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# SVX9000 Adjustable Frequency Drives

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**Note:** Supplement to Publication No. CA08102001E — Tab 40.



*SVX9000 Open Drives*

## Product Family Overview

**Overview**

With the SVX9000 series sensorless vector control, Eaton's expanded Cutler-Hammer® drive offering now covers a complete line of PWM adjustable frequency (speed) drives in ratings from:

- 208V — 3/4 to 100 hp I<sub>H</sub>;  
1 to 100 hp I<sub>L</sub>
- 230V — 3/4 to 100 hp I<sub>H</sub>;  
1 to 100 hp I<sub>L</sub>
- 480V — 1 to 1900 hp I<sub>H</sub>;  
1-1/2 to 2200 hp I<sub>L</sub>
- 575V — 2 to 2000 hp I<sub>H</sub>;  
3 to 2300 hp I<sub>L</sub>

The 9000X Family of Drives includes HVX9000, SVX9000, SLX9000 and SPX9000 drives. 9000X Series drive ratings are rated for either high overload (I<sub>H</sub>) or low overload (I<sub>L</sub>). I<sub>L</sub> indicates 110% overload capacity for 1 minute out of 10 minutes. I<sub>H</sub> indicates 150% overload capacity for 1 minute out of 10 minutes.

A full range of enclosure types and options are available to meet a wide array of applications — from simple variable torque to more complex industrial applications such as conveyors, mixers and machine controls.

**Application Description****Application Engineering**

Proper selection and application of all drive system components is essential to assure that an adjustable frequency drive system will safely and reliably provide the performance required for any given application. The party responsible for the overall design and operation of the facility must make sure that qualified personnel are employed to select all components of the drive system, including appropriate safety devices. Eaton's Cutler-Hammer AF Drives Application Engineering Department is prepared to provide assistance to answer any questions about the technical capabilities of Cutler-Hammer drives.

**Motor Selection**

The basic requirement of motor selection is to match the torque vs. speed capability of the motor to the torque vs. speed requirement of the driven load.

**Motor Torque vs. Speed Capability**

As the speed of a motor is reduced below its 60 Hz base speed, motor cooling becomes less effective because of the reduced speed of the self-cooling fan. This limitation determines the maximum torque for continuous operation at any operating speed. The maximum intermittent operating torque is determined by the motor's torque vs. current characteristics and the output current capability of the adjustable frequency controller.

**Multiple Motor Operation**

A number of motors can be connected in parallel to a single controller. Since the frequency of the power supplied by the controller is the same for each motor, the motors will always operate at the same speed. Application Engineering assistance must be requested for all multiple motor applications to assure compliance with all controller design limitations.

**Special Types of Motors**

Standard NEMA Designs A and B three-phase motors are the only motors recommended for use in the majority of applications, but other types of motors are occasionally used. If the existing motor used in the application or the motor proposed for use with the drive system is a type other than NEMA Design A or B, Application Engineering assistance must be requested to make certain that the drive is properly applied.

**Controller Selection**

The basic requirement of controller selection is to match the output current, voltage and frequency capabilities of the controller with the requirements of the connected motor.

**Output Current**

The controller must be selected and applied such that the average operating motor current and horsepower do not exceed the continuous current and horsepower ratings of the controller. The intermittent operating current must not exceed the intermittent current rating of the controller.

**Motor Protection**

Cutler-Hammer adjustable frequency drives include electronic motor overload protection circuits that are designed to meet the requirements of NEC article 430-2 provided that only one motor is connected to the output of the controller.

**Output Voltage and Frequency**

When they are shipped, AF controllers are adjusted to provide a maximum output voltage and frequency equivalent to the input line voltage and frequency. The controllers can be adjusted to operate above line frequency, but a hazard of personal injury or equipment damage may exist when the motor is operated above base speed. Before adjusting the drive to operate above line frequency, make sure that the motor and the driven machinery can safely be operated at the resulting speed.

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## Product Family Overview

## Controller Features

### Operator Control and Interface Requirements

Since there are many possible configurations and many ways of achieving a specific end result, it pays to consider the operator control and interface requirements carefully. A simplified and more economical drive package can often be achieved by selecting from standard product offerings rather than specifying a custom designed configuration.

### Installation Compatibility

The successful application of an AC drive requires the assurance that the drive will be compatible with the environment in which it will be installed. In planning the installation, be sure to carefully consider the heat produced by the drive, the altitude and temperature limits and the need for clean cooling air. Other important considerations include acoustical noise, vibration, electromagnetic compatibility, power quality, controller input harmonic current and power distribution equipment requirements.

### Auxiliary Equipment and Accessories

Adjustable drives are generally designed to have a motor directly connected to the controller output terminals with no other equipment connected in series or parallel. Motor starters, disconnect switches, surge absorbers, dv/dt suppression circuits, output chokes, output transformers and any other equipment under consideration for installation on the output of the controller should not be installed without first requesting Application Engineering assistance. Power factor correction capacitors must never, under any circumstances, be connected at the output of the controller. They would serve no useful purpose, and they may damage the controller.

### Enclosure Definitions

- **NEMA Type 1** — Enclosures are intended for indoor use primarily to provide a degree of protection against contact with enclosed equipment and provide a degree of protection against a limited amount of falling dirt in locations where unusual service conditions do not exist. Top or side openings in the NEMA Type 1 enclosure allow for the free exchange of inside and outside air while meeting the UL rod entry and rust resistance design tests.

- **NEMA Type 12** — Enclosures are intended for indoor use primarily to provide a degree of protection against circulating dust, falling dirt and dripping noncorrosive liquids. To meet UL drip, dust and rust resistance tests, NEMA Type 12 enclosures have no openings to allow for the exchange of inside and outside air.
- **Chassis IP00** — Similar to Protected Chassis IP20 except power terminals are protected by plastic shielding only. Primarily intended to be mounted inside a surrounding protective enclosure.
- **NEMA 3R** — Similar in design to NEMA Type 12 except with more stringent design and test requirements.

## Motor Protection

### DV/DT and Peak Motor Voltage Solutions

Today's AFD products offer significantly improved performance, but at the potential cost of motor insulation stress. The fast switching time of the IGBT devices used in newer AFDs can

cause a transmission line effect in the output power leads to the motor, leading to possibly damaging voltage levels. To meet this need, NEMA has introduced a motor in MG1, Part 31, which provides an insulation system designed to maintain normal motor life in AFD applications. For existing motors, a motor protection scheme is required for longer cable runs. Eaton offers three standard solutions for existing systems.

- **MotoR<sub>x</sub>**

This patented Cutler-Hammer solution provides an energy recovery system which clamps the peak motor voltage to a safe level for standard motors. This option is used when the distance between a single motor and the drive is 600 feet or less.

- **Output Line Reactor**

This option provides an output line reactor, reducing the DV/DT of the AFD output voltage and lessening the transmission line effect, to lower the peak voltage at the motor terminals.

## Product Availability Codes

The product availability codes indicate the type of facility (warehouse, Mod Center or factory) that the product will ship from and, if it is not in stock, the number of working days needed to assemble the product from receipt of the order to shipment from the designated facility. Please note that this lead-time does not include any in-transit time from our facility to your facility.

**Table 1. Product Availability Codes**

Codes	Description
W	Warehouse stocked item. Shipped on customer request date. If item is backordered, please check Vista/VISTALINE or contact your Customer Support Center for product availability.
F1	Factory assemble-to-order. Shipped from factory within 1 working day after receipt of order on Vista.
FA	Factory assemble-to-order. Shipped from factory within 2 – 3 working days after receipt of order on Vista.
FB	Factory assemble-to-order. Shipped from factory within 4 – 10 working days after receipt of order on Vista.
FC	Factory assemble-to-order. Shipped from factory within 11 – 15 working days after receipt of order on Vista.
FD	Factory assemble-to-order. Shipped from factory within 16 – 20 working days after receipt of order on Vista.
FP	Factory assemble-to-order. Shipped from factory on negotiated promise date.
MA	Mod Center assemble-to-order. Shipped from Mod Center within 1 – 3 working days after receipt of order on Vista.
MB	Mod Center assemble-to-order. Shipped from Mod Center within 4 – 10 working days after receipt of order on Vista.
MP	Mod Center assemble-to-order. Shipped from Mod Center on negotiated promise date.

Product availability codes contained herein for a given product may be quantity sensitive and are subject to change without notice. For the most current information, refer to the Product Identification Inquiry (PIN) screen on Vista.

## Open Drives

## SVX9000 Open Drives



SVX9000 Open Drives

## Product Description

Cutler-Hammer® SVX9000 Series Adjustable Frequency Drives from Eaton's electrical business are the next generation of drives specifically engineered for today's commercial and industrial applications. The power unit makes use of the most sophisticated semiconductor technology and a highly modular construction that can be flexibly adapted to the customer's needs.

The input and output configuration (I/O) is designed with modularity in mind. The I/O is comprised of option cards, each with its own input and output configuration. The control module is designed to accept a total of five of these cards. The cards contain not only normal analog and digital inputs but also fieldbus cards.

These drives continue the tradition of robust performance, and raise the bar on features and functionality, ensuring the best solution at the right price.

- The SVX can be flexibly adapted to a variety of needs using our pre-installed "Seven in One" Precision application programs consisting of:
  - Basic

## Features

- Robust design — proven 500,000 hours MTBF
- Integrated 3% line reactors standard on drives from FR4 through FR9
- EMI/RFI Filters H standard up to 200 hp I<sub>H</sub> 480V, 100 hp I<sub>H</sub> 230V
- Simplified operating menu allows for typical programming changes, while programming mode provides control of everything
- Quick Start Wizard built into the programming of the drive ensures a smooth start-up
- Keypad can display up to three monitored parameters simultaneously
- LOCAL/REMOTE operation from keypad
- Copy/Paste function allows transfer of parameter settings from one drive to the next
- Standard NEMA Type 12 keypad on all drives
  - Standard
  - Local/Remote
  - Multi Step Speed Control
  - PID Control

- Multi-Purpose Control
- Pump and Fan Control with Auto Change
- Additional I/O and communication cards provide plug and play functionality
- I/O connections with simple quick connection terminals
- UL Listed
- Hand-Held Auxiliary 240 Power Supply allows programming/monitoring of control module without applying full power to the drive
- Control logic can be powered from an external auxiliary control panel, internal drive functions and fieldbus if necessary
- Brake Chopper standard from:
  - 1 – 30 hp/380 – 500V
  - 3/4 – 15 hp/208 – 230V
- NEMA Type 1 and NEMA Type 12 enclosures available, Frame Sizes FR4 – FR9
- Open Chassis FR10 and greater
- NEMA Type 1 and NEMA Type 12 available in FR10 Freestanding design; NEMA Type 1 available in FR11 Freestanding design
- Standard option board configuration includes an A9 I/O board and an A2 relay output board installed in slots A and B

## Technical Data and Specifications

Table 2. SVX9000 Specifications

Description	Specification
<b>Input Ratings</b>	
Input Voltage ( $V_{in}$ )	+10% / -15%
Input Frequency ( $f_{in}$ )	50/60 Hz (variation up to 45 – 66 Hz)
Connection to Power	Once per minute or less (typical operation)
High Withstand Rating	100 kAIC
<b>Output Ratings</b>	
Output Voltage	0 to $V_{in}$
Continuous Output Current	$I_H$ rated 100% at 122°F (50°C), FR9 and below $I_L$ rated 100% at 104°F (40°C), FR9 and below $I_H/I_L$ 100% at 104°F (40°C), FR10 and above
Overload Current ( $I_H/I_L$ )	150% $I_H$ , 110% $I_L$ for 1 min.
Output Frequency	0 to 320 Hz
Frequency Resolution	.01 Hz
Initial Output Current ( $I_H$ )	250% for 2 seconds
<b>Control Characteristics</b>	
Control Method	Frequency Control (V/f) Open Loop: Sensorless Vector Control, Closed Loop: SPX9000 Drives Only
Switching Frequency Frame 4 – 6 Frame 7 – 12	Adjustable with Parameter 2.6.9 1 to 16 kHz; default 10 kHz 1 to 10 kHz; default 3.6 kHz
Frequency Reference	Analog Input: Resolution .1% (10-bit), accuracy $\pm$ 1% V/Hz Panel Reference: Resolution .01 Hz
Field Weakening Point	30 to 320 Hz
Acceleration Time	0 to 3000 sec.
Deceleration Time	0 to 3000 sec.
Braking Torque	DC brake: 30% x $T_n$ (without brake option)
<b>Ambient Conditions</b>	
Ambient Operating Temperature	14°F (-10°C), no frost to 122°F (+50°C) $I_H$ (FR4 – FR9) 14°F (-10°C), no frost to 104°F (+40°C) $I_H$ (FR10 and up) 14°F (-10°C), no frost to 104°F (+40°C) $I_L$ (all frames)
Storage Temperature	-40°F (-40°C) to 158°F (70°C)
Relative Humidity	0 to 95% RH, noncondensing, non-corrosive, no dripping water
Air Quality	Chemical vapors: IEC 721-3-3, unit in operation, class 3C2; Mechanical particles: IEC 721-3-3, unit in operation, class 3S2
Altitude	100% load capacity (no derating) up to 3280 ft. (1000m); 1% derating for each 328 ft. (100m) above 3280 ft. (1000m); max. 9842 ft. (3000m)
Vibration	EN 50178, EN 60068-2-6; 5 to 50 Hz, Displacement amplitude 1 mm (peak) at 3 to 15.8 Hz, Max. acceleration amplitude 1G at 15.8 to 150 Hz
Shock	EN 50178, EN 60068-2-27 UPS Drop test (for applicable UPS weights) Storage and shipping: max. 15G, 11 ms (in package)
Enclosure Class	NEMA 1/IP21 or NEMA 12/IP54, Open Chassis/IP20

Description	Specification
<b>Standards</b>	
Product	IEC 61800-2
Safety	UL 508C
EMC (at default settings)	Immunity: Fulfills all EMC immunity requirements; Emissions: EN 61800-3, LEVEL H
<b>Control Connections</b>	
Analog Input Voltage	0 to 10V, R = 200 k $\Omega$ (-10 to 10V joystick control) Resolution .1%; accuracy $\pm$ 1%
Analog Input Current	0(4) to 20 mA; $R_i$ - 250 $\Omega$ differential
Digital Inputs (6)	Positive or negative logic; 18 to 30V DC
Auxiliary Voltage	+24V $\pm$ 15%, max. 250 mA
Output Reference Voltage	+10V +3%, max. load 10 mA
Analog Output	0(4) to 20 mA; $R_L$ max. 500 $\Omega$ ; Resolution 10 bit; Accuracy $\pm$ 2%
Digital Outputs	Open collector output, 50 mA/48V
Relay Outputs	2 programmable Form C relay outputs Switching capacity: 24V DC / 8A, 250V AC / 8A, 125V DC / 0.4A

<b>Protections</b>	
Overcurrent Protection	Trip limit 4.0 x $I_H$ instantaneously
Overvoltage Protection	Yes
Undervoltage Protection	Yes
Earth Fault Protection	In case of earth fault in motor or motor cable, only the frequency converter is protected
Input Phase Supervision	Trips if any of the input phases are missing
Motor Phase Supervision	Trips if any of the output phases are missing
Overtemperature Protection	Yes
Motor Overload Protection	Yes
Motor Stall Protection	Yes
Motor Underload Protection	Yes
Short Circuit Protection	Yes (+24V and +10V Reference Voltages)

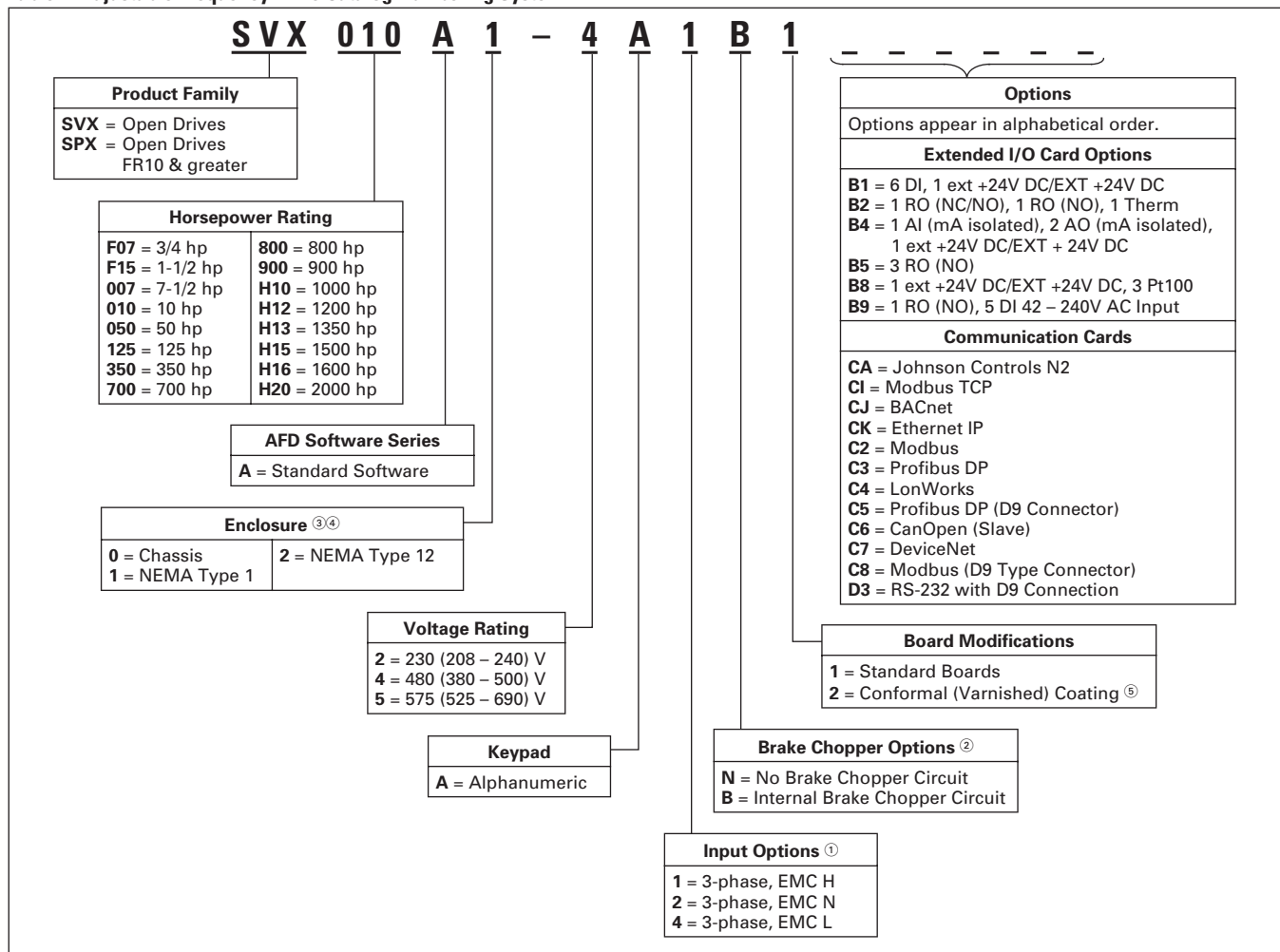
Table 3. Standard I/O Specifications

Description	Specification
6 – Digital Input Programmable	24V: "0" $\leq$ 10V, "1" $\geq$ 18V, $R_i >$ 5 k $\Omega$
2 – Analog Input Configurable w/Jumpers	Voltage: 0 – $\pm$ 10V, $R_i >$ 200 k $\Omega$ Current: 0 (4) – 20 mA, $R_i =$ 250 k $\Omega$
2 – Digital Output Programmable	Form C Relays 250V AC 2 Amp or 30V DC2 Amp resistive
1 – Digital Output Programmable	Open collector 48V DC 50 mA
1 – Analog Output Programmable Configurable w/Jumper	0 – 20 mA, $R_L <$ 500 ohms, resolution 10 Bits/0.1%

## Open Drives

## Catalog Number Selection

Table 4. Adjustable Frequency Drive Catalog Numbering System



① All 230V Drives and 480V Drives up to 200 hp (I<sub>H</sub>) are only available with Input Option 1 (EMC Level H). 480V Drives 250 hp (I<sub>H</sub>) or larger are available with Input Option 2 (EMC Level N). 480V Drives are available with Input Option 4 (EMC Level L). 575V Drives 200 hp (I<sub>H</sub>) or larger are only available with Input Option 2. 575V Drives up to 150 hp (I<sub>H</sub>) are only available with Input Option 4 (EMC Level L).

② 480V Drives up to 30 hp (I<sub>H</sub>) are only available with Brake Chopper Option B. 480V Drives 40 hp (I<sub>H</sub>) or larger come standard with Brake Chopper Option N. 230V Drives up to 15 hp (I<sub>H</sub>) are only available with Brake Chopper Option B. 230V Drives 20 hp or larger come standard with Brake Chopper Option N. All 575V Drives come standard without Brake Chopper Option (N). **Note:** N = No Brake Chopper.

③ 480V Drives 250 hp (I<sub>H</sub>) and larger are available with enclosure style 0 (Chassis); 690V Drives 200 hp (I<sub>H</sub>) and larger are available with enclosure style 0 (Chassis).

④ 480V and 690V FR10 Freestanding Drives are available with enclosure style 1 (NEMA Type 1) and enclosure style 2 (NEMA Type 12). FR11 Freestanding Drives only available with enclosure style 1 (NEMA Type 1).

⑤ Factory promise delivery. Consult Sales Office for availability.

Product Selection

230V SVX9000 Drives

Table 5. 208 – 240V, NEMA Type 1 Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR4	W	3/4	3.7	1	4.8	SVXF07A1-2A1B1	1,045.
		1	4.8	1-1/2	6.6	SVX001A1-2A1B1	1,150.
		1-1/2	6.6	2	7.8	SVXF15A1-2A1B1	1,270.
		2	7.8	3	11	SVX002A1-2A1B1	1,375.
		3	11	—	12.5	SVX003A1-2A1B1	1,490.
FR5	W	—	12.5	5	17.5	SVX004A1-2A1B1	1,590.
		5	17.5	7-1/2	25	SVX005A1-2A1B1	1,845.
		7-1/2	25	10	31	SVX007A1-2A1B1	2,075.
FR6	W	10	31	15	48	SVX010A1-2A1B1	2,390.
		15	48	20	61	SVX015A1-2A1B1	2,975.
FR7	W	20	61	25	75	SVX020A1-2A1N1	4,140.
		25	75	30	88	SVX025A1-2A1N1	5,920.
		30	88	40	114	SVX030A1-2A1N1	6,360.
FR8	W	40	114	50	140	SVX040A1-2A1N1	7,590.
		50	140	60	170	SVX050A1-2A1N1	8,830.
		60	170	75	205	SVX060A1-2A1N1	10,380.
FR9	W	75	205	100	261	SVX075A1-2A1N1	12,930.
		100	261	—	—	SVX100A1-2A1N1	16,430.

Table 6. 208 – 240V, NEMA Type 12 Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR4	F1	3/4	3.7	1	4.8	SVXF07A2-2A1B1	1,210.
		1	4.8	1-1/2	6.6	SVX001A2-2A1B1	1,310.
		1-1/2	6.6	2	7.8	SVXF15A2-2A1B1	1,440.
		2	7.8	3	11	SVX002A2-2A1B1	1,560.
		3	11	—	12.5	SVX003A2-2A1B1	1,690.
FR5	F1	—	12.5	5	17.5	SVX004A2-2A1B1	1,805.
		5	17.5	7-1/2	25	SVX005A2-2A1B1	2,095.
		7-1/2	25	10	31	SVX007A2-2A1B1	2,365.
FR6	F1	10	31	15	48	SVX010A2-2A1B1	2,715.
		15	48	20	61	SVX015A2-2A1B1	3,385.
FR7	W	20	61	25	75	SVX020A2-2A1N1	4,700.
		25	75	30	88	SVX025A2-2A1N1	6,710.
		30	88	40	114	SVX030A2-2A1N1	7,220.
FR8	FP	40	114	50	140	SVX040A2-2A1N1	8,450.
		50	140	60	170	SVX050A2-2A1N1	9,690.
		60	170	75	205	SVX060A2-2A1N1	11,260.
FR9	FP	75	205	100	261	SVX075A2-2A1N1	13,790.
		100	261	—	—	SVX100A2-2A1N1	17,290.

480V SVX9000 Drives

Table 7. 380 – 500V, NEMA Type 1 Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR4	W	1	2.2	1-1/2	3.3	SVX001A1-4A1B1	1,395.
		1-1/2	3.3	2	4.3	SVXF15A1-4A1B1	1,445.
		2	4.3	3	5.6	SVX002A1-4A1B1	1,525.
		3	5.6	5	7.6	SVX003A1-4A1B1	1,630.
		5	7.6	—	9	SVX005A1-4A1B1	1,985.
		—	9	7-1/2	12	SVX006A1-4A1B1	2,155.
FR5	W	7-1/2	12	10	16	SVX007A1-4A1B1	2,320.
		10	16	15	23	SVX010A1-4A1B1	2,485.
		15	23	20	31	SVX015A1-4A1B1	2,890.
FR6	W	20	31	25	38	SVX020A1-4A1B1	3,940.
		25	38	30	46	SVX025A1-4A1B1	4,385.
		30	46	40	61	SVX030A1-4A1B1	5,360.
FR7	W	40	61	50	72	SVX040A1-4A1N1	7,560.
		50	72	60	87	SVX050A1-4A1N1	7,780.
		60	87	75	105	SVX060A1-4A1N1	9,610.
FR8	W	75	105	100	140	SVX075A1-4A1N1	11,790.
		100	140	125	170	SVX100A1-4A1N1	15,180.
		125	170	150	205	SVX125A1-4A1N1	16,330.
FR9	W	150	205	200	261	SVX150A1-4A1N1	18,060.
		200	245	250	300	SVX200A1-4A1N1	27,150.

Discount Symbol..... SS-2

## Open Drives

Table 8. 380 – 500V, NEMA Type 1 Freestanding Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR10	W	250	330	300	385	SPX250A1-4A4N1	35,500.
	FP	300	385	350	460	SPX300A1-4A4N1	42,600.
	W	350	460	400	520	SPX350A1-4A4N1	49,600.
FR11	FP	400	520	500	590	SPX400A1-4A4N1	62,025.
	FP	500	590	550	650	SPX500A1-4A4N1	71,950.
	FP	550	650	600	730	SPX550A1-4A4N1	78,970.

**Note:** Integrated fuses as standard. Limited option selection available; 115V Transformer (KB), Light Kit (L1), HOA (K4), Speed Potentiometer w/HOA (K2), Disconnect Switch (P2). See Enclosed 480V option selection.

Table 9. 380 – 500V, NEMA Type 12 Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR4	F1	1	2.2	1-1/2	3.3	SVX001A2-4A1B1	1,585.
		1-1/2	3.3	2	4.3	SVXF15A2-4A1B1	1,645.
		2	4.3	3	5.6	SVX002A2-4A1B1	1,735.
		3	5.6	5	7.6	SVX003A2-4A1B1	1,850.
		5	7.6	—	9	SVX005A2-4A1B1	2,255.
		—	9	7-1/2	12	SVX006A2-4A1B1	2,450.
FR5	F1	7-1/2	12	10	16	SVX007A2-4A1B1	2,635.
		10	16	15	23	SVX010A2-4A1B1	2,820.
		15	23	20	31	SVX015A2-4A1B1	3,285.
FR6	F1	20	31	25	38	SVX020A2-4A1B1	4,475.
		25	38	30	46	SVX025A2-4A1B1	4,980.
		30	46	40	61	SVX030A2-4A1B1	6,080.
FR7	W	40	61	50	72	SVX040A2-4A1N1	8,580.
		50	72	60	87	SVX050A2-4A1N1	8,830.
		60	87	75	105	SVX060A2-4A1N1	10,920.
FR8	W	75	105	100	140	SVX075A2-4A1N1	13,390.
		100	140	125	170	SVX100A2-4A1N1	17,220.
		125	170	150	205	SVX125A2-4A1N1	18,540.
FR9	W	150	205	200	261	SVX150A2-4A1N1	20,530.
		200	245	250	300	SVX200A2-4A1N1	30,870.

Table 10. 380 – 500V, NEMA Type 12 Freestanding Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR10	FP	250	330	300	385	SPX250A2-4A4N1	37,000.
	FP	300	385	350	460	SPX300A2-4A4N1	44,100.
	FP	350	460	400	520	SPX350A2-4A4N1	51,100.

**Note:** Integrated fuses as standard. Limited option selection available; 115V Transformer (KB), Light Kit (L1), HOA (K4), Speed Potentiometer w/HOA (K2), Disconnect Switch (P2). See Enclosed 480V option selection.

Table 11. 480V 380 – 500, Open Chassis Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR10 <sup>①</sup>	W	250	330	300	385	SPX250A0-4A2N1	31,400.
		300	385	350	460	SPX300A0-4A2N1	39,060.
		350	460	400	520	SPX350A0-4A2N1	46,730.
FR11	W	400	520	500	590	SPX400A0-4A2N1	60,525.
		500	590	—	650	SPX500A0-4A2N1	70,450.
		—	650	600	730	SPX550A0-4A2N1	77,470.
FR12	FP	600	730	—	820	SPX600A0-4A2N1	86,790.
	W	—	820	700	920	SPX650A0-4A2N1	92,500.
	FP	700	920	800	1030	SPX700A0-4A2N1	103,150.
FR13	FP	800	1030	900	1150	SPX800A0-4A2N1	112,800.
		900	1150	1000	1300	SPX900A0-4A2N1	129,850.
		1000	1300	1200	1450	SPXH10A0-4A2N1	146,890.
FR14	FP	1200	1600	1500	1770	SPXH12A0-4A2N1	183,250.
		1600	1940	1800	2150	SPXH16A0-4A2N1	226,420.
		1900	2300	2200	2700	SPXH19A0-4A2N1	288,900.

<sup>①</sup> FR10 – FR14 includes 3% line reactor, but it is not integral to chassis.



Open Drives

575V SVX9000 Drives

Table 12. 525 – 690V, NEMA Type 1 Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR6	W	2	3.33	3	4.5	SVX002A1-5A4N1	2,065.
		3	4.5	—	5.5	SVX003A1-5A4N1	2,285.
		—	5.5	5	7.5	SVX004A1-5A4N1	2,495.
		5	7.5	7-1/2	10	SVX005A1-5A4N1	2,865.
		7-1/2	10	10	13.5	SVX007A1-5A4N1	3,555.
		10	13.5	15	18	SVX010A1-5A4N1	4,395.
		15	18	20	22	SVX015A1-5A4N1	5,240.
		20	22	25	27	SVX020A1-5A4N1	6,040.
		25	27	30	34	SVX025A1-5A4N1	6,960.
		FR7	W	30	34	40	41
40	41			50	52	SVX040A1-5A4N1	8,730.
FR8	W	50	52	60	62	SVX050A1-5A4N1	9,590.
		60	62	75	80	SVX060A1-5A4N1	12,440.
		75	80	100	100	SVX075A1-5A4N1	15,900.
FR9	W	100	100	125	125	SVX100A1-5A4N1	17,470.
		125	125	150	144	SVX125A1-5A4N1	21,730.
		150	144	—	170	SVX150A1-5A4N1	23,290.
		—	170	200	208	SVX175A1-5A4N1	23,970.

Table 13. 525 – 690V, NEMA Type 1 Freestanding Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR10	FP	200	208	250	261	SPX200A1-5A4N1	35,020.
		250	261	300	325	SPX250A1-5A4N1	45,020.
		300	325	400	385	SPX300A1-5A4N1	71,140.
FR11	FP	400	385	450	460	SPX400A1-5A4N1	91,220.
		450	460	500	502	SPX450A1-5A4N1	104,340.
		500	502	550	590	SPX500A1-5A4N1	121,460.

Note: Integrated fuses as standard. Limited option selection available; 115V Transformer (KB), Light Kit (L1), HOA (K4), Speed Potentiometer w/HOA (K2), Disconnect Switch (P2). See Enclosed 480V option selection.

Table 14. 525 – 690V, NEMA Type 12 Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR6	F1	2	3.33	3	4.5	SVX002A2-5A4N1	2,390.
		3	4.5	—	5.5	SVX003A2-5A4N1	2,610.
		—	5.5	5	7.5	SVX004A2-5A4N1	2,820.
		5	7.5	7-1/2	10	SVX005A2-5A4N1	3,195.
		7-1/2	10	10	13.5	SVX007A2-5A4N1	3,895.
		10	13.5	15	18	SVX010A2-5A4N1	4,735.
		15	18	20	22	SVX015A2-5A4N1	5,590.
		20	22	25	27	SVX020A2-5A4N1	6,390.
		25	27	30	34	SVX025A2-5A4N1	7,320.
		FR7	FP	30	34	40	41
40	41			50	52	SVX040A2-5A4N1	9,440.
FR8	FP	50	52	60	62	SVX050A2-5A4N1	10,810.
		60	62	75	80	SVX060A2-5A4N1	13,690.
		75	80	100	100	SVX075A2-5A4N1	17,170.
FR9	FP	100	100	125	125	SVX100A2-5A4N1	20,120.
		125	125	150	144	SVX125A2-5A4N1	24,420.
		150	144	—	170	SVX150A2-5A4N1	25,990.
		—	170	200	208	SVX175A2-5A4N1	26,670.

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Table 15. 525 – 690V, NEMA Type 12 Freestanding Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR10	FP	200	208	250	261	SPX200A2-5A4N1	38,700.
		250	261	300	325	SPX250A2-5A4N1	48,700.
		300	325	400	385	SPX300A2-5A4N1	74,820.

**Note:** Integrated fuses as standard. Limited option selection available; 115V Transformer (KB), Light Kit (L1), HOA (K4), Speed Potentiometer w/HOA (K2), Disconnect Switch (P2). See Enclosed 480V option selection.

Table 16. 525 – 690V, Open Chassis Drive

Frame Size	Delivery Code	hp (I <sub>H</sub> )	Current (I <sub>H</sub> )	hp (I <sub>L</sub> )	Current (I <sub>L</sub> )	Catalog Number	Price U.S. \$
FR10	FP	200	208	250	261	SPX200A0-5A2N1	31,980.
		250	261	300	325	SPX250A0-5A2N1	41,980.
		300	325	400	385	SPX300A0-5A2N1	68,100.
FR11	FP	400	385	450	460	SPX400A0-5A2N1	86,240.
		450	460	500	502	SPX450A0-5A2N1	99,360.
		500	502	—	590	SPX500A0-5A2N1	116,480.
FR12	FP	—	590	600	650	SPX550A0-5A2N1	136,870.
		600	650	700	750	SPX600A0-5A2N1	144,555.
		700	750	800	820	SPX700A0-5A2N1	156,240.
FR13	FP	800	820	900	920	SPX800A0-5A2N1	209,350.
		900	920	1000	1030	SPX900A0-5A2N1	239,070.
		1000	1030	1250	1180	SPXH10A0-5A2N1	268,790.
FR14	FP	1350	1300	1500	1500	SPXH13A0-5A2N1	332,200.
		1500	1500	2000	1900	SPXH15A0-5A2N1	407,500.
		2000	1900	2300	2250	SPXH20A0-5A2N1	516,480.

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9000X Series Option Board Kits

The 9000X Series drives can accommodate a wide selection of expander and adapter option boards to customize the drive for your application needs. The drive's control unit is designed to accept a total of five option boards (see Figure 1).

The 9000X Series factory installed standard board configuration includes an A9 I/O board and an A2 relay output board, which are installed in slots A and B.

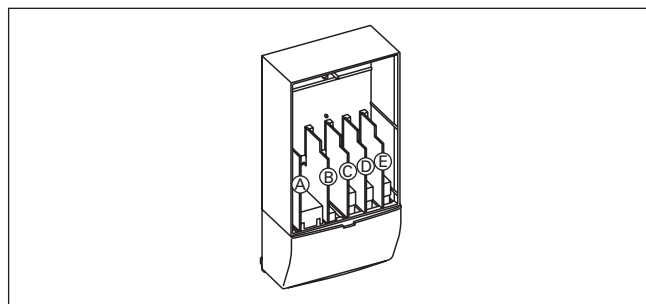


Figure 1. 9000X Series Option Boards

Table 17. Option Board Kits

Option Kit Description ②	Allowed Slot Locations ①	Field Installed		Factory Installed		SVX Ready Programs						
		Catalog Number	Price U.S. \$	Option Designator	Adder U.S. \$	Basic	Local/Remote	Standard	MSS	PID	Multi-P.	PFC
<b>Standard I/O Cards (See Figure 1)</b>												
2 RO (NC/NO)	B	<b>OPTA2</b>	94.50	—	—	X	X	X	X	X	X	X
6 DI, 1 DO, 2 AI, 1AO, 1 +10V DC ref, 2 ext +24V DC/ EXT +24V DC	A	<b>OPTA9</b>	189.00	—	—	X	X	X	X	X	X	X
<b>Extended I/O Card Options</b>												
2 RO, Therm — SPX Only	B	<b>OPTA3</b>	126.00	<b>A3</b>	231.00	—	X	X	X	X	X	X
Encoder low volt +5V/15V/24V — SPX Only	C	<b>OPTA4</b>	284.00	<b>A4</b>	389.00	—	X	X	X	X	X	X
Encoder high volt +15V/24V — SPX Only	C	<b>OPTA5</b>	179.00	<b>A5</b>	284.00	—	X	X	X	X	X	X
Double encoder — SPX Only	C	<b>OPTA7</b>	950.00	<b>A7</b>	1055.00	X	X	X	X	X	X	X
6 DI, 1 DO, 2 AI, 1 AO — SPX Only	A	<b>OPTA8</b>	326.00	<b>A8</b>	431.00	—	X	X	X	X	X	X
3 DI (Encoder 10 – 24V), Out +15V/+24V, 2 DO (pulse+direction) — SPX Only	C	<b>OPTAE</b>	850.00	<b>AE</b>	955.00	X	X	X	X	X	X	X
6 DI, 1 ext +24V DC/EXT +24V DC	B, C, D, E	<b>OPTB1</b>	189.00	<b>B1</b>	294.00	—	—	—	—	—	X	X
1 RO (NC/NO), 1 RO (NO), 1 Therm	B, C, D, E	<b>OPTB2</b>	221.00	<b>B2</b>	326.00	—	—	—	—	—	X	X
1 AI (mA isolated), 2 AO (mA isolated), 1 ext +24V DC/EXT +24V DC	B, C, D, E	<b>OPTB4</b>	336.00	<b>B4</b>	441.00	X	X	X	X	X	X	X
3 RO (NO)	B, C, D, E	<b>OPTB5</b>	200.00	<b>B5</b>	305.00	—	—	—	—	—	X	X
1 ext +24V DC/EXT +24V DC, 3 Pt100	B, C, D, E	<b>OPTB8</b>	570.00	<b>B8</b>	675.00	—	—	—	—	—	—	—
1 RO (NO), 5 DI 42 – 240V AC Input	B, C, D, E	<b>OPTB9</b>	294.00	<b>B9</b>	399.00	—	—	—	—	—	X	X
<b>Communication Cards</b>												
Modbus ③	D, E	<b>OPTC2</b>	237.00	<b>C2</b>	342.00	X	X	X	X	X	X	X
Johnson Controls N2 ③	D, E	<b>OPTC2</b>	237.00	<b>CA</b>	342.00	—	—	—	—	—	—	—
Modbus TCP	D, E	<b>OPTCI</b>	590.00	<b>CI</b>	695.00	X	X	X	X	X	X	X
BACnet	D, E	<b>OPTCJ</b>	280.00	<b>CJ</b>	385.00	X	X	X	X	X	X	X
Ethernet IP	D, E	<b>OPTCK</b>	590.00	<b>CK</b>	695.00	X	X	X	X	X	X	X
Profibus DP	D, E	<b>OPTC3</b>	431.00	<b>C3</b>	540.00	X	X	X	X	X	X	X
LonWorks	D, E	<b>OPTC4</b>	580.00	<b>C4</b>	685.00	X	X	X	X	X	X	X
Profibus DP (D9 Connector)	D, E	<b>OPTC5</b>	580.00	<b>C5</b>	685.00	X	X	X	X	X	X	X
CanOpen (Slave) ④	D, E	<b>OPTC6</b>	580.00	<b>C6</b>	685.00	X	X	X	X	X	X	X
DeviceNet	D, E	<b>OPTC7</b>	580.00	<b>C7</b>	685.00	X	X	X	X	X	X	X
Modbus (D9 Type Connector)	D, E	<b>OPTC8</b>	326.00	<b>C8</b>	431.00	X	X	X	X	X	X	X
Adapter — SPX Only	D, E	<b>OPTD1</b>	378.00	<b>D1</b>	483.00	X	X	X	X	X	X	X
Adapter — SPX Only	D, E	<b>OPTD2</b>	315.00	<b>D2</b>	420.00	X	X	X	X	X	X	X
RS-232 with D9 Connection	D, E	<b>OPTD3</b>	189.00	<b>D3</b>	294.00	X	X	X	X	X	X	X
<b>Keypad</b>												
9000X Series Local/ Remote Keypad (Replacement Keypad)	—	<b>KEYPAD-LOC/REM</b>	205.00	—	—	—	—	—	—	—	—	—
9000X Series Remote Mount Keypad Unit (Keypad not included, includes 10 ft. cable, keypad holder, mounting hardware)	—	<b>OPTRMT-KIT-9000X</b>	200.00	—	—	—	—	—	—	—	—	—
9000X Series RS-232 Cable, 13 ft.	—	<b>PP00104</b>	70.00	—	—	—	—	—	—	—	—	—

① Option card must be installed in one of the slots listed for that card. Slot indicated in Bold is the preferred location.

