reg Mode B	162(2)	0 “Disabled”
DB Resistor Type	163	0 “None”
Bus Reg Kp	164(2)	1200
Bus Reg Kd	165	1000
Flux Braking	166(1)	0 “Disabled”
Powerup Delay	167(1)	0.0 Secs
Start At PowerUp	168(2)	1 “Enabled”
Flying Start En	169(2)	1 “Enabled”
Flying StartGain	170	4000
Auto Rstrt Tries	174	0
Auto Rstrt Delay	175(2)	30.0 Secs

Parameter Name	Number	Default
Gnd Warn Level	177[1]	3.0 Amps
Sleep-Wake Mode	178	0 “Disabled”
Sleep-Wake Ref	179	2 “Analog In 2”
Wake Level	180	6.000 mA, 6.000 Volts
Wake Time	181	1.0 Secs
Sleep Level	182	5.000 mA, 5.000 Volts
Sleep Time	183	1.0 Secs
Power Loss Mode	184	0 “Coast”
Power Loss Time	185	0.5 Secs
Power Loss Level	186[3]	Drive Rated Volts
Load Loss Level	187[1]	200.0%
Load Loss Time	188[1]	0.0 Secs
Shear Pin Time	189[1]	0.0 Secs
Direction Mode	190[2]	2 “Reverse Dis”
Save HIM Ref	192	0 Hz
Man Ref Preload	193[3]	0 “Disabled”
Save MOP Ref	194[2]	At Pwr Down
MOP Rate	195	1.0 Hz/s 30.0 RPM/s
Param Access Lvl	196[2]	3 “Fan/Pump”
Reset To Defalts	197	0 “Ready”
Load Frm Usr Set	198	0 “Ready”
Save To User Set	199	0 “Ready”
Reset Meters	200	0 “Ready”
Language	201	0 “Not Selected”
Voltage Class	202	Based on Drive Cat. No.
Drive Checksum	203	Read Only
Dyn UsrSet Cnfg	204[1]	0 “Disabled”
Dyn UsrSet Sel	205[1]	0 “Disabled”
Dyn UsrSet Actv	206[1]	0 “Disabled”
Drive Status 1	209	Read Only
Drive Status 2	210	Read Only
Drive Alarm 1	211	Read Only
Drive Alarm 2	212	Read Only
Speed Ref Source	213	Read Only
Start Inhibits	214	Read Only
Last Stop Source	215	Read Only
Dig In Status	216	Read Only
Dig Out Status	217	Read Only
Drive Temp	218	Read Only
Drive OL Count	219	Read Only
Motor OL Count	220	Read Only
Fault Speed	224	Read Only
Fault Amps	225	Read Only
Fault Bus Volts	226	Read Only
Status 1 @ Fault	227	Read Only
Status 2@ Fault	228	Read Only
Alarm 1 @ Fault	229	Read Only
Alarm 2@ Fault	230	Read Only
Testpoint 1 Sel	234	499
Testpoint 2 Sel	236	499
Testpoint 1 Data	235	Read Only
Testpoint 2 Data	237	Read Only

Parameter Name	Number	Default
Fault Config 1	238	Bits 0 - 15 01x1001000x000xx
Fault Clear	240	0 “Ready”
Fault Clear Mode	241	1 “Enabled”
Power Up Marker	242	Read Only
Fault 1 Code	243	Read Only
Fault 1 Time	244	Read Only
Fault 2 Code	245	Read Only
Fault 2 Time	246	Read Only
Fault 3 Code	247	Read Only
Fault 3 Time	248	Read Only
Fault 4 Code	249	Read Only
Fault 4 Time	250	Read Only
Fault 5 Code	251[3]	Read Only
Fault 5 Time	252[3]	Read Only
Fault 6 Code	253[3]	Read Only
Fault 6Time	254[3]	Read Only
Fault 7 Code	255[3]	Read Only
Fault 7 Time	256[3]	Read Only
Fault 8 Code	257[3]	Read Only
Fault 8 Time	258[3]	Read Only
Alarm Config 1	259	Bits 0-15 000000x00000000x
Alarm Clear	261[3]	0 “Ready”
Alarm 1 Code	262[3]	Read Only
Alarm 2 Code	263[3]	Read Only
Alarm 3 Code	264[3]	Read Only
Alarm 4 Code	265[3]	Read Only
Alarm 5 Code	266[3]	Read Only
Alarm 6 Code	267[3]	Read Only
Alarm 7 Code	268[3]	Read Only
Alarm 8 Code	269[3]	Read Only
DPI Baud Rate	270	1 “500kbps”
Drive Logic Rslt	271	Read Only
Drive Ref Rslt	272	Read Only
Drive Ramp Rslt	273	Read Only
DPI Port Sel	274[1]	“DPI Port 1”
DPI Port Value	275[1]	Read Only
Logic Mask	276[1]	1 - Control Permitted
Start Mask	277	(See Logic Mask)
Jog Mask	278	(See Logic Mask)
Direction Mask	279	(See Logic Mask)
Reference Mask	280	(See Logic Mask)
Accel Mask	281	(See Logic Mask)
Decel Mask	282	(See Logic Mask)
Fault Clr Mask	283	(See Logic Mask)
MOP Mask	284	(See Logic Mask)
Local Mask	285	(See Logic Mask)
Stop Owner	288	Read Only
Start Owner	289	(See Stop Owner)
Jog Owner	290	(See Stop Owner)
Direction Owner	291	(See Stop Owner)
Reference Owner	292	(See Stop Owner)
Accel Owner	293	(See Stop Owner)
Decel Owner	294	(See Stop Owner)

Parameter Name	Number	Default
Fault Clr Owner	295	(See Stop Owner)
MOP Owner	296	(See Stop Owner)
Local Owner	297	(See Stop Owner)
DPI Ref Select	298[1]	0 “Max Freq”
DPI Fdbk Select	299	17 “Speed Fdbk”
Data In A1 - Link A Word 1	300	0(0 = “Disabled)
Data In A2 - Link A Word 2	301	0(0 = “Disabled)
Data In B1 - Link B Word 1	302	(See Data In A1 - Link A Word 1)
Data In B2 - Link B Word 2	303	(See Data In A2 - Link A Word 2)
Data In C1 - Link C Word 1	304	(See Data In A1 - Link A Word 1)
Data In C2 - Link C Word 2	305	(See Data In A2 - Link A Word 2)
Data In D1 - Link D Word 1	306	(See Data In A1 - Link A Word 1)
Data In D2 - Link D Word 2	307	(See Data In A2 - Link A Word 2)
Data Out A1 - Link A Word 1	310	0(0 = “Disabled)
Data Out A2 - Link A Word 2	311	0(0 = “Disabled)
Data Out B1 - Link A Word 1	312	(See Data Out A1 - Link A Word 1)
Data Out B2 - Link A Word 2	313	(See Data Out A2 - Link A Word 2)
Data Out C1 - Link A Word 1	314	(See Data Out A1 - Link A Word 1)
Data Out C2 - Link A Word 2	315	(See Data Out A2 - Link A Word 2)
Data Out D1 - Link A Word 1	316	(See Data Out A1 Link A Word 1)
Data Out D2 - Link A Word 2	317	(See Data Out A2 - Link A Word 2)
Anlg In Config	320[2]	Analog In 1 = 0.0 Volt
Anlg In Sqr Root	321	0 (Disable)
Analog In 1 Hi	322	10.000 Volt
Analog In 1 Lo	323	0.000 Volt
Analog In 1 Loss	324	0 “Disabled”
Analog In 2 Hi	325	10.000 Volt
Analog In 2 Lo	326	0.000 Volt
Analog In 2 Loss	327	0 “Disabled”
Anlg Out Config	340	1 (Current)
Anlg Out Absolut	341	1 (Absolute)
Analog Out1 Sel	342	0 “Output Freq”
Analog Out1 Hi	343	20.000 mA, 10.000 Volts
Analog Out1 Lo	344	0.000 mA, 0.000 Volts
Analog Out2 Sel	345	0 “Output Freq”
Analog Out Hi	346	20.000 mA, 10.000 Volts
Analog Out2 Lo	347	0.000 mA, 0.000 Volts
Anlg Out1 Scale	354[1]	0.0
Anlg Out2 Scale	355[1]	0.0
Digital In1 Sel	361	4 “Stop – CF”

Parameter Name	Number	Default
Digital In2 Sel	362	5 “Start”
Digital In3 Sel	363[2]	3 “Aux Fault”
Digital In4 Sel	364[2]	1 “Enable”
Digital In5 Sel	365[2]	15 “Speed Sel 1”
Digital In6 Sel	366[2]	16 “Speed Sel 2”
Anlg1 Out Setpt	377[1]	20.000 mA, 10.000 Volts
Anlg2 Out Setpt	378	20.000 mA, 10.000 Volts
Dig Out Setpt	379[1]	0 (Disable)
Digital Out1 Sel	380[4]	1 “Fault”
Dig Out1 Level	381	0.0
Dig Out1 OnTime	382	0.00 Secs
Dig Out1 OffTime	383	0.00 Secs
Digital Out2 Sel	384	4 “Run”
Dig Out2 Level	385	0.0
Dig Out2 OnTime	386	0.00 Secs
Dig Out2 OffTime	387	0.00 Secs
Digital Out3 Sel	388	4 “Run”
Dig Out3 Level	389	0.0
Dig Out3 OnTime	390	0.00 Secs
Dig Out3 OffTime	391	0.00 Secs
Dig Out Param	393	0 “PI Config”
DigIn DataLogic	411[1]	0=Logical 0
Motor Fdbk Type	412[1]	0 “Quadrature”
Encoder PPR	413[1]	1024 PPR
Enc Position Fdbk	414[1]	Read Only
Encoder Speed	415[1]	Read Only
Fdbk Filter Sel	416[1]	0 “None”
Notch FilterFreq	419[1]	0.0 Hz
Notch Filter K	420[1]	0.3 Hz
Marker Pulse	421	Read Only
Pulse In Scale	422	64
Encoder Z Chan	423	0 “Pulse Input”
Torque Ref A Sel	427	1 “Torque Stpt1”
Torque Ref A Hi	428[1]	100.0%
Torque Ref A Lo	429[1]	0.0%
Torq Ref A Div	430[1]	1.0
Torque Ref B Sel	431	24 “Disabled”
Torque Ref B Hi	432	100.0%
Torque Ref B Lo	433	0.0%
Torque Ref B Mult	434	1.0
Torque Setpoint1	435[1]	0.0%
Pos Torque Limit	436[1]	200.0%
Neg Torque Limit	437[1]	-200.0%
Torque Setpoint2	438	0.0%
Control Status	440[1]	Read Only
Mtr Tor Cur Ref	441[1]	Read Only
Ki Speed Loop	445[1]	7.0
Kp Speed Loop	446[1]	6.3

Parameter Name	Number	Default
Kf Speed Loop	447[1]	0.0
Speed Desired BW	449[1]	0.0 Radians/Sec
Total Inertia	450[1]	1.25 Secs 0.10 Secs (v3)
Speed Loop Meter	451[1]	Read Only
Rev Speed Limit	454[1]	0.0 RPM
PI Deriv Time	459[1]	0.00 Secs
PI Reference Hi	460[1]	100.0%
PI Reference Lo	461[1]	-100.0%
PI Feedback Hi	462[1]	100.0%
PI Feedback Lo	463[1]	0.0%
Scale1 In Value	476	0.0
Scale1 In Hi	477	0.0
Scale1 In Lo	478	0.0
Scale1 Out Hi	479	0.0
Scale1 Out Lo	480	0.0
Scale1 Out Value	481	Read Only
Scale2 In Value	482	0.0
Scale2 In Hi	483	0.0
Scale2 In Lo	484	0.0
Scale2 Out Hi	485	0.0
Scale2 Out Lo	486	0.0
Scale2 Out Value	487	Read Only
Scale3 In Value	488	0.0
Scale3 In Hi	489	0.0
Scale3 In Lo	490	0.0
Scale3 Out Hi	491	0.0
Scale3 Out Lo	492	0.0
Scale3 Out Value	493	Read Only
Scale4 In Value	494	0.0
Scale4 In Hi	495	0.0
Scale4 In Lo	496	0.0
Scale4 Out Hi	497	0.0
Scale4 Out Lo	498	0.0
Scale4 Out Value	499	Read Only
PortMask Act	595[1]	Read Only
Write Mask Cfg	596[1]	1 = Write Permitted
Write Mask Act	597[1]	Read Only
Logic Mask Act	598[1]	Read Only
TorqProve Cnfg	600	0 (Disable)
TorqProve Setup	601	0 (Disable)
Spd Dev Band	602	2.0 Hz 60.0 RPM
SpdBand Integrat	603	60 mSec
Brk Release Time	604	0.10 Secs
ZeroSpdFloatTime	605	5.0 Secs
Float Tolerance	606	0.2 Hz 6.0 RPM
Brk Set Time	607	0.10 Secs
TorqLim SlewRate	608	10.0 Secs

Parameter Name	Number	Default
BrkSlip Count	609	250
Brk Alarm Travel	610	1.0 Revs
MicroPos Scale%	611	10.0%

(1) Applicable to PowerFlex 70 Packages only.

(2) The default values for these parameters differ from the factory defaults. Setting 194 [Reset To Defalts] to 1 “Factory Rset” will change these parameter settings to the defaults listed in the PowerFlex® 70 or PowerFlex 700 *User Manual*.

(3) Applicable to PowerFlex 700 Packages only.

(4) When [TorqProve Cnfg] is set to “Enable,” [Digital Out1 Sel] becomes the brake control and any other selection will be ignored.

ATTENTION: Parameter 168 [Start At PowerUp] ships from the factory enabled. This feature allows a Run command to automatically cause the drive to resume running at commanded speed after drive input power is restored. Equipment damage and/or personal injury may result if this parameter is used in an inappropriate application. Do not use this function without considering applicable local, national and international codes, standards, regulations or industry guidelines.

Drawing Index

Main Input Disconnect Drive Packages (Style A)

Input Voltage	kW	HP	Input Line Reactor	Drawing			
				Schematic	Inter-Connect	Layout	Outline
208V AC	0.75	1	No	Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	1.5	2		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	2.2	3		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	4	5		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.18, Page 1-30
	5.5	7.5		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.19, Page 1-31
	7.5	10		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.19, Page 1-31
	11	15		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.9, Page 1-21	Figure 1.20, Page 1-32
	0.75	1	Yes	Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	1.5	2		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	2.2	3		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	4	5		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.15, Page 1-27	Figure 1.26, Page 1-38
	5.5	7.5		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.16, Page 1-28	Figure 1.27, Page 1-39
	7.5	10		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.16, Page 1-28	Figure 1.27, Page 1-39

Input Voltage	kW	HP	Input Line Reactor	Drawing			
				Schematic	Inter-Connect	Layout	Outline
460V AC	0.75	1.0	No	Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	1.5	2.0		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	2.2	3.0		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	4.0	5.0		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	5.5	7.5		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.18, Page 1-30
	7.5	10		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.18, Page 1-30
	11	15		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.19, Page 1-31
	15	20		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.19, Page 1-31
	18.5	25		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.19, Page 1-31
	22	30		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.9, Page 1-21	Figure 1.20, Page 1-32
	30	40		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.10, Page 1-22	Figure 1.21, Page 1-33
	37	50		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.10, Page 1-22	Figure 1.21, Page 1-33
	45	60		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.11, Page 1-23	Figure 1.22, Page 1-34
	55	75		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.12, Page 1-24	Figure 1.23, Page 1-35
	75	100		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.12, Page 1-24	Figure 1.23, Page 1-35
	90	125		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.13, Page 1-25	Figure 1.24, Page 1-36
	110	150		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.13, Page 1-25	Figure 1.24, Page 1-36
	132	200		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.13, Page 1-25	Figure 1.24, Page 1-36
	0.75	1.0	Yes	Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	1.5	2.0		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	2.2	3.0		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	4.0	5.0		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	5.5	7.5		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.15, Page 1-27	Figure 1.26, Page 1-38
	7.5	10		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.15, Page 1-27	Figure 1.26, Page 1-38
	11	15		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.16, Page 1-28	Figure 1.27, Page 1-39
	15	20		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.16, Page 1-28	Figure 1.27, Page 1-39
	18.5	25		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.16, Page 1-28	Figure 1.27, Page 1-39

Input Voltage	kW	HP	Input Line Reactor	Drawing			
				Schematic	Inter-Connect	Layout	Outline
600V AC	2.2	3.0		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	4.0	5.0		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.7, Page 1-19	Figure 1.17, Page 1-29
	5.5	7.5		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.18, Page 1-30
	7.5	10		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.18, Page 1-30
	11	15		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.19, Page 1-31
	15	20		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.19, Page 1-31
	18.5	25		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.8, Page 1-20	Figure 1.19, Page 1-31
	22	30	No	Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.9, Page 1-21	Figure 1.20, Page 1-32
	30	40		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.10, Page 1-22	Figure 1.21, Page 1-33
	37	50		Figure 1.1, Page 1-13	Figure 1.4, Page 1-16	Figure 1.10, Page 1-22	Figure 1.21, Page 1-33
	45	60		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.11, Page 1-23	Figure 1.22, Page 1-34
	55	75		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.12, Page 1-24	Figure 1.23, Page 1-35
	75	100		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.12, Page 1-24	Figure 1.23, Page 1-35
	90	125		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.13, Page 1-25	Figure 1.24, Page 1-36
	110	150		Figure 1.3, Page 1-15	Figure 1.5, Page 1-17	Figure 1.13, Page 1-25	Figure 1.24, Page 1-36
	2.2	3.0		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	4.0	5.0		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.14, Page 1-26	Figure 1.25, Page 1-37
	5.5	7.5		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.15, Page 1-27	Figure 1.26, Page 1-38
	7.5	10	Yes	Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.15, Page 1-27	Figure 1.26, Page 1-38
	11	15		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.16, Page 1-28	Figure 1.27, Page 1-39
	15	20		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.16, Page 1-28	Figure 1.27, Page 1-39
	18.5	25		Figure 1.2, Page 1-14	Figure 1.6, Page 1-18	Figure 1.16, Page 1-28	Figure 1.27, Page 1-39

Schematic Drawings

Figure 1.1 1-15 HP, 208V AC, and 1-50 HP, 460V AC and 600V AC Drives

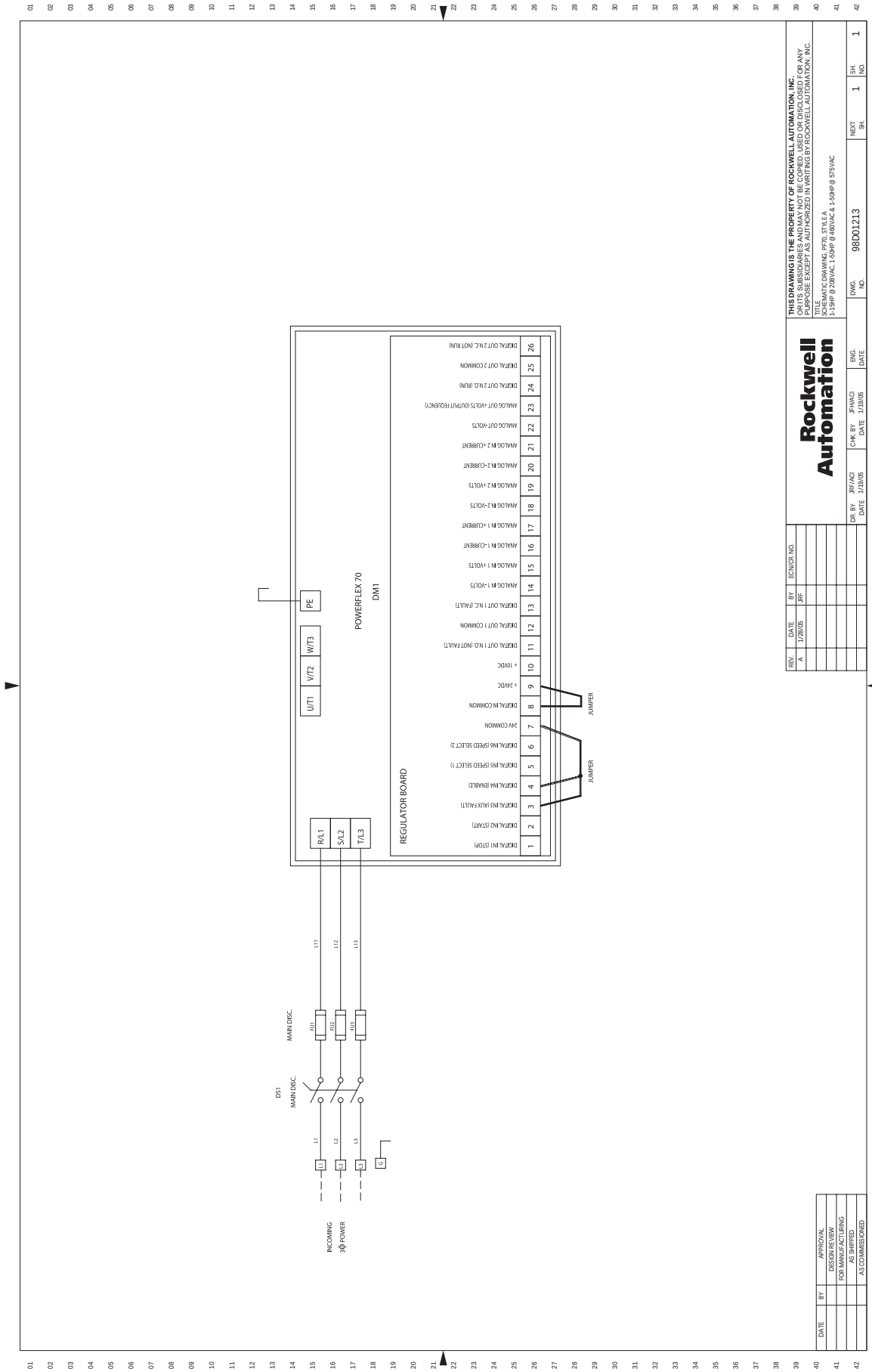


Figure 1.2 1-10 HP, 208V AC and 1-25 HP, 460V AC and 600V AC Drives with Line Reactor

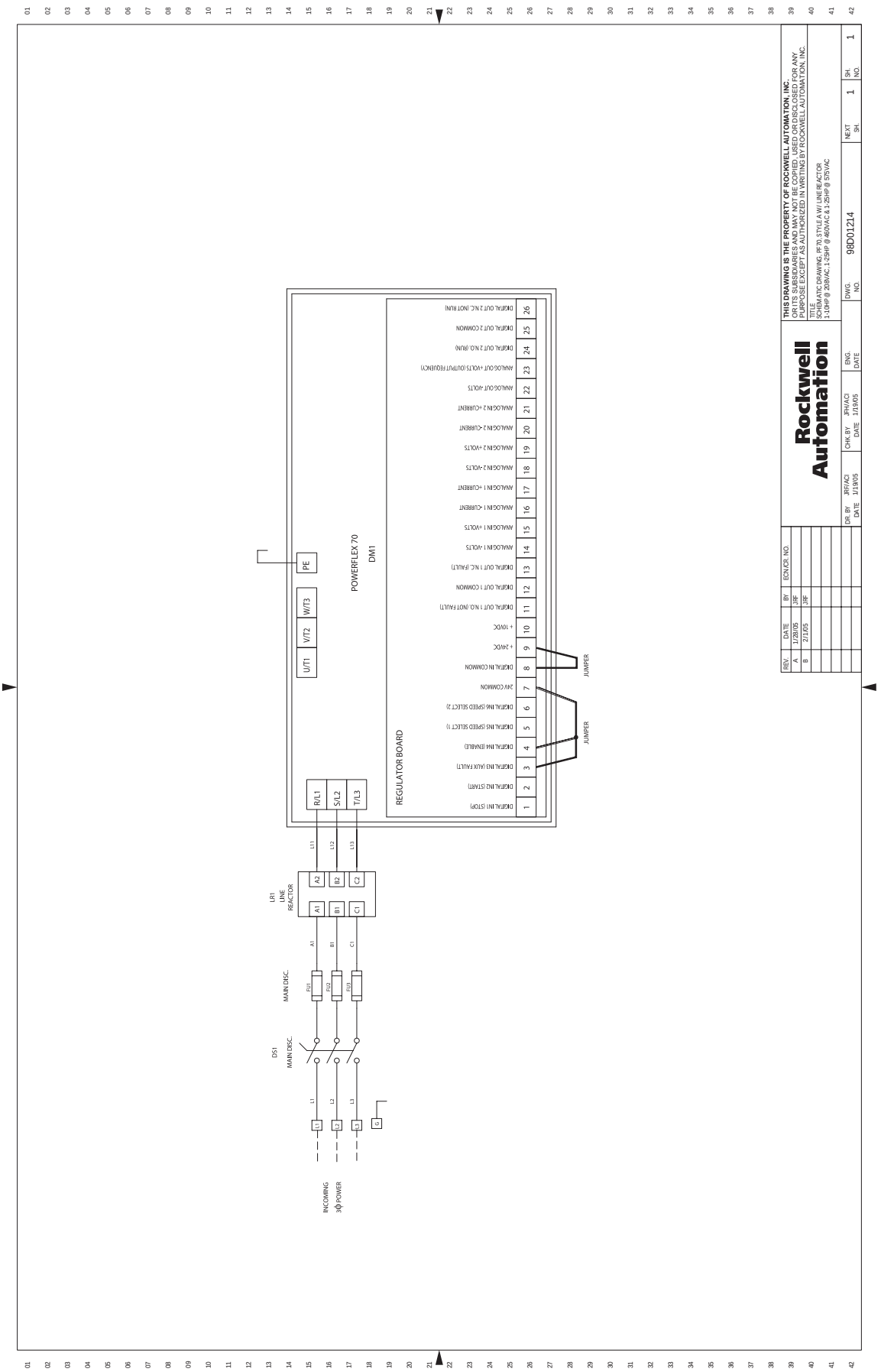
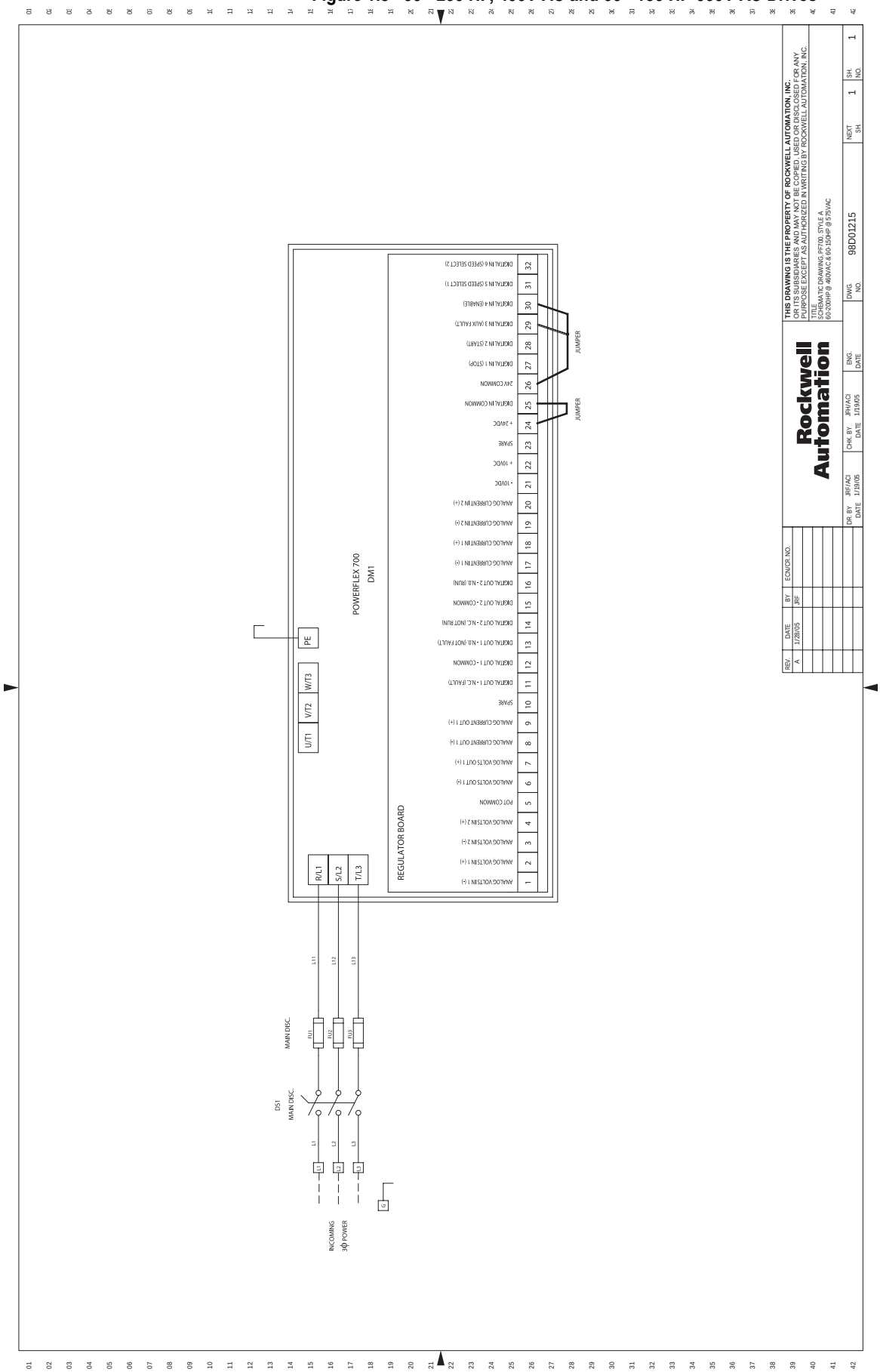


Figure 1.3 60 - 200 HP, 460V AC and 60 - 150 HP 600V AC Drives



Inter-Connect Drawings

Figure 1.4 1-15 HP, 208V AC and 1-50 HP, 460V AC and 600V AC Drives

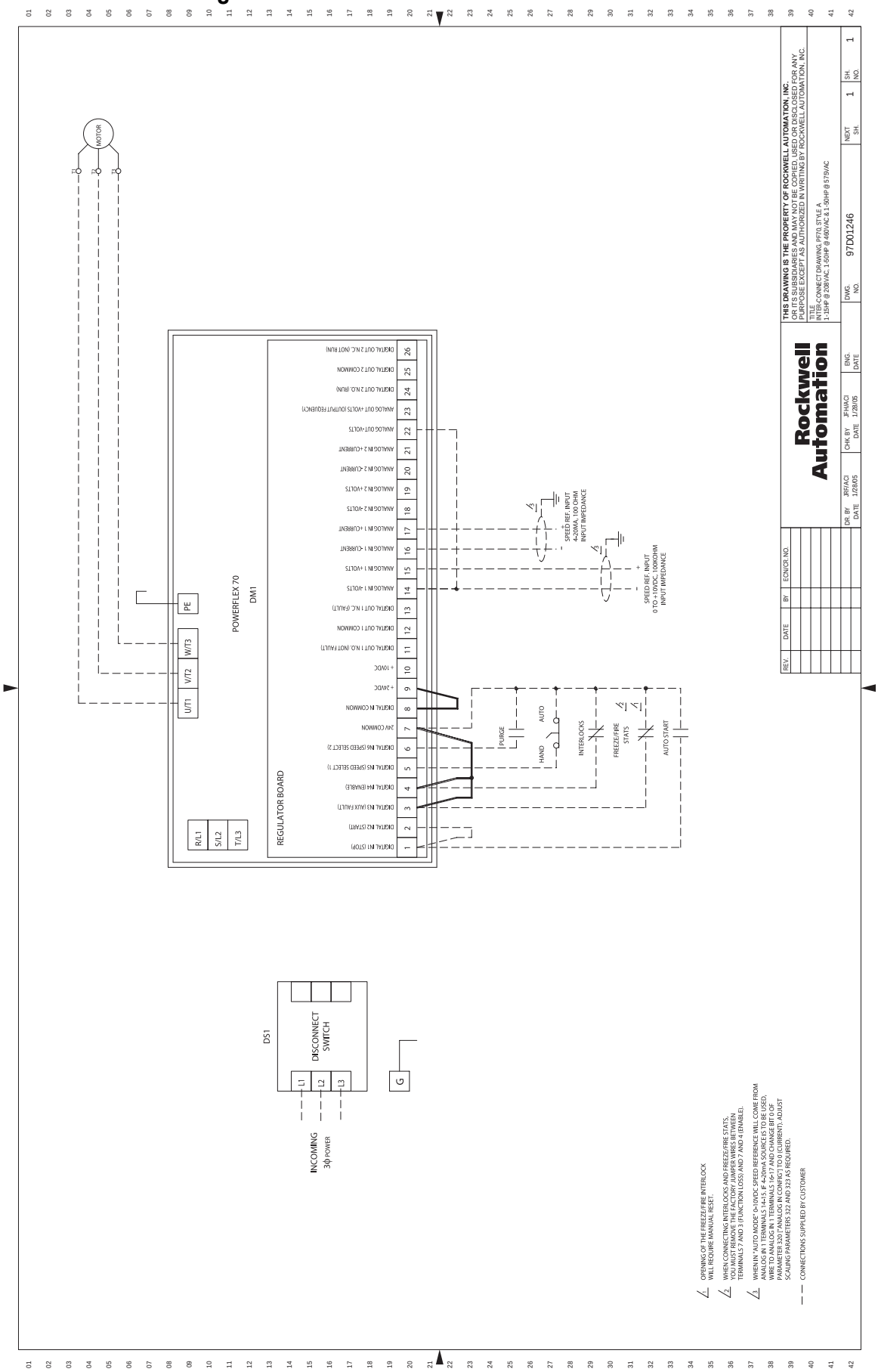


Figure 1.5 60-200 HP, 460V AC and 60-150 HP 600V AC Drives

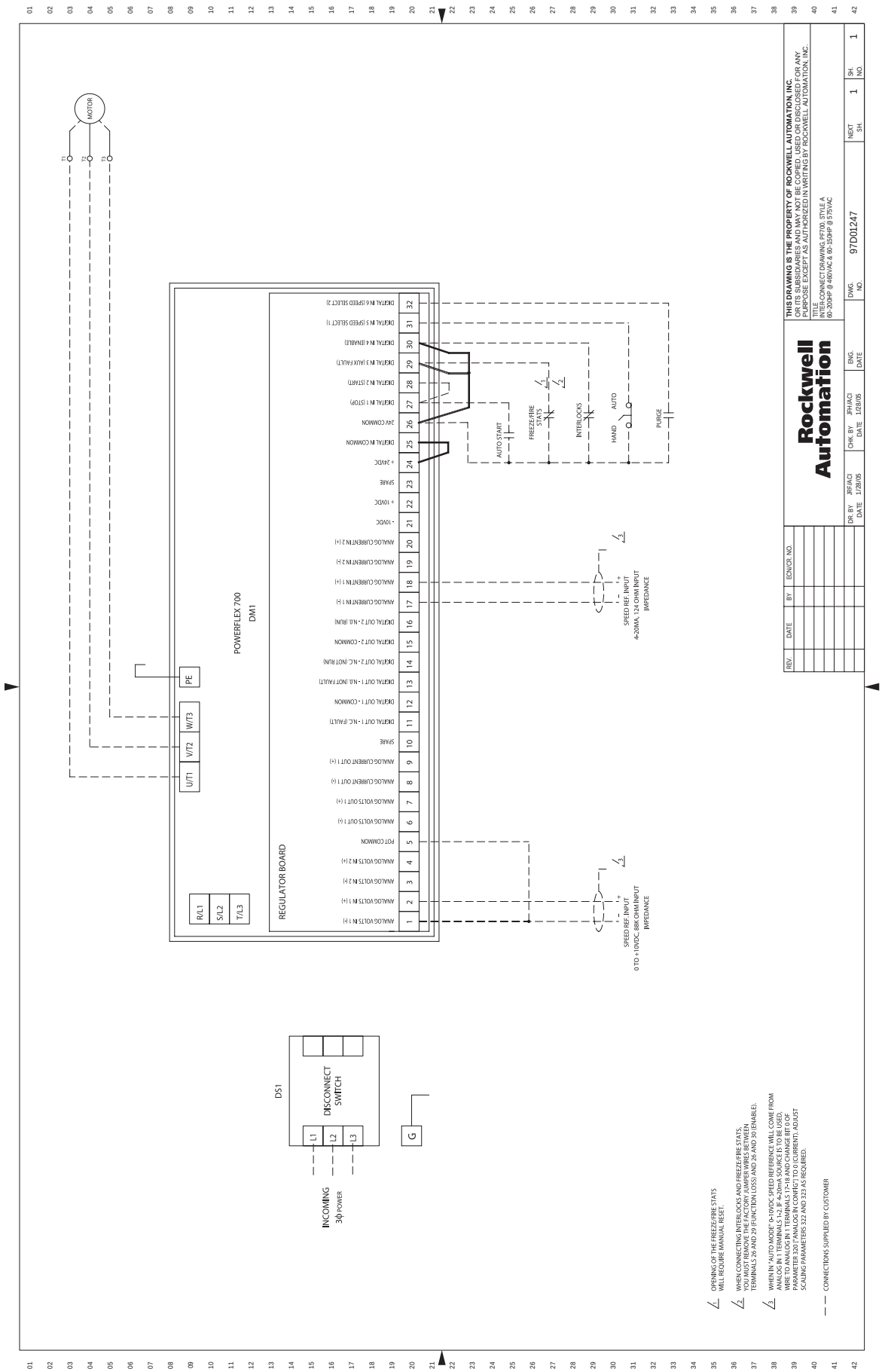
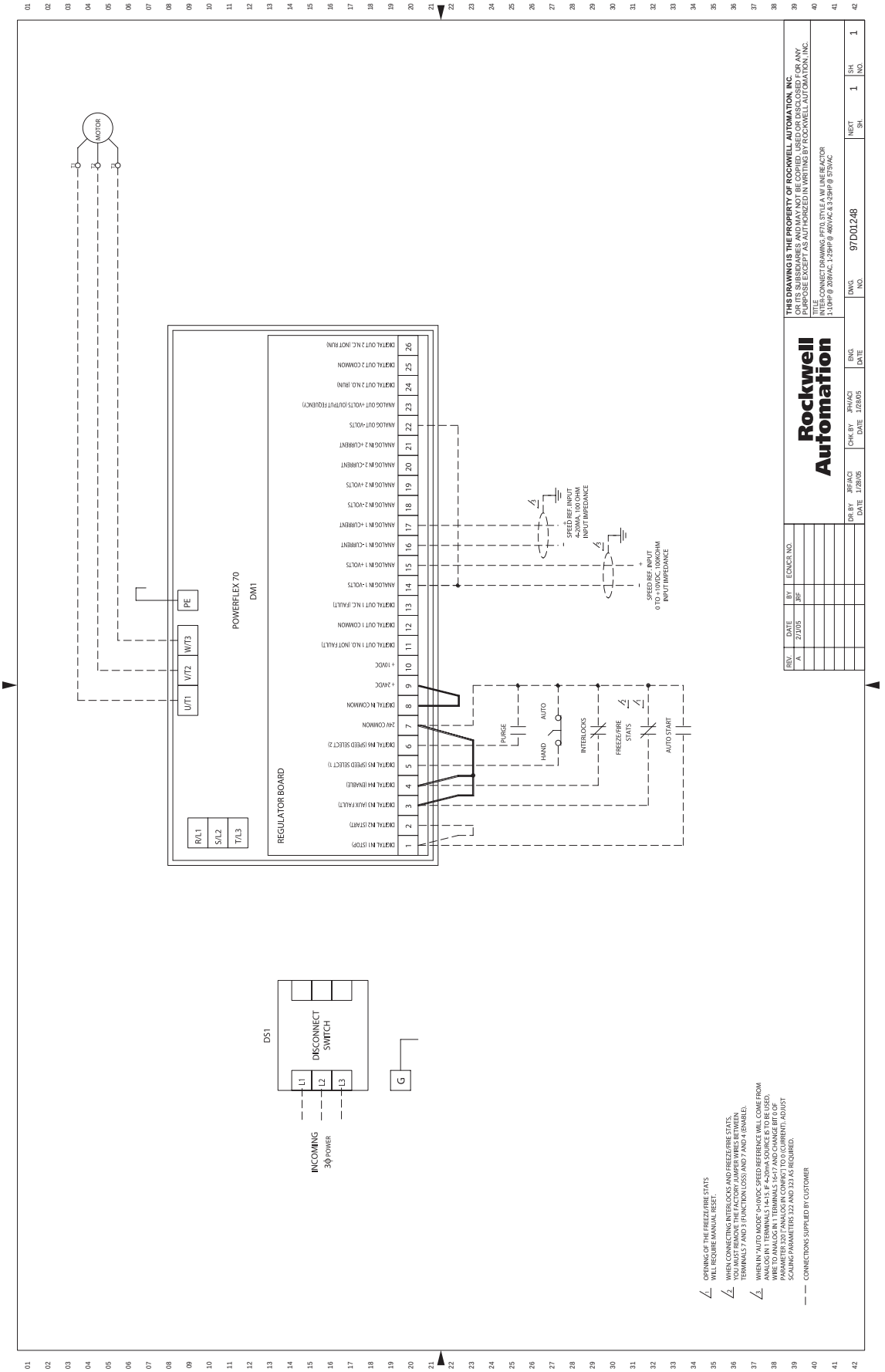


Figure 1.6 1-10 HP, 208V AC, 1-25 HP, 460V AC and 3-25 HP, 600V AC Drives with Line Reactor



Layout Drawings

Figure 1.7 1-3 HP, 208V AC, 1-5 HP, 460V AC and 3-5 HP 600V AC Drives

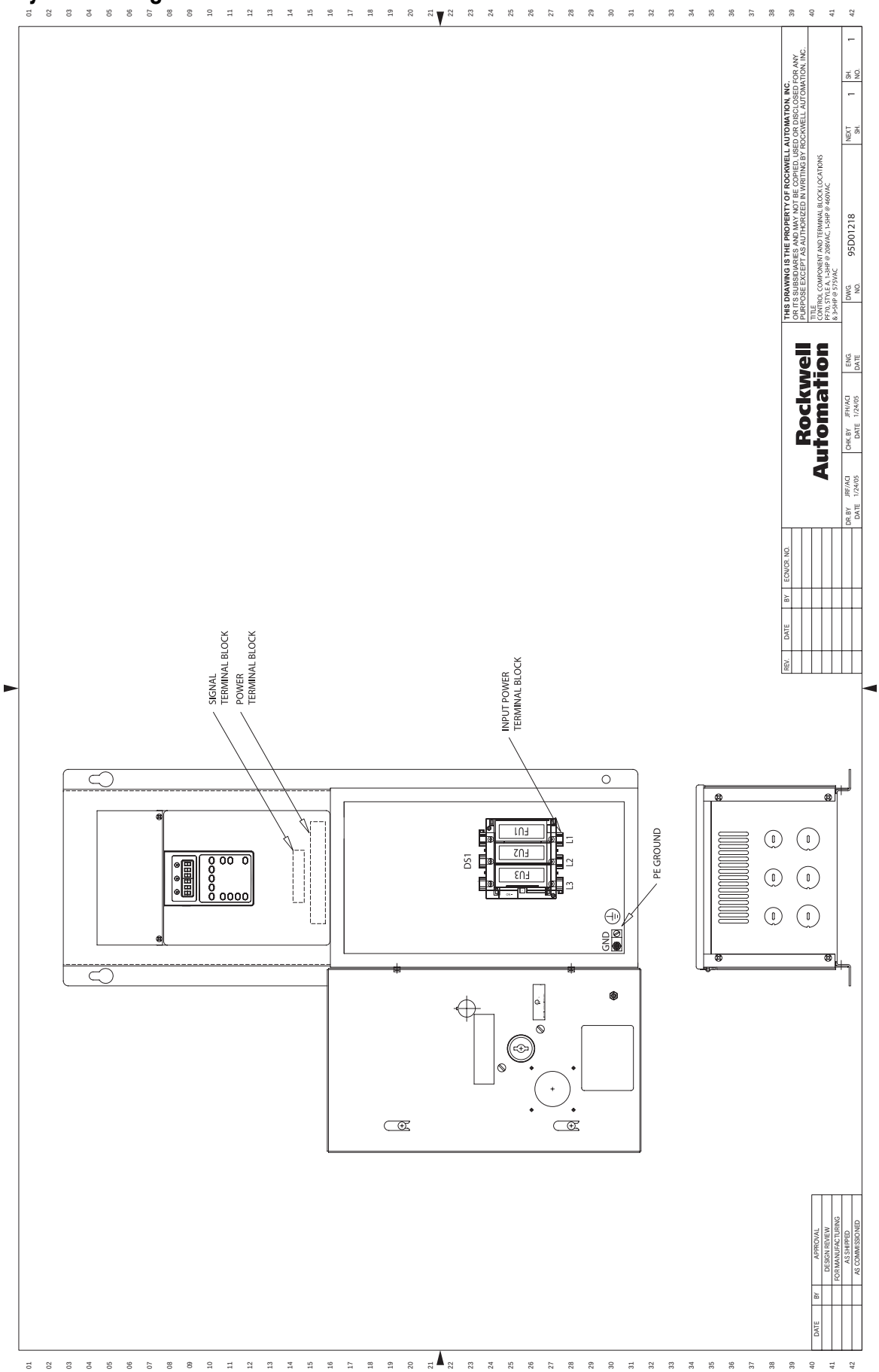


Figure 1.8 5-10 HP, 208V AC, and 7.5-25 HP, 460V AC and 600V AC Drives

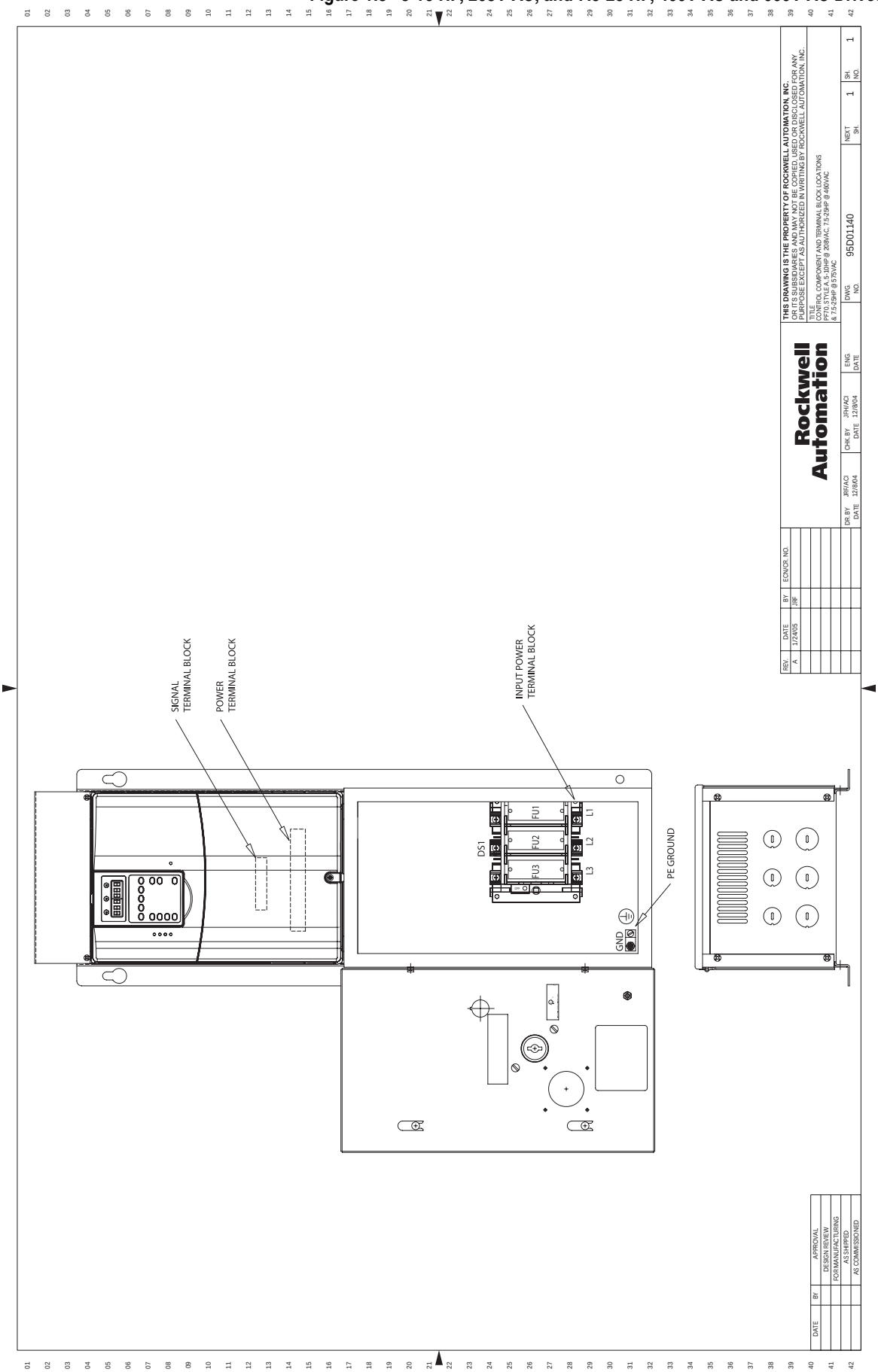


Figure 1.9 15 HP, 208V AC, and 30 HP, 460V AC and 600V AC Drives

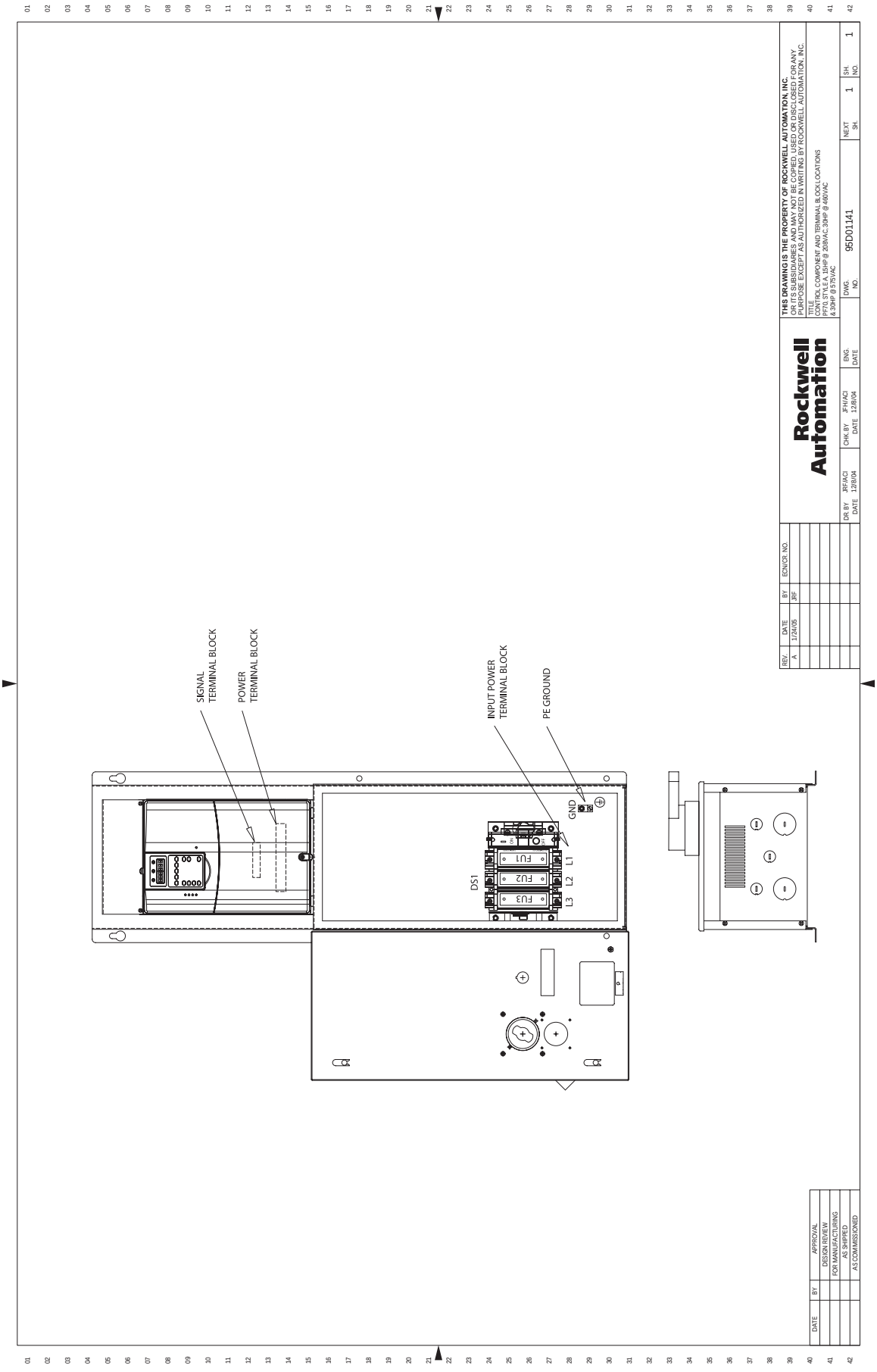


Figure 1.10 40-50 HP, 460V AC and 600V AC Drives

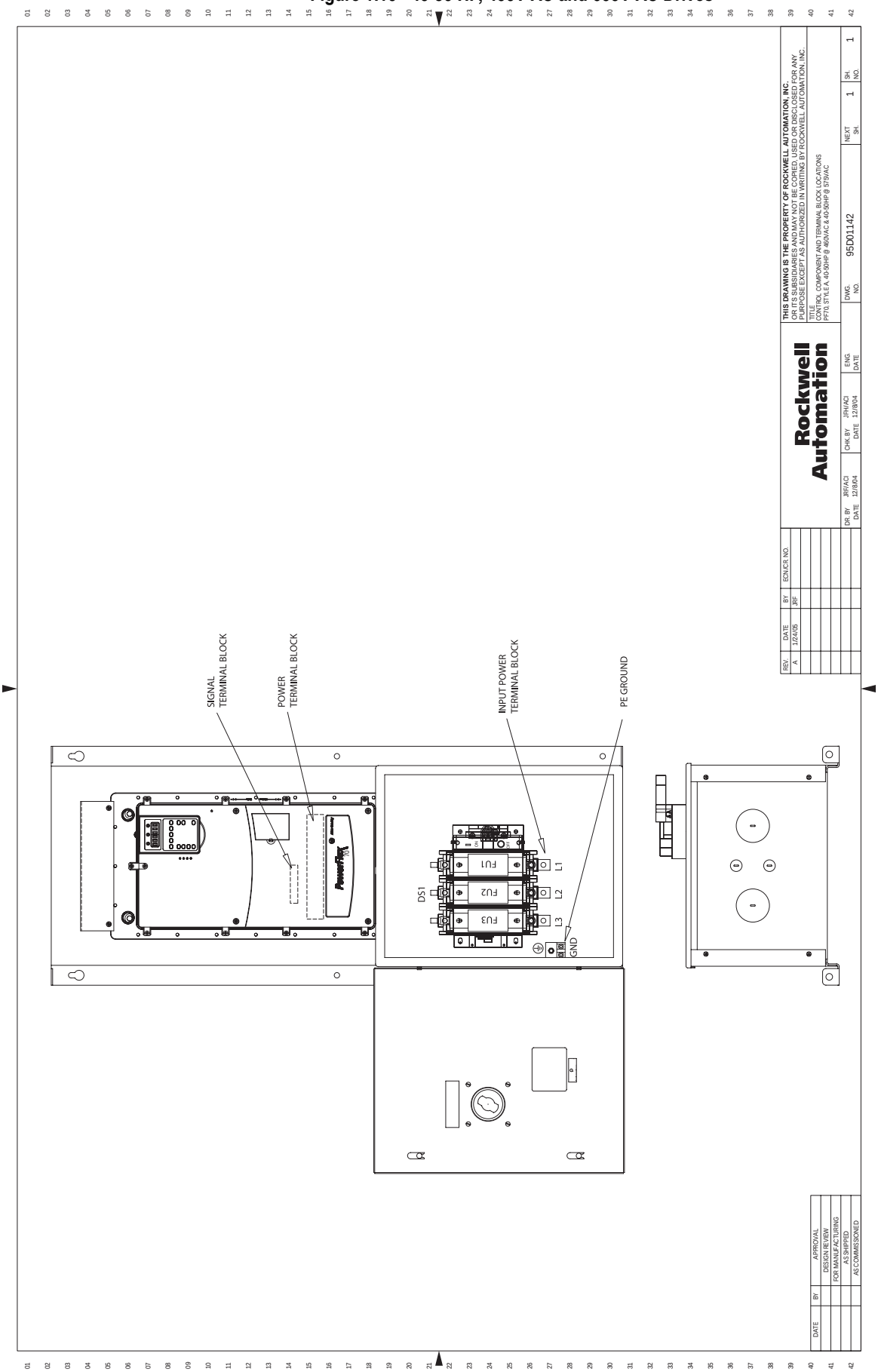


Figure 1.11 60 HP, 460V AC and 600V AC Drives

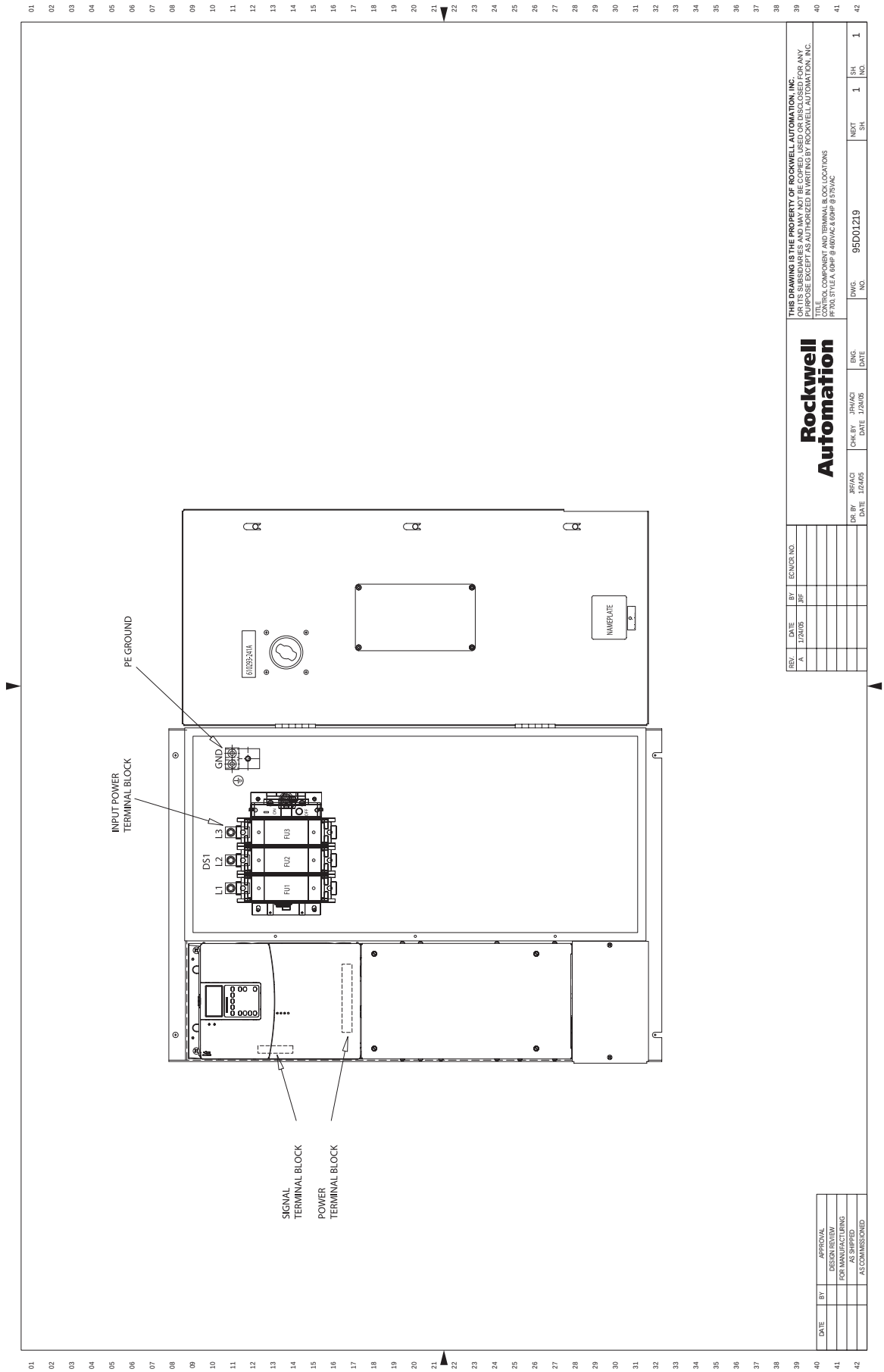


Figure 1.12 75-100 HP, 460V AC and 600V AC Drives

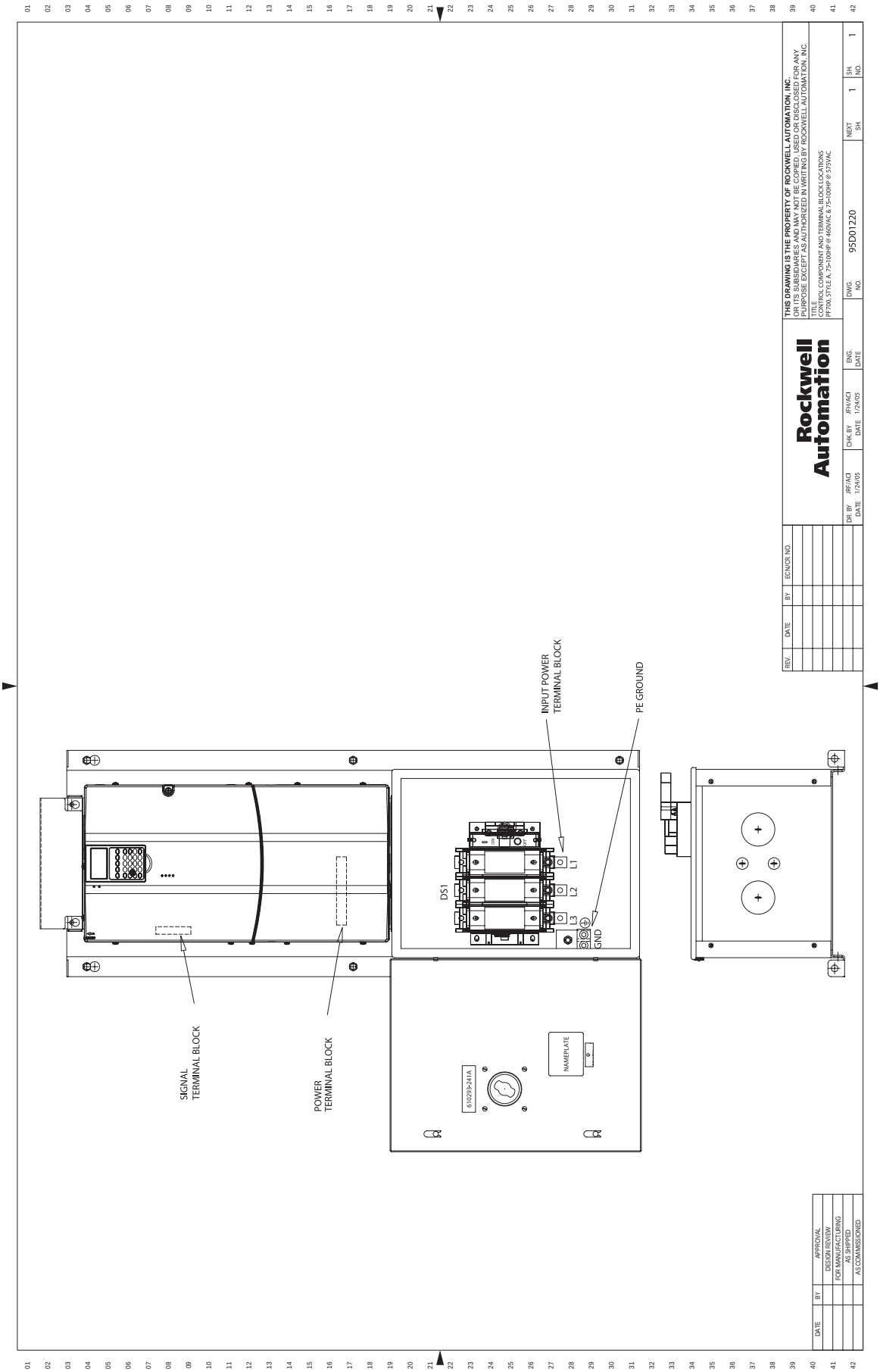


Figure 1.13 125-200 HP, 460V AC and 125-150 HP 600V AC Drives

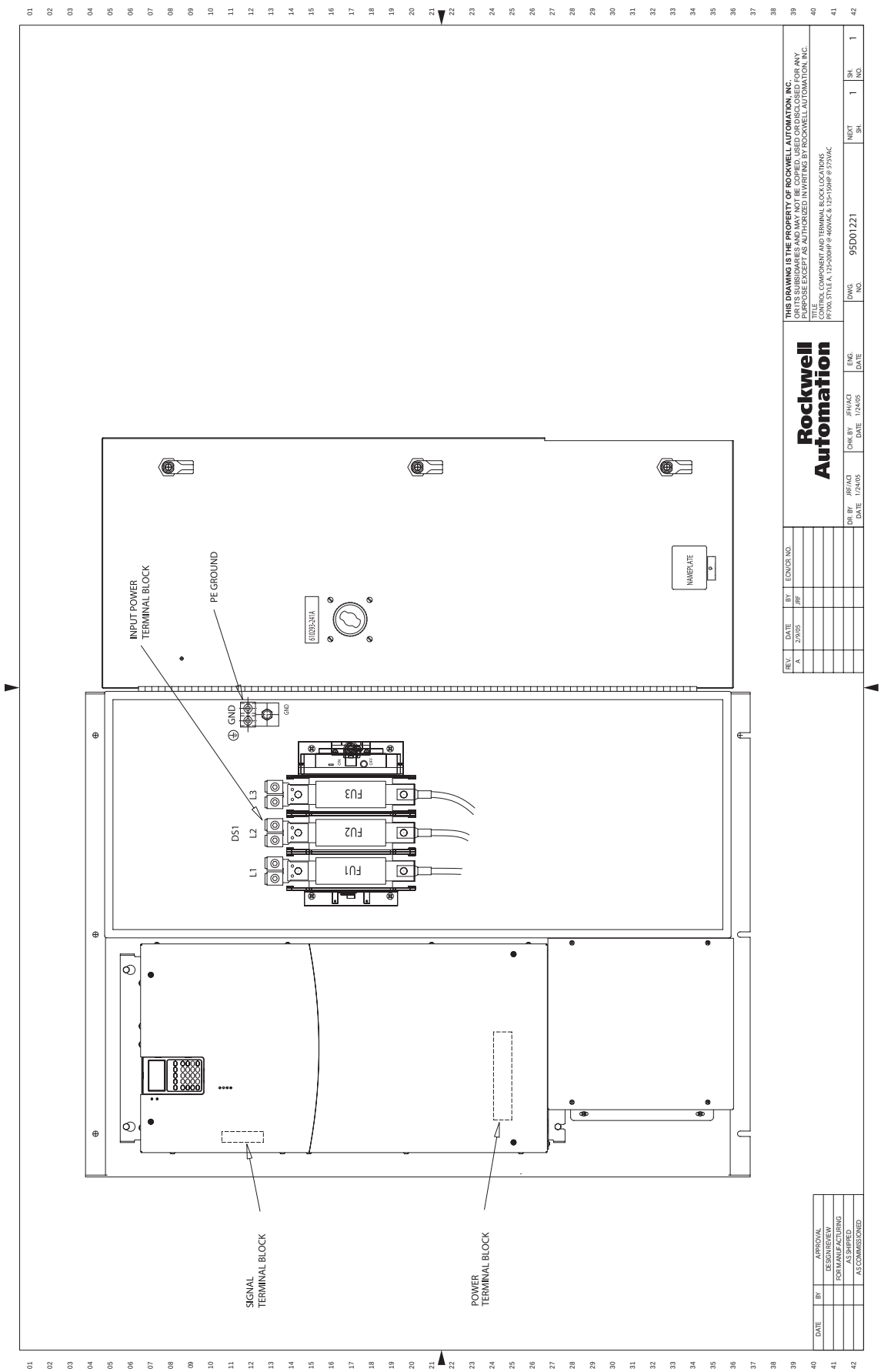


Figure 1.14 1-3 HP, 208V AC, 1-5 HP, 460V AC and 3-5 HP, 600V AC Drives with Line Reactor

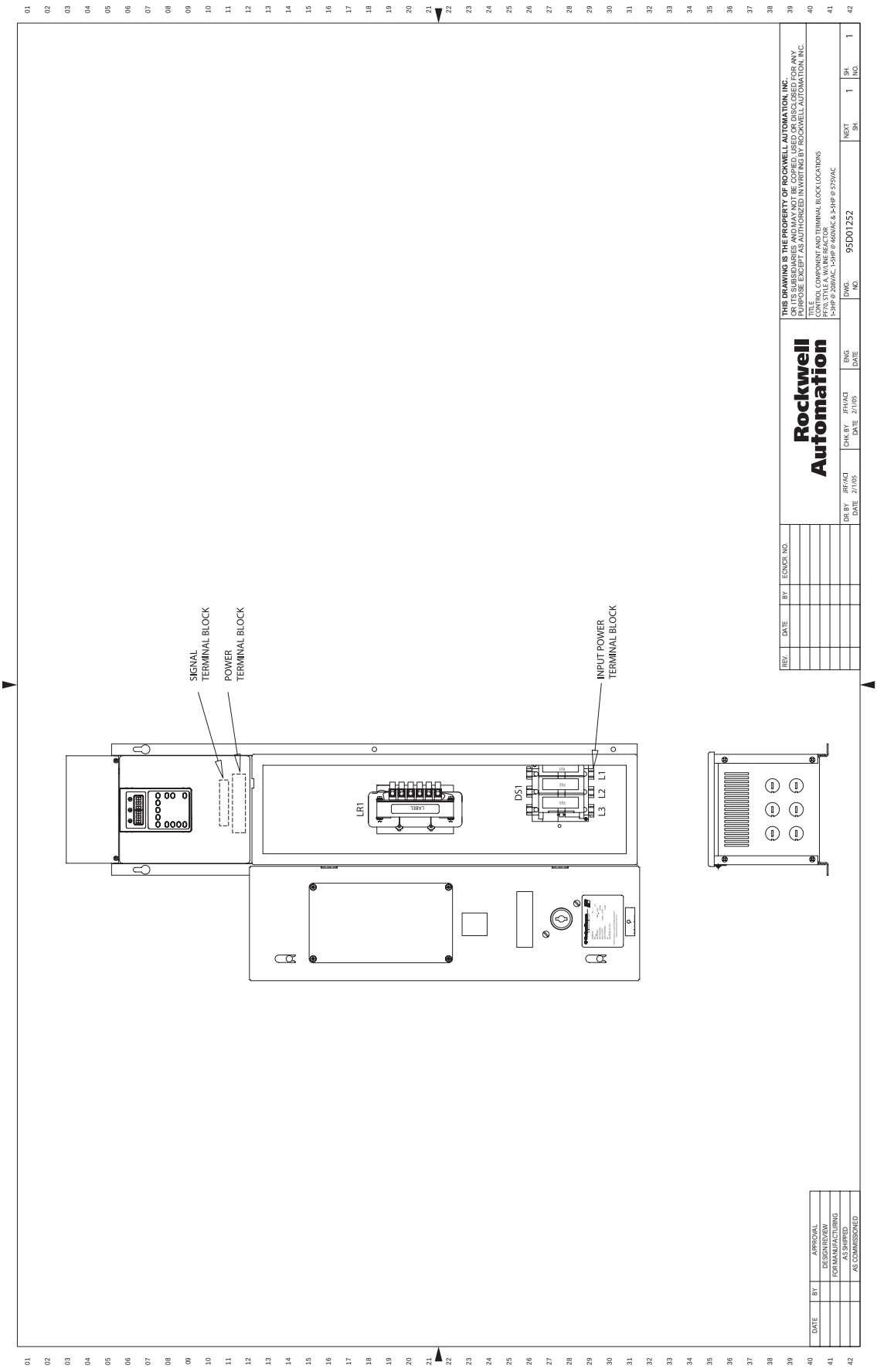


Figure 1.15 5 HP, 208V AC, and 7.5-1 0HP, 460V AC and 600V AC Drives with Line Reactor

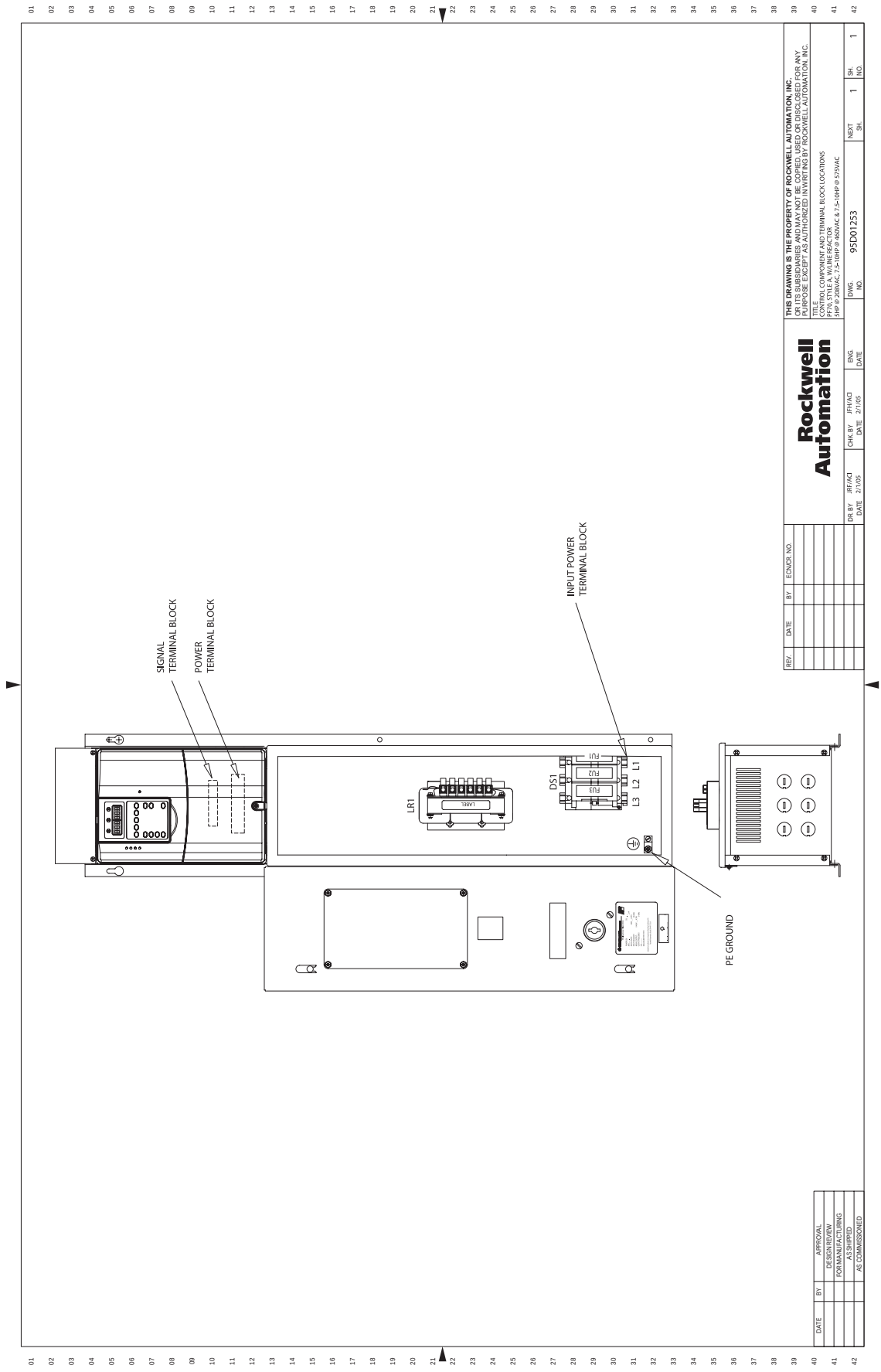
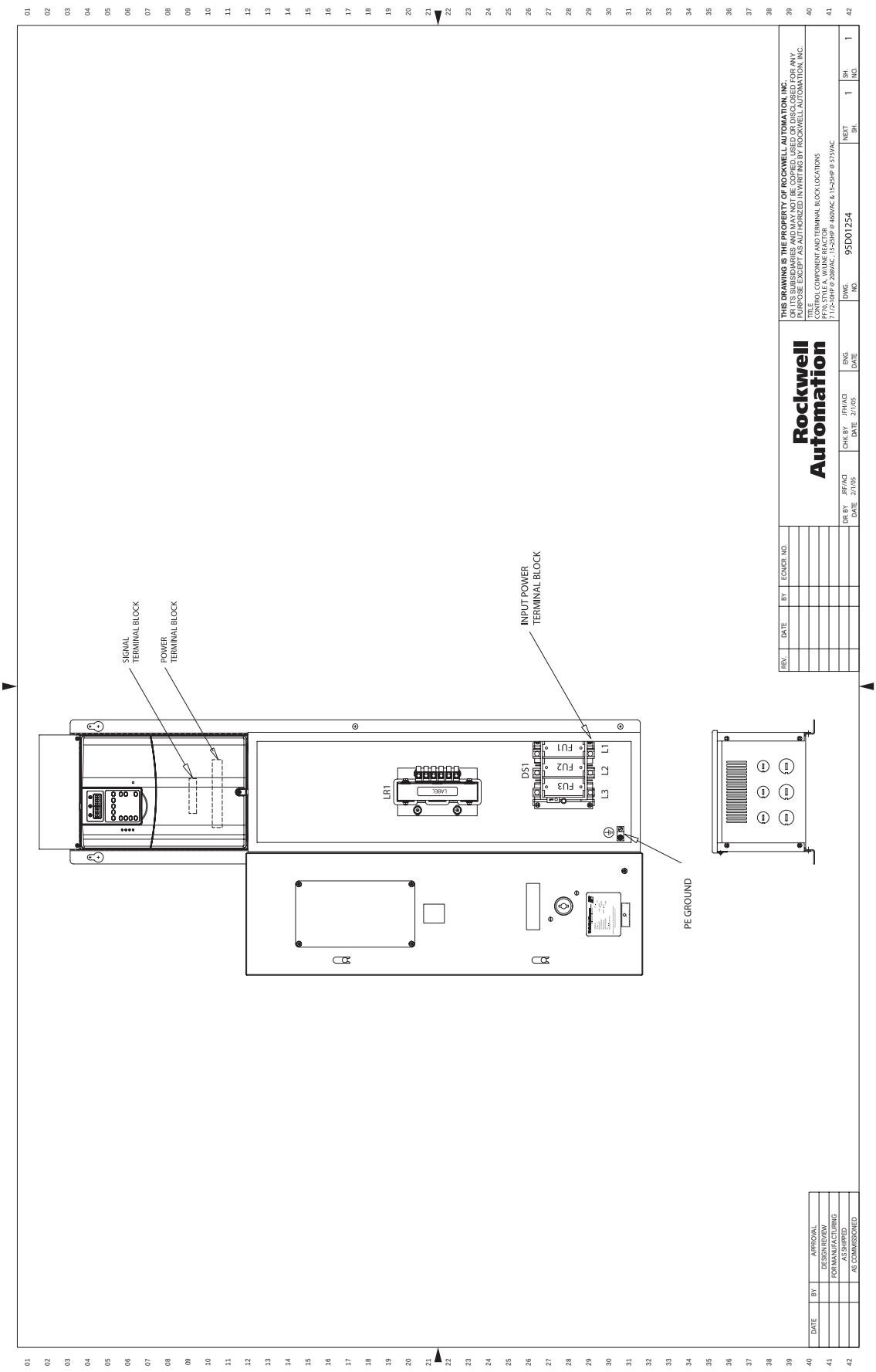


Figure 1.16 7.5-10 HP, 208V AC, and 15-25 HP, 460V AC and 600V AC Drives with Line Reactor



Outline Drawings

Figure 1.17 1-3 HP, 208V AC, 1-5 HP, 460V AC and 3-5 HP, 600V AC Drives

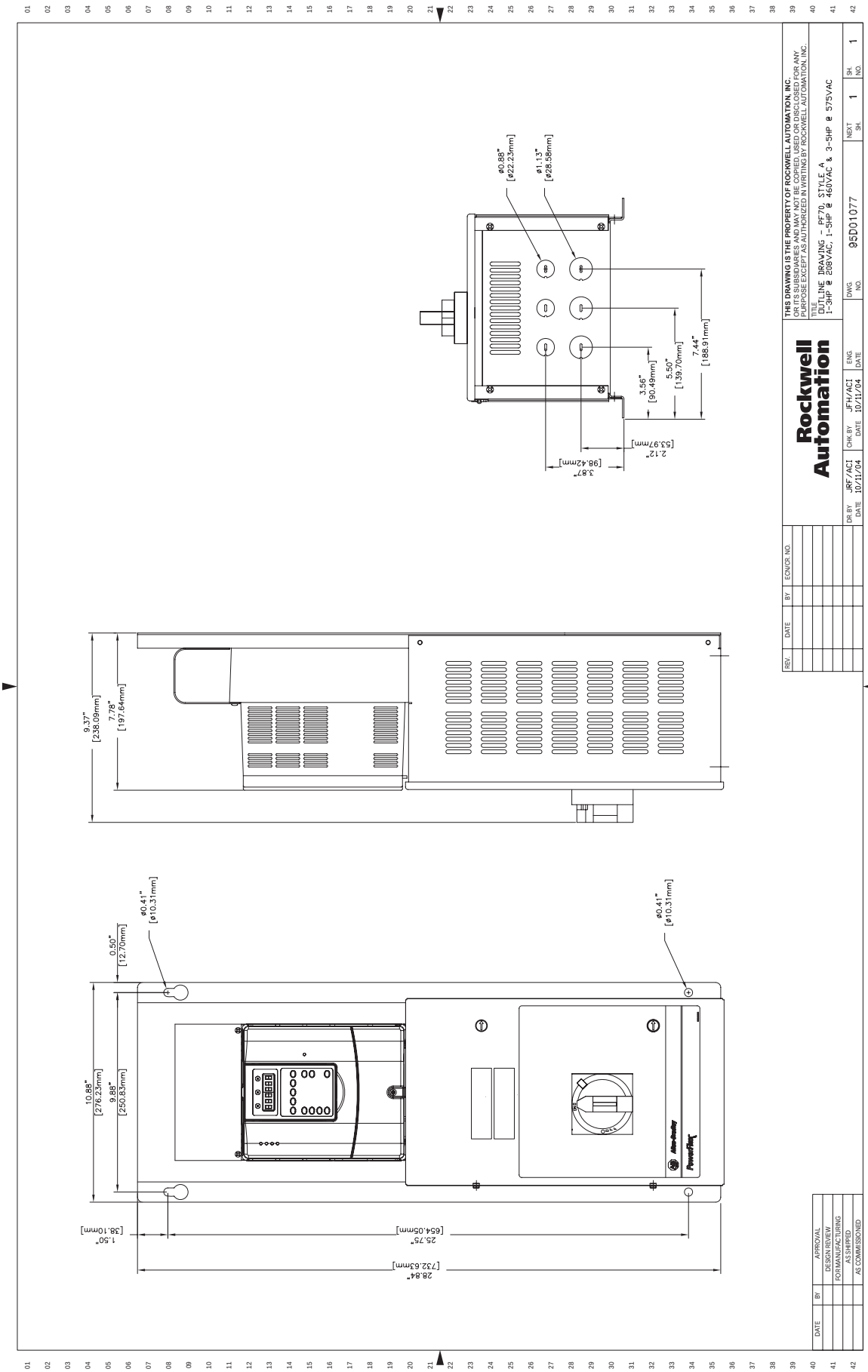


Figure 1.18 5 HP, 208V AC, and 7.5-10 HP, 460V AC and 600V AC Drives

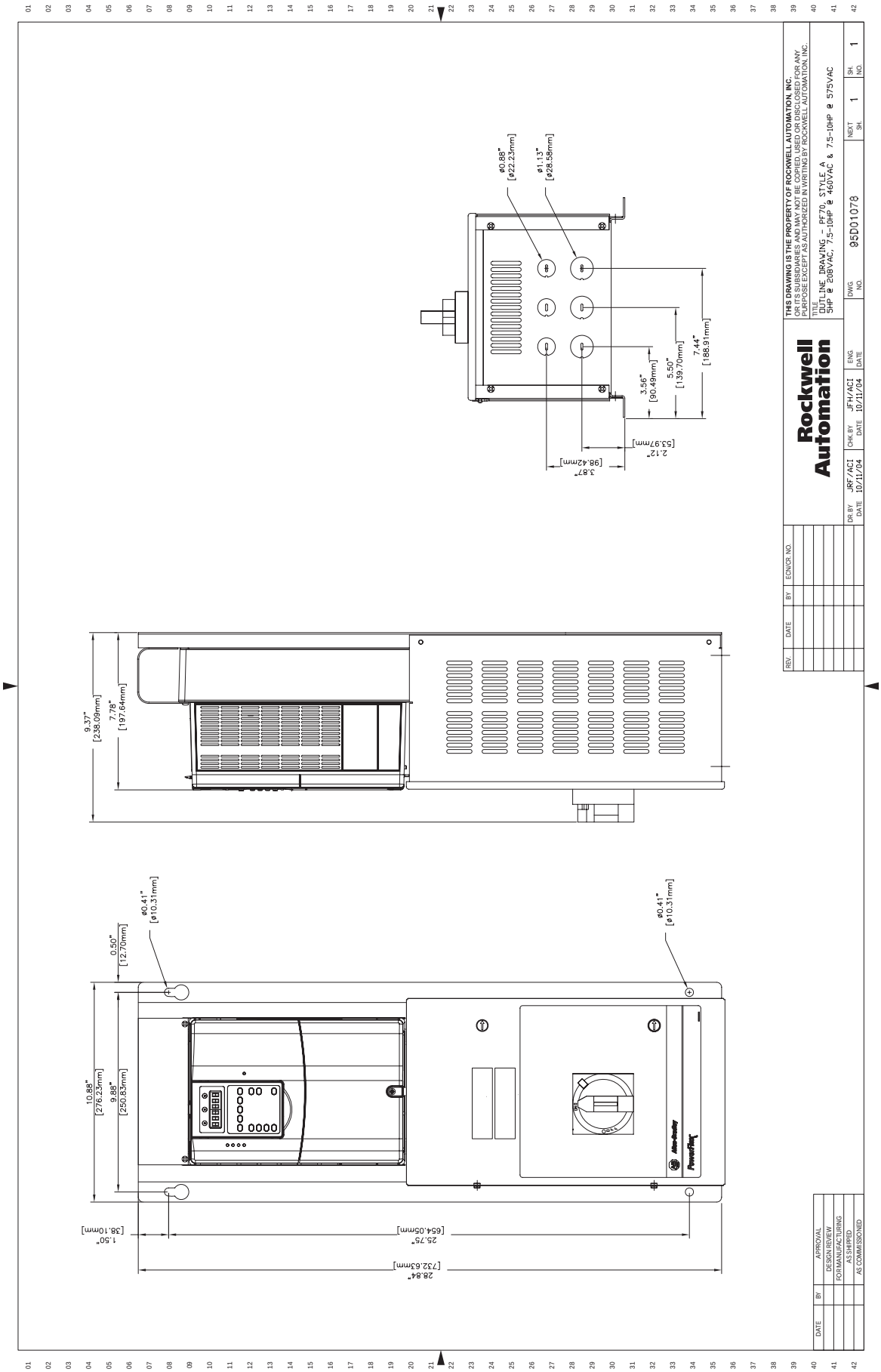


Figure 1.19 7.5-10 HP, 208V AC, and 15-25 HP, 460V AC and 600V AC Drives

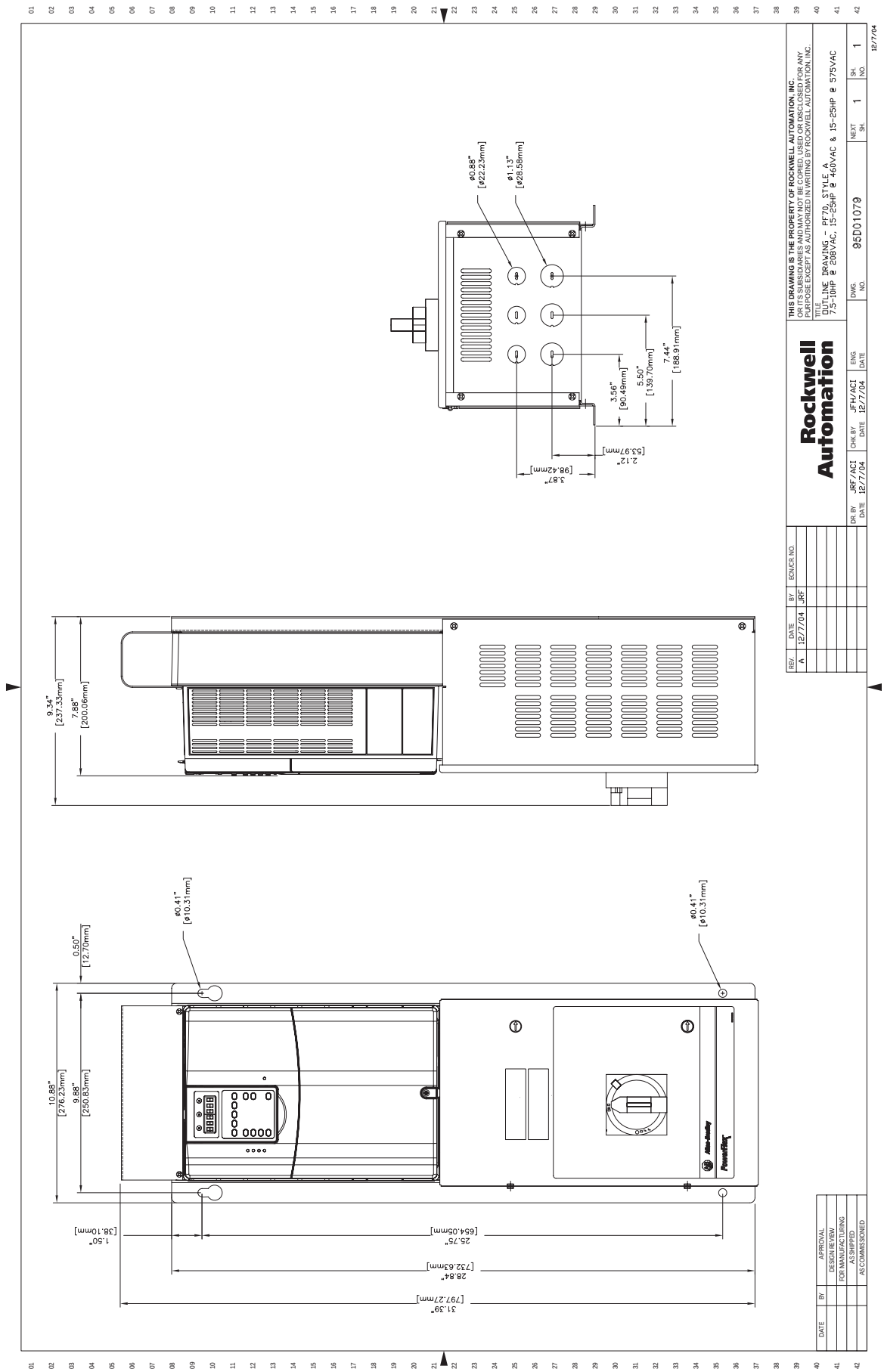


Figure 1.20 15 HP, 208V AC, and 30 HP, 460V AC and 600V AC Drives

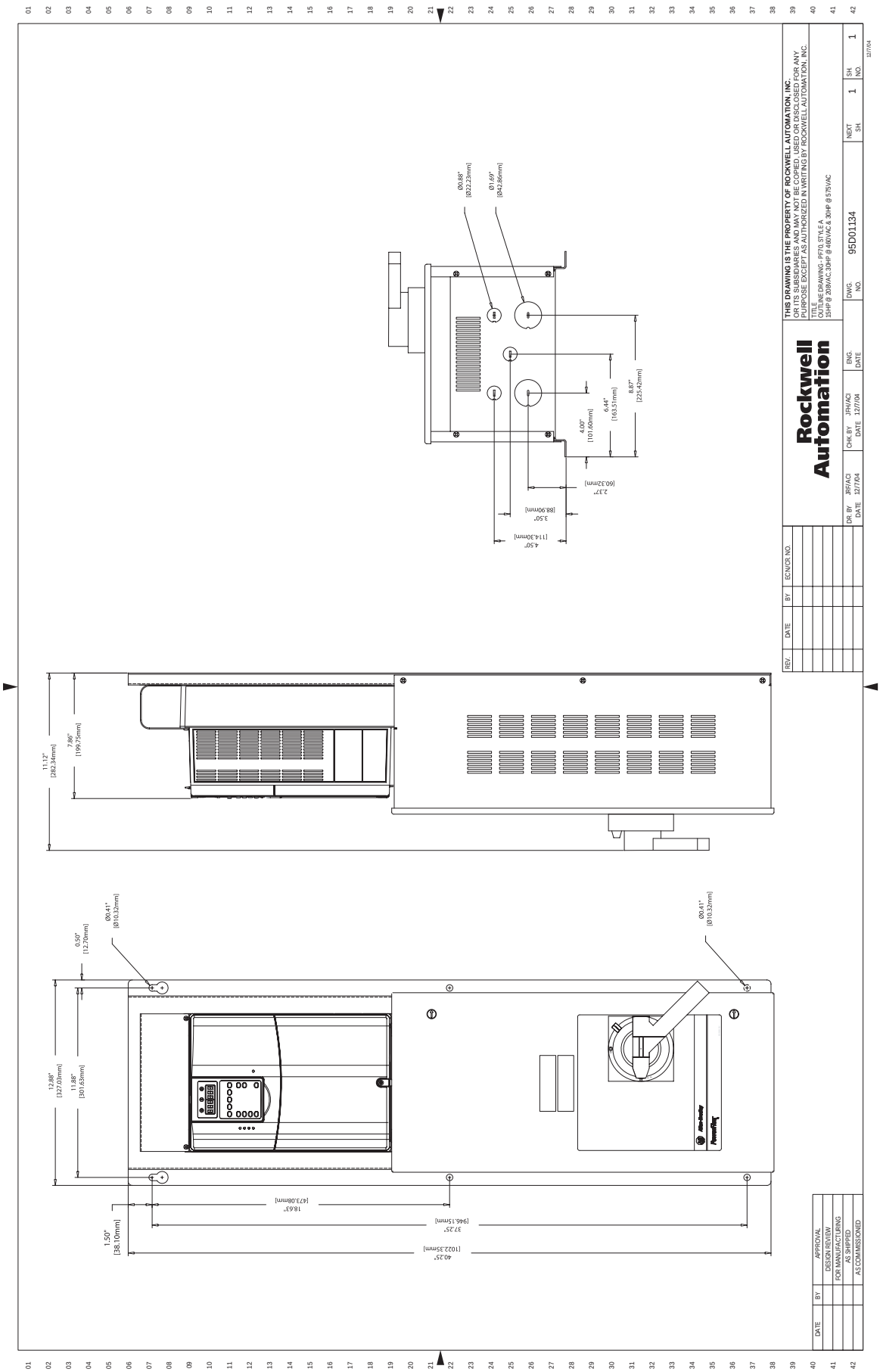


Figure 1.21 40-50 HP, 460V AC and 600V AC Drives

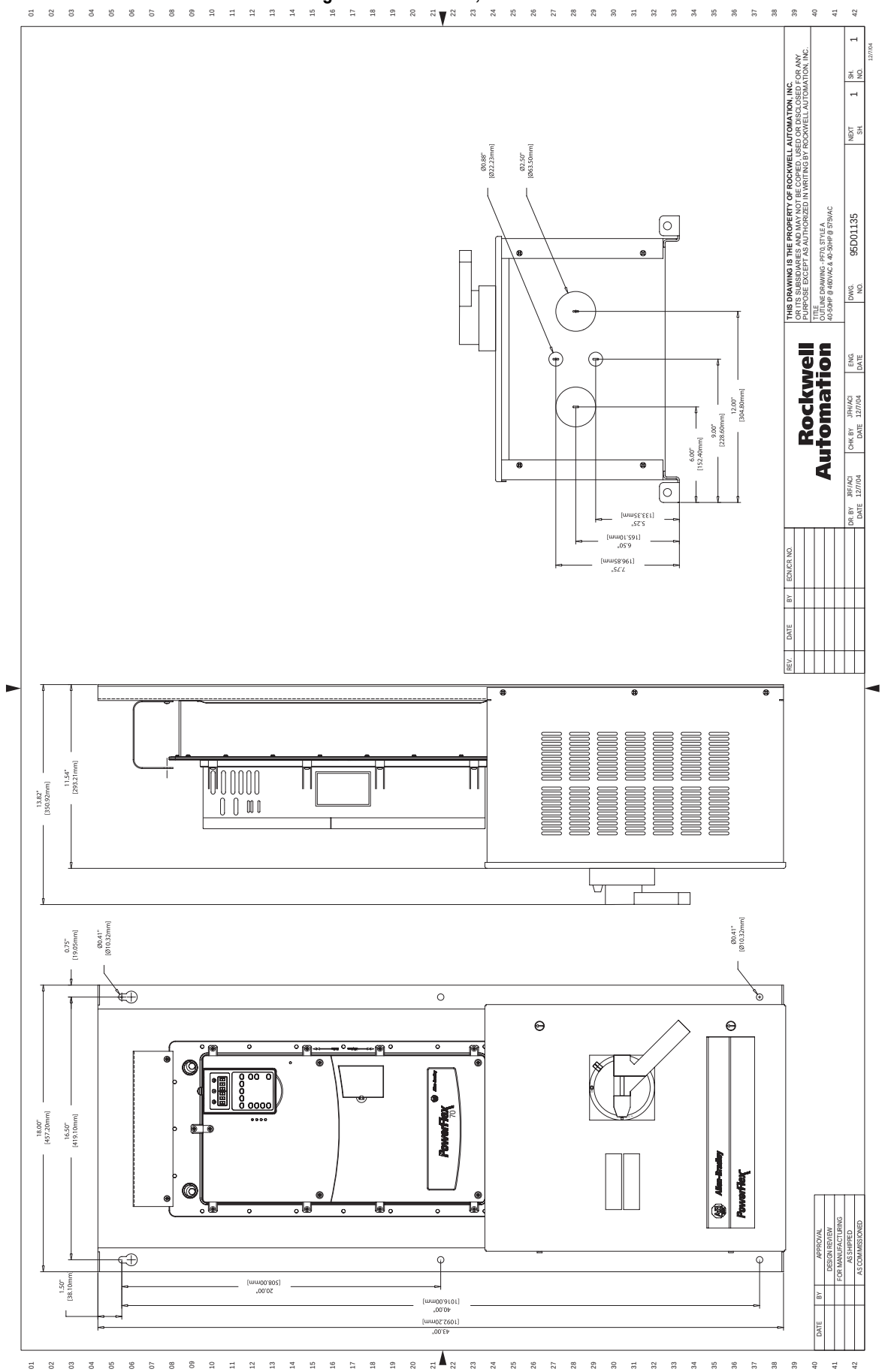


Figure 1.22 60 HP, 460V AC and 600V AC Drives

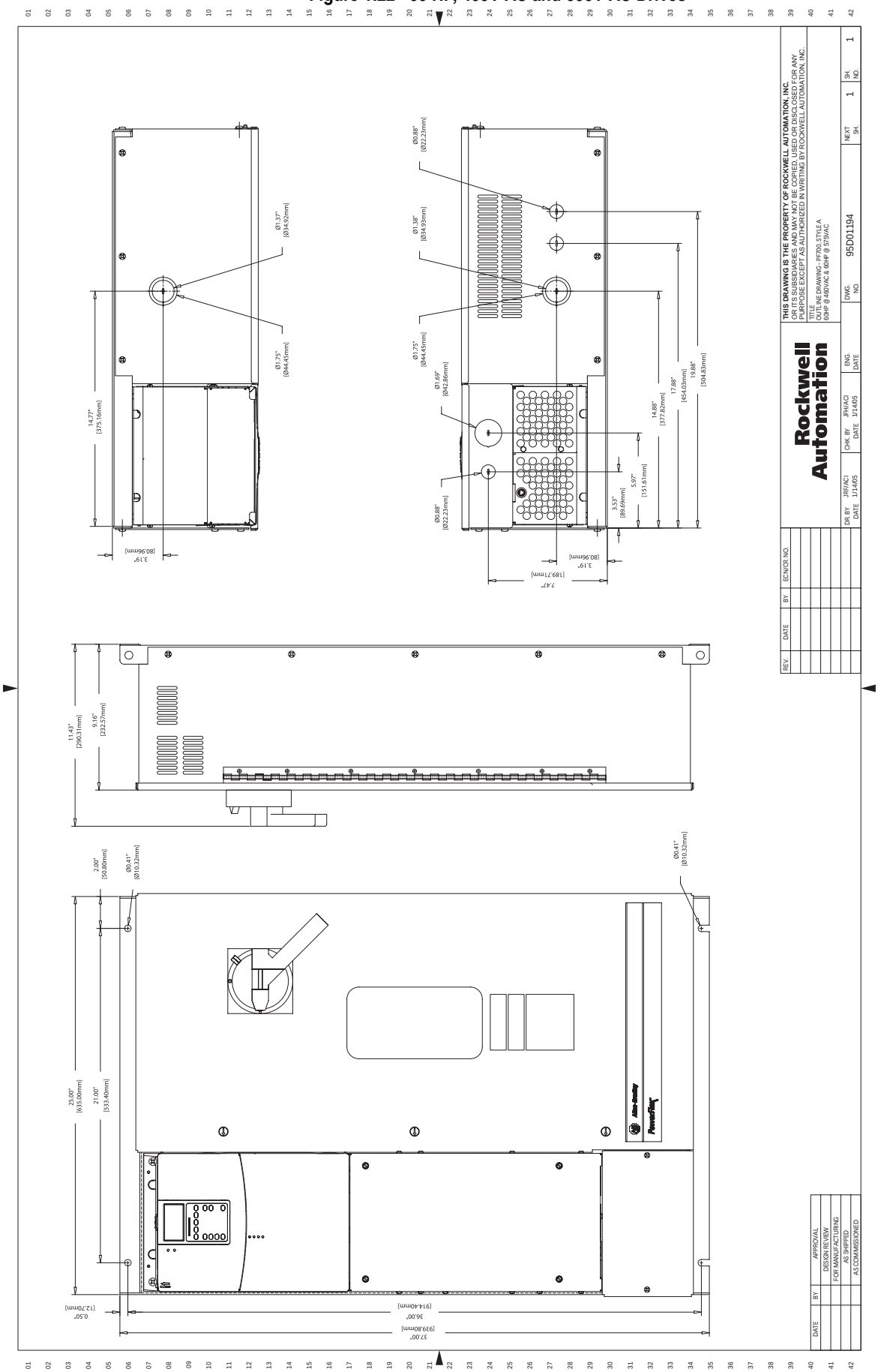


Figure 1.23 75-100 HP, 460V AC and 600V AC Drives

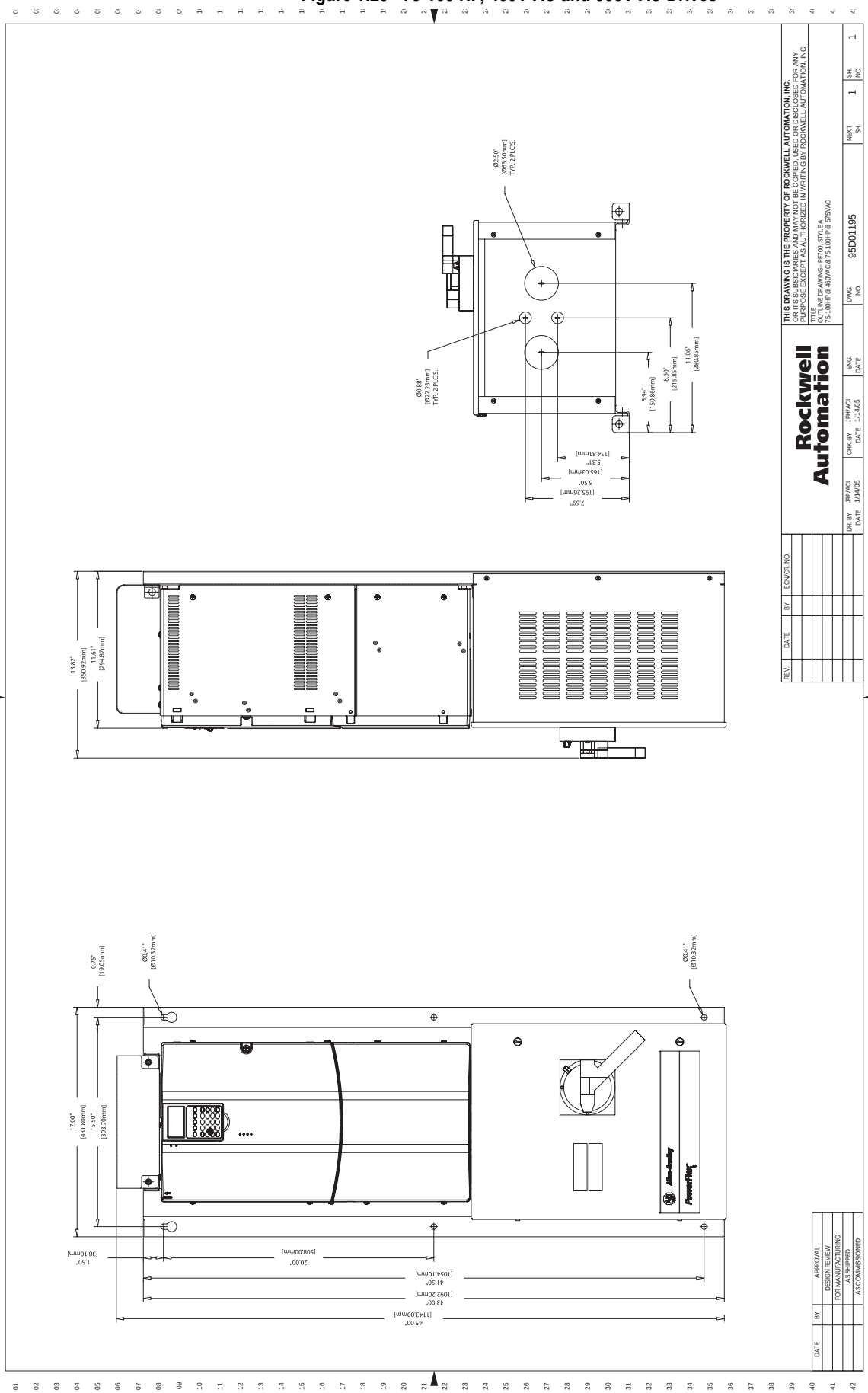


Figure 1.24 125-200 HP, 460V AC and 125-200 HP, 600V AC Drives

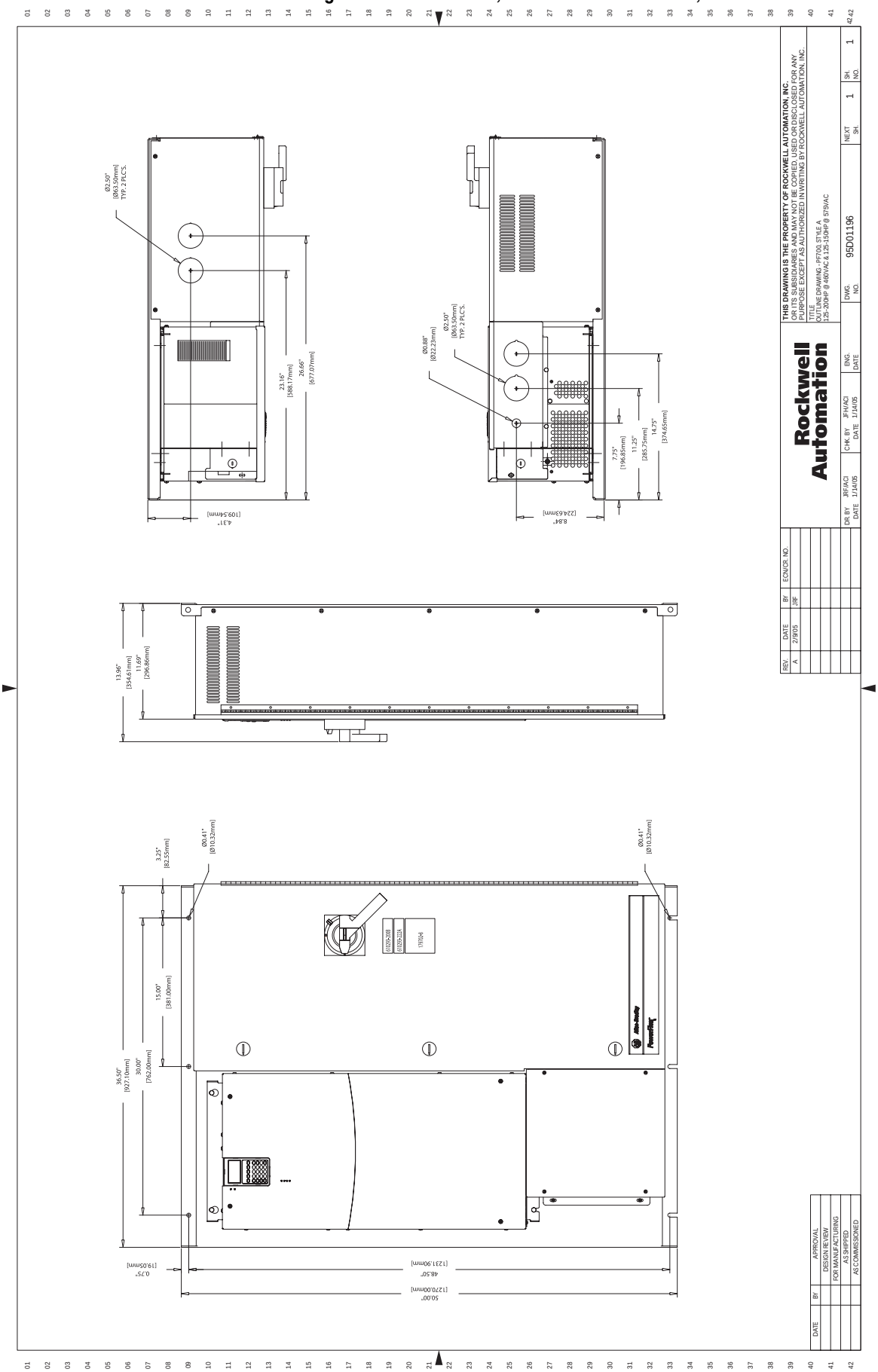


Figure 1.25 1-3 HP, 208V AC, 1-5 HP, 460V AC and 3-5 HP, 600V AC Drives with Line Reactor