② AI = Analog Input; AO = Analog Output, DI = Digital Input, DO = Digital Output, RO = Relay Output

③ OPTC2 is a multi-protocol option card.

④ SPX9000 Drives only (FR10 and larger).

Discount Symbol ..... SS-2

## Open Drives

**Modbus RTU Network Communications**

The Modbus Network Card OPTC2 is used for connecting the 9000X Drive as a slave on a Modbus network. The interface is connected by a 9-pin DSUB connector (female) and the baud rate ranges from 300 to 19200 baud. Other communication parameters include an address range from 1 to 247; a parity of None, Odd or Even; and the stop bit is 1.

**Profibus Network Communications**

The Profibus Network Card OPTC3 is used for connecting the 9000X Drive as a slave on a Profibus-DP network. The interface is connected by a 9-pin DSUB connector (female). The baud rates range from 9.6K baud to 12M baud, and the addresses range from 1 to 127.

**LonWorks Network Communications**

The LonWorks Network Card OPTC4 is used for connecting the 9000X Drive on a LonWorks network. This interface uses Standard Network Variable Types (SNVT) as data types. The channel connection is achieved using a FTT-10A Free Topology transceiver via a single twisted transfer cable. The communication speed with LonWorks is 78 kBits/s.

**CanOpen (Slave) Communications**

The CanOpen (Slave) Network Card OPTC6 is used for connecting the 9000X Drive to a host system. According to ISO11898 standard cables to be chosen for CAN bus should have a nominal impedance of 120Ω, and specific line delay of nominal 5 nS/m. 120Ω line termination resistors required for installation.

**DeviceNet Network Communications**

The DeviceNet Network Card OPTC7 is used for connecting the 9000X Drive on a DeviceNet Network. It includes a 5.08 mm pluggable connector. Transfer method is via CAN using a 2-wire twisted shielded cable with 2-wire bus power cable and drain. The baud rates used for communication include 125K baud, 250K baud and 500K baud.

**Johnson Controls Metasys™ N2 Network Communications**

The OPTC2 fieldbus board provides communication between the 9000X Drive and a Johnson Controls Metasys™ N2 network. With this connection, the drive can be controlled, monitored and programmed from the Metasys system. The N2 fieldbus is available as a factory installed option and as a field installable kit.

**Modbus/TCP Network Communications**

The Modbus/TCP Network Card OPTC1 is used for connecting the 9000X Drive to Ethernet networks utilizing Modbus protocol. It includes an RJ-45 pluggable connector. This interface provides a selection of standard and custom register values to communicate drive parameters. The board supports 10 Mbps and 100 Mbps communication speeds. The IP address of the board is configurable over Ethernet using a supplied software tool.

**BACnet Network Communications**

The BACnet Network Card OPTCJ is used for connecting the 9000X Drive to BACnet networks. It includes a 5.08 mm pluggable connector. Data transfer is Master-Slave/Token Passing (MS/TP) RS-485. This interface uses a collection of 30 Binary Value Objects (BVOs) and 35 Analog Value Objects (AVOs) to communicate drive parameters. The card supports 9.6, 19.2 and 38.4 Kbaud communication speeds and supports network addresses 1 – 127.

**Ethernet/IP Network Communications**

The Ethernet/IP Network Card OPTCK is used for connecting the 9000X Drive to Ethernet/Industrial Protocol networks. It includes an RJ-45 pluggable connector. The interface uses CIP objects to communicate drive parameters (CIP is "Common Industrial Protocol", the same protocol used by DeviceNet). The board supports 10 Mbps and 100 Mbps communication speeds. The IP address of the board is configurable by Static, BOOTP and DHCP methods.

Options

Control Panel Options

Table 18. Control Panel Factory Options

Description	Factory Installed		Field Installed	
	Option Code	Adder U.S. \$	NEMA Type 1	
			Catalog Number	Price U.S. \$
<b>Local/Remote Keypad SVX9000 Control Panel</b> — This option is standard on all drives and consists of an RS-232 connection, backlit alphanumeric LCD display with nine indicators for the RUN status and two indicators for the control source. The nine pushbuttons on the panel are used for panel programming and monitoring of all SVX9000 parameters. The panel is detachable and isolated from the input line potential. Include LOC/REM key to choose control location.	A	Standard	KEYPAD-LOC/REM	205.
<b>Keypad Remote Mounting Kit</b> — This option is used to remote mount the SVX9000 keypad. The footprint is compatible to the SV9000 remote mount kit. Includes 10 ft. cable, keypad holder and mounting hardware.	—	—	OPTRMT-KIT-9000X	200.

Table 19. Miscellaneous Options

Description	Catalog Number	Price U.S. \$
<b>9000XDrive</b> — A PC-based tool for controlling and monitoring of the SVX9000. Features include: loading parameters that can be saved to a file or printed, setting references, starting and stopping the motor, monitoring signals in graphical or text form, and real-time display. To avoid damage to the drive or computer, SVDrivecable must be used.	9000XDRIVE	384.
<b>SVDrivecable</b> — 6 ft. (1.8m) RS-232 cable (22 gauge) with a 7-pin connector on each end. Should be used in conjunction with the 9000X Drive option to avoid damage to the SVX9000 or computer. The same cable can be used for downloading specialized applications to the drive.	SVDRIVECABLE	38.
<b>External Dynamic Braking Resistors</b> — Used with the Dynamic Braking Chopper Circuit to absorb motor regenerative energy for stopping the load and to dissipate the energy flowing back into the drive. Resistors are separated into Standard Duty and Heavy-Duty. Standard Duty is defined as 20% duty or less with 100% braking torque, while Heavy-Duty is defined as 50% duty or less with 150% braking torque. <i>Consult factory.</i>	①	—

① Consult factory.

Brake Chopper Options

The Brake Chopper Circuit option is used for applications that require dynamic braking. Dynamic Braking resistors are not included with drive purchase. Consult the factory for dynamic braking resistors which are supplied separately. Resistors are not UL Listed.

Table 20. Brake Chopper Circuit Adder — NEMA Type 1, NEMA Type 12, Chassis

hp (H)	Adder U.S. \$		
	208 – 240V	380 – 500V	525 – 690V
2	—	—	441.
3	—	—	441.
5vt	—	—	441.
5ct	—	—	441.
7-1/2vt	—	—	441.
7-1/2ct	—	—	441.
10	—	—	441.
15	—	—	441.
20	473.	—	441.
25	473.	—	441.
30	473.	—	473.
40	730.	473.	473.
50	730.	473.	1,040.
60	730.	473.	1,040.
75	1,170.	730.	1,040.
100	1,170.	730.	1,445.
125	—	730.	1,445.
150	—	1,170.	1,445.

hp (H)	Adder U.S. \$		
	208 – 240V	380 – 500V	525 – 690V
200vt	—	—	1,445.
200ct	—	1,170.	2,500.
250	—	2,500.	2,500.
300	—	2,500.	2,500.
350	—	2,500.	—
400	—	2,500.	2,500.
450	—	—	2,500.
500	—	2,500.	2,500.
550	—	—	—
600vt	—	2,500.	②
600ct	—	②	②
700vt	—	②	—
700ct	—	②	②
800	—	—	②
900	—	—	②
1000	—	—	②
1200	—	—	②
1350	—	—	②
1500	—	—	②
1600	—	②	—
2000	—	—	②

② Contact sales office.

Note: Delivery code is FP.

Table 21. Conformal (Varnished) Coating Adder — 208 – 240V, 380 – 500V, 525 – 690V (See Catalog Number Description to order.)

Frame	Delivery Code	Adder U.S. \$
FR4	FP	263.
FR5	FP	263.
FR6	FP	263.
FR7	FP	263.
FR8	FP	263.
FR9	FP	605.
FR10	FP	605.
FR11	FP	605.
FR12	FP	605.
FR13	FP	③
FR14	FP	③

③ Contact sales office.

Table 22. Conformal Coated Board Kits ④

Field Installed		Factory Installed	
Catalog Number	Price U.S. \$	Option Designator	Adder U.S. \$
OPT_V ⑥	74. ⑤		74.

④ See Option Catalog Numbers on Page 11.

⑤ Construct Catalog Numbers for factory installed per Table 4 on Page 6.

⑥ Replace “—” with the correct Catalog Number from Page 11. Example: OPTC2V.

## Open Drives

## Accessories

## Demo Drive and Power Supply

Table 23. Demo Drive and Power Supply

Description	Catalog Number	Price U.S. \$
9000X Drive Demo	9000XDEMO	4,200.
Hand Held 24V Auxiliary Power Supply — used to supply power to the control module in order to perform keypad programming before the drive is connected to line voltage	9000XAUX24V	174.

## NEMA Type 12 Conversion Kit

The NEMA Type 12 kit option is used to convert a NEMA Type 1 to a NEMA Type 12 drive. The NEMA Type 12 Kit consists of a metal drive shroud, fan kit for some frames, adaptor plate and plugs.

Table 24. NEMA Type 12 Conversion Kit

Frame Size	Delivery Code	Approximate Dimensions in Inches (mm)			Approximate Weight in Lb. (kg)	Catalog Number	Price U.S. \$
		Length	Width	Height	Weight		
FR4	W	13 (330)	7 (178)	4 (102)	4 (1.8)	OPTN12FR4	216.
FR5	W	16 (406)	8 (203)	7 (178)	5 (2.3)	OPTN12FR5	347.
FR6	W	21 (533)	10 (254)	5 (127)	7 (3.2)	OPTN12FR6	580.

## Flange Kits

## Flange Kit Type 12

The flange kit is utilized when the power section is mounted through the back panel of an enclosure. Includes flange mount brackets and NEMA Type 12 fan components. Metal shroud not included.

Table 25. Flange Kit Type 12 — Frames 4, 5 and 6 <sup>①</sup>

Frame Size	Delivery Code	Catalog Number	Price U.S. \$
FR4	W	OPTTHRFR4	273.
FR5	W	OPTTHRFR5	294.
FR6	W	OPTTHRFR6	310.

<sup>①</sup> For installation of an SVX9000 NEMA Type 1 drive into a NEMA Type 12 oversized enclosure.

## Flange Kit Type 1

Flange kits for NEMA 1 enclosure drive rating are determined by rating of drive.

Table 26. Flange Kit Type 1 — Frames 4 – 9 <sup>②</sup>

Frame Size	Delivery Code	Catalog Number	Price U.S. \$
FR4	FP	OPTTHR4	158.
FR5	FP	OPTTHR5	168.
FR6	FP	OPTTHR6	184.
FR7	FP	OPTTHR7	121.
FR8	FP	OPTTHR8	153.
FR9	FP	OPTTHR9	226.

<sup>②</sup> For installation of an SVX9000 NEMA Type 1 drive into a NEMA Type 1 oversized enclosure.

## Flange Kit Type 12

Flange kits for NEMA 12 enclosure drive rating are determined by rating of drive.

Table 27. Flange Kit Type 12 — Frames 4 – 9 <sup>③</sup>

Frame Size	Delivery Code	Catalog Number	Price U.S. \$
FR4	FP	OPTTHR4	158.
FR5	FP	OPTTHR5	168.
FR6	FP	OPTTHR6	184.
FR7	FP	OPTTHR7	121.
FR8	FP	OPTTHR8	153.
FR9	FP	OPTTHR9	226.

<sup>③</sup> For installation of an SVX9000 NEMA Type 12 drive into a NEMA Type 12 oversized enclosure.

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Open Drives

Dimensions

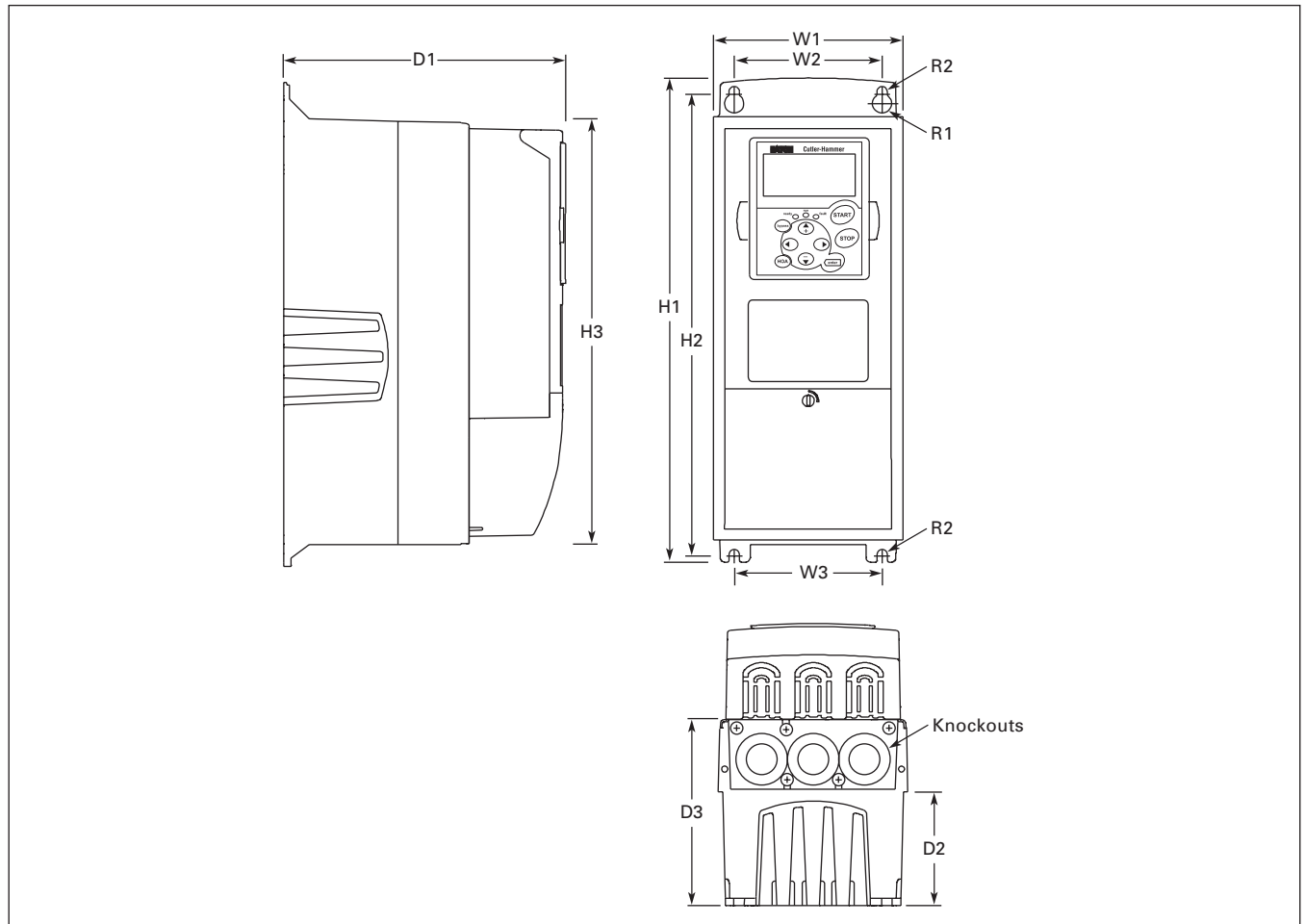


Figure 2. NEMA Type 1 and NEMA Type 12 9000X Drive Dimensions, FR4, FR5 and FR6

Table 28. 9000X Drive Dimensions

Frame Size	Voltage	hp (I <sub>H</sub> )	Approximate Dimensions in Inches (mm)											Weight Lbs. (kg)	Knockouts @ Inches (mm) N1 (O.D.)
			H1	H2	H3	D1	D2	D3	W1	W2	W3	R1 dia.	R2 dia.		
FR4	230V	3/4 – 3	12.9	12.3	11.5	7.5	3.0	5.0	5.0	3.9	—	.5	.3	11.0	3 @ 1.1
	480V	1 – 5	(327)	(313)	(292)	(190)	(77)	(126)	(128)	(100)		(13)	(7)	(5)	(28)
FR5	230V	5 – 7-1/2	16.5	16.0	15.3	8.4	3.9	5.8	5.6	3.9	—	.5	.3	17.9	2 @ 1.5
	480V	7-1/2 – 15	(419)	(406)	(389)	(214)	(100)	(148)	(143)	(100)		(13)	(7)	(8)	(37) 1 @ 1.1 (28)
FR6	230V	10 – 15	22.0	21.3	20.4	9.3	4.2	6.5	7.6	5.8	—	.6	.4	40.8	3 @ 1.5
	480V	20 – 30	(558)	(541)	(519)	(237)	(105)	(165)	(195)	(148)		(15.5)	(9)	(19)	(37)
	575V	2 – 25													

Open Drives

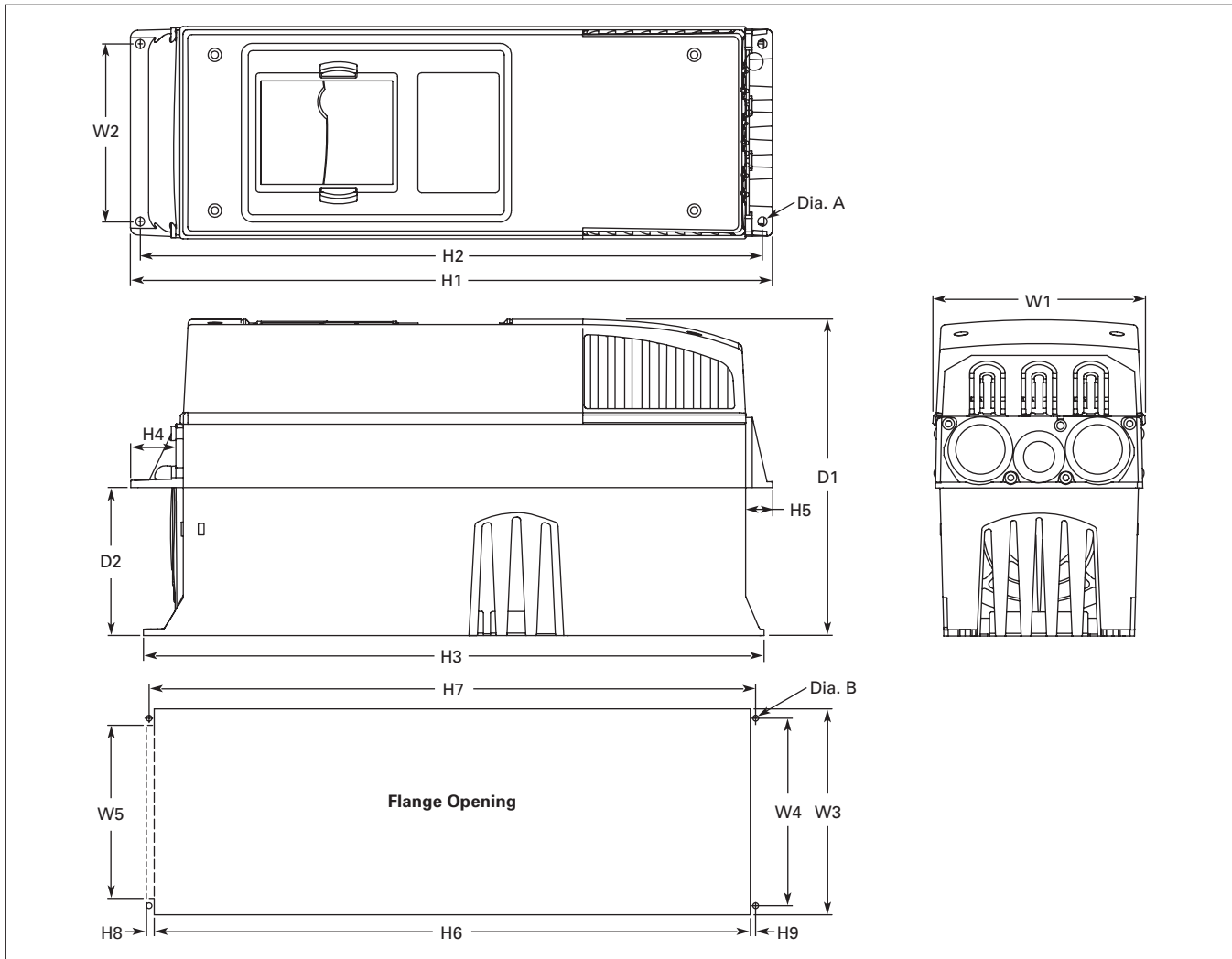


Figure 3. 9000X Dimensions, NEMA Type 1 and NEMA Type 12 with Flange Kit, FR4, FR5 and FR6

Table 29. Dimensions for 9000X, FR4, FR5 and FR6 with Flange Kit

Frame Size	Approximate Dimensions in Inches (mm)									
	W1	W2	H1	H2	H3	H4	H5	D1	D2	Dia. A
FR4	5.0 (128)	4.5 (113)	13.3 (337)	12.8 (325)	12.9 (327)	1.2 (30)	.9 (22)	7.5 (190)	3.0 (77)	.3 (7)
FR5	5.6 (143)	4.7 (120)	17.0 (434)	16.5 (420)	16.5 (419)	1.4 (36)	.7 (18)	8.4 (214)	3.9 (100)	.3 (7)
FR6	7.7 (195)	6.7 (170)	22.0 (560)	21.6 (549)	22.0 (558)	1.2 (30)	.8 (20)	9.3 (237)	4.2 (106)	.3 (7)

Table 30. Dimensions for the Flange Opening, FR4 to FR6

Frame Size	Approximate Dimensions in Inches (mm)								
	W3	W4	W5	H6	H7	H8	H9	Dia. B	
FR4	4.8 (123)	4.5 (113)	—	12.4 (315)	12.8 (325)	—	.2 (5)	.3 (7)	
FR5	5.3 (135)	4.7 (120)	—	16.2 (410)	16.5 (420)	—	.2 (5)	.3 (7)	
FR6	7.3 (185)	6.7 (170)	6.2 (157)	21.2 (539)	21.6 (549)	.3 (7)	.2 (5)	.3 (7)	



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Open Drives

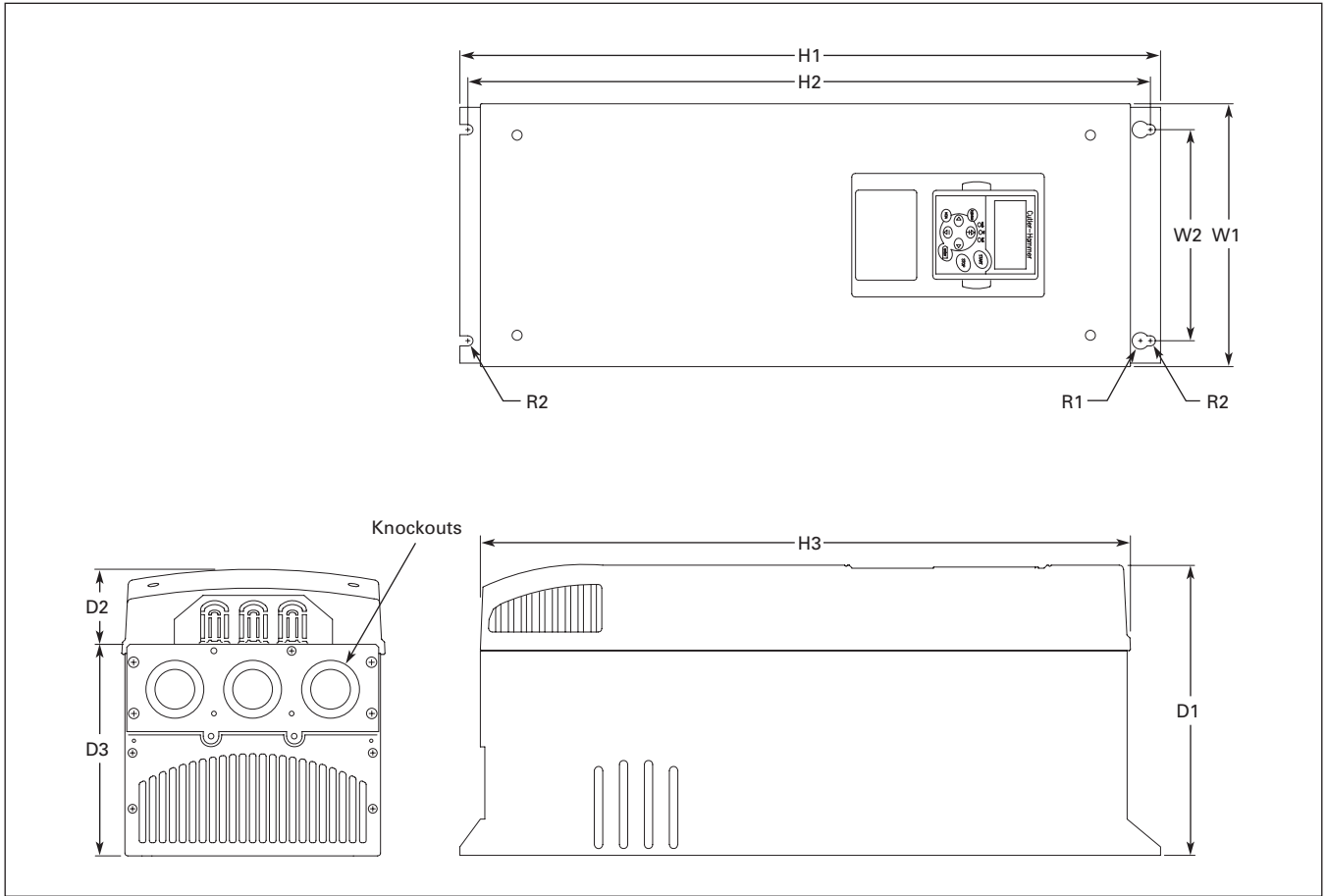


Figure 4. 9000X Dimensions, NEMA Type 1 and NEMA Type 12, FR7

Table 31. 9000X Drive Dimensions, FR7

Frame Size	Voltage	hp (I <sub>H</sub> )	Approximate Dimensions in Inches (mm)										Weight lbs. (kg)	Knockouts @ Inches (mm) N1 (O.D.)
			H1	H2	H3	D1	D2	D3	W1	W2	R1 dia.	R2 dia.		
FR7	230V	20 – 30	24.8	24.2	23.2	10.1	3.0	7.3	9.3	7.5	.7	.4	77.2	3 @ 1.5 (37)
	480V	40 – 60	(630)	(614)	(590)	(257)	(77)	(184)	(237)	(190)	(18)	(9)	(35)	
	575V	30 – 40												

Open Drives

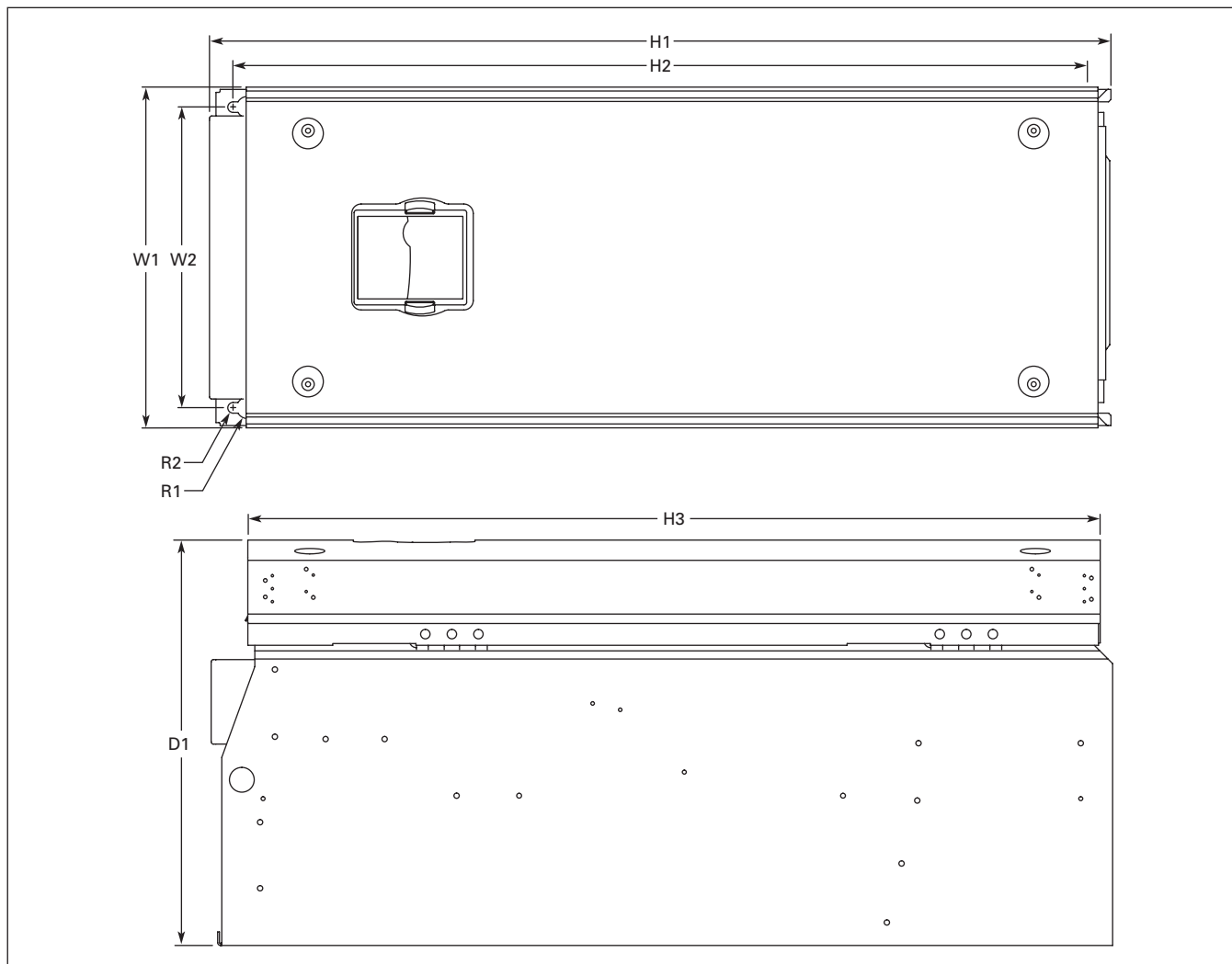


Figure 5. 9000X Dimensions, NEMA Type 1 and NEMA Type 12, FR8

Table 32. 9000X Drive Dimensions, FR8

Frame Size	Voltage	hp (I <sub>H</sub> )	Approximate Dimensions in Inches (mm)								Weight lbs. (kg)
			D1	H1	H2	H3	W1	W2	R1 dia.	R2 dia.	
FR8	230V	40 – 60	13.5 (344)	30.1 (764)	28.8 (732)	28.4 (721)	11.5 (291)	10 (255)	.7 (18)	.4 (9)	127 (58)
	480V	75 – 125									
	575V	50 – 75									

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Open Drives

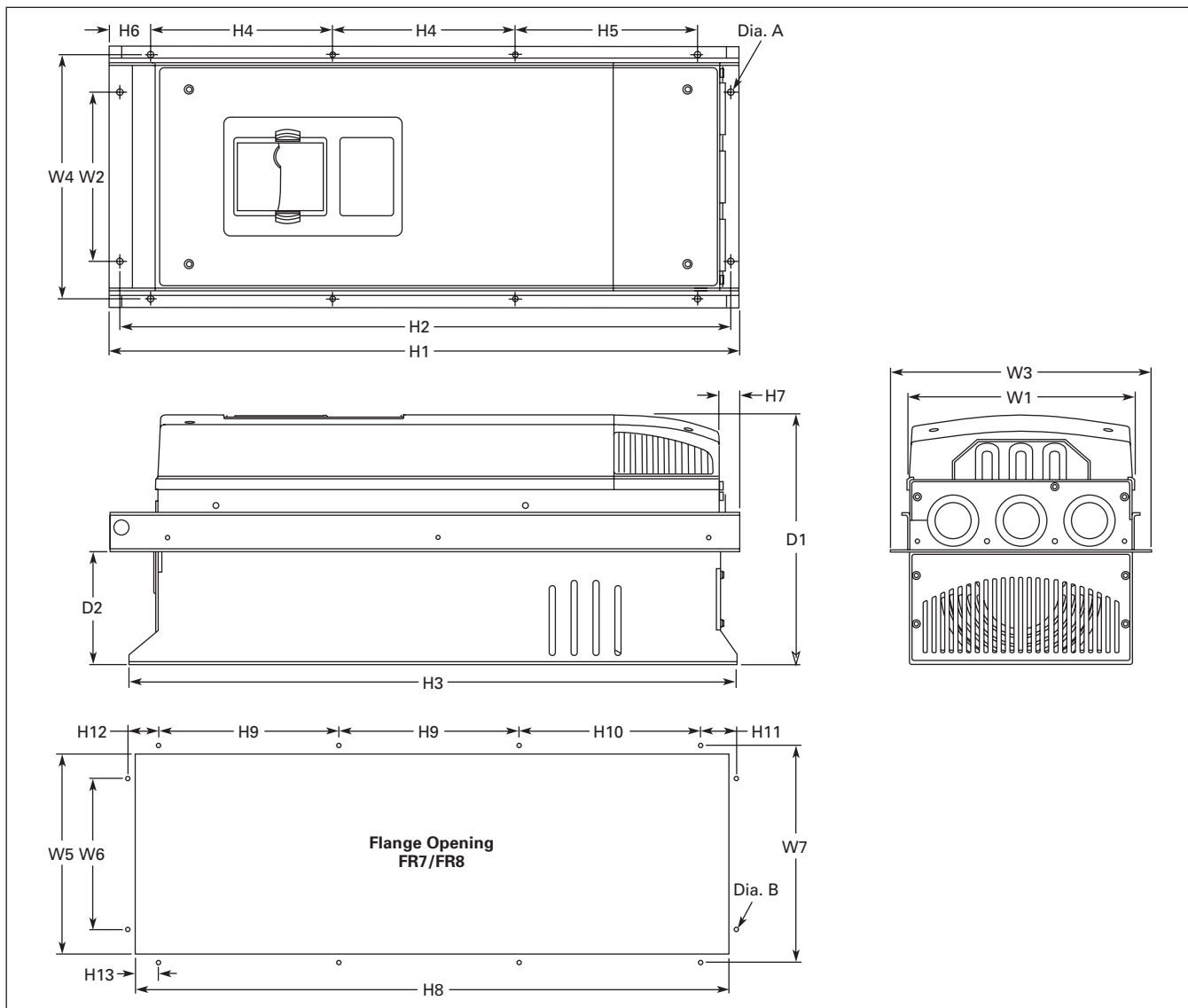


Figure 6. 9000X Dimensions, NEMA Type 1 and NEMA Type 12, with Flange Kit, FR7 and FR8

Table 33. Dimensions for 9000X, FR7 and FR8 with Flange Kit

Frame Size	Approximate Dimensions in Inches (mm)													
	W1	W2	W3	W4	H1	H2	H3	H4	H5	H6	H7	D1	D2	Dia. A
FR7	9.3 (237)	6.8 (175)	10.6 (270)	10.0 (253)	25.6 (652)	24.8 (632)	24.8 (630)	7.4 (189)	7.4 (189)	.9 (23)	.8 (20)	10.1 (257)	4.6 (117)	.3 (6)
FR8	11.2 (285)	—	14.0 (355)	13.0 (330)	32.8 (832)	—	29.3 (745)	10.2 (258)	10.4 (265)	1.7 (43)	2.2 (57)	13.5 (344)	4.3 (110)	.4 (9)

Table 34. Dimensions for the Flange Opening, FR7/FR8

Frame Size	Approximate Dimensions in Inches (mm)									
	W5	W6	W7	H8	H9	H10	H11	H12	H13	Dia. B
FR7	9.2 (233)	6.9 (175)	10.0 (253)	24.4 (619)	7.4 (189)	7.4 (189)	1.4 (35)	1.3 (32)	1.0 (25)	.3 (6)
FR8	11.9 (301)	—	13.0 (330)	31.9 (810)	10.2 (258)	10.4 (265)	—	—	1.3 (33)	.4 (9)

Open Drives

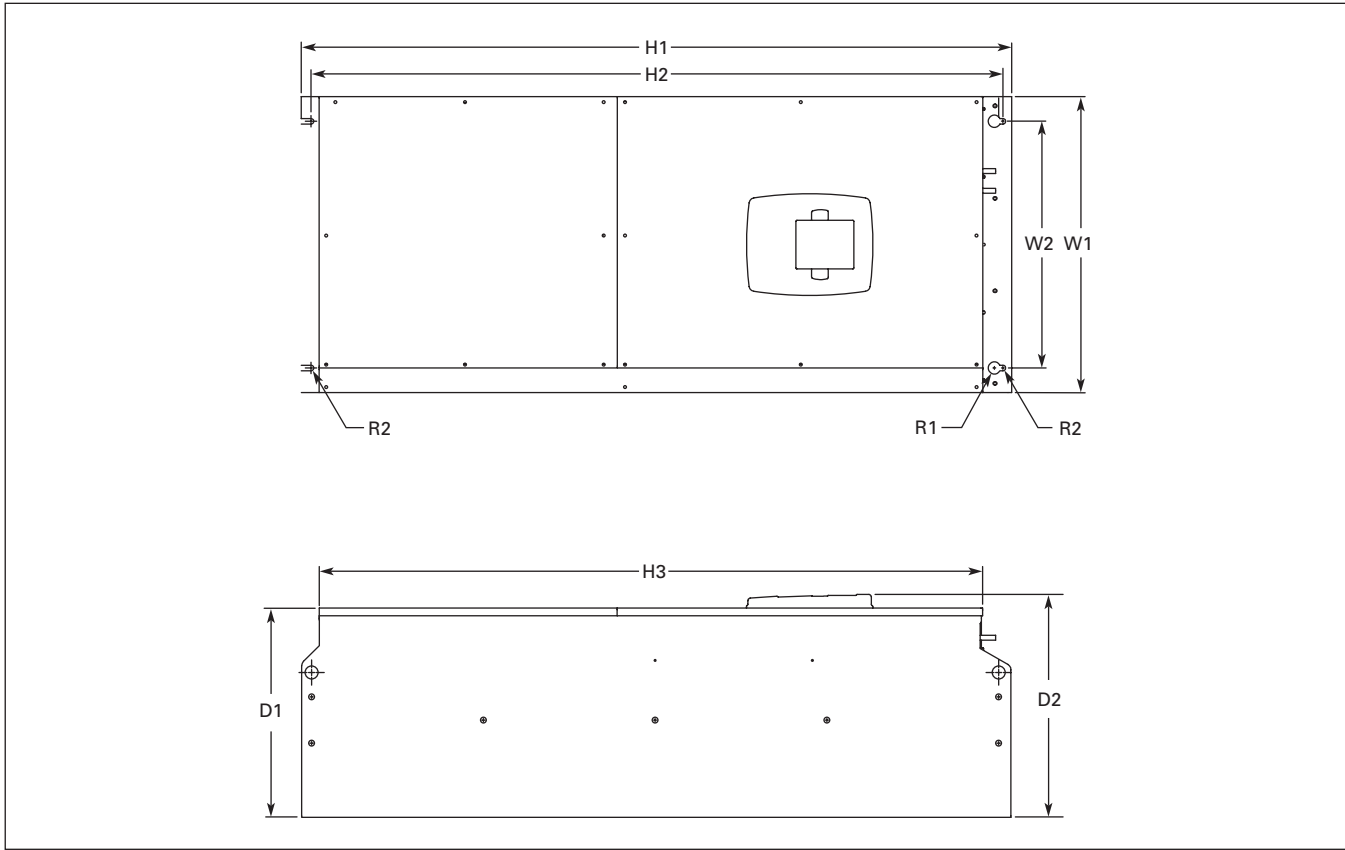


Figure 7. 9000X Dimensions, NEMA Type 1 and NEMA Type 12, FR9

Table 35. 9000X Drive Dimensions, FR9

Frame Size	Voltage	hp (I <sub>H</sub> )	Approximate Dimensions in Inches (mm)									Weight lbs. (kg)
			H1	H2	H3	D1	D2	W1	W2	R1 dia.	R2 dia.	
FR9	230V	75 – 100	45.3	44.1	42.4	13.4	14.3	18.9	15.7	.8	.4	321.9 (146)
	480V	150 – 200	(1150)	(1120)	(1076)	(340)	(362)	(480)	(400)	(20)	(9)	
	575V	100 – 175										

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Open Drives

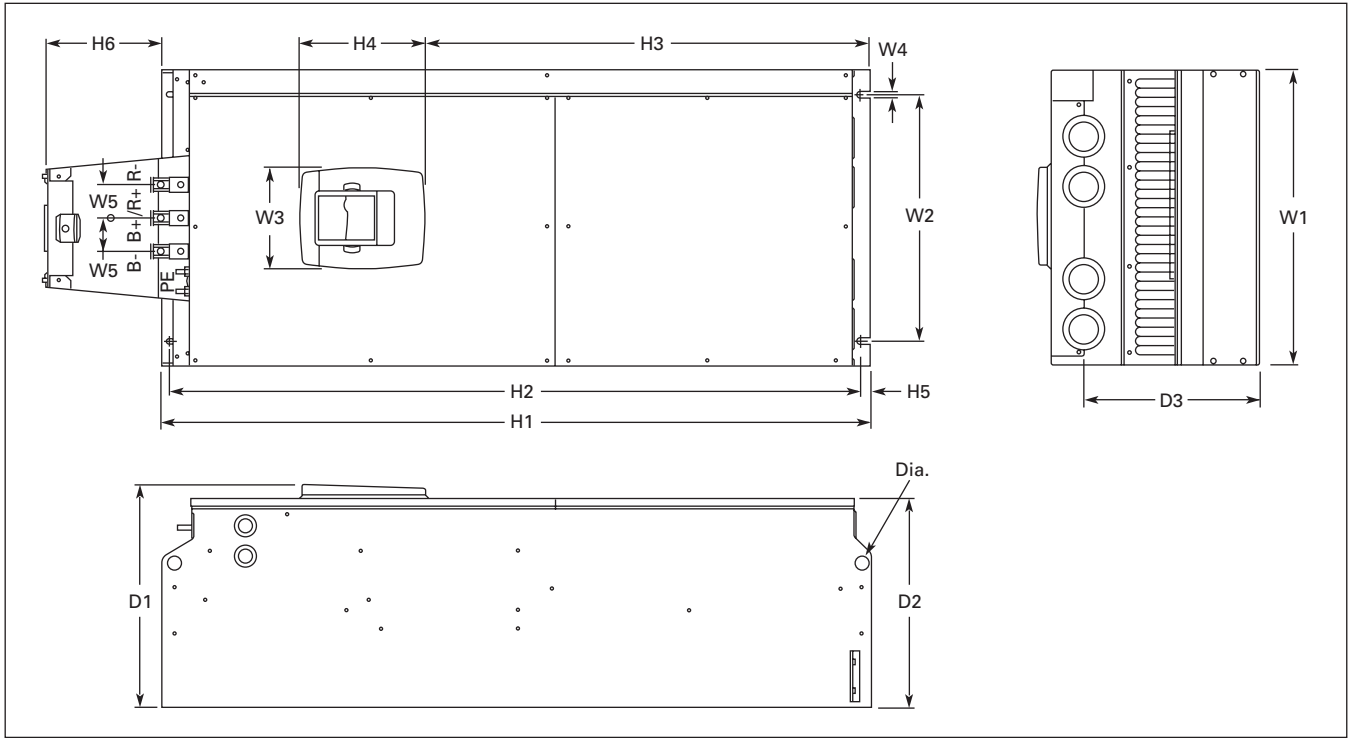


Figure 8. 9000X Dimensions, NEMA Type 1 and NEMA Type 12 FR9

Table 36. Dimensions for 9000X, FR9

Frame Size	Approximate Dimensions in Inches (mm)														
	W1	W2	W3	W4	W5	H1	H2	H3	H4	H5	H6 ①	D1	D2	D3	Dia.
FR9	18.9 (480)	15.7 (400)	6.5 (165)	.4 (9)	2.1 (54)	45.3 (1150)	44.1 (1120)	28.3 (721)	8.0 (205)	.6 (16)	7.4 (188)	14.2 (361.5)	13.4 (340)	11.2 (285)	.8 (21)

① Brake resistor terminal box (H6) included when brake chopper ordered.