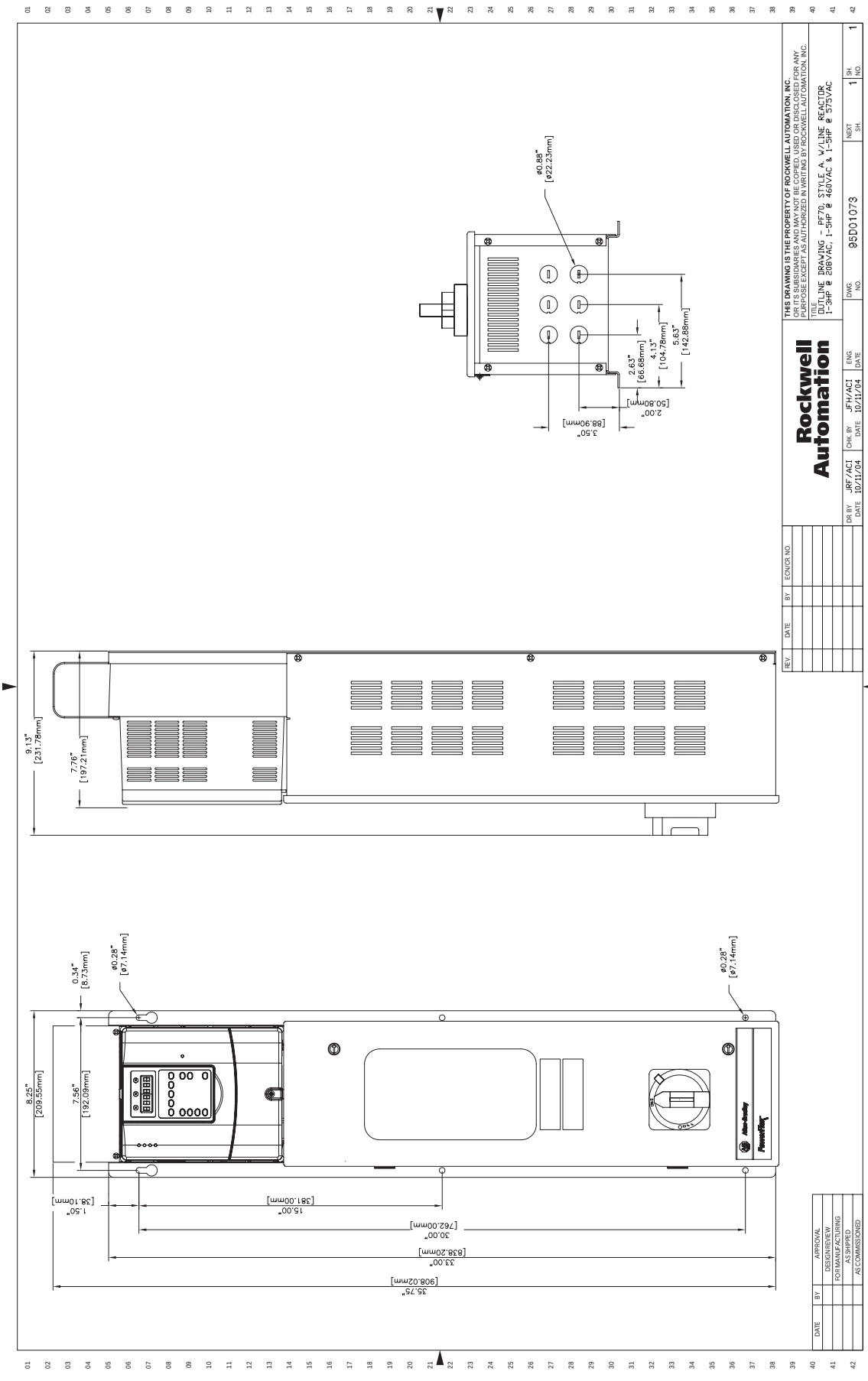


Figure 1.26 5 HP, 208V AC, and 7.5-10 HP, 460V AC and 600V AC Drives with Line Reactor

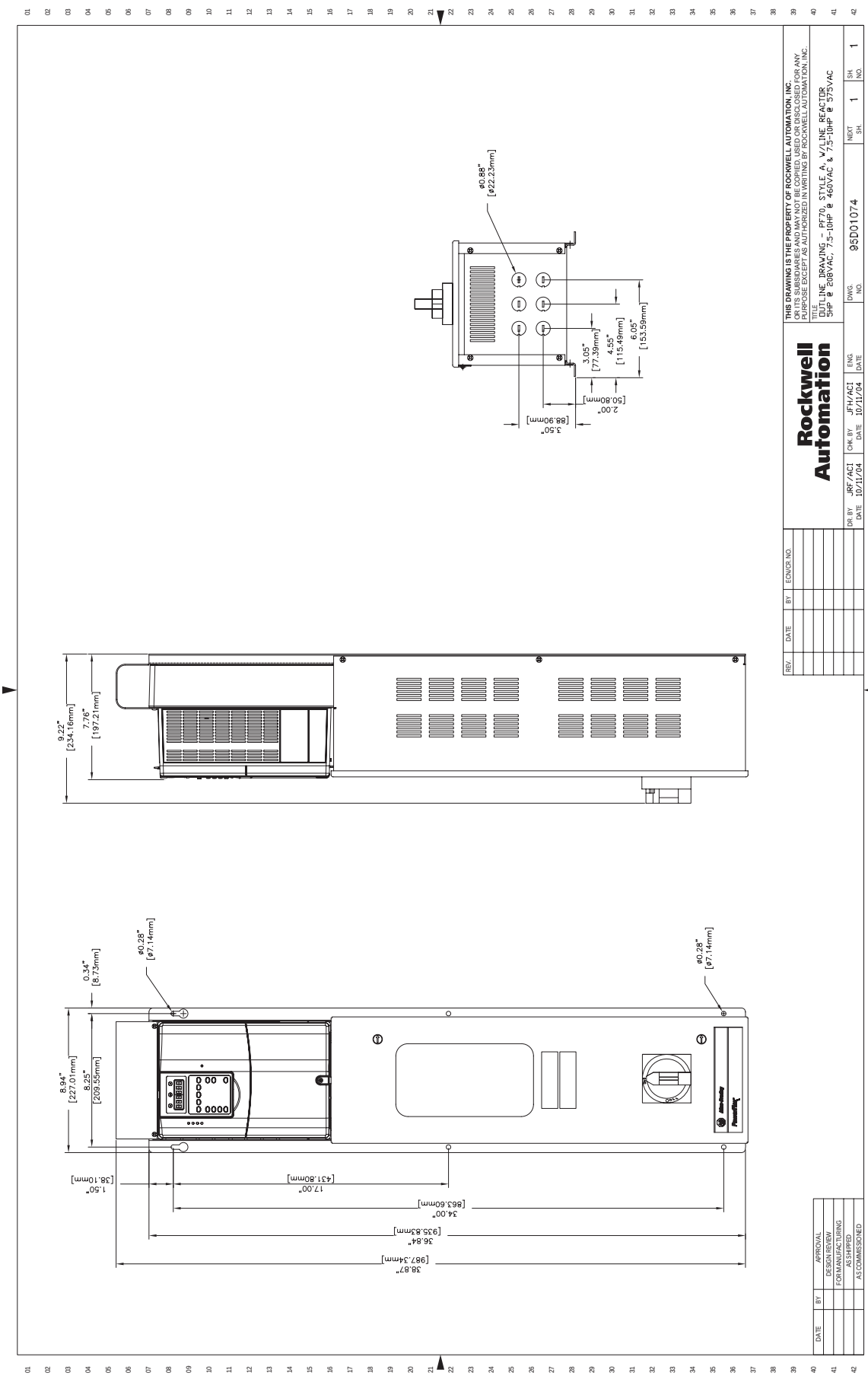
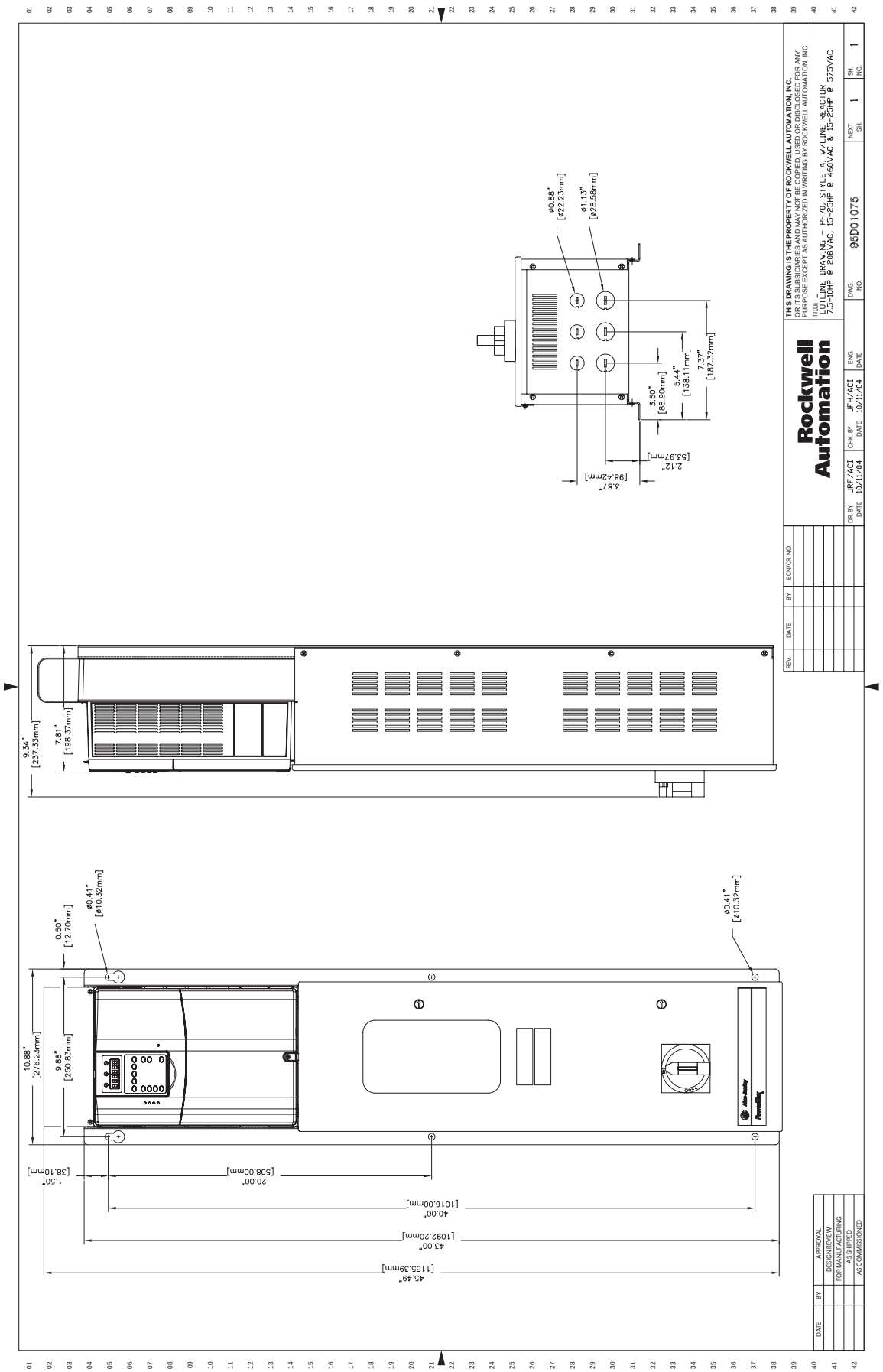


Figure 1.27 7.5-10 HP, 208V AC, and 15-25 HP, 460V AC and 600V AC Drives with Line Reactor



Notes:

3 Contactor Full Feature Bypass with Disconnect Package *(Style B)*

Chapter Objectives

This chapter describes the features and operation for the 3 Contactor Full Feature Bypass with Disconnect Package (Style B).

Hardware Overview

The 3 Contactor Full Feature Bypass with Disconnect Package (Style B) allows the motor to be manually transferred from drive output to the AC line, or from the AC line to the drive, while the motor is at zero (0) speed. The contactor bypass is electrically interlocked. A means for disconnecting input power via a door interlocked fuse disconnect switch is standard. In addition, this package is supplied with a bypass control interface which provides status indication and allows for remote activation of the bypass circuit.

Main Disconnect Switch (DS1)

An Allen-Bradley Bulletin 194R fused disconnect switch with lockable rotary mounted operator handle is provided. The disconnect switch is designed to meet disconnect switch requirements for branch circuit protection. The door-mounted handle accepts up to three (3) padlocks.

Main Fuses (FU1-FU3)

ATTENTION: Most codes require that upstream branch circuit protection be provided to protect input power wiring. Install the fuses recommended in Table 2.A. Do not exceed the fuse ratings. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

Input line branch circuit protection fuses must be used to protect the input power lines. If input fuses are not provided with your drive, recommended fuse values are shown in Table 2.A. The input fuse ratings listed in Table 2.A are applicable for one drive per branch circuit. No other load may be applied to that fused circuit.

The recommended fuse type for all PowerFlex 70 and 700 Packages for Fan and Pump Applications is UL Class J, 600V.

Table 2.A Fuse Recommendations

Drive Rating			Fuse Rating
Input Voltage	**kW**	**HP**	**Amps**
208V AC – 3-Phase	0.75	1.0	10
	1.5	2.0	15
	2.2	3.0	20
	4.0	5.0	20
	5.5	7.5	35
	7.5	10	40
	11	15	80
460V AC – 3-Phase	0.75	1.0	6
	1.5	2.0	10
	2.2	3.0	15
	4.0	5.0	15
	5.5	7.5	20
	7.5	10	20
	11	15	35
	15	20	35
	18.5	25	60
	22	30	70
	30	40	80
	37	50	100
	45	60	150
	55	75	175
	75	100	200
	90	125	250
	110	150	350

Drive Rating			Fuse Rating
Input Voltage	kW	HP	Amps
600V AC - 3-Phase	2.2	3.0	10
	4.0	5.0	15
	5.5	7.5	20
	7.5	10	20
	11	15	35
	15	20	35
	18.5	25	60
	22	30	70
	30	40	80
	37	50	100
	45	60	150
	55	75	175
	75	100	200
	90	125	250
	110	150	350

Contactors (DIC, DOC, BC)

Allen-Bradley Bulletin 100 Contactors are provided for all ratings. The contactors function as follows:

1. Drive-input contactor (DIC) opens and closes input to the drive.
2. Drive-output contactor (DOC) opens and closes the connection between the drive and the motor.
3. Bypass contactor (BC) opens and closes the connection to line-start the motor.

Motor Overload Relay (OL)

The motor overload relay is set at the factory to 100% of the drive output current. In many cases, this setting matches the motor full load amps (FLA). However, before starting the drive, you should check the setting on the motor overload relay to assure that it is set properly for your motor.

- For motors with a service factor less than 1.15, set the motor overload relays to 0.9x motor FLA.
- For motors with a service factor equal to, or greater than 1.15, set the motor overload relay to the motor FLA.

Figure 2.1 Setting Motor Overload

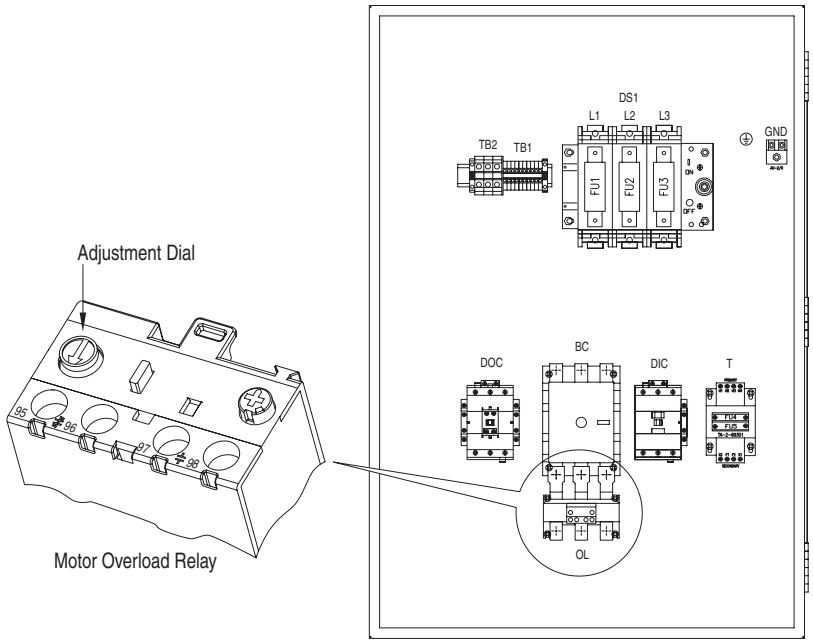


Table 2.B Overload Ratings

Drive Rating			Overload Rating	
Input Voltage	**kW**	**HP**	**Trip Class**	**Adjustment Range (Amps)**
208V AC – 3-Phase	0.75	1.0	20	3.2 - 16
	1.5	2.0	20	3.2 - 16
	2.2	3.0	20	3.2 - 16
	4.0	5.0	20	5.4 - 27
	5.5	7.5	20	9 - 45
	7.5	10	20	9 - 45
	11	15	20	18 - 90
460V AC – 3-Phase	0.75	1.0	20	1.0 - 5.0
	1.5	2.0	20	1.0 - 5.0
	2.2	3.0	20	3.2 - 16
	4.0	5.0	20	3.2 - 16
	5.5	7.5	20	3.2 - 16
	7.5	10	20	5.4 - 27
	11	15	20	9 - 45
	15	20	20	9 - 45
	18.5	25	20	9 - 45
	22	30	20	9 - 45
	30	40	20	18 - 90
	37	50	20	18 - 90
	45	60	20	18 - 90
	55	75	20	40 - 200
	75	100	20	40 - 200
	90	125	20	40 - 200
	110	150	20	40 - 200

Drive Rating			Overload Rating	
Input Voltage	**kW**	**HP**	**Trip Class**	**Adjustment Range (Amps)**
600V AC - 3-Phase	2.2	3.0	20	3.2 - 16
	4.0	5.0	20	3.2 - 16
	5.5	7.5	20	3.2 - 16
	7.5	10	20	5.4 - 27
	11	15	20	9 - 45
	15	20	20	9 - 45
	18.5	25	20	9 - 45
	22	30	20	9 - 45
	30	40	20	18 - 90
	37	50	20	18 - 90
	45	60	20	18 - 90
	55	75	20	40 - 200
	75	100	20	40 - 200
	90	125	20	40 - 200
	110	150	20	40 - 200

Control Transformer (T1)

115V AC control power is obtained via a supplied control power transformer. The control transformer is fused on the primary.

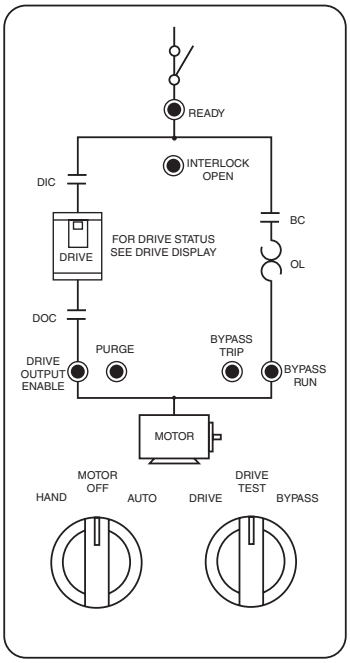
Bypass Control Interface (CP1)

The operator interface on the bypass option box shows the following LEDs:

- Ready (green) - On when power is applied to the drive-bypass unit.
- Interlock Open (amber) - On when the customer interlock or Aux Fault is de-energized.
- Bypass Run (green) - On when the bypass contactor (BC) is energized.
- Bypass Trip (red) - On when a bypass fault condition exists (for example, bypass motor overload has tripped).
- Purge (amber) - On when the purge condition is active.
- Drive Output Enable (Green) - On when the drive output contactor (DOC) is energized.

In addition, the Bypass Control Interface contains two selector switches. Selector Switch 1 (SS1) determines the state of the DIC, DOC and BC contactors. Selector Switch 2 (SS2) determines the source of control logic.

Figure 2.2 Bypass Control Interface



Electrical Installation

Input Power Wiring

Refer to the PowerFlex® 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about input power wiring recommendations and selection.

ATTENTION: Protect the contents of the options cabinet from metal chips and other debris while drilling the conduit openings. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

ATTENTION: Do not route signal and control wiring with power wiring in the same conduit. This can cause interference with drive operation. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

To connect AC input power to the drive package:

❑ **1.** Select the proper wire size according to NEC and all applicable local codes and standards. Note that you must punch openings in the Option Cabinet of the desired conduit size, following NEC and all applicable local codes and standards. Power terminal block specifications are listed in Table 2.C.

❑ **2.** Connect the three-phase AC input power leads (three-wire VAC) to the appropriate terminals. Connect the AC input power leads to terminals L1, L2, L3 on the fused disconnect switch.

❑ **3.** Tighten the AC input terminal power terminals to the proper torque according to drive type as shown in Table 2.C.

Table 2.C AC Input Power Terminal Block Specification

Voltage Rating	kW	HP	Maximum Wire Size(1)	Minimum Wire Size	Recommended Torque
208V AC	0.75-3.7	1-5	8.4 mm^2 (8 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	5.5-7.5	7.5-10	16.0 mm^2 (4 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	11	15	33.6 mm^2 (2 AWG)	2.5 mm^2 (14 AWG)	17.5 N-m (155 lb.-in.)
460V AC	0.75-7.5	1-10	8.4 mm^2 (8 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	11-18.5	15-25	16.0 mm^2 (4 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	22-37	30-50	33.6 mm^2 (2 AWG)	2.5 mm^2 (14 AWG)	17.5 N-m (155 lb.-in.)
	45-75	60-100	(250 MCM)	10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)
	90-110	125-150	(2) (350 MCM)	(2) 10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)
600V AC	0.75-7.5	1-10	8.4 mm^2 (8 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	11-18.5	15-25	16.0 mm^2 (4 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	22-37	30-50	33.6 mm^2 (2 AWG)	2.5 mm^2 (14 AWG)	17.5 N-m (155 lb.-in.)
	45-75	60-100	(250 MCM)	10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)
	90-110	125-150	(2) (350 MCM)	(2) 10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

Output Power Wiring

Refer to the PowerFlex® 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about output power wiring recommendations and selection.

ATTENTION: Unused wires in conduit must be grounded at both ends to avoid a possible shock hazard caused by induced voltages. Also, if a drive sharing a conduit is being serviced or installed, all drives using this conduit should be disabled to eliminate the possible shock hazard from cross-coupled motor leads. Failure to observe these precautions could result in bodily injury.

ATTENTION: Do not route signal and control wiring with power wiring in the same conduit. This can cause interference with drive operation. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

To connect AC output power wiring from the drive to the motor:

❑ **1.** Wire the three-phase AC output power motor leads by routing them according to the drive option type. Note that you must punch openings in the option cabinet of the desired conduit size, following NEC and all applicable local codes and standards. Output power terminal block specifications are listed in Table 2.D.

Do not route more than three sets of motor leads through a single conduit. This will minimize cross-talk that could reduce the effectiveness of noise reduction methods. If more than three drive/motor connections per conduit are required, shielded cable must be used. If possible, each conduit should contain only one set of motor leads.

❑ **2.** Connect the three-phase AC output power motor leads to terminals T1, T2, T3 on the output power terminal block (TB2) located inside the option cabinet.

❑ **3.** Tighten the three-phase AC output power terminals to the proper torque according to drive type as shown in Table 2.D on the following page.

Table 2.D Output Power Terminal Block Specification

Voltage Rating	kW	HP	Maximum Wire Size[1]	Minimum Wire Size	Recommended Torque
208V AC	0.75-4.0	1-5	3.5 mm^2 (12 AWG)	0.3 mm^2 (22 AWG)	0.6 N-m (5 lb.-in.)
	5.5-11	7.5-15	8.4 mm^2 (8 AWG)	0.8 mm^2 (18 AWG)	1.4 N-m (12 lb.-in.)
460V AC	0.75-7.5	1-10	3.5 mm^2 (12 AWG)	0.3 mm^2 (22 AWG)	0.6 N-m (5 lb.-in.)
	11-22	15-30	8.4 mm^2 (8 AWG)	0.8 mm^2 (18 AWG)	1.4 N-m (12 lb.-in.)
	30-37	40-50	25.0 mm^2 (3 AWG)	2.5 mm^2 (14 AWG)	2.71 N-m (24 lb.-in.)
	45	60	35 mm^2 (1/0 AWG)	10 mm^2 (8 AWG)	4.0 N-m (35 lb.-in.)
	55	75	50 mm^2 (1/0 AWG)	2.5 mm^2 (14 AWG)	[2]
	75	100	70 mm^2 (2/0 AWG)	25 mm^2 (4 AWG)	[2]
	90-110	125-150	120 mm^2 (4/0 AWG)	2.5 mm^2 (14 AWG)	6 N-m (52 lb.-in.)
600V AC	0.75-7.5	1-10	3.5 mm^2 (12 AWG)	0.3 mm^2 (22 AWG)	0.6 N-m (5 lb.-in.)
	11-22	15-30	8.4 mm^2 (8 AWG)	0.8 mm^2 (18 AWG)	1.4 N-m (12 lb.-in.)
	30-37	40-50	25.0 mm^2 (3 AWG)	2.5 mm^2 (14 AWG)	2.71 N-m (24 lb.-in.)
	45	60	35.0 mm^2 (1/0 AWG)	10.0 mm^2 (8 AWG)	4.0 N-m (35 lb.-in.)
	55	75	50.0 mm^2 (1/0 AWG)	2.5 mm^2 (14 AWG)	[2]
	75	100	70.0 mm^2 (2/0 AWG)	25.0 mm^2 (4 AWG)	[2]
	90-110	125-150	120 mm^2 (4/0 AWG)	2.5 mm^2 (14 AWG)	6 N-m (52 lb.-in.)

[1] Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

[2] Refer to terminal block label inside drive.

Control and Signal Wiring

Refer to the PowerFlex® 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about control and signal wiring.

The I/O Terminal Block (Terminals 1-26 for 1-20HP @ 208VAC, 1-50HP @ 460VAC, and 1-50HP @600VAC and Terminals 1-32 for 60-150HP @460VAC and 60-150HP @ 600VAC) located on the drive and Control Terminal Block (TB1 Terminals 31-40) located inside the Option Cabinet provide terminals for interfacing customer supplied control inputs and outputs. All analog and discrete control wiring will be made at these terminals. Typical customer control and signal wiring is shown on the Inter-Connect drawings, Figure 2.15, Figure 2.16 and Figure 2.17.

To connect control and signal wiring to the drive package:

❑ **1.** Wire the control and signal leads by routing them according to the drive option type. Note that you must punch openings in the option cabinet of the desired conduit size, following NEC and all applicable local codes and standards. Control and signal terminal block specifications are listed in Table 2.E.

Control and signal wires should be separated from power wires by at least 0.3 meters (1 foot).

❑ **2.** Connect the analog and relay output signal wiring to the I/O terminal Block located on the drive.

❑ **3.** Connect the control wiring listed below to terminals 31-40 located inside the Option Cabinet.
- Interlock
- Freeze/Fire Stats
- Autostart
- Bypass
- Purge
- Bypass Running

❑ **4.** Tighten the control and signal terminals to the proper torque according to drive type as shown in Table 2.E.

Table 2.E Control and Signal Terminal Block Specifications

Voltage Rating	kW	HP	Terminals	Location	Maximum Wire Size(1)	Minimum Wire Size	Recommended Torque
208V AC	0.75-11	1-15	1-26	Drive	1.5 mm^2 (16 AWG)	0.05 mm^2 (30 AWG)	0.5 N-m (4.4 lb.-in.)
			31-40	Option Cabinet	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.0 lb.-in.)
460V AC	0.75-37	1-50	1-26	Drive	1.5 mm^2 (16 AWG)	0.05 mm^2 (30 AWG)	0.5 N-m (4.4 lb.-in.)
			31-40	Option Cabinet	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.0 lb.-in.)
	45-110	60-150	1-32	Drive	2.1 mm^2 (14 AWG)	0.30 mm^2 (22 AWG)	0.6 N-m (5.2 lb.-in.)
			31-40	Option Cabinet	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.0 lb.-in.)
600V AC	0.75-137	1-50	1-26	Drive	1.5 mm^2 (16 AWG)	0.05 mm^2 (30 AWG)	0.5 N-m (4.4 lb.-in.)
			31-40	Option Cabinet	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.0 lb.-in.)
	45-110	60-150	1-32	Drive	2.1 mm^2 (14 AWG)	0.30 mm^2 (22 AWG)	0.6 N-m (5.2 lb.-in.)
			31-40	Option Cabinet	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.0 lb.-in.)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

Customer Connections

The 3 Contactor Full Feature Bypass with Disconnect Package is set up to accommodate the following customer supplied contacts. Contacts should be rated for 120V AC.

Interlock

The “Interlock” input functions as an Enable input when operating in either Drive or Bypass mode. Opening of the “Interlock” input (T31-T32) will prevent the drive/motor from running. T31-T32 are shipped jumpered together (with a jumper wire) from the factory. If it is desirable to use the “Interlock” input, this jumper wire can be removed and appropriate customer contacts wired in. If a valid “Autostart” or “Bypass” contact is present, the drive/motor will immediately run upon the closing of the “Interlock” input.

Freeze/Fire Stat

The “Freeze/Fire Stat” input functions as a system fault input when operating in either Drive or Bypass mode. Opening of the “Freeze/Fire Stat” input (T31-T33) will prevent the drive/motor from running. T31-T33 are shipped jumpered together (with a jumper wire) from the factory. If it is desirable to use the “Freeze/Fire Stat” input, the jumper wire can be removed and appropriate customer contacts wired in. If the “Freeze/Fire Stat” input opens while operating in Drive mode, the drive will fault and require a manual reset to restart once the input closes. If the “Freeze/Fire Stat” input opens while operating in Bypass mode, the motor will coast to a stop and immediately run upon the re-closing of the input.

Autostart

The “Autostart” input is used to remotely start the drive when SS1 is in the DRIVE position and SS2 is in the AUTO position. A closed input to terminals 34-35 will start the drive.

Bypass

The “Bypass” input is used to remotely start the motor across the 3-phase AC line when SS1 is in the BYPASS position and SS2 is in the AUTO position. A closed input to terminals 34-36 will start the motor.

Purge

A “Purge” input can be wired to terminals 37-38. When this input is closed, the motor will run at the Purge Frequency, which is defined by Parameter A141 [Purge Frequency], assuming the following conditions exist.

- SS1 is either in the DRIVE or BYPASS position.
- SS2 is either in the HAND or AUTO position if Jumper P1 on the Bypass Control Panel (CP1) is in position A.
- SS2 is in the HAND, MOTOR OFF or AUTO position if Jumper P1 on the Bypass Control Panel (CP1) is in Position B.
- Interlock wired to terminals 31-32 is closed.
- Freeze/Fire Stat wired to terminals 31-33 is closed.

ATTENTION: A Purge command will take precedence over a Stop command from the Comm Port/Network. Insure that another stop method is available if stopping is necessary during a purge.

Bypass Running

The “Bypass Running” contact is normally open. When the Bypass Contactor (BC) is closed the Bypass Running” contact will also be closed.

Operating Modes

Selector Switch 1 (SS1) and Selector Switch 2 (SS2), located on the Bypass Control Panel (CP1), are used to determine the operating state of the 3 Contactor Full Feature Bypass with Disconnect Package. SS1 is used to select motor control:

- DRIVE = Drive keypad/terminal block controls the motor
- DRIVE TEST = Drive is powered but is not controlling the motor
- BYPASS = Motor runs across 3-Phase line

Jumper P2 on the Bypass Control Panel (CP1) allows the drive to be powered while running in bypass. This is accomplished by moving Jumper P2 to position B-C and turning SS1 from BYPASS to DRIVE TEST. If Jumper P2 is in position A-B, the drive cannot be powered while running in bypass. SS2 selects the source of the Start, Stop, and Drive Speed Reference as defined in Table 2.F.

Table 2.F Command and Reference Selection

SS1 Selection	SS2 Selection	Start Command			Stop Command			Drive Speed Reference		
		TB	Keypad	None	TB	Keypad	None	TB	Keypad	None
DRIVE	HAND		•			•			•	
	MOTOR OFF			•			•			•
	AUTO	•			•	•		•		
DRIVE TEST	HAND		•			•			•	
	MOTOR OFF			•			•			•
	AUTO	•			•	•		•		
BYPASS	HAND	Automatically Starts			Automatically Starts			Motor Runs at Base Speed		
	MOTOR OFF			•			•			•
	AUTO	•			•			Motor Runs at Base Speed		

ATTENTION: 3 Contactor Full Feature Bypass with Disconnect Packages are not designed to allow control over a communication network while in Auto Mode. The communication network is intended to be used for monitoring purposes only. If network control is required, wiring and parameters changes are required.

Parameter Defaults 3 Contactor Full Feature Bypass with Disconnect Package *(Style B)*

Parameter Name	Number	Default
Output Freq	001	Read Only
Commanded Freq	002	Read Only
Output Current	003	Read Only
Output Voltage	004	Read Only
Flux Current	005	Read Only
Output Voltage	006	Read Only
Output Power	007	Read Only
Output Powr Fctr	008	Read Only
Elapsed MWh	009	Read Only
Elapsed Run Time	010	Read Only
MOP Frequency	011	Read Only
DC Bus Voltage	012	Read Only
DC Bus Memory	013	Read Only
Elapsed kWh	014(1)	Read Only
Analog In1 Value	016	Read Only
Analog In2 Value	017	Read Only
Ramped Speed	022(1)	Read Only
Speed Reference	023(1)	Read Only
Commanded Torque	024(1)	Read Only
Speed Feedback	025(1)	Read Only
Rated kW	026	Read Only
Rated Volts	027	Read Only
Rated Amps	028	Read Only
Control SW Ver	029	Read Only
Motor Type	040	Induction
Motor NP Volts	041	Drive Rating Based
Motor NP FLA	042	Drive Rating Based
Motor NP Hertz	043	Drive Rating Based
Motor NP PRM	044	Drive Rating Based
Motor NP Power	045	Drive Rating Based
Mtr NP Pwr Units	046	Drive Rating Based
Motor OL Hertz	047	Motor NP Hz/3
Motor OL Factor	048	1.00
Motor Poles	049(1)	4
Motor Cntl Sel	053(2)	3 “FAN/Pump V/Hz”
Maximum Voltage	054	Drive Rated Volts
Maximum Freq	055	110.0 or 130.0 Hz
Compensation	056	Bits 0 - 6 0101111
Flux Up Mode	057	“Manual”
Flux Up Time	058	0.000 Secs
SV Boost Filter	059	500
Autotune	061	“Calculate”
IR Voltage Drop	062	Based on Drive Rating
Flux Current Ref	063	Based on Drive Rating
Ixo Voltage Drop	064	Based on Drive Rating
Autotune Torque	066(1)	50%
Inertia Autotune	067(1)	“Ready”

Parameter Name	Number	Default
St Acc Boost	069	Based on Drive Rating
Run Boost	070	Based on Drive Rating
Break Voltage	071	[Motor NP Volts] × 0.25
Break Frequency	072	[Motor NP Hz] × 0.25
Speed Units	079	0 “Hz”
Feedback Select]	080	0 “Open Loop”
Minimum Speed	081	0.0
Maximum Speed	082	50.0 or 60.0 Hz (volt class) [Motor NP RPM]
Overspeed Limit	083	10.0 Hz 300.0 RPM
Skip Frequency 1	084	0.0 Hz
Skip Frequency 2	085	0.0 Hz
Skip Frequency 3	086	0.0 Hz
Skip Freq Band	087(2)	1.0 Hz
Speed/Torque Mod	088(1)	1 “Speed Reg”
Speed Ref A Sel	090(2)	1 “Analog In 1”
Speed Ref A Hi	091	Maximum Speed
Speed Ref A Lo	092	0.0
Speed Ref B Sel	093(2)	18 “DPI Port 1”
Speed Ref B Hi	094	Maximum Speed
Speed Ref B Lo	095	0.0
TB Man Ref Sel	096	1 “Analog In 1”
TB Man Ref Hi	097	Maximum Speed
TB Man Ref Lo	098	0.0
Pulse Input Ref	099	Read Only
Jog Speed 1	100	10.0 Hz
Preset Speed 1	101	5.0 Hz
Preset Speed 2	102(2)	5.0 Hz
Preset Speed 3	103	20.0 Hz
Preset Speed 4	104	30.0 Hz
Preset Speed 5	105	40.0 Hz
Preset Speed 6	106	50.0 Hz
Preset Speed 7	107	6.0 Hz
Jog Speed 2	108	10.0 Hz
Trim % Setpoint	116(1)	0.0%
Trim In Select	117	2 “Analog In 2”
Trim Out Select	118	0 (Disable)
Trim Hi	119	60.0 Hz
Trim Lo	120	0.0 Hz
Slip RPM @ FLA	121	Based on [Motor NP RPM]
Slip Comp Gain	122	40.0
Slip RPM Meter	123	Read Only
PI Configuration	124	0 (Disable)
PI Control	125	0 (Disable)
PI Reference Sel	126	0 “PI Setpoint”
PI Setpoint	127	50.00%

Parameter Name	Number	Default
PI Feedback Sel	128	0 “PI Setpoint”
PI Integral Time	129	2.00 Secs
PI Prop Gain	130	1.0
PI Lower Limit	131	–[Maximum Freq] –100%
PI Upper Limit	132	+[Maximum Freq] 100%
PI Preload	133	0.0 Hz 100.0%
PI Status	134	Read Only
PI Ref Meter	135	Read Only
PI Fdback Meter	136	Read Only
PI Error Meter	137	Read Only
PI Output Meter	138	Read Only
PI BW Filter	139(1)	0.0 Radians
Accel Time 1	140(2)	20.0 Secs
Accel Time 2	141(2)	20.0 Secs
Decel Time 1	142(2)	20.0 Secs
Decel Time 2	143(2)	20.0 Secs
DB While Stopped	145(1)	0 “Disabled”
S Curve %	146(2)	20%
Current Lmt Sel	147	0 “Cur Lim Val”
Current Lmt Val	148	[Rated Amps] × 1.5 (Equation yields approximate default value.)
Current Lmt Gain	149	250
Drive OL Mode	150	3 “Both–PWM 1st”
PWM Frequency	151	4 kHz 2 kHz (Frames 4-6, 600/ 690VAC)
Droop RPM @ FLA	152(1)	0.0 RPM
Regen Power Limit	153(1)	–50.0%
Current Rate Limit	154(1)	400.0%
Stop Mode A	155(2)	0 “Coast”
Stop Mode B	156(2)	1 “Ramp”
DC Brake Lvl Sel	157	0 “DC Brake Lvl”
DC Brake Level	158	[Rated Amps]
DC Brake Time	159	0.0 Secs
Bus Reg Ki	160	450
Bus Reg Mode A	161	1 “Adjust Freq”
Bus Reg Mode B	162(2)	0 “Disabled”
DB Resistor Type	163	0 “None”
Bus Reg Kp	164(2)	1200
Bus Reg Kd	165	1000
Flux Braking	166(1)	0 “Disabled”
Powerup Delay	167(1)	0.0 Secs
Start At PowerUp	168(2)	1 “Enabled”
Flying Start En	169(2)	1 “Enabled”
Flying StartGain	170	4000
Auto Rstrt Tries	174	0
Auto Rstrt Delay	175(2)	30.0 Secs

Parameter Name	Number	Default
Gnd Warn Level	177[1]	3.0 Amps
Sleep-Wake Mode	178	0 “Disabled”
Sleep-Wake Ref	179	2 “Analog In 2”
Wake Level	180	6.000 mA, 6.000 Volts
Wake Time	181	1.0 Secs
Sleep Level	182	5.000 mA, 5.000 Volts
Sleep Time	183	1.0 Secs
Power Loss Mode	184	0 “Coast”
Power Loss Time	185	0.5 Secs
Power Loss Level	186[3]	Drive Rated Volts
Load Loss Level	187[1]	200.0%
Load Loss Time	188[1]	0.0 Secs
Shear Pin Time	189[1]	0.0 Secs
Direction Mode	190[2]	2 “Reverse Dis”
Save HIM Ref	192	0 Hz
Man Ref Preload	193[3]	0 “Disabled”
Save MOP Ref	194[2]	At Pwr Down
MOP Rate	195	1.0 Hz/s 30.0 RPM/s
Param Access Lvl	196[2]	3 “Fan/Pump”
Reset To Defalts	197	0 “Ready”
Load Frm Usr Set	198	0 “Ready”
Save To User Set	199	0 “Ready”
Reset Meters	200	0 “Ready”
Language	201	0 “Not Selected”
Voltage Class	202	Based on Drive Cat. No.
Drive Checksum	203	Read Only
Dyn UsrSet Cnfg	204[1]	0 “Disabled”
Dyn UsrSet Sel	205[1]	0 “Disabled”
Dyn UsrSet Actv	206[1]	0 “Disabled”
Drive Status 1	209	Read Only
Drive Status 2	210	Read Only
Drive Alarm 1	211	Read Only
Drive Alarm 2	212	Read Only
Speed Ref Source	213	Read Only
Start Inhibits	214	Read Only
Last Stop Source	215	Read Only
Dig In Status	216	Read Only
Dig Out Status	217	Read Only
Drive Temp	218	Read Only
Drive OL Count	219	Read Only
Motor OL Count	220	Read Only
Fault Speed	224	Read Only
Fault Amps	225	Read Only
Fault Bus Volts	226	Read Only
Status 1 @ Fault	227	Read Only
Status 2@ Fault	228	Read Only
Alarm 1 @ Fault	229	Read Only
Alarm 2@ Fault	230	Read Only
Testpoint 1 Sel	234	499
Testpoint 2 Sel	236	499
Testpoint 1 Data	235	Read Only
Testpoint 2 Data	237	Read Only

Parameter Name	Number	Default
Fault Config 1	238	Bits 0 - 15 01x1001000x000xx
Fault Clear	240	0 “Ready”
Fault Clear Mode	241	1 “Enabled”
Power Up Marker	242	Read Only
Fault 1 Code	243	Read Only
Fault 1 Time	244	Read Only
Fault 2 Code	245	Read Only
Fault 2 Time	246	Read Only
Fault 3 Code	247	Read Only
Fault 3 Time	248	Read Only
Fault 4 Code	249	Read Only
Fault 4 Time	250	Read Only
Fault 5 Code	251[3]	Read Only
Fault 5 Time	252[3]	Read Only
Fault 6 Code	253[3]	Read Only
Fault 6Time	254[3]	Read Only
Fault 7 Code	255[3]	Read Only
Fault 7 Time	256[3]	Read Only
Fault 8 Code	257[3]	Read Only
Fault 8 Time	258[3]	Read Only
Alarm Config 1	259	Bits 0-15 000000x00000000x
Alarm Clear	261[3]	0 “Ready”
Alarm 1 Code	262[3]	Read Only
Alarm 2 Code	263[3]	Read Only
Alarm 3 Code	264[3]	Read Only
Alarm 4 Code	265[3]	Read Only
Alarm 5 Code	266[3]	Read Only
Alarm 6 Code	267[3]	Read Only
Alarm 7 Code	268[3]	Read Only
Alarm 8 Code	269[3]	Read Only
DPI Baud Rate	270	1 “500kbps”
Drive Logic Rslt	271	Read Only
Drive Ref Rslt	272	Read Only
Drive Ramp Rslt	273	Read Only
DPI Port Sel	274[1]	“DPI Port 1”
DPI Port Value	275[1]	Read Only
Logic Mask	276[1]	1 - Control Permitted
Start Mask	277	(See Logic Mask)
Jog Mask	278	(See Logic Mask)
Direction Mask	279	(See Logic Mask)
Reference Mask	280	(See Logic Mask)
Accel Mask	281	(See Logic Mask)
Decel Mask	282	(See Logic Mask)
Fault Clr Mask	283	(See Logic Mask)
MOP Mask	284	(See Logic Mask)
Local Mask	285	(See Logic Mask)
Stop Owner	288	Read Only
Start Owner	289	(See Stop Owner)
Jog Owner	290	(See Stop Owner)
Direction Owner	291	(See Stop Owner)
Reference Owner	292	(See Stop Owner)
Accel Owner	293	(See Stop Owner)
Decel Owner	294	(See Stop Owner)

Parameter Name	Number	Default
Fault Clr Owner	295	(See Stop Owner)
MOP Owner	296	(See Stop Owner)
Local Owner	297	(See Stop Owner)
DPI Ref Select	298[1]	0 “Max Freq”
DPI Fdbk Select	299	17 “Speed Fdbk”
Data In A1 - Link A Word 1	300	0(0 = “Disabled)
Data In A2 - Link A Word 2	301	0(0 = “Disabled)
Data In B1 - Link B Word 1	302	(See Data In A1 - Link A Word 1)
Data In B2 - Link B Word 2	303	(See Data In A2 - Link A Word 2)
Data In C1 - Link C Word 1	304	(See Data In A1 - Link A Word 1)
Data In C2 - Link C Word 2	305	(See Data In A2 - Link A Word 2)
Data In D1 - Link D Word 1	306	(See Data In A1 - Link A Word 1)
Data In D2 - Link D Word 2	307	(See Data In A2 - Link A Word 2)
Data Out A1 - Link A Word 1	310	0(0 = “Disabled)
Data Out A2 - Link A Word 2	311	0(0 = “Disabled)
Data Out B1 - Link A Word 1	312	(See Data Out A1 - Link A Word 1)
Data Out B2 - Link A Word 2	313	(See Data Out A2 - Link A Word 2)
Data Out C1 - Link A Word 1	314	(See Data Out A1 - Link A Word 1)
Data Out C2 - Link A Word 2	315	(See Data Out A2 - Link A Word 2)
Data Out D1 - Link A Word 1	316	(See Data Out A1 Link A Word 1)
Data Out D2 - Link A Word 2	317	(See Data Out A2 - Link A Word 2)
Anlg In Config	320[2]	Analog In 1 = 0.0 Volt
Anlg In Sqr Root	321	0 (Disable)
Analog In 1 Hi	322	10.000 Volt
Analog In 1 Lo	323	0.000 Volt
Analog In 1 Loss	324	0 “Disabled”
Analog In 2 Hi	325	10.000 Volt
Analog In 2 Lo	326	0.000 Volt
Analog In 2 Loss	327	0 “Disabled”
Anlg Out Config	340	1 (Current)
Anlg Out Absolut	341	1 (Absolute)
Analog Out1 Sel	342	0 “Output Freq”
Analog Out1 Hi	343	20.000 mA, 10.000 Volts
Analog Out1 Lo	344	0.000 mA, 0.000 Volts
Analog Out2 Sel	345	0 “Output Freq”
Analog Out Hi	346	20.000 mA, 10.000 Volts
Analog Out2 Lo	347	0.000 mA, 0.000 Volts
Anlg Out1 Scale	354[1]	0.0
Anlg Out2 Scale	355[1]	0.0
Digital In1 Sel	361	4 “Stop – CF”

Parameter Name	Number	Default
Digital In2 Sel	362	5 “Start”
Digital In3 Sel	363[2]	3 “Aux Fault”
Digital In4 Sel	364[2]	1 “Enable”
Digital In5 Sel	365[2]	15 “Speed Sel 1”
Digital In6 Sel	366[2]	16 “Speed Sel 2”
Anlg1 Out Setpt	377[1]	20.000 mA, 10.000 Volts
Anlg2 Out Setpt	378	20.000 mA, 10.000 Volts
Dig Out Setpt	379[1]	0 (Disable)
Digital Out1 Sel	380[4]	1 “Fault”
Dig Out1 Level	381	0.0
Dig Out1 OnTime	382	0.00 Secs
Dig Out1 OffTime	383	0.00 Secs
Digital Out2 Sel	384	4 “Run”
Dig Out2 Level	385	0.0
Dig Out2 OnTime	386	0.00 Secs
Dig Out2 OffTime	387	0.00 Secs
Digital Out3 Sel	388	4 “Run”
Dig Out3 Level	389	0.0
Dig Out3 OnTime	390	0.00 Secs
Dig Out3 OffTime	391	0.00 Secs
Dig Out Param	393	0 “PI Config”
DigIn DataLogic	411[1]	0=Logical 0
Motor Fdbk Type	412[1]	0 “Quadrature”
Encoder PPR	413[1]	1024 PPR
Enc Position Fdbk	414[1]	Read Only
Encoder Speed	415[1]	Read Only
Fdbk Filter Sel	416[1]	0 “None”
Notch FilterFreq	419[1]	0.0 Hz
Notch Filter K	420[1]	0.3 Hz
Marker Pulse	421	Read Only
Pulse In Scale	422	64
Encoder Z Chan	423	0 “Pulse Input”
Torque Ref A Sel	427	1 “Torque Stpt1”
Torque Ref A Hi	428[1]	100.0%
Torque Ref A Lo	429[1]	0.0%
Torq Ref A Div	430[1]	1.0
Torque Ref B Sel	431	24 “Disabled”
Torque Ref B Hi	432	100.0%
Torque Ref B Lo	433	0.0%
Torque Ref B Mult	434	1.0
Torque Setpoint1	435[1]	0.0%
Pos Torque Limit	436[1]	200.0%
Neg Torque Limit	437[1]	-200.0%
Torque Setpoint2	438	0.0%
Control Status	440[1]	Read Only
Mtr Tor Cur Ref	441[1]	Read Only
Ki Speed Loop	445[1]	7.0
Kp Speed Loop	446[1]	6.3

Parameter Name	Number	Default
Kf Speed Loop	447[1]	0.0
Speed Desired BW	449[1]	0.0 Radians/Sec
Total Inertia	450[1]	1.25 Secs 0.10 Secs (v3)
Speed Loop Meter	451[1]	Read Only
Rev Speed Limit	454[1]	0.0 RPM
PI Deriv Time	459[1]	0.00 Secs
PI Reference Hi	460[1]	100.0%
PI Reference Lo	461[1]	-100.0%
PI Feedback Hi	462[1]	100.0%
PI Feedback Lo	463[1]	0.0%
Scale1 In Value	476	0.0
Scale1 In Hi	477	0.0
Scale1 In Lo	478	0.0
Scale1 Out Hi	479	0.0
Scale1 Out Lo	480	0.0
Scale1 Out Value	481	Read Only
Scale2 In Value	482	0.0
Scale2 In Hi	483	0.0
Scale2 In Lo	484	0.0
Scale2 Out Hi	485	0.0
Scale2 Out Lo	486	0.0
Scale2 Out Value	487	Read Only
Scale3 In Value	488	0.0
Scale3 In Hi	489	0.0
Scale3 In Lo	490	0.0
Scale3 Out Hi	491	0.0
Scale3 Out Lo	492	0.0
Scale3 Out Value	493	Read Only
Scale4 In Value	494	0.0
Scale4 In Hi	495	0.0
Scale4 In Lo	496	0.0
Scale4 Out Hi	497	0.0
Scale4 Out Lo	498	0.0
Scale4 Out Value	499	Read Only
PortMask Act	595[1]	Read Only
Write Mask Cfg	596[1]	1 = Write Permitted
Write Mask Act	597[1]	Read Only
Logic Mask Act	598[1]	Read Only
TorqProve Cnfg	600	0 (Disable)
TorqProve Setup	601	0 (Disable)
Spd Dev Band	602	2.0 Hz 60.0 RPM
SpdBand Integrat	603	60 mSec
Brk Release Time	604	0.10 Secs
ZeroSpdFloatTime	605	5.0 Secs
Float Tolerance	606	0.2 Hz 6.0 RPM
Brk Set Time	607	0.10 Secs
TorqLim SlewRate	608	10.0 Secs

Parameter Name	Number	Default
BrkSlip Count	609	250
Brk Alarm Travel	610	1.0 Revs
MicroPos Scale%	611	10.0%

(1) Applicable to PowerFlex 70 Packages only.

(2) The default values for these parameters differ from the factory defaults. Setting 194 [Reset To Defalts] to 1 “Factory Rset” will change these parameter settings to the defaults listed in the PowerFlex® 70 or PowerFlex 700 *User Manual*.

(3) Applicable to PowerFlex 700 Packages only.

(4) When [TorqProve Cnfg] is set to “Enable,” [Digital Out1 Sel] becomes the brake control and any other selection will be ignored.

ATTENTION: Parameter 168 [Start At PowerUp] ships from the factory enabled. This feature allows a Run command to automatically cause the drive to resume running at commanded speed after drive input power is restored. Equipment damage and/or personal injury may result if this parameter is used in an inappropriate application. Do not use this function without considering applicable local, national and international codes, standards, regulations or industry guidelines.