Open Drives

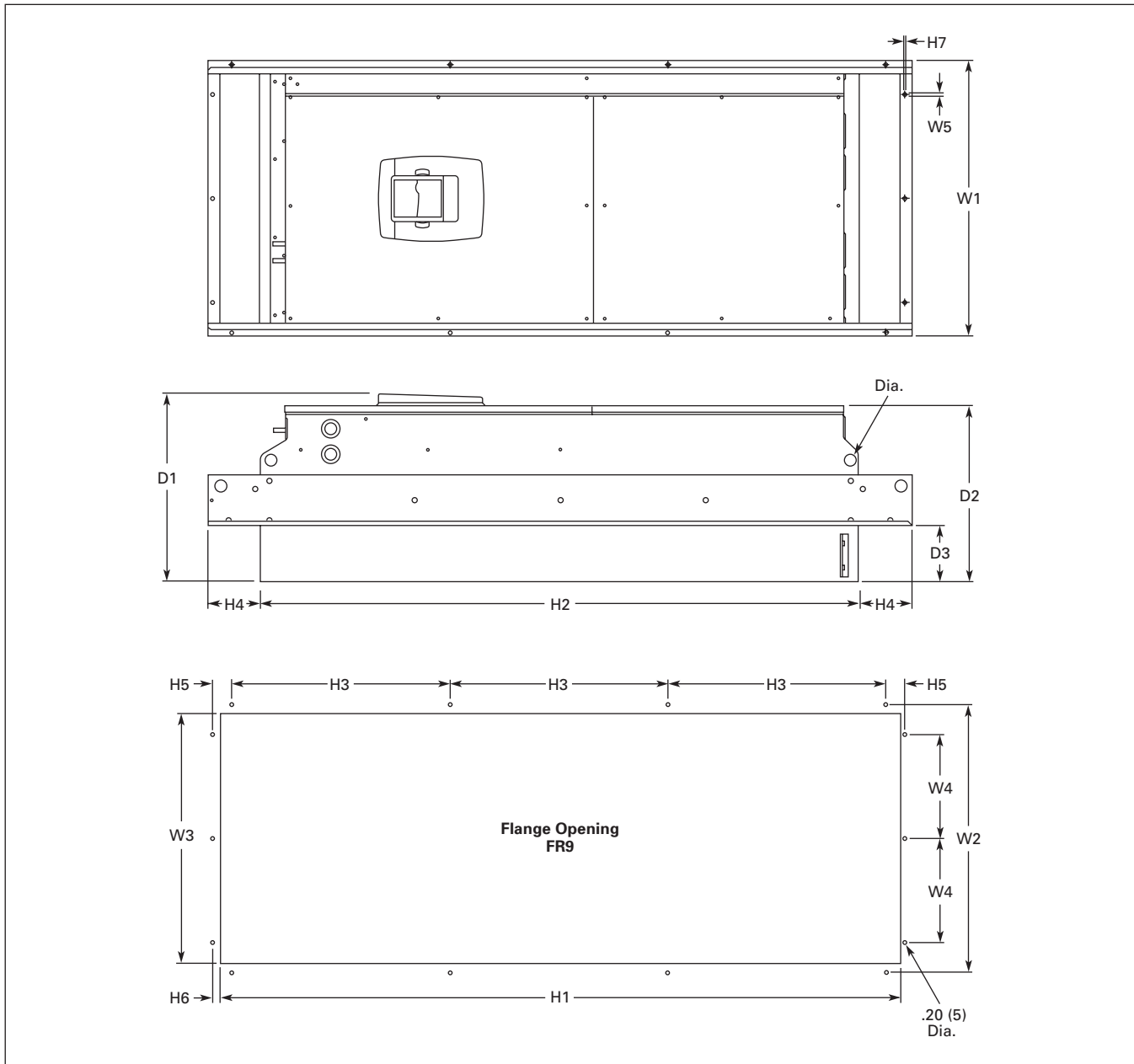


Figure 9. 9000X Dimensions, NEMA Type 1 and NEMA Type 12 FR9 with Flange Kit

Table 37. Dimensions for 9000X, FR9 with Flange Kit

Frame Size	Approximate Dimensions in Inches (mm)															
	W1	W2	W3	W4	W5	H1	H2	H3	H4	H5	H6	H7	D1	D2	D3	Dia.
FR9	20.9 (530)	20.0 (510)	19.1 (485)	7.9 (200)	.2 (5.5)	51.7 (1312)	45.3 (1150)	16.5 (420)	3.9 (100)	1.4 (35)	.4 (9)	.1 (2)	24.9 (362)	13.4 (340)	4.3 (109)	.8 (21)

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Open Drives

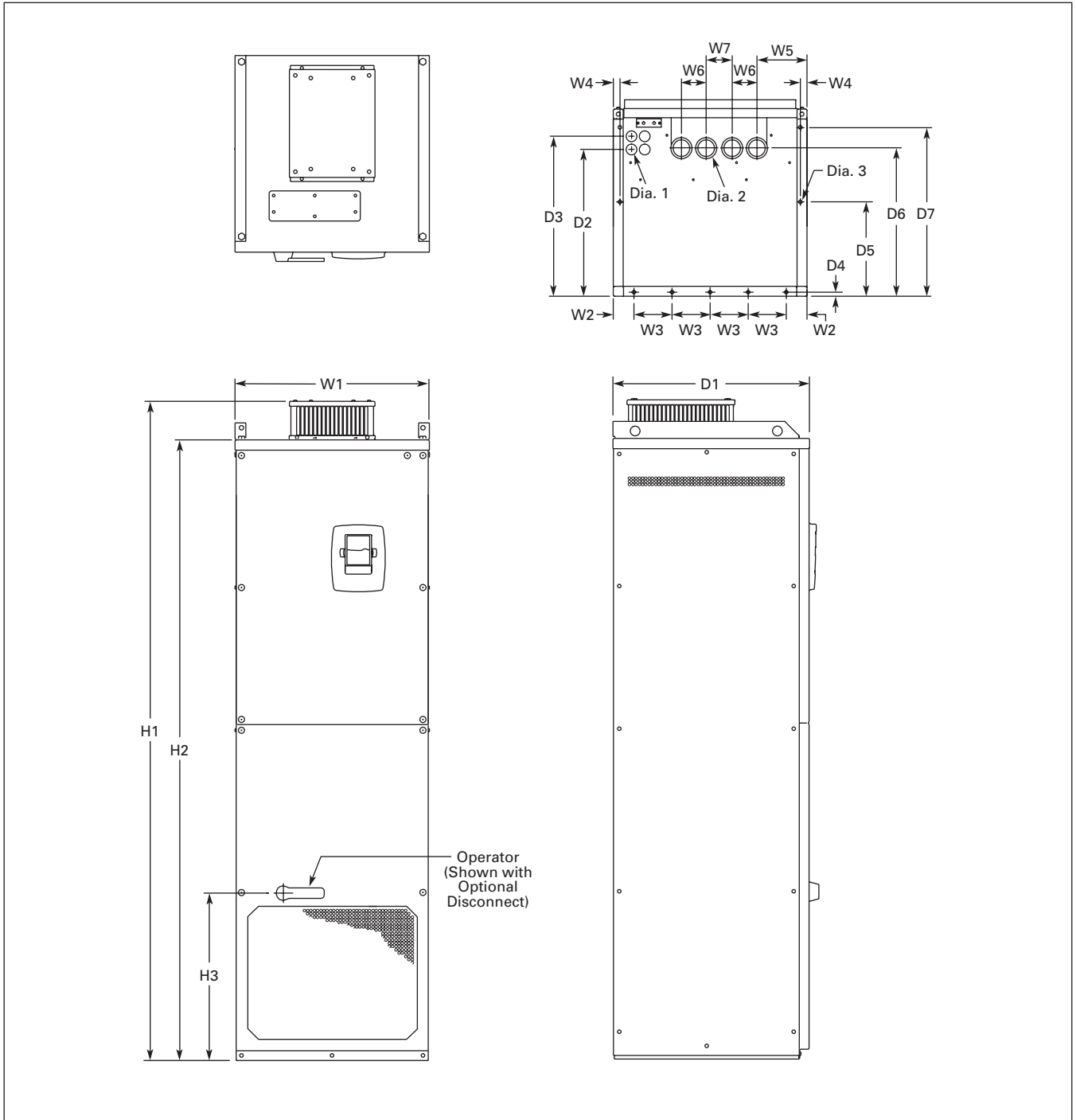


Figure 10. 9000X Dimensions, NEMA Type 1 and NEMA Type 12 FR10 Freestanding Drive

Table 38. Dimensions for 9000X, FR10 Freestanding Drive

Frame Size	Approximate Dimensions in Inches (mm)																				Weight lbs. (kg)
	W1	W2	W3	W4	W5	W6	W7	H1	H2	H3	D1	D2	D3	D4	D5	D6	D7	Dia. 1	Dia. 2	Dia. 3	
FR10	23.43 (595)	2.46 (62.5)	4.53 (115)	.79 (20)	5.95 (151)	2.95 (75)	3.11 (79)	79.45 (2018)	74.80 (1900)	20.18 (512.5)	23.70 (602)	17.44 (443)	19.02 (483)	.47 (12)	11.22 (285)	17.60 (447)	20.08 (510)	.83 (21)	1.89 (48)	.43 (11)	857 (389)

Open Drives

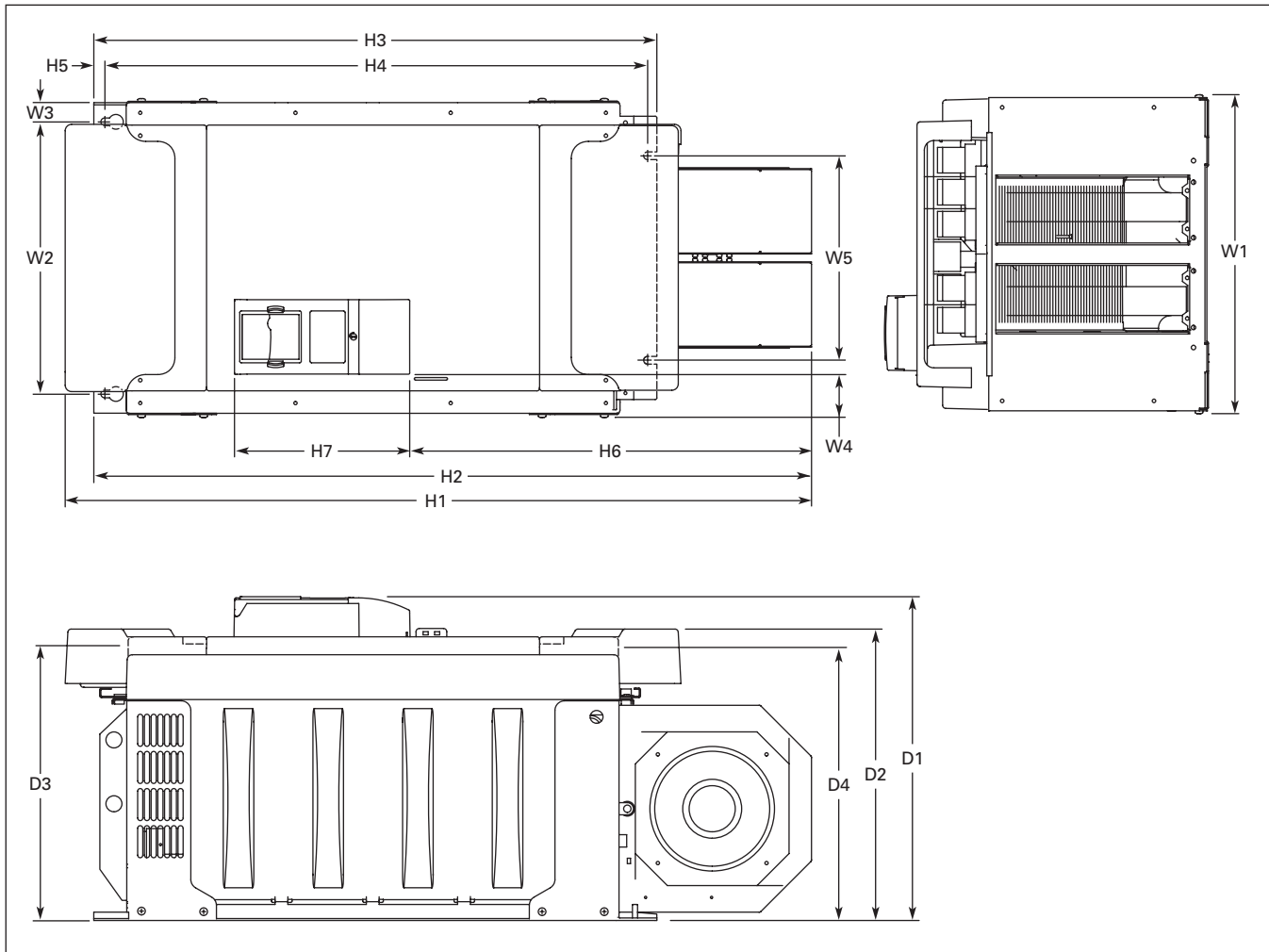


Figure 11. 9000X Dimensions, FR10 Open Chassis

Table 39. Dimensions for 9000X, FR10 Open Chassis

Frame Size	Voltage	hp (I <sub>H</sub> )	Approximate Dimensions in Inches (mm)																Weight lbs. (kg)
			W1	W2	W3	W4	W5	H1	H2	H3	H4	H5	H6	H7	D1	D2	D3	D4	
FR10	480V	250 – 350	19.7	16.7	1.2	2.6	12.8	45.9	44.1	34.6	33.5	.7	24.7	10.8	19.9	17.9	16.7	16.6	518
	575V	200 – 300	(500)	(425)	(30)	(67)	(325)	(1165)	(1121)	(879)	(850)	(17)	(627)	(275)	(506)	(455)	(423)	(421)	(235)

Note: 9000X FR12 is built of two FR10 modules. Please refer to SPX9000 installation manual for mounting instructions.



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Open Drives

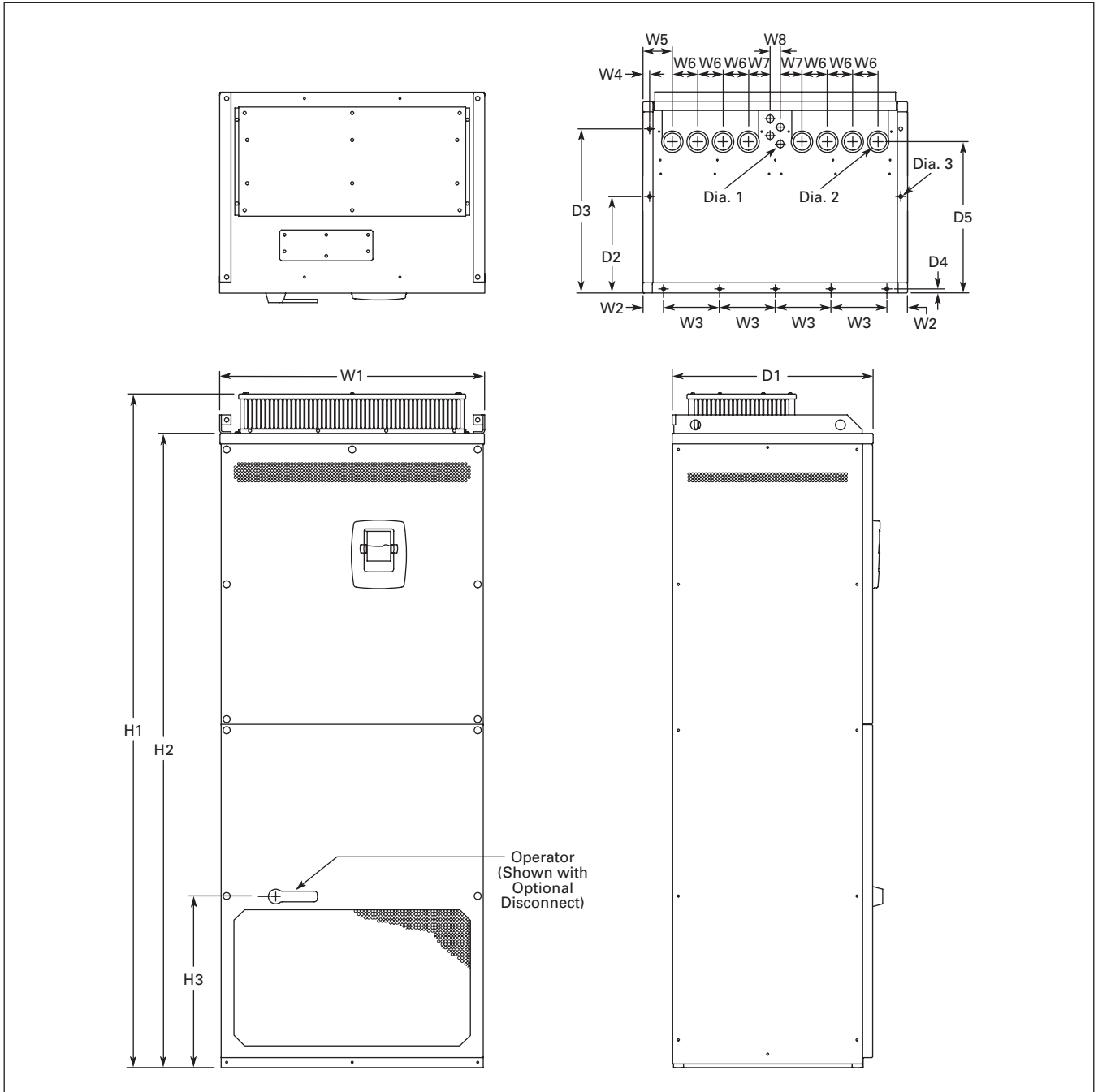


Figure 12. 9000X Dimensions, NEMA Type 1 FR11 Freestanding Drive

Table 40. Dimensions for 9000X, NEMA Type 1 FR11 Freestanding Drive

Frame Size	Voltage	hp (I <sub>H</sub> )	Approximate Dimensions in Inches (mm)																		Weight lbs. (kg)	
			W1	W2	W3	W4	W5	W6	W7	W8	H1	H2	H3	D1	D2	D3	D4	D5	Dia. 1	Dia. 2		Dia. 3
FR11	480	400 – 550	31.26 (794)	2.40 (61)	6.50 (165)	.79 (20)	3.43 (87)	2.95 (75)	2.52 (64)	1.18 (30)	79.45 (2018)	74.80 (1900)	20.18 (512.5)	23.70 (602)	11.22 (285)	19.09 (485)	.47 (12)	17.60 (447)	.83 (21)	1.89 (48)	.35 x .43 (9 x 11)	526 (239)

Open Drives

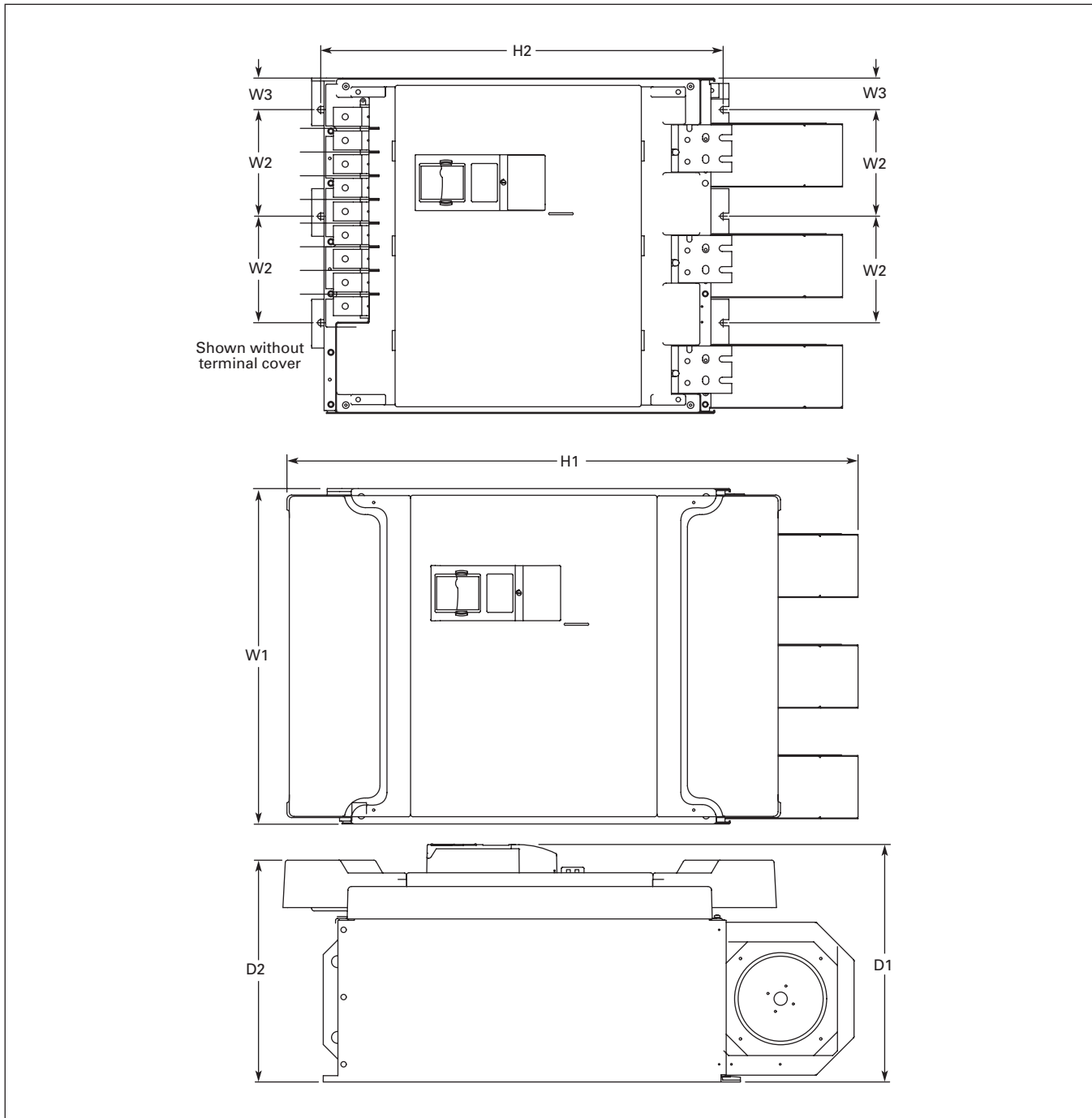


Figure 13. 9000X Dimensions, FR11 Open Chassis

Table 41. Dimensions for 9000X, FR11 Open Chassis

Frame Size	Voltage	hp (I <sub>H</sub> )	Approximate Dimensions in Inches (mm)							Weight lbs. (kg)
			W1	W2	W3	H1	H2	D1	D2	
FR11	480V	400 – 550	27.9	8.86	2.6	45.5	33.5	19.8	18.4	833
	575V	400 – 500	(709)	(225)	(67)	(1155)	(850)	(503)	(468)	(378)

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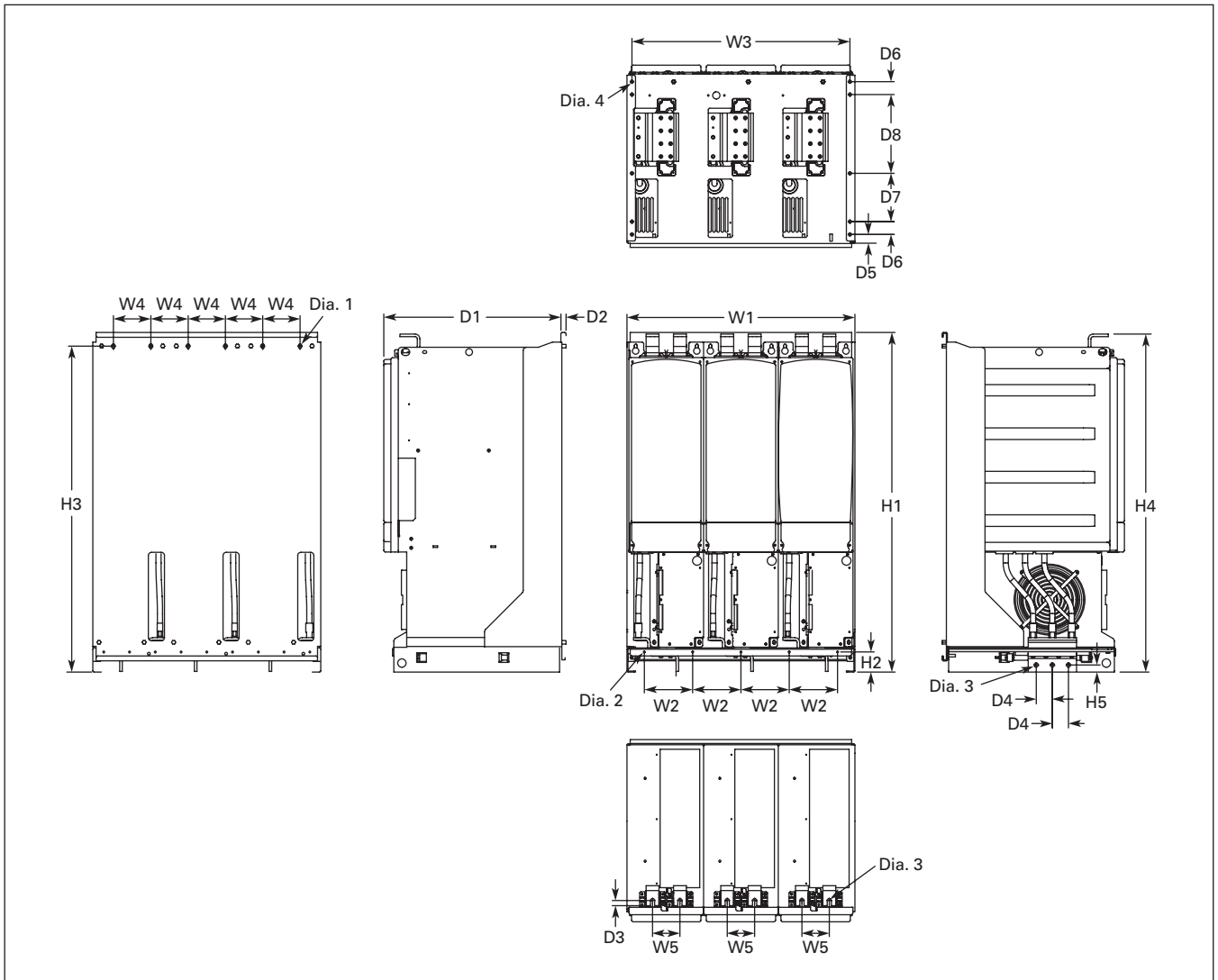


Figure 14. 9000X Dimensions, FR13 Open Chassis Inverter

Table 42. Dimensions for 9000X, FR13 Open Chassis Inverter

Frame Size	Approximate Dimensions in Inches (mm)																		Weight lbs. (kg)				
	W1	W2	W3	W4	W5	H1	H2	H3	H4	H5	D1	D2	D3	D4	D5	D6	D7	D8		Dia. 1	Dia. 2	Dia. 3	Dia. 4
FR13	27.87 (708)	5.91 (150)	26.65 (677)	4.57 (116)	3.35 (85)	41.54 (1055)	2.46 (62.5)	39.86 (1012.5)	41.34 (1050)	.79 (20)	21.77 (553)	.51 (13)	.63 (16)	1.97 (50)	1.06 (27)	1.57 (40)	5.91 (150)	9.64 (244.8)	.35x.59 (9x15)	.18 (4.6)	.51 (13)	.37 (9.5)	683 (310)

Note: 9000X FR14 is built of two FR13 modules. Please refer to SPX9000 installation manual for mounting instructions.

Note: FR13 is built from an inverter module and a converter module. Please refer to SPX9000 installation manual for mounting instructions.

Open Drives

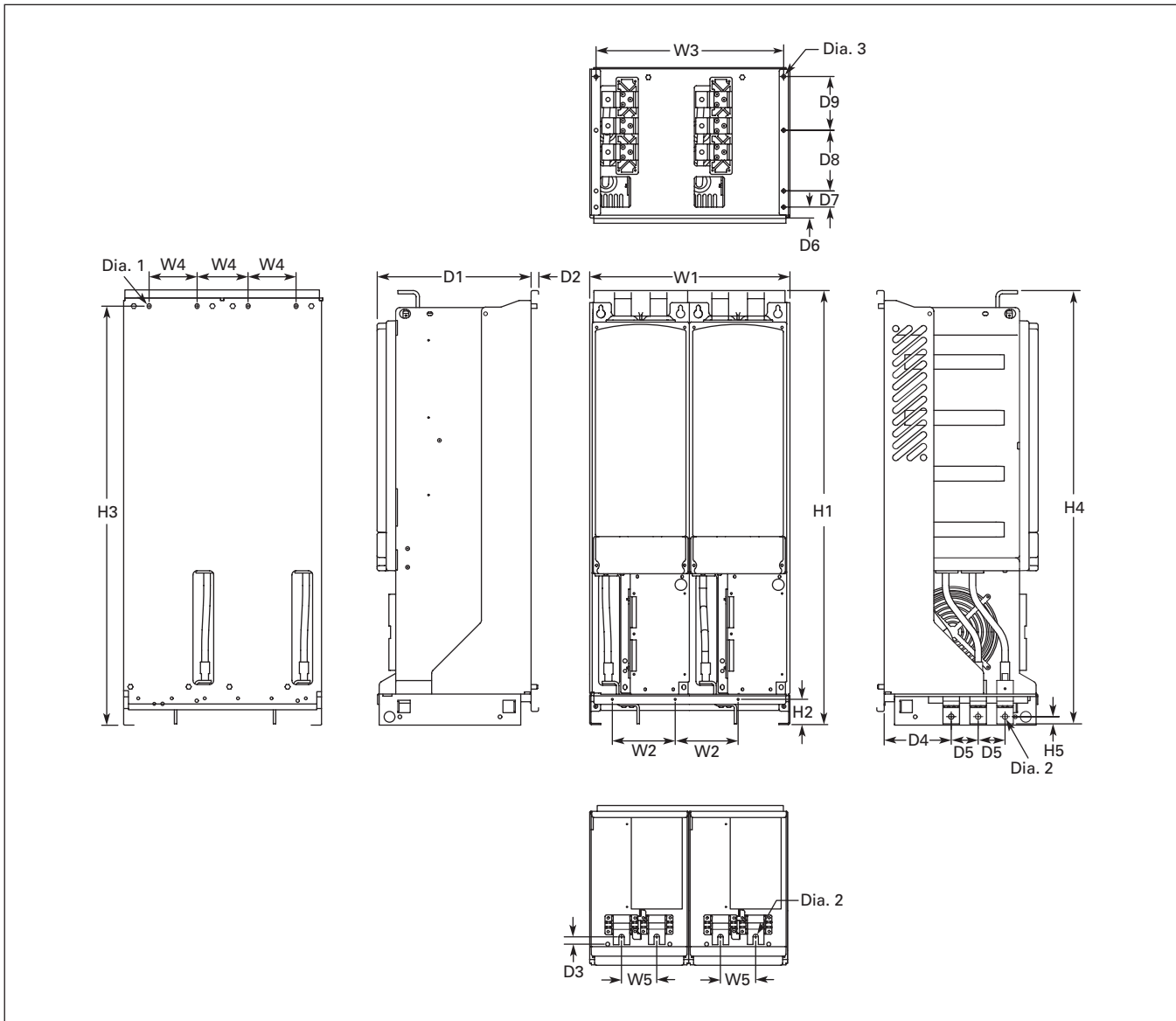


Figure 15. 9000X Dimensions, FR13 Open Chassis Converter

Table 43. FR13 — Number of Input Units

480V	hp	Input Modules	690V	hp	Input Modules
SPX800A0-4A2N1	800	2	SPX800A0-5A2N1	800	2
			SPX900A0-5A2N1	900	2
			SPXH10A0-5A2N1	1000	2

Table 44. Dimensions for 9000X, FR13 Open Chassis Converter

Frame Size	Approximate Dimensions in Inches (mm)																				Weight lbs. (kg)		
	W1	W2	W3	W4	W5	H1	H2	H3	H4	H5	D1	D2	D3	D4	D5	D6	D7	D8	D9	Dia. 1		Dia. 2	Dia. 3
FR13	18.74 (476)	5.91 (150)	17.52 (445)	4.57 (116)	3.35 (85)	41.54 (1055)	2.46 (62.5)	39.86 (1012.5)	41.34 (1050)	.69 (17.5)	14.69 (373)	.51 (13)	.73 (18.5)	6.42 (163)	2.56 (65)	1.06 (27)	1.57 (40)	5.91 (150)	5.24 (133)	.35x.59 (9x15)	.51 (13)	.37 (9.5)	295 (134)

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Open Drives

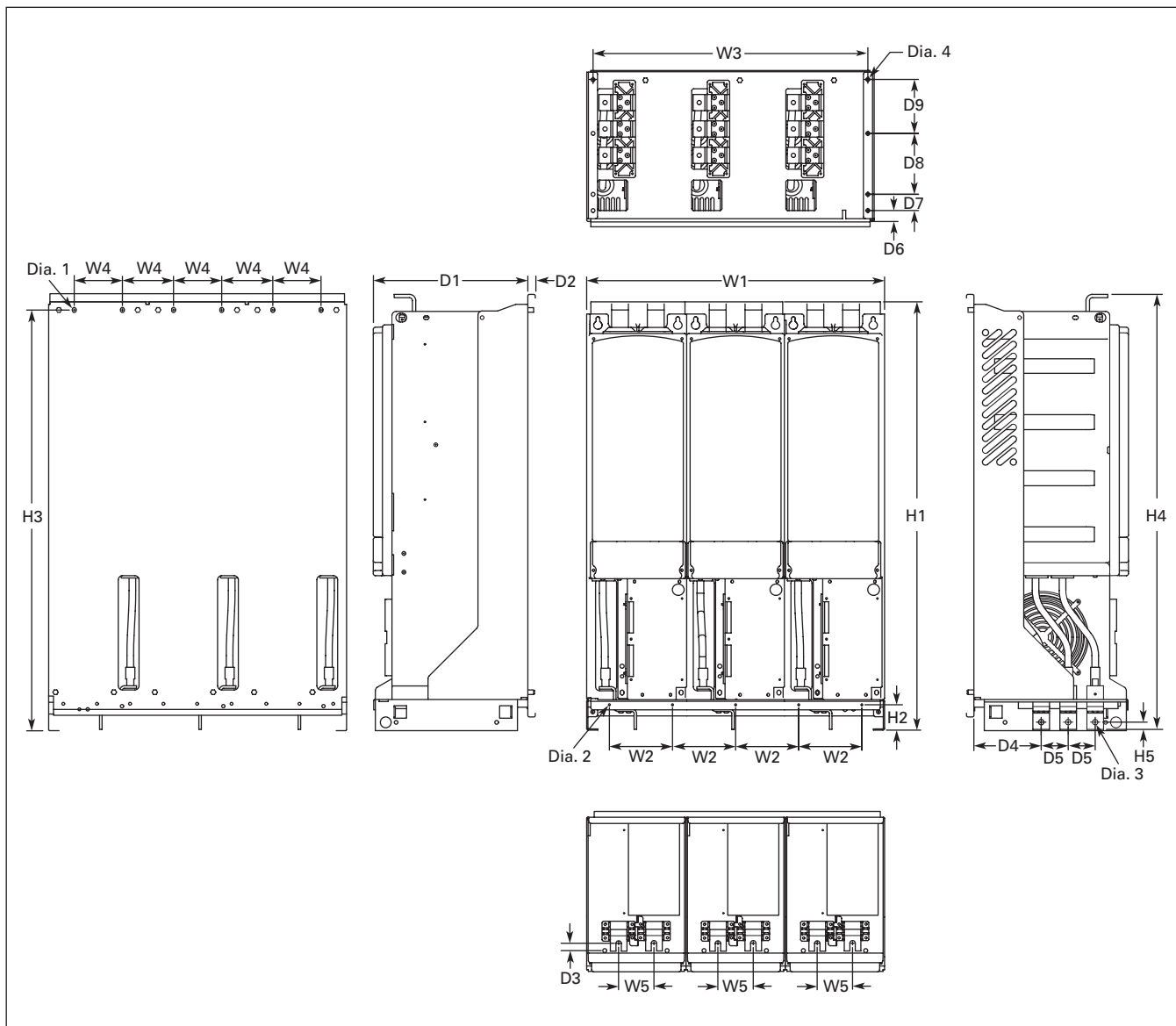


Figure 16. 9000X Dimensions, FR13 Open Chassis Converter — 900/1000 hp 480V

Table 45. FR13 — Number of Input Units

480V	hp	Input Modules
SPX900A0-4A2N1	900	3
SPXH10A0-4A2N1	1000	3

Table 46. Dimensions for 9000X, FR13 Open Chassis Converter — 900/1000 hp 480V

Frame Size	Approximate Dimensions in Inches (mm)																			Weight lbs. (kg)				
	W1	W2	W3	W4	W5	H1	H2	H3	H4	H5	D1	D2	D3	D4	D5	D6	D7	D8	D9		Dia. 1	Dia. 2	Dia. 3	Dia. 4
FR13	27.87 (708)	5.91 (150)	26.65 (677)	4.57 (116)	3.35 (85)	41.54 (1055)	2.46 (62.5)	39.86 (1012.5)	41.34 (1050)	.69 (17.5)	14.69 (373)	.51 (13)	.73 (18.5)	6.42 (163)	2.56 (65)	1.06 (27)	1.57 (40)	5.91 (150)	5.24 (133)	.35x.59 (9x15)	.18 (4.6)	.51 (13)	.37 (9.5)	443 (201)

## Open Drives

Table 47. Choke Types

Catalog Number	Frame Size	Choke Type ①
<b>Voltage Range 380 – 500V</b>		
SPX 250 4	FR10	CHK0400
SPX 300 4	FR10	CHK0520
SPX 350 4	FR10	CHK0520
SPX 400 4	FR11	2 x CHK0400
SPX 500 4	FR11	2 x CHK0400
SPX 550 4	FR11	2 x CHK0400
SPX 600 4	FR12	2 x CHK0520
SPX 650 4	FR12	2 x CHK0520
SPX 700 4	FR12	2 x CHK0520
SPX 800 4	FR13	2 x CHK0400
SPX 900 4	FR13	3 x CHK0520
SPX H10 4	FR13	3 x CHK0520
SPX H12 4	FR14	4 x CHK0520
SPX H16 4	FR14	6 x CHK0400
<b>Voltage Range 525 – 690V</b>		
SPX 200 5	FR10	CHK0261
SPX 250 5	FR10	CHK0400
SPX 300 5	FR10	CHK0400
SPX 400 5	FR11	CHK0520
SPX 450 5	FR11	CHK0520
SPX 500 5	FR11	2 x CHK0400
SPX 550 5	FR12	2 x CHK0400
SPX 600 5	FR12	2 x CHK0400
SPX 700 5	FR12	2 x CHK0400
SPX 800 5	FR13	2 x CHK0400
SPX 900 5	FR13	2 x CHK0400
SPX H10 5	FR13	2 x CHK0400
SPX H13 5	FR14	4 x CHK0400
SPX H15 5	FR14	6 x CHK0400

① Chokes are provided with all FR10 – FR14 drives.