Drawing Index

3 Contactor Full Feature Bypass with Disconnect Package (Style B)

Input Voltage	kW	HP	Input Line Reactor	Drawing			
				Schematic	Inter-Connect	Layout	Outline
208V AC	0.75	1.0	No	Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	1.5	2.0		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	2.2	3.0		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	4.0	5.0		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.28, Page 2-44
	5.5	7.5		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.29, Page 2-45
	7.5	10		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.29, Page 2-45
	11	15		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.19, Page 2-35	Figure 2.30, Page 2-46
	0.75	1.0	Yes	Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	1.5	2.0		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	2.2	3.0		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	4.0	5.0		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.25, Page 2-41	Figure 2.36, Page 2-52
	5.5	7.5		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.25, Page 2-41	Figure 2.37, Page 2-53
	7.5	10		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.26, Page 2-42	Figure 2.37, Page 2-53

Input Voltage	kW	HP	Input Line Reactor	Drawing			
				Schematic	Inter-Connect	Layout	Outline
460V AC	0.75	1.0		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	1.5	2.0		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	2.2	3.0		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	4.0	5.0		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	5.5	7.5		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.28, Page 2-44
	7.5	10		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.28, Page 2-44
	11	15		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.29, Page 2-45
	15	20		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.29, Page 2-45
	18.5	25	No	Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.29, Page 2-45
	22	30		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.19, Page 2-35	Figure 2.30, Page 2-46
	30	40		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.20, Page 2-36	Figure 2.31, Page 2-47
	37	50		Figure 2.3, Page 2-19	Figure 2.15, Page 2-31	Figure 2.20, Page 2-36	Figure 2.31, Page 2-47
	45	60		Figure 2.5, Page 2-21	Figure 2.16, Page 2-32	Figure 2.21, Page 2-37	Figure 2.32, Page 2-48
	55	75		Figure 2.5, Page 2-21	Figure 2.16, Page 2-32	Figure 2.22, Page 2-38	Figure 2.33, Page 2-49
	75	100		Figure 2.5, Page 2-21	Figure 2.16, Page 2-32	Figure 2.22, Page 2-38	Figure 2.33, Page 2-49
	90	125		Figure 2.5, Page 2-21	Figure 2.16, Page 2-32	Figure 2.23, Page 2-39	Figure 2.34, Page 2-50
	110	150		Figure 2.5, Page 2-21	Figure 2.16, Page 2-32	Figure 2.23, Page 2-39	Figure 2.34, Page 2-50
	0.75	1.0		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	1.5	2.0		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	2.2	3.0		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	4.0	5.0		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	5.5	7.5	Yes	Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.25, Page 2-41	Figure 2.36, Page 2-52
	7.5	10		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.25, Page 2-41	Figure 2.36, Page 2-52
	11	15		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.26, Page 2-42	Figure 2.37, Page 2-53
	15	20		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.26, Page 2-42	Figure 2.37, Page 2-53
	18.5	25		Figure 2.11, Page 2-27	Figure 2.17, Page 2-33	Figure 2.26, Page 2-42	Figure 2.37, Page 2-53

Input Voltage	kW	HP	Input Line Reactor	Drawing			
				Schematic	Inter-Connect	Layout	Outline
600V AC	2.2	3.0		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	4.0	5.0		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.27, Page 2-43
	5.5	7.5		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.28, Page 2-44
	7.5	10		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.28, Page 2-44
	11	15		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.29, Page 2-45
	15	20		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.29, Page 2-45
	18.5	25		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.18, Page 2-34	Figure 2.29, Page 2-45
	22	30	No	Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.19, Page 2-35	Figure 2.30, Page 2-46
	30	40		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.20, Page 2-36	Figure 2.31, Page 2-47
	37	50		Figure 2.7, Page 2-23	Figure 2.15, Page 2-31	Figure 2.20, Page 2-36	Figure 2.31, Page 2-47
	45	60		Figure 2.9, Page 2-25	Figure 2.16, Page 2-32	Figure 2.21, Page 2-37	Figure 2.32, Page 2-48
	55	75		Figure 2.9, Page 2-25	Figure 2.16, Page 2-32	Figure 2.22, Page 2-38	Figure 2.33, Page 2-49
	75	100		Figure 2.9, Page 2-25	Figure 2.16, Page 2-32	Figure 2.22, Page 2-38	Figure 2.33, Page 2-49
	90	125		Figure 2.9, Page 2-25	Figure 2.16, Page 2-32	Figure 2.23, Page 2-39	Figure 2.34, Page 2-50
	110	150		Figure 2.9, Page 2-25	Figure 2.16, Page 2-32	Figure 2.23, Page 2-39	Figure 2.34, Page 2-50
	2.2	3.0		Figure 2.12, Page 2-28	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	4.0	5.0		Figure 2.12, Page 2-28	Figure 2.17, Page 2-33	Figure 2.24, Page 2-40	Figure 2.35, Page 2-51
	5.5	7.5		Figure 2.12, Page 2-28	Figure 2.17, Page 2-33	Figure 2.25, Page 2-41	Figure 2.36, Page 2-52
	7.5	10	Yes	Figure 2.12, Page 2-28	Figure 2.17, Page 2-33	Figure 2.25, Page 2-41	Figure 2.36, Page 2-52
	11	15		Figure 2.12, Page 2-28	Figure 2.17, Page 2-33	Figure 2.26, Page 2-42	Figure 2.37, Page 2-53
	15	20		Figure 2.12, Page 2-28	Figure 2.17, Page 2-33	Figure 2.26, Page 2-42	Figure 2.37, Page 2-53
	18.5	25		Figure 2.12, Page 2-28	Figure 2.17, Page 2-33	Figure 2.26, Page 2-42	Figure 2.37, Page 2-53

Schematic Drawings

Figure 2.3 1-15 HP, 208V AC and 1-50 HP, 460V AC Drives (Sheet 1)

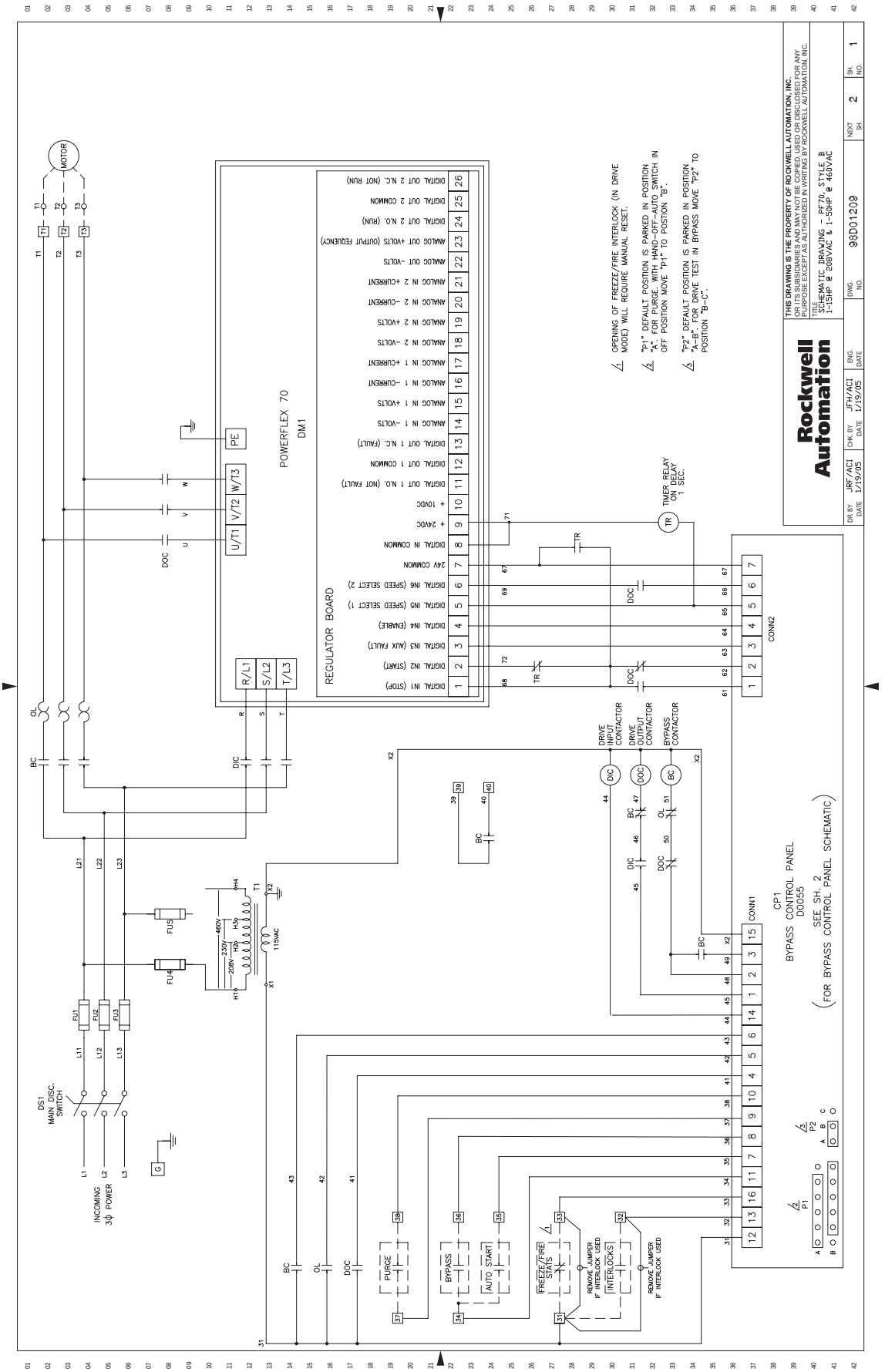


Figure 2.4 1-15 HP, 208V AC and 1-50 HP, 460V AC Drives (Sheet 2)

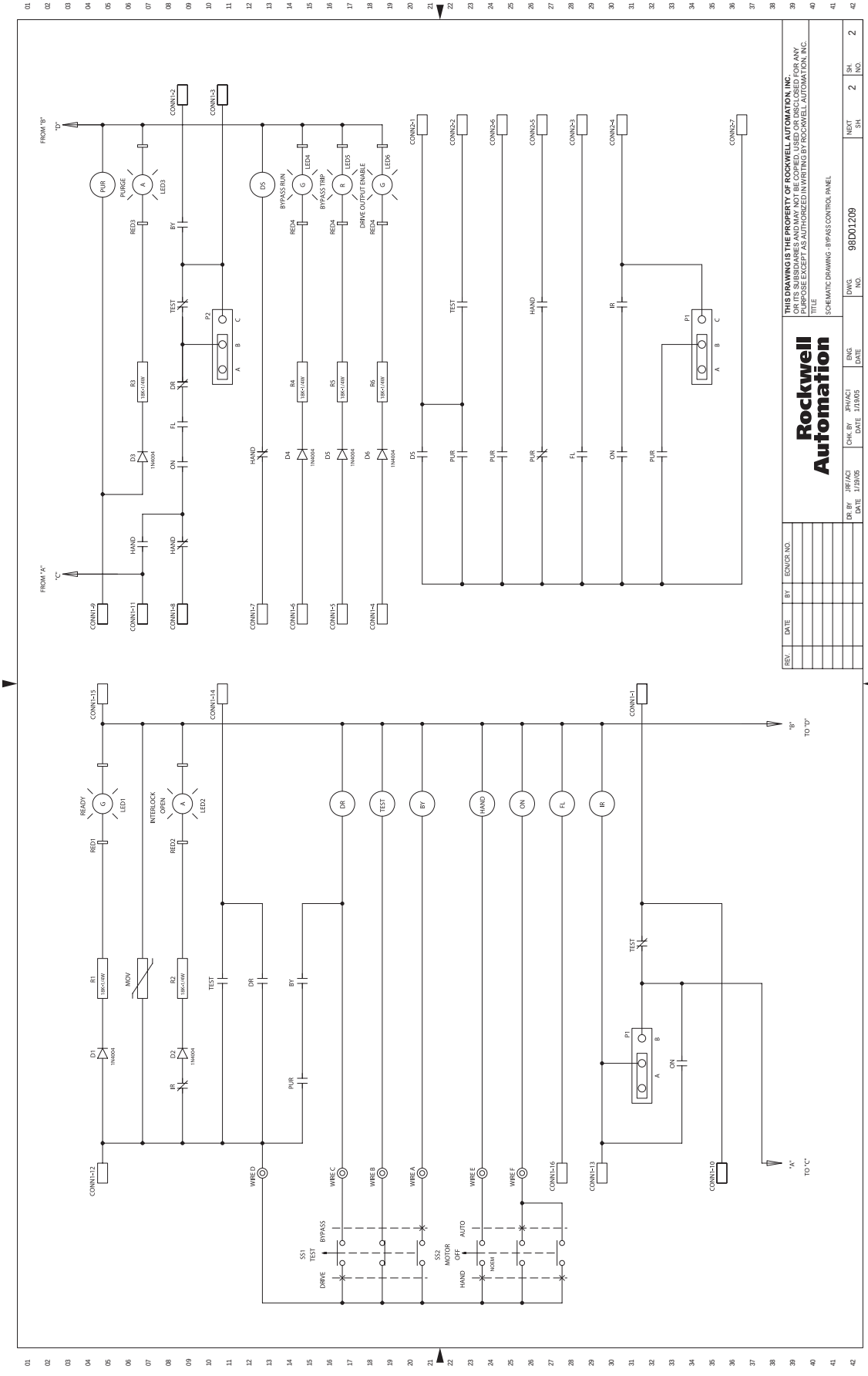


Figure 2.5 60-150 HP, 460V AC Drives (Sheet 1)

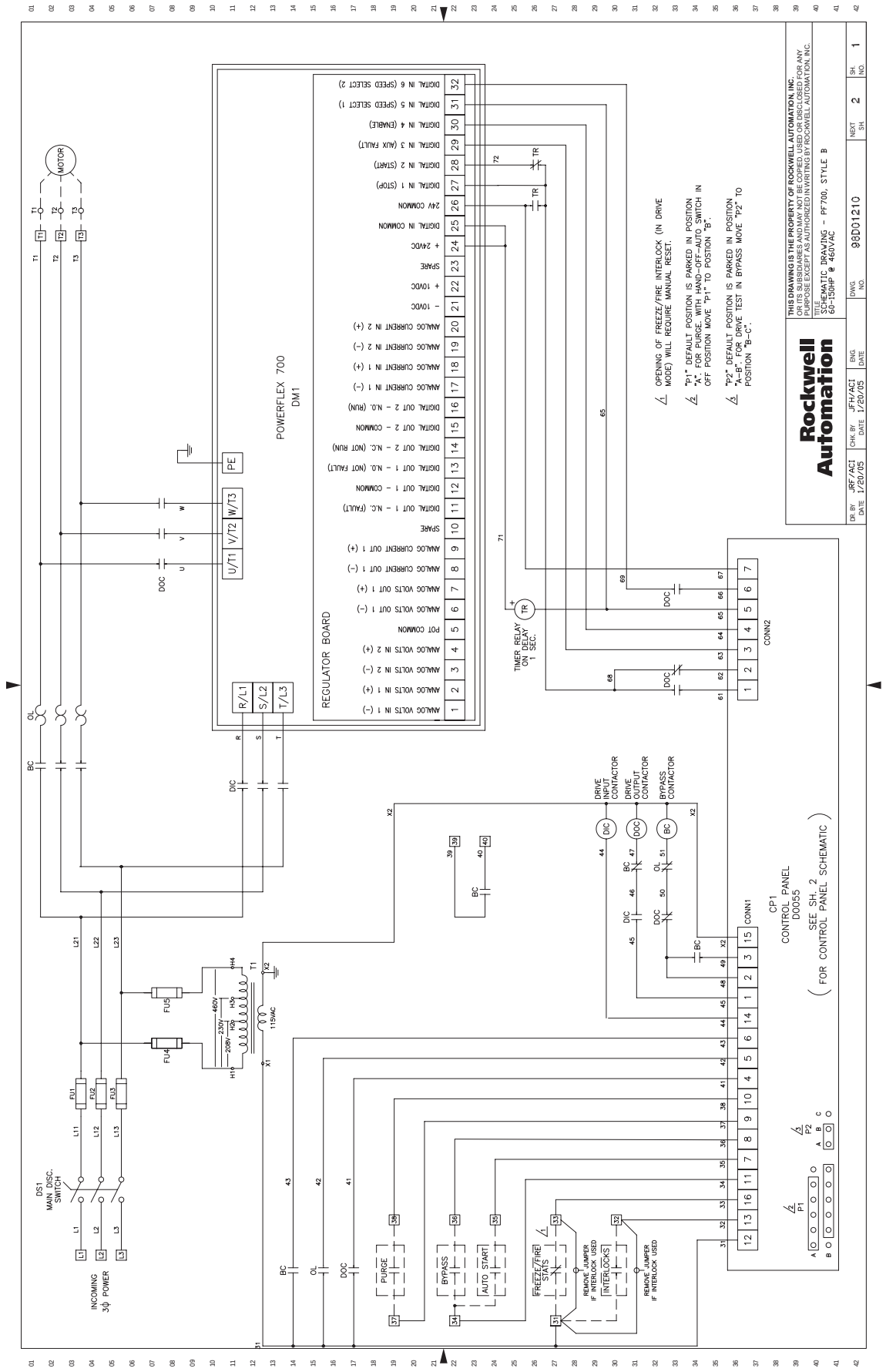


Figure 2.6 60-150 HP, 460V AC Drives (Sheet 2)

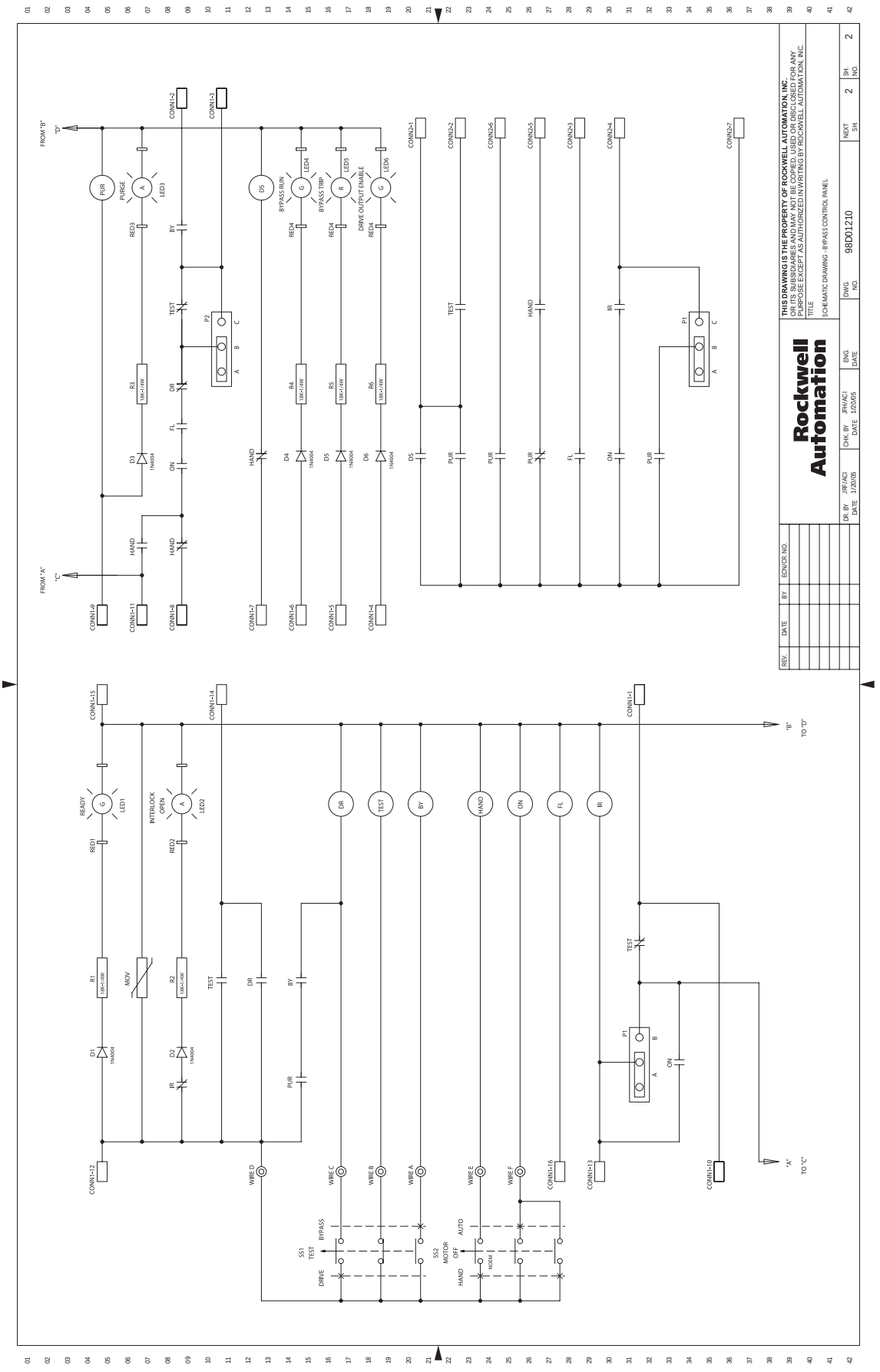


Figure 2.7 1-50 HP, 600V AC Drives (Sheet 1)

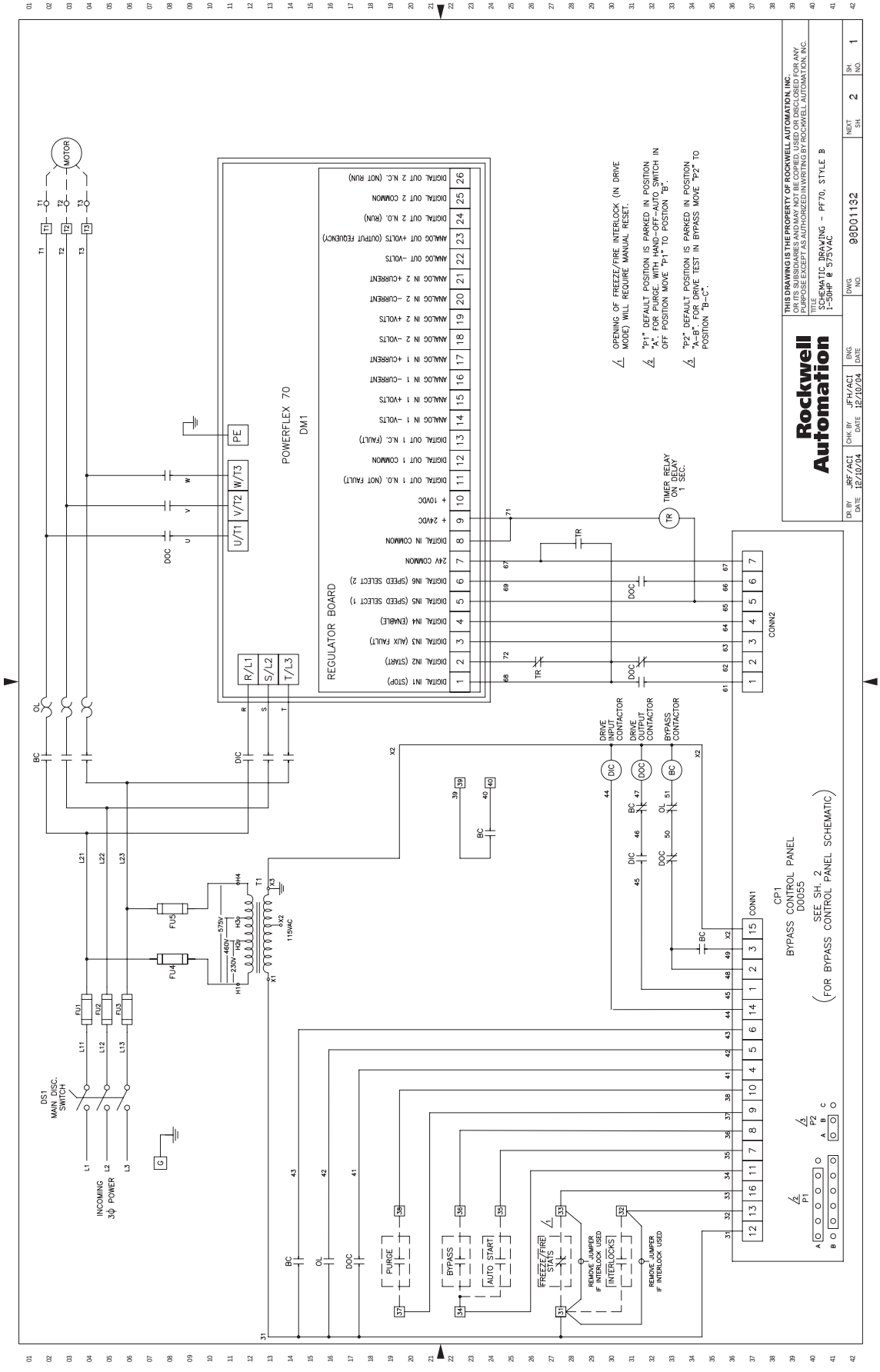


Figure 2.8 1-50 HP, 600V AC Drives (Sheet 2)

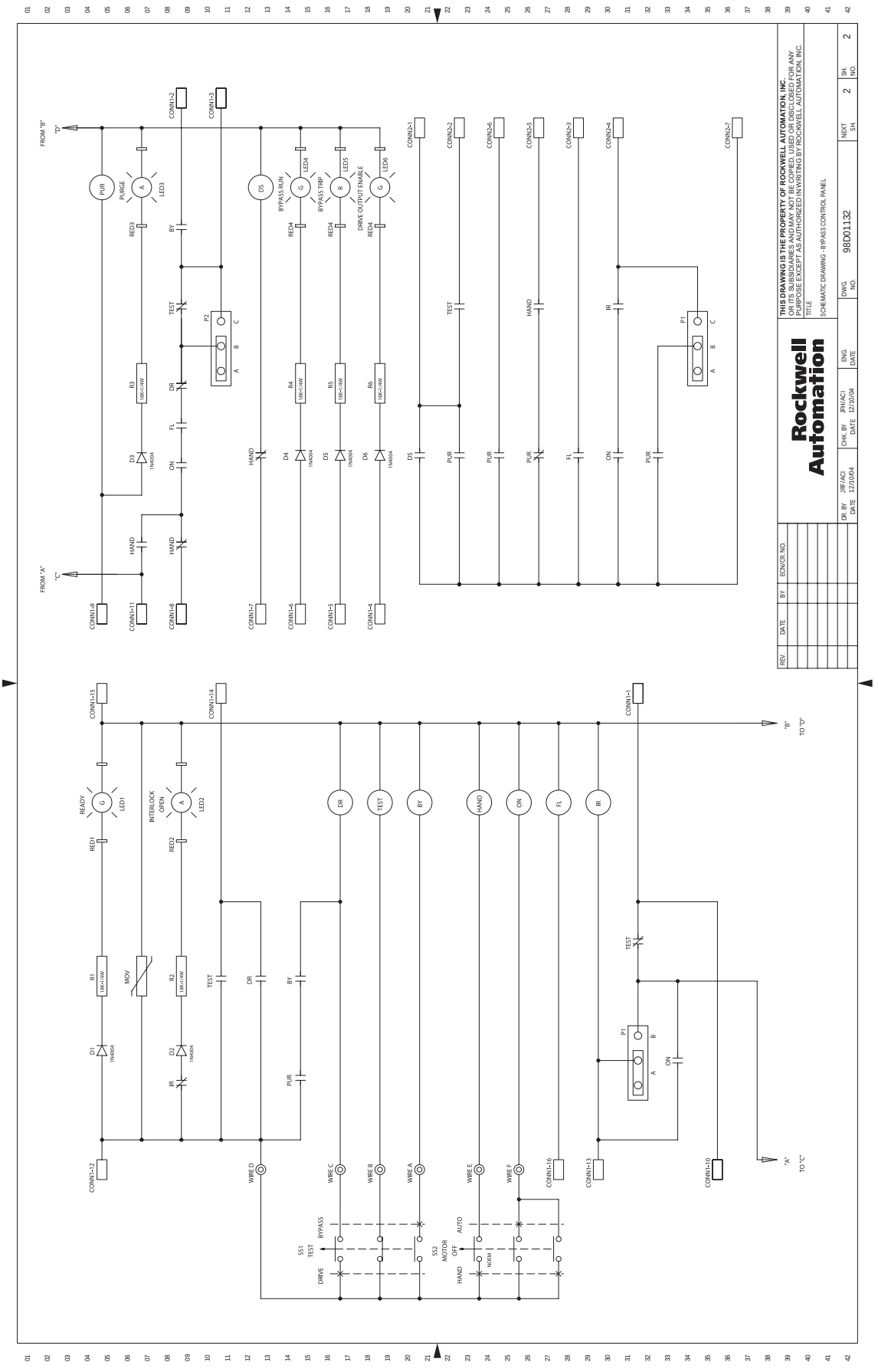


Figure 2.9 60-150 HP, 600V AC Drives (Sheet 1)

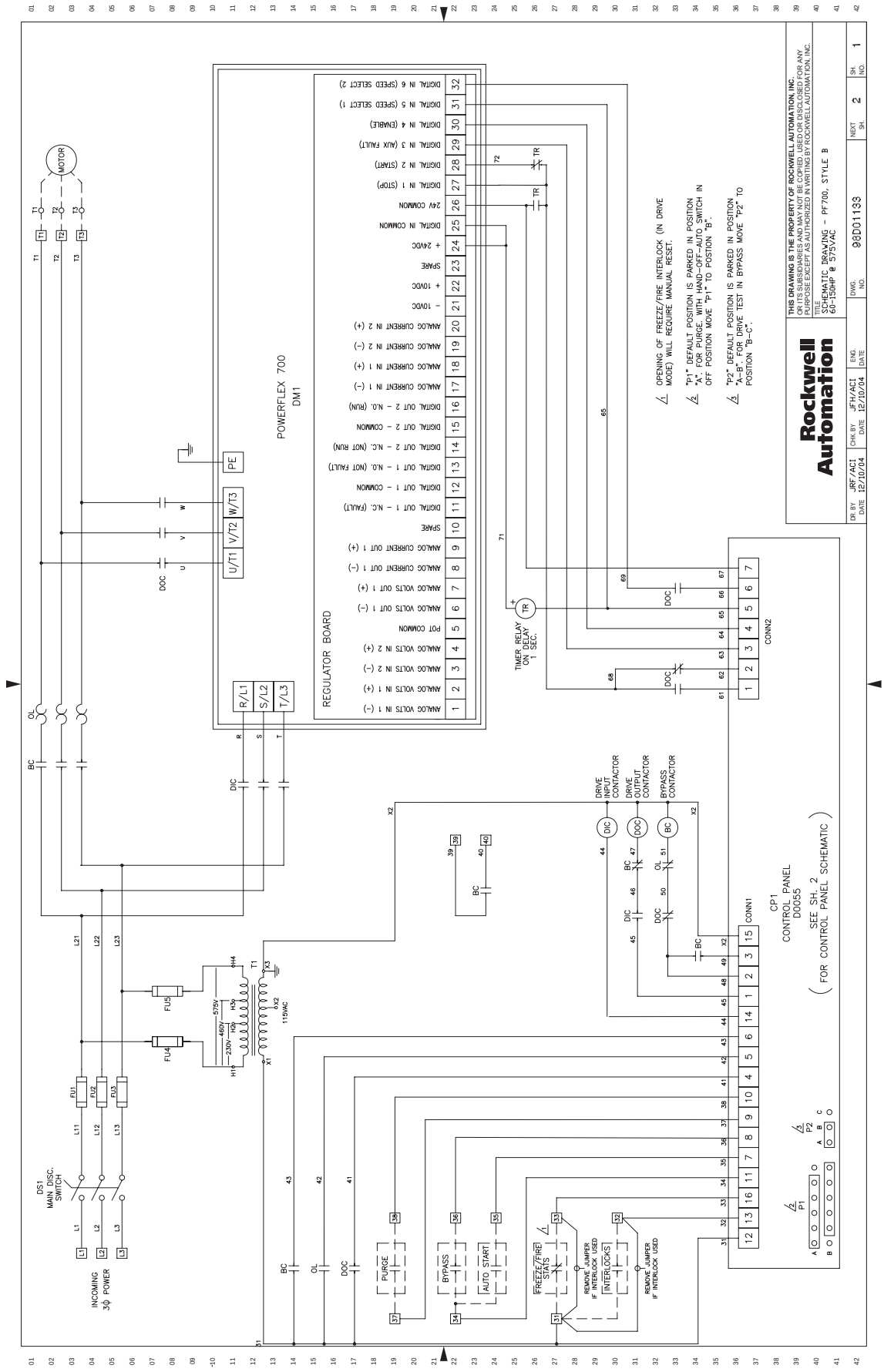


Figure 2.10 60-150 HP, 600V AC Drives (Sheet 2)

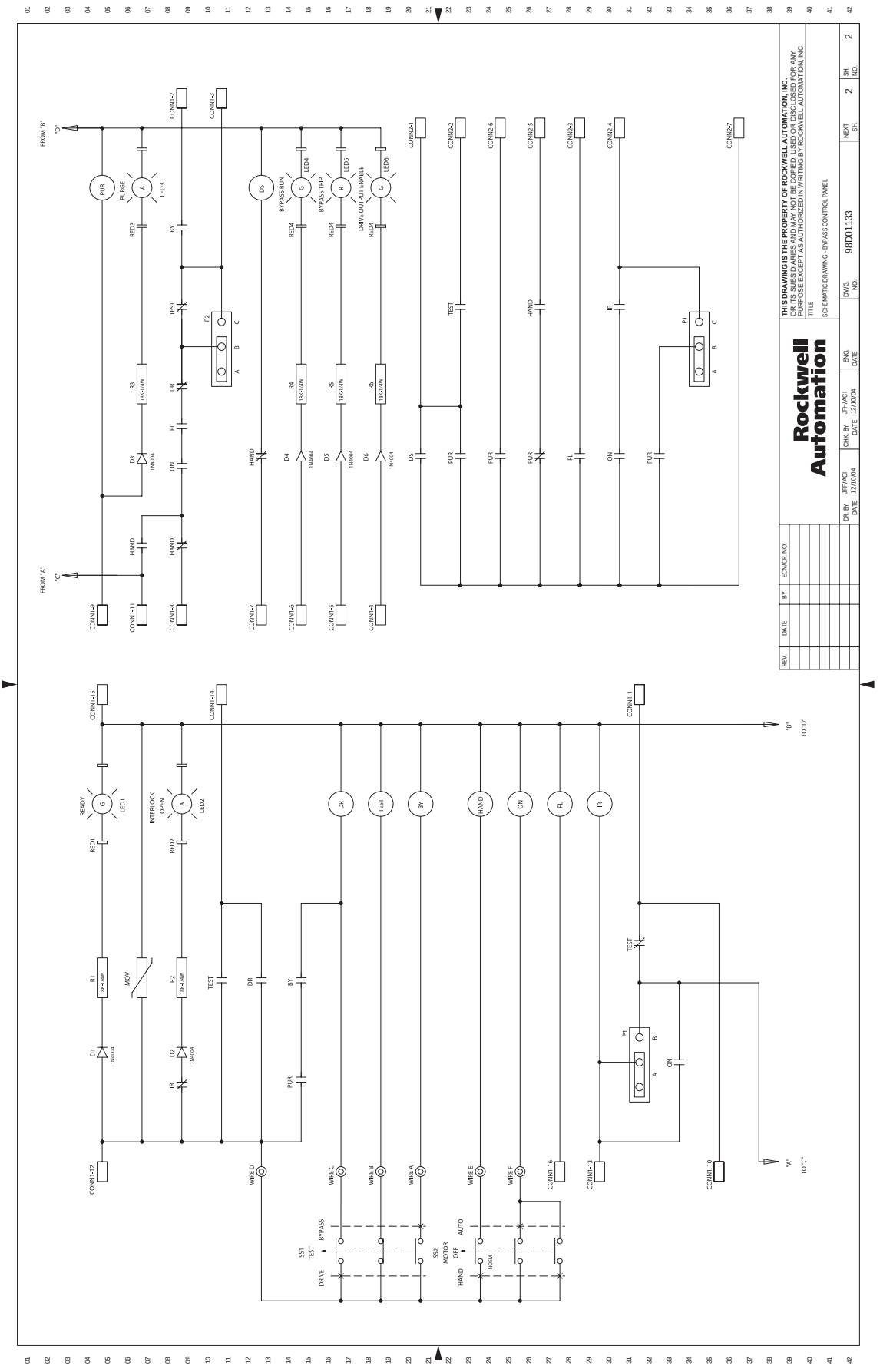


Figure 2.11 1-10 HP, 208V AC and 1-25 HP, 460V AC Drives with Line Reactor (Sheet 1)

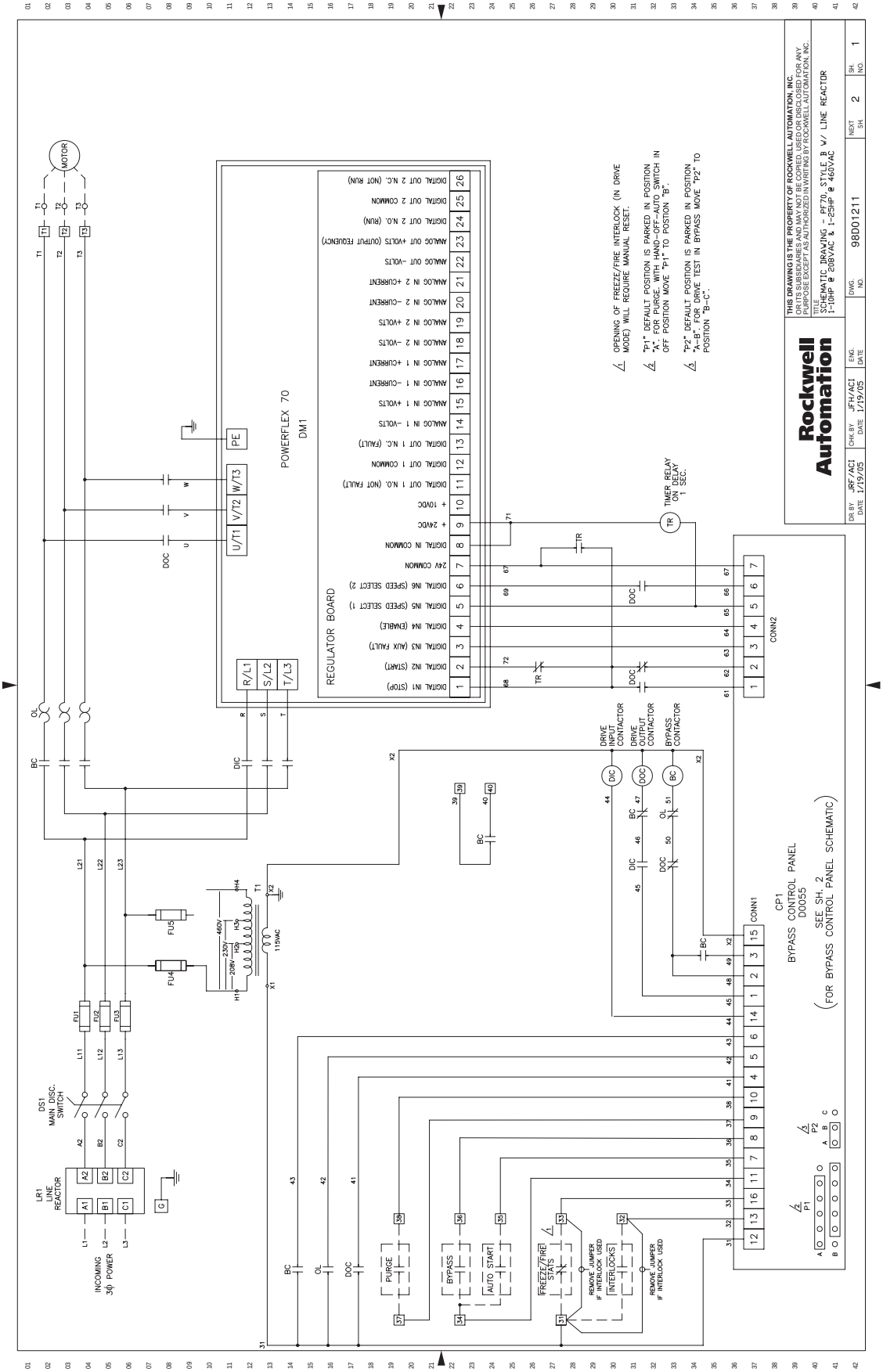


Figure 2.12 1-10 HP, 208V AC and 1-25 HP, 460V AC Drives with Line Reactor (Sheet 2)

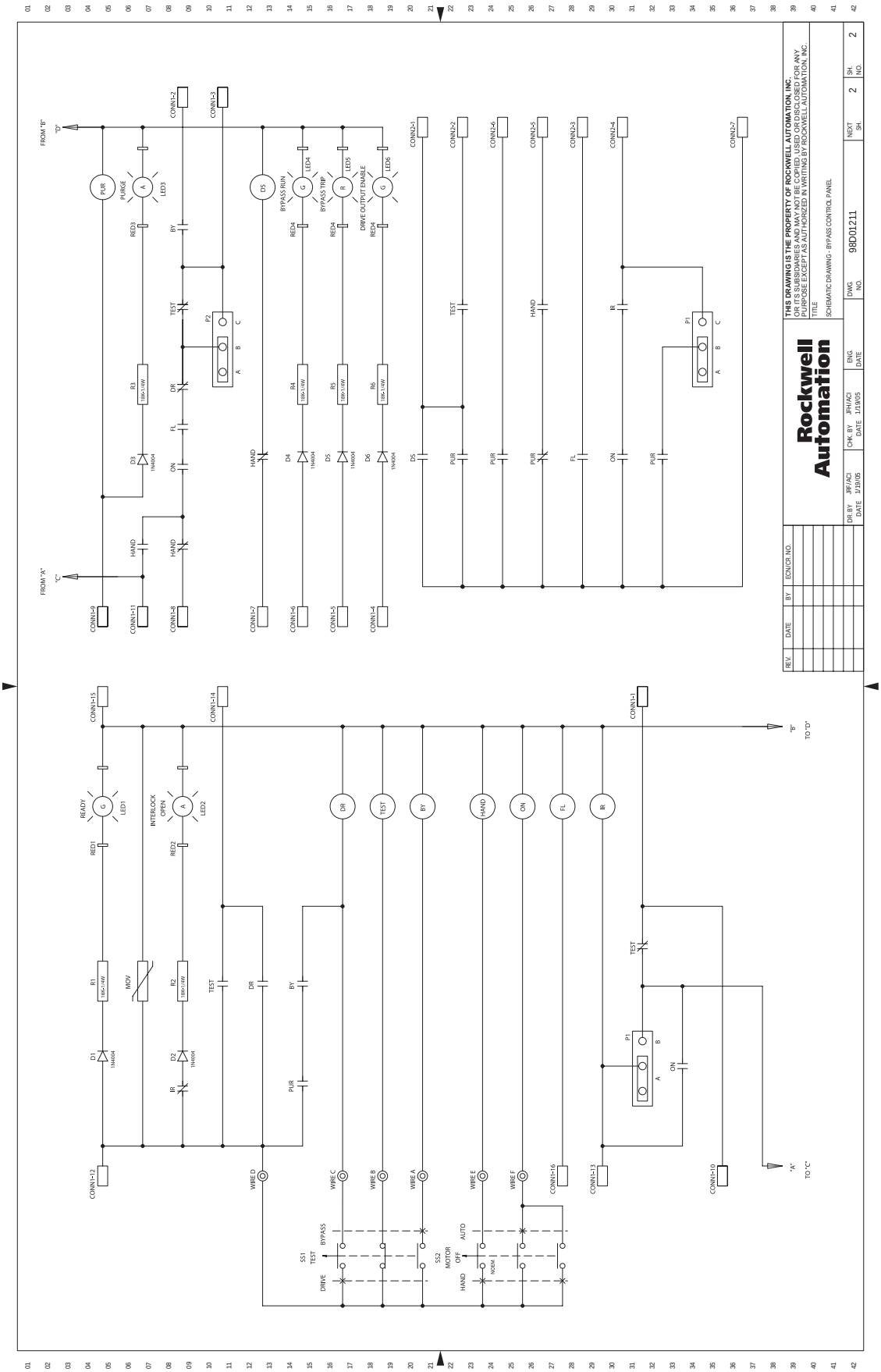


Figure 2.13 3-25 HP, 600V AC Drives with Line Reactor (Sheet 1)

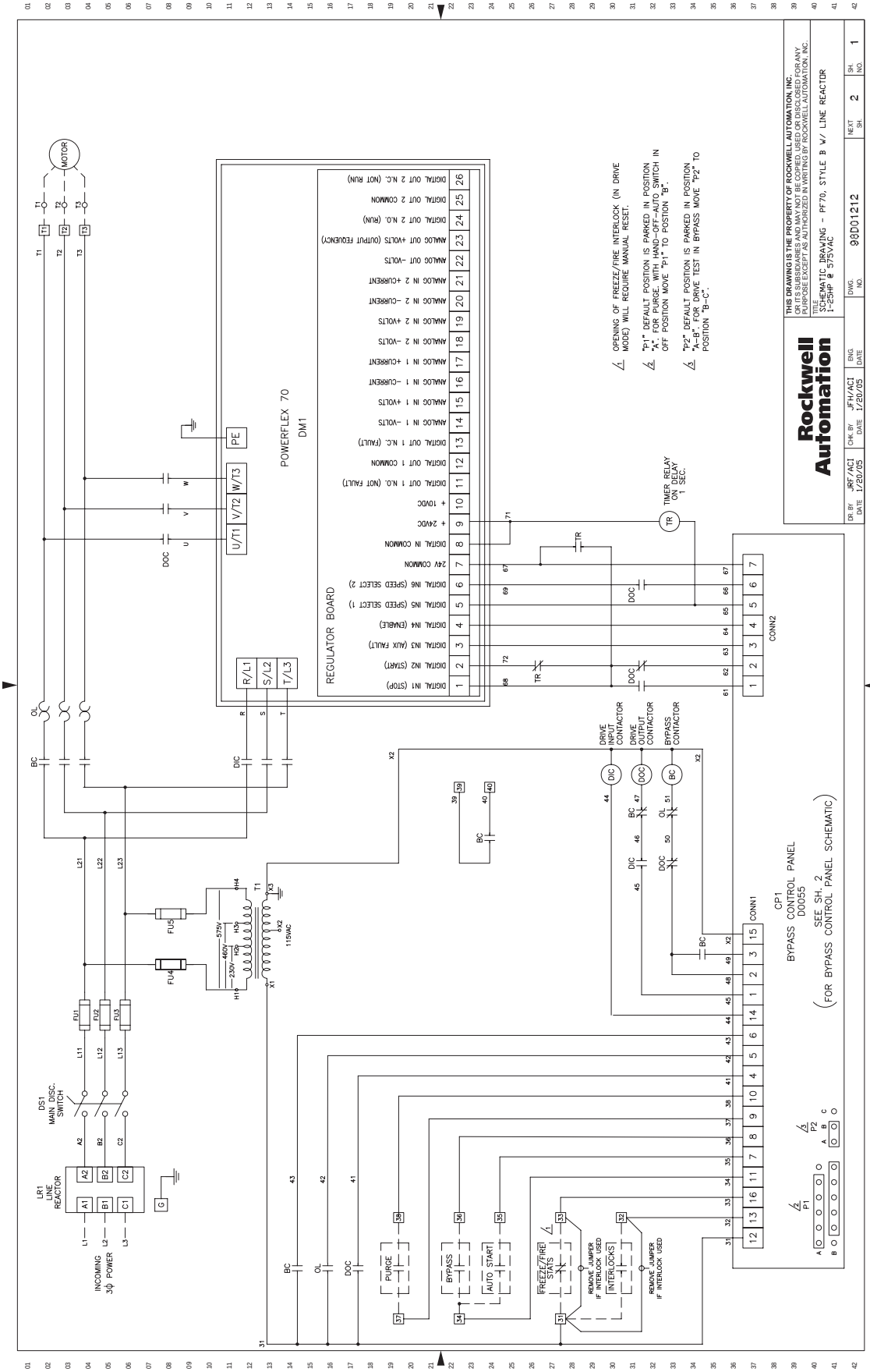
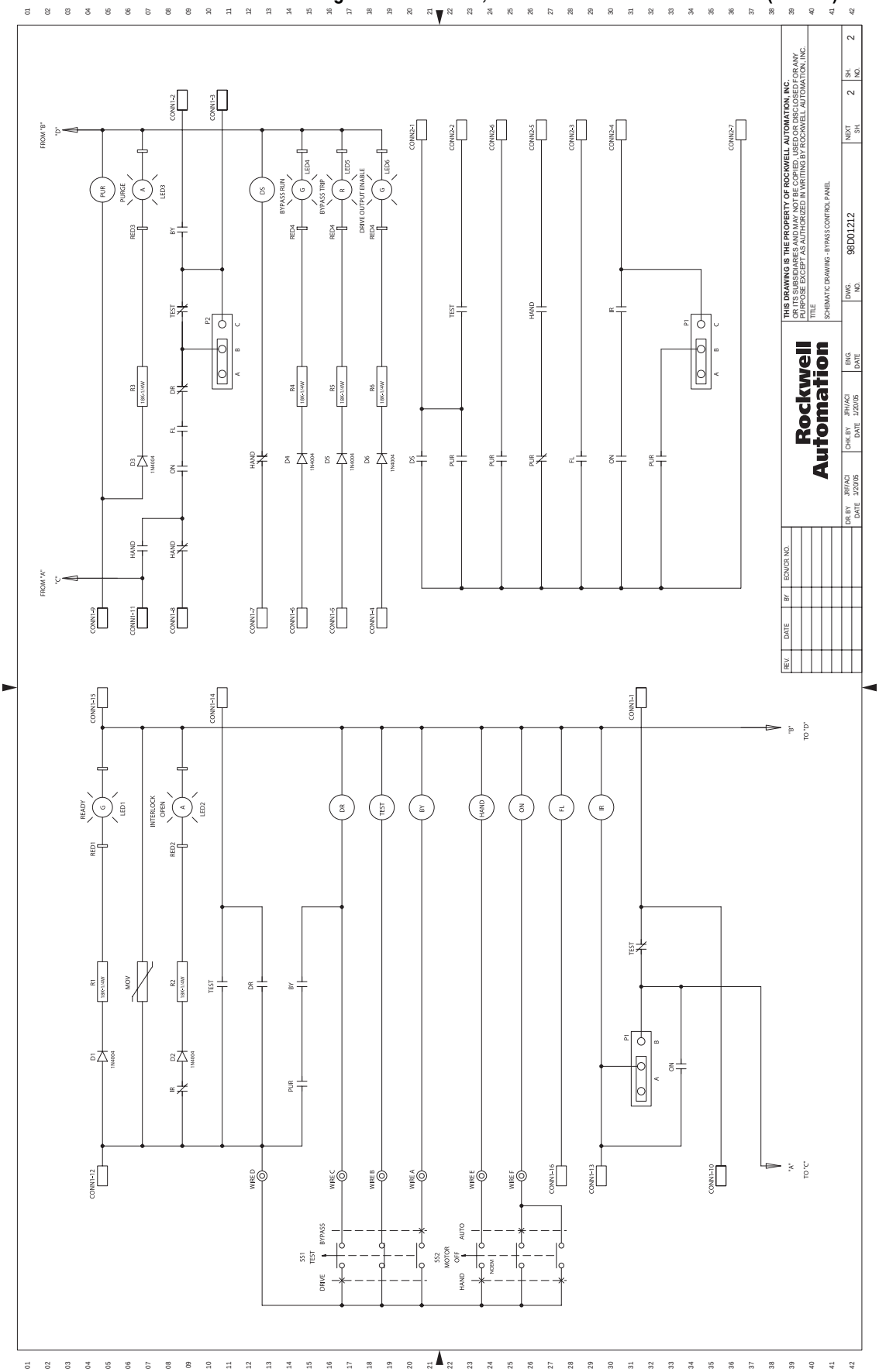


Figure 2.14 3-25 HP, 600V AC Drives with Line Reactor (Sheet 2)