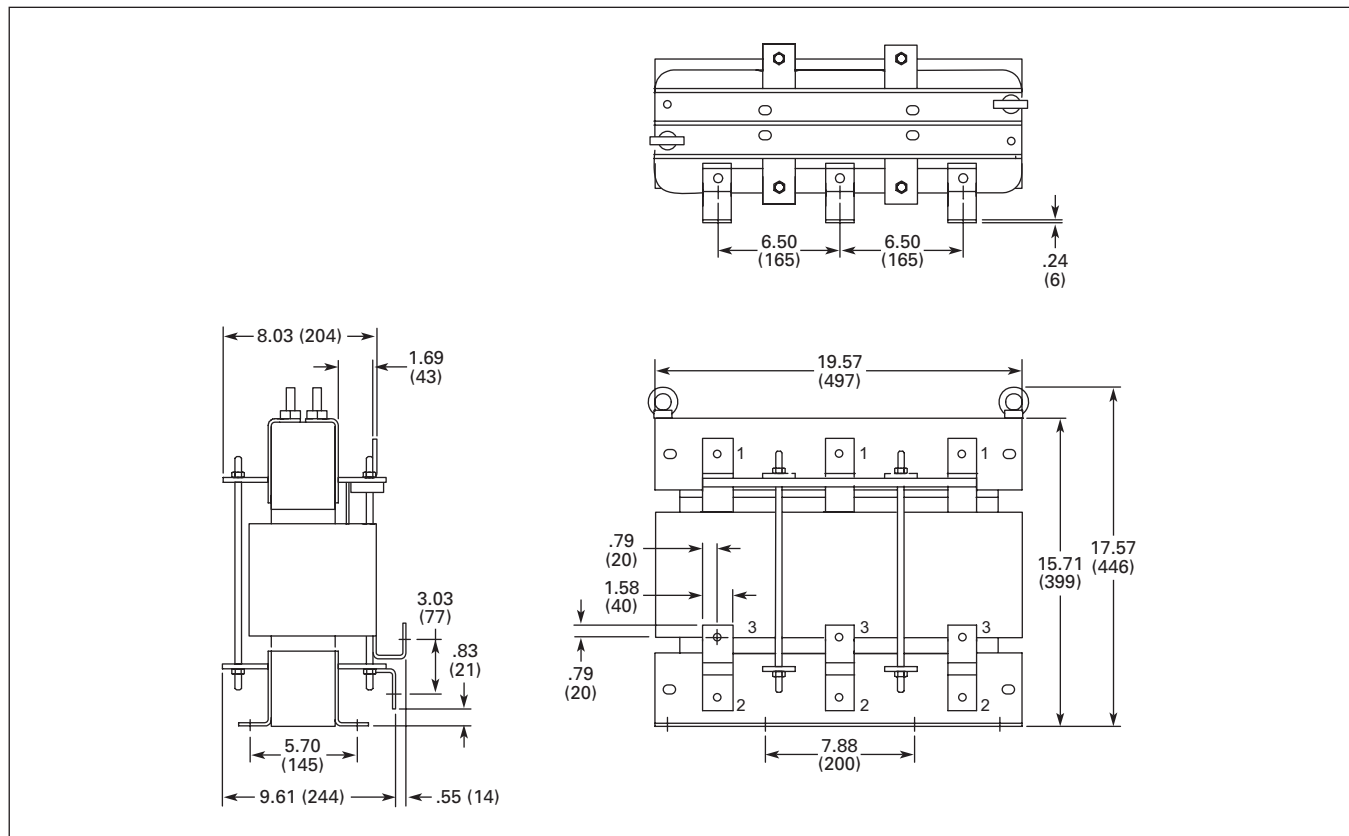


Figure 17. Dimensions of AC Choke CHK0520 in Inches (mm)

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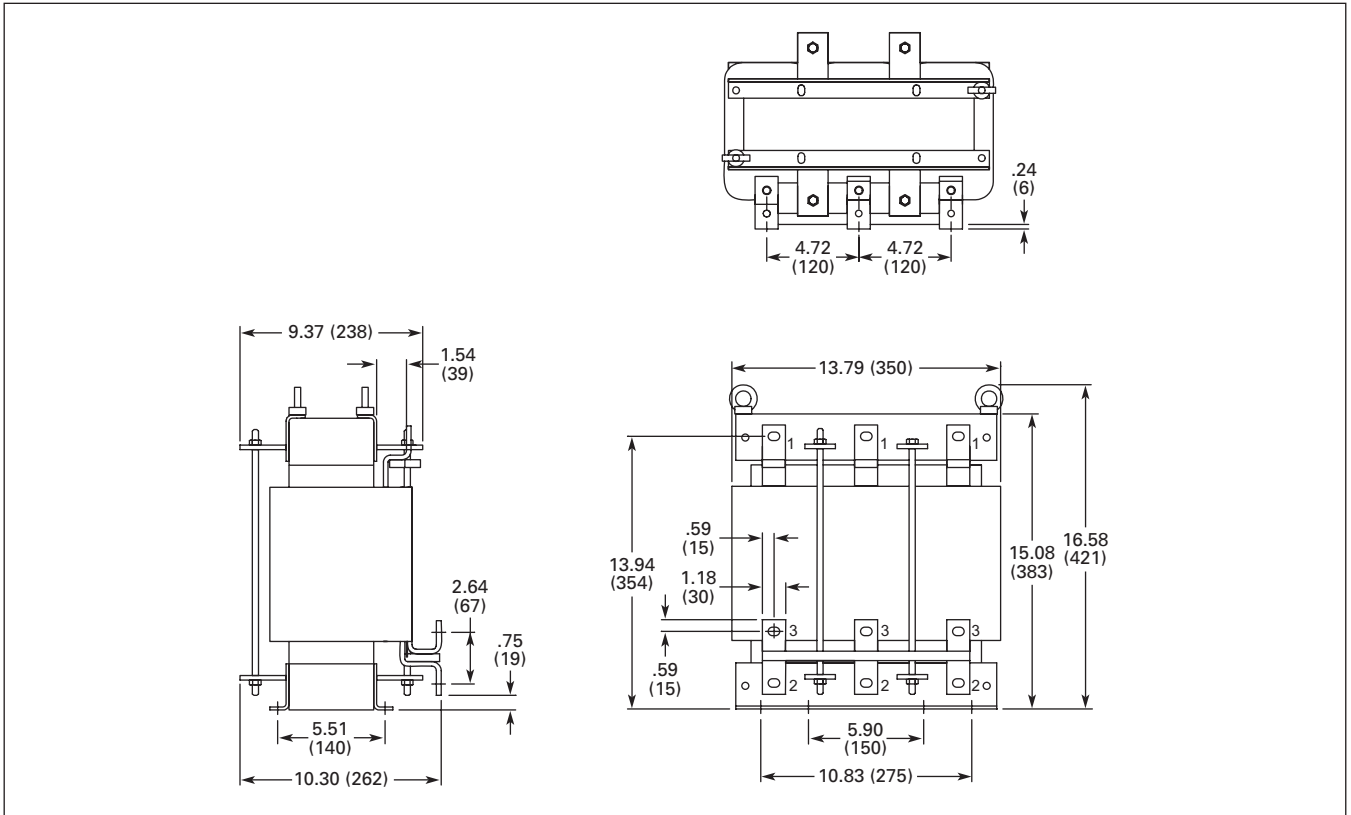


Figure 18. Dimensions of AC Choke CHK0400 in Inches (mm)

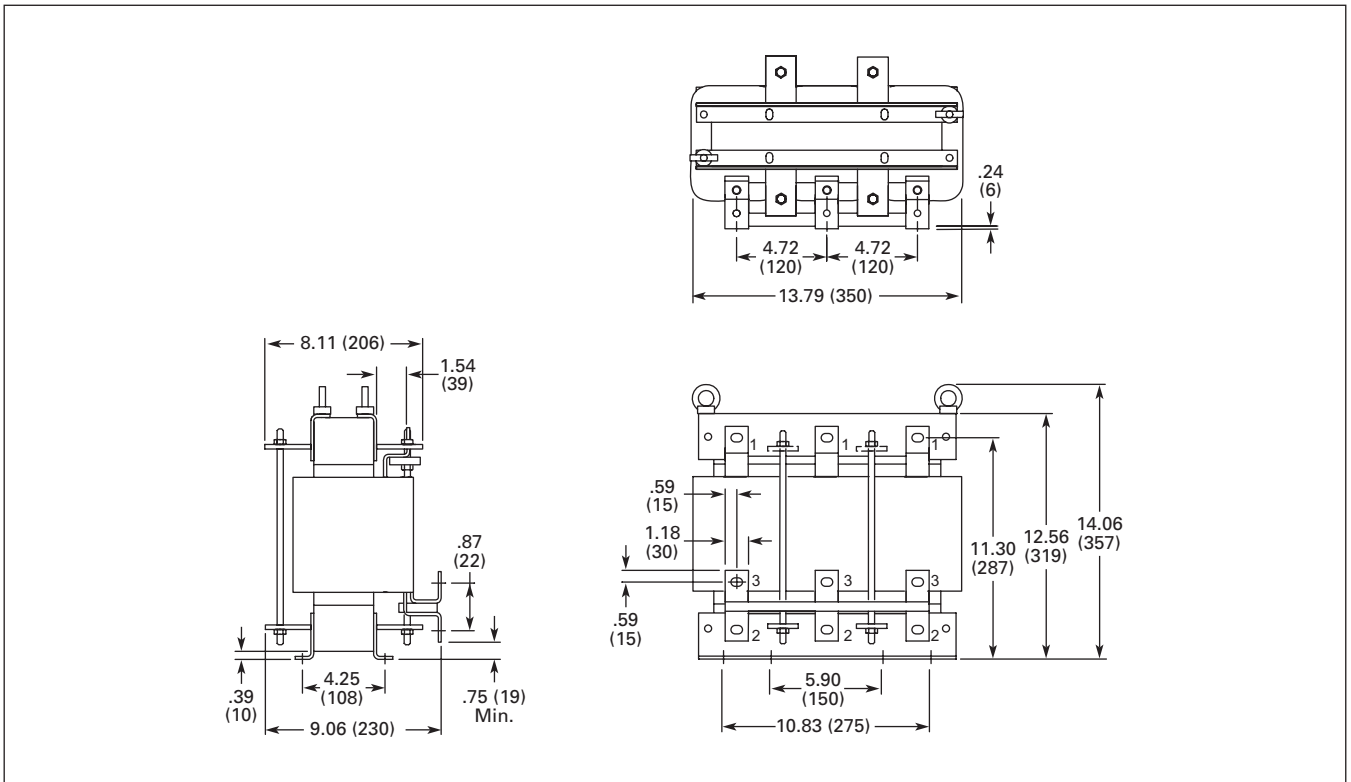


Figure 19. Dimensions of AC Choke CHK0261 in Inches (mm)

Open Drives

Spare Units & Replacement Parts

Table 48. 9000X Spare Units – SVX9000, 208 – 690V, Frames 4 – 12

Description	Catalog Number	Price U.S. \$
Control Unit – Includes the control board, blue base housing, installed SVX9000 software program and blue flip cover. Does not include any OPT boards or keypad. See Figure 1 and Table 17 (Page 11) for standard and option boards and keypad.	CSBS0000000000	1,320.00

Table 49. 9000X Series Replacement Parts — SVX9000 Drives, 208 – 240V

Frame:	4			5			6			7			8			Delivery Code	Catalog Number	Price U.S. \$	
hp (I <sub>H</sub> ):	3/4	1	1-1/2	2	3	5 <sup>①</sup>	5	7-1/2	10	15	20	25	30	40	50	60			
<b>Control Board</b>																			
1	1	1					1	1									W	VB00252	1,140.00
<b>Power Boards</b>																			
1																	FB	VB00308-0004-2	1,310.00
	1																FB	VB00308-0007-2	1,310.00
		1															FB	VB00308-0008-2	1,310.00
			1														FB	VB00310-0011-2	1,355.00
				1													FB	VB00310-0012-2	1,355.00
					1												FB	VB00313-0017-2	1,430.00
						1											FB	VB00313-0025-2	1,430.00
							1										FB	VB00313-0031-2	1,430.00
								1									FB	VB00316-0048-2	1,505.00
									1								FB	VB00316-0061-2	1,505.00
										1							FB	VB00319-0075-2	1,590.00
											1						FB	VB00319-0088-2	1,590.00
												1					FB	VB00319-0114-2	1,590.00
													1				FB	VB00322-0140-2	1,610.00
														1			FB	VB00322-0170-2	1,610.00
															1		FB	VB00322-0205-2	1,610.00
<b>Electrolytic Capacitors</b>																			
2	2	2															W	PP01000	63.00
			2	2													W	PP01001	79.00
					2		2										W	PP01002	126.00
								2									W	PP01003	153.00
									2	2							W	PP01004	189.00
											2	2	2	4	4		W	PP01005	279.00
																4	W	PP01099	385.00
<b>Cooling Fans</b>																			
1	1	1		1	1												W	PP01060	94.50
					1		1	1									W	PP01061	158.00
									1	1							W	PP01062	595.00
											1	1	1				W	PP01063	600.00
														1	1	1	FC	PP01123 <sup>②</sup>	700.00
1	1	1		1	1												W	PP01086	105.00
					1		1	1									FC	PP01088	179.00
											1	1	1				W	PP01049	105.00
														1	2	2	FC	CP01180	100.00
														1	1	1	FC	PP08037	430.00

① I<sub>L</sub> only; has no corresponding I<sub>H</sub> rated hp rating.  
 ② PP00061 capacitor not included in main fan; please order separately.





Open Drives

Table 50. 9000X Series Replacement Parts — FR4 – FR9 SVX9000 Drives, 380 – 500V (Continued)

Frame:	4						5			6			7			8			9		Delivery Code	Catalog Number	Price U.S. \$	
hp (I <sub>H</sub> ):	1	1-1/2	2	3	5	7-1/2 ①	7-1/2	10	15	20	25	30	40	50	60	75	100	125	150	200				
<b>Cooling Fans</b>																								
	1	1		1	1	1																W	PP01060	94.50
							1		1	1												W	PP01061	158.00
										1	1	1										W	PP01062	595.00
													1	1	1							W	PP01063	600.00
																1	1	1				FC	PP01123 ②	700.00
																			1	1		FC	PP01080 ③	1,115.00
1	1		1	1	1	1																W	PP01086	105.00
							1		1	1												FC	PP01088	179.00
										1	1	1	1	1	1							W	PP01049	105.00
																1	1	1				FC	CP01180	100.00
																			1 ④	2		W	PP01068	79.00
																			1	1		FC	PP09051	200.00
<b>IGBT Modules</b>																								
1	1		1																			W	CP01304	258.00
			1	1																		W	CP01305	347.00
				1			1															W	CP01306	473.00
								1														W	CP01307	540.00
									1													W	CP01308	720.00
										1												W	PP01020	945.00
											1											W	PP01022	1,070.00
												1										W	PP01023	1,210.00
													1									W	PP01024	1,765.00
														1								W	PP01025	2,305.00
															1							W	PP01029	2,725.00
																1						W	PP01026	2,380.00
																	1	1				W	PP01027	3,505.00
<b>Chopper/Rectifiers</b>																								
										1	1											W	CP01367	368.00
											1											W	CP01368	431.00
<b>Diode/Thyristor Modules</b>																								
													3	3	3							W	PP01035	174.00
																3	3	3				W	CP01268	447.00
																			3	3		W	PP01037	184.00
<b>Rectifying Boards</b>																								
													1	1	1							W	VB00242	1,090.00
																1	1	1				W	VB00227	600.00
																			1	1		W	VB00459	1,315.00
<b>Rectifying Module Sub-assembly</b>																								
																				1	1	W	FR09810	5,380.00
<b>Power Module Sub-assemblies</b>																								
																					1	W	FR09-150-4-ANS ⑤	12,550.00
																					1	W	FR09-200-4-ANS ⑤	13,120.00

① I<sub>L</sub> only; has no corresponding I<sub>H</sub> rated hp rating.  
 ② PP00061 capacitor not included in main fan; please order separately.  
 ③ PP00011 capacitor not included in main fan; please order separately.  
 ④ For FR9 NEMA Type 12 you need two PP01068 internal fans.  
 ⑤ See Table 54 for details.

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Open Drives

Table 51. 9000X Series Replacement Parts — FR10 – FR12 SVX9000 Drives, 380 – 500V

Frame:	10			11			12			Delivery Code	Catalog Number	Price U.S. \$
hp (I <sub>H</sub> ):	250	300	350	400	500	550	600	650	700			
<b>Control Board</b>												
1	1	1	1	1	1	1	1	1	1	W	VB00561 ①	2,455.00
<b>Shunt Boards</b>												
6										FC	VB00537	40.00
	6									FC	VB00497	40.00
		6					12	12	12	FC	VB00498	40.00
			9							FC	VB00538	40.00
				9						FC	VB00513	40.00
					9					FC	VB00514	40.00
<b>Driver Boards</b>												
			3	3	3					FC	VB00489	1,585.00
1	1	1					2	2	2	FC	VB00487	2,630.00
<b>Driver Adapter Board</b>												
1	1	1					2	2	2	FC	VB00330	300.00
<b>ASIC Board</b>												
1	1	1	1	1	1	1	2	2	2	FC	VB00451	3,635.00
<b>Feedback Interface Board</b>												
							2	2	2	FC	VB00448	470.00
<b>Star Coupler Board</b>												
							1	1	1	FC	VB00336	2,760.00
<b>Power Modules</b>												
1	1	1	2	2	2	2	2	2	2	FC	FR10820 ②	4,795.00
2	2	2								FC	FR10828	3,180.00
1										FC	FR10-250-4-ANS ③	17,130.00
	1									FC	FR10-300-4-ANS ③	17,130.00
		1					2	2	2	FC	FR10-350-4-ANS ③	17,130.00
			3							FC	FR11-400-4-ANS ③	6,570.00
				3						FC	FR11-500-4-ANS ③	6,570.00
					3					FC	FR11-550-4-ANS ③	6,570.00
<b>Electrolytic Capacitors</b>												
2	2	2	3	3	3	3	4	4	4	FC	PP00060	30.00
12	12	12	18	18	18	18	24	24	24	FC	PP01005	279.00
<b>Fuses</b>												
1	1	1	1	1	1	1	2	2	2	FC	PP01094	73.50
2	2	2	2	2	2	2	4	4	4	FC	PP01095	15.80
<b>Cooling Fans and Isolation Transformers</b>												
2	2	2	3	3	3	3	4	4	4	FC	VB00299	1,090.00
2	2	2	3	3	3	3	4	4	4	FC	PP01080 ④	1,115.00
2	2	2					4	4	4	FC	PP01068	79.00
1	1	1	1	1	1	1	2	2	2	FC	PP01096	105.00
1	1	1					2	2	2	FC	FR10844	615.00
1	1	1	3	3	3	3	2	2	2	FC	FR10845	615.00
1	1	1					2	2	2	FC	FR10846	1,915.00
1	1	1	3	3	3	3	2	2	2	FC	FR10847	1,915.00
<b>Rectifying Board</b>												
1	1	1	2	2	2	2	2	2	2	FC	VB00459	1,210.00

① SPX9000 Drives only (FR10 and larger).  
 ② Rectifying board not included.  
 ③ See Table 54 for details.  
 ④ PP00060 capacitor not included in main fan; please order separately.

Discount Symbol..... SS-2

Open Drives

Table 52. 9000X Series Replacement Parts — FR6 – FR9 SVX9000 Drives, 525 – 690V

Frame:	6								7		8		9				Delivery Code	Catalog Number	Price U.S. \$		
hp (I <sub>H</sub> ):	2	3	5 ①	5	7-1/2	10	15	20	25	30	40	50	60	75	100	125				150	200 ①
<b>Control Board</b>																					
	1	1	1	1	1	1	1	1	1	1	1					1	1	1	W	VB00252	1,140.00
<b>Driver Board</b>																					
	1																		FB	VB00404-0004-6	630.00
		1																	FB	VB00404-0005-6	630.00
			1																FB	VB00404-0007-6	630.00
				1															FB	VB00404-0010-6	630.00
					1														FB	VB00404-0013-6	630.00
						1													FB	VB00404-0018-6	630.00
							1												FB	VB00404-0022-6	630.00
								1											FB	VB00404-0027-6	630.00
									1										FB	VB00404-0034-6	630.00
<b>Power Boards</b>																					
										1									FB	VB00419-0041-6	2,360.00
											1								FB	VB00419-0052-6	2,360.00
												1							FB	VB00422-0062-6	2,380.00
													1						FB	VB00422-0080-6	2,380.00
														1					FB	VB00422-0100-6	2,380.00
<b>Power Modules</b>																					
															1				FC	FR09-100-5-ANS ②	12,300.00
																1			FC	FR09-125-5-ANS ②	12,390.00
																	1		FC	FR09-150-5-ANS ②	12,440.00
																		1	FC	FR09-175-5-ANS ②	12,560.00
<b>Electrolytic Capacitors</b>																					
	2	2	2	2	2	2	2	2	2										FC	PP01093	216.00
										2	2	4	4		8	8	8	8	FC	PP01041	368.00
													4						FC	PP01040	462.00
<b>Fuses</b>																					
											1	1	1	1	1	1	1	1	W	PP01094	73.50
											2	2	2	2	2	2	2	2	W	PP01095	15.80
<b>Cooling Fans</b>																					
	1	1	1	1	1														W	PP01061	158.00
						1	1	1	1										W	PP01062	595.00
										1	1								W	PP01063	600.00
											1	1	1						FC	PP01123	700.00
	1	1	1	1	1	1	1	1	1	1	1	1	1						W	PP01049	105.00
												1	1	1					FC	CP01180	100.00
															1	1	1	1 ③	W	PP01068	79.00
															1	1	1	1	FC	PP01080	1,115.00
<b>Fan Power Supply</b>																					
																1	1	1	FC	VB00299	1,125.00
<b>IGBT Modules</b>																					
	3	3	3	3	3	3	3	3	3										FC	PP01091	515.00
										1	1								FC	PP01089	1,765.00
												1	1	1					FC	PP01127	2,720.00
<b>IGBT/Diode (Brake)</b>																					
	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	FC	PP01040	462.00
<b>Diode Module</b>																					
	1	1	1	1	1	1	1	1	1										FC	PP01092	184.00
<b>Diode/Thyristor Modules</b>																					
										3	3								FC	PP01071	163.00
															3	3	3	3	FC	PP01072	910.00
<b>Rectifying Boards</b>																					
										1	1								FC	VB00442	955.00
															1	1	1	1	FC	VB00460	1,025.00
<b>Rectifying Module Sub-assemblies</b>																					
															1	1	1		W	FR09810	5,380.00
															1	1	1		FC	FR09811	6,010.00

① I<sub>L</sub> only; has no corresponding I<sub>H</sub> rated hp rating.  
 ② See Table 54 for details.  
 ③ For NEMA Type 12, two PP01068 internal fans are needed.

Discount Symbol..... SS-2

June 2006

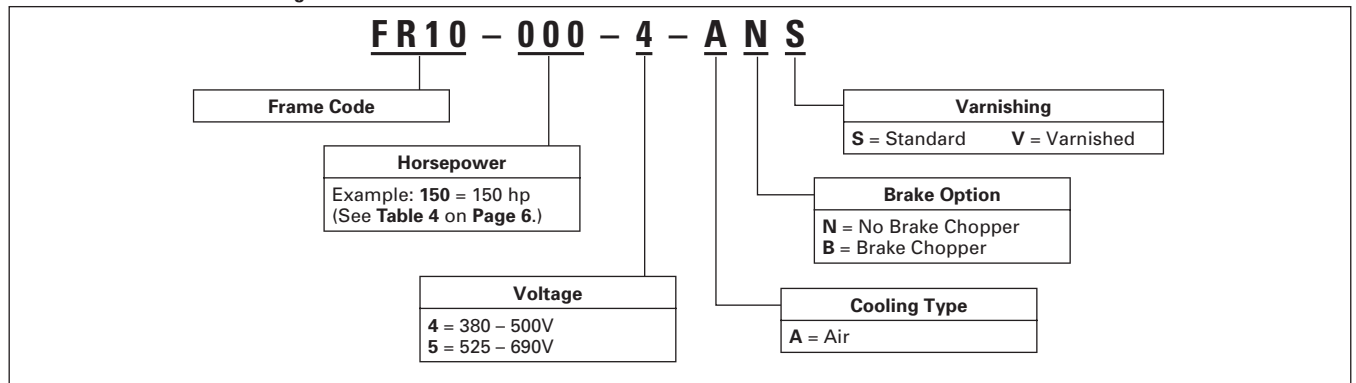
Open Drives

Table 53. 9000X Series Replacement Parts — FR10 – FR12 SVX9000 Drives, 525 – 690V

Frame:	10			11			12			Delivery Code	Catalog Number	Price U.S. \$
hp (hp):	200	250	300	400	450	500	550	600	700			
<b>Component Boards</b>												
1	1	1	1	1	1	1	1	1	1	W	VB00561 ①	2,455.00
1	1	1	1	1	1	1	2	2	2	FC	VB00451	3,635.00
6										FC	VB00545	42.00
	6									FC	VB00510	42.00
		6					12	12	12	FC	VB00511	42.00
1	1	1					2	2	2	FC	VB00330	300.00
1	1	1					2	2	2	FC	VB00487	2,630.00
			3	3	3					FC	VB00489	1,585.00
			9							FC	VB00546	40.00
				9						FC	VB00547	40.00
					9					FC	VB00512	40.00
						2	2	2	2	FC	VB00448	470.00
						1	1	1	1	FC	VB00336	2,760.00
<b>Power Modules</b>												
1	1	1	2	2	2	2	2	2	2	FC	FR10821 ②	5,660.00
2	2	2								FC	FR10829	2,980.00
1										FC	FR10-200-5-ANS ③	17,600.00
	1									FC	FR10-250-5-ANS ③	17,600.00
		1					2	2	2	FC	FR10-300-5-ANS ③	17,600.00
			3							FC	FR11-400-5-ANS ③	6,800.00
				3						FC	FR11-450-5-ANS ③	6,800.00
					3					FC	FR11-500-5-ANS ③	6,800.00
<b>Electrolytic Capacitors</b>												
2	2	2	3	3	3	4	4	4	4	FC	PP00060	30.00
12	12	12	18	18	18	24	24	24	24	FC	PP01099	375.00
<b>Fuses</b>												
1	1	1	1	1	1	2	2	2	2	FC	PP01094	73.50
2	2	2	2	2	2	4	4	4	4	FC	PP01095	15.80
<b>Cooling Fans and Isolation Transformers</b>												
2	2	2	3	3	3	4	4	4	4	FC	VB00299	1,125.00
2	2	2	3	3	3	4	4	4	4	FC	PP01080 ④	1,115.00
2	2	2				4	4	4	4	FC	PP01068	79.00
1	1	1	1	1	1	2	2	2	2	FC	PP01096	105.00
1	1	1				2	2	2	2	FC	FR10844	615.00
1	1	1	3	3	3	2	2	2	2	FC	FR10845	615.00
1	1	1				2	2	2	2	FC	FR10846	1,915.00
1	1	1	3	3	3	2	2	2	2	FC	FR10847	1,915.00
<b>Fan Power Supply</b>												
						1	1	1	1	FC	VB00299	1,125.00
<b>Rectifying Boards</b>												
1	1	1	2	2	2	2	2	2	2	FC	VB00460	1,025.00

- ① SPX9000 Drives only (FR10 and larger).
- ② Rectifying board not included.
- ③ See Table 54 for details.
- ④ PP00060 capacitor not included in main fan; please order separately.

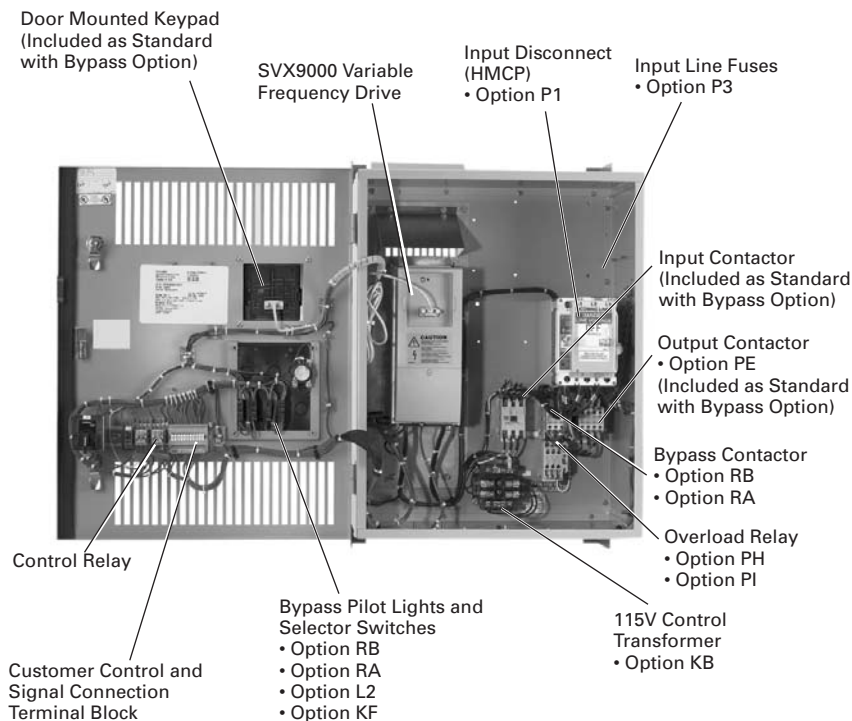
Table 54. Power Module Catalog Number Matrix



Discount Symbol..... SS-2

## Enclosed Drives

## SVX9000 Enclosed Drives



Enclosed 9000X Series Drive

## Standards and Certifications

- UL Listed
- cUL Listed

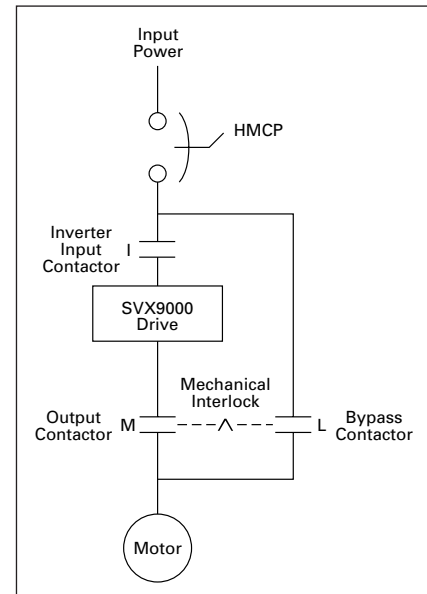


Figure 20. Power Diagram for Bypass Options RB and RA

## Product Description

- **Standard Enclosed** — covers a wide range of the most commonly ordered options. Pre-engineering eliminates the lead time normally associated with customer specific options.
- **Modified Standard Enclosed** — applies to specific customer requirements that vary from the Standard Enclosed offering, such as the need for an additional indicating light or minor modifications to drawings. *Consult your Eaton representative for assistance in pricing and lead time.*
- **Custom Engineered** — for those applications with more unique or complex requirements, these are individually engineered to the customer's needs. *Consult your Eaton representative for assistance in pricing and lead time.*

## Features

- NEMA Type 1 or Type 12 enclosures
- Input Voltage: 208V, 230V, 480V and 575V (Consult Factory)
- Complete range of control, network and power options
- Horsepower range:
  - 208V — 3/4 to 100 hp I<sub>H</sub>; 1 to 100 hp I<sub>L</sub>
  - 230V — 3/4 to 100 hp I<sub>H</sub>; 1 to 100 hp I<sub>L</sub>
  - 480V — 1 to 700 hp I<sub>H</sub>; 1-1/2 to 800 hp I<sub>L</sub>
- HMCP padlockable

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## Enclosed Drives

## Technical Data and Specifications

Table 55. Specifications

Feature Description	9000X Enclosed Products — NEMA Type 1 or NEMA Type 12
<b>Primary Design Features</b>	
45 – 66 Hz Input Frequency	Standard
Output: AC Volts Maximum	Input Voltage Base
Output Frequency Range: Hz	0 – 320
Initial Output Current (I <sub>H</sub> )	250% for 2 seconds
Overload: 1 Minute (I <sub>H</sub> /I <sub>L</sub> )	150%/110%
Enclosure Space Heater	Optional
Oversize Enclosure	Standard
Output Contactor	Optional
Bypass Motor Starter	Optional
Listings	UL, cUL
<b>Protection Features</b>	
Incoming Line Fuses	Optional
AC Input Circuit Disconnect	Optional
Line Reactors	Standard
Phase Rotation Insensitive	Standard
EMI Filter	Standard
Input Phase Loss Protection	Standard
Input Overvoltage Protection	Standard
Line Surge Protection	Standard
Output Short Circuit Protection	Standard
Output Ground Fault Protection	Standard
Output Phase Protection	Standard
Overtemperature Protection	Standard
DC Overvoltage Protection	Standard
Drive Overload Protection	Standard
Motor Overload Protection	Standard
Programmer Software	Optional
Local/Remote Keypad	Standard
Keypad Lockout	Standard
Fault Alarm Output	Standard
Built-In Diagnostics	Standard
<b>Input/Output Interface Features</b>	
<b>Setup Adjustment Provisions:</b> Remote Keypad/Display Personal Computer	Standard Standard
<b>Operator Control Provisions:</b> Drive Mounted Keypad/Display Remote Keypad/Display Conventional Control Elements Serial Communications 115V AC Control Circuit	Standard Standard Standard Optional Optional
<b>Speed Setting Inputs:</b> Keypad 0 – 10V DC Potentiometer/Voltage Signal 4 – 20 mA Isolated 4 – 20 mA Differential 3 – 15 psig	Standard Standard Configurable Configurable Optional
<b>Analog Outputs:</b> Speed/Frequency Torque/Load/Current Motor Voltage Kilowatts 0 – 10V DC Signals 4 – 20 mA DC Signals Isolated Signals	Standard Programmable Programmable Programmable Configurable w/Jumpers Standard Optional

Feature Description	9000X Enclosed Products — NEMA Type 1 or NEMA Type 12
---------------------	--

## Input/Output Interface Features (Continued)

<b>Discrete Outputs:</b> Fault Alarm Drive Running Drive at Set Speed Optional Parameters Dry Contacts Open Collector Outputs Additional Discrete Outputs	Standard Standard Programmable 14 1 (2 Relays Form C) 1 Optional
<b>Communications:</b> RS-232 RS-422/485 DeviceNet™ Modbus RTU CanOpen (Slave) Profibus-DP Lonworks® Johnson Controls Metasys™ N2	Standard Optional Optional Optional Optional Optional Optional Optional

## Performance Features

Sensorless Vector Control	Standard
Volts/Hertz Control	Standard
IR and Slip Compensation	Standard
Electronic Reversing	Standard
Dynamic Braking	Optional ①
DC Braking	Standard
PID Setpoint Controller	Programmable
Critical Speed Lockout	Standard
Current (Torque) Limit	Standard
Adjustable Acceleration/Deceleration	Standard
Linear or S Curve Accel/Decel	Standard
Jog at Preset Speed	Standard
Thread/Preset Speeds	7
Automatic Restart	Selectable
Coasting Motor Start	Standard
Coast or Ramp Stop Selection	Standard
Elapsed Time Meter	Optional
Carrier Frequency Adjustment	1 – 16 kHz

## Standard Conditions for Application and Service

Operating Ambient Temperature	0 – 40°C
Storage Temperature	-40 – 60°C
Humidity (Maximum), Non-condensing	95%
Altitude (Maximum without Derate)	3300 ft. (1000m)
Line Voltage Variation	+10/-15%
Line Frequency Variation	45 – 66 Hz
Efficiency	>96%
Power Factor (Displacement)	>.94

① Some horsepower units include dynamic braking chopper as standard — refer to individual drive sections.