Inter-Connect Drawings

Figure 2.15 1-15 HP, 208V AC and 1-50 HP, 460V AC and 600V AC Drives

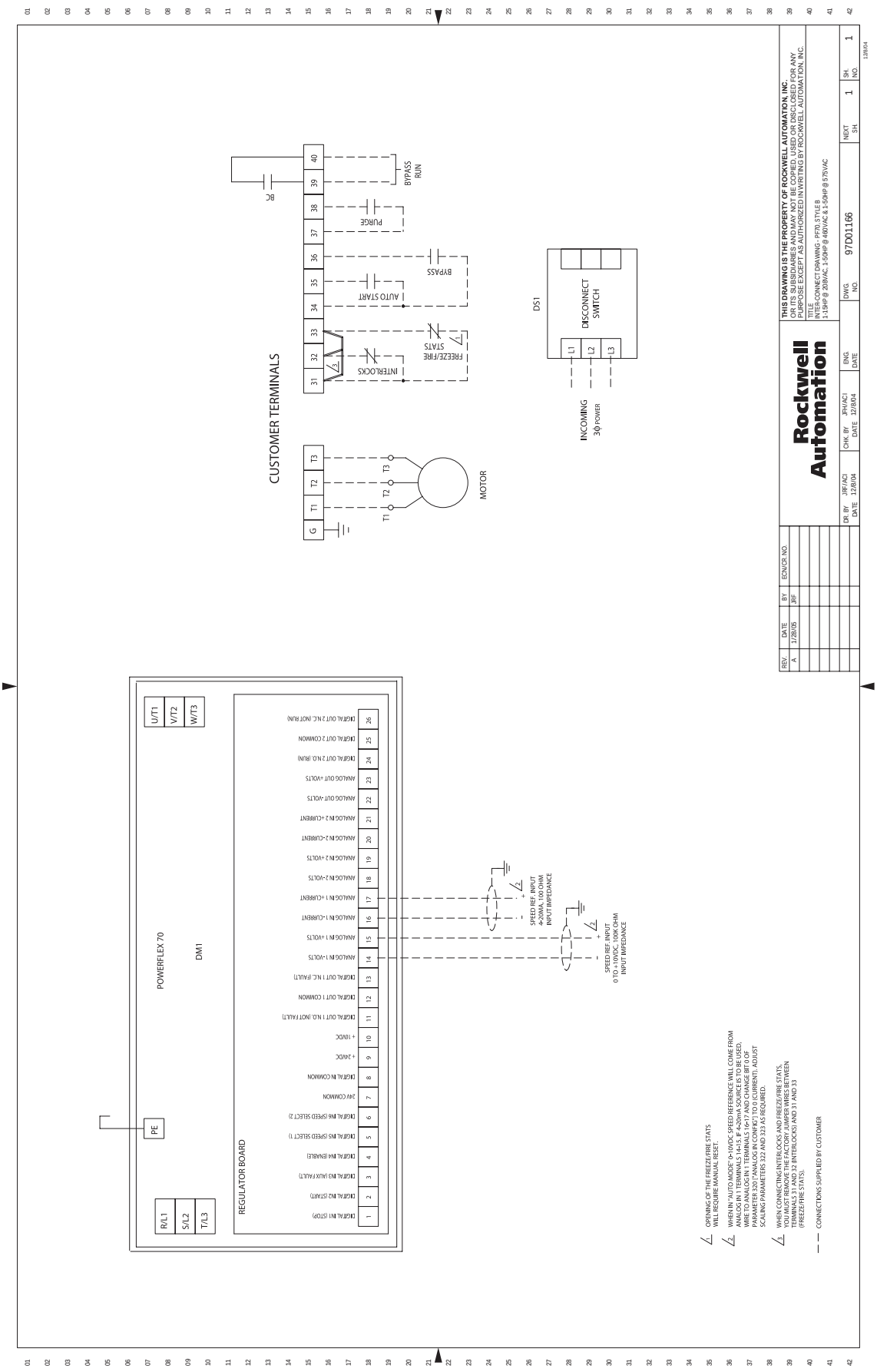


Figure 2.16 60-150 HP, 460V AC and 600V AC Drives

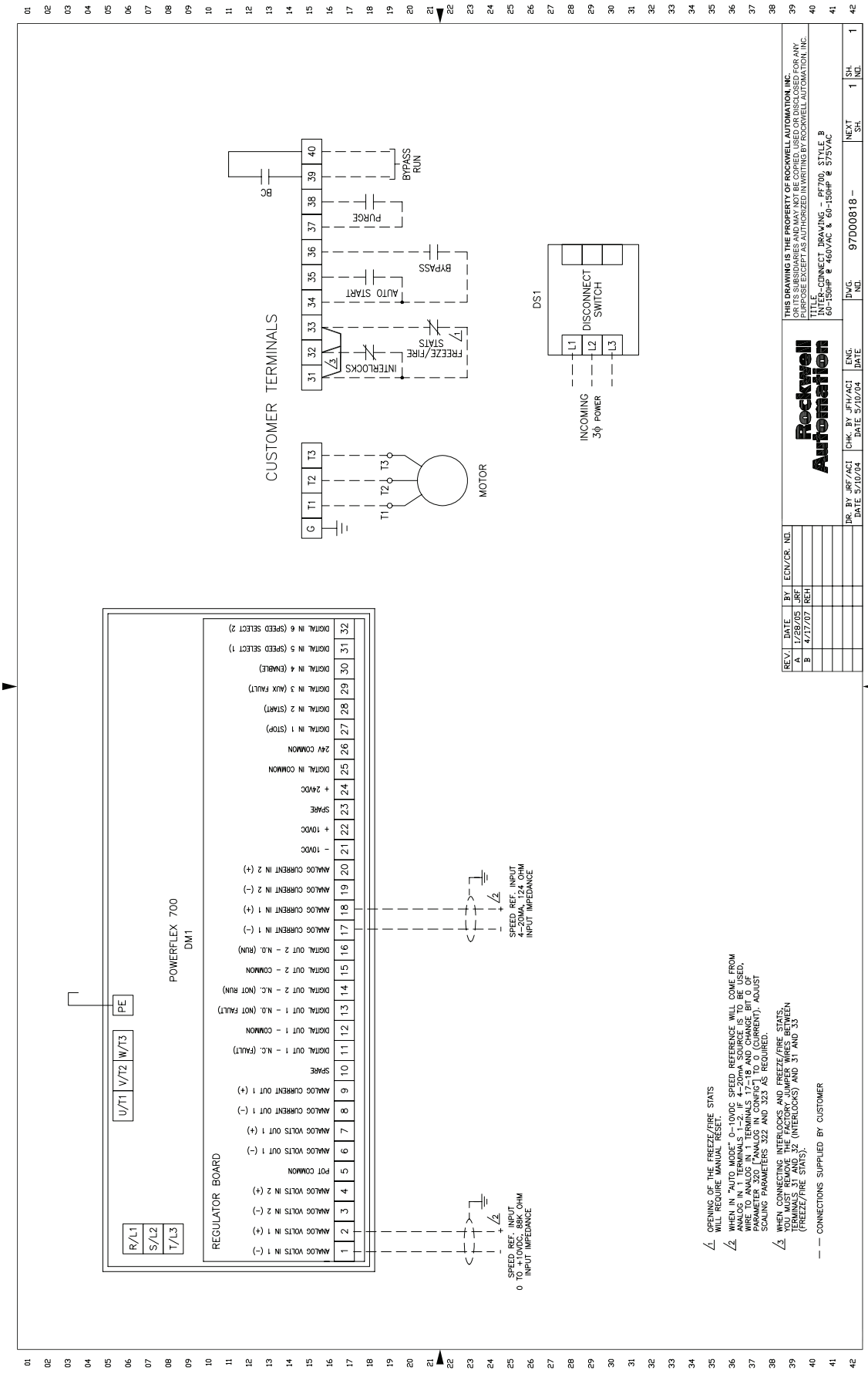
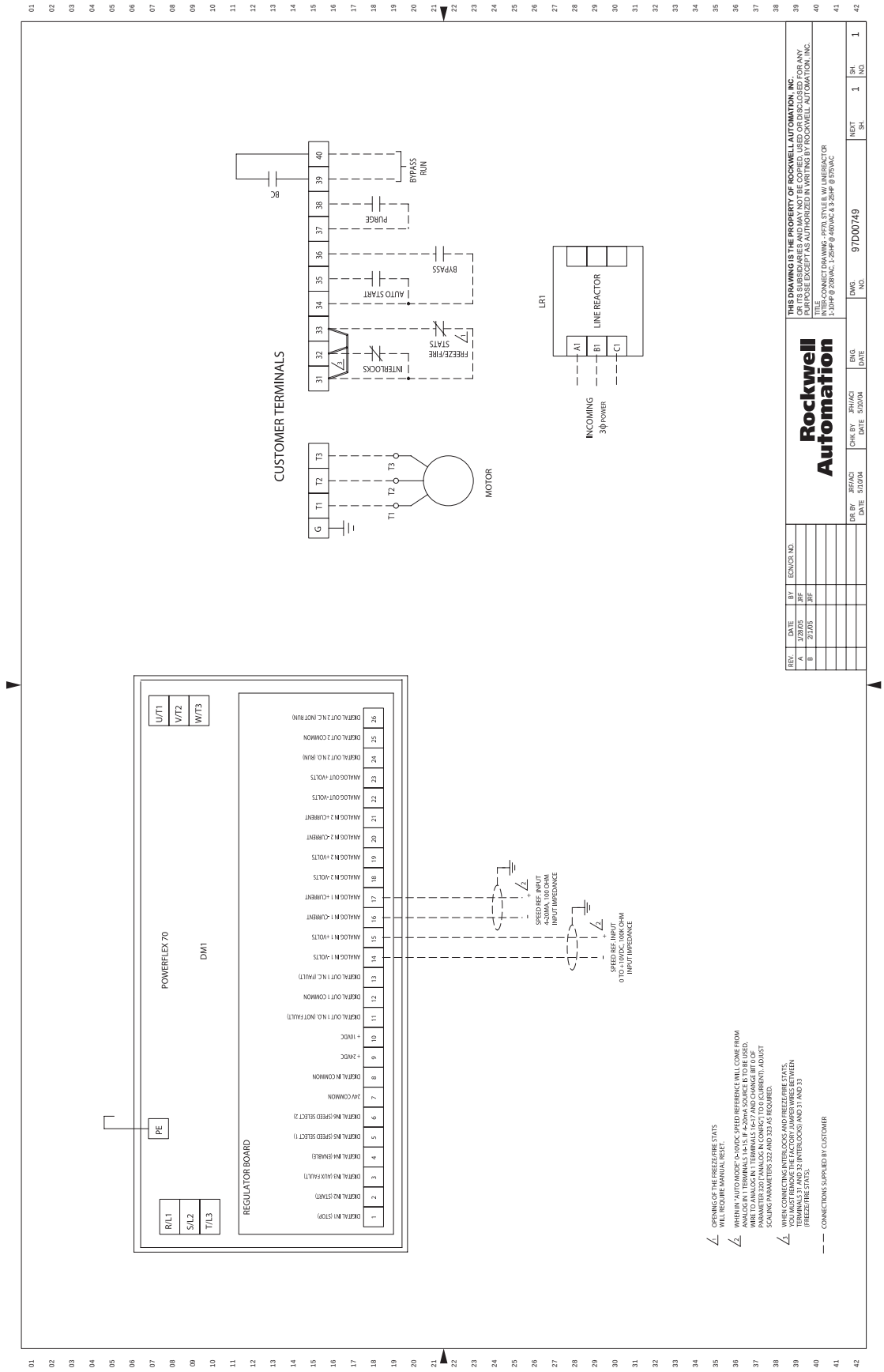


Figure 2.17 1-10 HP, 208V AC, 1-25 HP, 460V AC and 3-25 HP, 600V AC Drives with Line Reactor



Layout Drawings

Figure 2.18 1-10 HP, 208V AC, 1-25 HP, 460V AC and 3-25 HP, 600V AC Drives

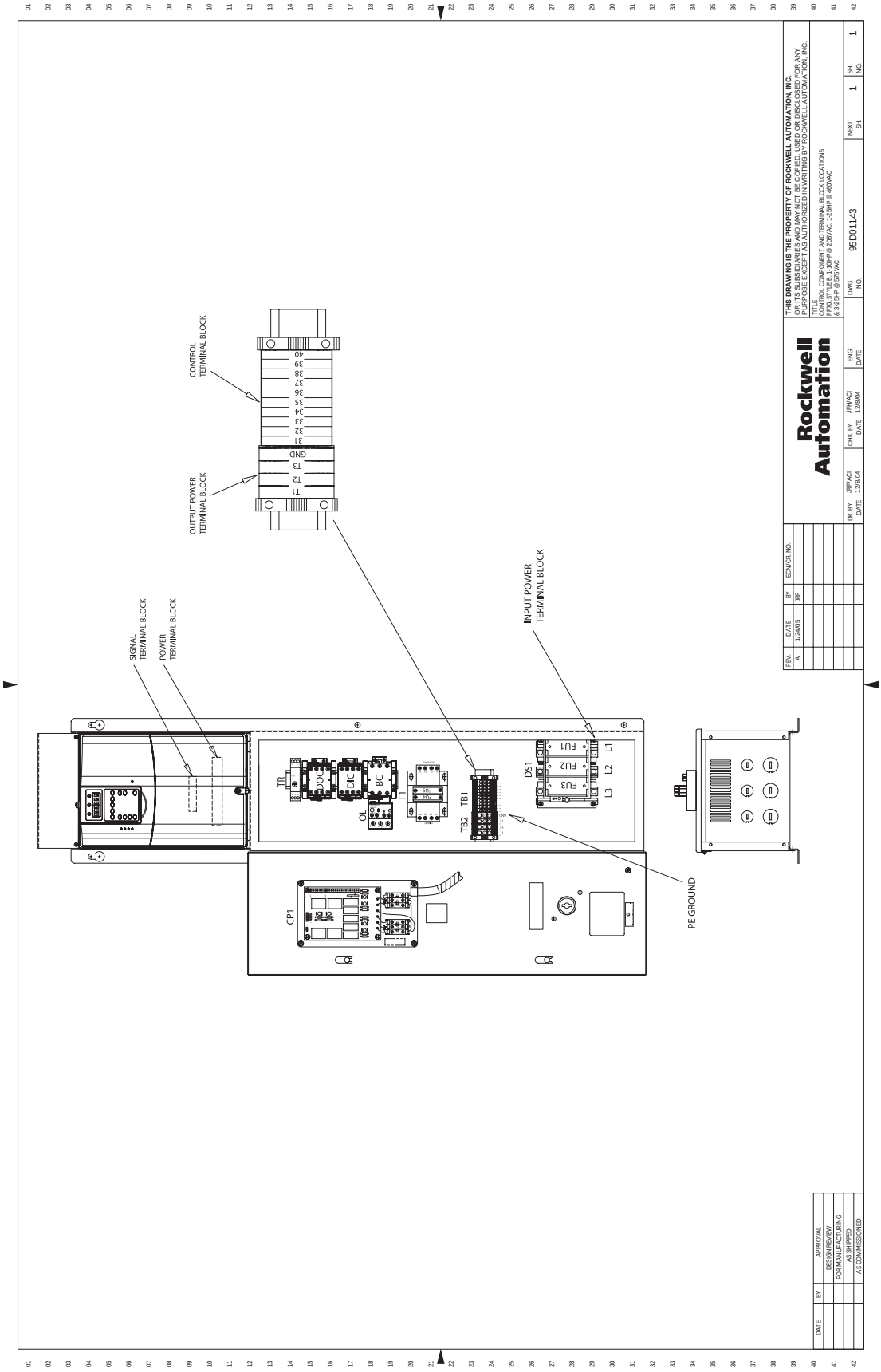


Figure 2.19 15 HP, 208V AC and 30 HP, 460V AC and 600V AC Drives

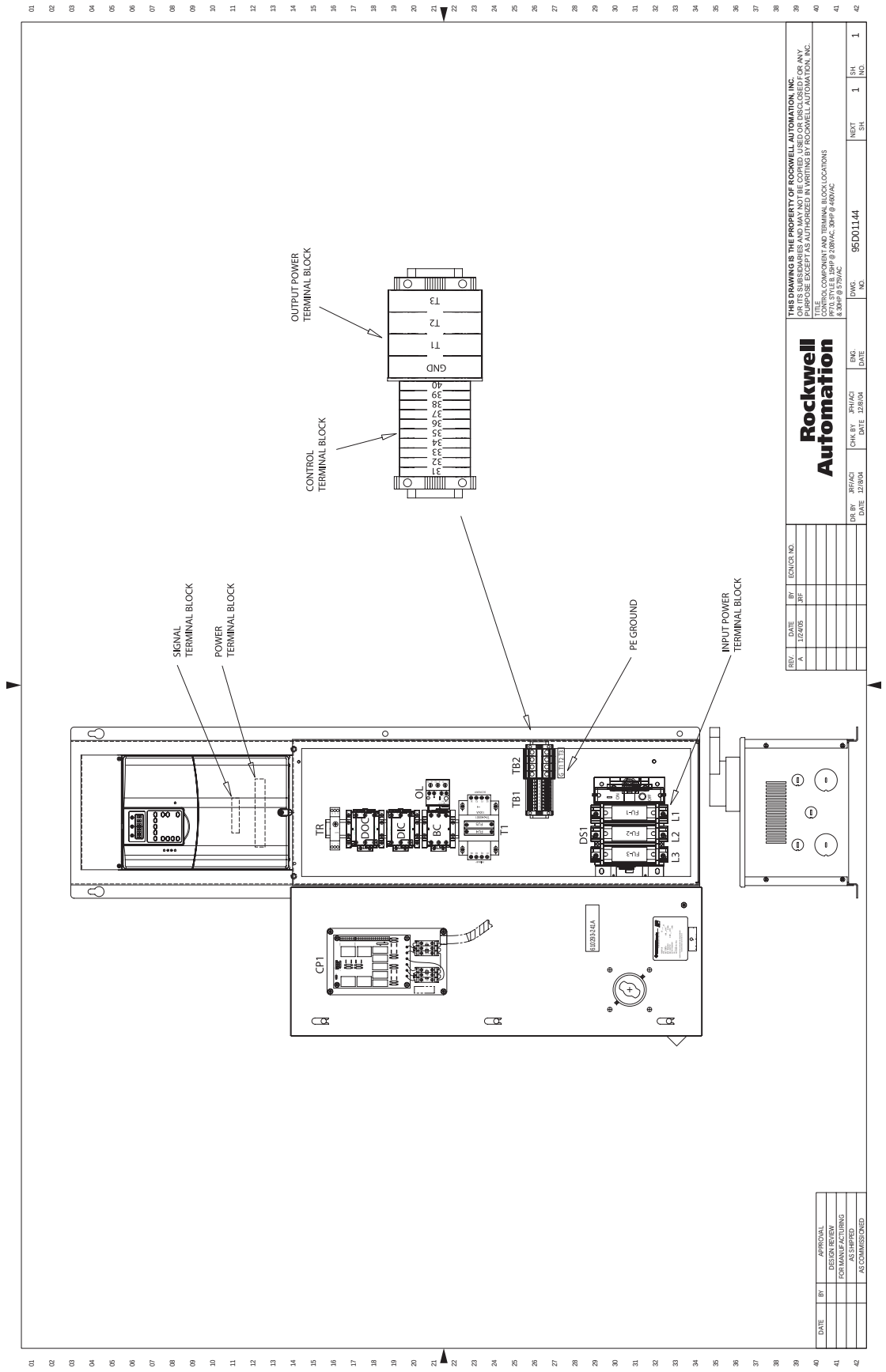


Figure 2.20 40-50 HP, 460V AC and 600V AC Drives

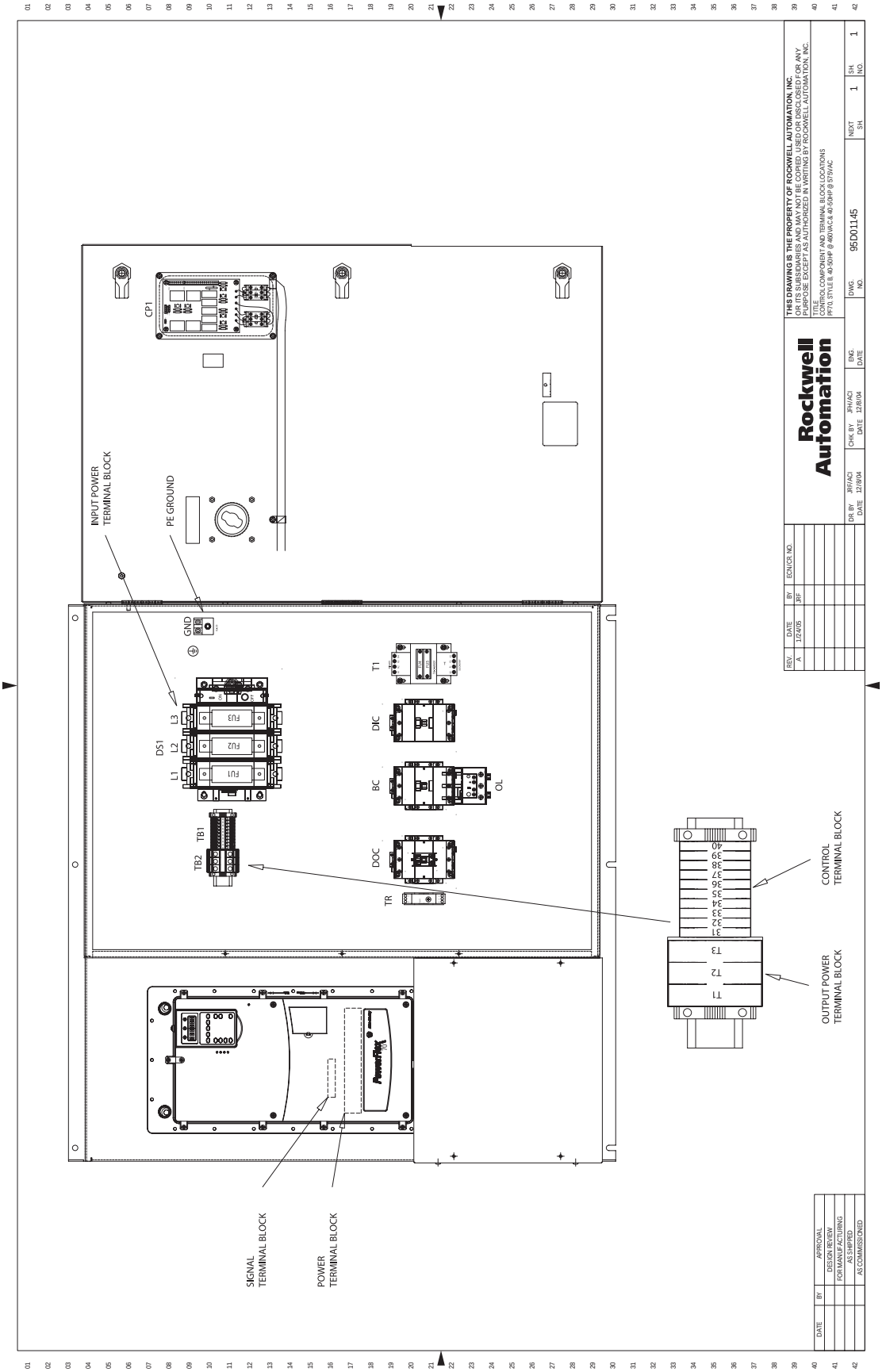


Figure 2.21 60 HP, 460V AC and 600V AC Drives

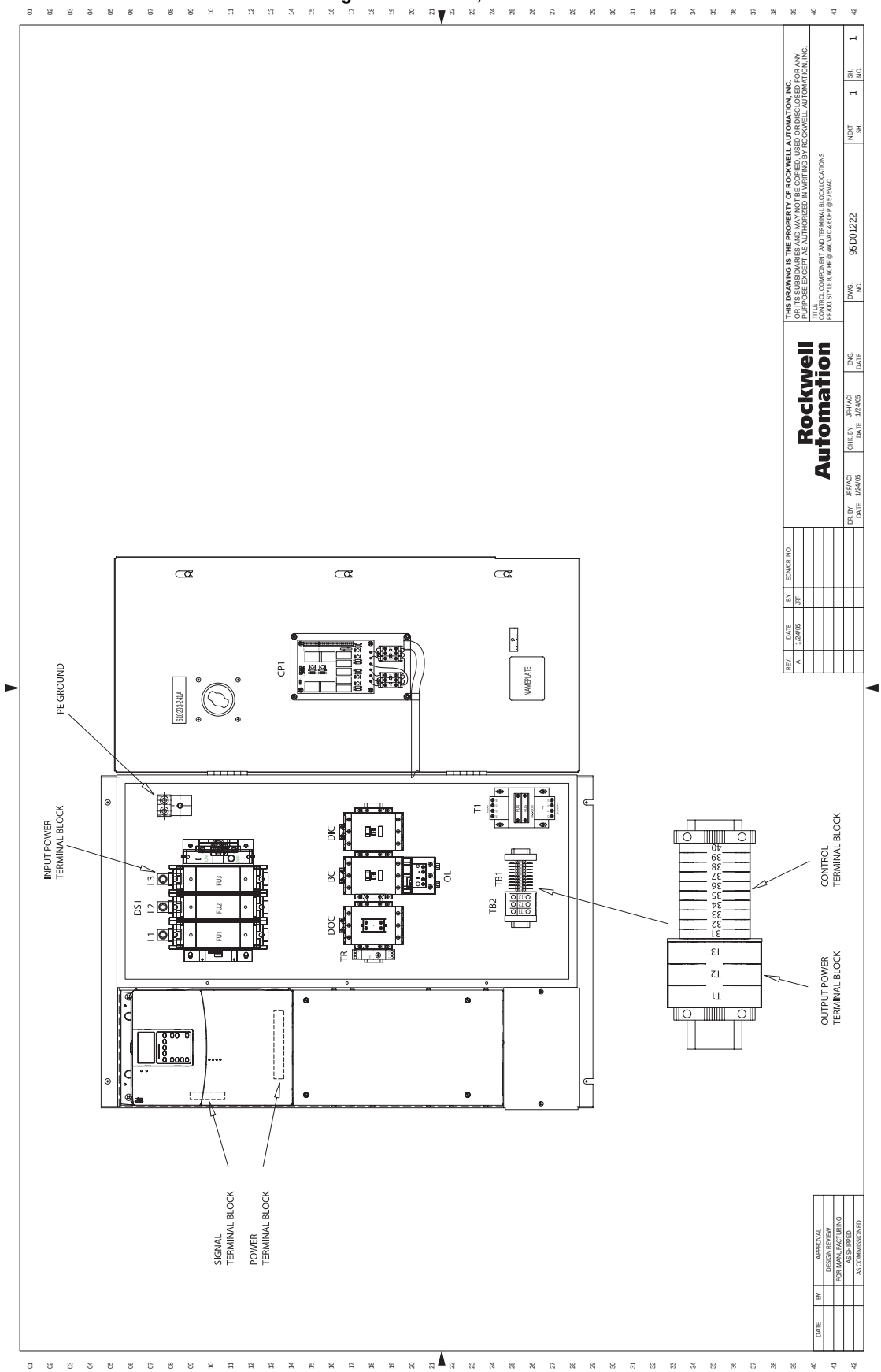


Figure 2.22 75-100 HP, 460V AC and 600V AC Drives

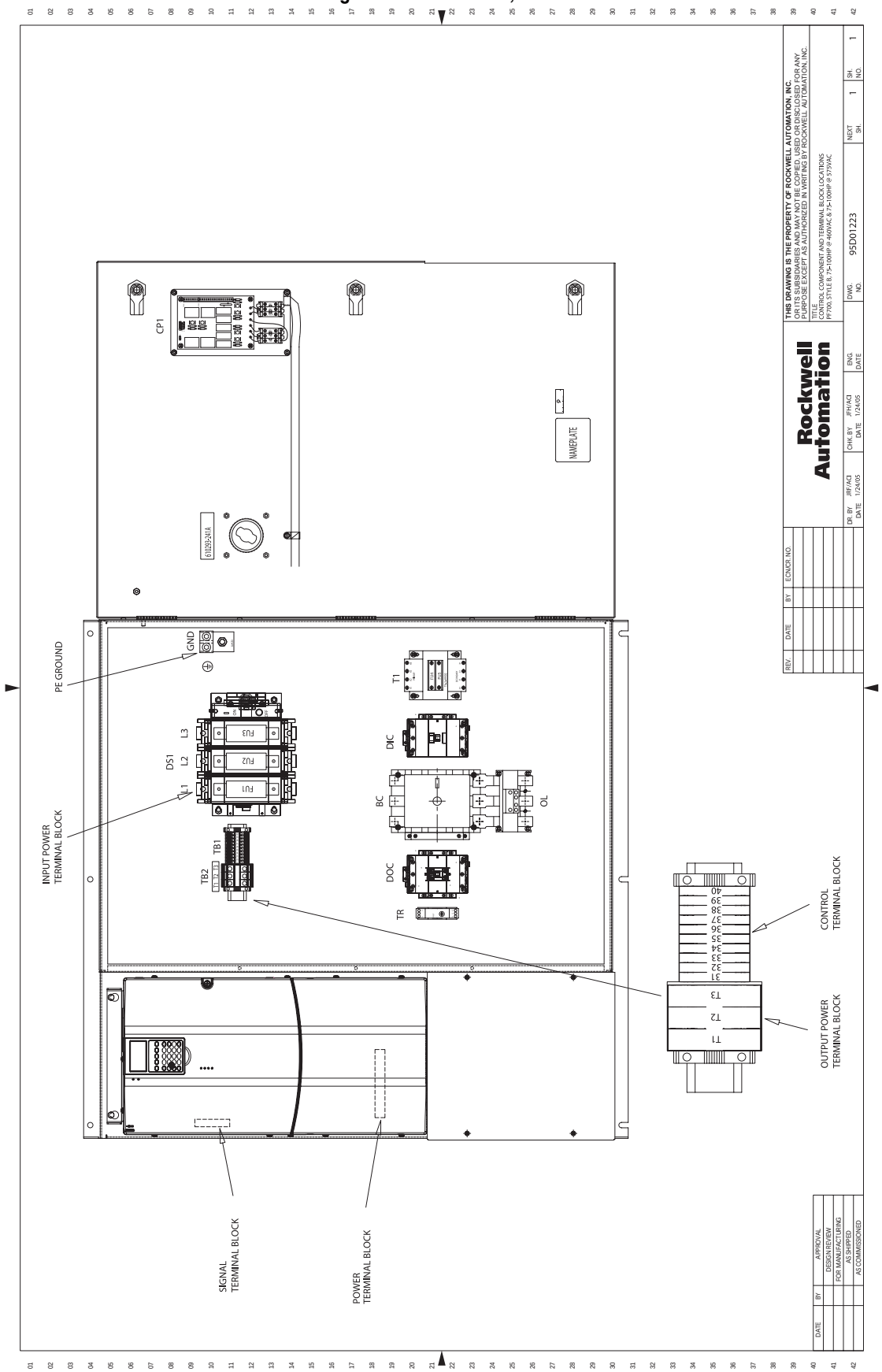


Figure 2.23 125-150 HP, 460V AC and 600V AC Drives

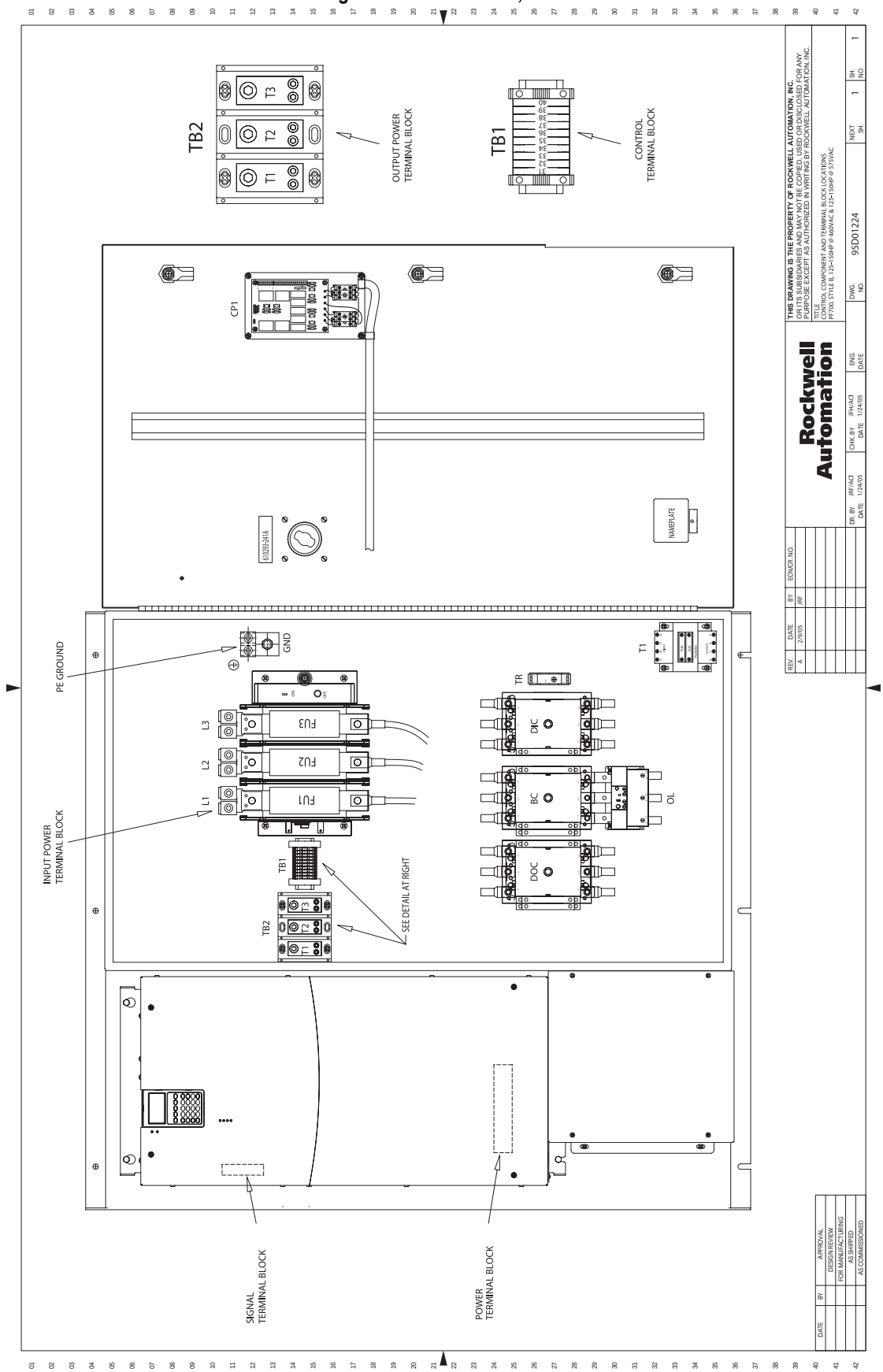


Figure 2.24 1-3 HP, 208V AC, 1-5 HP, 460V AC and 3-5 HP, 60V AC Drives with Line Reactor

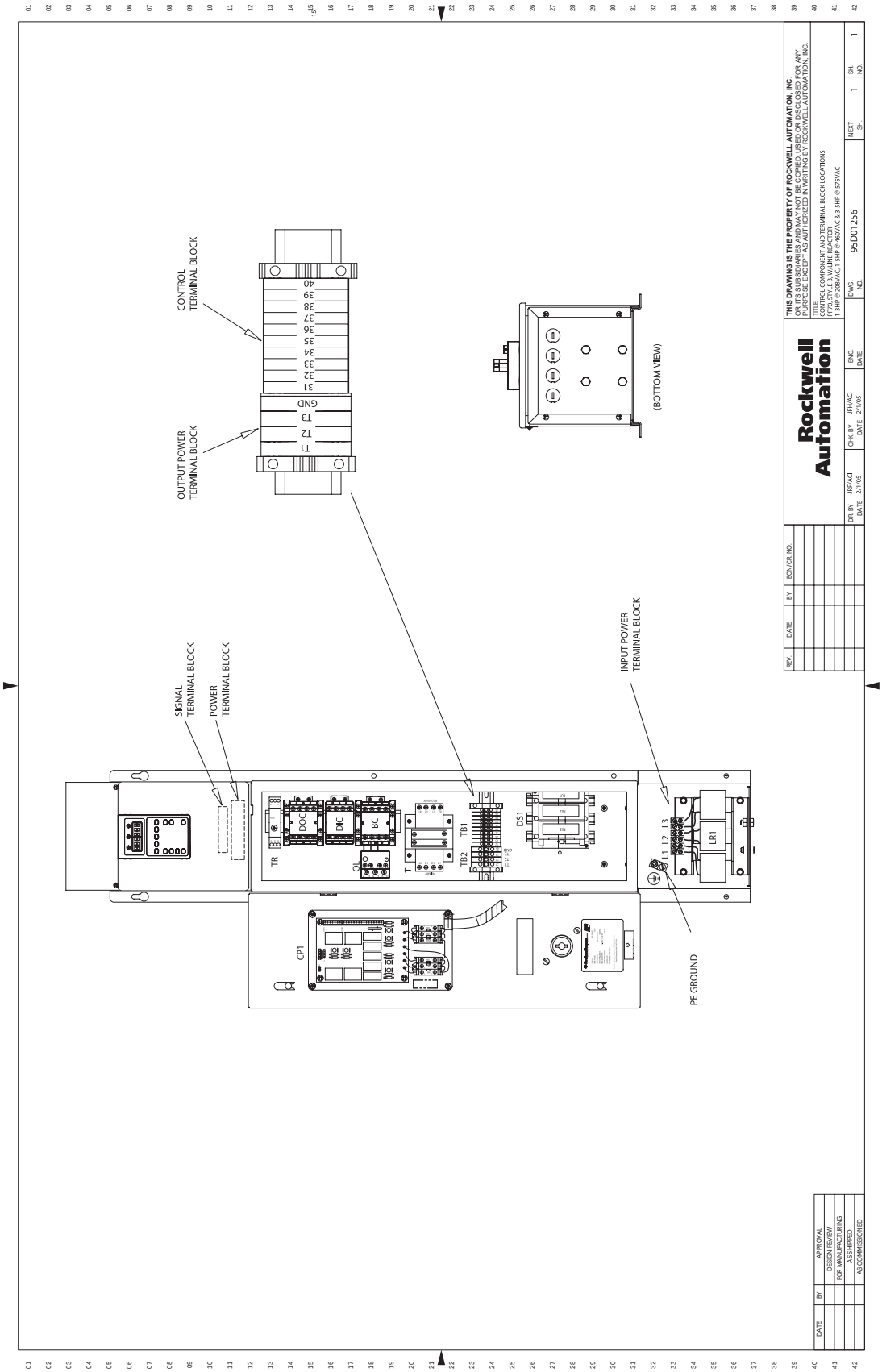


Figure 2.25 5-7.5 HP, 208V AC and 7.5-10 HP, 460V AC and 600V AC Drives with Line Reactor

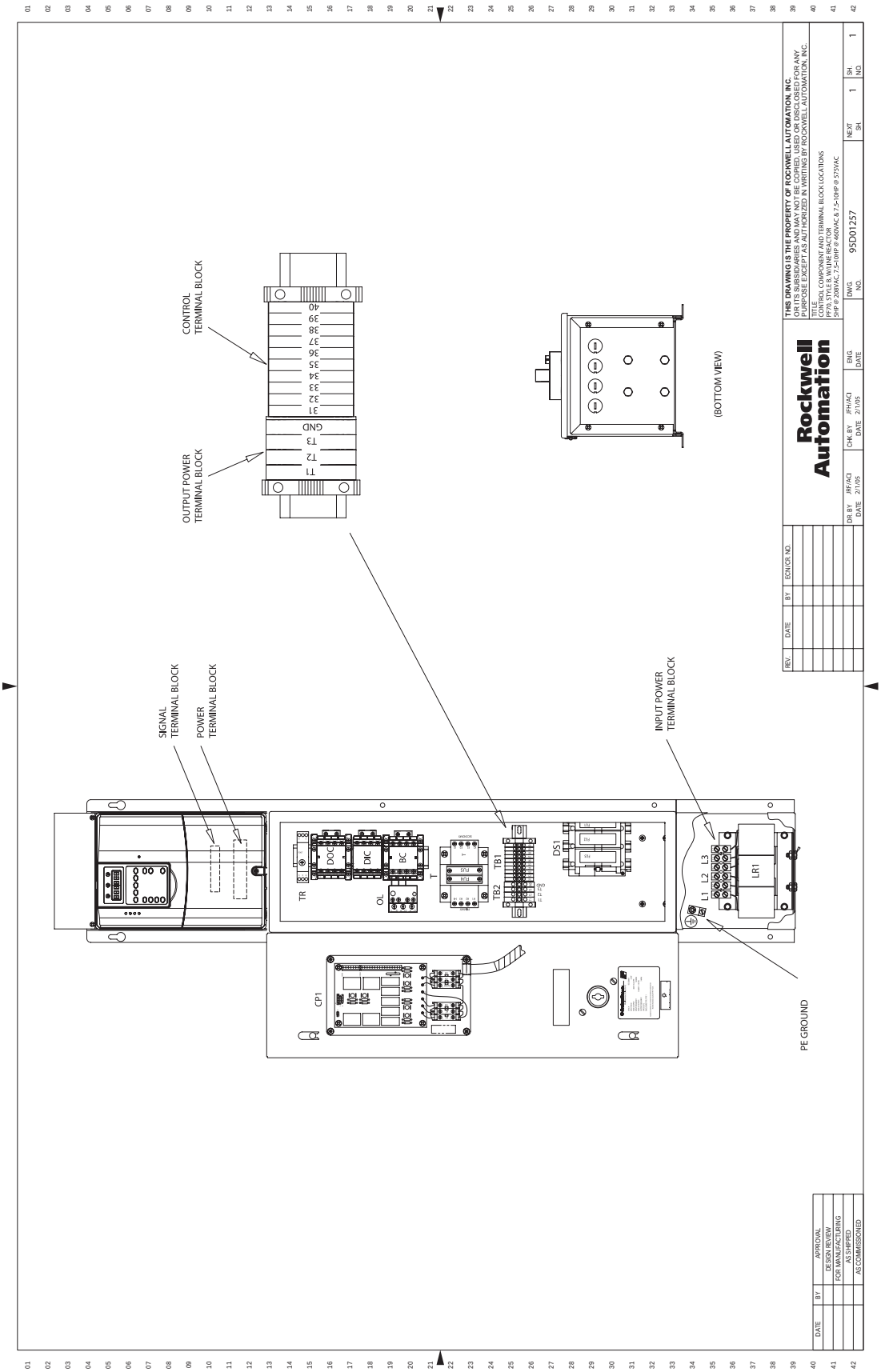
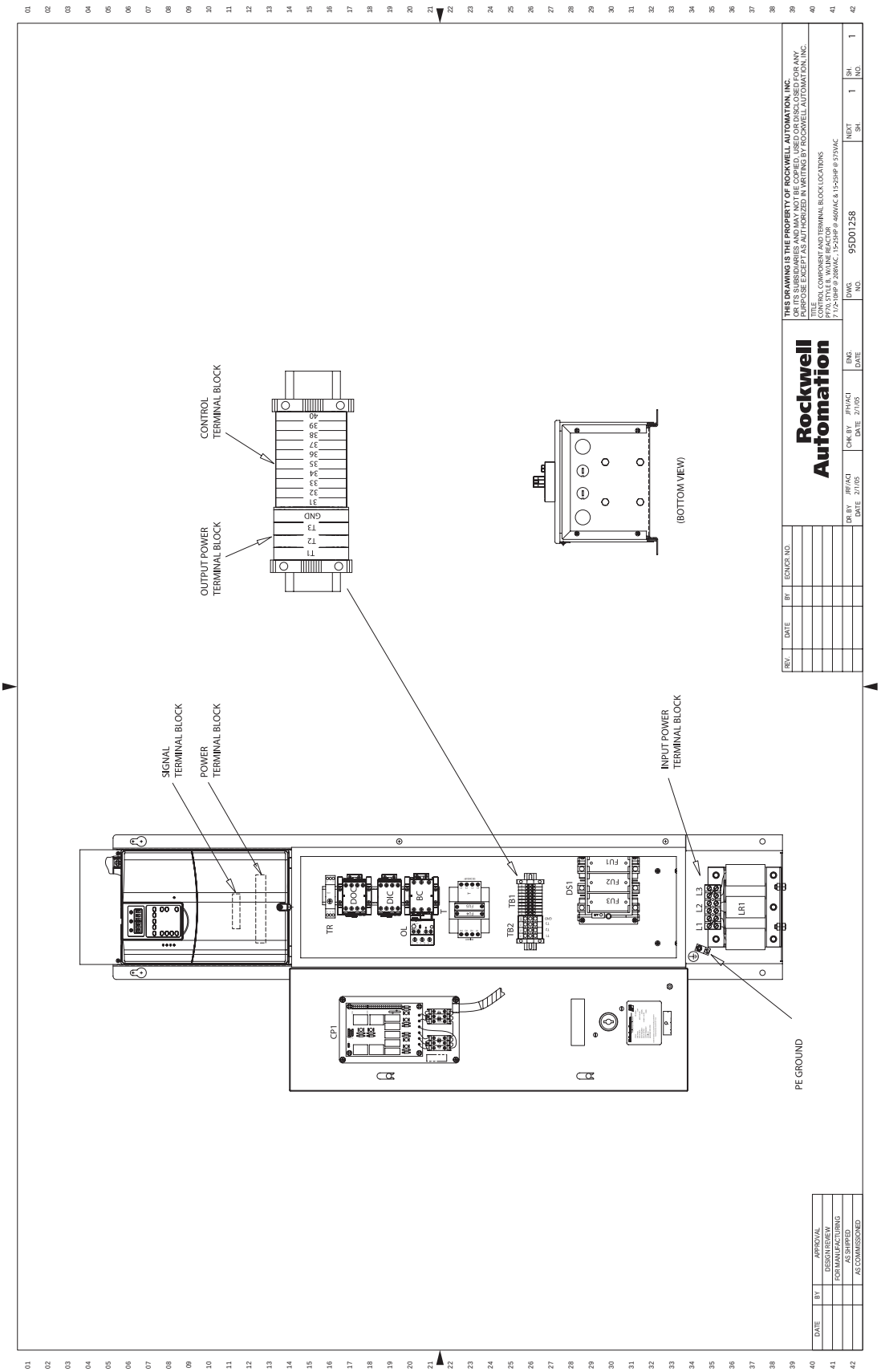


Figure 2.26 10 HP, 208V AC and 15-25 HP, 460V AC and 600V AC Drives with Line Reactor