Table 56. Standard I/O Specifications

Description	Specification
6 – Digital Input Programmable	24V: "0" ≤ 10V, "1" ≥ 18V; R <sub>i</sub> > 5 kΩ
2 – Analog Input Configurable w/Jumpers	Voltage: 0 – ±10V, R <sub>i</sub> > 200 kΩ Current: 0 (4) – 20 mA, R <sub>i</sub> = 250 kΩ
2 – Digital Output Programmable	Form C Relays 250V AC 2 Amp or 30V DC 2 Amp resistive
1 – Digital Output Programmable	Open collector 48V DC 50 mA
1 – Analog Output Programmable Configurable w/Jumper	0 – 20 mA, impedance 500 ohms, resolution 106 ±3%

Enclosed Drives

Catalog Number Selection

Table 57. SVX9000 Enclosed NEMA Type 1/12 Drive Catalog Numbering System

Build Alphabetically and Numerically

**SVX F07 1 4 A A**

**Product Family**  
SVX = Enclosed Drives

Horsepower Rating		
F07 = 3/4 hp	025 = 25 hp	250 = 250 hp
001 = 1 hp	030 = 30 hp	300 = 300 hp
F15 = 1-1/2 hp	040 = 40 hp	350 = 350 hp
002 = 2 hp	050 = 50 hp	400 = 400 hp
003 = 3 hp	060 = 60 hp	500 = 500 hp
005 = 5 hp	075 = 75 hp	550 = 550 hp
007 = 7-1/2 hp	100 = 100 hp	600 = 600 hp
010 = 10 hp	125 = 125 hp	650 = 650 hp
015 = 15 hp	150 = 150 hp	700 = 700 hp
020 = 20 hp	200 = 200 hp	800 = 800 hp

**Enclosure Rating**  
1 = NEMA Type 1  
2 = NEMA Type 12  
6 = NEMA 12 Filtered

**Voltage Rating**  
1 = 208V  
2 = 230V  
4 = 480V

**Application — Torque/Braking**<sup>②</sup>  
A = I<sub>L</sub>/No Brake Chopper  
B = I<sub>L</sub>/Internal Brake Chopper  
D = I<sub>H</sub>/No Brake Chopper  
E = I<sub>H</sub>/Internal Brake Chopper

**Enclosed Style**  
A = Enclosed Drive

Enclosed Options		Type
K1	Door-Mounted Speed Potentiometer	Control
K2	Door-Mounted Speed Potentiometer with HOA Selector Switch	Control
K3	3 – 15 psig Follower	Control
K4	HAND/OFF/AUTO Switch (22 mm)	Control
K5	MANUAL/AUTO Ref Switch (22 mm)	Control
K6	START/STOP Pushbuttons (22 mm)	Control
KB	115V Control Transformer – 550 VA	Control
KF	Bypass Test Switch for RA and RB	Addl. Bypass
KO	Standard Elapsed Time Meter	Control
L1	Power On and Fault Pilot Lights	Light
L2	Bypass Pilot Lights for RA, RB Bypass Options	Addl. Bypass
LA	Green RUN Light (22 mm)	Light
LD	Green STOP Light (22 mm)	Light
LE	Red RUN Light	Light
LJ	Red STOP Light (22 mm)	Light
LF	White Power On Light (22 mm)	Light
LU	Misc. Light (22 mm)	Light
P1	Input Disconnect (HMCP) 100 kAIC	Input
P2	Disconnect Switch	Input
P3	Input Line Fuses (200 kAIC)	Input
P7	Input Power Surge Protection	Input
PE	Output Contactor	Output
PF	Output Filter	Output
PG	MotoRx (Up to 600 Ft.) 1000 V/μS DV/DT Filter	Output
PH	Single Overload Relay	Output
PI	Dual Overload Relays	Output
PN	Dual Overloads for Bypass	Addl. Bypass
RA	Manual HOA Bypass Controller	Bypass
RB	Manual IOB Bypass Controller	Bypass
RC	Auto Transfer HOA Bypass Controller	Bypass
RD	Auto Transfer IOB Bypass Controller	Bypass
S5	Floor Stand 22"	Enclosure
S6	Floor Stand 12"	Enclosure
S7	10" Expansion	Enclosure
S8	20" Expansion	Enclosure
S9	Space Heater	Enclosure

Communication Options		
C2 = Modbus	C6 = CanOpen (Slave)	CA = Johnson Controls N2
C3 = Profibus DP	C7 = DeviceNet	CI = Modbus TCP
C4 = LonWorks	C8 = Modbus (D9 Connector)	CJ = BACnet
C5 = Profibus DP (D9 Connector)		CK = Ethernet IP
		D3 = RS-232 with D9 Connection

Control Options	
B1 = 6 DI, 1 ext +24V DC/EXT +24V DC	B5 = 3 RO (NO)
B2 = 1 RO (NC/NO), 1 RO (NO), 1 Therm	B8 = 1 ext +24V DC/EXT +24V DC, 3 Pt100
B4 = 1 AI (mA isolated), 2 AO (mA isolated), 1 ext +24V DC/EXT +24V DC	B9 = 1 RO (NO), 5 DI 42 – 240V AC Input

Engineered Options	
HT	High Temperature rating for 50°C (FR10 and above)
VB	Varnished Boards

① Local/Remote keypad is included as the standard Control Panel.  
 ② Brake Chopper is a factory installed option only, see drive option tables on Pages 45 – 53. Note: External dynamic braking resistors not included. Consult factory.  
 ③ Includes local/remote speed reference switch.  
 ④ Some options are voltage and/or horsepower specific. Consult your Eaton representative for details.  
 ⑤ See Pages 41 and 42 for descriptions.  
 ⑥ See Pages 43 and 44 for complete descriptions.  
 ⑦ Applicable only with FR10 and FR11 Freestanding designs.  
 ⑧ Consult Eaton for pricing and availability.



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## Enclosed Drives

## Control/Communication Option Descriptions

Table 58. Available Control/Communications Options

Option	Description	Option Type
K1	<b>Door-Mounted Speed Potentiometer</b> — Provides the SVX9000 with the ability to adjust the frequency reference using a door-mounted potentiometer. This option uses the 10V DC reference to generate a 0 – 10V signal at the analog voltage input signal terminal. When the HOA bypass option is added, the speed is controlled when the HOA switch is in the hand position. Without the HOA bypass option, a 2-position switch (labeled local/remote) is provided on the keypad to select speed reference from the Speed Potentiometer or a remote speed signal.	Control
K2	<b>Door-Mounted Speed Potentiometer with HOA Selector Switch</b> — Provides the SVX9000 with the ability to start/stop and adjust the speed reference from door-mounted control devices or remotely from customer supplied inputs. In HAND position, the drive will start and the speed is controlled by the door-mounted speed potentiometer. The drive will be disabled in the OFF position. When AUTO is selected, the drive run and speed control commands are via user-supplied dry contact and 4 – 20 mA signal.	Control
K3	<b>3 – 15 psig Follower</b> — Provides a pneumatic transducer which converts a 3 – 15 psig pneumatic signal to either 0 – 8V DC or a 1 – 9V DC signal interface with the SVX9000. The circuit board is mounted on the inside of the front enclosure panel and connects to the user's pneumatic control system via 6 ft. (1.8m) of flexible tubing and a 1/4 inch (6.4 mm) brass tube union.	Control
K4	<b>HAND/OFF/AUTO Switch for Non-bypass Configurations</b> — Provides a three-position selector switch that allows the user to select either a Hand or Auto mode of operation. Hand mode is defaulted to keypad operation, and Auto mode is defaulted to control from an external terminal source. These modes of operation can be configured via programming to allow for alternate combinations of start and speed sources. Start and speed sources include Keypad, I/O and FieldBus.	Control
K5	<b>MANUAL/AUTO Speed Reference Switch</b> — Provides a door-mounted selector switch for Manual/Auto speed reference.	Control
K6	<b>START/STOP Pushbuttons</b> — Provides door-mounted START and STOP pushbuttons for either bypass or non-bypass configurations.	Control
KB	<b>115V Control Transformer – 550 VA</b> — Provides a fused control power transformer with additional 550 VA at 115V for customer use.	Control
KF	<b>Bypass Test Switch for RB and RA</b> — Allows the user to energize the AF drive for testing while operating the motor on the bypass controller. The Test Switch is mounted on the inside of the enclosure door.	Addl. Bypass
KO	<b>Standard Elapsed Time Meter</b> — Provides a door-mounted elapsed run time meter.	Control
L1	<b>Power On and Fault Pilot Lights</b> — Provides a white power on light that indicates power to the enclosed cabinet and a red fault light indicates a drive fault has occurred.	Light
L2	<b>Bypass Pilot Lights for RB, RA Bypass Options</b> — A green light indicates when the motor is running in inverter mode and an amber light indicates when the motor is running in bypass mode. The lights are mounted on the enclosure door, above the switches.	Addl. Bypass
LA	<b>Green RUN Light (22 mm)</b> — Provides a green run light that indicates the drive is running.	Light
LD	<b>Green STOP Light (22 mm)</b> — Provides a green stop light that indicates the drive is stopped.	Light
LE	<b>Red Run Pilot Light (22 mm)</b> — Provides a red run pilot light that indicates the drive is running.	Light
LF	<b>Red STOP Light (22 mm)</b> — Provides a red stop light that indicates the drive is stopped.	Light
LJ	<b>White Power On Light (22 mm)</b> — The 22 mm white light that illuminates when the drive assembly is powered.	Light
LU	<b>Misc. Light (22 mm)</b> — Provides a misc. "user defined" pilot light. User to define light function and color.	Light
P1	<b>Input Disconnect Assembly Rated to 100 kAIC</b> — High Interrupting Motor Circuit Protector (HMCP) that provides a means of short circuit protection for the power cables between it and the SVX9000, and protection from high-level ground faults on the power cable. Allows a convenient means of disconnecting the SVX9000 from the line and the operating mechanism can be padlocked in the OFF position. This is factory mounted in the enclosure.	Input
P2	<b>Disconnect Switch</b> — Disconnect switch option is applicable only with NEMA Type 1 and NEMA Type 12 Freestanding drives. Allows a convenient means of disconnecting the SVX9000 from the line, and the operating mechanism can be padlocked in the OFF position. This is factory-mounted in the enclosure.	Input
P3	<b>Input Line Fuses Rated to 200 kAIC</b> — Provides high-level fault protection of the SVX9000 input power circuit from the load side of the fuses to the input side of the power transistors. This option consists of three 200 kA fuses, which are factory mounted in the enclosure.	Input
P7	<b>MOV Surge Suppressor</b> — Provides a Metal Oxide Varistor (MOV) connected to the line side terminals and is designed to clip line side transients.	Input
PE	<b>Output Contactor</b> — Provides a means for positive disconnection of the drive output from the motor terminals. The contactor coil is controlled by the drive's run or permissive logic. NC and NO auxiliary contacts rated at 10A, 600V AC are provided for customer use. Bypass Options <b>RB</b> and <b>RA</b> include an Output Contactor as standard. This option includes a low VA 115V AC fused Control Power Transformer and is factory mounted in the enclosure.	Output
PF	<b>Output Filter</b> — Used to reduce the transient voltage (DV/DT) at the motor terminals. The Output Filter is recommended for cable lengths exceeding 100 ft. (30m) with a drive of 3 hp and above, for cable lengths of 33 ft. (10m) with a drive of 2 hp and below, or for a drive rated at 525 – 690V. This option is mounted in the enclosure, and may be used in conjunction with a Brake Chopper Circuit.	Output
PG	<b>MotoRx (300 – 600 Ft.) 1000 V/μS DV/DT Filter</b> — Used to reduce transient voltage (DV/DT) and peak voltages at the motor terminals. This option is comprised of a .5% line reactor, followed by capacitive filtering and an energy recovery/clamping circuit. Unlike the Output Filter (See option <b>PF</b> ), the MotoRx recovers most of the energy from the voltage peaks, resulting in a lower voltage drop to the motor, and therefore conserving power. This option is used when the distance between a single motor and the drive is 300 – 600 feet (91 – 183m). <i>This option can not be used with the Brake Chopper Circuit. The Output Filter (option <b>PF</b>) should be investigated as an alternative.</i>	Output
PH	<b>Single Overload Relay</b> — Uses a bimetallic overload relay to provide additional overload current protection to the motor on configurations without bypass options. It is included with the Bypass Configurations for overload current protection in the bypass mode. The Overload Relay is mounted within the enclosure, and is manually resettable. Heater pack included.	Output

## Enclosed Drives

Table 58. Available Control/Communications Options (Continued)

Option	Description	Option Type
PI	<b>Dual Overload Relays</b> — This option is recommended when a single drive is operating 2 motors and overload current protection is needed for each of the motors. The standard configuration includes two bimetallic overload relays, each sized to protect a motor with 50% of the drive hp rating. For example, a 100 hp drive would include two overload relays sized to protect two 50 hp motors. The relays are mounted within the enclosure, and are manually resettable. Heater packs not included.	Output
PN	<b>Dual Overloads for Bypass</b> — This option is recommended when a single drive is operating 2 motors in the bypass mode and overload current protection is needed for each of the motors. The standard configuration includes two bimetallic overload relays, each sized to protect a motor with 50% of the drive hp rating. For example, a 100 hp drive would include two overload relays sized to protect two 50 hp motors. The relays are mounted within the enclosure, and are manually resettable.	Addl. Bypass
RA	<b>Manual HOA Bypass Controller</b> — The Manual HAND/OFF/AUTO (HOA) — 3-contactor — bypass option provides a means of bypassing the SVX9000, allowing the AC motor to be operated at full speed directly from the AC supply line. This option consists of an input disconnect, a fused control power transformer, and a full voltage bypass starter with a door mounted HOA selector switch and an INVERTER/BYPASS switch. The HOA switch provides the ability to start and stop the drive in the inverter mode. For applications up to 100 hp, a Freedom Series IEC input contactor, a Freedom Series IEC output contactor, and a Freedom Series IEC starter with a bimetallic overload relay is included. For applications above 100 hp, an Advantage input contactor, an Advantage output contactor and an Advantage starter with electronic overload protection is included. The contactors are mechanically and electrically interlocked (see power diagram on <b>Page 38</b> ).	Bypass
RB	<b>Manual IOB Bypass Controller</b> — The Manual INVERTER/OFF/BYPASS (IOB) — 3-contactor — bypass option provides a means of bypassing the SVX9000, allowing the AC motor to be operated at full speed directly from the AC supply line. This option consists of an input disconnect, a fused control power transformer, and a full voltage bypass starter with a door mounted IOB selector switch. For applications up to 100 hp, a Freedom Series IEC input contactor, a Freedom Series IEC output contactor, and a Freedom Series IEC starter with a bimetallic overload relay is included. For applications above 100 hp, an Advantage input contactor, an Advantage output contactor and an Advantage starter with electronic overload protection is included. The contactors are mechanically and electrically interlocked (see power diagram on <b>Page 38</b> ).	Bypass
RC	<b>Auto Transfer HOA Bypass Controller</b> — The Manual HAND/OFF/AUTO (HOA) — 3-contactor — bypass option provides a means of bypassing the SVX9000, allowing the AC motor to be operated at full speed directly from the AC supply line. The circuitry provides an automatic transfer of the load to “across the line” operation after a drive trip. This option consists of an input disconnect, a fused control power transformer, and a full voltage bypass starter with a door mounted HOA selector switch and an INVERTER/BYPASS switch. The HOA switch provides the ability to start and stop the drive in either mode. For applications up to 100 hp, a Freedom Series IEC input contactor, a Freedom Series IEC output contactor, and a Freedom Series IEC starter with a bimetallic overload relay is included. For applications above 100 hp, an Advantage input contactor, an Advantage output contactor and an Advantage starter with electronic overload protection is included. The contactors are mechanically and electrically interlocked (see power diagram on <b>Page 38</b> ). Door-mounted pilot lights are provided which indicate bypass or inverter operation. A green light indicates when the motor is running in inverter mode and an amber light indicates when the motor is running in bypass mode. <b>WARNING:</b> The motor may restart when the overcurrent relay is reset when operating in bypass, unless the IOB selector switch is turned to the OFF position.	Bypass
RD	<b>Auto Transfer IOB Bypass Controller</b> — The Auto INVERTER/OFF/BYPASS (IOB) — 3-contactor — bypass option provides a means of bypassing the SVX9000, allowing the AC motor to be operated at full speed directly from the AC supply line. The circuitry provides an automatic transfer of the load to “across the line” operation after a drive trip. This option consists of an input disconnect, a fused control power transformer, and a full voltage bypass starter with a door mounted IOB selector switch. For applications up to 100 hp, a Freedom Series IEC input contactor, a Freedom Series IEC output contactor, and a Freedom Series IEC starter with a bimetallic overload relay is included. For applications above 100 hp, an Advantage input contactor, an Advantage output contactor and an Advantage starter with electronic overload protection is included. The contactors are mechanically and electrically interlocked (see power diagram on <b>Page 38</b> ). Door-mounted pilot lights are provided which indicate bypass or inverter operation. A green light indicates when the motor is running in inverter mode and an amber light indicates when the motor is running in bypass mode. <b>WARNING:</b> The motor may restart when the overcurrent relay is reset when operating in bypass, unless the IOB selector switch is turned to the OFF position.	Bypass
S5	<b>Floor Stand 22"</b> — Converts a Size 1 or 2, normally wall mounted enclosure to a floor standing enclosure with a height of 22" (558.8 mm).	Enclosure
S6	<b>Floor Stand 12"</b> — Converts a Size 2, normally wall mounted enclosure to a floor standing enclosure with a height of 12" (304.8 mm).	Enclosure
S7	<b>10" Expansion</b> — In a Size 5 enclosure, the extension allows for bottom cable entry and additional space for customer mounted components. <b>NOTE:</b> Enclosure expansion rated NEMA Type 1 only.	Enclosure
S8	<b>20" Expansion</b> — In a Size 5 enclosure, the extension allows for bottom cable entry and additional space for customer mounted components. When the Output Filter (option <b>PF</b> ) is selected for a drive using a Size 5 enclosure, this expansion box is required and included in the option pricing. <b>NOTE:</b> Enclosure expansion rated NEMA Type 1 only.	Enclosure
S9	<b>Space Heater</b> — Prevents condensation from forming in the enclosure when the drive is inactive or in storage. Includes a thermostat for variable temperature control. A 200W heater is installed in enclosures 0 and 1, and a 400W heater is installed in enclosures 2 – 5. Requires a customer supplied 115V remote supply source.	Enclosure

**Note:** For availability, see Product Selection for base drive voltage required.

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Enclosed Drives

9000X Series Option Board Kits

The 9000X Series drives can accommodate a wide selection of expander and adapter option boards to customize the drive for your application needs. The drive's control unit is designed to accept a total of five option boards (see Figure 21).

The 9000X Series factory installed standard board configuration includes an A9 I/O board and an A2 relay output board, which are installed in slots A and B.

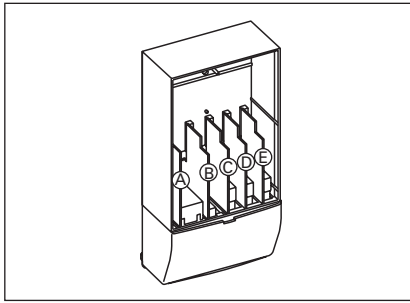


Figure 21. 9000X Series Option Boards

Table 59. Option Board Kits

Option Kit Description <sup>②</sup>	Allowed Slot Locations <sup>①</sup>	Field Installed		Factory Installed		SVX Ready Programs						
		Catalog Number	Price U.S. \$	Option Designator	Adder U.S. \$	Basic	Local/Remote	Standard	MSS	PID	Multi-P.	PFC
<b>Standard I/O Cards (See Figure 21)</b>												
2 RO (NC/NO)	B	<b>OPTA2</b>	94.50	—	—	X	X	X	X	X	X	X
6 DI, 1 DO, 2 AI, 1AO, 1 +10V DC ref, 2 ext +24V DC/ EXT +24V DC	A	<b>OPTA9</b>	189.00	—	—	X	X	X	X	X	X	X
<b>Extended I/O Card Options</b>												
2 RO, Therm — SPX Only	B	<b>OPTA3</b>	126.00	<b>A3</b>	231.00	—	X	X	X	X	X	X
Encoder low volt +5V/15V/24V — SPX Only	C	<b>OPTA4</b>	284.00	<b>A4</b>	389.00	—	X	X	X	X	X	X
Encoder high volt +15V/24V — SPX Only	C	<b>OPTA5</b>	179.00	<b>A5</b>	284.00	—	X	X	X	X	X	X
Double encoder — SPX Only	C	<b>OPTA7</b>	950.00	<b>A7</b>	1055.00	X	X	X	X	X	X	X
6 DI, 1 DO, 2 AI, 1 AO — SPX Only	A	<b>OPTA8</b>	326.00	<b>A8</b>	431.00	—	X	X	X	X	X	X
3 DI (Encoder 10 – 24V), Out +15V/+24V, 2 DO (pulse+direction) — SPX Only	C	<b>OPTAE</b>	850.00	<b>AE</b>	955.00	X	X	X	X	X	X	X
6 DI, 1 ext +24V DC/EXT +24V DC	B, C, D, E	<b>OPTB1</b>	189.00	<b>B1</b>	294.00	—	—	—	—	—	X	X
1 RO (NC/NO), 1 RO (NO), 1 Therm	B, C, D, E	<b>OPTB2</b>	221.00	<b>B2</b>	326.00	—	—	—	—	—	X	X
1 AI (mA isolated), 2 AO (mA isolated), 1 ext +24V DC/EXT +24V DC	B, C, D, E	<b>OPTB4</b>	336.00	<b>B4</b>	441.00	X	X	X	X	X	X	X
3 RO (NO)	B, C, D, E	<b>OPTB5</b>	200.00	<b>B5</b>	305.00	—	—	—	—	—	X	X
1 ext +24V DC/EXT +24V DC, 3 Pt100	B, C, D, E	<b>OPTB8</b>	570.00	<b>B8</b>	675.00	—	—	—	—	—	—	—
1 RO (NO), 5 DI 42 – 240V AC Input	B,C, D, E	<b>OPTB9</b>	294.00	<b>B9</b>	399.00	—	—	—	—	—	X	X
<b>Communication Cards <sup>③</sup></b>												
Modbus	D, E	<b>OPTC2</b>	237.00	<b>C2</b>	342.00	X	X	X	X	X	X	X
Modbus TCP	D, E	<b>OPTCI</b>	590.00	<b>CI</b>	695.00	X	X	X	X	X	X	X
BACnet	D, E	<b>OPTCJ</b>	280.00	<b>CJ</b>	385.00	X	X	X	X	X	X	X
Ethernet IP	D, E	<b>OPTCK</b>	590.00	<b>CK</b>	695.00	X	X	X	X	X	X	X
Johnson Controls N2	D, E	<b>OPTC2</b>	237.00	<b>CA</b>	342.00	—	—	—	—	—	—	—
Profibus DP	D, E	<b>OPTC3</b>	431.00	<b>C3</b>	540.00	X	X	X	X	X	X	X
LonWorks	D, E	<b>OPTC4</b>	580.00	<b>C4</b>	685.00	X	X	X	X	X	X	X
Profibus DP (D9 Connector)	D, E	<b>OPTC5</b>	580.00	<b>C5</b>	685.00	X	X	X	X	X	X	X
CanOpen (Slave)	D, E	<b>OPTC6</b>	580.00	<b>C6</b>	685.00	X	X	X	X	X	X	X
DeviceNet	D, E	<b>OPTC7</b>	580.00	<b>C7</b>	685.00	X	X	X	X	X	X	X
Modbus (D9 Type Connector)	D, E	<b>OPTC8</b>	326.00	<b>C8</b>	431.00	X	X	X	X	X	X	X
Adapter — SPX Only	D, E	<b>OPTD1</b>	378.00	<b>D1</b>	483.00	X	X	X	X	X	X	X
Adapter — SPX Only	D, E	<b>OPTD2</b>	315.00	<b>D2</b>	420.00	X	X	X	X	X	X	X
RS-232 with D9 Connection	D, E	<b>OPTD3</b>	189.00	<b>D3</b>	294.00	X	X	X	X	X	X	X
<b>Keypad</b>												
9000X Series Local Remote Keypad	—	<b>KEYPAD-LOC/REM</b>	205.00	—	—	—	—	—	—	—	—	—
9000X Series Remote Mount Keypad Kit (Keypad not included)	—	<b>OPTRMT-KIT-9000X</b>	200.00	—	—	—	—	—	—	—	—	—
9000X Series RS-232 Cable, 13 ft.	—	<b>PP00104</b>	70.00	—	—	—	—	—	—	—	—	—

① Option card must be installed in one of the slots listed for that card. Slot indicated in Bold is the preferred location.

② AI = Analog Input; AO = Analog Output, DI = Digital Input, DO = Digital Output, RO = Relay Output

③ OPTC2 is a multi-protocol option card.

Discount Symbol..... **SS-2**

Enclosed Drives

**Modbus RTU Network Communications**

The Modbus Network Card OPTC2 is used for connecting the 9000X Drive as a slave on a Modbus network. The interface is connected by a 9-pin DSUB connector (female) and the baud rate ranges from 300 to 19200 baud. Other communication parameters include an address range from 1 to 247; a parity of None, Odd or Even; and the stop bit is 1.

**Profibus Network Communications**

The Profibus Network Card OPTC3 is used for connecting the 9000X Drive as a slave on a Profibus-DP network. The interface is connected by a 9-pin DSUB connector (female). The baud rates range from 9.6K baud to 12M baud, and the addresses range from 1 to 127.

**LonWorks Network Communications**

The LonWorks Network Card OPTC4 is used for connecting the 9000X Drive on a LonWorks network. This interface uses Standard Network Variable Types (SNVT) as data types. The channel connection is achieved using a FTT-10A Free Topology transceiver via a single twisted transfer cable. The communication speed with LonWorks is 78 kBits/s.

**CanOpen (Slave) Communications**

The CanOpen (Slave) Network Card OPTC6 is used for connecting the 9000X Drive to a host system. According to ISO11898 standard cables to be chosen for CAN bus should have a nominal impedance of 120Ω, and specific line delay of nominal 5 nS/m. 120Ω line termination resistors required for installation.

**DeviceNet Network Communications**

The DeviceNet Network Card OPTC7 is used for connecting the 9000X Drive on a DeviceNet Network. It includes a 5.08 mm pluggable connector. Transfer method is via CAN using a 2-wire twisted shielded cable with 2-wire bus power cable and drain. The baud rates used for communication include 125K baud, 250K baud and 500K baud.

**Johnson Controls Metasys™ N2 Network Communications**

The OPTC2 fieldbus board provides communication between the 9000X Drive and a Johnson Controls Metasys™ N2 network. With this connection, the drive can be controlled, monitored and programmed from the Metasys system. The N2 fieldbus is available as a factory installed option and as a field installable kit.

**Modbus/TCP Network Communications**

The Modbus/TCP Network Card OPTC1 is used for connecting the 9000X Drive to Ethernet networks utilizing Modbus

protocol. It includes an RJ-45 pluggable connector. This interface provides a selection of standard and custom register values to communicate drive parameters. The board supports 10 Mbps and 100 Mbps communication speeds. The IP address of the board is configurable over Ethernet using a supplied software tool.

**BACnet Network Communications**

The BACnet Network Card OPTCJ is used for connecting the 9000X Drive to BACnet networks. It includes a 5.08 mm pluggable connector. Data transfer is Master-Slave/Token Passing (MS/TP) RS-485. This interface uses a collection of 30 Binary Value Objects (BVOs) and 35 Analog Value Objects (AVOs) to communicate drive

parameters. The card supports 9.6, 19.2 and 38.4 Kbaud communication speeds and supports network addresses 1 – 127.

**Ethernet/IP Network Communications**

The Ethernet/IP Network Card OPTCK is used for connecting the 9000X Drive to Ethernet/Industrial Protocol networks. It includes an RJ-45 pluggable connector. The interface uses CIP objects to communicate drive parameters (CIP is “Common Industrial Protocol”, the same protocol used by DeviceNet). The board supports 10 Mbps and 100 Mbps communication speeds. The IP address of the board is configurable by Static, BOOTP and DHCP methods.

Table 60. I/O Specifications for the Control/Communication Options

Description	Specifications
Analog voltage, input	0 – ±10V, R <sub>i</sub> ≥ 200 kΩ
Analog current, input	0 (4) – 20 mA, R <sub>i</sub> = 250 Ω
Digital Input	24V: “0” ≤ 10V, “1” ≥ 18V, R <sub>i</sub> > 5 kΩ
Aux. voltage	24V (±20%), max. 50 mA
Reference voltage	10V ±3%, max. 10 mA
Analog current, output	0 (4) – 20 mA, R <sub>L</sub> = 500 kΩ, resolution 10 bit, accuracy ≤ ±2%
Analog voltage, output	0 (2) – 10V, R <sub>L</sub> ≥ 1 kΩ, resolution 10 bit, accuracy ≤ ±2%
Relay output	
Max. switching voltage	300V DC, 250V AC
Max. switching load	8A/24V DC, .4A/300V DC, 2 kVA/250V AC
Max. continuous load	2A rms
Thermistor input	R <sub>trip</sub> = 4.7 kΩ
Encoder input	24V: “0” ≤ 10V, “1” ≥ 18V, R <sub>i</sub> = 2.2 kΩ 5V: “0” ≤ 2V, “1” ≥ 3V, R <sub>i</sub> = 330 Ω

**SVX Conversion Kit**

Table 61. SVX Conversion Kit Frame 4 – 7

Frame Size	Enclosure Size	Catalog Number	Delivery Code	Price U.S. \$
FR4	0	OPTCON-SVXFR4-SZ00	FB10	410.
FR4	1	OPTCON-SVXFR4-SZ01	FB10	480.
FR5	0	OPTCON-SVXFR5-SZ00	FB10	430.
FR5	1	OPTCON-SVXFR5-SZ01	FB10	500.
FR6	1	OPTCON-SVXFR6-SZ01	FB10	450.
FR6	2	OPTCON-SVXFR6-SZ02	FB10	500.
FR7	2	OPTCON-SVXFR7-SZ02	FB10	195.

Note: The kit consists of a flange kit, adapter plate(s), hardware, remote keypad kit and SVX9000 decal.

Table 62. Conformal (Varnished) Coating Adder — 208 – 240V, 380 – 500V ①

Frame	Delivery Code	Adder U.S. \$
FR4	FP	789.
FR5	FP	789.
FR6	FP	789.
FR7	FP	789.
FR8	FP	789.
FR9	FP	1,815.
FR10	FP	1,815.
FR11	FP	1,815.
FR12	FP	1,815.
FR13	FP	②
FR14	FP	②

① See catalog number description to order.  
② Consult Eaton.

Discount Symbol..... SS-2

Enclosed Drives

Product Selection

When Ordering

- Select a Base Catalog Number that meets the application requirements — nominal horsepower, voltage and enclosure rating (the enclosed drive's continuous output amp rating should be equal to or greater than the motor's full load amp rating). The base enclosed package includes a standard drive, door mounted Local/Remote Keypad and enclosure.
- If Dynamic Brake Chopper or Control/Communication option is desired, change the appropriate code in the Base Catalog Number.
- Select Enclosed Options. Add the codes as suffixes to the Base Catalog Number in alphabetical and numeric order.
- Read all Footnotes.

208V Drives

Table 63. 208V AC Input Base Drive

Enclosure Size ①	hp	Current (A)	NEMA Type 1			NEMA Type 12		
			Frame Size	Base Catalog Number ②	Price U.S. \$ ②	Frame Size	Base Catalog Number ②	Price U.S. \$ ②
<b>208V High Overload Drive and Enclosure</b>								
0	3/4	3.7	4	SVXF0711EA	2,425.	4	SVXF0721EA	2,665.
0	1	4.8	4	SVX00111EA	2,475.	4	SVX00121EA	2,725.
0	1-1/2	6.6	4	SVXF1511EA	2,560.	4	SVXF1521EA	2,815.
0	2	7.8	4	SVX00211EA	2,620.	4	SVX00221EA	3,005.
0	3	11	4	SVX00311EA	2,680.	4	SVX00321EA	3,385.
0	5	17.5	5	SVX00511EA	2,910.	5	SVX00521EA	4,035.
0	7-1/2	25	5	SVX00711EA	3,600.	5	SVX00721EA	5,310.
1	10	31	6	SVX01011EA	4,305.	6	SVX01021EA	6,250.
1	15	48	6	SVX01511EA	5,650.	6	SVX01521EA	7,450.
2	20	61	7	SVX02011DA	8,360.	7	SVX02021DA	8,530.
2	25	75	7	SVX02511DA	9,460.	7	SVX02521DA	9,630.
2	30	88	7	SVX03011DA	11,250.	7	SVX03021DA	11,370.
3	40	114	8	SVX04011DA	12,260.	8	SVX04021DA	12,380.
4	50	143	8	SVX05011DA	14,240.	8	SVX05021DA	14,850.
5	60	170	8	SVX06011DA	19,390.	8	SVX06021DA	20,960.
5	75	211	9	SVX07511DA	24,070.	9	SVX07521DA	25,650.
5	100	273	9	SVX10011DA	26,170.	9	SVX10021DA	27,750.
<b>208V Low Overload Drive and Enclosure</b>								
0	1	4.8	4	SVX00111BA	2,425.	4	SVX00121BA	2,665.
0	1-1/2	6.6	4	SVXF1511BA	2,475.	4	SVXF1521BA	2,725.
0	2	7.8	4	SVX00211BA	2,560.	4	SVX00221BA	2,815.
0	3	11	4	SVX00311BA	2,620.	4	SVX00321BA	3,005.
0	5	17.5	5	SVX00511BA	2,680.	5	SVX00521BA	3,675.
0	7-1/2	25	5	SVX00711BA	3,175.	5	SVX00721BA	4,035.
0	10	31	5	SVX01011BA	3,600.	5	SVX01021BA	5,310.
1	15	48	6	SVX01511BA	4,725.	6	SVX01521BA	6,250.
1	20	61	6	SVX02011BA	5,650.	6	SVX02021BA	7,450.
2	25	75	7	SVX02511AA	8,360.	7	SVX02521AA	8,530.
2	30	88	7	SVX03011AA	9,950.	7	SVX03021AA	10,070.
2	40	114	7	SVX04011AA	11,250.	7	SVX04021AA	11,370.
3	50	—	8	SVX05011AA	12,620.	8	SVX05021AA	13,220.
4	60	170	8	SVX06011AA	14,240.	8	SVX06021AA	14,850.
5	③	205 ③	8	SVX07511AA	19,390.	8	SVX07521AA	20,960.
5	③	261 ③	9	SVX10011AA	24,070.	9	SVX10021AA	25,650.

① Enclosure dimensions listed on Pages 54 – 61.  
 ② Includes drive, Local/Remote Keypad and enclosure.  
 ③ These units are current rated (75 I<sub>L</sub> hp 205 Amps, 100 I<sub>L</sub> hp 261 Amps). They are not hp rated.

Table 64. 208V Brake Chopper Adder ④

I <sub>H</sub> hp	Adder U.S. \$		I <sub>L</sub> hp	Adder U.S. \$	
	NEMA Type 1/12			NEMA Type 1/12	
3/4	Incl.	—	—	Incl.	—
1	Incl.	1	1	Incl.	1
1-1/2	Incl.	1-1/2	1-1/2	Incl.	1-1/2
2	Incl.	2	2	Incl.	2
3	Incl.	3	3	Incl.	3
5	Incl.	5	5	Incl.	5
7-1/2	Incl.	7-1/2	7-1/2	Incl.	7-1/2
10	Incl.	10	10	Incl.	10
15	Incl.	15	15	Incl.	15
20	473.	20	20	473.	20
25	473.	25	25	473.	25
30	473.	30	30	473.	30
40	730.	40	40	730.	40
50	730.	50	50	730.	50
60	730.	60	60	730.	60
75	1,170.	75	75	1,170.	75
100	1,170.	100	100	1,170.	100

④ External dynamic braking resistors not included. Consult factory.

Enclosed Drives

Table 65. 208V Control Options


Catalog Number Suffix 	Door-Mounted Speed Potentiometer	Door-Mounted Speed Potentiometer with HOA Selector Switch	3 – 15 psig Follower	HAND/OFF/AUTO Switch (22 mm)	MANUAL/AUTO Ref Switch (22 mm)	START/STOP Pushbuttons (22 mm)	115 Volt Control Transformer 550 VA	Standard Elapsed Time Meter
	K1	K2	K3	K4	K5	K6	KB	KO
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	200.	263.	750.	200.	130.	360.	580.	405.

Table 66. 208V Light Options



Catalog Number Suffix 	Power On/Fault Pilot Lights (22 mm)	Green RUN Light (22 mm)	Green STOP Light (22 mm)	Red RUN Light (22 mm)	Red STOP Light (22 mm)	Power On Light (22 mm)	Misc Light (22 mm)
	L1	LA	LD	LE	LF	LJ	LU
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	560.	190.	190.	190.	190.	190.	200.

Table 67. 208V Bypass Options

Catalog Number Suffix 	Bypass Test Switch for RA, RB	Bypass Pilot Lights for RA, RB Options	Dual Overloads for Bypass	Manual HOA Bypass Controller	Manual IOB Bypass Controller	Auto Transfer HOA Bypass Controller	Auto Transfer IOB Bypass Controller
	KF	L2	PN	RA	RB	RC	RD
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 7-1/2	200.	200.	147.	1,810.	1,410.	2,200.	1,810.
10	200.	200.	147.	2,100.	1,705.	2,495.	2,100.
15	200.	200.	168.	2,165.	1,765.	2,560.	2,165.
20	200.	200.	168.	2,165.	1,765.	2,560.	2,165.
25	200.	200.	189.	3,550.	3,150.	3,945.	3,550.
30	200.	200.	189.	3,550.	3,255.	3,945.	3,550.
40	200.	200.	242.	3,655.	3,255.	4,080.	3,655.
50	200.	200.	441.	4,830.	4,430.	5,230.	4,830.
60	200.	200.	441.	4,830.	4,430.	5,230.	4,830.
75	200.	200.	630.	9,430.	9,030.	9,830.	9,430.
100	200.	200.	840.	10,650.	10,250.	11,050.	10,650.

Discount Symbol..... SS-3

June 2006

Enclosed Drives

Table 68. 208V Enclosure Options

Catalog Number Suffix <b>     </b> ➔	Floor Stand 22" (558.8 mm)	Floor Stand 12" (304.8 mm)	10" (254 mm) Expansion	20" (508 mm) Expansion	Space Heater <sup>①</sup>
Enclosure Size	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
0	—	—	—	—	—
1	368.	—	—	—	336. <sup>②</sup>
2	431.	410.	—	—	462. <sup>③</sup>
3	—	—	—	—	462.
4	—	—	—	—	462.
5	—	—	1,050.	1,620.	462.

- ① Requires customer supplied 115V AC supply.
- ② 200 watt.
- ③ 400 watt.

Table 69. 208V Power Options

Catalog Number Suffix <b>     </b> ➔	Input			Output				
	Input Disconnect (HMCP) 100 kAIC	Input Line Fuses 200 kAIC	Input Power Surge Protection	Output Contactor	Output Filter <sup>④</sup>	MotoRx (300–600 Ft.) 1000 V/μS DV/DT Filter <sup>④</sup>	Single Overload Relay	Dual Overload Relays
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4–5	525.	263.	500.	210.	N/A	N/A	147.	294.
7-1/2	525.	315.	500.	242.	N/A	N/A	147.	294.
10	580.	420.	500.	305.	N/A	N/A	147.	294.
15	580.	420.	500.	441.	N/A	N/A	168.	336.
20	580.	525.	500.	441.	N/A	N/A	168.	336.
25	1,155.	525.	500.	630.	N/A	N/A	189.	378.
30	1,155.	525.	500.	630.	N/A	N/A	189.	378.
40	1,155.	525.	500.	810.	N/A	N/A	242.	483.
50	1,565.	735.	500.	1,440.	N/A	N/A	441.	885.
60	1,565.	735.	500.	1,440.	N/A	N/A	441.	885.
75	1,890.	861.	500.	3,090.	N/A	N/A	885.	1,765.
100	2,315.	1,020.	500.	3,415.	N/A	N/A	1,020.	2,115.

- ④ Not required for 208V applications.

Discount Symbol..... **SS-3**

Enclosed Drives

230V Drives

Table 70. 230V AC Input Base Drive

Enclosure Size ①	hp	Current (A)	NEMA Type 1			NEMA Type 12		
			Frame Size	Base Catalog Number ②	Price U.S. \$ ②	Frame Size	Base Catalog Number ②	Price U.S. \$ ②
<b>230V High Overload Drive and Enclosure</b>								
0	3/4	3.7	4	SVXF0712EA	2,345.	4	SVXF0722EA	2,580.
0	1	4.8	4	SVX00112EA	2,425.	4	SVX00122EA	2,665.
0	1-1/2	6.6	4	SVXF1512EA	2,475.	4	SVXF1522EA	2,725.
0	2	7.8	4	SVX00212EA	2,560.	4	SVX00222EA	2,770.
0	3	11	4	SVX00312EA	2,620.	4	SVX00322EA	3,005.
0	5	17.5	5	SVX00512EA	2,680.	5	SVX00522EA	3,675.
0	7-1/2	25	5	SVX00712EA	2,910.	5	SVX00722EA	4,035.
1	10	31	6	SVX01012EA	3,600.	6	SVX01022EA	5,310.
1	15	48	6	SVX01512EA	4,305.	6	SVX01522EA	6,250.
2	20	61	7	SVX02012DA	5,650.	7	SVX02022DA	7,450.
2	25	75	7	SVX02512DA	8,360.	7	SVX02522DA	8,530.
2	30	88	7	SVX03012DA	9,460.	7	SVX03022DA	9,630.
3	40	114	8	SVX04012DA	11,250.	8	SVX04022DA	11,370.
4	50	140	8	SVX05012DA	12,260.	8	SVX05022DA	12,380.
5	60	170	8	SVX06012DA	14,240.	8	SVX06022DA	14,850.
5	75	205	9	SVX07512DA	19,390.	9	SVX07522DA	20,960.
5	100	261	9	SVX10012DA	24,070.	9	SVX10022DA	25,650.
<b>230V Low Overload Drive and Enclosure</b>								
0	1	4.8	4	SVX00112BA	2,345.	4	SVX00122BA	2,580.
0	1-1/2	6.6	4	SVXF1512BA	2,425.	4	SVXF1522BA	2,665.
0	2	7.8	4	SVX00212BA	2,475.	4	SVX00222BA	2,725.
0	3	11	4	SVX00312BA	2,560.	4	SVX00322BA	2,770.
0	5	17.5	5	SVX00512BA	2,620.	5	SVX00522BA	3,385.
0	7-1/2	25	5	SVX00712BA	2,680.	5	SVX00722BA	3,675.
0	10	31	5	SVX01012BA	3,175.	5	SVX01022BA	4,550.
1	15	48	6	SVX01512BA	3,600.	6	SVX01522BA	5,310.
1	20	61	6	SVX02012BA	4,725.	6	SVX02022BA	6,490.
2	25	75	7	SVX02512AA	5,650.	7	SVX02522AA	7,450.
2	30	88	7	SVX03012AA	8,360.	7	SVX03022AA	8,530.
2	40	114	7	SVX04012AA	9,950.	7	SVX04022AA	10,070.
3	50	140	8	SVX05012AA	11,250.	8	SVX05022AA	11,370.
4	60	170	8	SVX06012AA	12,620.	8	SVX06022AA	13,220.
5	75	205	8	SVX07512AA	14,240.	8	SVX07522AA	14,850.
5	③	261 ③	9	SVX10012AA	19,390.	9	SVX10022AA	20,960.

230V Low Overload Drive and Enclosure

0	1	4.8	4	SVX00112BA	2,345.	4	SVX00122BA	2,580.
0	1-1/2	6.6	4	SVXF1512BA	2,425.	4	SVXF1522BA	2,665.
0	2	7.8	4	SVX00212BA	2,475.	4	SVX00222BA	2,725.
0	3	11	4	SVX00312BA	2,560.	4	SVX00322BA	2,770.
0	5	17.5	5	SVX00512BA	2,620.	5	SVX00522BA	3,385.
0	7-1/2	25	5	SVX00712BA	2,680.	5	SVX00722BA	3,675.
0	10	31	5	SVX01012BA	3,175.	5	SVX01022BA	4,550.
1	15	48	6	SVX01512BA	3,600.	6	SVX01522BA	5,310.
1	20	61	6	SVX02012BA	4,725.	6	SVX02022BA	6,490.
2	25	75	7	SVX02512AA	5,650.	7	SVX02522AA	7,450.
2	30	88	7	SVX03012AA	8,360.	7	SVX03022AA	8,530.
2	40	114	7	SVX04012AA	9,950.	7	SVX04022AA	10,070.
3	50	140	8	SVX05012AA	11,250.	8	SVX05022AA	11,370.
4	60	170	8	SVX06012AA	12,620.	8	SVX06022AA	13,220.
5	75	205	8	SVX07512AA	14,240.	8	SVX07522AA	14,850.
5	③	261 ③	9	SVX10012AA	19,390.	9	SVX10022AA	20,960.

① Enclosure dimensions listed on Pages 54 – 61.

② Includes drive, Local/Remote Keypad and enclosure.

③ This unit is current rated (100 I<sub>L</sub> hp 261 Amps). It is not hp rated.

Table 71. 230V Brake Chopper Adder ④

I <sub>H</sub> hp	Adder U.S. \$	I <sub>L</sub> hp	Adder U.S. \$
	NEMA Type 1/12		NEMA Type 1/12
3/4	Incl.	—	—
1	Incl.	1	Incl.
1-1/2	Incl.	1-1/2	Incl.
2	Incl.	2	Incl.
3	Incl.	3	Incl.
5	Incl.	5	Incl.
7-1/2	Incl.	7-1/2	Incl.
10	Incl.	10	Incl.
15	Incl.	15	Incl.
20	473.	20	Incl.
25	473.	25	473.
30	473.	30	473.
40	730.	40	473.
50	730.	50	730.
60	730.	60	730.
75	1,170.	75	730.
100	1,170.	100	1,170.

④ External dynamic braking resistors not included. Consult factory.



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Enclosed Drives

Table 72. 230V Control Options

Catalog Number Suffix	Door-Mounted Speed Potentiometer	Door-Mounted Speed Potentiometer with HOA Selector Switch	3 – 15 psig Follower	HAND/OFF/AUTO Switch (22 mm)	MANUAL/AUTO Ref Switch (22 mm)	START/STOP Pushbuttons (22 mm)	115 Volt Control Transformer 550 VA	Standard Elapsed Time Meter
	K1	K2	K3	K4	K5	K6	KB	KO
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	200.	263.	750.	200.	130.	360.	473.	405.

Table 73. 230V Light Options

Catalog Number Suffix	Power On/Fault Pilot Lights (22 mm)	Green RUN Light (22 mm)	Green STOP Light (22 mm)	Red RUN Light (22 mm)	Red STOP Light (22 mm)	Power On Light (22 mm)	Misc Light (22 mm)
	L1	LA	LD	LE	LF	LJ	LU
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	560.	190.	190.	190.	190.	190.	200.

Table 74. 230V Bypass Options ①

Catalog Number Suffix	Bypass Test Switch for RA, RB, RC, RD	Bypass Pilot Lights for RA, RB Options	Dual Overloads for Bypass	Manual HOA Bypass Controller	Manual IOB Bypass Controller	Auto Transfer HOA Bypass Controller	Auto Transfer IOB Bypass Controller
	KF	L2	PN	RA	RB	RC	RD
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 10	200.	200.	147.	1,810.	1,410.	2,200.	1,810.
15	200.	200.	147.	2,100.	1,705.	2,495.	2,100.
20	200.	200.	168.	2,165.	1,765.	2,560.	2,165.
25	200.	200.	168.	2,165.	1,765.	2,560.	2,165.
30	200.	200.	189.	3,550.	3,150.	3,945.	3,550.
40	200.	200.	189.	3,550.	3,255.	3,945.	3,550.
50	200.	200.	242.	3,655.	3,255.	4,080.	3,480.
60	200.	200.	441.	4,830.	4,425.	5,230.	4,830.
75	200.	200.	441.	4,830.	4,425.	5,230.	4,830.
100	200.	200.	630.	9,430.	9,030.	9,830.	9,430.

① See Pages 41 and 42 for details.

Enclosed Drives

Table 75. 230V Enclosure Options

Catalog Number Suffix <b>    →</b>	Floor Stand 22" (558.8 mm)	Floor Stand 12" (304.8 mm)	10" (254 mm) Expansion	20" (508 mm) Expansion	Space Heater <sup>①</sup>
Enclosure Size	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
0	—	—	—	—	—
1	368.	—	—	—	336. <sup>②</sup>
2	431.	410.	—	—	462. <sup>③</sup>
3	—	—	—	—	462.
4	—	—	—	—	462.
5	—	—	1,050.	1,620.	780.

<sup>①</sup> Requires customer supplied 115V AC supply.

<sup>②</sup> 200 watt.

<sup>③</sup> 400 watt.

Table 76. 230V Power Options

Catalog Number Suffix <b>    →</b>	Input			Output				
	Input Disconnect (HMCP) 100 kAIC	Input Line Fuses 200 kAIC	Input Power Surge Protection	Output Contactor	Output Filter <sup>④</sup>	MotoRx (300 – 600 Ft.) 1000 V/μS DV/DT Filter	Single Overload Relay	Dual Overload Relays
	P1	P3	P7	PE	PF	PG	PH	PI
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 5	525.	263.	500.	210.	N/A	N/A	147.	294.
7-1/2	525.	315.	500.	242.	N/A	N/A	147.	294.
10	525.	315.	500.	242.	N/A	N/A	147.	294.
15	580.	420.	500.	305.	N/A	N/A	147.	294.
20	580.	420.	500.	441.	N/A	N/A	168.	336.
25	580.	420.	500.	441.	N/A	N/A	168.	336.
30	1,155.	525.	500.	630.	N/A	N/A	189.	378.
40	1,155.	525.	500.	630.	N/A	N/A	189.	378.
50	1,155.	525.	500.	810.	N/A	N/A	242.	483.
60	1,565.	735.	500.	1,440.	N/A	N/A	441.	885.
75	1,565.	735.	500.	1,440.	N/A	N/A	441.	885.
100	1,890.	865.	500.	3,090.	N/A	N/A	885.	1,765.

<sup>④</sup> Not required for 230V applications.

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Enclosed Drives

480V Drives

Table 77. 480V AC Input Base Drive

Enclosure Size ①	hp	Current (A)	NEMA Type 1			NEMA Type 12		
			Frame Size	Base Catalog Number ②	Price U.S. \$ ②	Frame Size	Base Catalog Number ②	Price U.S. \$ ②
<b>High Overload Drive and Enclosure</b>								
0	1	2.2	4	SVX00114EA	2,425.	4	SVX00124EA	2,665.
0	1-1/2	3.3	4	SVXF1514EA	2,475.	4	SVXF1524EA	2,725.
0	2	4.3	4	SVX00214EA	2,575.	4	SVX00224EA	2,835.
0	3	5.6	4	SVX00314EA	2,685.	4	SVX00324EA	3,020.
0	5	7.6	4	SVX00514EA	2,765.	4	SVX00524EA	3,415.
0	7-1/2	12	5	SVX00714EA	2,995.	5	SVX00724EA	3,990.
0	10	16	5	SVX01014EA	3,390.	5	SVX01024EA	4,460.
0	15	23	5	SVX01514EA	4,080.	5	SVX01524EA	4,930.
1	20	31	6	SVX02014EA	5,310.	6	SVX02024EA	5,890.
1	25	38	6	SVX02514EA	6,140.	6	SVX02524EA	6,900.
1	30	46	6	SVX03014EA	7,040.	6	SVX03024EA	8,020.
2	40	61	7	SVX04014DA	9,140.	7	SVX04024DA	9,500.
2	50	72	7	SVX05014DA	10,740.	7	SVX05024DA	11,100.
2	60	87	7	SVX06014DA	12,600.	7	SVX06024DA	12,770.
3	75	105	8	SVX07514DA	14,730.	8	SVX07524DA	14,900.
3	100	140	8	SVX10014DA	17,070.	8	SVX10024DA	17,240.
4	125	170	8	SVX12514DA	20,780.	8	SVX12524DA	21,390.
5	150	205	9	SVX15014DA	27,020.	9	SVX15024DA	28,590.
5	200	245	9	SVX20014DA	32,660.	9	SVX20024DA	34,230.
6, 8 ④⑥	250	300	10	SVX25014DA	39,860.	10	SVX25064DA	41,860.
6, 8 ④⑥	300	385	10	SVX30014DA	45,140.	10	SVX30064DA	47,140.
6, 8 ④⑥	350	460	10	SVX35014DA	52,090.	10	SVX35064DA	54,090.
8, 9 ⑤⑥	400	520	11	SVX40014DA	65,410.	11	SVX40064DA	67,410.
8, 9 ⑤⑥	500	590	11	SVX50014DA	74,590.	11	SVX50064DA	76,590.
8, 9 ⑤⑥	550	650	11	SVX55014DA	79,580.	11	SVX55064DA	81,580.
③	600	730	12	SVX60014DA	89,550.	12	SVX60064DA	91,550.
③	650	820	12	SVX65014DA	94,060.	12	SVX65064DA	96,060.
③	700	920	12	SVX70014DA	106,580.	12	SVX70064DA	108,580.
<b>Low Overload Drive and Enclosure</b>								
0	1-1/2	3.3	4	SVXF1514BA	2,425.	4	SVXF1524BA	2,665.
0	2	4.3	4	SVX00214BA	2,475.	4	SVX00224BA	2,725.
0	3	5.6	4	SVX00314BA	2,575.	4	SVX00324BA	2,835.
0	5	7.6	4	SVX00514BA	2,685.	4	SVX00524BA	3,240.
0	7-1/2	12	4	SVX00714BA	2,765.	4	SVX00724BA	3,440.
0	10	16	5	SVX01014BA	2,995.	5	SVX01024BA	4,020.
0	15	23	5	SVX01514BA	3,390.	5	SVX01524BA	4,485.
0	20	31	5	SVX02014BA	4,080.	5	SVX02024BA	4,960.
1	25	38	6	SVX02514BA	5,310.	6	SVX02524BA	6,400.
1	30	46	6	SVX03014BA	6,140.	6	SVX03024BA	6,900.
1	40	61	6	SVX04014BA	7,660.	6	SVX04024BA	8,020.
2	50	72	7	SVX05014AA	9,140.	7	SVX05024AA	9,500.
2	60	87	7	SVX06014AA	11,160.	7	SVX06024AA	11,330.
2	75	105	7	SVX07514AA	12,600.	7	SVX07524AA	12,770.
3	100	140	8	SVX10014AA	14,730.	8	SVX10024AA	14,900.
4	125	170	8	SVX12514AA	17,920.	8	SVX12524AA	18,530.
4	150	205	8	SVX15014AA	20,780.	8	SVX15024AA	21,390.
5	200	261	9	SVX20014AA	30,150.	9	SVX20024AA	31,730.
5	250	300	9	SVX25014AA	32,660.	9	SVX25024AA	34,230.
6, 8 ④⑥	300	385	10	SVX30014AA	39,860.	10	SVX30064AA	41,860.
6, 8 ④⑥	350	460	10	SVX35014AA	45,140.	10	SVX35064AA	47,140.
6, 8 ④⑥	400	520	10	SVX40014AA	52,090.	10	SVX40064AA	54,090.
8, 9 ⑤⑥	500	590	11	SVX50014AA	65,410.	11	SVX50064AA	67,410.
8, 9 ⑤⑥	550	650	11	SVX55014AA	74,590.	11	SVX55064AA	76,590.
8, 9 ⑤⑥	600	730	11	SVX60014AA	79,580.	11	SVX60064AA	81,580.
③	650	820	12	SVX65014AA	89,550.	12	SVX65064AA	91,550.
③	700	920	12	SVX70014AA	94,060.	12	SVX70064AA	96,060.
③	800	1030	12	SVX80014AA	106,580.	12	SVX80064AA	108,580.

① Enclosure dimensions listed on Pages 54 – 64.  
 ② Includes drive, Local/Remote keypad and enclosure.  
 ③ Consult Eaton.  
 ④ The smaller Enclosure Size 6 accommodates only power options, Input Disconnect (P1) and Input Line Fuses (P3). Bypass and other options require Size 8. Adding any standard control option will not require the larger enclosure.  
 ⑤ The smaller Enclosure Size 8 accommodates only power options, Input Disconnect (P1) and Input Line Fuses (P3). Bypass and other options require Size 9. Adding any standard control option will not require the larger enclosure.  
 ⑥ For other options, consult factory.

Table 78. 480V Brake Chopper Adder ⑦

I <sub>H</sub> hp	Adder U.S. \$	I <sub>L</sub> hp	Adder U.S. \$
1	Incl.	—	—
1-1/2	Incl.	1-1/2	Incl.
2	Incl.	2	Incl.
3	Incl.	3	Incl.
5	Incl.	5	Incl.
7-1/2	Incl.	7-1/2	Incl.
10	Incl.	10	Incl.
15	Incl.	15	Incl.
20	Incl.	20	Incl.
25	Incl.	25	Incl.
30	Incl.	30	Incl.
40	473.	40	Incl.
50	473.	50	473.
60	473.	60	473.
75	730.	75	473.
100	730.	100	730.
125	730.	125	730.
150	1,170.	150	730.
200	1,170.	200	1,170.
250	2,500.	250	1,170.
300	2,500.	300	2,500.
350	2,500.	350	2,500.
400	2,500.	400	2,500.
500	2,500.	500	2,500.
550	2,500.	550	2,500.
600	⑧ 600	⑧ 600	⑧
650	⑧ 650	⑧ 650	⑧
700	⑧ 700	⑧ 700	⑧
		800	⑧

⑦ External dynamic braking resistors not included. Consult factory.  
 ⑧ Consult Eaton.

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Table 79. 480V Light Options

Catalog Number Suffix	Power On/Fault Pilot Lights (22 mm)	Green RUN Light (22 mm)	Green STOP Light (22 mm)	Red RUN Light (22 mm)	Red STOP Light (22 mm)	Power On Light (22 mm)	Misc Light (22 mm)
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
1 - 800	560.	190.	190.	190.	190.	190.	200.

Table 80. 480V Control Options

Catalog Number Suffix	Door-Mounted Speed Potentiometer	Door-Mounted Speed Potentiometer with HOA Selector Switch	3 - 15 psig Follower	HAND/OFF/AUTO Switch (22 mm)	MANUAL/AUTO Ref Switch (22 mm)	START/STOP Pushbuttons (22 mm)	115 Volt Control Transformer 550 VA	Standard Elapsed Time Meter
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
1 - 800	200.	263.	750.	200.	130.	360.	473.	405.

Table 81. 480V Bypass Options

Catalog Number Suffix	Bypass Test Switch for RA, RB, RC, RD	Bypass Pilot Lights for RA, RB Options	Dual Overloads for Bypass	Manual HOA Bypass Controller	Manual IOB Bypass Controller	Auto Transfer HOA Bypass Controller	Auto Transfer IOB Bypass Controller
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
1 - 20	200.	200.	147.	1,810.	1,410.	2,200.	1,810.
25	200.	200.	147.	1,995.	1,600.	2,390.	1,995.
30	200.	200.	147.	2,100.	1,705.	2,495.	2,100.
40	200.	200.	168.	2,165.	1,765.	2,560.	2,165.
50	200.	200.	168.	2,165.	1,765.	2,560.	2,165.
60	200.	200.	189.	3,550.	3,150.	3,945.	3,550.
75	200.	200.	189.	3,550.	3,150.	3,945.	3,550.
100	200.	200.	242.	3,655.	3,255.	4,050.	3,655.
125	200.	200.	441.	4,830.	4,425.	5,230.	4,830.
150	200.	200.	441.	4,830.	4,425.	5,230.	4,830.
200	200.	200.	630.	9,430.	9,030.	9,825.	9,430.
250	200.	200.	1,515.	12,960.	12,560.	13,360.	12,960.
300	200.	200.	1,515.	12,960.	12,560.	13,360.	12,960.
350	200.	200.	1,515.	12,960.	12,560.	13,360.	12,960.
400	200.	200.	1,945.	13,630.	13,230.	14,240.	13,630.
500	200.	200.	1,945.	13,840.	13,440.	14,240.	13,840.
550	200.	200.	1,945.	13,840.	13,440.	14,240.	13,840.
600	200.	200.	1,945.	13,840.	13,440.	14,240.	13,840.
650	200.	200.	1,945.	13,840.	13,440.	14,240.	13,840.
700	200.	200.	1,945.	19,500.	18,000.	21,500.	19,500.
800	200.	200.	1,945.	24,000.	22,000.	25,500.	24,000.

① See Pages 41 and 42 for details.

Table 82. 480V Enclosure Options

Catalog Number Suffix	Floor Stand 22" (558.8 mm)	Floor Stand 12" (304.8 mm)	10" (254 mm) Expansion	20" (508 mm) Expansion	Space Heater
Enclosure Size	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
0	—	—	—	—	—
1	368.	—	—	—	336. ③
2	431.	410.	—	—	462. ④
3	—	—	—	—	462. ④
4	—	—	—	—	462. ④
5	—	—	—	1,050.	462. ④
6	—	—	1,050.	—	1,620.
8	—	—	2,100.	—	2,620.
9	—	—	4,200.	—	4,720.

② Requires customer supplied 115V AC supply.

③ 200 watt.

④ 400 watt.

⑤ See Enclosure 5-1P on Page 60 for dimensions.

⑥ See Enclosure 5-2P on Page 61 for dimensions.

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Table 83. 480V Power Options

Catalog Number Suffix	Input			Output				
	Input Disconnect (HMCP) 100 kAIC	Input Line Fuses 200 kAIC	Input Power Surge Protection	Output Contactor	Output Filter <sup>①</sup>	MotoRx (300 – 600 Ft.) 1000 V/ $\mu$ S DV/DT Filter <sup>①</sup>	Single Overload Relay <sup>②</sup>	Dual Overload Relays <sup>②</sup>
	P1	P3	P7	PE	PF	PG	PH	PI
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
1 – 2	525.	263.	500.	210.	399.	735.	147.	294.
3 – 5	525.	263.	500.	210.	452.	735.	147.	294.
7-1/2	525.	263.	500.	210.	525.	735.	147.	294.
10	525.	263.	500.	210.	550.	735.	147.	294.
15	525.	315.	500.	242.	560.	790.	147.	294.
20	525.	315.	500.	242.	665.	790.	147.	294.
25	580.	420.	500.	305.	665.	820.	147.	294.
30	580.	420.	500.	305.	750.	820.	147.	294.
40	580.	420.	500.	441.	790.	1,190.	168.	336.
50	580.	420.	500.	441.	925.	1,190.	168.	336.
60	1,155.	525.	500.	630.	925.	1,495.	189.	378.
75	1,155.	525.	500.	630.	1,240.	1,495.	189.	378.
100	1,155.	525.	500.	810.	1,380.	1,840.	242.	483.
125	1,565.	735.	500.	1,440.	1,870.	2,375.	441.	885.
150	1,565.	735.	500.	1,440.	2,145.	2,375.	441.	885.
200	1,890.	865.	500.	3,090.	5,090.	3,780.	840.	1,765.
250	3,150.	990.	500.	3,635.	5,130.	3,780.	840.	1,765.
300	3,360.	990.	500.	3,635.	5,460.	4,035.	840.	1,765.
350	3,360.	990.	500.	3,635.	5,460.	4,035.	840.	1,765.
400	3,360.	1,260.	500.	3,780.	5,880.	4,035.	1,120.	2,230.
500	6,090.	1,260.	500.	7,645.	6,765.	7,290.	1,120.	2,230.
550	6,090.	1,260.	500.	7,645.	6,765.	7,290.	1,120.	2,230.
600	6,090.	1,470.	500.	7,645.	7,225.	9,030.	1,120.	2,230.
650	6,090.	1,470.	500.	7,645.	7,225.	9,030.	1,120.	2,230.
700	9,000.	2,520.	500.	8,955.	<sup>③</sup>	13,000.	2,240.	4,480.
800	12,000.	2,520.	500.	8,955.	<sup>③</sup>	17,000.	2,240.	4,480.

<sup>①</sup> Output filter may be required whenever the distance from the drive to the motor exceeds 100 feet (30m). Refer to Application Notes for further details.

<sup>②</sup> Heater packs not included.

<sup>③</sup> Consult Eaton.

Table 84. Input Options

Catalog Number Suffix	Load Switch
	P2 <sup>④</sup>
hp	Adder U.S. \$
250	3,000.
300	3,000.
350	3,000.
400	<sup>⑤</sup>
500	<sup>⑤</sup>
550	<sup>⑤</sup>

<sup>④</sup> Applicable with FR10 and FR11 Freestanding designs only.

<sup>⑤</sup> Consult Eaton.

Discount Symbol ..... SS-3

Enclosed Drives

Dimensions

Enclosure Size 0

Table 85. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)												
	Wide A	High B	Deep C	Mounting							H	Min. Air Space	
				D	D1	E	E1	F	G	G1		J	K
0	19.9 (504)	29.0 (737)	16.4 (416)	18.3 (465)	—	—	—	27.4 (695)	—	—	25.4 (644)	4.0 (102)	3.0 (76)

Table 85. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)											Max. Approx. Ship. Wt. lbs. (kg)
	Cable Entry					Door Clearance S	T	U	V	W		
	L	M	N	P	R							
0	5.0 (127)	—	—	6.0 (152)	9.6 (245)	26.4 (669)	1.5 (38)	6.3 (160)	4.3 (108)	5.3 (134)	200 (91)	

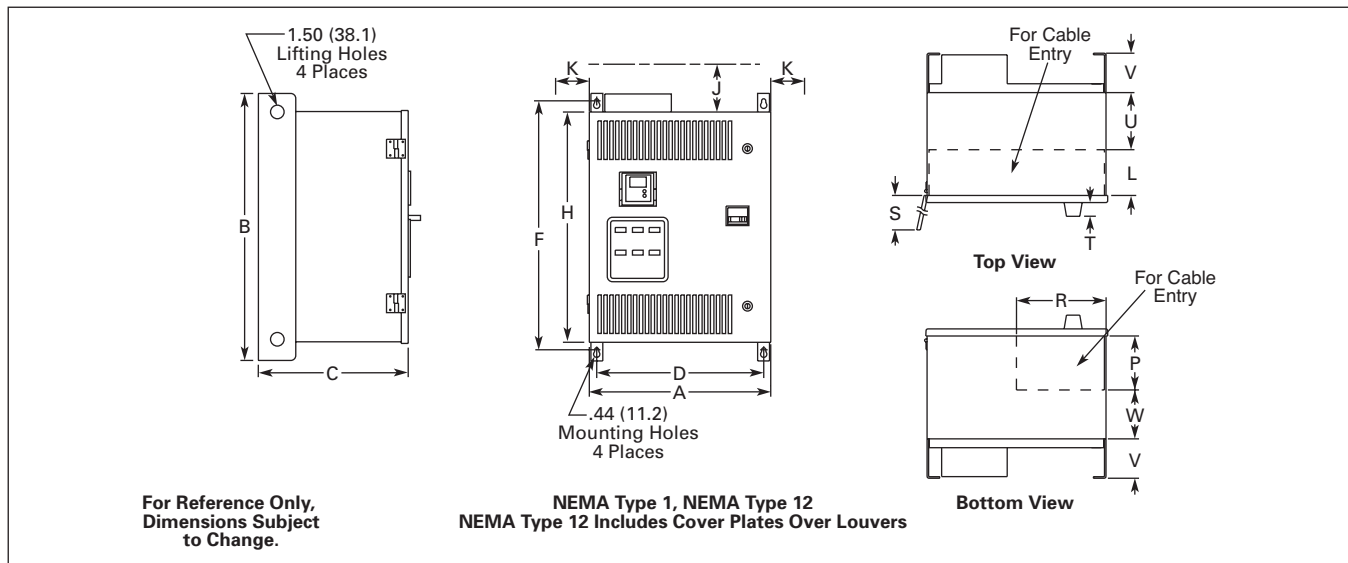


Figure 22. Approximate Dimensions

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Enclosed Drives

Enclosure Size 1

Table 86. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)										H	Min. Air Space	
	Wide A	High B	Deep C	Mounting						J		K	
				D	D1	E	E1	F	G	G1			
1	26.4 (669)	36 (914)	16.3 (414)	24.8 (630)	—	—	—	34.0 (864)	—	—	32.4 (822)	4.0 (102)	3.0 (76)

Table 86. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)															
	Cable Entry					Door Clearance S	T	U	V	W	Floor Stand					
L	M	N	P	R	X						Y	Z	AA	BB	CC	
1	11.0 (279)	6.0 (152)	9.0 (229)	10.0 (254)	6.5 (165)	26.4 (669)	1.5 (38)	4.3 (108)	—	—	56.0 (1422)	4.3 (108)	11.1 (281)	1.8 (46)	0.8 (19)	55.2 (1402)

Table 86. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)												Max. Approx. Ship. Wt. lbs. (kg)				
	Floor Stand																
	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	RR	SS	TT	UU	VV	
1	26.0 (660)	3.5 (90)	5.5 (141)	3.0 (76)	6.0 (152)	2.0 (51)	5.4 (136)	1.1 (28)	8.8 (224)	5.4 (137)	—	—	—	—	—	—	230 (104)

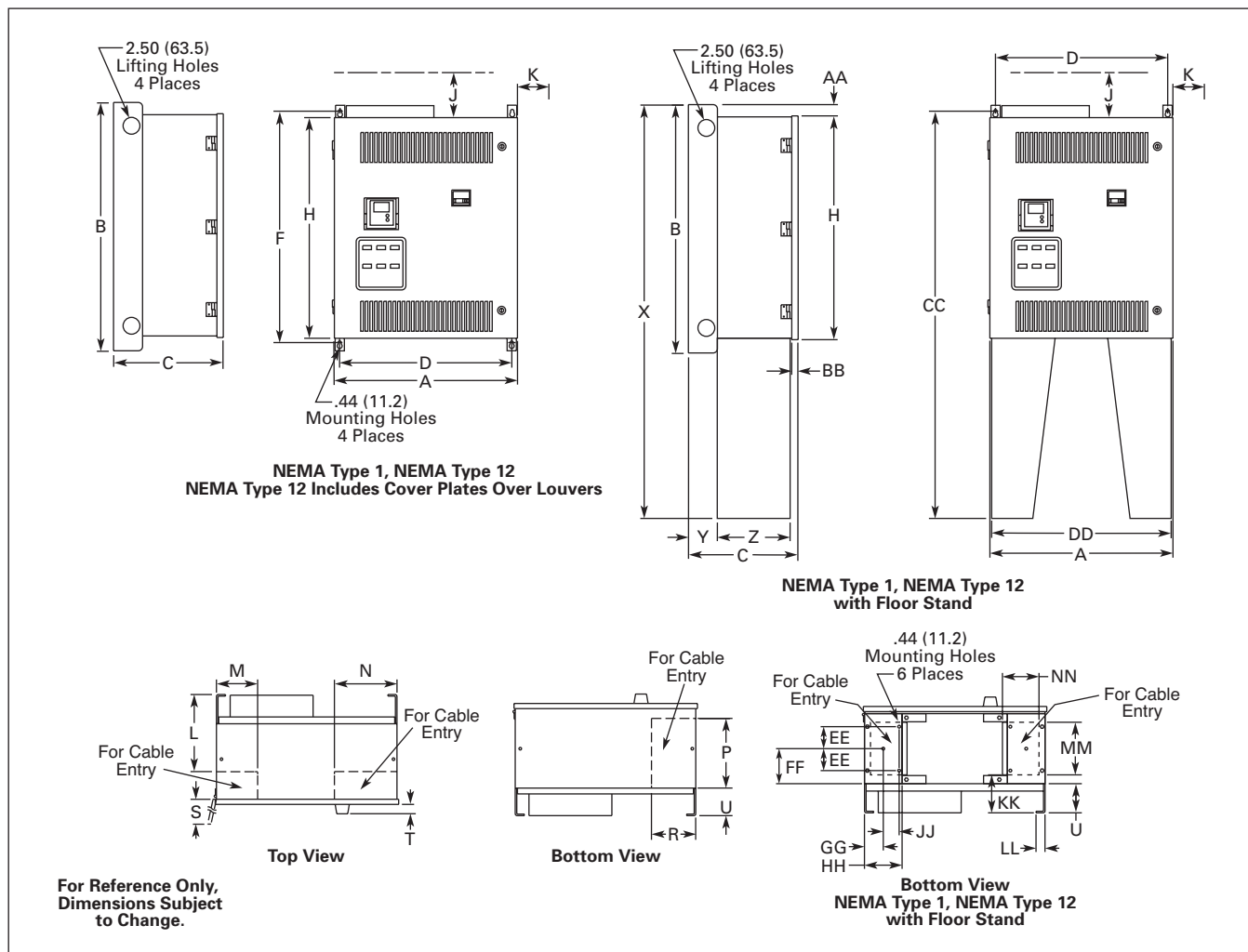


Figure 23. Approximate Dimensions

Enclosed Drives

Enclosure Size 2

Table 87. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)												Min. Air Space	
	Wide A	High B	Deep C	Mounting							H	J	K	
				D	D1	E	E1	F	G	G1				
2	26.4 (669)	59.0 (1499)	19.4 (492)	24.8 (630)	—	—	—	—	57.0 (1448)	—	—	55.4 (1406)	4.0 (102)	3.0 (76)

Table 87. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)															
	Cable Entry					Door Clearance S	T	U	V	W	Floor Stand					
	L	M	N	P	R						X	Y	Z	AA	BB	CC
2	5.9 (149)	—	—	12.4 (315)	9.5 (241)	26.4 (669)	1.5 (38)	4.8 (121)	5.9 (151)	—	69.0 (1753)	4.8 (121)	13.6 (344)	1.8 (46)	.8 (19)	68.2 (1732)

Table 87. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)															Max. Approx. Ship. Wt. lbs. (kg)	
	Floor Stand											RR	SS	TT	UU		VV
	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP						
2	26.0 (660)	4.8 (121)	6.8 (172)	3.0 (76)	6.0 (152)	2.0 (51)	5.0 (127)	1.1 (28)	11.3 (288)	79.0 (2007)	78.2 (1986)	—	—	—	—	—	380 (173)

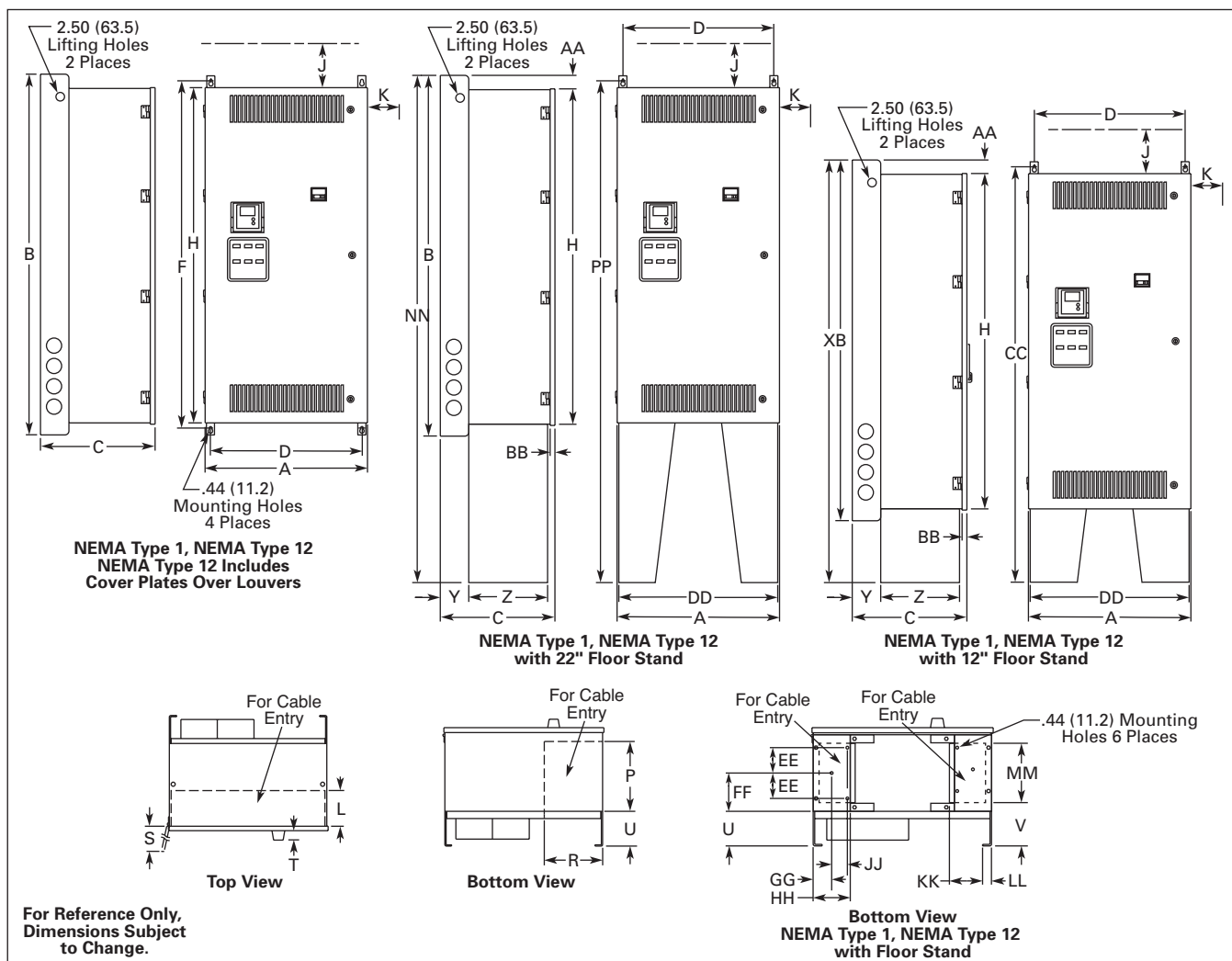


Figure 24. Approximate Dimensions



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Enclosed Drives

Enclosure Size 3

Table 88. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)			Mounting							H	Min. Air Space	
	Wide A	High B	Deep C	D	D1	E	E1	F	G	G1		J	K
3	26.4 (671)	77.0 (1956)	19.4 (493)	19.5 (495)	3.3 (83)	23.0 (584)	1.5 (38)	11.7 (298)	5.5 (140.)	.9 (24)	76.4 (1939)	4.0 (102)	3.0 (76)

Table 88. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)															Max. Approx. Ship. Wt. lbs. (kg)
	Cable Entry					Door Clearance S	T	U	V	W	RR	SS	TT	UU	VV	
L	M	N	P	R												
3	5.3 (133)	23.4 (594)	10.0 (254)	1.3 (32)	12.9 (328)	26.4 (669)	1.5 (38)	8.0 (203)	4.8 (121)	6.8 (173)	79.5 (2018)	13.4 (340)	.8 (19)	1.3 (32)	26.0 (660)	690 (313)

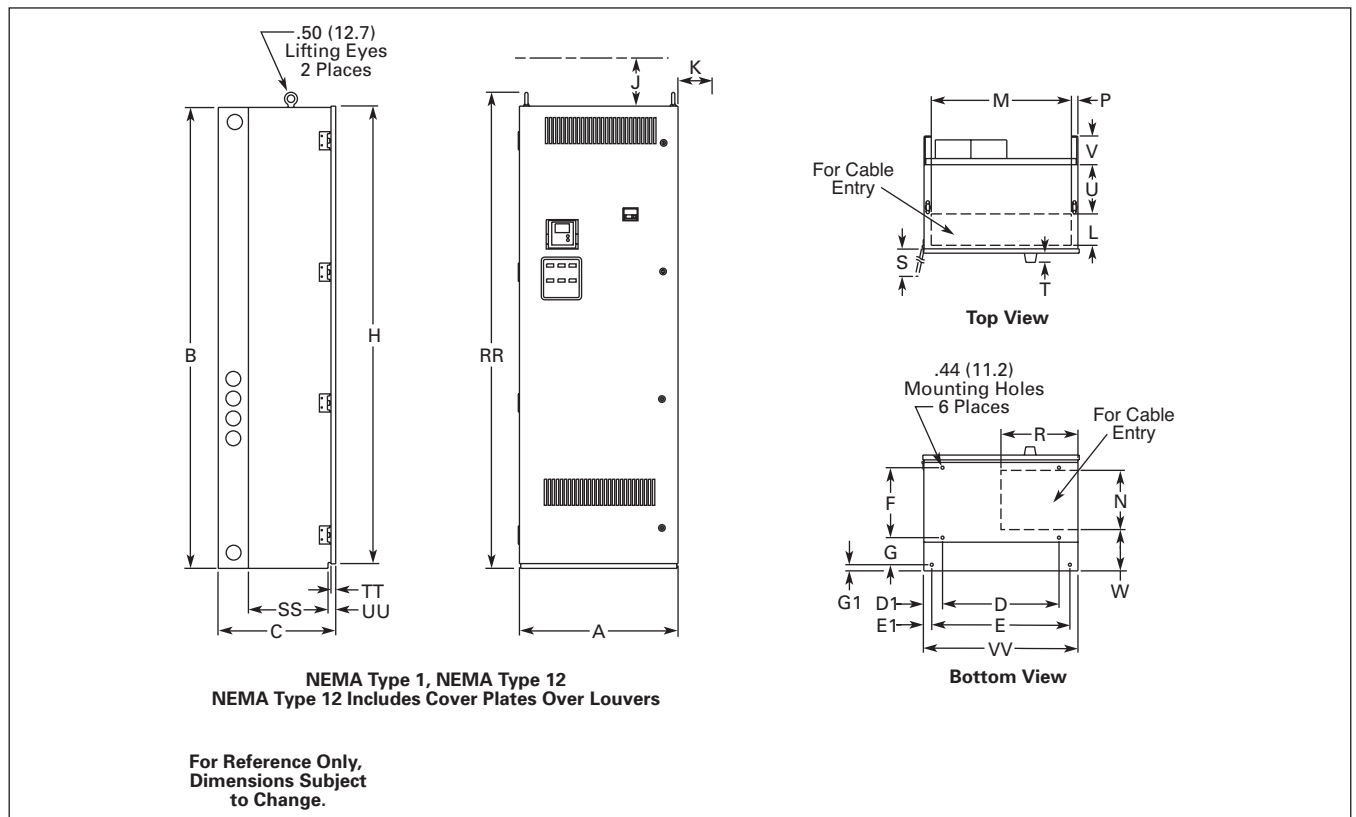


Figure 25. Approximate Dimensions

Enclosed Drives

Enclosure Size 4

Table 89. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)										H	Min. Air Space	
	Wide A	High B	Deep C	Mounting						J		K	
				D	D1	E	E1	F	G	G1			
4	26.4 (671)	90.0 (2286)	19.4 (493)	19.5 (495)	3.3 (83)	23.0 (584)	1.5 (38)	11.7 (298)	5.5 (140)	.9 (24)	89.4 (2270)	4.0 (102)	3.0 (76)

Table 89. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)														Max. Approx. Ship. Wt. lbs. (kg)	
	Cable Entry					Door Clearance S	T	U	V	W	RR	SS	TT	UU		VV
	L	M	N	P	R											
4	5.3 (133)	23.4 (594)	13.8 (351)	1.0 (25)	11.2 (286)	26.4 (669)	1.5 (38)	8.0 (204)	4.8 (121)	—	92.5 (2349)	.8 (19)	1.3 (32)	—	—	825 (375)