Outline Drawings

Figure 2.27 1-3 HP, 208V AC, 1-5 HP, 460V AC and 3-5 HP, 600V AC Drives

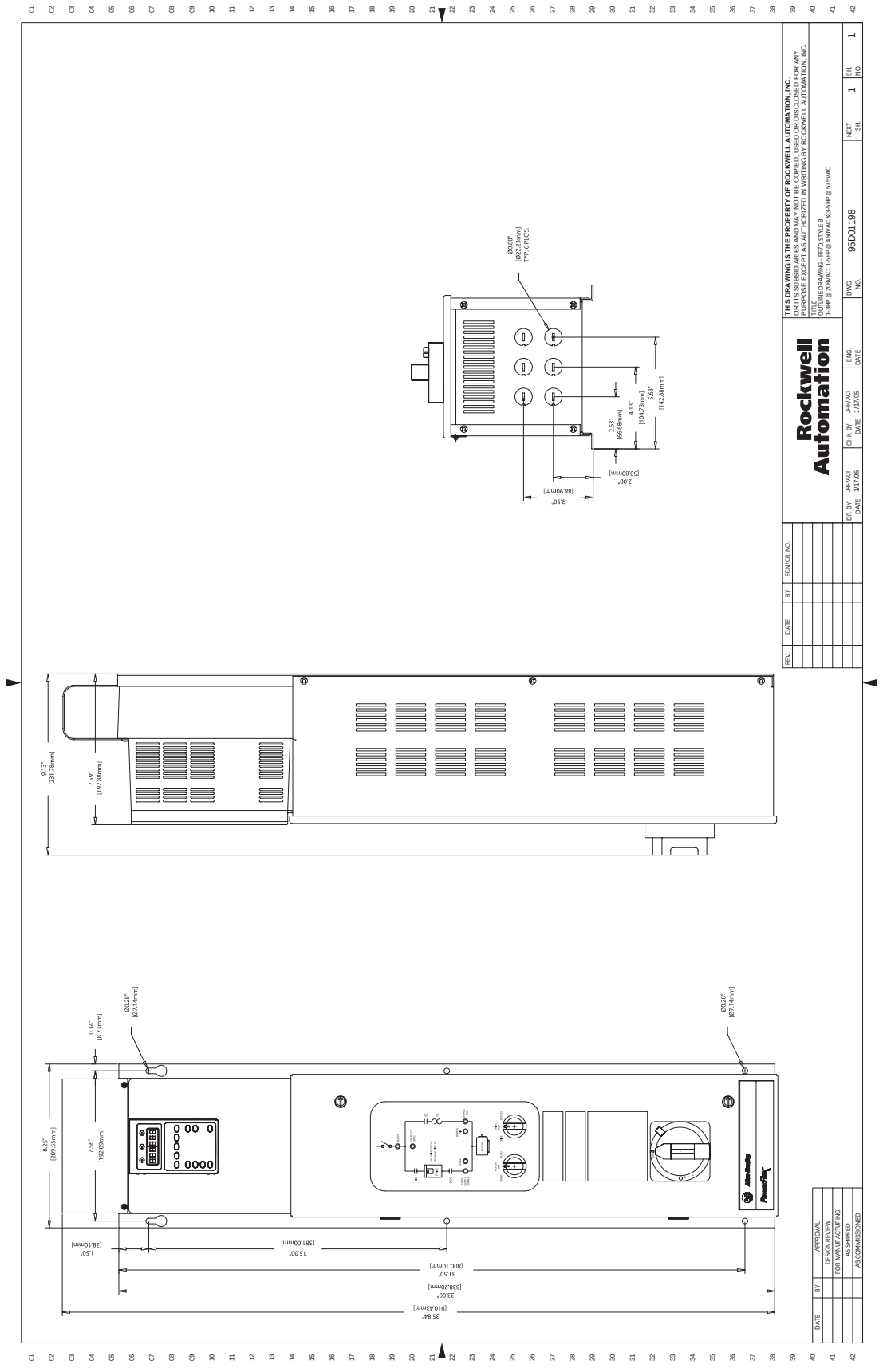


Figure 2.28 5 HP, 208V AC and 7.5-10 HP, 460V AC and 600V AC Drives

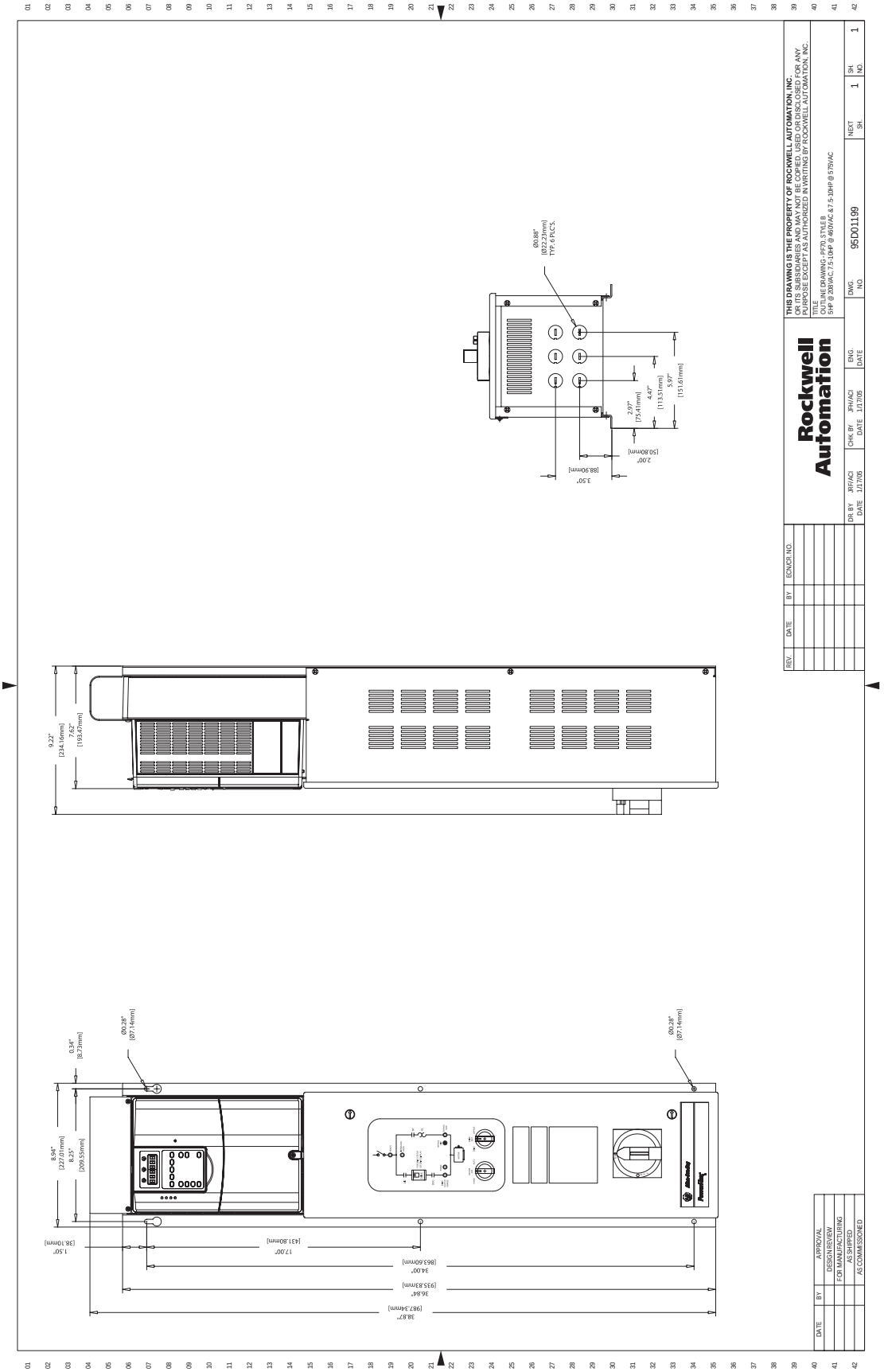


Figure 2.29 7.5-10 HP, 208V AC and 15-25 HP, 460V AC and 600V AC Drives

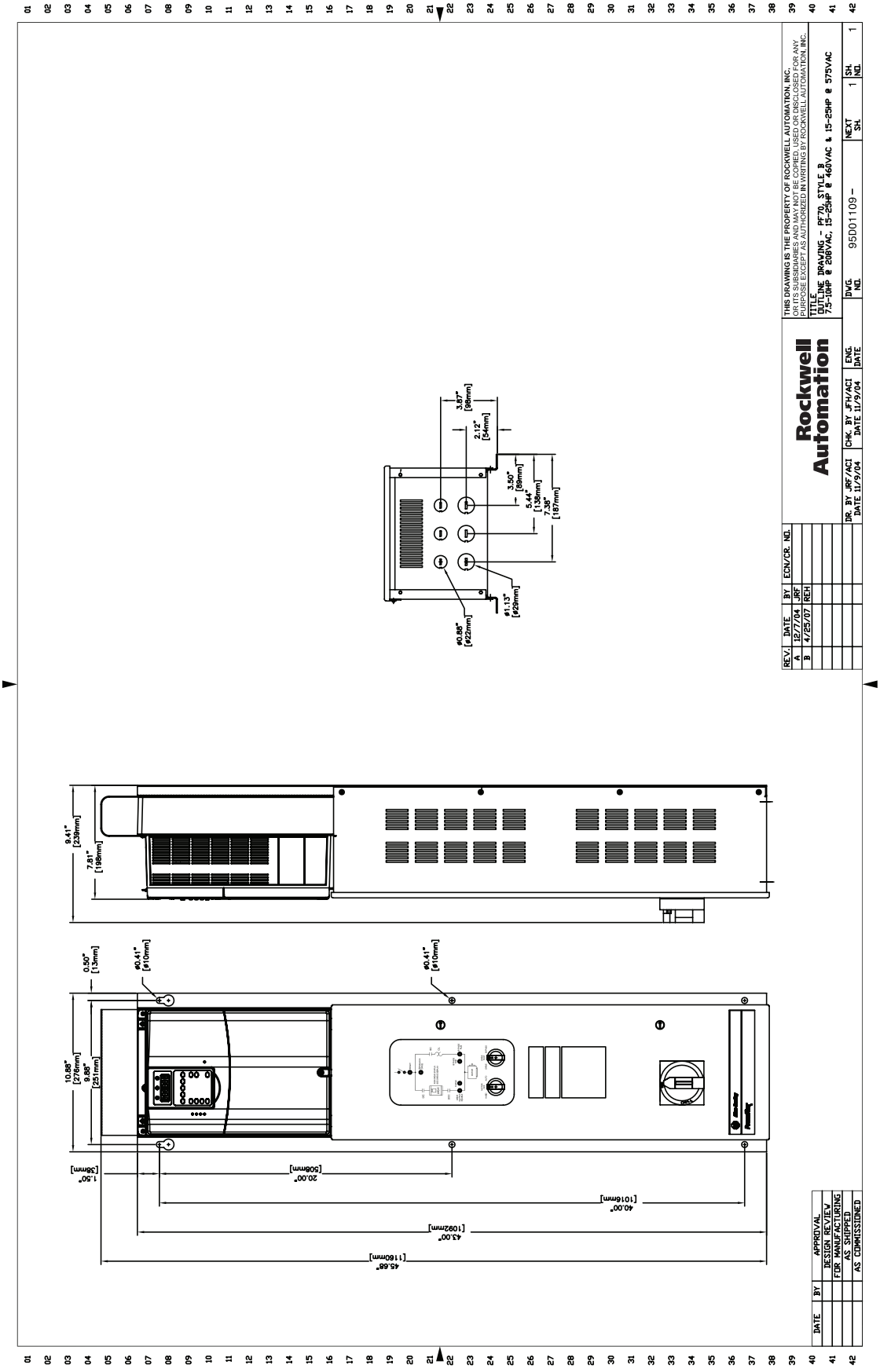


Figure 2.30 15 HP, 208V AC and 30 HP, 460V AC and 600V AC Drives

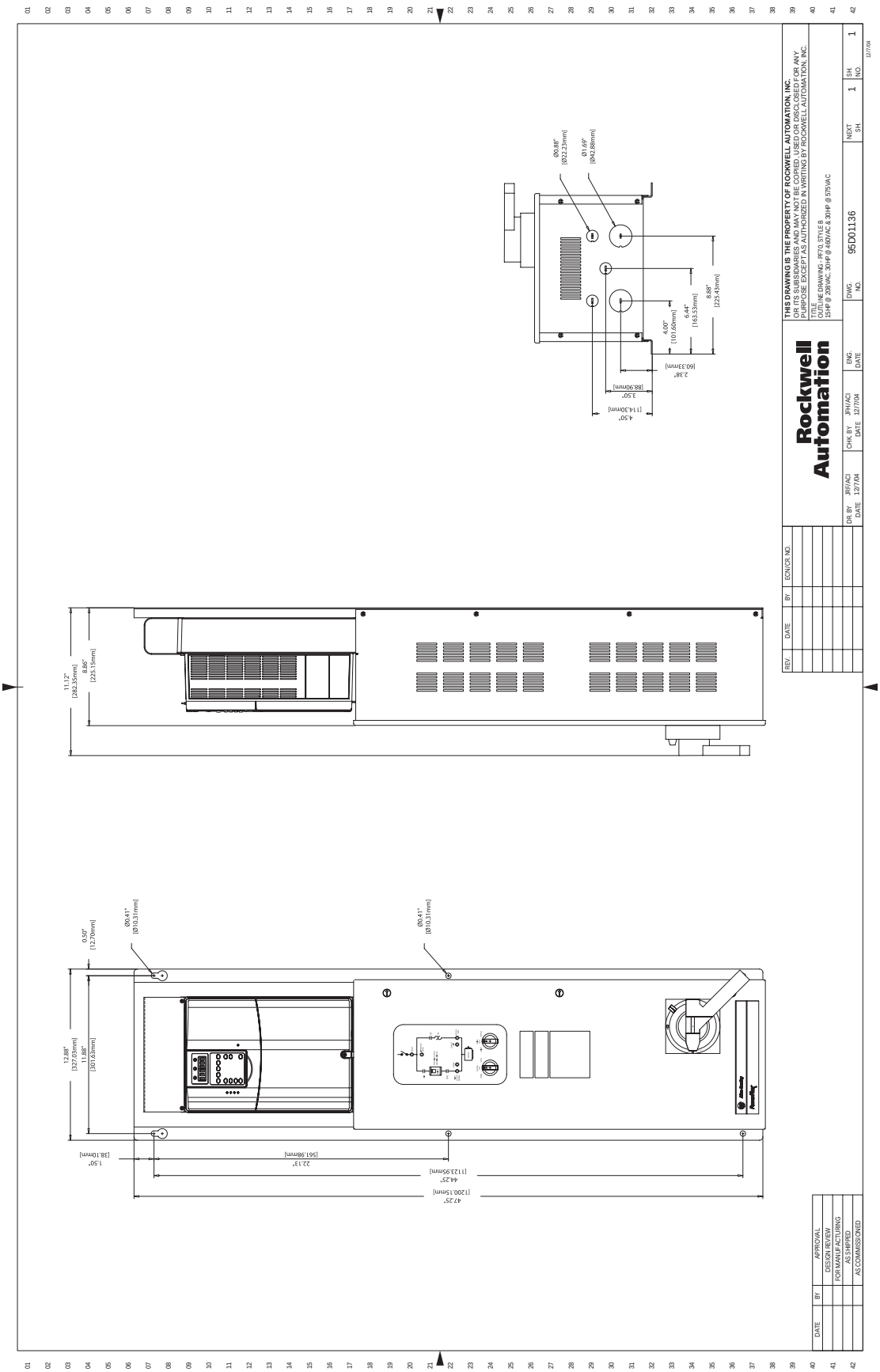


Figure 2.31 40-50 HP, 460V AC and 600V AC Drives

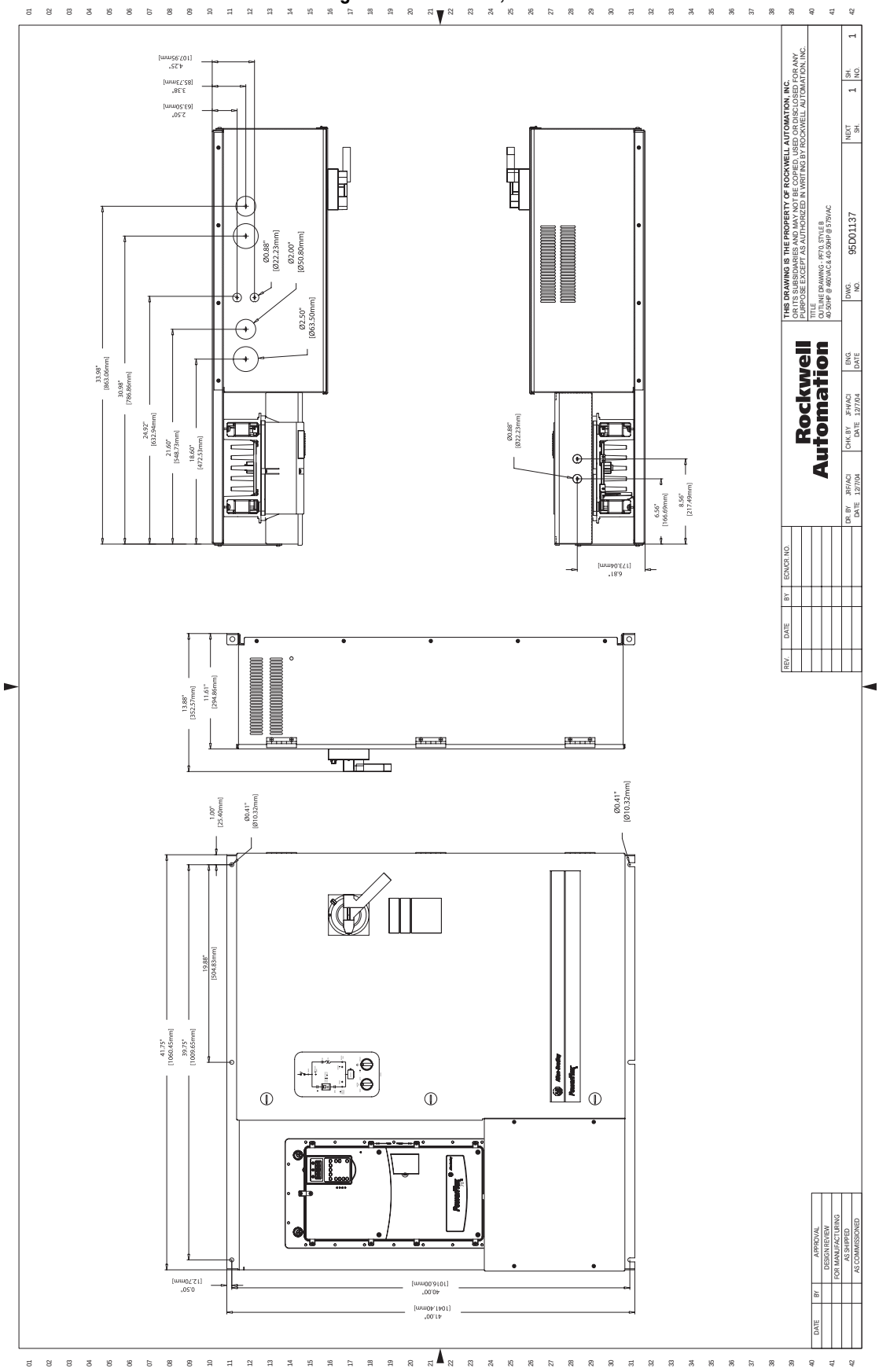


Figure 2.32 60 HP, 460V AC and 600V AC Drives

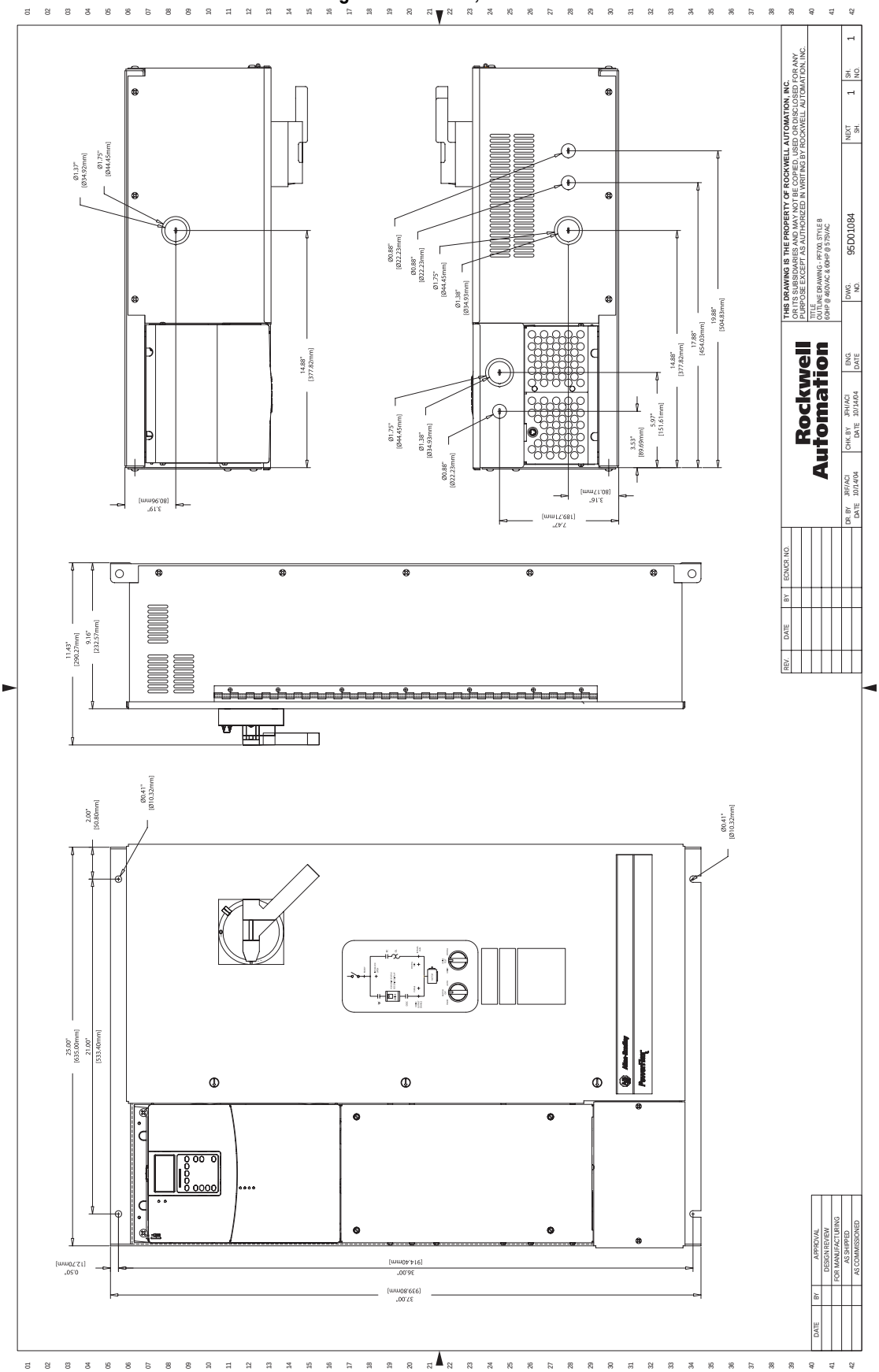


Figure 2.33 75-100 HP, 460V AC and 600V AC Drives

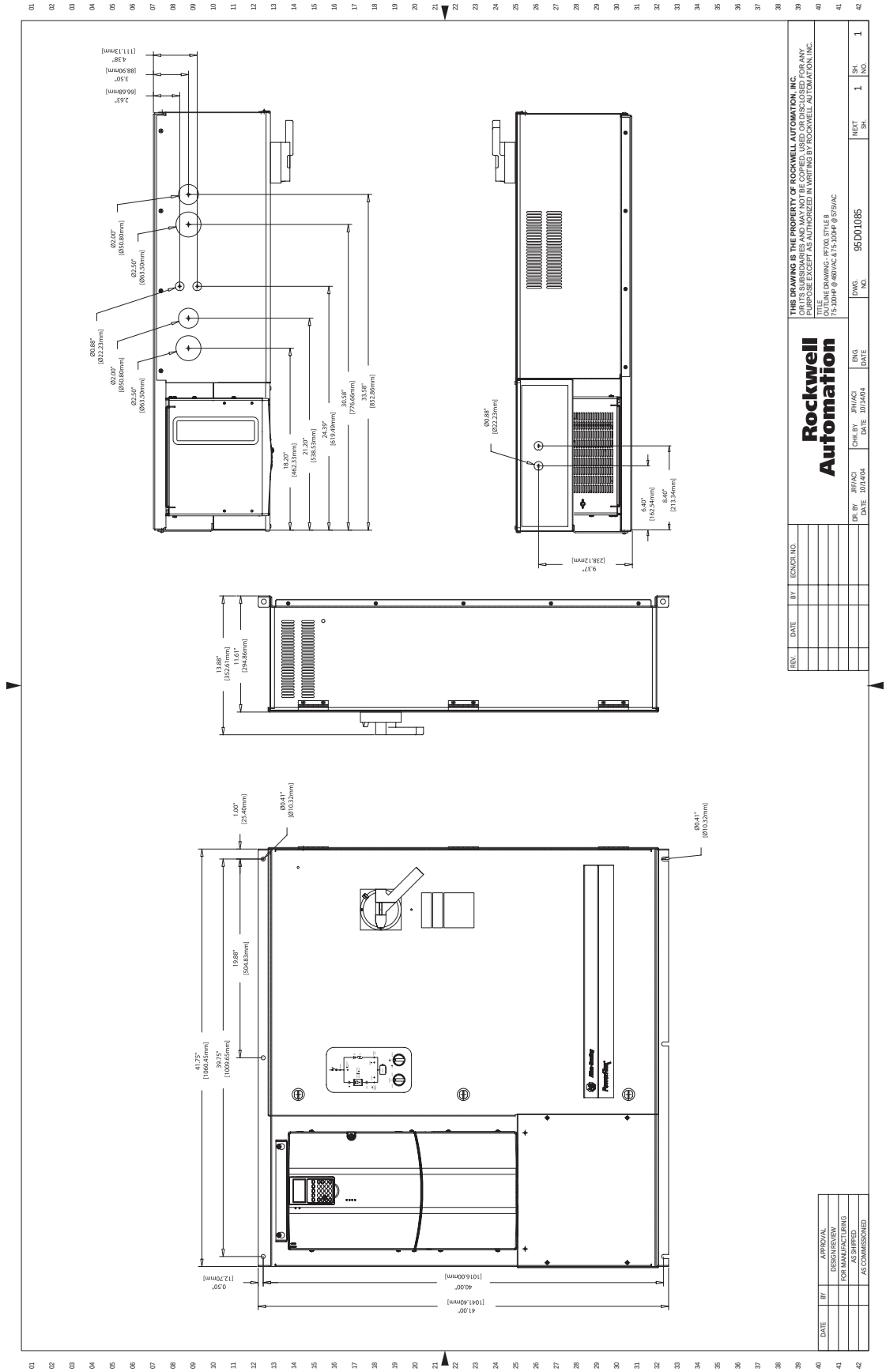


Figure 2.34 125-150 HP, 460V AC and 600V AC Drives

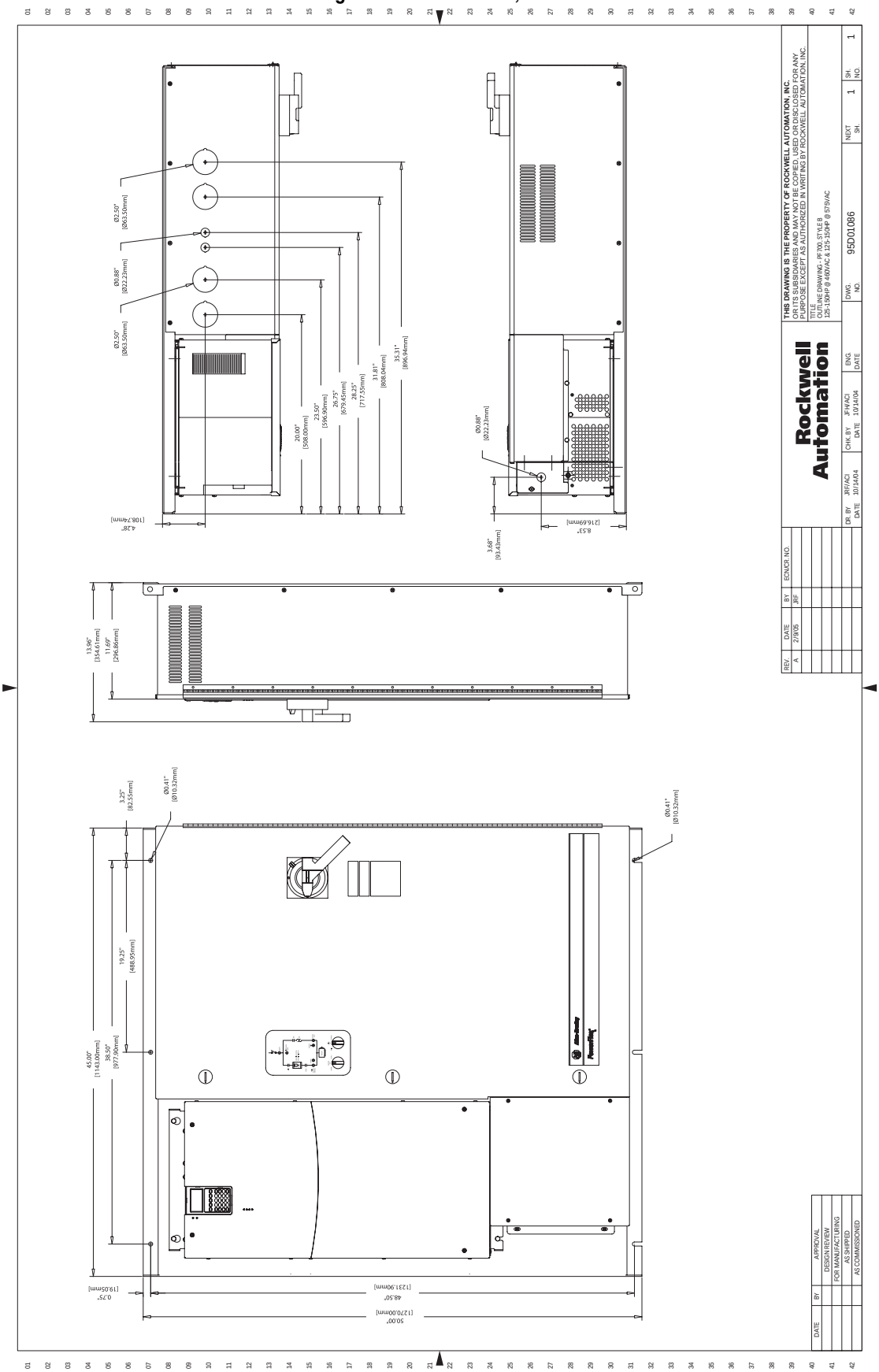


Figure 2.35 1-3 HP, 208V AC, 1-5 HP, 460V AC and 3-5 HP, 600V AC Drives with Line Reactor

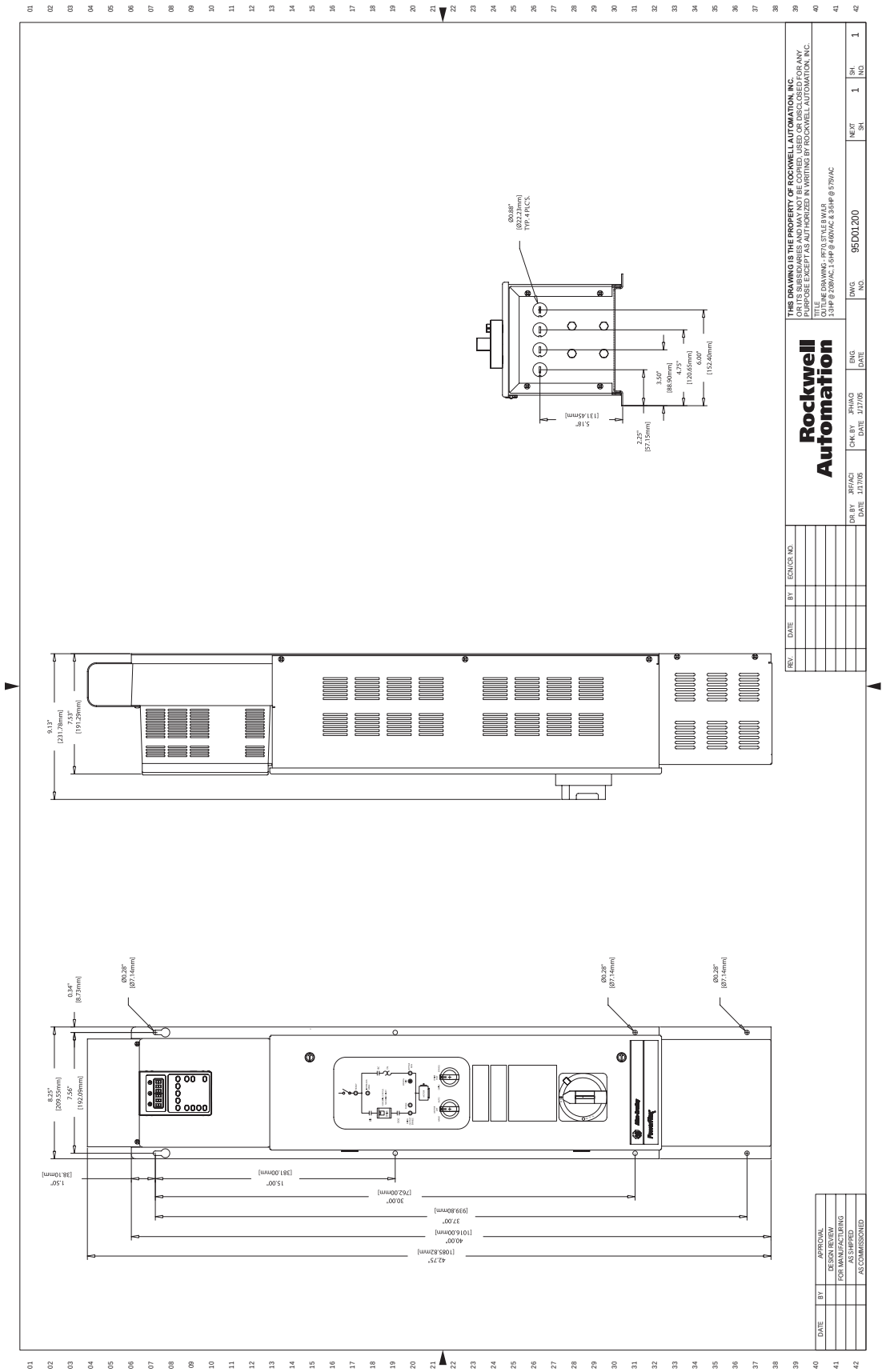


Figure 2.36 5 HP, 208V AC and 7.5-10 HP, 460V AC and 600V AC Drives with Line Reactor

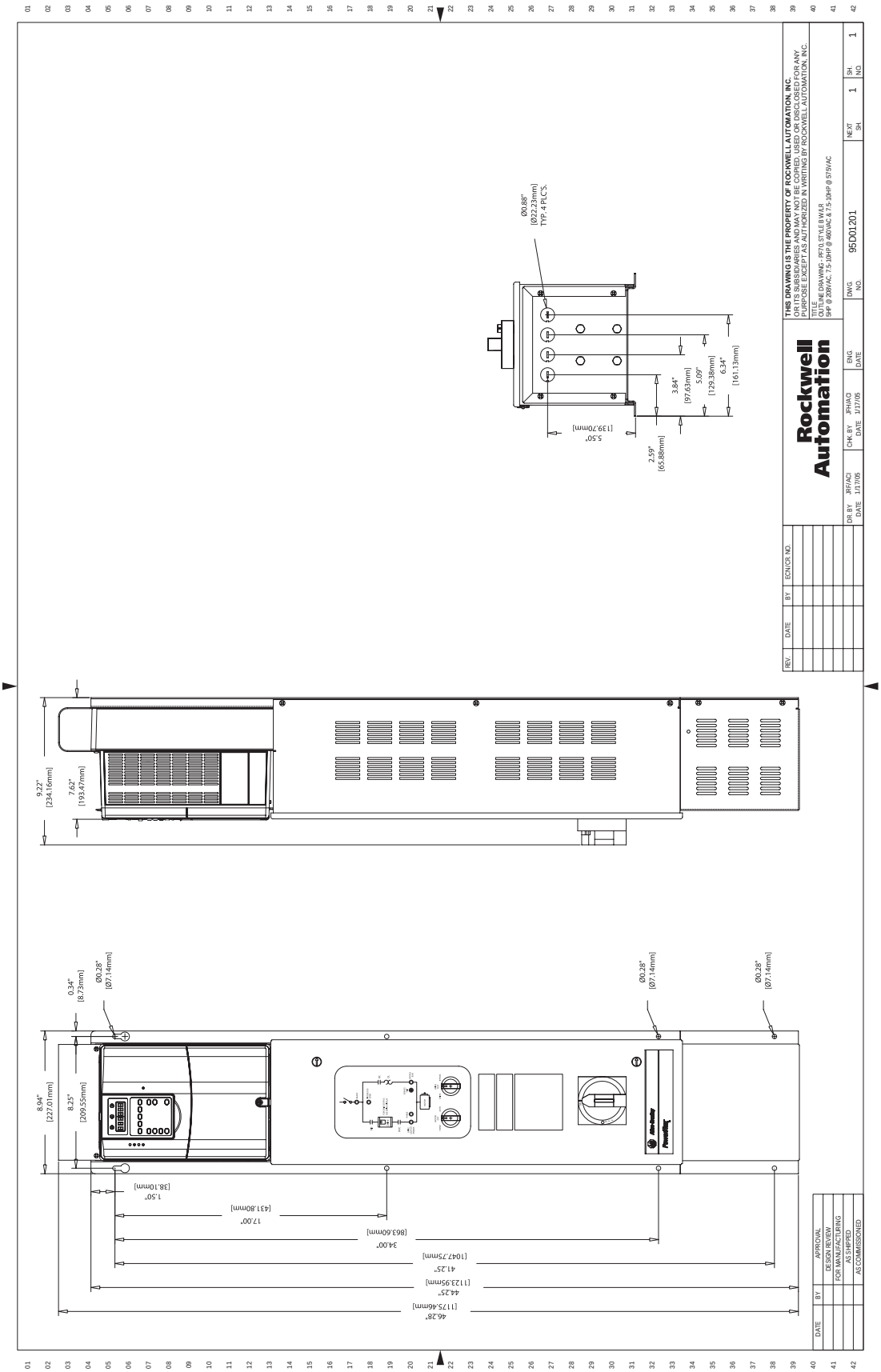
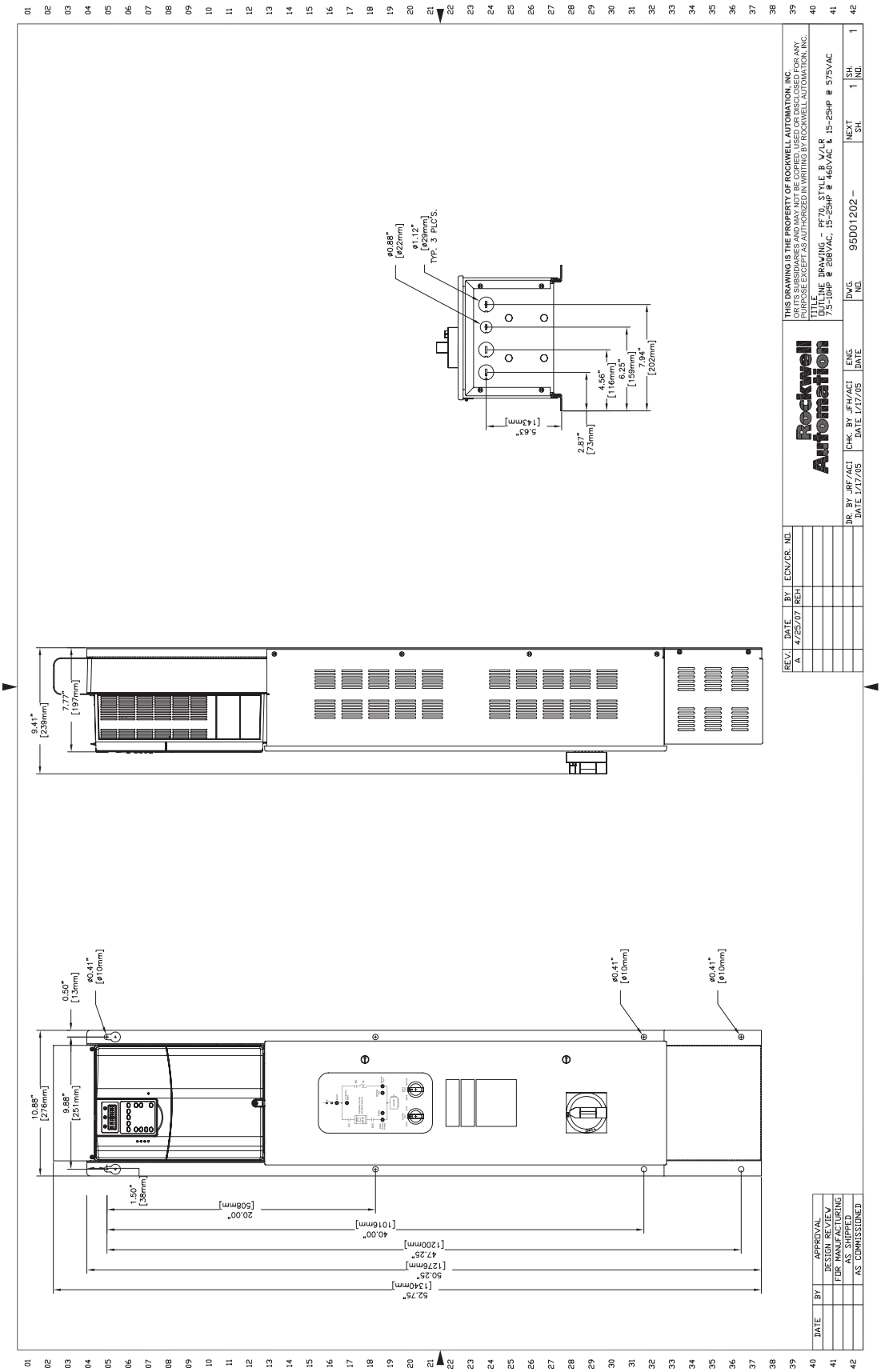


Figure 2.37 7.5-10 HP, 208V AC and 15-25 HP, 460V AC and 600V AC Drives with Line Reactor



Notes:

3 Contactor Basic Bypass with Disconnect Package *(Style C)*

Chapter Objectives

This chapter describes the features and operation for the 3 Contactor Basic Bypass with Disconnect Package (Style C).

Hardware Overview

The 3 Contactor Basic Bypass with Disconnect Package (Style C) allows the motor be manually transferred from the drive output to the AC line, or from the AC line to the drive. Remote or automatic bypass operation is not provided with this option. A single door-mounted 4-position selector switch determines the state of operation. Additionally, a user-powered “Drive/ Bypass” enable relay is provided for remote shut down of the unit.

Main Disconnect Switch (DS1 or MP1)

Allen-Bradley Bulletin 140M Motor Protectors are provided for all ratings through 60 HP. The Bulletin 140M provides short circuit and overload protection. A lockable door-mounted operator handle is provided. The door-mounted handle accepts up to three (3) padlocks.

For ratings 75 HP and larger, an Allen-Bradley Bulletin 194R fused disconnect switch with lockable rotary-mounted operator handle is provided. The disconnect switch is designed to meet disconnect switch requirements for branch circuit protection. The door-mounted handle accepts up to three (3) padlocks.

Main Fuses (FU1-FU3)

ATTENTION: Most codes require that upstream branch circuit protection be provided to protect input power wiring. Install the fuses recommended in Table 3.A. Do not exceed the fuse ratings. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

For ratings 55 kW (75 HP) and larger, input line branch circuit protection fuses must be used to protect the input power lines. If input fuses are not provided with your drive, recommended fuse values are shown in Table 3.A. The input fuse ratings listed in Table 3.A are applicable for one drive per branch circuit. No other load may be applied to that fused circuit.

The recommended fuse type for all PowerFlex Drives for Fan and Pump Applications is UL Class J, 600V.

Table 3.A Fuse Recommendations

Drive Rating			Fuse Rating
Input Voltage	**kW**	**HP**	**Amps**
460V AC – 3-Phase	55	75	175
	75	100	200

Contactors (DIC, DOC, BC)

Allen-Bradley Bulletin 100 Contactors are provided for all ratings. The contactors function as follows:

- Drive Input Contactor (DOC) opens and closes input to the drive.
- Drive Output Contactor (DOC) opens and closes the connection between the drive and the motor.
- Bypass Contactor (BC) opens and closes the connection to the line-start the motor.

Motor Overload Relay (OL)

For units supplied with a fused disconnect switch, a motor overload relay is supplied. The motor overload relay is set at the factory to 100% of the drive output current. In many cases, this setting matches the motor full load amps (FLA). However, before starting the drive, you should check the setting on the motor overload relay to assure that it is set properly for your motor.

- For motors with a service factor less than 1.15, set the motor overload relays to 0.9x motor FLA.
- For motors with a service factor equal to, or greater than 1.15, set the motor overload relay to the motor FLA.

Figure 3.1 Setting Motor Overload

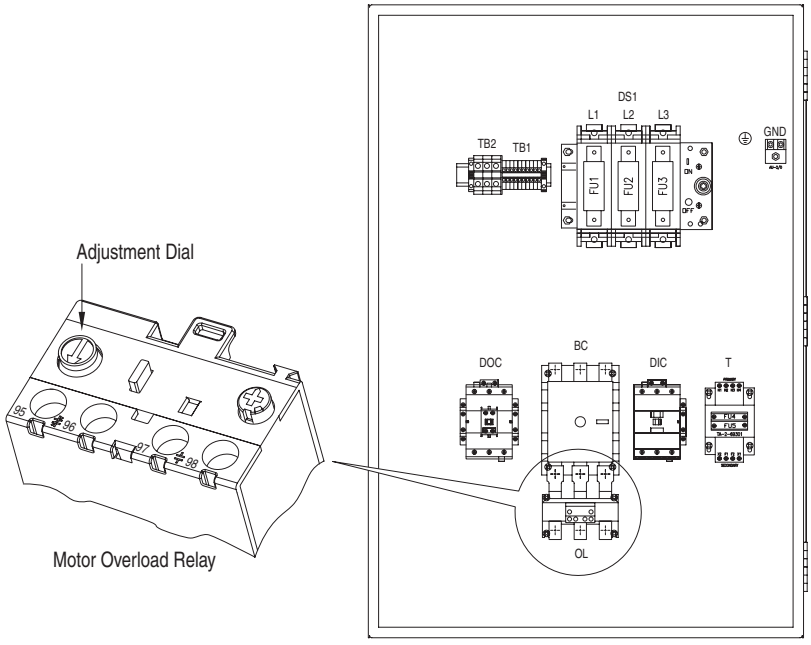


Table 3.B Overload Ratings

Drive Rating			Overload Rating	
Input Voltage	**kW**	**HP**	**Trip Class**	**Adjustment Range (Amps)**
460V AC – 3-Phase	0.75	1.0	10	1.6 - 2.5
	1.5	2.0	10	2.5 - 4.0
	2.2	3.0	10	4.0 - 6.3
	4.0	5.0	10	6.3 - 10
	5.5	7.5	10	10 - 16
	7.5	10	10	10 - 16
	11	15	10	18 - 25
	15	20	10	23 - 32
	18.5	25	10	32 - 45
	22	30	10	25 - 40
	30	40	10	40 - 63
	37	50	10	63 - 90
	45	60	10	63 - 90
	55	75	20	57 - 180
	75	100	20	57 - 180

Drive/Bypass Relay (CR)

A user-powered (24V AC) “Drive/Bypass” enable relay is provided for remote shut down of the unit. This relay can be used to turn off the motor whether the selector switch is in Drive or Bypass positions. It can also be used for an safety-input interlocks (freeze/fire stats, smoke purge, etc.). To utilize this function, factory-installed jumpers must be removed and Normally Closed contacts must be field wired to the appropriate input terminals.

Electrical Installation

Input Power Wiring

Refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about input power wiring recommendations and selection.

ATTENTION: Protect the contents of the options cabinet from metal chips and other debris while drilling the conduit openings. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

ATTENTION: Do not route signal and control wiring with power wiring in the same conduit. This can cause interference with drive operation. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

To connect AC input power to the drive package:

❑ **1.** Select the proper wire size according to NEC and all applicable local codes and standards. Note that you must punch openings in the Option Cabinet of the desired conduit size, following NEC and all applicable local codes and standards. Power terminal block specifications are listed in Table 3.C.

❑ **2.** Connect the three-phase AC input power leads (three-wire VAC) to the appropriate terminals. For ratings provided with a Motor Protector, connect the AC input power leads to terminals L1, L2, L3 on the Input Power Terminal Block. For ratings provided with a fused disconnect, connect the AC input power leads to terminals L1, L2, L3 on the fused disconnect switch.

❑ **3.** Tighten the AC input terminal power terminals to the proper torque according to drive type as shown in Table 3.C.

Table 3.C AC Input Power Terminal Block Specification

Voltage Rating	kW	HP	Maximum Wire Size(1)	Minimum Wire Size	Recommended Torque
460V AC	0.75-7.5	1-10	8.4 mm^2 (8 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	11-18.5	15-25	16.0 mm^2 (4 AWG)	2.5 mm^2 (14 AWG)	4.0 N-m (35 lb.-in.)
	22-37	30-50	33.6 mm^2 (2 AWG)	2.5 mm^2 (14 AWG)	17.5 N-m (155 lb.-in.)
	45-75	60-100	(250 MCM)	10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

Output Power Wiring

Refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about output power wiring recommendations and selection.

ATTENTION: Unused wires in conduit must be grounded at both ends to avoid a possible shock hazard caused by induced voltages. Also, if a drive sharing a conduit is being serviced or installed, all drives using this conduit should be disabled to eliminate the possible shock hazard from cross-coupled motor leads. Failure to observe these precautions could result in bodily injury.

ATTENTION: Do not route signal and control wiring with power wiring in the same conduit. This can cause interference with drive operation. Failure to observe this precaution could result in damage to, or destruction of, the equipment.

To connect AC output power wiring from the drive to the motor:

❑ **1.** Wire the three-phase AC output power motor leads by routing them according to the drive option type. Note that you must punch openings in the option cabinet of the desired conduit size, following NEC and all applicable local codes and standards. Output power terminal block specifications are listed in Table 3.D.

Do not route more than three sets of motor leads through a single conduit. This will minimize cross-talk that could reduce the effectiveness of noise reduction methods. If more than three drive/motor connections per conduit are required, shielded cable must be used. If possible, each conduit should contain only one set of motor leads.

❑ **2.** Connect the three-phase AC output power motor leads to terminals T1, T2, T3 on the output power terminal block located inside the Option Cabinet.

❑ **3.** Tighten the three-phase AC output power terminals to the proper torque according to drive type as shown in Table 3.D.

Table 3.D Output Power Terminal Block Specification

Voltage Rating	kW	HP	Maximum Wire Size[1]	Minimum Wire Size	Recommended Torque
460V AC	0.75-5.5	1-7.5	8.4 mm^2 (8 AWG)	0.5 mm^2 (22 AWG)	1.5 N-m (13 lb.-in.)
	7.5-22	10-30	16.0 mm^2 (4 AWG)	2.5 mm^2 (14 AWG)	2.3 N-m (20 lb.-in.)
	30-55	40-75	35.0 mm^2 (1/0 AWG)	2.5 mm^2 (14 AWG)	2.5 N-m (22 lb.-in.)
	75	100	17.3 mm^2 (350 MCM)	10.0 mm^2 (6 AWG)	31.1 N-m (275 lb.-in.)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

Control and Signal Wiring

Refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual* for additional detailed information about control and signal wiring.

The I/O Terminal Block (Terminals 1-26 for 1-50HP @ 460VAC and Terminals 1-32 for 60-100HP 460VAC) located on the drive and Control Terminal Block (TB1 Terminals 19-24) located inside the Option Cabinet provide terminals for interfacing customer supplied control inputs and outputs. All analog and discrete control wiring will be made at these terminals. Typical customer control and signal wiring is shown on the Inter-Connect drawings, Figure 3.6 and Figure 3.7.

To connect control and signal wiring to the drive package:

❑ **1.** Wire the control and signal leads by routing them according to the drive option type. Note that you must punch openings in the option cabinet of the desired conduit size, following NEC and all applicable local codes and standards. Control and signal terminal block specifications are listed in Table 3.E.

Control and signal wires should be separated from power wires by at least 0.3 meters (1 foot).

❑ **2.** Connect the analog and relay output signal wiring to the I/O Terminal Block located on the drive.

❑ **3.** Connect the control wiring listed below to terminals 19-24 located inside the Option Cabinet.

- Drive St Stop
- Drive/Bypass Enable
- Bypass Run

❑ **4.** Tighten the I/O terminals to the proper torque according to drive type as shown in Table 3.E.

Table 3.E Control and Signal Terminal Block Specifications

Voltage Rating	kW	HP	Terminals	Location	Maximum Wire Size(1)	Minimum Wire Size	Recommended Torque
460V AC	0.75-37	1-50	1-26	Drive	1.5 mm^2 (16 AWG)	0.05 mm^2 (30 AWG)	0.5 N-m (4.4 lb.-in.)
			19-24	Option Cabinet	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.0 lb.-in.)
	45-75	60-100	1-32	Drive	2.1 mm^2 (14 AWG)	0.30 mm^2 (22 AWG)	0.6 N-m (5.2 lb.-in.)
			19-24	Option Cabinet	4.0 mm^2 (10 AWG)	0.5 mm^2 (22 AWG)	0.6 N-m (5.0 lb.-in.)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations. If national or local codes require sizes outside the range, lugs may be used.

Operating Modes

Drive Mode

For this mode to be active, the door-mounted selector switch needs to be in the DRIVE position. The DIC and DOC are energized and the BC is de-energized. The PowerFlex® drive controls the motor speed. The speed reference to the drive can come from the Human Interface Module on the drive, an analog reference wired to the drive terminal block, a preset speed or via a network drive-mounted communication module if supplied. Parameter 90 [Speed Ref A Sel] determines the source of the speed reference to the drive. The drive package ships with the default speed reference set to Analog In 1 located on the drive terminal block. If a different location or device will be used for the speed reference, Parameter 90 will need to be changed. Please refer to the PowerFlex 70 or 700 *User Manual* for information on how to program the drive or available speed reference locations. The start/stop peripheral connected to the drive including the Human Interface Module or Communication Module. If a remote customer supplied Start/Stop contact will be used, this needs to be wired between terminal block 19 and 20. Terminal blocks 18 and 19 also need to be jumpered together. If a remote customer supplied Start/Stop contact will not be used, terminal blocks 19 and 20 need to be jumpered. The default configuration when shipped has terminal blocks 19 and 20 jumpered thus allowing a customer supplied Start/Stop contact to be used.

Test Mode

For this mode to be active, the door-mounted selector switch needs to be in the “Test” position. The DIC is energized and the DOC and BC are de-energized.

Off Mode

For this mode to be active, the door-mounted selector switch needs to be in the “Off” position. The DIC, DOC and BC are all de-energized. The PowerFlex drive will not be powered and the motor will not run.

Bypass Mode

In the Bypass Mode the BC is energized and the DIC and DOC are de-energized. The motor is powered by the AC line. The motor will immediately be powered when the selector switch is in the “Bypass” position unless the “Drive/Bypass Enable” relay, CR, is used and is not picked up.

Parameter Defaults
3 Contactor Basic Bypass with Disconnect Package *(Style C)*

Parameter Name	Number	Default
Output Freq	001	Read Only
Commanded Freq	002	Read Only
Output Current	003	Read Only
Output Voltage	004	Read Only
Flux Current	005	Read Only
Output Voltage	006	Read Only
Output Power	007	Read Only
Output Powr Fctr	008	Read Only
Elapsed MWh	009	Read Only
Elapsed Run Time	010	Read Only
MOP Frequency	011	Read Only
DC Bus Voltage	012	Read Only
DC Bus Memory	013	Read Only
Elapsed kWh	014(1)	Read Only
Analog In1 Value	016	Read Only
Analog In2 Value	017	Read Only
Ramped Speed	022(1)	Read Only
Speed Reference	023(1)	Read Only
Commanded Torque	024(1)	Read Only
Speed Feedback	025(1)	Read Only
Rated kW	026	Read Only
Rated Volts	027	Read Only
Rated Amps	028	Read Only
Control SW Ver	029	Read Only
Motor Type	040	Induction
Motor NP Volts	041	Drive Rating Based
Motor NP FLA	042	Drive Rating Based
Motor NP Hertz	043	Drive Rating Based
Motor NP PRM	044	Drive Rating Based
Motor NP Power	045	Drive Rating Based
Mtr NP Pwr Units	046	Drive Rating Based
Motor OL Hertz	047	Motor NP Hz/3
Motor OL Factor	048	1.00
Motor Poles	049(1)	4
Motor Cntl Sel	053(2)	3 “FAN/Pump V/Hz”
Maximum Voltage	054	Drive Rated Volts
Maximum Freq	055	110.0 or 130.0 Hz
Compensation	056	Bits 0 - 6 0101111
Flux Up Mode	057	“Manual”
Flux Up Time	058	0.000 Secs
SV Boost Filter	059	500
Autotune	061	“Calculate”
IR Voltage Drop	062	Based on Drive Rating
Flux Current Ref	063	Based on Drive Rating
Ixo Voltage Drop	064	Based on Drive Rating
Autotune Torque	066(1)	50%
Inertia Autotune	067(1)	“Ready”

Parameter Name	Number	Default
St Acc Boost	069	Based on Drive Rating
Run Boost	070	Based on Drive Rating
Break Voltage	071	[Motor NP Volts] × 0.25
Break Frequency	072	[Motor NP Hz] × 0.25
Speed Units	079	0 “Hz”
Feedback Select]	080	0 “Open Loop”
Minimum Speed	081	0.0
Maximum Speed	082	50.0 or 60.0 Hz (volt class) [Motor NP RPM]
Overspeed Limit	083	10.0 Hz 300.0 RPM
Skip Frequency 1	084	0.0 Hz
Skip Frequency 2	085	0.0 Hz
Skip Frequency 3	086	0.0 Hz
Skip Freq Band	087(2)	1.0 Hz
Speed/Torque Mod	088(1)	1 “Speed Reg”
Speed Ref A Sel	090(2)	1 “Analog In 1”
Speed Ref A Hi	091	Maximum Speed
Speed Ref A Lo	092	0.0
Speed Ref B Sel	093(2)	18 “DPI Port 1”
Speed Ref B Hi	094	Maximum Speed
Speed Ref B Lo	095	0.0
TB Man Ref Sel	096	1 “Analog In 1”
TB Man Ref Hi	097	Maximum Speed
TB Man Ref Lo	098	0.0
Pulse Input Ref	099	Read Only
Jog Speed 1	100	10.0 Hz
Preset Speed 1	101	5.0 Hz
Preset Speed 2	102(2)	5.0 Hz
Preset Speed 3	103	20.0 Hz
Preset Speed 4	104	30.0 Hz
Preset Speed 5	105	40.0 Hz
Preset Speed 6	106	50.0 Hz
Preset Speed 7	107	6.0 Hz
Jog Speed 2	108	10.0 Hz
Trim % Setpoint	116(1)	0.0%
Trim In Select	117	2 “Analog In 2”
Trim Out Select	118	0 (Disable)
Trim Hi	119	60.0 Hz
Trim Lo	120	0.0 Hz
Slip RPM @ FLA	121	Based on [Motor NP RPM]
Slip Comp Gain	122	40.0
Slip RPM Meter	123	Read Only
PI Configuration	124	0 (Disable)
PI Control	125	0 (Disable)
PI Reference Sel	126	0 “PI Setpoint”
PI Setpoint	127	50.00%
PI Feedback Sel	128	0 “PI Setpoint”

Parameter Name	Number	Default
PI Integral Time	129	2.00 Secs
PI Prop Gain	130	1.0
PI Lower Limit	131	–[Maximum Freq] –100%
PI Upper Limit	132	+[Maximum Freq] 100%
PI Preload	133	0.0 Hz 100.0%
PI Status	134	Read Only
PI Ref Meter	135	Read Only
PI Fdback Meter	136	Read Only
PI Error Meter	137	Read Only
PI Output Meter	138	Read Only
PI BW Filter	139(1)	0.0 Radians
Accel Time 1	140(2)	20.0 Secs
Accel Time 2	141(2)	20.0 Secs
Decel Time 1	142(2)	20.0 Secs
Decel Time 2	143(2)	20.0 Secs
DB While Stopped	145(1)	0 “Disabled”
S Curve %	146(2)	20%
Current Lmt Sel	147	0 “Cur Lim Val”
Current Lmt Val	148	[Rated Amps] × 1.5 (Equation yields approximate default value.)
Current Lmt Gain	149	250
Drive OL Mode	150	3 “Both–PWM 1st”
PWM Frequency	151	4 kHz 2 kHz (Frames 4-6, 600/690VAC)
Droop RPM @ FLA	152(1)	0.0 RPM
Regen Power Limit	153(1)	–50.0%
Current Rate Limit	154(1)	400.0%
Stop Mode A	155(2)	0 “Coast”
Stop Mode B	156(2)	1 “Ramp”
DC Brake Lvl Sel	157	0 “DC Brake Lvl”
DC Brake Level	158	[Rated Amps]
DC Brake Time	159	0.0 Secs
Bus Reg Ki	160	450
Bus Reg Mode A	161	1 “Adjust Freq”
Bus Reg Mode B	162(2)	0 “Disabled”
DB Resistor Type	163	0 “None”
Bus Reg Kp	164(2)	1200
Bus Reg Kd	165	1000
Flux Braking	166(1)	0 “Disabled”
Powerup Delay	167(1)	0.0 Secs
Start At PowerUp	168(2)	1 “Enabled”
Flying Start En	169(2)	1 “Enabled”
Flying StartGain	170	4000
Auto Rstrt Tries	174	0
Auto Rstrt Delay	175(2)	30.0 Secs
Gnd Warn Level	177(1)	3.0 Amps
Sleep-Wake Mode	178	0 “Disabled”

Parameter Name	Number	Default
Sleep-Wake Ref	179	2 “Analog In 2”
Wake Level	180	6.000 mA, 6.000 Volts
Wake Time	181	1.0 Secs
Sleep Level	182	5.000 mA, 5.000 Volts
Sleep Time	183	1.0 Secs
Power Loss Mode	184	0 “Coast”
Power Loss Time	185	0.5 Secs
Power Loss Level	186(3)	Drive Rated Volts
Load Loss Level	187(1)	200.0%
Load Loss Time	188(1)	0.0 Secs
Shear Pin Time	189(1)	0.0 Secs
Direction Mode	190(2)	2 “Reverse Dis”
Save HIM Ref	192	0 Hz
Man Ref Preload	193(3)	0 “Disabled”
Save MOP Ref	194(2)	At Pwr Down
MOP Rate	195	1.0 Hz/s 30.0 RPM/s
Param Access Lvl	196(2)	3 “Fan/Pump”
Reset To Defalts	197	0 “Ready”
Load Frm Usr Set	198	0 “Ready”
Save To User Set	199	0 “Ready”
Reset Meters	200	0 “Ready”
Language	201	0 “Not Selected”
Voltage Class	202	Based on Drive Cat. No.
Drive Checksum	203	Read Only
Dyn UsrSet Cnfg	204(1)	0 “Disabled”
Dyn UsrSet Sel	205(1)	0 “Disabled”
Dyn UsrSet Actv	206(1)	0 “Disabled”
Drive Status 1	209	Read Only
Drive Status 2	210	Read Only
Drive Alarm 1	211	Read Only
Drive Alarm 2	212	Read Only
Speed Ref Source	213	Read Only
Start Inhibits	214	Read Only
Last Stop Source	215	Read Only
Dig In Status	216	Read Only
Dig Out Status	217	Read Only
Drive Temp	218	Read Only
Drive OL Count	219	Read Only
Motor OL Count	220	Read Only
Fault Speed	224	Read Only
Fault Amps	225	Read Only
Fault Bus Volts	226	Read Only
Status 1 @ Fault	227	Read Only
Status 2@ Fault	228	Read Only
Alarm 1 @ Fault	229	Read Only
Alarm 2@ Fault	230	Read Only
Testpoint 1 Sel	234	499
Testpoint 2 Sel	236	499
Testpoint 1 Data	235	Read Only
Testpoint 2 Data	237	Read Only
Fault Config 1	238	Bits 0 - 15 01x1001000x000xx

Parameter Name	Number	Default
Fault Clear	240	0 “Ready”
Fault Clear Mode	241	1 “Enabled”
Power Up Marker	242	Read Only
Fault 1 Code	243	Read Only
Fault 1 Time	244	Read Only
Fault 2 Code	245	Read Only
Fault 2 Time	246	Read Only
Fault 3 Code	247	Read Only
Fault 3 Time	248	Read Only
Fault 4 Code	249	Read Only
Fault 4 Time	250	Read Only
Fault 5 Code	251(3)	Read Only
Fault 5 Time	252(3)	Read Only
Fault 6 Code	253(3)	Read Only
Fault 6Time	254(3)	Read Only
Fault 7 Code	255(3)	Read Only
Fault 7 Time	256(3)	Read Only
Fault 8 Code	257(3)	Read Only
Fault 8 Time	258(3)	Read Only
Alarm Config 1	259	Bits 0-15 000000x00000000x
Alarm Clear	261(3)	0 “Ready”
Alarm 1 Code	262(3)	Read Only
Alarm 2 Code	263(3)	Read Only
Alarm 3 Code	264(3)	Read Only
Alarm 4 Code	265(3)	Read Only
Alarm 5 Code	266(3)	Read Only
Alarm 6 Code	267(3)	Read Only
Alarm 7 Code	268(3)	Read Only
Alarm 8 Code	269(3)	Read Only
DPI Baud Rate	270	1 “500kbps”
Drive Logic Rslt	271	Read Only
Drive Ref Rslt	272	Read Only
Drive Ramp Rslt	273	Read Only
DPI Port Sel	274(1)	“DPI Port 1”
DPI Port Value	275(1)	Read Only
Logic Mask	276(1)	1 - Control Permitted
Start Mask	277	(See Logic Mask)
Jog Mask	278	(See Logic Mask)
Direction Mask	279	(See Logic Mask)
Reference Mask	280	(See Logic Mask)
Accel Mask	281	(See Logic Mask)
Decel Mask	282	(See Logic Mask)
Fault Clr Mask	283	(See Logic Mask)
MOP Mask	284	(See Logic Mask)
Local Mask	285	(See Logic Mask)
Stop Owner	288	Read Only
Start Owner	289	(See Stop Owner)
Jog Owner	290	(See Stop Owner)
Direction Owner	291	(See Stop Owner)
Reference Owner	292	(See Stop Owner)
Accel Owner	293	(See Stop Owner)
Decel Owner	294	(See Stop Owner)
Fault Clr Owner	295	(See Stop Owner)

Parameter Name	Number	Default
MOP Owner	296	(See Stop Owner)
Local Owner	297	(See Stop Owner)
DPI Ref Select	298(1)	0 “Max Freq”
DPI Fdbk Select	299	17 “Speed Fdbk”
Data In A1 - Link A Word 1	300	0(0 = “Disabled)
Data In A2 - Link A Word 2	301	0(0 = “Disabled)
Data In B1 - Link B Word 1	302	(See Data In A1 - Link A Word 1)
Data In B2 - Link B Word 2	303	(See Data In A2 - Link A Word 2)
Data In C1 - Link C Word 1	304	(See Data In A1 - Link A Word 1)
Data In C2 - Link C Word 2	305	(See Data In A2 - Link A Word 2)
Data In D1 - Link D Word 1	306	(See Data In A1 - Link A Word 1)
Data In D2 - Link D Word 2	307	(See Data In A2 - Link A Word 2)
Data Out A1 - Link A Word 1	310	0(0 = “Disabled)
Data Out A2 - Link A Word 2	311	0(0 = “Disabled)
Data Out B1 - Link A Word 1	312	(See Data Out A1 - Link A Word 1)
Data Out B2 - Link A Word 2	313	(See Data Out A2 - Link A Word 2)
Data Out C1 - Link A Word 1	314	(See Data Out A1 - Link A Word 1)
Data Out C2 - Link A Word 2	315	(See Data Out A2 - Link A Word 2)
Data Out D1 - Link A Word 1	316	(See Data Out A1 Link A Word 1)
Data Out D2 - Link A Word 2	317	(See Data Out A2 - Link A Word 2)
Anlg In Config	320(2)	Analog In 1 = 0.0 Volt
Anlg In Sqr Root	321	0 (Disable)
Analog In 1 Hi	322	10.000 Volt
Analog In 1 Lo	323	0.000 Volt
Analog In 1 Loss	324	0 “Disabled”
Analog In 2 Hi	325	10.000 Volt
Analog In 2 Lo	326	0.000 Volt
Analog In 2 Loss	327	0 “Disabled”
Anlg Out Config	340	1 (Current)
Anlg Out Absolut	341	1 (Absolute)
Analog Out1 Sel	342	0 “Output Freq”
Analog Out1 Hi	343	20.000 mA, 10.000 Volts
Analog Out1 Lo	344	0.000 mA, 0.000 Volts
Analog Out2 Sel	345	0 “Output Freq”
Analog Out Hi	346	20.000 mA, 10.000 Volts
Analog Out2 Lo	347	0.000 mA, 0.000 Volts
Anlg Out1 Scale	354(1)	0.0
Anlg Out2 Scale	355(1)	0.0
Digital In1 Sel	361	4 “Stop – CF”
Digital In2 Sel	362	5 “Start”

Parameter Name	Number	Default
Digital In3 Sel	363[2]	3 “Aux Fault”
Digital In4 Sel	364[2]	1 “Enable”
Digital In5 Sel	365[2]	15 “Speed Sel 1”
Digital In6 Sel	366[2]	16 “Speed Sel 2”
Anlg1 Out Setpt	377[1]	20.000 mA, 10.000 Volts
Anlg2 Out Setpt	378	20.000 mA, 10.000 Volts
Dig Out Setpt	379[1]	0 (Disable)
Digital Out1 Sel	380[4]	1 “Fault”
Dig Out1 Level	381	0.0
Dig Out1 OnTime	382	0.00 Secs
Dig Out1 OffTime	383	0.00 Secs
Digital Out2 Sel	384	4 “Run”
Dig Out2 Level	385	0.0
Dig Out2 OnTime	386	0.00 Secs
Dig Out2 OffTime	387	0.00 Secs
Digital Out3 Sel	388	4 “Run”
Dig Out3 Level	389	0.0
Dig Out3 OnTime	390	0.00 Secs
Dig Out3 OffTime	391	0.00 Secs
Dig Out Param	393	0 “PI Config”
DigIn DataLogic	411[1]	0=Logical 0
Motor Fdbk Type	412[1]	0 “Quadrature”
Encoder PPR	413[1]	1024 PPR
Enc Position Fdbk	414[1]	Read Only
Encoder Speed	415[1]	Read Only
Fdbk Filter Sel	416[1]	0 “None”
Notch FilterFreq	419[1]	0.0 Hz
Notch Filter K	420[1]	0.3 Hz
Marker Pulse	421	Read Only
Pulse In Scale	422	64
Encoder Z Chan	423	0 “Pulse Input”
Torque Ref A Sel	427	1 “Torque Stpt1”
Torque Ref A Hi	428[1]	100.0%
Torque Ref A Lo	429[1]	0.0%
Torq Ref A Div	430[1]	1.0
Torque Ref B Sel	431	24 “Disabled”
Torque Ref B Hi	432	100.0%
Torque Ref B Lo	433	0.0%
Torque Ref B Mult	434	1.0
Torque Setpoint1	435[1]	0.0%
Pos Torque Limit	436[1]	200.0%
Neg Torque Limit	437[1]	-200.0%
Torque Setpoint2	438	0.0%
Control Status	440[1]	Read Only
Mtr Tor Cur Ref	441[1]	Read Only
Ki Speed Loop	445[1]	7.0
Kp Speed Loop	446[1]	6.3
Kf Speed Loop	447[1]	0.0

Parameter Name	Number	Default
Speed Desired BW	449[1]	0.0 Radians/Sec
Total Inertia	450[1]	1.25 Secs 0.10 Secs (v3)
Speed Loop Meter	451[1]	Read Only
Rev Speed Limit	454[1]	0.0 RPM
PI Deriv Time	459[1]	0.00 Secs
PI Reference Hi	460[1]	100.0%
PI Reference Lo	461[1]	-100.0%
PI Feedback Hi	462[1]	100.0%
PI Feedback Lo	463[1]	0.0%
Scale1 In Value	476	0.0
Scale1 In Hi	477	0.0
Scale1 In Lo	478	0.0
Scale1 Out Hi	479	0.0
Scale1 Out Lo	480	0.0
Scale1 Out Value	481	Read Only
Scale2 In Value	482	0.0
Scale2 In Hi	483	0.0
Scale2 In Lo	484	0.0
Scale2 Out Hi	485	0.0
Scale2 Out Lo	486	0.0
Scale2 Out Value	487	Read Only
Scale3 In Value	488	0.0
Scale3 In Hi	489	0.0
Scale3 In Lo	490	0.0
Scale3 Out Hi	491	0.0
Scale3 Out Lo	492	0.0
Scale3 Out Value	493	Read Only
Scale4 In Value	494	0.0
Scale4 In Hi	495	0.0
Scale4 In Lo	496	0.0
Scale4 Out Hi	497	0.0
Scale4 Out Lo	498	0.0
Scale4 Out Value	499	Read Only
PortMask Act	595[1]	Read Only
Write Mask Cfg	596[1]	1 = Write Permitted
Write Mask Act	597[1]	Read Only
Logic Mask Act	598[1]	Read Only
TorqProve Cnfg	600	0 (Disable)
TorqProve Setup	601	0 (Disable)
Spd Dev Band	602	2.0 Hz 60.0 RPM
SpdBand Integrat	603	60 mSec
Brk Release Time	604	0.10 Secs
ZeroSpdFloatTime	605	5.0 Secs
Float Tolerance	606	0.2 Hz 6.0 RPM
Brk Set Time	607	0.10 Secs
TorqLim SlewRate	608	10.0 Secs

Parameter Name	Number	Default
BrkSlip Count	609	250
Brk Alarm Travel	610	1.0 Revs
MicroPos Scale%	611	10.0%

(1) Applicable to PowerFlex 70 Packages only.