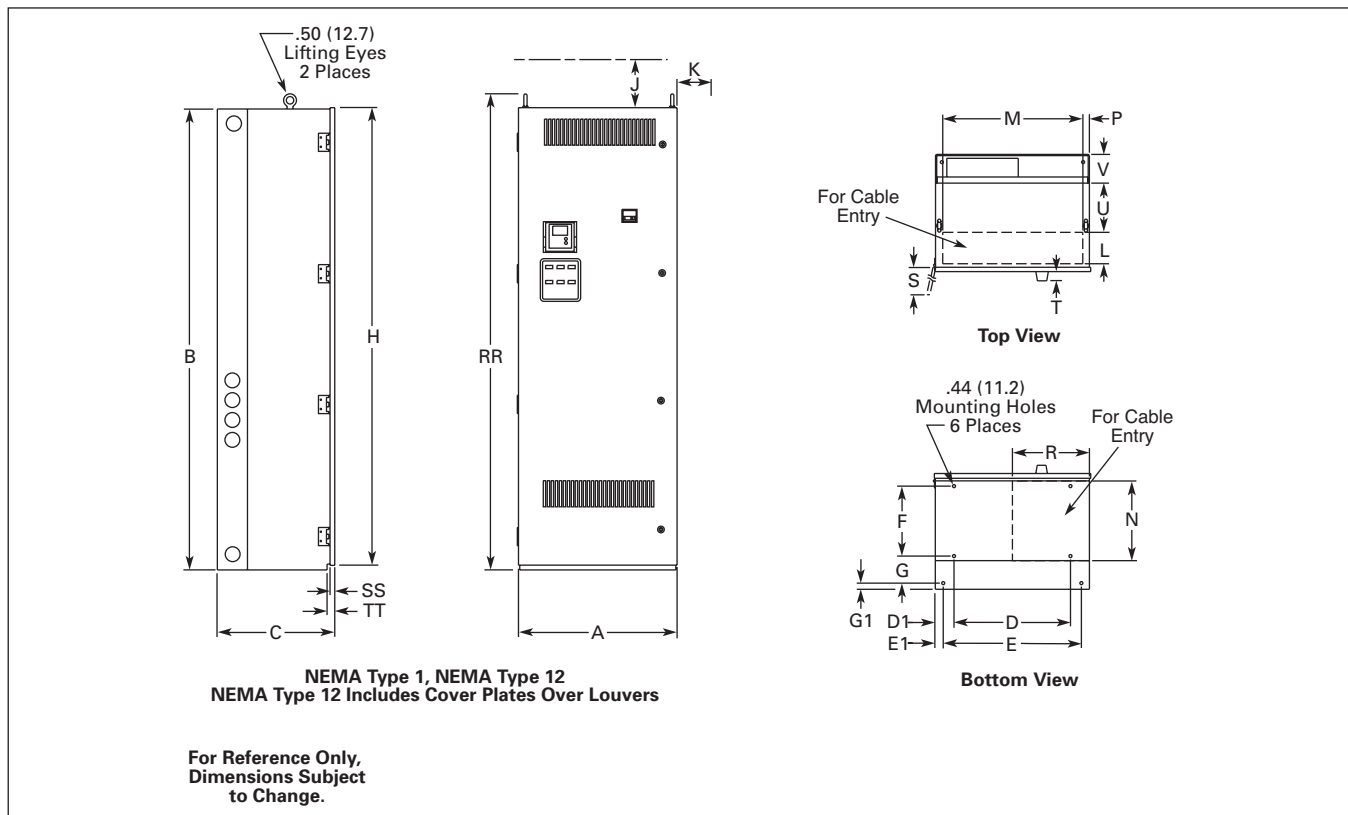


Figure 26. Approximate Dimensions

June 2006

Enclosed Drives

Enclosure Size 5

Table 90. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)											Min. Air Space	
	Wide A	High B	Deep C	Mounting							H	J	K
				D	D1	E	E1	F	G	G1			
5	40.0 (1016)	90.0 (2286)	21.3 (541)	36.0 (914)	2.0 (51)	—	—	8.0 (203)	10.8 (273)	—	84.4 (2143)	4.0 (102)	—

Table 90. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)														Max. Approx. Ship. Wt. lbs. (kg)	
	Cable Entry					Door Clearance S	T	U	V	W	RR	SS	TT	UU		VV
	L	M	N	P	R											
5	15.0 (381)	10.0 (254)	4.8 (122)	2.0 (51)	—	36.3 (921)	20.0 (508)	—	—	—	94.0 (2387)	15.5 (394)	—	—	—	1275 (579)

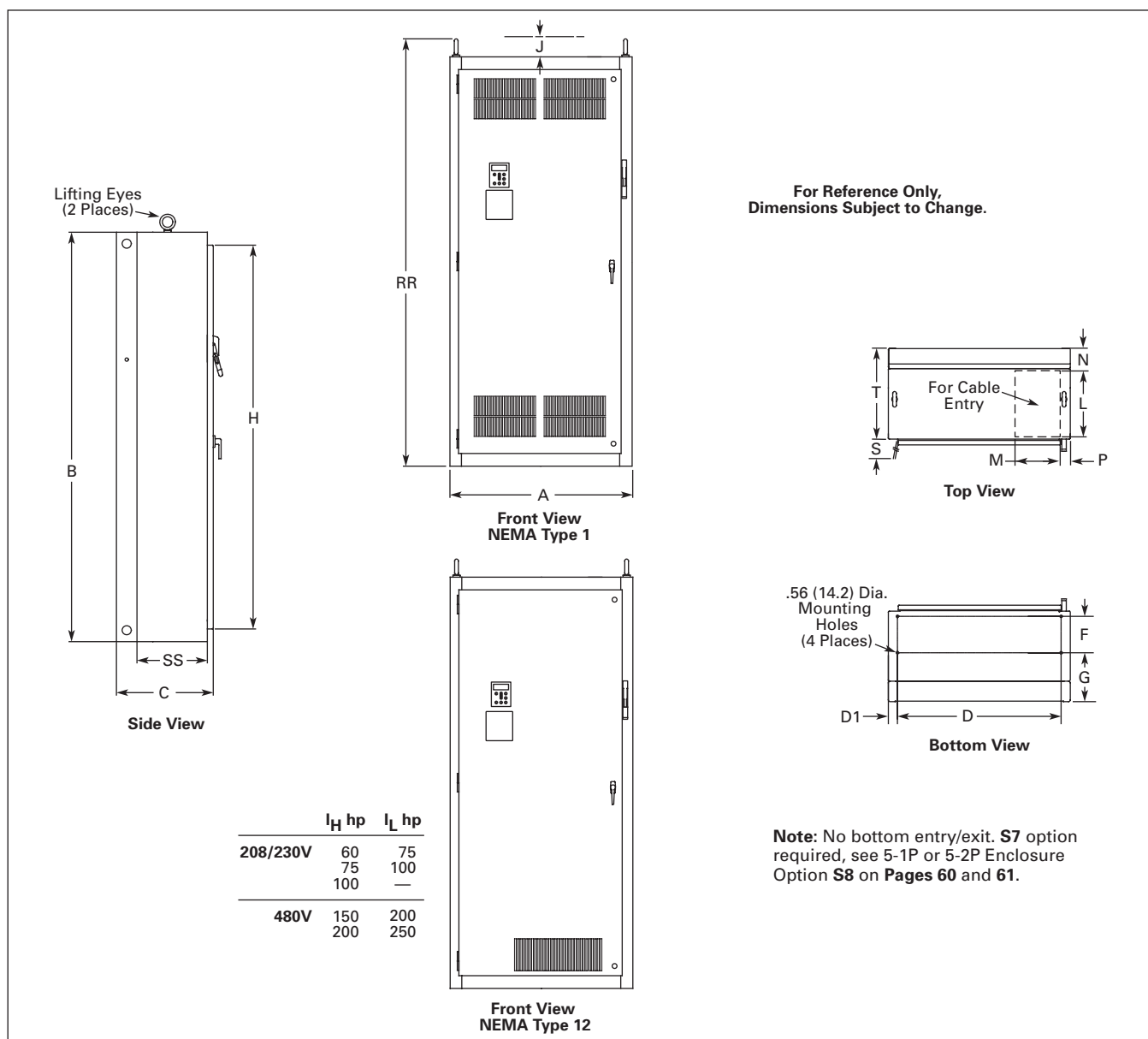


Figure 27. Approximate Dimensions

Enclosed Drives

Enclosure Size 5-1P

Table 91. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)			Mounting							H	Min. Air Space	
	Wide A	High B	Deep C	D	D1	E	E1	F	G	G1		J	K
5-1P	50.0 (1270)	90.0 (2286)	21.3 (541)	36.0 (914)	2.0 (51)	—	—	8.0 (203)	10.8 (273)	—	84.4 (2143)	4.0 (102)	—

Table 91. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)											Max. Approx. Ship. Wt. lbs. (kg)				
	Cable Entry					Door Clearance S	T	U	V	W	RR		SS	TT	UU	VV
L	M	N	P	R												
5-1P	17.1 (435)	8.0 (203)	1.3 (33)	1.0 (25)	—	36.3 (921)	20.0 (508)	18.4 (466)	1.3 (32)	—	94.0 (2387)	15.5 (394)	—	—	—	1375 (624)

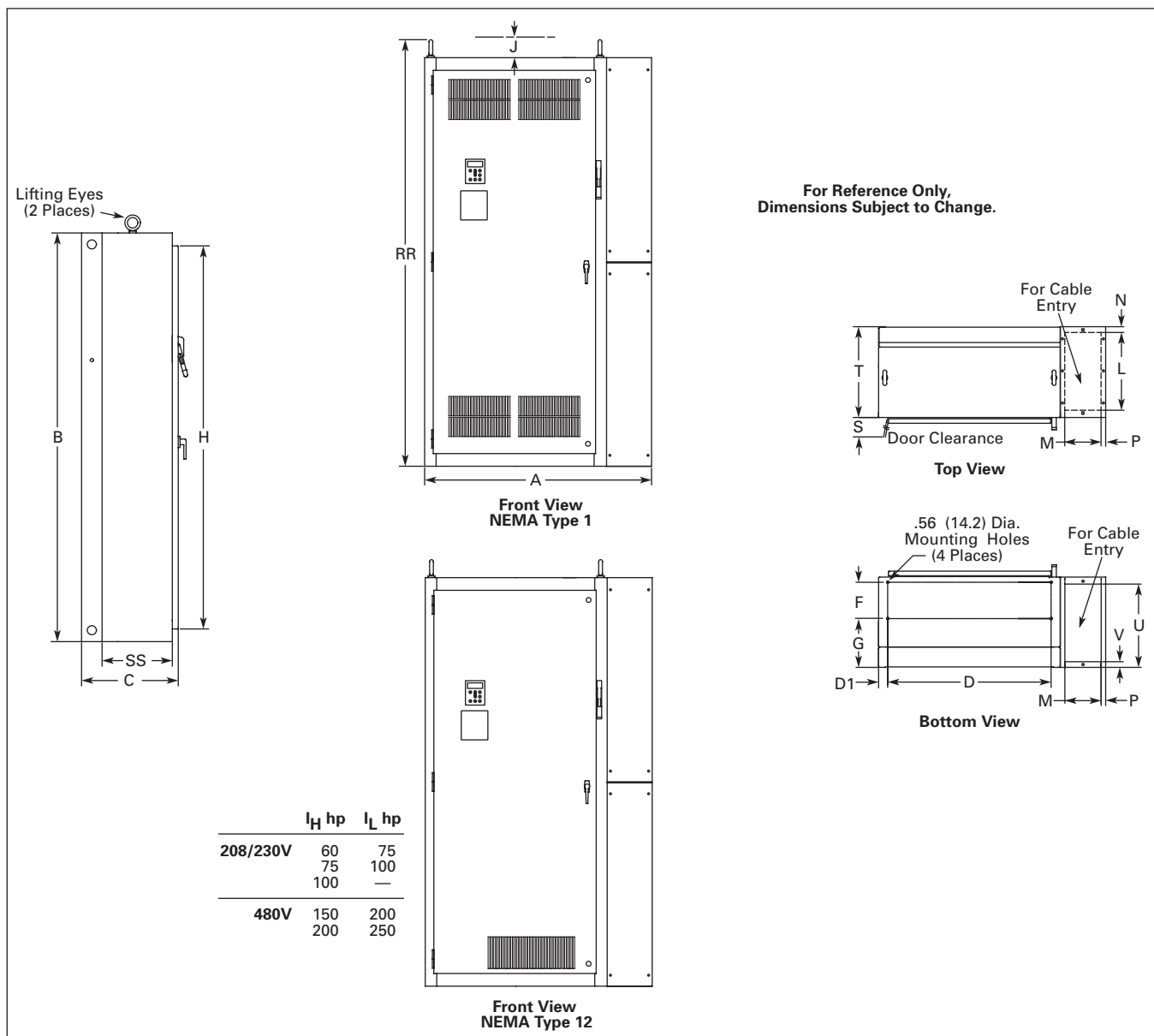


Figure 28. Approximate Dimensions

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Enclosed Drives

Enclosure Size 5-2P

Table 92. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)			Mounting							H	Min. Air Space	
	Wide A	High B	Deep C	D	D1	E	E1	F	G	G1		J	K
5-2P	60.0 (1524)	90.0 (2286)	21.3 (541)	36.0 (914)	2.0 (51)	—	—	8.0 (203)	10.8 (273)	—	84.4 (2143)	4.0 (102)	—

Table 92. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)											Max. Approx. Ship. Wt. lbs. (kg)				
	Cable Entry					Door Clearance S	T	U	V	W	RR		SS	TT	UU	VV
L	M	N	P	R												
5-2P	17.0 (432)	18.0 (457)	1.5 (38)	1.0 (25)	.9 (23)	36.3 (921)	20.0 (508)	18.4 (466)	1.3 (32)	—	94.0 (2387)	15.5 (394)	—	—	—	1585 (720)

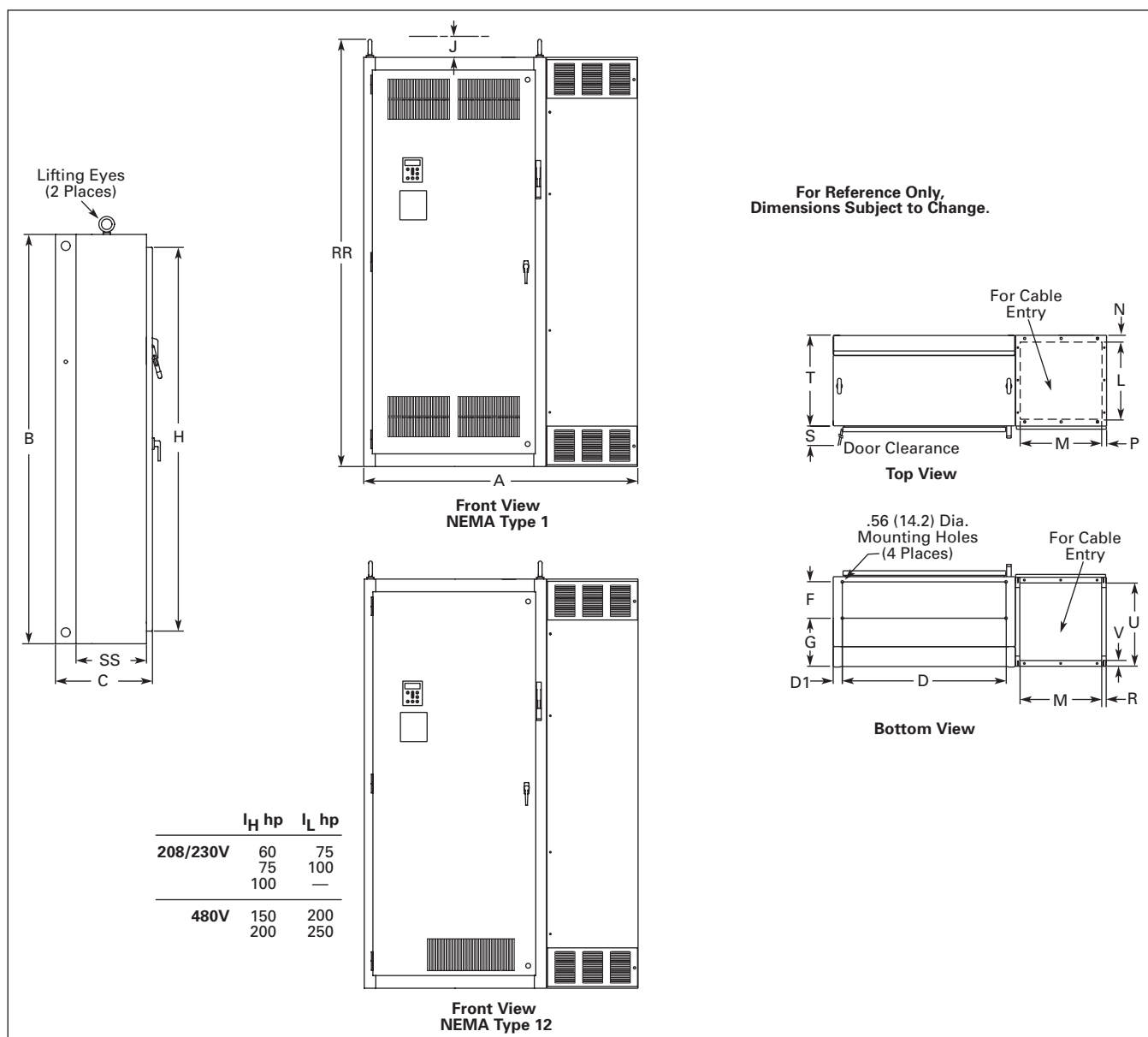


Figure 29. Approximate Dimensions

Enclosed Drives

Enclosure Size 6

Table 93. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)										H	Min. Air Space	
	Wide A	High B	Deep C	Mounting								J	K
				D	D1	D2	E	F	G	G1			
6	30.0 (762)	90.0 (2286)	26.0 (660)	26.5 (673)	1.8 (46)	—	—	17.3 (438)	5.5 (140)	—	84.4 (2143)	4.0 (102)	—

Table 93. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)											Max. Approx. Ship. Wt. lbs. (kg)				
	Cable Entry					Door Clearance S	T	U	V	W	RR		SS	TT	UU	VV
	L	M	N	P	R											
6	23.5 (597)	3.3 (84)	4.5 (114)	19.3 (490)	—	26.2 (667)	24.8 (629)	—	—	—	93.9 (2386)	—	—	—	—	1500 (681)

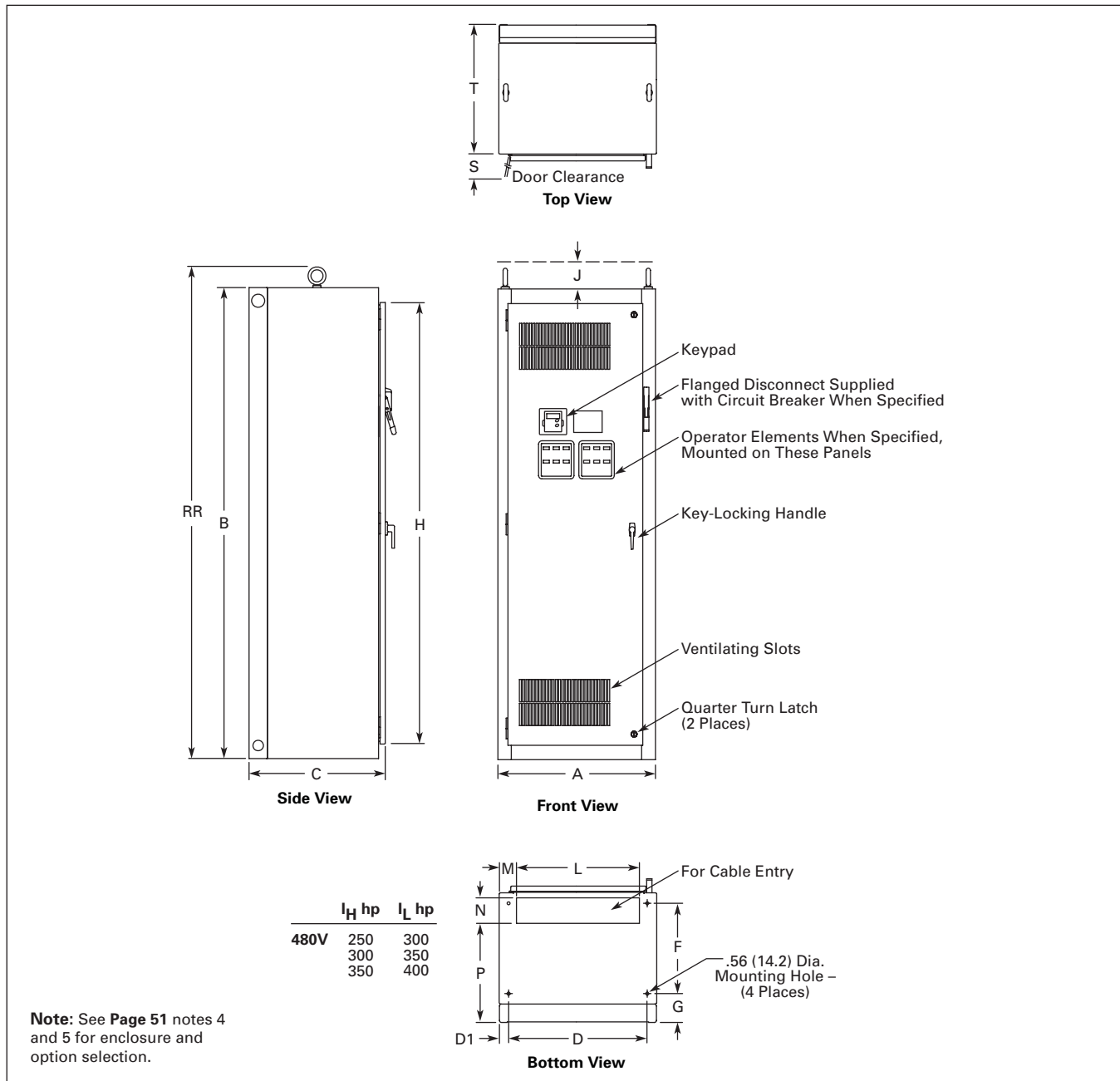


Figure 30. Approximate Dimensions

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Enclosed Drives

Enclosure Size 8

Table 94. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)										H	Min. Air Space		
	Wide A	High B	Deep C	Mounting						J		K		
	D	D1	D2	E	F	G	G1							
8	48.0 (1219)	90.0 (2286)	24.0 (610)	42.2 (1072)	3.0 (77)	—	—	—	—	5.5 (139)	—	84.4 (2143)	4.0 (102)	—

Table 94. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)													Max. Approx. Ship. Wt. lbs. (kg)		
	Cable Entry							U	V	W	RR	SS	TT		UU	VV
	L	M	N	P	R	S	T									
8	9.5 (241)	37.5 (952)	12.5 (318)	7.7 (196)	8.3 (210)	1.3 (32)	31.0 (787)	21.5 (545)	21.3 (541)	—	93.5 (2375)	—	—	—	—	2000 (908)

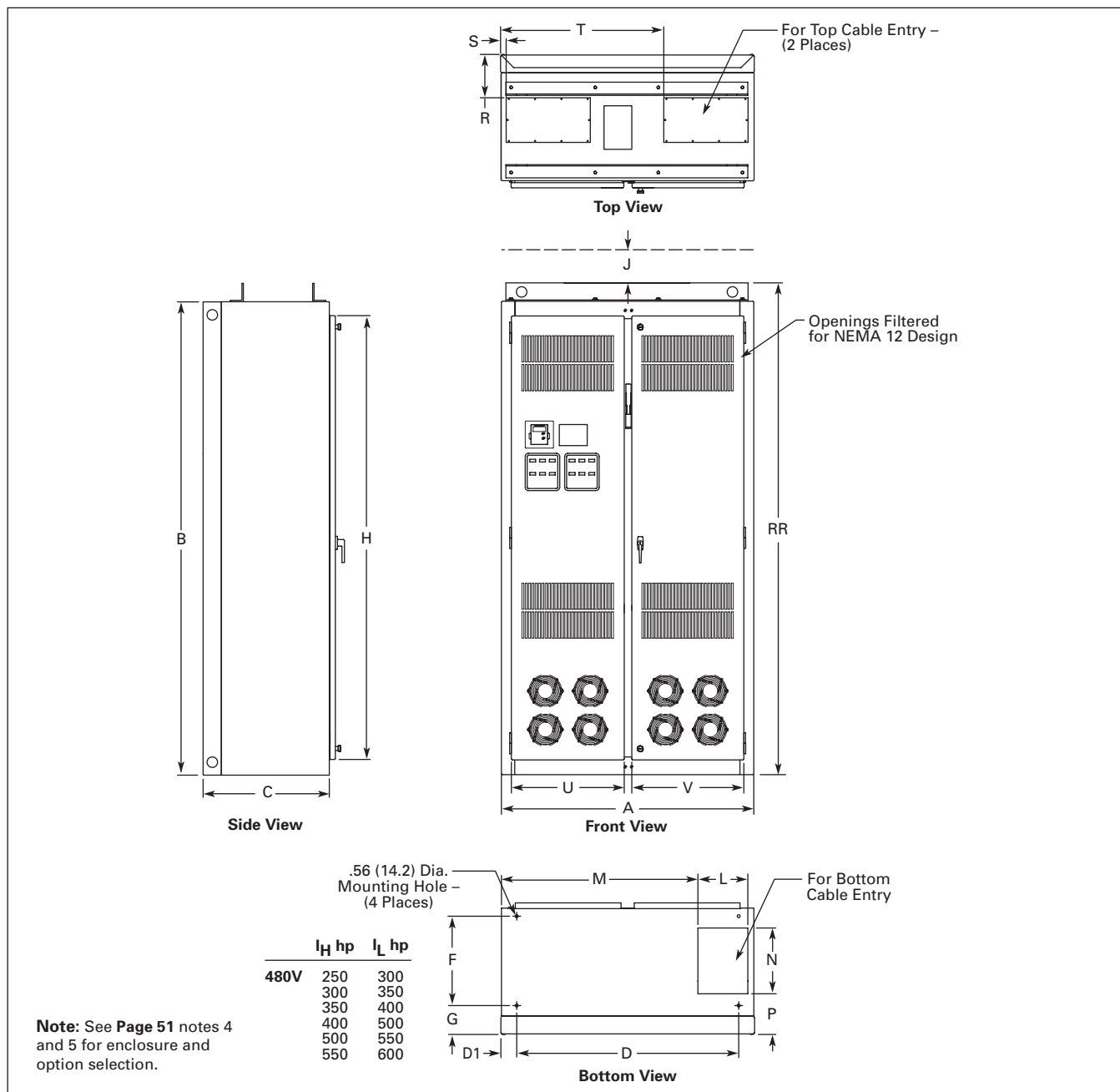


Figure 31. Approximate Dimensions

Enclosed Drives

Enclosure Size 9

Table 95. Approximate Dimensions and Shipping Weight — Enclosed Products

Enclosure Size	Dimensions in Inches (mm)										H	Min. Air Space	
	Wide A	High B	Deep C	Mounting								J	K
				D	D1	D2	E	F	G	G1			
9	60.0 (1524)	90.0 (2286)	26.1 (664)	22.9 (582)	2.0 (51)	30.0 (762)	44.3 (1125)	10.6 (270)	10.6 (270)	8.2 (208)	—	4.0 (102)	—

Table 95. Approximate Dimensions and Shipping Weight — Enclosed Products (Continued)

Enclosure Size	Dimensions in Inches (mm)															Max. Approx. Ship. Wt. lbs. (kg)
	Cable Entry										W	RR	SS	TT	UU	
	L	M	N	P	R	S	T	U	V							
9	8.5 (216)	32.7 (831)	12.0 (305)	11.9 (303)	9.8 (249)	1.5 (38)	43.5 (1105)	15.0 (381)	7.5 (191)	25.0 (635)	93.5 (2375)	27.4 (696)	29.1 (738)	27.1 (687)	—	2500 (1135)

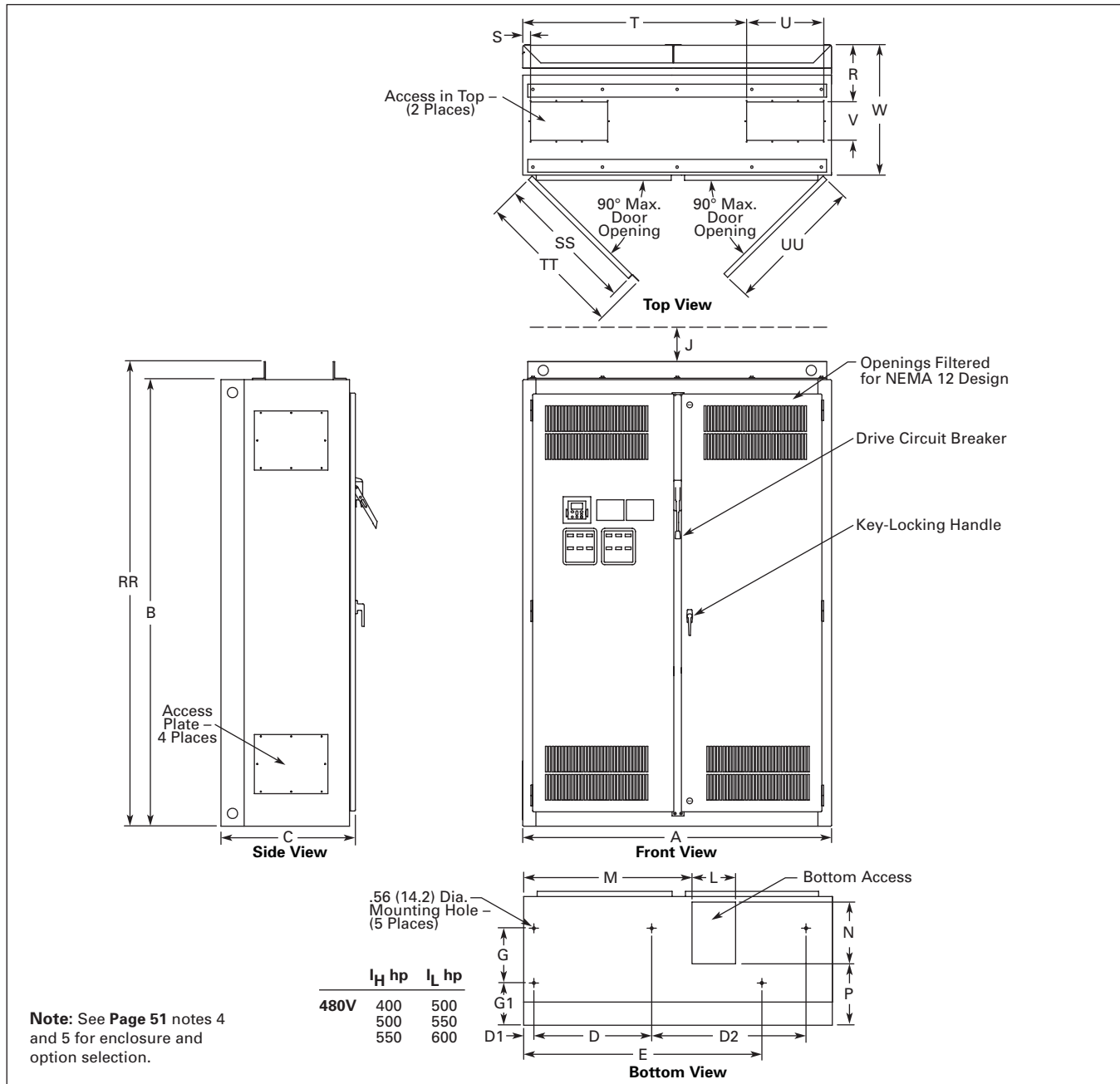


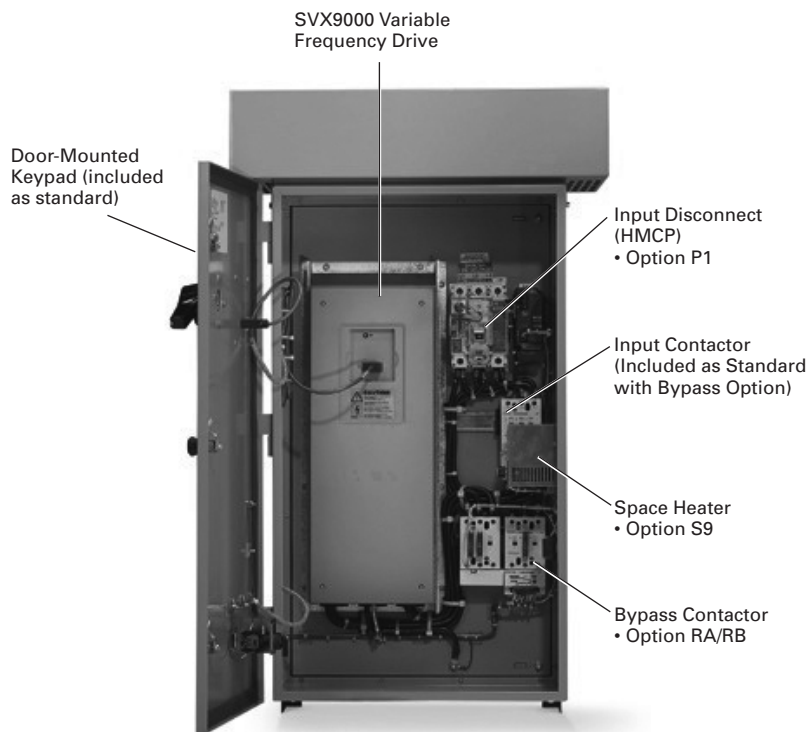
Figure 32. Approximate Dimensions



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## VFD Pump Panels

## SVX9000 Pump Application



NEMA 3R Enclosed 9000X Series Drive

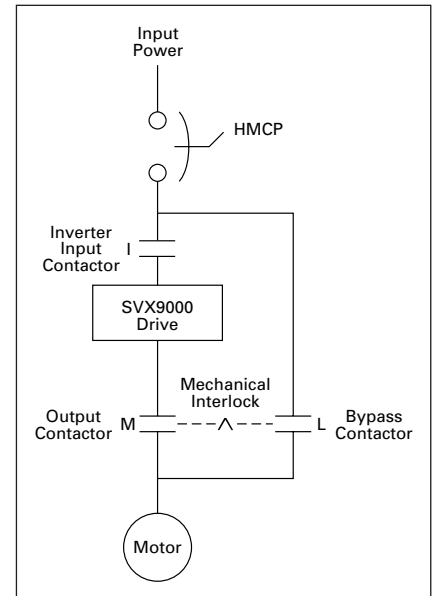


Figure 33. Power Diagram for Bypass Option RA

## Product Description

- **Standard Enclosed** — covers a wide range of the most commonly ordered options. Pre-engineering eliminates the lead time normally associated with customer specific options.
- **Modified Standard Enclosed** — applies to specific customer requirements that vary from the Standard Enclosed offering, such as the need for an additional indicating light or minor modifications to drawings. *Consult your Eaton representative for assistance in pricing and lead time.*
- **Custom Engineered** — for those applications with more unique or complex requirements, these are individually engineered to the customer's needs. *Consult your Eaton representative for assistance in pricing and lead time.*

## Features

- NEMA Type 12 or Type 3R enclosures
- Input Voltage: 208V, 230V, 480V and 575V (Consult Factory)
- Complete range of control, network and power options
- Horsepower range:
  - 208V — 3/4 to 100 hp I<sub>H</sub>; 1 to 100 hp I<sub>L</sub>
  - 230V — 3/4 to 100 hp I<sub>H</sub>; 1 to 100 hp I<sub>L</sub>
  - 480V — 1 to 350 hp I<sub>H</sub>; 1-1/2 to 400 hp I<sub>L</sub>
- HMCP padlockable
- Single Phase input available — Consult factory

## Standards and Certifications

- UL Listed
- cUL Listed

## VFD Pump Panels

## Technical Data and Specifications

Table 96. Specifications

Feature Description	9000X Enclosed Products — NEMA Type 12 or NEMA Type 3R
<b>Primary Design Features</b>	
45 – 66 Hz Input Frequency	Standard
Output: AC Volts Maximum	Input Voltage Base
Output Frequency Range: Hz	0 – 320
Initial Output Current (I <sub>H</sub> )	250% for 2 seconds
Overload: 1 Minute (I <sub>H</sub> /I <sub>L</sub> )	150%/110%
Enclosure Space Heater	Optional
Oversize Enclosure	Standard
Output Contactor	Optional
Bypass Motor Starter	Optional
Listings	UL, cUL
<b>Protection Features</b>	
Incoming Line Fuses	Optional
AC Input Circuit Disconnect	Optional
Line Reactors	Standard
Phase Rotation Insensitive	Standard
EMI Filter	Standard — Thru Frame 9
Input Phase Loss Protection	Standard
Input Overvoltage Protection	Standard
Line Surge Protection	Standard
Output Short Circuit Protection	Standard
Output Ground Fault Protection	Standard
Output Phase Protection	Standard
Overtemperature Protection	Standard
DC Overvoltage Protection	Standard
Drive Overload Protection	Standard
Motor Overload Protection	Standard
Programmer Software	Optional
Local/Remote Keypad	Standard
Keypad Lockout	Standard
Fault Alarm Output	Standard
Built-In Diagnostics	Standard
<b>Input/Output Interface Features</b>	
<b>Setup Adjustment Provisions:</b> Remote Keypad/Display Personal Computer	Standard Standard
<b>Operator Control Provisions:</b> Drive Mounted Keypad/Display Remote Keypad/Display Conventional Control Elements Serial Communications 115V AC Control Circuit	Standard Standard Standard Optional Optional
<b>Speed Setting Inputs:</b> Keypad 0 – 10V DC Potentiometer/ Voltage Signal 4 – 20 mA Isolated 4 – 20 mA Differential	Standard Standard Configurable Configurable
<b>Analog Outputs:</b> Speed/Frequency Torque/Load/Current Motor Voltage Kilowatts 0 – 10V DC Signals 4 – 20 mA DC Signals Isolated Signals	Standard Programmable Programmable Programmable Configurable w/Jumpers Standard Optional

Feature Description	9000X Enclosed Products — NEMA Type 12 or NEMA Type 3R
---------------------	---

## Input/Output Interface Features (Continued)

<b>Discrete Outputs:</b> Fault Alarm Drive Running Drive at Set Speed Optional Parameters Dry Contacts Open Collector Outputs Additional Discrete Outputs	Standard Standard Programmable 14 1 (2 Relays Form C) 1 Optional
<b>Communications:</b> RS-232 RS-422/485 DeviceNet™ Modbus RTU CanOpen (Slave) Profibus-DP Lonworks® Johnson Controls Metasys™ N2	Standard Optional Optional Optional Optional Optional Optional Optional

## Performance Features

Sensorless Vector Control	Standard
Volts/Hertz Control	Standard
IR and Slip Compensation	Standard
Electronic Reversing	Standard
Dynamic Braking	Optional ①
DC Braking	Standard
PID Setpoint Controller	Programmable
Critical Speed Lockout	Standard
Current (Torque) Limit	Standard
Adjustable Acceleration/Deceleration	Standard
Linear or S Curve Accel/Decel	Standard
Jog at Preset Speed	Standard
Thread/Preset Speeds	7
Automatic Restart	Selectable
Coasting Motor Start	Standard
Coast or Ramp Stop Selection	Standard
Elapsed Time Meter	Optional
Carrier Frequency Adjustment	1 – 16 kHz

## Standard Conditions for Application and Service

Operating Ambient Temperature	0 – 40°C
Storage Temperature	-40 – 60°C
Humidity (Maximum), Non-condensing	95%
Altitude (Maximum without Derate)	3300 ft. (1000m)
Line Voltage Variation	+10/-15%
Line Frequency Variation	45 – 66 Hz
Efficiency	>96%
Power Factor (Displacement)	.96

① Some horsepower units include dynamic braking chopper as standard — refer to individual drive sections.