(2) The default values for these parameters differ from the factory defaults. Setting 194 [Reset To Defalts] to 1 “Factory Rset” will change these parameter settings to the defaults listed in the PowerFlex® 70 or PowerFlex 700 *User Manual*.

(3) Applicable to PowerFlex 700 Packages only.

(4) When [TorqProve Cnfg] is set to “Enable,” [Digital Out1 Sel] becomes the brake control and any other selection will be ignored.

ATTENTION: Parameter 168 [Start At PowerUp] ships from the factory enabled. This feature allows a Run command to automatically cause the drive to resume running at commanded speed after drive input power is restored. Equipment damage and/or personal injury may result if this parameter is used in an inappropriate application. Do not use this function without considering applicable local, national and international codes, standards, regulations or industry guidelines.

Drawing Index

3 Contactor Basic Bypass with Disconnect Package (Style C)

Input Voltage	kW	HP	Input Line Reactor	Drawing			
				Schematic	Inter-Connect	Layout	Outline
460V AC	0.75	1.0		Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.13, Page 3-24
	1.5	2.0		Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.13, Page 3-24
	2.2	3.0		Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.13, Page 3-24
	4.0	5.0		Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.13, Page 3-24
	5.5	7.5		Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.14, Page 3-25
	7.5	10		Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.14, Page 3-25
	11	15		Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.15, Page 3-26
	15	20	No	Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.15, Page 3-26
	18.5	25		Figure 3.2, Page 3-13	Figure 3.6, Page 3-17	Figure 3.8, Page 3-19	Figure 3.15, Page 3-26
	22	30		Figure 3.3, Page 3-14	Figure 3.6, Page 3-17	Figure 3.9, Page 3-20	Figure 3.16, Page 3-27
	30	40		Figure 3.3, Page 3-14	Figure 3.6, Page 3-17	Figure 3.10, Page 3-21	Figure 3.17, Page 3-28
	37	50		Figure 3.3, Page 3-14	Figure 3.6, Page 3-17	Figure 3.10, Page 3-21	Figure 3.17, Page 3-28
	45	60		Figure 3.4, Page 3-15	Figure 3.7, Page 3-18	Figure 3.11, Page 3-22	Figure 3.18, Page 3-29
	55	75		Figure 3.5, Page 3-16	Figure 3.7, Page 3-18	Figure 3.12, Page 3-23	Figure 3.19, Page 3-30
	75	100		Figure 3.5, Page 3-16	Figure 3.7, Page 3-18	Figure 3.12, Page 3-23	Figure 3.19, Page 3-30

Schematic Drawings

Figure 3.2 1-25 HP, 460V AC Drives

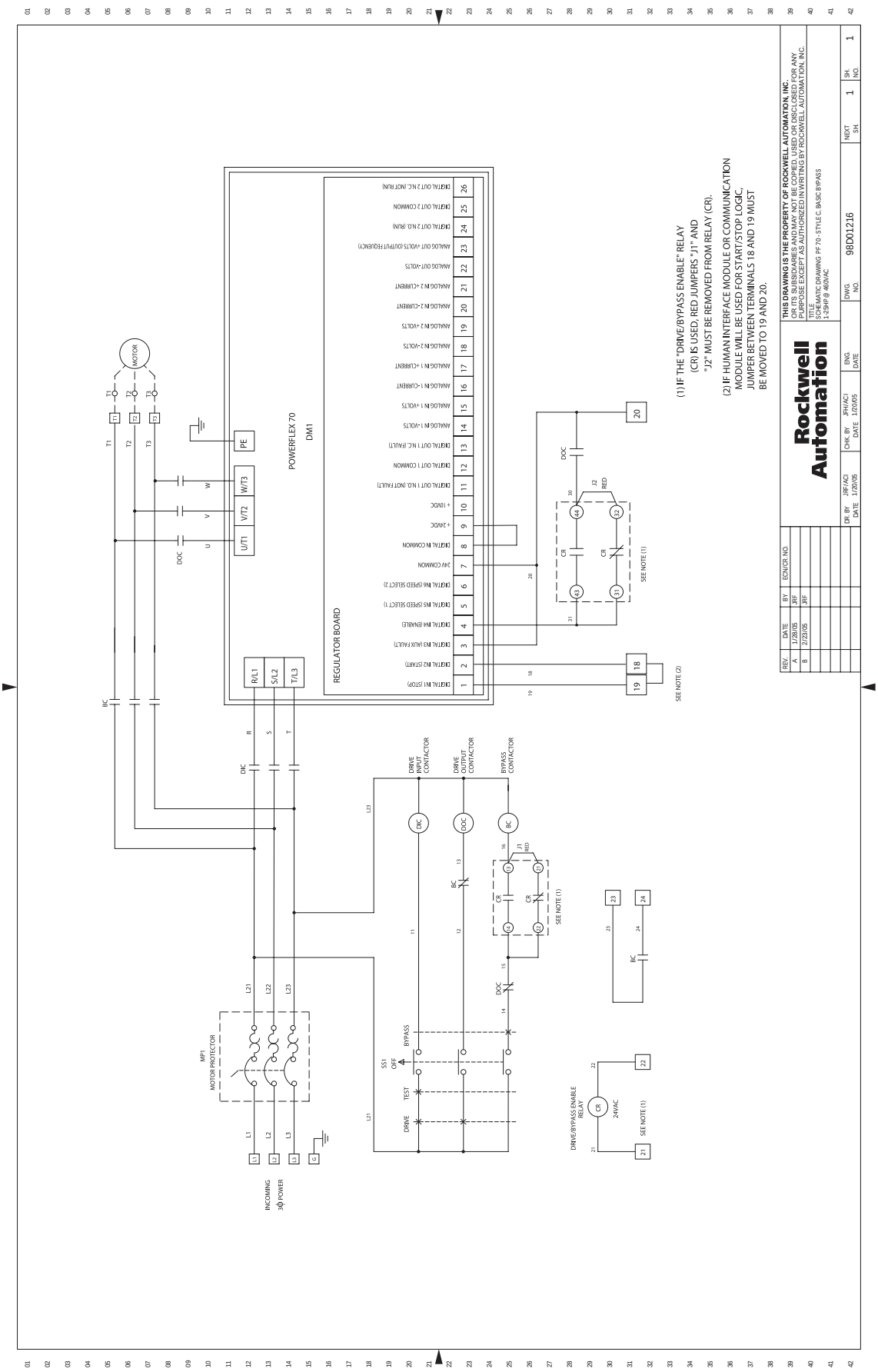


Figure 3.3 30-50 HP, 460V AC Drives

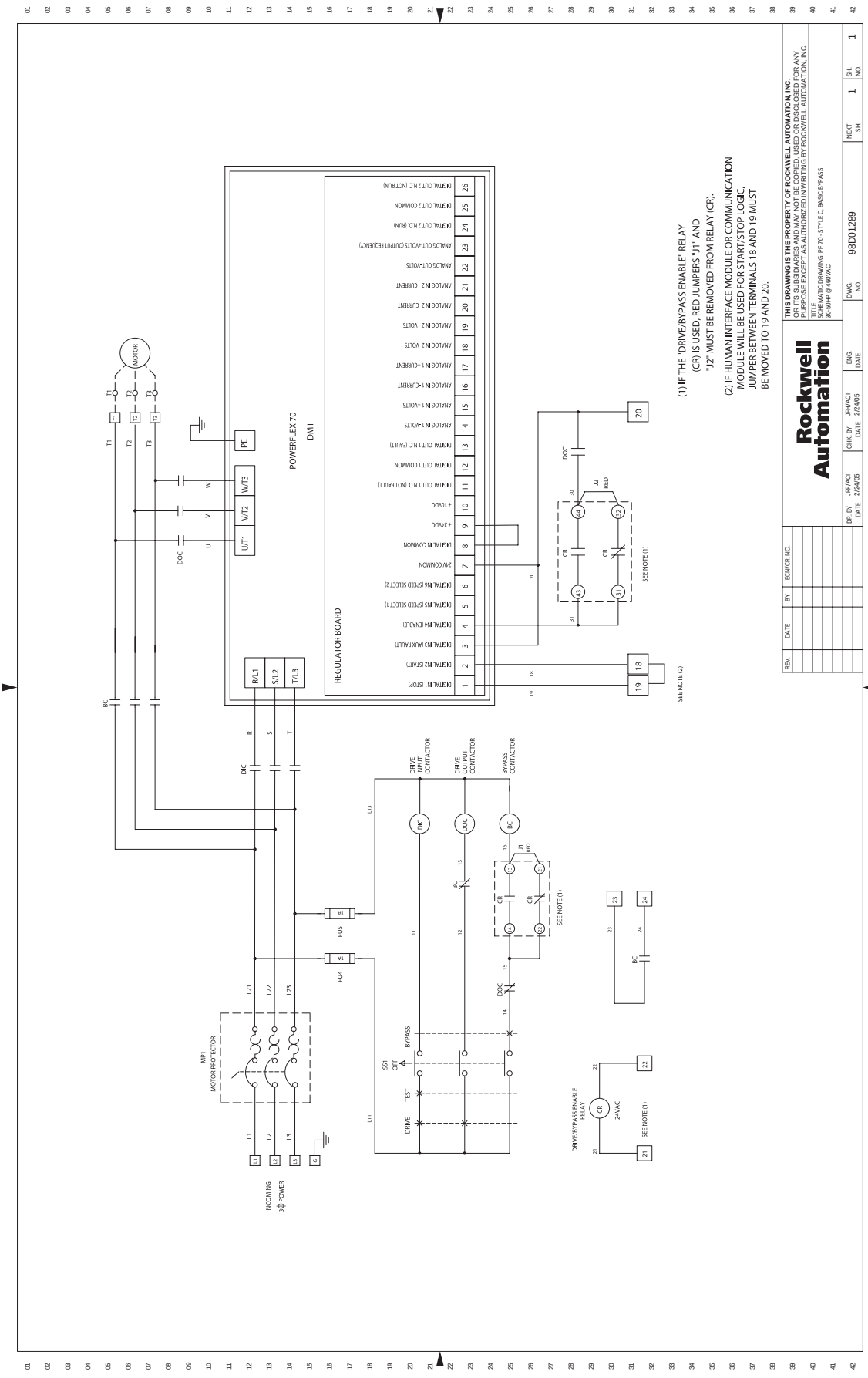


Figure 3.4 60 HP, 460V AC Drives

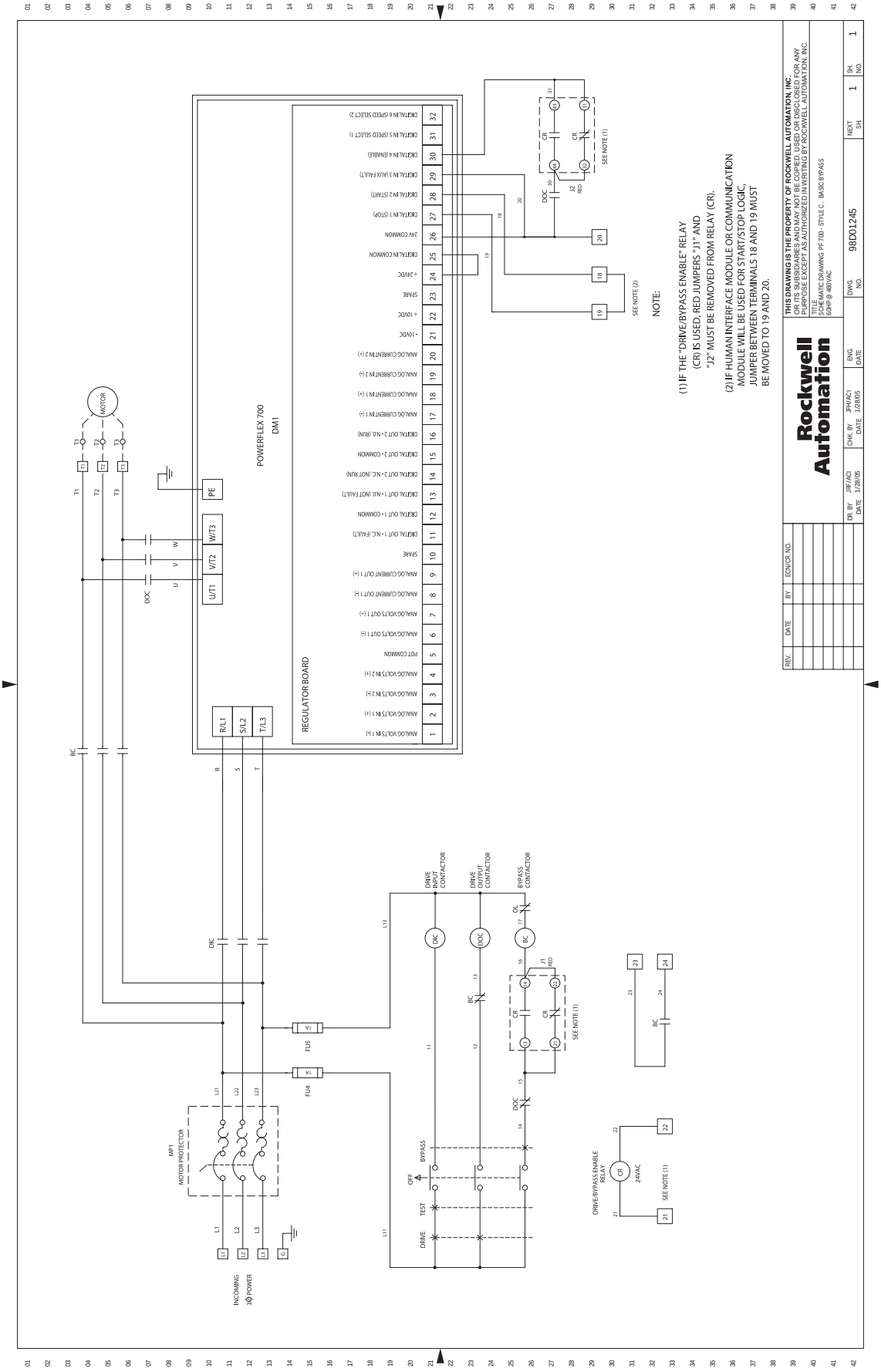
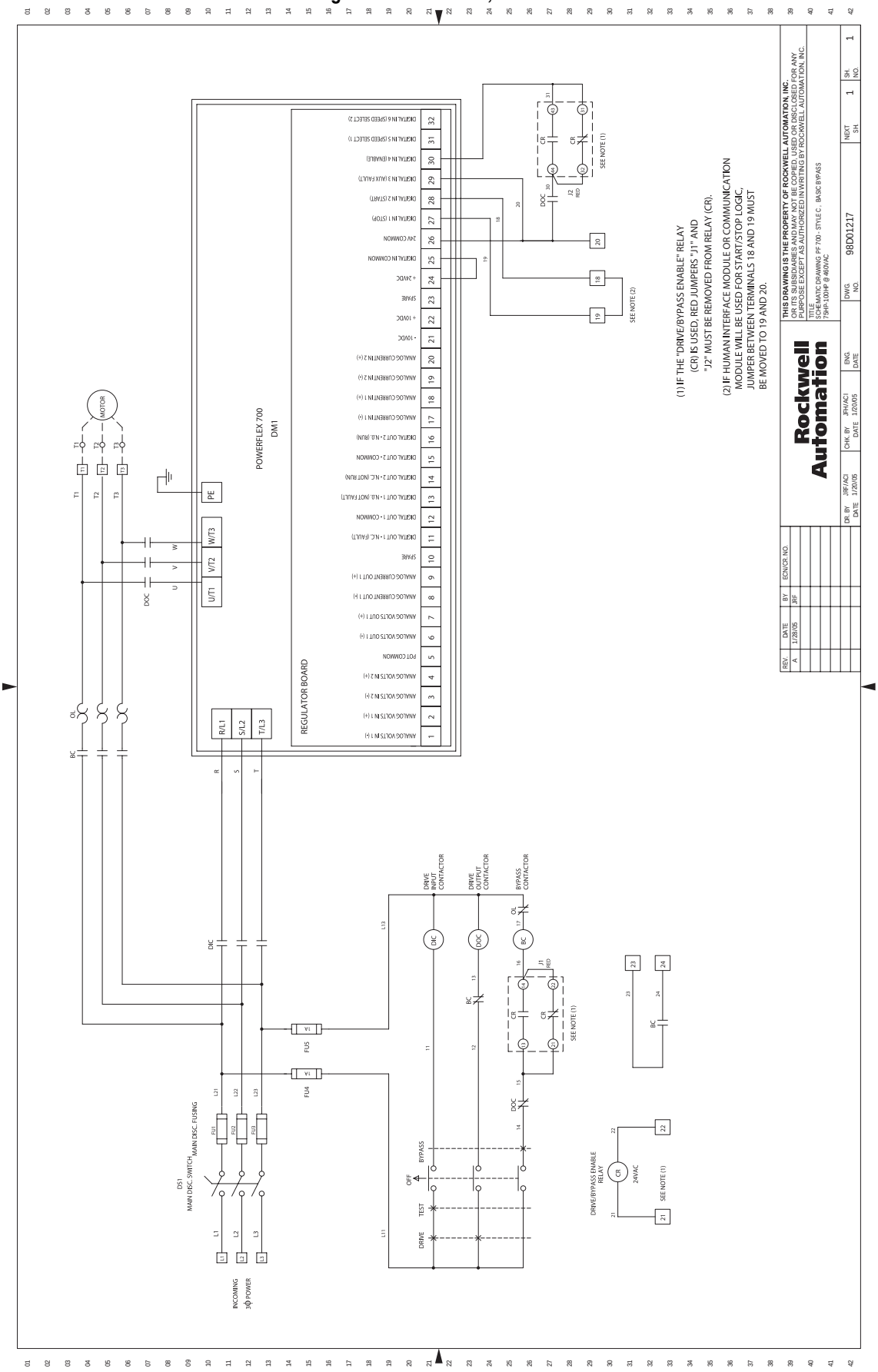


Figure 3.5 75-100 HP, 460V AC Drives



Inter-Connect Drawings

Figure 3.6 1-50 HP, 460V AC Drives

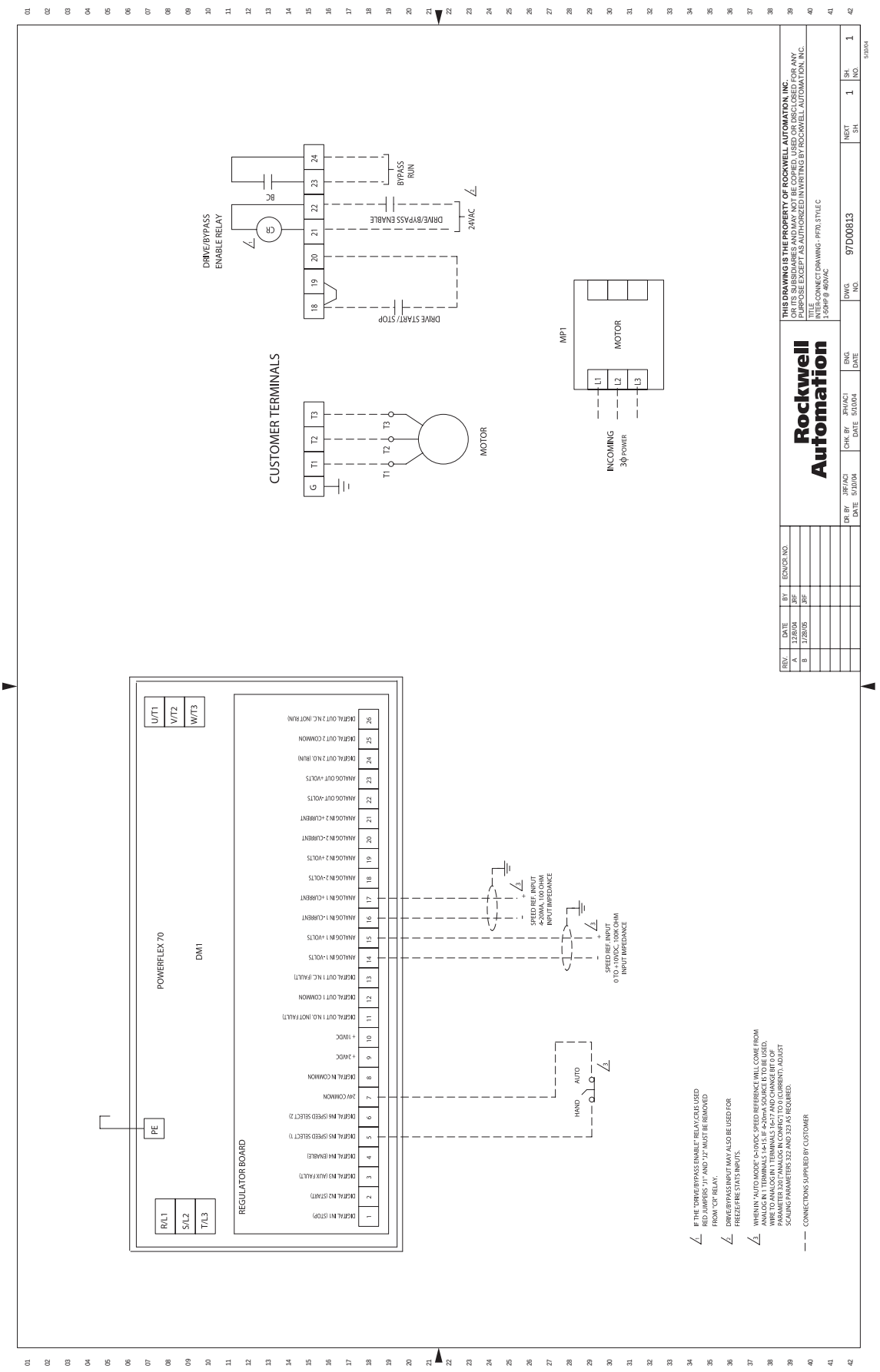
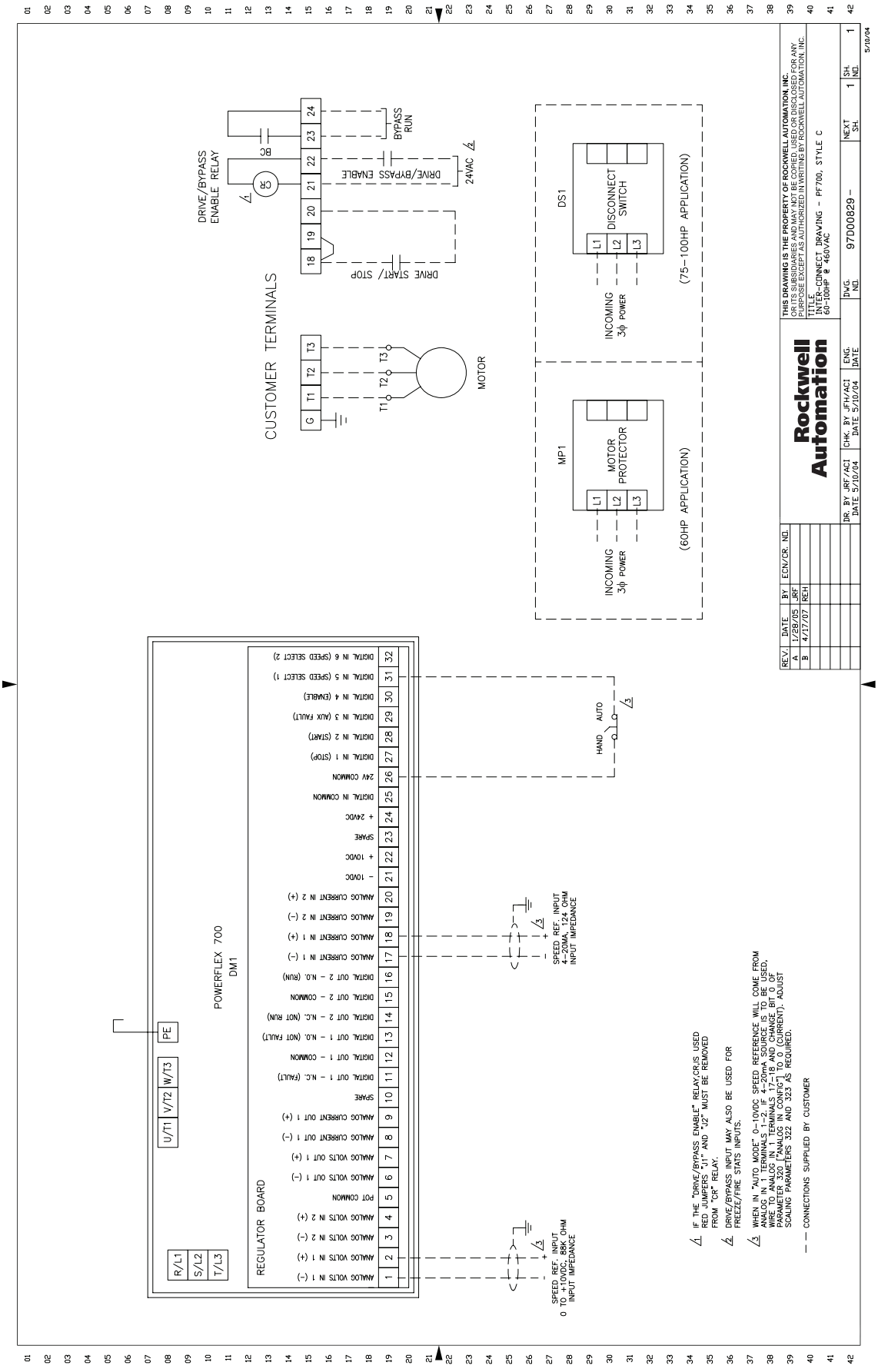


Figure 3.7 60-100 HP, 460V AC Drives



Layout Drawings

Figure 3.8 1-25 HP, 460V AC Drives

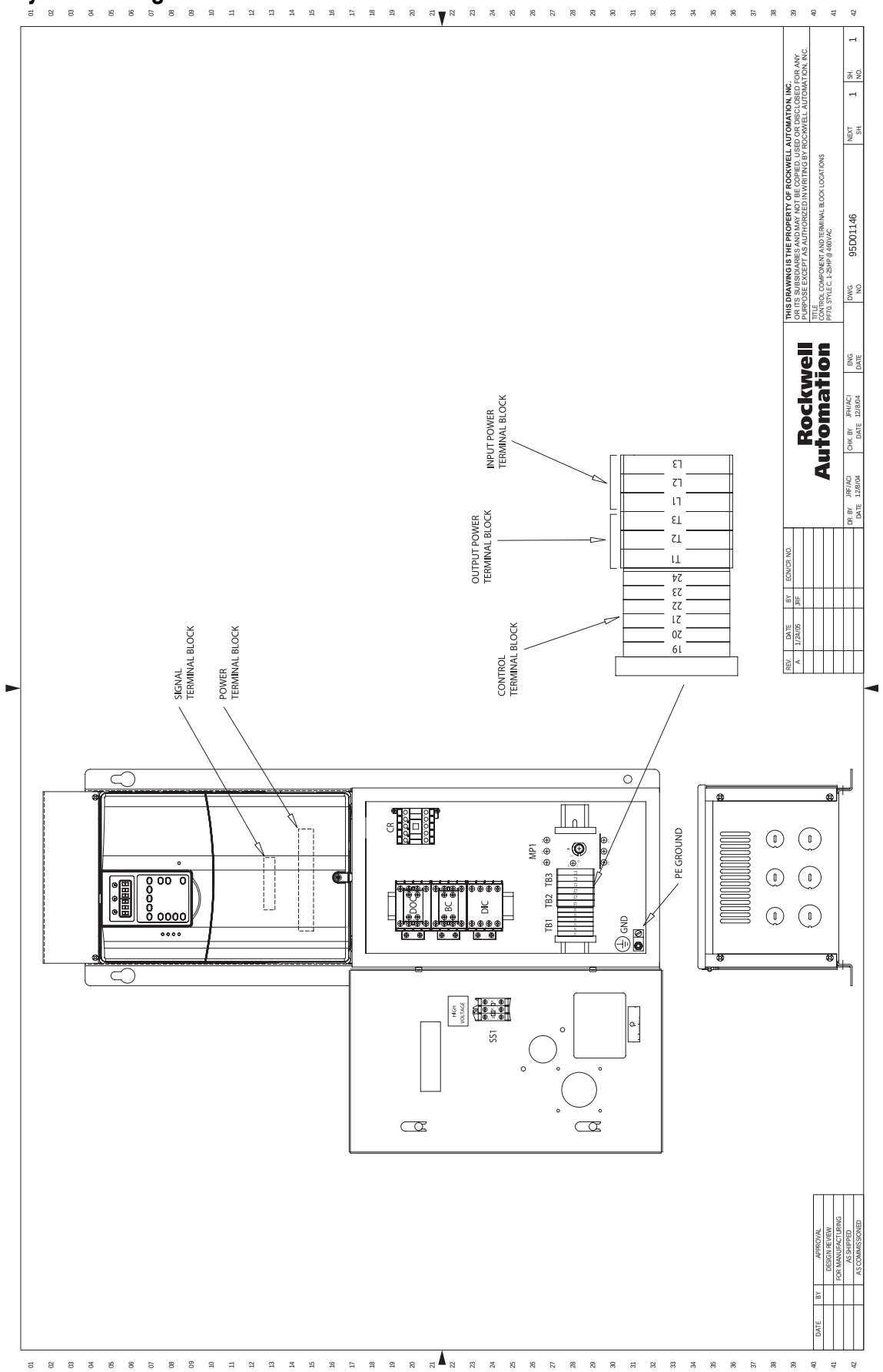


Figure 3.9 30 HP, 460V AC Drives

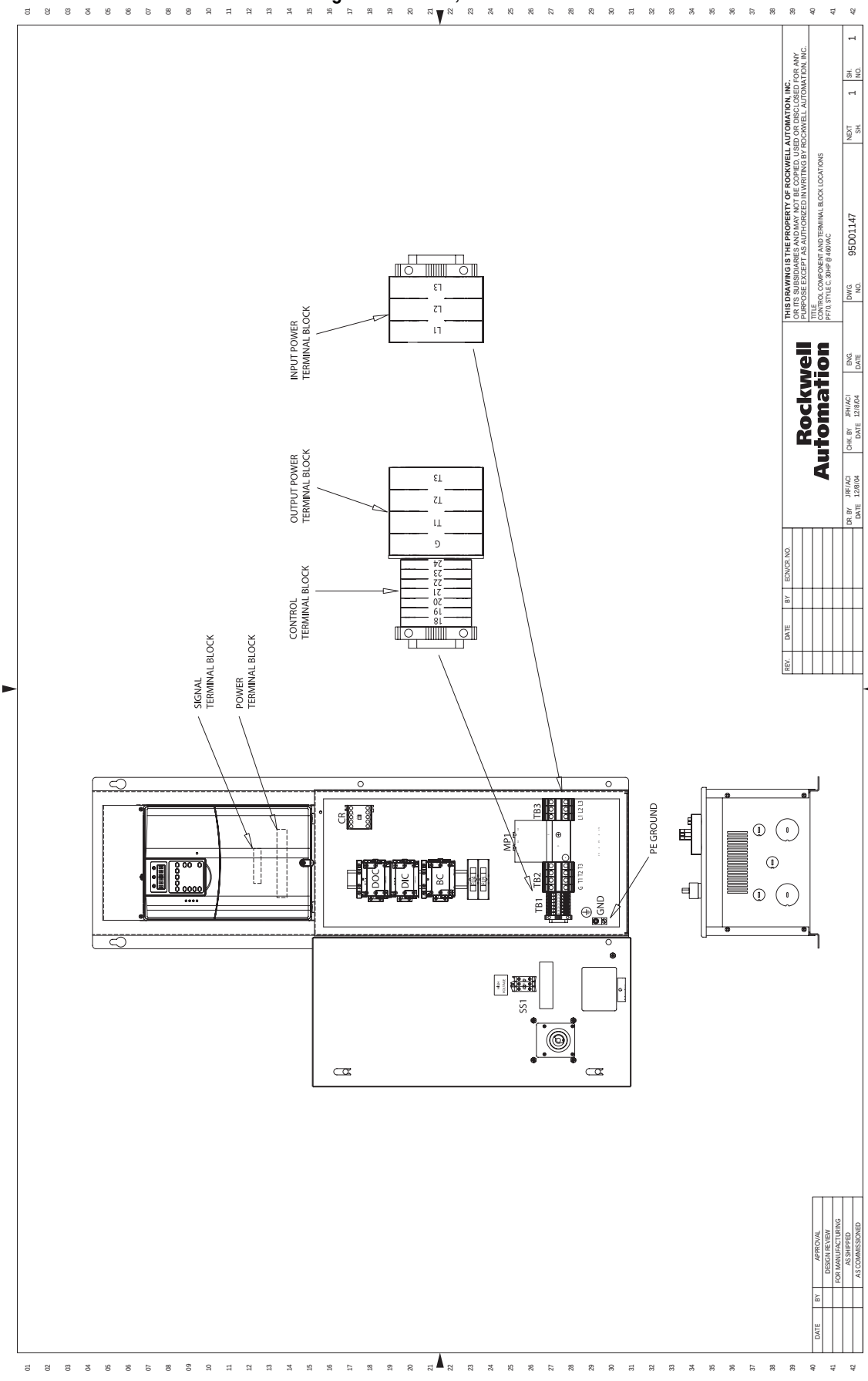


Figure 3.10 40-50 HP, 460V AC Drives

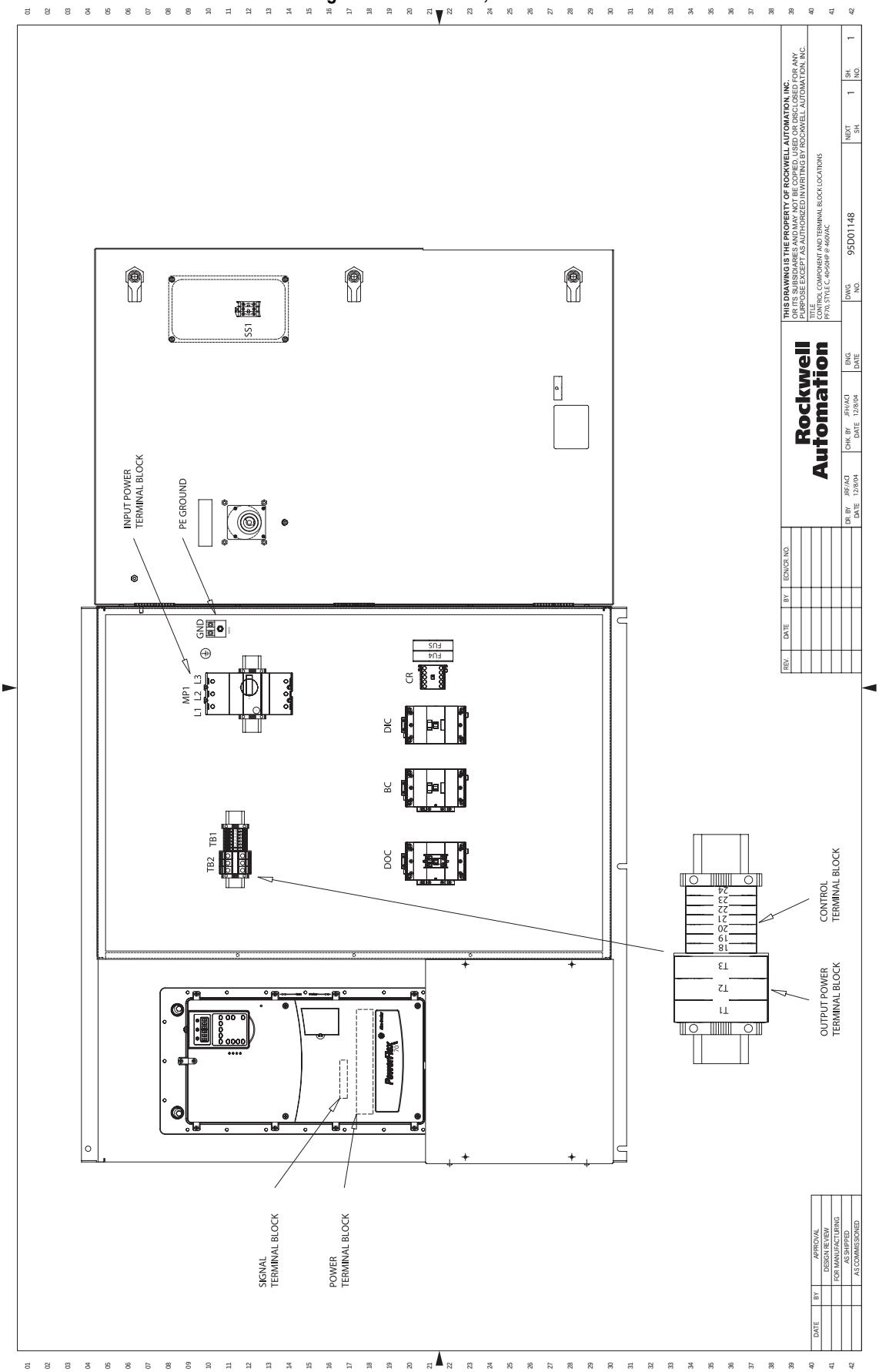


Figure 3.11 60 HP, 460V AC Drives

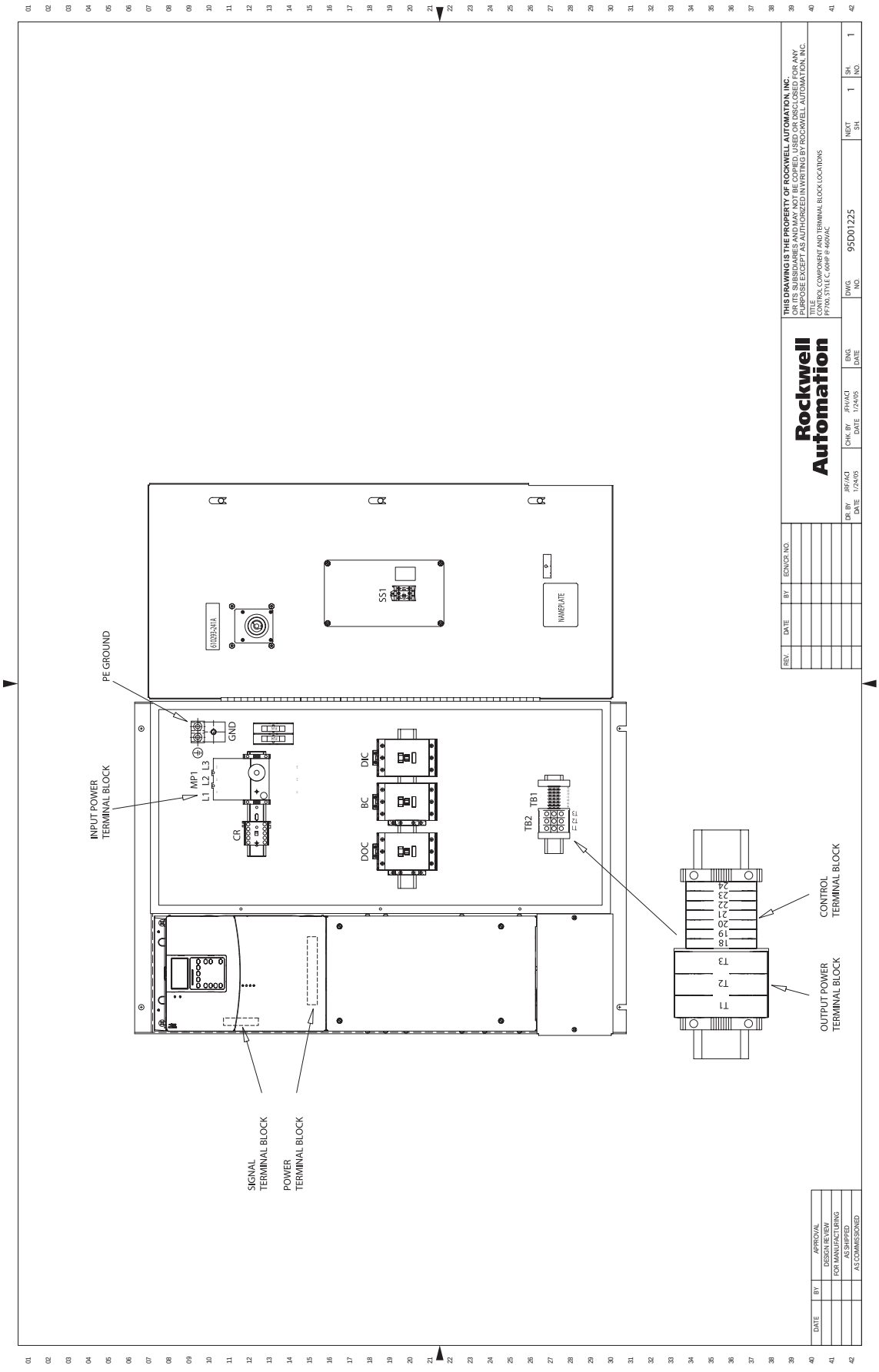
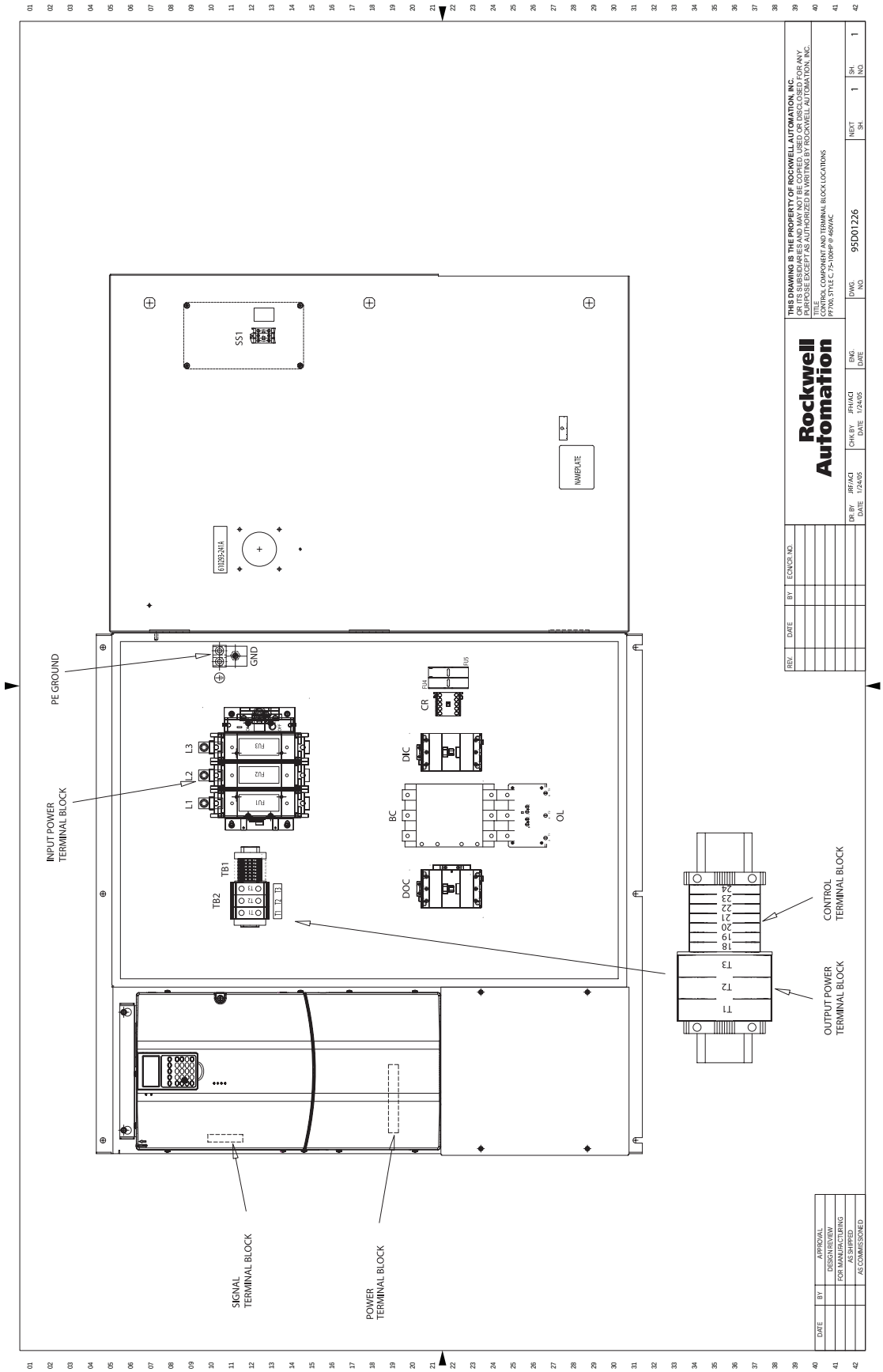


Figure 3.12 75-100 HP, 460V AC Drives



Outline Drawings

Figure 3.13 1-5 HP, 460V AC Drives

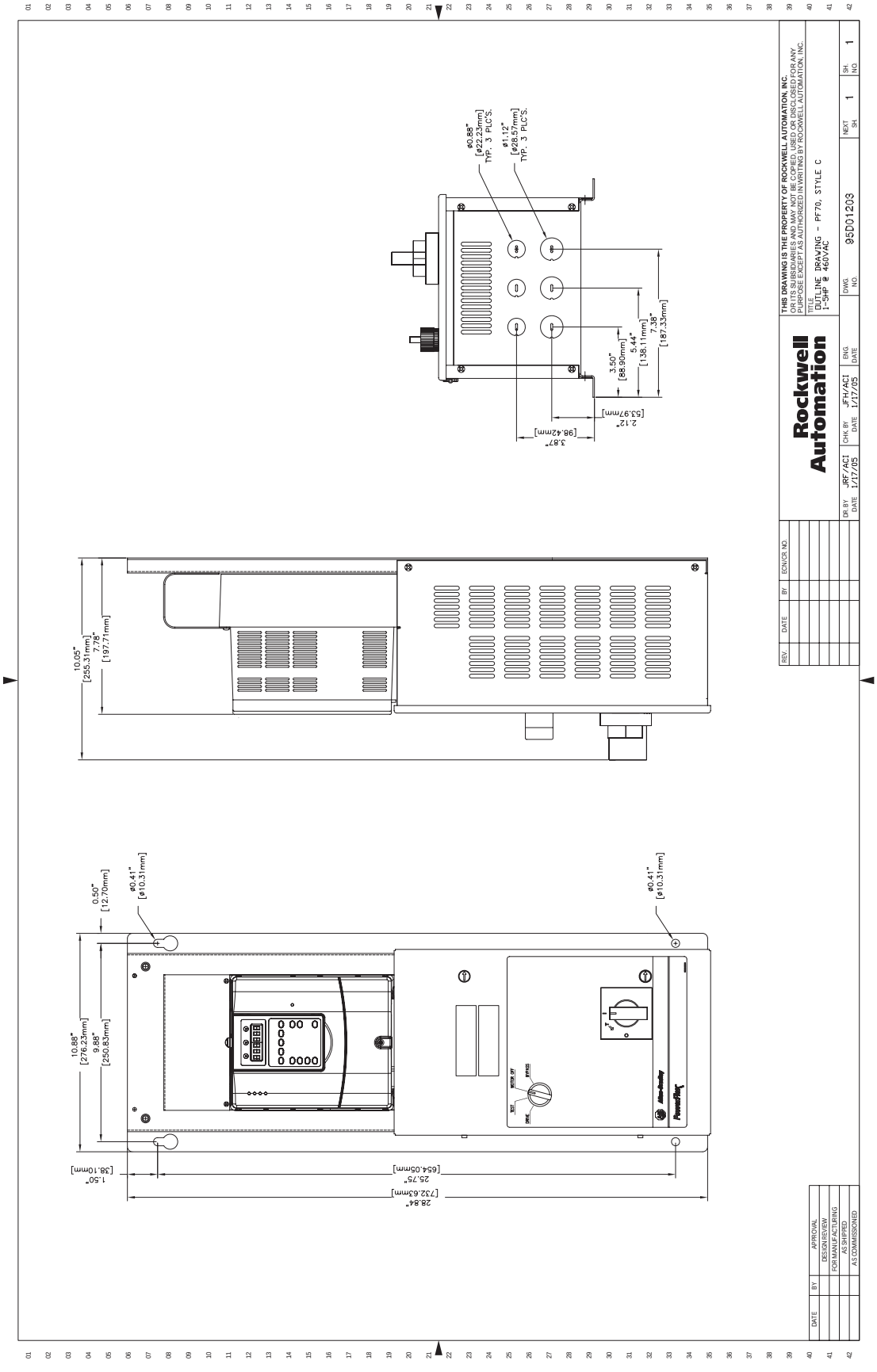


Figure 3.14 7.5-10 HP, 460V AC Drives

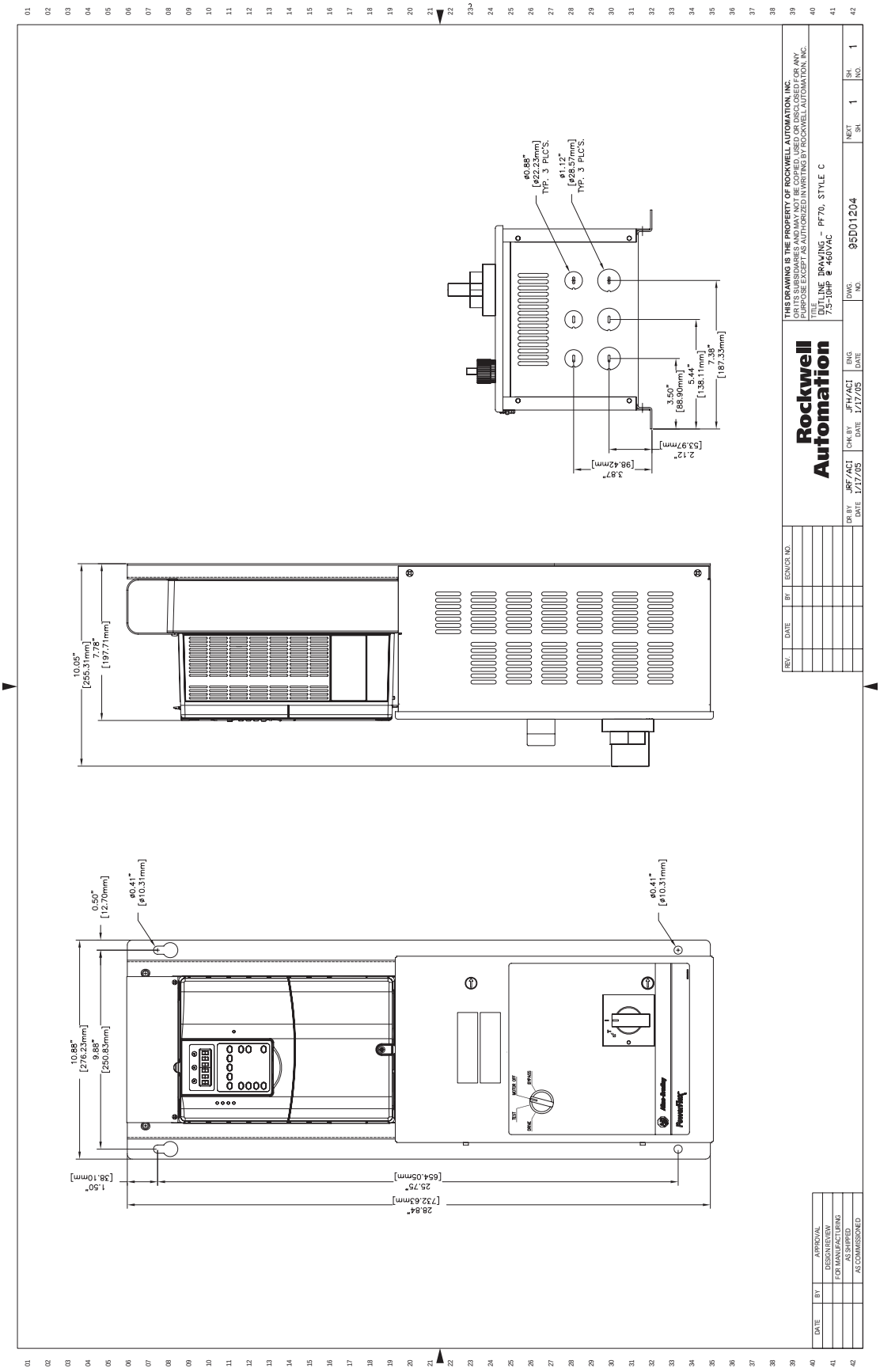


Figure 3.15 15-25 HP, 460V AC Drives

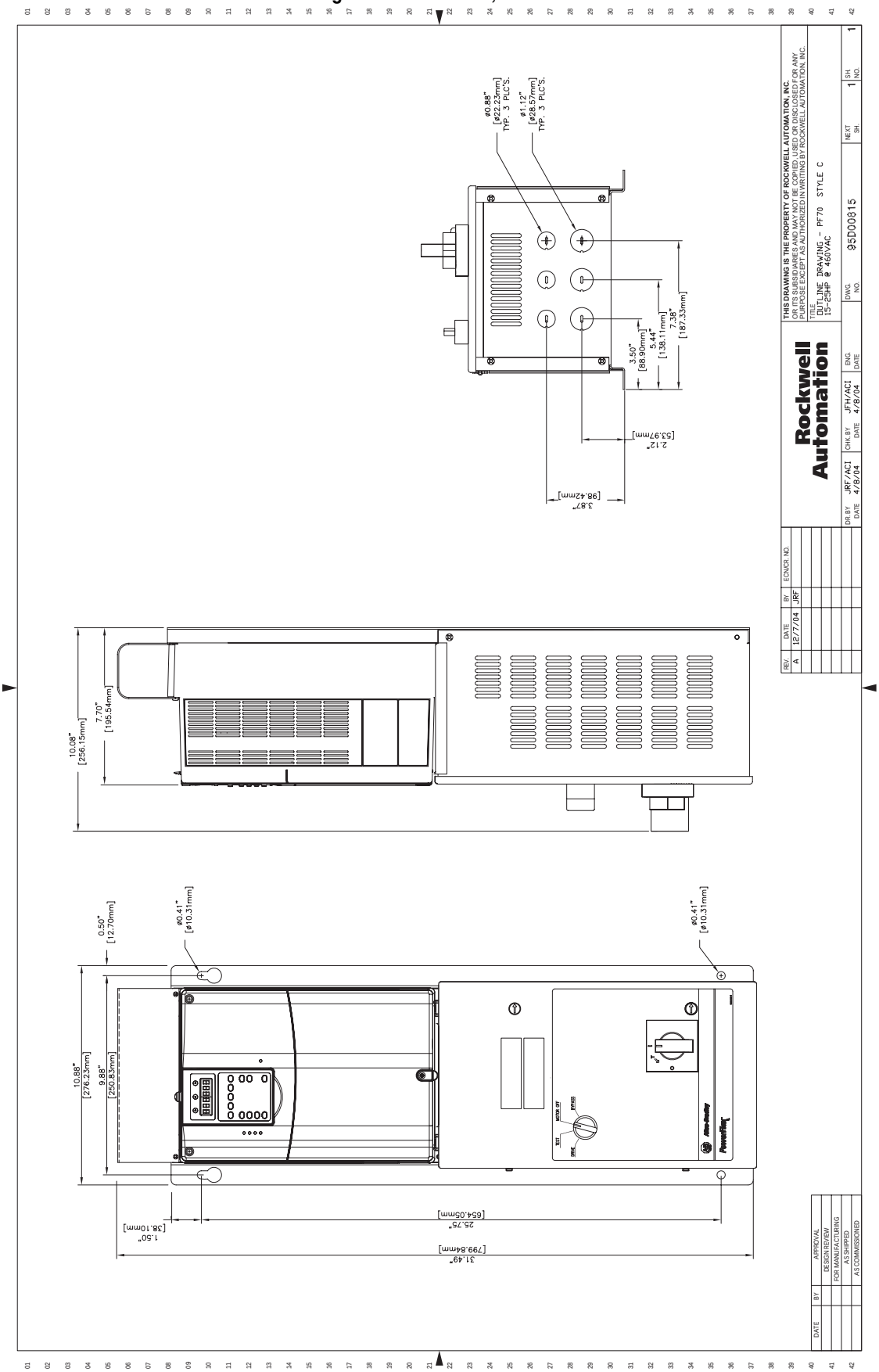


Figure 3.16 30HP, 460V AC Drives

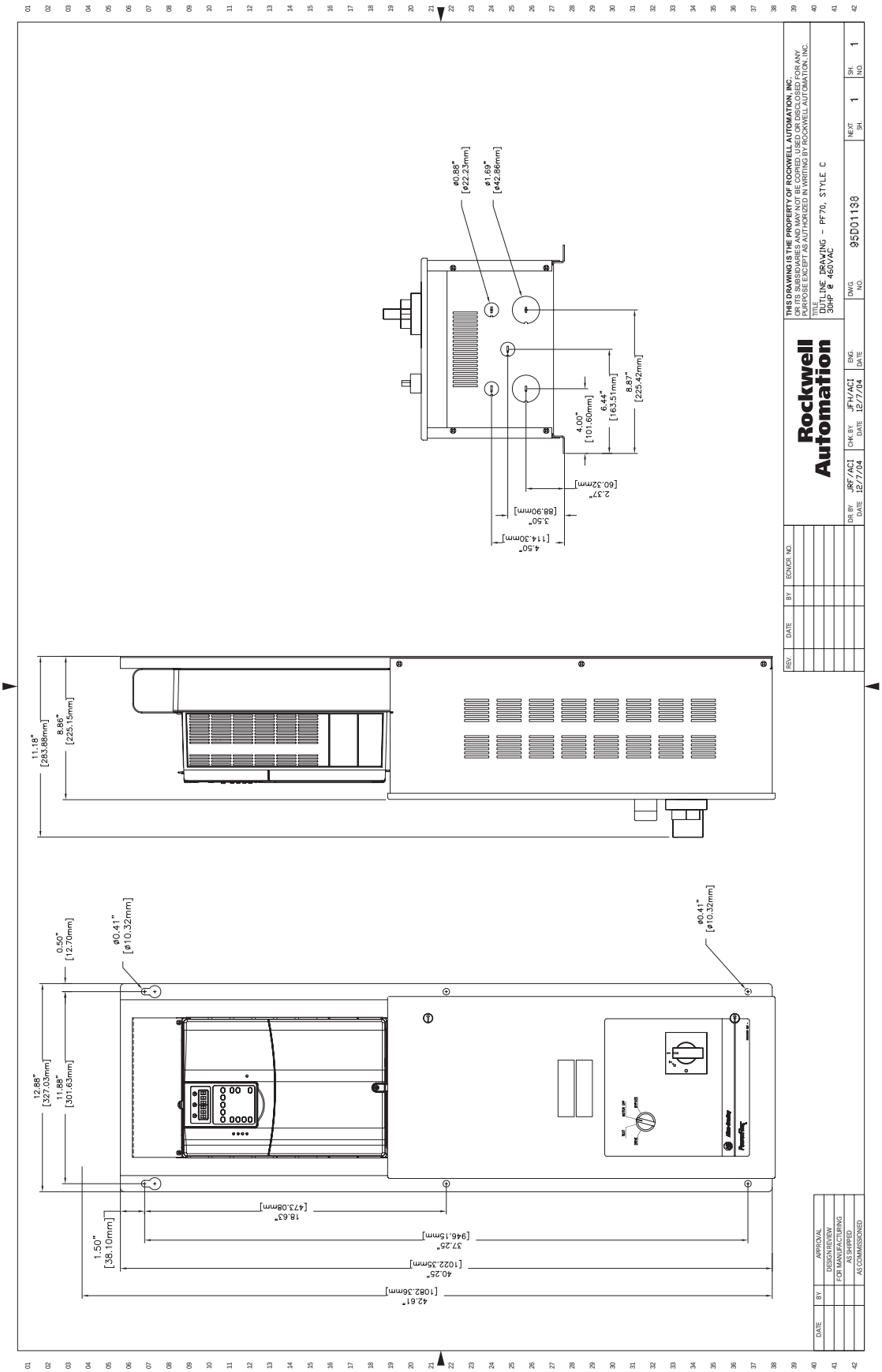


Figure 3.17 40-50 HP, 460V AC Drives

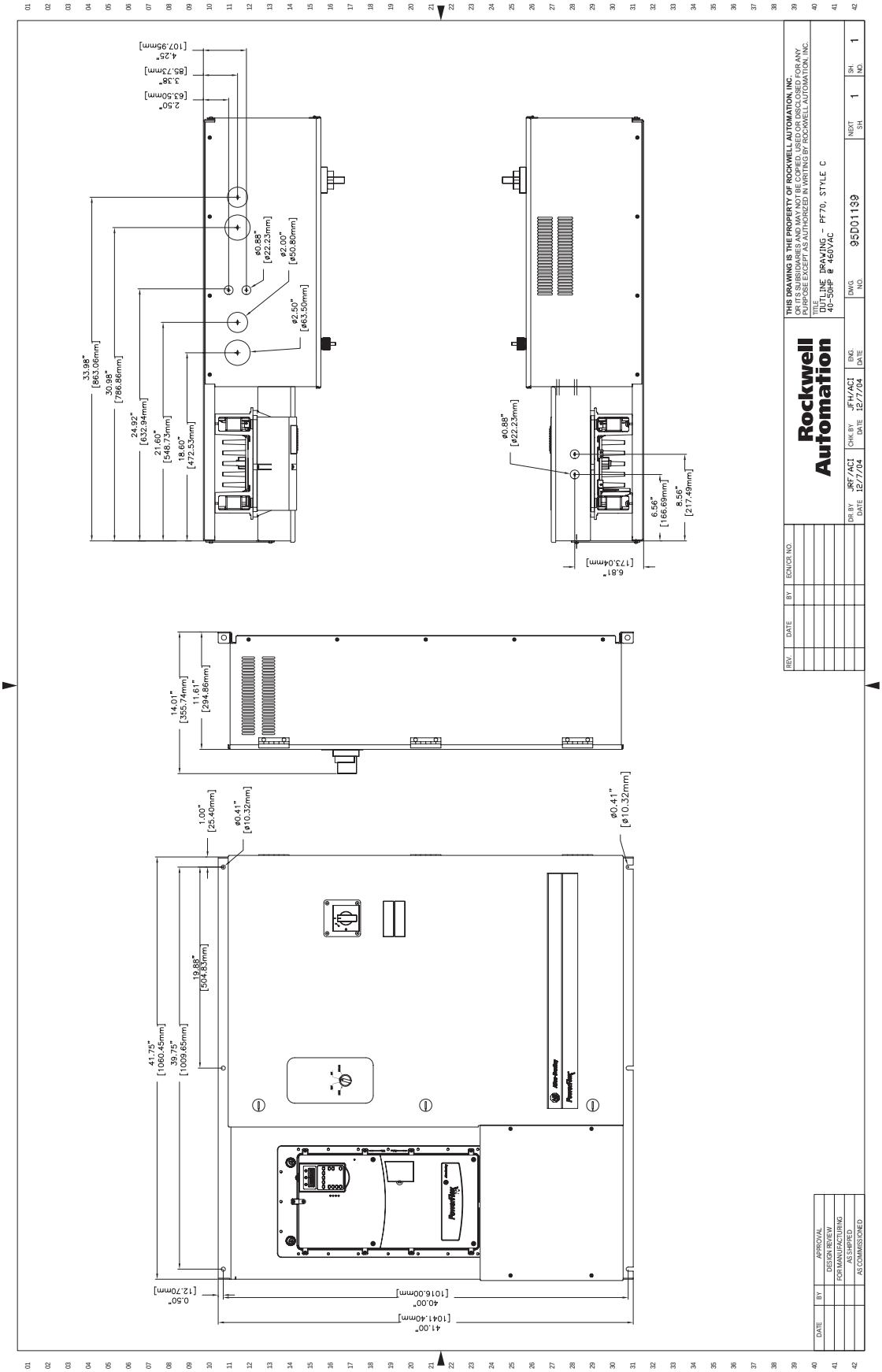


Figure 3.18 60 HP, 460V AC Drives

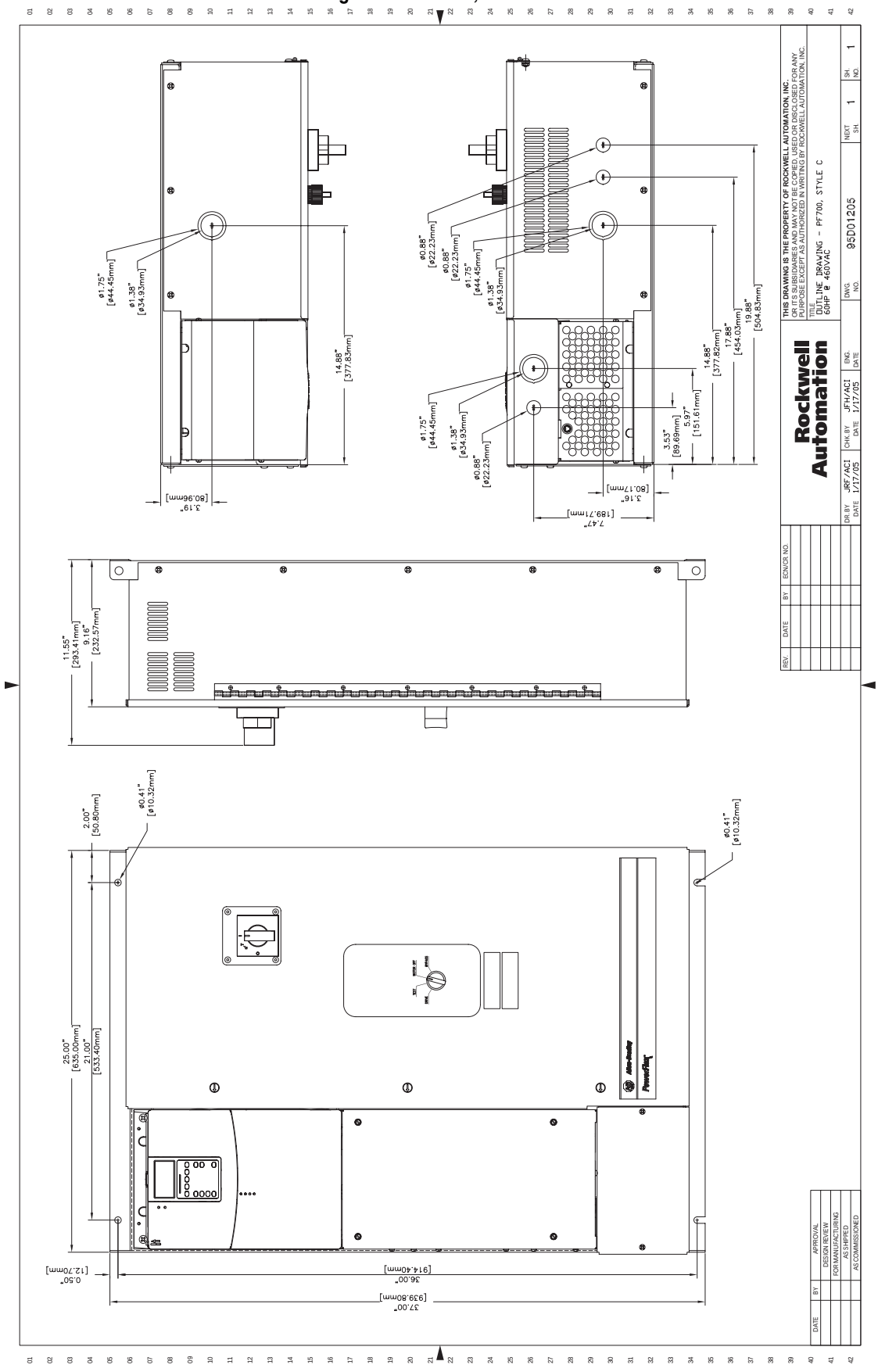
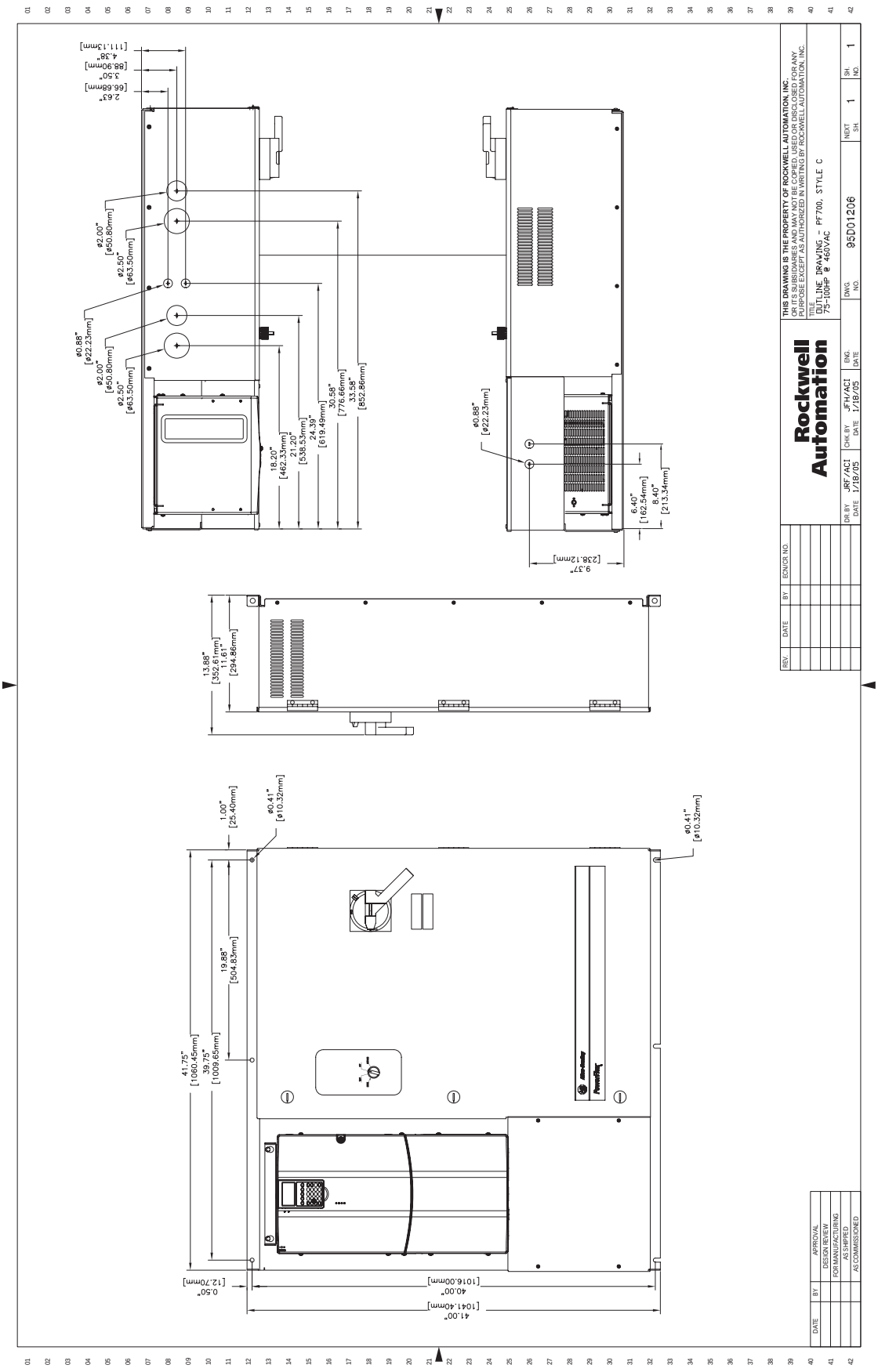


Figure 3.19 75-100 HP, 460V AC Drives



Mechanical Installation

Chapter Objectives

This chapter provides information on mounting a PowerFlex 70 and 700 Package for Fan and Pump Applications.

ATTENTION: The following information is merely a guide for proper installation. 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.

Mounting Considerations

Environment

Before deciding on an installation site, verify that the PowerFlex Drive Packages can be kept clean, cool and dry. The drives should be kept away from oil, coolants or other airborne contaminants.

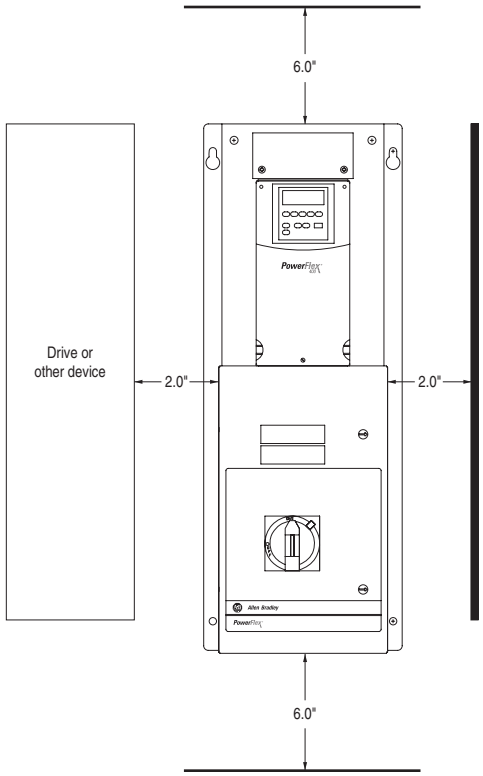
Maximum Surrounding Air Temperature

PowerFlex 70 and 700 Packages for Fan and Pump Applications are designed to operate at 0° to 40°C (32° to 104°F) surrounding air temperature.

Minimum Mounting Clearances

Be sure there is adequate clearance for air circulation around the drive. For best air movement, do not mount drives directly above each other. Note that no devices are to be mounted behind the drive. This area must be kept clear of all control and power wiring.

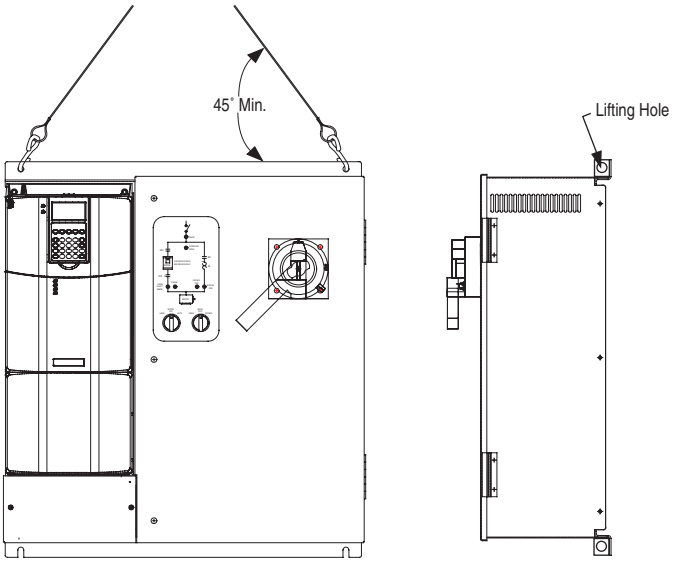
Figure 4.1 Minimum Mounting Clearances



Lifting and Mounting the Drive

Care should be used to prevent damage due to dropping or jolting when moving the drive. A fork lift truck or similar mains of lifting and transporting may be used. Sling in a manner that will equalize the load at the pickup points. Use a spreader bar if the angle of the sling is less than 45 degrees relative to horizontal. Do no jolt while lifting.

Figure 4.2 Lifting the Drive



Use the following procedure to lift and mount the drive.

1. Attach a sling with safety hooks or clevis clamps to the two lifting holes. Make certain that the angle of the sling is not less than 45 degrees relative to horizontal.
2. Using an overhead or portable hoist, attach a free-fall chain to the chain secured to the drive. Take up any vertical slack in the chain.
3. Using the hoist, lift the drive from the horizontal shipping pallet.
4. Position the drive.
5. Attach the drive to a vertical surface using the mounting holes provided. Use washers under the bolt heads.

Watts Loss

The following table lists watt loss data for PowerFlex 70 and 700 Packages for Fan and Pump Applications running at full load, full speed and a factory default PWM frequency of 4kHz.

Table 4.A Watts Loss at Full Load/Speed, 4 kHz

Drive Rating			Power Dissipation
Input Voltage	kW	HP	Watts
208V AC – 3-Phase	0.75	1.0	61
	1.5	2.0	77
	2.2	3.0	103
	4.0	5.0	185
	5.5	7.5	250
	7.5	10	329
	11	15	436
460V AC – 3-Phase	0.75	1.0	57
	1.5	2.0	75
	2.2	3.0	99
	4.0	5.0	138
	5.5	7.5	178
	7.5	10	235
	11	15	350
	15	20	486
	18.5	25	414
	22	30	448
	30	40	561
	37	50	700
	45	60	940
	55	75	1117
	75	100	1489
	90	125	1855
	110	150	2214
	132	200	2512

Drive Rating			Power Dissipation
Input Voltage	kW	HP	Watts
600V AC - 3-Phase	2.2	3.0	89
	4.0	5.0	128
	5.5	7.5	168
	7.5	10	226
	11	15	340
	15	20	433
	18.5	25	334
	22	30	365
	30	40	452
	37	50	571
	45	60	835
	55	75	1371
	75	100	1884
	90	125	1910
	110	150	2290

Weights

The following tables list approximate weights for PowerFlex 70/700 Drive Packages for Fan and Pump Applications.

Table 4.B Weights for Main Input Disconnect Packages (Style A)

Input Voltage	kW	HP	Input Line Reactor	Weight
208V AC	0.75	1	No	25 lbs
	1.5	2		25 lbs
	2.2	3		25 lbs
	4	5		34 lbs
	5.5	7.5		40 lbs
	7.5	10		40 lbs
	11	15		41 lbs
	0.75	1	Yes	39 lbs
	1.5	2		39 lbs
	2.2	3		39 lbs
	4	5		50 lbs
	5.5	7.5		62 lbs
	7.5	10		62 lbs

Input Voltage	kW	HP	Input Line Reactor	Weight
460V AC	0.75	1.0	No	25 lbs
	1.5	2.0		25 lbs
	2.2	3.0		25 lbs
	4.0	5.0		25 lbs
	5.5	7.5		34 lbs
	7.5	10		34 lbs
	11	15		40 lbs
	15	20		40 lbs
	18.5	25		40 lbs
	22	30		50 lbs
	30	40		69 lbs
	37	50		69 lbs
	45	60		150 lbs
	55	75		150 lbs
	75	100		150 lbs
	90	125		390 lbs
	110	150		390 lbs
	132	200		390 lbs
	0.75	1.0	Yes	39 lbs
	1.5	2.0		39 lbs
	2.2	3.0		39 lbs
	4.0	5.0		39 lbs
	5.5	7.5		50 lbs
	7.5	10		50 lbs
	11	15		62 lbs
	15	20		62 lbs
	18.5	25		62 lbs

Input Voltage	kW	HP	Input Line Reactor	Weight
600V AC	2.2	3.0		25 lbs
	4.0	5.0		25 lbs
	5.5	7.5		34 lbs
	7.5	10		34 lbs
	11	15		40 lbs
	15	20		40 lbs
	18.5	25		40 lbs
	22	30	No	50 lbs
	30	40		69 lbs
	37	50		69 lbs
	45	60		150 lbs
	55	75		150 lbs
	75	100		150 lbs
	90	125		390 lbs
	110	150		390 lbs
	2.2	3.0		39 lbs
	4.0	5.0		39 lbs
	5.5	7.5		50 lbs
	7.5	10	Yes	50 lbs
	11	15		62 lbs
	15	20		62 lbs
	18.5	25		62 lbs

Table 4.C Weights for 3 Contactor Full Feature Bypass with Disconnect Packages (Style B)

Input Voltage	kW	HP	Input Line Reactor	Weight
208V AC	0.75	1		35 lbs
	1.5	2		35 lbs
	2.2	3		35 lbs
	4	5	No	47 lbs
	5.5	7.5		60 lbs
	7.5	10		60 lbs
	11	15		60 lbs
	0.75	1		49 lbs
	1.5	2		49 lbs
	2.2	3	Yes	49 lbs
	4	5		65 lbs
	5.5	7.5		83 lbs
	7.5	10		83 lbs

Input Voltage	kW	HP	Input Line Reactor	Weight
460V AC	0.75	1.0		35 lbs
	1.5	2.0		35 lbs
	2.2	3.0		35 lbs
	4.0	5.0		35 lbs
	5.5	7.5		47 lbs
	7.5	10		47 lbs
	11	15		60 lbs
	15	20		60 lbs
	18.5	25	No	60 lbs
	22	30		95 lbs
	30	40		95 lbs
	37	50		95 lbs
	45	60		240 lbs
	55	75		250 lbs
	75	100		270 lbs
	90	125		420 lbs
	110	150		420 lbs
	0.75	1.0		49 lbs
	1.5	2.0		49 lbs
	2.2	3.0		49 lbs
	4.0	5.0		49 lbs
	5.5	7.5	Yes	65 lbs
	7.5	10		65 lbs
	11	15		83 lbs
	15	20		83 lbs
	18.5	25		83 lbs

Input Voltage	kW	HP	Input Line Reactor	Weight
600V AC	2.2	3.0		35 lbs
	4.0	5.0		35 lbs
	5.5	7.5		47 lbs
	7.5	10		47 lbs
	11	15		60 lbs
	15	20		60 lbs
	18.5	25		60 lbs
	22	30	No	95 lbs
	30	40		95 lbs
	37	50		95 lbs
	45	60		240 lbs
	55	75		250 lbs
	75	100		270 lbs
	90	125		420 lbs
	110	150		420 lbs
	2.2	3.0		49 lbs
	4.0	5.0		49 lbs
	5.5	7.5		65 lbs
	7.5	10	Yes	65 lbs
	11	15		83 lbs
	15	20		83 lbs
	18.5	25		83 lbs

Table 4.D Weights for 3 Contactor Basic Bypass with Disconnect Packages (Style C)

Input Voltage	kW	HP	Input Line Reactor	Weight
460V AC	0.75	1.0		30 lbs
	1.5	2.0		30 lbs
	2.2	3.0		30 lbs
	4.0	5.0		30 lbs
	5.5	7.5		37 lbs
	7.5	10		37 lbs
	11	15		47 lbs
	15	20	No	47 lbs
	18.5	25		53 lbs
	22	30		95 lbs
	30	40		95 lbs
	37	50		95 lbs
	45	60		200 lbs
	55	75		250 lbs
	75	100		270 lbs

Supplemental Information

Specifications

Category	Specification	
Environment	Altitude:	1000 m (3300 ft.) max. without derating
	Surrounding Air Temperature without Derating: Storage Temperature (all const.):	0 to 40° C (32 to 104° F) -40 to 70° C (-40 to 158° F)
	Relative Humidity:	5 to 95% non-condensing
	Shock:	15 G peak for 11 ms duration (+/- 1.0 ms)
	Vibration:	0.152 mm (0.006 in.) displacement, 1 G peak, 5.5 Hz
All Others	Refer to the PowerFlex 70 *User Manual* or PowerFlex 700 *User Manual*.	

Notes:

Replacement Parts

Main Input Disconnect Package (Style A)

Description	Designation	Voltage	HP	Part Number	Manufacturer
Disconnect Switch	DSI	208V AC	1-5	194R-NJ030P3	Allen-Bradley
			7.5-10	194R-NJ060P3	Allen-Bradley
			15	194R-NJ100P3	Allen-Bradley
		460V AC	1-10	194R-NJ030P3	Allen-Bradley
			15-25	194R-NJ060P3	Allen-Bradley
			30-50	194R-NJ100P3	Allen-Bradley
			60-100	194R-NJ200P3	Allen-Bradley
			125-200	194R-NJ400P3	Allen-Bradley
		600V AC	3-10	194R-NJ030P3	Allen-Bradley
			15-25	194R-NJ060P3	Allen-Bradley
			30-50	194R-NJ100P3	Allen-Bradley
			60-100	194R-NJ200P3	Allen-Bradley
			125-150	194R-NJ400P3	Allen-Bradley
Operator Handle		208V AC	1-15	194R-HS1	Allen-Bradley
		460V AC	1-25	194R-HS1	Allen-Bradley
			30-200	194R-HM1	Allen-Bradley
		600V AC	3-25	194R-HS1	Allen-Bradley
			30-150	194R-HM1	Allen-Bradley
Operator Shaft		208V AC	1-10	194R-R2	Allen-Bradley
			15	194R-R4	Allen-Bradley
		460V AC	1-25	194R-R2	Allen-Bradley
			30-100	194R-R4	Allen-Bradley
			125-200	194R-R6	Allen-Bradley
		600V AC	1-25	194R-R2	Allen-Bradley
			30-100	194R-R4	Allen-Bradley
			125-150	194R-R6	Allen-Bradley

Description	Designation	Voltage	HP	Part Number	Manufacturer
Main Fuses	FU1-FU3	208V AC	1	10 Amp Class J	–
			2	15 Amp Class J	–
			3-5	20 Amp Class J	–
			7.5	35 Amp Class J	–
			10	40 Amp Class J	–
			15	80 Amp Class J	–
		460V AC	1	6 Amp Class J	–
			2-3	10 Amp Class J	–
			5	15 Amp Class J	–
			7.5-10	20 Amp Class J	–
			15-20	35 Amp Class J	–
			25	60 Amp Class J	–
			30	70 Amp Class J	–
			40	80 Amp Class J	–
			50	100 Amp Class J	–
			60	150 Amp Class J	–
			75	175 Amp Class J	–
			100	200 Amp Class J	–
			125	250 Amp Class J	–
			150	350 Amp Class J	–
			200	400 Amp Class J	–
		600V AC	3	10 Amp Class J	–
			5	15 Amp Class J	–
			7.5-10	20 Amp Class J	–
			15-20	35 Amp Class J	–
			25	60 Amp Class J	–
			30	70 Amp Class J	–
			40	80 Amp Class J	–
			50	100 Amp Class J	–
			60	150 Amp Class J	–
			75	175 Amp Class J	–
			100	200 Amp Class J	–
			125	250 Amp Class J	–
			150	350 Amp Class J	–
Drive Module	DM1	208V AC	1	20AB4P2A0AYNANC0	Allen-Bradley
			2	20AB6P8A0AYNANC0	Allen-Bradley
			3	20AB9P6A0AYNANC0	Allen-Bradley
			5	20AB015A0AYNANC0	Allen-Bradley
			7.5	20AB022A0AYNANC0	Allen-Bradley
			10	20AB028A0AYNANC0	Allen-Bradley
			15	20AB042A0AYNANC0	Allen-Bradley
		460V AC	1	20AD2P1A0AYNANC0	Allen-Bradley
			2	20AD3P4A0AYNANC0	Allen-Bradley
			3	20AD5P0A0AYNANC0	Allen-Bradley
			5	20AD8P0A0AYNANC0	Allen-Bradley
			7.5	20AD011A0AYNANC0	Allen-Bradley
			10	20AD014A0AYNANC0	Allen-Bradley
			15	20AD022A0AYNANC0	Allen-Bradley
			20	20AD027A0AYNANC0	Allen-Bradley
			25	20AD034A0AYNANC0	Allen-Bradley
			30	20AD040A0AYNANC0	Allen-Bradley
			40	20AD052A0AYNANC0	Allen-Bradley
			50	20AD065A0AYNANC0	Allen-Bradley
			60	20BD077A0ANNANA0	Allen-Bradley
			75	20BD096A0ANNANA0	Allen-Bradley
			100	20BD125A0ANNANA0	Allen-Bradley
			125	20BD156A0ANNANA0	Allen-Bradley
			150	20BD180A0ANNANA0	Allen-Bradley
			200	20BD248A0ANNANA0	Allen-Bradley

Description	Designation	Voltage	HP	Part Number	Manufacturer
Drive Module	DM1	600V AC	3	20AE3P9A0AYNNNC0	Allen-Bradley
			5	20AE6P1A0AYNNNC0	Allen-Bradley
			7.5	20AE9P0A0AYNNNC0	Allen-Bradley
			10	20AE011A0AYNNNC0	Allen-Bradley
			15	20AE017A0AYNNNC0	Allen-Bradley
			20	20AE022A0AYNNNC0	Allen-Bradley
			25	20BE027A0AYNANA0	Allen-Bradley
			30	20BE032A0AYNANA0	Allen-Bradley
			40	20BE041A0AYNANA0	Allen-Bradley
			50	20BE052A0AYNANA0	Allen-Bradley
			60	20BE062A0AYNANA0	Allen-Bradley
			75	20BE077A0AYNANA0	Allen-Bradley
			100	20BE099A0AYNANA0	Allen-Bradley
			125	20BE125A0AYNANA0	Allen-Bradley
			150	20BE144A0AYNANA0	Allen-Bradley

3 Contactor Full Feature Bypass with Disconnect Package (Style B)

Description	Designation	Voltage	HP	Part Number	Manufacturer
Disconnect Switch	DSI	208V AC	1-5	194R-NJ030P3	Allen-Bradley
			7.5-10	194R-NJ060P3	Allen-Bradley
			15	194R-NJ100P3	Allen-Bradley
		460V AC	1-10	194R-NJ030P3	Allen-Bradley
			15-25	194R-NJ060P3	Allen-Bradley
			30-50	194R-NJ100P3	Allen-Bradley
			60-100	194R-NJ200P3	Allen-Bradley
			125-150	194R-NJ400P3	Allen-Bradley
		600V AC	3-10	194R-NJ030P3	Allen-Bradley
			15-25	194R-NJ060P3	Allen-Bradley
			30-50	194R-NJ100P3	Allen-Bradley
			60-100	194R-NJ200P3	Allen-Bradley
			125-150	194R-NJ400P3	Allen-Bradley
Operator Handle		208V AC	1-15	194R-HS1	Allen-Bradley
		460V AC	1-25	194R-HS1	Allen-Bradley
			30-150	194R-HM1	Allen-Bradley
		600V AC	3-25	194R-HS1	Allen-Bradley
			30-150	194R-HM1	Allen-Bradley
Operator Shaft		208V AC	1-10	194R-R2	Allen-Bradley
			15	194R-R4	Allen-Bradley
		460V AC	1-25	194R-R2	Allen-Bradley
			30-100	194R-R4	Allen-Bradley
			125-150	194R-R6	Allen-Bradley
		600V AC	3-25	194R-R2	Allen-Bradley
			30-100	194R-R4	Allen-Bradley
			125-150	194R-R6	Allen-Bradley

Description	Designation	Voltage	HP	Part Number	Manufacturer
Main Fuses	FU1-FU3	208V AC	1	10 Amp Class J	–
			2	15 Amp Class J	–
			3-5	20 Amp Class J	–
			7.5	35 Amp Class J	–
			10	40 Amp Class J	–
			15	80 Amp Class J	–
		460V AC	1	6 Amp Class J	–
			2-3	10 Amp Class J	–
			5	15 Amp Class J	–
			15-20	35 Amp Class J	–
			25	60 Amp Class J	–
			30	70 Amp Class J	–
			40	80 Amp Class J	–
			50	100 Amp Class J	–
			60	150 Amp Class J	–
			75	175 Amp Class J	–
			100	200 Amp Class J	–
			125	250 Amp Class J	–
			150	350 Amp Class J	–
		600V AC	3	10 Amp Class J	–
			5	15 Amp Class J	–
			7.5-10	20 Amp Class J	–
			15-20	35 Amp Class J	–
			25	60 Amp Class J	–
			30	70 Amp Class J	–
			40	80 Amp Class J	–
			50	100 Amp Class J	–
			60	150 Amp Class J	–
			75	175 Amp Class J	–
			100	200 Amp Class J	–
			125	250 Amp Class J	–
			150	350 Amp Class J	–
Control Transformer	T1	208V AC	1-10	TB-69300	ACME
			15	TB-69301	ACME
		460V AC	1-20	TB-69300	ACME
			25-60	TB-69301	ACME
			75-150	TB-69302	ACME
		600V AC	3-20	TB-81001	ACME
			25-60	TB-81001	ACME
			75-150	TB-81002	ACME
Control Transformer Fuses	FU4-FU5	208V AC	1-10	1 Amp Class CC	–
			15	2 Amp Class CC	–
		480V AC	1-60	1 Amp Class CC	–
			75-150	2 Amp Class CC	–
		600V AC	3-60	1 Amp Class CC	–
			75-150	2 Amp Class CC	–

Description	Designation	Voltage	HP	Part Number	Manufacturer
Bypass Contactor	BC	208V AC	1-3	100-C16D10	Allen-Bradley
			5	100-C23D10	Allen-Bradley
			7.5-10	100-C37D00	Allen-Bradley
			15	100-C60D00	Allen-Bradley
		460V AC	1-10	100-C16D10	Allen-Bradley
			15-25	100-C37D10	Allen-Bradley
			30	100-C43D00	Allen-Bradley
			40-50	100-C72D00	Allen-Bradley
			60	100-C85D00	Allen-Bradley
			75	100-D110ED11	Allen-Bradley
			100	100-D140ED11	Allen-Bradley
			125-150	100-D180ED11	Allen-Bradley
		600V AC	3-10	100-C16D10	Allen-Bradley
			15-25	100-C37D10	Allen-Bradley
			30	100-C43D00	Allen-Bradley
			40-50	100-C72D00	Allen-Bradley
			60	100-C85D00	Allen-Bradley
			75	100-D110ED11	Allen-Bradley
			100	100-D140ED11	Allen-Bradley
			125-150	100-D180ED11	Allen-Bradley
Drive Input Contactor	DIC	208V AC	1-7.5	100-C16D10	Allen-Bradley
			10-15	100-C37D00	Allen-Bradley
		460V AC	1-20	100-C16D10	Allen-Bradley
			25-30	100-C37D00	Allen-Bradley
			40	100-C43D00	Allen-Bradley
			50-60	100-C72D00	Allen-Bradley
			75	100-C85D00	Allen-Bradley
			100-125	100-D110ED11	Allen-Bradley
			150	100-D140ED11	Allen-Bradley
		600V AC	3-20	100-C16D10	Allen-Bradley
			25-30	100-C37D00	Allen-Bradley
			40	100-C43D00	Allen-Bradley
			50-60	100-C72D00	Allen-Bradley
			75	100-C85D00	Allen-Bradley
			100-125	100-D110ED11	Allen-Bradley
			150	100-D140ED11	Allen-Bradley
Drive Output Contactor	DOC	208V AC	1-7.5	100-C16D10	Allen-Bradley
			10	100-C23D10	Allen-Bradley
			15	100-C37D00	Allen-Bradley
		460V AC	1-20	100-C16D10	Allen-Bradley
			25-30	100-C37D00	Allen-Bradley
			40	100-C43D00	Allen-Bradley
			50-60	100-C72D00	Allen-Bradley
			75	100-C85D00	Allen-Bradley
			100-125	100-D110ED11	Allen-Bradley
			150	100-D140ED11	Allen-Bradley
		600V AC	3-20	100-C16D10	Allen-Bradley
			25-30	100-C37D00	Allen-Bradley
			40	100-C43D00	Allen-Bradley
			50-60	100-C72D00	Allen-Bradley
			75	100-C85D00	Allen-Bradley
			100-125	100-D110ED11	Allen-Bradley
			150	100-D140ED11	Allen-Bradley

Description	Designation	Voltage	HP	Part Number	Manufacturer
Overload Relay	OL	208V AC	1-3	193-EEDB	Allen-Bradley
			5	193-EEEB	Allen-Bradley
			7.5-10	193-EEFD	Allen-Bradley
			15	193-EEGE	Allen-Bradley
		460V AC	1-2	193-EECB	Allen-Bradley
			3-7.5	193-EEDB	Allen-Bradley
			10	193-EEEB	Allen-Bradley
			15-30	193-EEFD	Allen-Bradley
			40-60	193-EEGE	Allen-Bradley
			75-150	193-EEJF	Allen-Bradley
		600V AC	3-7.5	193-EEDB	Allen-Bradley
			10	193-EEEB	Allen-Bradley
			15-30	193-EEFD	Allen-Bradley
			40-60	193-EEGE	Allen-Bradley
			75-150	193-EEJF	Allen-Bradley
Bypass Control Panel	CP1	208V AC	1-15	SK-C1-BCP1	Allen-Bradley
		460V AC	1-150	SK-C1-BCP1	Allen-Bradley
		600V AC	3-150	SK-C1-BCP1	Allen-Bradley
Power Terminal Blocks	T1-T3	208V AC	1-7.5	1492-W10	Allen-Bradley
			10-15	1492-W16S	Allen-Bradley
		460V AC	1-15	1492-W10	Allen-Bradley
			20-30	1492-W16S	Allen-Bradley
			40-75	1492-J35	Allen-Bradley
			100	67013	Gould-Shawmut
			125-150	67003	Gould-Shawmut
		600V AC	3-15	1492-W10	Allen-Bradley
			20-30	1492-W16S	Allen-Bradley
			40-75	1492-J35	Allen-Bradley
			100	67013	Gould-Shawmut
			125-150	67003	Gould-Shawmut
Control Terminal Blocks	T31-T40	208V AC	1-15	1492-W4	Allen-Bradley
		460V AC	1-150	1492-W4	Allen-Bradley
		600V AC	3-150	1492-W4	Allen-Bradley
Drive Module	DM1	208V AC	1	20AB4P2A0AYNANC0	Allen-Bradley
			2	20AB6P8A0AYNANC0	Allen-Bradley
			3	20AB9P6A0AYNANC0	Allen-Bradley
			5	20AB015A0AYNANC0	Allen-Bradley
			7.5	20AB022A0AYNANC0	Allen-Bradley
			10	20AB028A0AYNANC0	Allen-Bradley
			15	20AB042A0AYNANC0	Allen-Bradley
		460V AC	1	20AD2P1A0AYNANC0	Allen-Bradley
			2	20AD3P4A0AYNANC0	Allen-Bradley
			3	20AD5P0A0AYNANC0	Allen-Bradley
			5	20AD8P0A0AYNANC0	Allen-Bradley
			7.5	20AD011A0AYNANC0	Allen-Bradley
			10	20AD014A0AYNANC0	Allen-Bradley
			15	20AD022A0AYNANC0	Allen-Bradley
			20	20AD027A0AYNANC0	Allen-Bradley
			25	20AD034A0AYNANC0	Allen-Bradley
			30	20AD040A0AYNANC0	Allen-Bradley
			40	20AD052A0AYNANC0	Allen-Bradley
			50	20AD065A0AYNANC0	Allen-Bradley
			60	20BD077A0ANNANA0	Allen-Bradley
			75	20BD096A0ANNANA0	Allen-Bradley
			100	20BD125A0ANNANA0	Allen-Bradley
			125	20BD156A0ANNANA0	Allen-Bradley
			150	20BD180A0ANNANA0	Allen-Bradley

Description	Designation	Voltage	HP	Part Number	Manufacturer
Drive Module	DM1	600V AC	3	20AE3P9A0AYNNNC0	Allen-Bradley
			5	20AE6P1A0AYNNNC0	Allen-Bradley
			7.5	20AE9P0A0AYNNNC0	Allen-Bradley
			10	20AE011A0AYNNNC0	Allen-Bradley
			15	20AE017A0AYNNNC0	Allen-Bradley
			20	20AE022A0AYNNNC0	Allen-Bradley
			25	20BE027A0AYNANA0	Allen-Bradley
			30	20BE032A0AYNANA0	Allen-Bradley
			40	20BE041A0AYNANA0	Allen-Bradley
			50	20BE052A0AYNANA0	Allen-Bradley
			60	20BE062A0ANNANA0	Allen-Bradley
			75	20BE077A0ANNANA0	Allen-Bradley
			100	20BE099A0ANNANA0	Allen-Bradley
			125	20BE125A0ANNANA0	Allen-Bradley
			150	20BE144A0ANNANA0	Allen-Bradley

3 Contactor Basic Bypass with Disconnect Package (Style C)

Description	Designation	Voltage	HP	Part Number	Manufacturer
Disconnect Switch	DSI	460V AC	75-100	194R-NJ200P3	Allen-Bradley
Motor Protector	MP1	460V AC	1	140M-C2E-B25	Allen-Bradley
			2	140M-C2E-B40	Allen-Bradley
			3	140M-C2E-B63	Allen-Bradley
			5	140M-C2E-C10	Allen-Bradley
			7.5-10	140M-D8E-C16	Allen-Bradley
			15	140M-D8E-C25	Allen-Bradley
			20	140M-F8E-C32	Allen-Bradley
			25	140M-F8E-C45	Allen-Bradley
			30	140-CMN-4300	Allen-Bradley
			40	140-CMN-6300	Allen-Bradley
			50-60	140-CMN-9000	Allen-Bradley
Operator Handle		460V AC	1-60	140M-C-DN66	Allen-Bradley
			75-100	194R-HM1	Allen-Bradley
Operator Shaft		460V AC	1-60	140M-C-DN66	Allen-Bradley
			75-100	194R-R4	Allen-Bradley
Main Fuses	FU1-FU3	460V AC	75	175 Amp Class J	–
			100	200 Amp Class J	–
Bypass Contactor	BC	460V AC	1-10	100-C16B10	Allen-Bradley
			15-25	100-C37B00	Allen-Bradley
			30	100-C43B00	Allen-Bradley
			40-50	100-C72B00	Allen-Bradley
			60	100-C85B00	Allen-Bradley
			75	100-D110ED11	Allen-Bradley
			100	100-D140ED11	Allen-Bradley
Drive Input Contactor	DIC	460V AC	1-20	100-C16B10	Allen-Bradley
			25-30	100-C37B00	Allen-Bradley
			40	100-C43B00	Allen-Bradley
			50-60	100-C72B00	Allen-Bradley
			75	100-C85B00	Allen-Bradley
			100	100-D110ED11	Allen-Bradley
Drive Output Contactor	DOC	460V AC	1-20	100-C16B10	Allen-Bradley
			25-30	100-C37B00	Allen-Bradley
			40	100-C43B00	Allen-Bradley
			50-60	100-C72B00	Allen-Bradley
			75	100-C85B00	Allen-Bradley
			100	100-D110ED11	Allen-Bradley
Overload Relay	OL	460V AC	60	193-EEGE	Allen-Bradley
			75-100	193-EEJF	Allen-Bradley
Enable Relay	CR	460V AC	1-100	700-M200A24S	Allen-Bradley

Description	Designation	Voltage	HP	Part Number	Manufacturer
Power Terminal Blocks	T1-T3	460V AC	1-15	1492-W10	Allen-Bradley
			20-30	1492-W16S	Allen-Bradley
			40-75	1492-J35	Allen-Bradley
			100	67013	Gould-Shawmut
Control Terminal Blocks	T19-T24	460V AC	1-100	1492-W4	Allen-Bradley
Drive Module	DM1	460V AC	1	20AD2P1A0AYNANC0	Allen-Bradley
			2	20AD3P4A0AYNANC0	Allen-Bradley
			3	20AD5P0A0AYNANC0	Allen-Bradley
			5	20AD8P0A0AYNANC0	Allen-Bradley
			7.5	20AD011A0AYNANC0	Allen-Bradley
			10	20AD014A0AYNANC0	Allen-Bradley
			15	20AD022A0AYNANC0	Allen-Bradley
			20	20AD027A0AYNANC0	Allen-Bradley
			25	20AD034A0AYNANC0	Allen-Bradley
			30	20AD040A0AYNANC0	Allen-Bradley
			40	20AD052A0AYNANC0	Allen-Bradley
			50	20AD065A0AYNANC0	Allen-Bradley
			60	20BD077A0ANNANA0	Allen-Bradley
			75	20BD096A0ANNANA0	Allen-Bradley
			100	20BD125A0ANNANA0	Allen-Bradley

Notes:

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