Table 97. Standard I/O Specifications

Description	Specification
6 – Digital Input Programmable	24V: "0" ≤ 10V, "1" ≥ 18V, R <sub>i</sub> > 5 kΩ
2 – Analog Input Configurable w/Jumpers	Voltage: 0 – ±10V, R <sub>i</sub> > 200 kΩ Current: 0 (4) – 20 mA, R <sub>i</sub> = 250 kΩ
2 – Digital Output Programmable	Form C Relays 250V AC 2 Amp or 30V DC 2 Amp resistive
1 – Digital Output Programmable	Open collector 48V DC 50 mA
1 – Analog Output Programmable Configurable w/Jumper	0 – 20 mA, impedance 500 ohms, resolution 106 ±3%

### Catalog Number Selection

Table 98. SVX9000 Enclosed NEMA Type 12/3R Drive Catalog Numbering System

**SVX 010 2 4 E P**

**Product Family**  
SVX = Enclosed Drives

Horsepower Rating		
F07 = 3/4 hp	010 = 10 hp	060 = 60 hp
001 = 1 hp	015 = 15 hp	075 = 75 hp
F15 = 1-1/2 hp	020 = 20 hp	100 = 100 hp
002 = 2 hp	025 = 25 hp	125 = 125 hp
003 = 3 hp	030 = 30 hp	150 = 150 hp
005 = 5 hp	040 = 40 hp	200 = 200 hp
007 = 7-1/2 hp	050 = 50 hp	

Consult Factory<sup>①</sup>

250 = 250 hp	350 = 350 hp
300 = 300 hp	400 = 400 hp

**Enclosure Rating**  
2 = NEMA Type 12  
3 = NEMA Type 3R

Voltage Rating	
Three-Phase	Single-Phase
1 = 208V	J = 230V
2 = 230V	K = 480V
4 = 480V	

**Application — Torque/Braking<sup>③</sup>**  
A = I<sub>L</sub>/No Brake Chopper  
B = I<sub>L</sub>/Internal Brake Chopper  
D = I<sub>H</sub>/No Brake Chopper  
E = I<sub>H</sub>/Internal Brake Chopper

**Enclosed Style**  
P = Pumping Application

Build Alphabetically and Numerically

Enclosed Options <sup>②⑤⑥</sup>		Type
K1	Door-Mounted Speed Potentiometer <sup>④</sup>	Control
K2	Door-Mounted Speed Potentiometer with HOA Selector Switch <sup>④</sup>	Control
K5	Manual/Auto Reference Switch (22 mm)	Control
K6	Start & Stop Pushbuttons (22 mm)	Control
K9	(2) Factory Installed Auxiliary Contacts	Power
L1	Power On and Fault Pilot Lights	Light
L2	Bypass Pilot Lights for RA Bypass Option <sup>⑧</sup>	Addl. Bypass
LD	Green Stop Light	Light
LE	Red Run Light	Light
LU	Light (22 mm)	Light
LW	PTT Light (22 mm)	Light
LY	Adder for LED Each	Light
P1	Input Disconnect (HMCP) 100 kAIC	Input
P3	Input Line Fuses (200 kAIC)	Input
P7	Input Power Surge Protection	Input
P8	TVSS Transient Voltage Surge Suppressor	Input
PE	Output Contactor	Output
RA	Manual HOA Bypass Controller <sup>⑧</sup>	Bypass
S5	Floor Stand 22"	Enclosure
S9	Space Heater w/out CPT	Enclosure
SA	Space Heater w/CPT	Enclosure
SB	Socket Type Control Relay	Enclosure
SE	On-Delay Timer	Enclosure
SF	Off-Delay Timer	Enclosure

**Communication Options<sup>⑦</sup>**  
C2 = Modbus  
C3 = Profibus DP  
C4 = LonWorks  
C5 = Profibus DP (D9 Connector)  
C6 = CanOpen (Slave)  
C7 = DeviceNet  
C8 = Modbus (D9 Type Connector)  
CA = Johnson Controls N2  
CI = Modbus TCP  
CJ = BACnet  
CK = Ethernet IP  
D3 = RS-232 with D9 Connection

**Control Options**  
B1 = 6 DI, 1 ext +24V DC/EXT +24V DC  
B2 = 1 RO (NC/NO), 1 RO (NO), 1 Therm  
B4 = 1 AI (mA isolated), 2 AO (mA isolated), 1 ext +24V DC/EXT +24V DC  
B5 = 3 RO (NO)  
B8 = 1 ext +24V DC/EXT +24V DC, 3 Pt100  
B9 = 1 RO (NO), 5 DI 42 – 240V AC Input

① Consult factory.  
 ② Local/Remote keypad is included as the standard Control Panel.  
 ③ Brake Chopper is a factory installed option only, see drive option tables on **Pages 71 – 76**. **Note:** External dynamic braking resistors not included. Consult factory.  
 ④ Includes local/remote speed reference switch.  
 ⑤ Some options are voltage and/or horsepower specific. Consult your Eaton representative for details.  
 ⑥ See **Page 68** for descriptions.  
 ⑦ See **Pages 69 and 70** for complete descriptions.  
 ⑧ Bypass options applicable only in the Pump Panel three-phase design.

## VFD Pump Panels

## Control/Communication Option Descriptions

Table 99. Available Control/Communications Options

Option	Description	Option Type
K1	<b>Door-Mounted Speed Potentiometer</b> — Provides the SVX9000 with the ability to adjust the frequency reference using a door-mounted potentiometer. This option uses the 10V DC reference to generate a 0 – 10V signal at the analog voltage input signal terminal. When the HOA bypass option is added, the speed is controlled when the HOA switch is in the hand position. Without the HOA bypass option, a 2-position switch (labeled local/remote) is provided on the keypad to select speed reference from the Speed Potentiometer or a remote speed signal.	Control
K2	<b>Door-Mounted Speed Potentiometer with HOA Selector Switch</b> — Provides the SVX9000 with the ability to start/stop and adjust the speed reference from door-mounted control devices or remotely from customer supplied inputs. In HAND position, the drive will start and the speed is controlled by the door-mounted speed potentiometer. The drive will be disabled in the OFF position. When AUTO is selected, the drive run and speed control commands are via user-supplied dry contact and 4 – 20 mA signal.	Control
K5	<b>Manual/Auto Speed Reference Switch</b> — Provides a door-mounted selector switch for Manual/Auto speed reference.	Control
K6	<b>Start &amp; Stop Pushbuttons (22 mm)</b> — Start (green) and Stop (red). Provides door-mounted Start and Stop pushbuttons for either bypass or non-bypass configurations.	Control
K9	<b>(2) Factory Installed Auxiliary Contacts</b> — Provides two NO/NC auxiliary contacts.	Power
L1	<b>Power On and Fault Pilot Lights</b> — Provides a white power on light that indicates power to the enclosed cabinet and a red fault light indicates a drive fault has occurred.	Light
L2	<b>Bypass Pilot Lights for RB, RA Bypass Options</b> — A green light indicates when the motor is running in inverter mode and an amber light indicates when the motor is running in bypass mode. The lights are mounted on the enclosure door, above the switches.	Addl. Bypass
LD	<b>Green Stop Light (22 mm)</b> — Provides a green light that indicates the drive is stopped.	Light
LE	<b>Run Pilot Light (22 mm)</b> — Provides a red run light that indicates the drive is running.	Light
LU	<b>Misc. Light (22 mm)</b> — Provides misc. “user defined” pilot light. User to define light function and color.	Light
LW	<b>PTT (Push-To-Test) Light (22 mm)</b> — Provides misc. “user defined” PTT pilot light. User to define light function and color.	Light
LY	<b>Adder for LED Each</b> — Changes light packages from standard incandescent bulb to LED style bulb.	Light
P1	<b>Input Disconnect Assembly Rated to 100 kAIC</b> — High Interrupting Motor Circuit Protector (HMCP) that provides a means of short circuit protection for the power cables between it and the SVX9000, and protection from high-level ground faults on the power cable. Allows a convenient means of disconnecting the SVX9000 from the line and the operating mechanism can be padlocked in the OFF position. This is factory mounted in the enclosure.	Input
P3	<b>Input Line Fuses Rated to 200 kAIC</b> — Provides high-level fault protection of the SVX9000 input power circuit from the load side of the fuses to the input side of the power transistors. This option consists of three 200 kA fuses, which are factory mounted in the enclosure.	Input
P7	<b>MOV Surge Suppressor</b> — Provides a Metal Oxide Varistor (MOV) connected to the line side terminals and is designed to clip line side transients.	Input
P8	<b>TVSS Transient Voltage Surge Suppressor</b> — Provides transient voltage surge suppression of the unit. Consult factory for ratings.	Input
PE	<b>Output Contactor</b> — Provides a means for positive disconnection of the drive output from the motor terminals. The contactor coil is controlled by the drive’s run or permissive logic. NC and NO auxiliary contacts rated at 10A, 600V AC are provided for customer use. Bypass Option RA includes an Output Contactor as standard. This option includes a low VA 115V AC fused Control Power Transformer and is factory mounted in the enclosure.	Output
RA	<b>Manual HOA Bypass Controller</b> — The Manual HAND/OFF/AUTO (HOA) — 3-contactor — bypass option provides a means of bypassing the SVX9000, allowing the AC motor to be operated at full speed directly from the AC supply line. This option consists of an input disconnect, a fused control power transformer, and a full voltage bypass starter with a door mounted HOA selector switch and an INVERTER/BYPASS switch. The HOA switch provides the ability to start and stop the drive in the inverter mode. For applications up to 100 hp, a Freedom Series IEC input contactor, a Freedom Series IEC output contactor, and a Freedom Series IEC starter with a bimetallic overload relay is included. For applications above 100 hp, an Advantage input contactor, an Advantage output contactor and an Advantage starter with electronic overload protection is included. The contactors are mechanically and electrically interlocked (see power diagram on Page 65).	Bypass
S5	<b>Floor Stand 22"</b> — Converts a Size A or B, normally wall mounted enclosure to a floor standing enclosure with a height of 22" (558.8 mm).	Enclosure
S9	<b>Space Heater without CPT</b> — Prevents condensation from forming in the enclosure when the drive is inactive or in storage. Includes a thermostat for variable temperature control. A 200W heater is installed in enclosures A and B, and 400W heater is installed in enclosures C – D. Requires a customer supplied 115V remote supply source.	Enclosure
SA	<b>Space Heater with CPT</b> — Prevents condensation from forming in the enclosure when the drive is inactive or in storage. Includes a thermostat for variable temperature control. A 200W heater is installed in enclosures A and B, and 400W heater is installed in enclosures C – D. Provided with CPT connected to load side of input disconnect.	Enclosure
SB	<b>Ice Cube Style Control Relay</b> — Provides misc. “user defined” 4PDT control relay. Requires user to define functionality.	Enclosure
SE	<b>On-Delay Timer (Delay on Make)</b> — Provides misc. “user defined” time delay relay. Requires user to define functionality and time setting requirement.	Enclosure
SF	<b>Off-Delay Timer (Delay on Break)</b> — Provides misc. “user defined” time delay relay. Requires user to define functionality and time setting requirement.	Enclosure

**Note:** For availability, see Product Selection for base drive voltage required.

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VFD Pump Panels

9000X Series Option Board Kits

The 9000X Series drives can accommodate a wide selection of expander and adapter option boards to customize the drive for your application needs. The drive's control unit is designed to accept a total of five option boards (see Figure 34).

The 9000X Series factory installed standard board configuration includes an A9 I/O board and an A2 relay output board, which are installed in slots A and B.

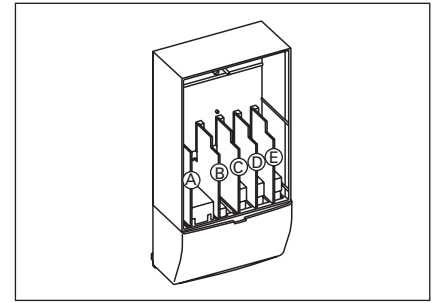


Figure 34. 9000X Series Option Boards

Table 100. Option Board Kits

Option Kit Description ②	Allowed Slot Locations ①	Field Installed		Factory Installed		SVX Ready Programs						
		Catalog Number	Price U.S. \$	Option Designator	Adder U.S. \$	Basic	Local/Remote	Standard	MSS	PID	Multi-P	PFC
<b>Standard I/O Cards (See Figure 34)</b>												
2 RO (NC/NO)	B	<b>OPTA2</b>	94.50	—	—	X	X	X	X	X	X	X
6 DI, 1 DO, 2 AI, 1AO, 1 +10V DC ref, 2 ext +24V DC/EXT +24V DC	A	<b>OPTA9</b>	189.00	—	—	X	X	X	X	X	X	X
<b>Extended I/O Card Options</b>												
6 DI, 1 ext +24V DC/EXT +24V DC	B, C, D, E	<b>OPTB1</b>	189.00	<b>B1</b>	294.00	—	—	—	—	—	X	X
1 RO (NC/NO), 1 RO (NO), 1 Therm	B, C, D, E	<b>OPTB2</b>	221.00	<b>B2</b>	326.00	—	—	—	—	—	X	X
1 AI (mA isolated), 2 AO (mA isolated), 1 ext +24V DC/EXT +24V DC	B, C, D, E	<b>OPTB4</b>	336.00	<b>B4</b>	441.00	X	X	X	X	X	X	X
3 RO (NO)	B, C, D, E	<b>OPTB5</b>	200.00	<b>B5</b>	305.00	—	—	—	—	—	X	X
1 ext +24V DC/EXT +24V DC, 3 Pt100	B, C, D, E	<b>OPTB8</b>	570.00	<b>B8</b>	675.00	—	—	—	—	—	—	—
1 RO (NO), 5 DI 42 – 240V AC Input	B, C, D, E	<b>OPTB9</b>	294.00	<b>B9</b>	399.00	—	—	—	—	—	X	X
<b>Communication Cards ③</b>												
Modbus	D, E	<b>OPTC2</b>	237.00	<b>C2</b>	342.00	X	X	X	X	X	X	X
Modbus TCP	D, E	<b>OPTCI</b>	590.00	<b>CI</b>	695.00	X	X	X	X	X	X	X
BACnet	D, E	<b>OPTCJ</b>	280.00	<b>CJ</b>	385.00	X	X	X	X	X	X	X
Ethernet IP	D, E	<b>OPTCK</b>	590.00	<b>CK</b>	695.00	X	X	X	X	X	X	X
Johnson Controls N2	D, E	<b>OPTC2</b>	237.00	<b>CA</b>	342.00	—	—	—	—	—	—	—
Profibus DP	D, E	<b>OPTC3</b>	431.00	<b>C3</b>	540.00	X	X	X	X	X	X	X
LonWorks	D, E	<b>OPTC4</b>	580.00	<b>C4</b>	685.00	X	X	X	X	X	X	X
Profibus DP (D9 Connector)	D, E	<b>OPTC5</b>	580.00	<b>C5</b>	685.00	X	X	X	X	X	X	X
CanOpen (Slave)	D, E	<b>OPTC6</b>	580.00	<b>C6</b>	685.00	X	X	X	X	X	X	X
DeviceNet	D, E	<b>OPTC7</b>	580.00	<b>C7</b>	685.00	X	X	X	X	X	X	X
Modbus (D9 Type Connector)	D, E	<b>OPTC8</b>	326.00	<b>C8</b>	431.00	X	X	X	X	X	X	X
RS-232 with D9 Connection	D, E	<b>OPTD3</b>	189.00	<b>D3</b>	294.00	X	X	X	X	X	X	X
<b>Keypad</b>												
9000X Series Local Remote Keypad	—	<b>KEYPAD-LOC/REM</b>	205.00	—	—	—	—	—	—	—	—	—
9000X Series Remote Mount Keypad Kit (Keypad not included)	—	<b>OPTRMT-KIT-9000X</b>	200.00	—	—	—	—	—	—	—	—	—
9000X Series RS-232 Cable, 13 ft.	—	<b>PP00104</b>	70.00	—	—	—	—	—	—	—	—	—

① Option card must be installed in one of the slots listed for that card. Slot indicated in Bold is the preferred location.

② AI = Analog Input; AO = Analog Output, DI = Digital Input, DO = Digital Output, RO = Relay Output

③ OPTC2 is a multi-protocol option card.

## VFD Pump Panels

**Modbus RTU Network Communications**

The Modbus Network Card OPTC2 is used for connecting the 9000X Drive as a slave on a Modbus network. The interface is connected by a 9-pin DSUB connector (female) and the baud rate ranges from 300 to 19200 baud. Other communication parameters include an address range from 1 to 247; a parity of None, Odd or Even; and the stop bit is 1.

**Profibus Network Communications**

The Profibus Network Card OPTC3 is used for connecting the 9000X Drive as a slave on a Profibus-DP network. The interface is connected by a 9-pin DSUB connector (female). The baud rates range from 9.6K baud to 12M baud, and the addresses range from 1 to 127.

**LonWorks Network Communications**

The LonWorks Network Card OPTC4 is used for connecting the 9000X Drive on a LonWorks network. This interface uses Standard Network Variable Types (SNVT) as data types. The channel connection is achieved using a FTT-10A Free Topology transceiver via a single twisted transfer cable. The communication speed with LonWorks is 78 kBits/s.

**CanOpen (Slave) Communications**

The CanOpen (Slave) Network Card OPTC6 is used for connecting the 9000X Drive to a host system. According to ISO11898 standard cables to be chosen for CAN bus should have a nominal impedance of 120Ω, and specific line delay of nominal 5 nS/m. 120Ω line termination resistors required for installation.

**DeviceNet Network Communications**

The DeviceNet Network Card OPTC7 is used for connecting the 9000X Drive on a DeviceNet Network. It includes a 5.08 mm pluggable connector. Transfer method is via CAN using a 2-wire twisted shielded cable with 2-wire bus power cable and drain. The baud rates used for communication include 125K baud, 250K baud and 500K baud.

**Johnson Controls Metasys™ N2 Network Communications**

The OPTC2 fieldbus board provides communication between the 9000X Drive and a Johnson Controls Metasys™ N2 network. With this connection, the drive can be controlled, monitored and programmed from the Metasys system. The N2 fieldbus is available as a factory installed option and as a field installable kit.

**Modbus/TCP Network Communications**

The Modbus/TCP Network Card OPTC1 is used for connecting the 9000X Drive to Ethernet networks utilizing Modbus protocol. It includes an RJ-45 pluggable connector. This interface provides a selection of standard and custom register values to communicate drive parameters. The board supports 10 Mbps and 100 Mbps communication speeds. The IP address of the board is configurable over Ethernet using a supplied software tool.

**BACnet Network Communications**

The BACnet Network Card OPTCJ is used for connecting the 9000X Drive to BACnet networks. It includes a 5.08 mm pluggable connector. Data transfer is Master-Slave/Token Passing (MS/TP) RS-485. This interface uses a collection of 30 Binary Value

Objects (BVOs) and 35 Analog Value Objects (AVOs) to communicate drive parameters. The card supports 9.6, 19.2 and 38.4 Kbaud communication speeds and supports network addresses 1 – 127.

**Ethernet/IP Network Communications**

The Ethernet/IP Network Card OPTCK is used for connecting the 9000X Drive to Ethernet/Industrial Protocol networks. It includes an RJ-45 pluggable connector. The interface uses CIP objects to communicate drive parameters (CIP is "Common Industrial Protocol", the same protocol used by DeviceNet). The board supports 10 Mbps and 100 Mbps communication speeds. The IP address of the board is configurable by Static, BOOTP and DHCP methods.

**Table 101. I/O Specifications for the Control/Communication Options**

Description	Specifications
Analog voltage, input	0 – ±10V, R <sub>i</sub> ≥ 200 kΩ
Analog current, input	0 (4) – 20 mA, R <sub>i</sub> = 250 Ω
Digital Input	24V: "0" ≤ 10V, "1" ≥ 18V, R <sub>i</sub> > 5 kΩ
Aux. voltage	24V (±20%), max. 50 mA
Reference voltage	10V ±3%, max. 10 mA
Analog current, output	0 (4) – 20 mA, R <sub>L</sub> = 500 kΩ, resolution 10 bit, accuracy ≤ ±2%
Analog voltage, output	0 (2) – 10V, R <sub>L</sub> ≥ 1 kΩ, resolution 10 bit, accuracy ≤ ±2%
Relay output	300V DC, 250V AC
Max. switching voltage	8A/24V DC, .4A/300V DC, 2 kVA/250V AC
Max. switching load	
Max. continuous load	2A rms
Thermistor input	R <sub>trip</sub> = 4.7 kΩ

**Product Selection**

**When Ordering**

- Select a Base Catalog Number that meets the application requirements — nominal horsepower, voltage and enclosure rating (the enclosed drive's continuous output amp rating should be equal to or greater than the motor's full load amp rating). The base enclosed package includes a standard drive, door mounted Local/Remote Keypad and enclosure.
- If Dynamic Brake Chopper or Control/Communication option is desired, change the appropriate code in the Base Catalog Number.
- Select Enclosed Options. Add the codes as suffixes to the Base Catalog Number in alphabetical and numeric order.
- Read all Footnotes.

**208V Drives**

**Table 102. 208V Pump Panel Style (Three-Phase)**

Enclosure Size ①	hp	NEMA Type 12			NEMA Type 3R		
		Frame Size	Base Catalog Number ②	Price U.S. \$ ②	Frame Size	Base Catalog Number ②	Price U.S. \$ ②
<b>208V High Overload Drive and Enclosure</b>							
A	3/4	4	SVXF0721EP	2,475.	4	SVXF0731EP	3,595.
A	1		SVX00121EP	2,525.		SVX00131EP	3,680.
A	1-1/2		SVXF1521EP	2,610.		SVXF1531EP	3,800.
A	2		SVX00221EP	2,675.		SVX00231EP	3,910.
A	3	5	SVX00321EP	2,735.	5	SVX00331EP	4,055.
A	5		SVX00521EP	2,970.		SVX00531EP	4,135.
A	7-1/2		SVX00721EP	3,670.		SVX00731EP	5,110.
A	10	6	SVX01021EP	4,390.	6	SVX01031EP	6,050.
B	15		SVX01521EP	5,735.		SVX01531EP	7,600.
B	20	7	SVX02021DP	8,485.	7	SVX02031DP	10,665.
B	25		SVX02521DP	9,605.		SVX02531DP	12,150.
C	30		SVX03021DP	11,365.		SVX03031DP	13,975.
C	40	8	SVX04021DP	12,385.	8	SVX04031DP	14,365.
C	50		SVX05021DP	14,380.		SVX05031DP	17,085.
D	60		SVX06021DP	19,585.		SVX06031DP	22,910.
D	75	9	SVX07521DP	24,315.	9	SVX07531DP	28,100.
D	100		SVX10021DP	26,435.		SVX10031DP	29,750.
<b>208V Low Overload Drive and Enclosure</b>							
A	1	4	SVX00121BP	2,475.	4	SVX00131BP	3,595.
A	1-1/2		SVXF1521BP	2,525.		SVXF1531BP	3,680.
A	2		SVX00221BP	2,610.		SVX00231BP	3,800.
A	3		SVX00321BP	2,675.		SVX00331BP	3,910.
A	5	5	SVX00521BP	2,735.	5	SVX00531BP	4,055.
A	7-1/2		SVX00721BP	3,240.		SVX00731BP	4,440.
A	10		SVX01021BP	3,675.		SVX01031BP	5,110.
A	15	6	SVX01521BP	4,820.	6	SVX01531BP	6,250.
B	20		SVX02021BP	5,735.		SVX02031BP	7,600.
B	25	7	SVX02521AP	8,485.	7	SVX02531AP	10,660.
B	30		SVX03021AP	10,100.		SVX03031AP	12,585.
C	40		SVX04021AP	11,365.		SVX04031AP	14,210.
C	50	8	SVX05021AP	12,750.	8	SVX05031AP	15,205.
C	60		SVX06021AP	14,380.		SVX06031AP	17,085.
D	75		SVX07521AP	19,585.		SVX07531AP	22,910.
D	100	9	SVX10021AP	24,315.	9	SVX10031AP	28,100.

① Enclosure dimensions listed on Pages 77 – 82.

② Includes drive, Local/Remote Keypad and enclosure.

**Table 103. 208V Brake Chopper Adder ③**

I <sub>H</sub> hp	Adder U.S. \$	I <sub>L</sub> hp	Adder U.S. \$
	NEMA Type 12/3R		NEMA Type 12/3R
3/4	Incl.	—	—
1	Incl.	1	Incl.
1-1/2	Incl.	1-1/2	Incl.
2	Incl.	2	Incl.
3	Incl.	3	Incl.
5	Incl.	5	Incl.
7-1/2	Incl.	7-1/2	Incl.
10	Incl.	10	Incl.
15	Incl.	15	Incl.
20	473.	20	Incl.
25	473.	25	473.
30	473.	30	473.
40	730.	40	473.
50	730.	50	730.
60	730.	60	730.
75	1,170.	75	730.
100	1,170.	100	1,170.

③ External dynamic braking resistors not included. Consult factory.

VFD Pump Panels

Table 104. 208V Control Options


Catalog Number Suffix 	Door-Mounted Speed Potentiometer	Door-Mounted Speed Potentiometer with HOA Selector Switch	Manual/Auto Reference Switch (22 mm)	Start & Stop Pushbuttons (22 mm)
K1	K2	K5	K6	
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	200.00	263.00	128.00	360.00

Table 105. 208V Light Options

Catalog Number Suffix 	Power On/Fault Pilot Lights (22 mm)	Green Stop Light (22 mm)	Red Run Light (22 mm)	Misc. Light (22 mm)	PTT Light (22 mm)	Adder for LED Each
L1	LD	LE	LU	LW	LY	
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	560.00	190.00	190.00	200.00	270.00	70.00

Table 106. 208V Enclosure Options




Catalog Number Suffix 	Floor Stand 22" (558.8 mm)	Space Heater w/out CPT	Space Heater w/CPT	Socket Type Control Relay	On-Delay Timer	Off-Delay Timer
S5	S9	SA	SB	SE	SF	
Enclosure Size	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
A	—	336.00	436.00	200.00	280.00	280.00
B	368.00	336.00	436.00	200.00	280.00	280.00
C	431.00	462.00	562.00	200.00	280.00	280.00
D	—	615.00	815.00	200.00	280.00	280.00

Table 107. 208V Power Options

Catalog Number Suffix 	Input					Output
	Two Auxiliary Contacts Installed	Input Disconnect (HMCP) 100 kAIC	Input Line Fuses 200 kAIC	Input Power Surge Protection	TVSS Transient Voltage Surge Suppressor	Output Contactor
	K9	P1	P3	P7	P8	PE
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 5	31.50	525.00	263.00	500.00	1,800.00	210.00
7-1/2	31.50	525.00	315.00	500.00	1,800.00	242.00
10	31.50	580.00	420.00	500.00	1,800.00	305.00
15	31.50	580.00	420.00	500.00	1,800.00	441.00
20	31.50	580.00	525.00	500.00	1,800.00	441.00
25 – 30	31.50	1,155.00	525.00	500.00	1,800.00	630.00
40	31.50	1,155.00	525.00	500.00	1,800.00	810.00
50 – 60	31.50	1,565.00	735.00	500.00	1,800.00	1,440.00
75	31.50	1,890.00	861.00	500.00	1,800.00	3,090.00
100	31.50	①	①	500.00	1,800.00	①

① Contact sales office for pricing and availability.

Table 108. 208V Bypass Options

Catalog Number Suffix 	Bypass Pilot Lights for RA Option	Manual HOA Bypass Controller
L2	RA	
hp	Adder U.S. \$	Adder U.S. \$
3/4 – 7-1/2	200.00	1,810.00
10	200.00	2,100.00
15 – 20	200.00	2,165.00
25 – 30	200.00	3,550.00
40	200.00	3,655.00
50 – 60	200.00	4,830.00
75	200.00	9,430.00
100	200.00	②

② Contact sales office for pricing and availability.



230V Drives

Table 109. 230V Pump Panel Style (Three-Phase)

Enclosure Size ①	hp	NEMA Type 12			NEMA Type 3R		
		Frame Size	Base Catalog Number ②	Price U.S. \$ ②	Frame Size	Base Catalog Number ②	Price U.S. \$ ②
<b>230V High Overload Drive and Enclosure</b>							
A	3/4	4	SVXF0722EP	2,390.	4	SVXF0732EP	3,515.
A	1		SVX00122EP	2,475.		SVX00132EP	3,620.
A	1-1/2		SVXF1522EP	2,525.		SVXF1532EP	3,710.
A	2		SVX00222EP	2,610.		SVX00232EP	3,855.
A	3	5	SVX00322EP	2,675.	5	SVX00332EP	3,910.
A	5		SVX00522EP	2,735.		SVX00532EP	4,135.
A	7-1/2		SVX00722EP	2,970.		SVX00732EP	4,435.
A	10	6	SVX01022EP	3,675.	6	SVX01032EP	5,310.
B	15		SVX01522EP	4,370.		SVX01532EP	6,250.
B	20	7	SVX02022DP	5,735.	7	SVX02032DP	7,600.
B	25		SVX02522DP	8,485.		SVX02532DP	11,045.
C	30		SVX03022DP	9,555.		SVX03032DP	12,130.
C	40	8	SVX04022DP	11,365.	8	SVX04032DP	13,620.
C	50		SVX05022DP	12,385.		SVX05032DP	14,330.
D	60		SVX06022DP	14,380.		SVX06032DP	16,850.
D	75	9	SVX07522DP	19,585.	9	SVX07532DP	22,910.
D	100		SVX10022DP	24,315.		SVX10032DP	—

230V Low Overload Drive and Enclosure

A	1	4	SVX00122BP	2,390.	4	SVX00132BP	3,515.
A	1-1/2		SVXF1522BP	2,475.		SVXF1532BP	3,620.
A	2		SVX00222BP	2,525.		SVX00232BP	3,710.
A	3		SVX00322BP	2,610.		SVX00332BP	3,855.
A	5	5	SVX00522BP	2,675.	5	SVX00532BP	3,910.
A	7-1/2		SVX00722BP	2,735.		SVX00732BP	4,055.
A	10		SVX01022BP	3,240.		SVX01032BP	4,440.
A	15	6	SVX01522BP	3,675.	6	SVX01532BP	5,110.
B	20		SVX02022BP	4,820.		SVX02032BP	6,390.
B	25	7	SVX02522AP	5,735.	7	SVX02532AP	7,600.
B	30		SVX03022AP	8,485.		SVX03032AP	11,045.
C	40		SVX04022AP	10,050.		SVX04032AP	12,570.
C	50	8	SVX05022AP	11,365.	8	SVX05032AP	13,620.
C	60		SVX06022AP	12,750.		SVX06032AP	15,205.
D	75		SVX07522AP	14,380.		SVX07532AP	16,850.
D	100	9	SVX10022AP	19,585.	9	SVX10032AP	22,910.

① Enclosure dimensions listed on Pages 77 – 82.

② Includes drive, Local/Remote Keypad and enclosure.

Table 110. 230V Pump Panel Style (Single-Phase)

Enclosure Size ③	hp	NEMA Type 12			NEMA Type 3R		
		Frame Size	Base Catalog Number ④	Price U.S. \$ ④	Frame Size	Base Catalog Number ④	Price U.S. \$ ④
<b>230V Low Overload Drive and Enclosure</b>							
A	3/4	4	SVXF072JBP	2,580.	4	SVXF073JBP	3,765.
A	1		SVX0012JBP	2,610.		SVX0013JBP	3,855.
A	2	5	SVX0022JBP	2,645.	5	SVX0023JBP	3,880.
A	3		SVX0032JBP	2,675.		SVX0033JBP	3,910.
A	5		SVX0052JBP	3,235.		SVX0053JBP	4,555.
A	7-1/2	6	SVX0072JBP	3,740.	6	SVX0073JBP	4,940.
A	10		SVX0102JBP	4,175.		SVX0103JBP	5,610.
B	15	7	SVX0152JBP	6,475.	7	SVX0153JBP	8,340.
B	20		SVX0202JAP	9,225.		SVX0203JAP	11,785.
C	25	8	SVX0252JAP	10,050.	8	SVX0253JAP	12,570.
C	30		SVX0302JAP	11,965.		SVX0303JAP	14,220.
C	40		SVX0402JAP	13,350.		SVX0403JAP	15,805.

③ Enclosure dimensions listed on Pages 77 – 82.

④ Includes drive, Local/Remote Keypad and enclosure.

Table 111. 230V Brake Chopper Adder ⑤

I <sub>H</sub> hp	Adder U.S. \$	I <sub>L</sub> hp	Adder U.S. \$
	NEMA Type 12/3R		NEMA Type 12/3R
3/4	Incl.	—	—
1	Incl.	1	Incl.
1-1/2	Incl.	1-1/2	Incl.
2	Incl.	2	Incl.
3	Incl.	3	Incl.
5	Incl.	5	Incl.
7-1/2	Incl.	7-1/2	Incl.
10	Incl.	10	Incl.
15	Incl.	15	Incl.
20	473.	20	Incl.
25	473.	25	473.
30	473.	30	473.
40	730.	40	473.
50	730.	50	730.
60	730.	60	730.
75	1,170.	75	730.
100	1,170.	100	1,170.

⑤ External dynamic braking resistors not included. Consult factory.

VFD Pump Panels

Table 112. 230V Control Options

Catalog Number Suffix	Door-Mounted Speed Potentiometer	Door-Mounted Speed Potentiometer with HOA Selector Switch	Manual/Auto Reference Switch (22 mm)	Start & Stop Pushbuttons (22 mm)
K1	K2	K5	K6	
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	200.00	263.00	128.00	360.00

Table 113. 230V Light Options

Catalog Number Suffix	Power On/Fault Pilot Lights (22 mm)	Green Stop Light (22 mm)	Red Run Light (22 mm)	Misc. Light (22 mm)	PTT Light (22 mm)	Adder for LED Each
L1	LD	LE	LU	LW	LY	
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	560.00	190.00	190.00	200.00	270.00	70.00

Table 114. 230V Enclosure Options

Catalog Number Suffix	Floor Stand 22" (558.8 mm)	Space Heater w/out CPT	Space Heater w/CPT	Socket Type Control Relay	On-Delay Timer	Off-Delay Timer
S5	S9	SA	SB	SE	SF	
Enclosure Size	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
A	—	336.00	436.00	200.00	280.00	280.00
B	368.00	336.00	436.00	200.00	280.00	280.00
C	431.00	462.00	562.00	200.00	280.00	280.00
D	—	615.00	815.00	200.00	280.00	280.00

Table 115. 230V Power Options

Catalog Number Suffix	Input					Output
	Two Auxiliary Contacts Installed	Input Disconnect (HMCP) 100 kAIC	Input Line Fuses 200 kAIC	Input Power Surge Protection	TVSS Transient Voltage Surge Suppressor	Output Contactor
	K9	P1	P3	P7	P8	PE
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 5	31.50	525.00	263.00	500.00	1,800.00	210.00
7-1/2 – 10	31.50	525.00	315.00	500.00	1,800.00	242.00
15	31.50	580.00	420.00	500.00	1,800.00	305.00
20 – 25	31.50	580.00	420.00	500.00	1,800.00	441.00
30 – 40	31.50	1,155.00	525.00	500.00	1,800.00	630.00
50	31.50	1,155.00	525.00	500.00	1,800.00	810.00
60 – 75	31.50	1,565.00	735.00	500.00	1,800.00	1,440.00
100	31.50	1,890.00	865.00	500.00	1,800.00	3,090.00

Table 116. 230V Bypass Options

Catalog Number Suffix	Bypass Pilot Lights for RA Option	Manual HOA Bypass Controller
L2	RA	
hp	Adder U.S. \$	Adder U.S. \$
3/4 – 10	200.00	1,810.00
15	200.00	2,100.00
20 – 25	200.00	2,165.00
30 – 40	200.00	3,550.00
50	200.00	3,655.00
60 – 75	200.00	4,830.00
100	200.00	9,430.00

① See Page 68 for details.

② Bypass options applicable only in the Pump Panel three-phase design.

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480V Drives

Table 117. 480V Pump Panel Style (Three-Phase)

Enclosure Size ①	hp	NEMA Type 12			NEMA Type 3R		
		Frame Size	Base Catalog Number ②	Price U.S. \$ ②	Frame Size	Base Catalog Number ②	Price U.S. \$ ②
<b>480V High Overload Drive and Enclosure</b>							
A	1	4	SVX00124EP	2,475.	4	SVX00134EP	3,600.
A	1-1/2		SVXF1524EP	2,525.		SVXF1534EP	3,680.
A	2		SVX00224EP	2,630.		SVX00234EP	3,785.
A	3		SVX00324EP	2,740.		SVX00334EP	3,870.
A	5		SVX00524EP	2,820.		SVX00534EP	3,915.
A	7-1/2	5	SVX00724EP	3,055.	5	SVX00734EP	4,190.
A	10		SVX01024EP	3,460.		SVX01034EP	4,760.
A	15		SVX01524EP	4,165.		SVX01534EP	5,705.
A	20	6	SVX02024EP	5,390.	6	SVX02034EP	7,340.
A	25		SVX02524EP	6,235.		SVX02534EP	8,250.
B	30		SVX03024EP	7,145.		SVX03034EP	9,470.
B	40	7	SVX04024DP	9,230.	7	SVX04034DP	11,800.
B	50		SVX05024DP	10,850.		SVX05034DP	13,350.
B	60		SVX06024DP	12,725.		SVX06034DP	15,120.
C	75	8	SVX07524DP	14,875.	8	SVX07534DP	17,400.
C	100		SVX10024DP	17,240.		SVX10034DP	19,440.
C	125		SVX12524DP	20,990.		SVX12534DP	23,590.
D	150	9	SVX15024DP	27,290.	9	SVX15034DP	30,790.
D	200		SVX20024DP	32,985.		SVX20034DP	36,430.
TBD	250	10	SVX25024DP	③	10	SVX25034DP	③
TBD	300		SVX30024DP	③		SVX30034DP	③
TBD	350		SVX35024DP	③		SVX35034DP	③

480V Low Overload Drive and Enclosure

A	1-1/2	4	SVXF1524BP	2,475.	4	SVXF1534BP	3,600.
A	2		SVX00224BP	2,525.		SVX00234BP	3,680.
A	3		SVX00324BP	2,630.		SVX00334BP	3,820.
A	5		SVX00524BP	2,740.		SVX00534BP	3,965.
A	7-1/2		SVX00724BP	2,820.		SVX00734BP	3,940.
A	10	5	SVX01024BP	3,055.	5	SVX01034BP	4,220.
A	15		SVX01524BP	3,460.		SVX01534BP	4,785.
A	20		SVX02024BP	4,165.		SVX02034BP	5,735.
A	25	6	SVX02524BP	5,390.	6	SVX02534BP	7,340.
A	30		SVX03024BP	6,235.		SVX03034BP	8,250.
B	40		SVX04024BP	7,775.		SVX04034BP	10,270.
B	50	7	SVX05024AP	9,230.	7	SVX05034AP	12,000.
B	60		SVX06024AP	11,275.		SVX06034AP	13,580.
B	75		SVX07524AP	12,725.		SVX07534AP	15,120.
C	100	8	SVX10024AP	14,875.	8	SVX10034AP	17,400.
C	125		SVX12524AP	18,100.		SVX12534AP	20,730.
C	150		SVX15024AP	20,990.		SVX15034AP	23,590.
D	200	9	SVX20024AP	27,290.	9	SVX20034AP	33,930.
D	250		SVX25024AP	32,985.		SVX25034AP	36,430.
TBD	300	10	SVX30024AP	③	10	SVX30034AP	③
TBD	400		SVX40024AP	③		SVX40034AP	③

① Enclosure dimensions listed on Pages 77 – 82.

② Includes drive, Local/Remote keypad and enclosure.

③ Consult Eaton.

Table 118. 480V Pump Panel Style (Single-Phase)

Enclosure Size ④	hp	NEMA Type 12			NEMA Type 3R		
		Frame Size	Base Catalog Number ⑤	Price U.S. \$ ⑤	Frame Size	Base Catalog Number ⑤	Price U.S. \$ ⑤
<b>480V Low Overload Drive and Enclosure</b>							
A	3/4	4	SVXF072KBP	3,245.	4	SVXF073KBP	4,315.
A	1		SVX0012KBP	3,370.		SVX0013KBP	4,495.
A	2		SVX0022KBP	3,635.		SVX0023KBP	4,860.
A	3		SVX0032KBP	3,685.		SVX0033KBP	4,900.
A	5	5	SVX0052KBP	3,715.	5	SVX0053KBP	5,005.
A	7-1/2		SVX0072KBP	4,000.		SVX0073KBP	5,165.
A	10		SVX0102KBP	4,405.		SVX0103KBP	5,730.
A	15	6	SVX0152KBP	5,710.	6	SVX0153KBP	7,660.
A	20		SVX0202KBP	6,555.		SVX0203KBP	8,570.
B	25	7	SVX0252KAP	8,095.	7	SVX0253KAP	10,590.
B	30		SVX0302KAP	9,550.		SVX0303KAP	12,320.
C	40	8	SVX0402KAP	14,030.	8	SVX0403KAP	16,425.
C	50		SVX0502KAP	15,105.		SVX0503KAP	17,565.
C	60		SVX0602KAP	16,180.		SVX0603KAP	18,705.

④ Enclosure dimensions listed on Pages 77 – 82.

⑤ Includes drive, Local/Remote keypad and enclosure.

Table 119. 480V Brake Chopper Adder ⑥

I <sub>H</sub> hp	Adder U.S. \$	I <sub>L</sub> hp	Adder U.S. \$	
			NEMA Type 12/3R	NEMA Type 12/3R
1		Incl.	—	—
1-1/2		Incl.	1-1/2	Incl.
2		Incl.	2	Incl.
3		Incl.	3	Incl.
5		Incl.	5	Incl.
7-1/2		Incl.	7-1/2	Incl.
10		Incl.	10	Incl.
15		Incl.	15	Incl.
20		Incl.	20	Incl.
25		Incl.	25	Incl.
30		Incl.	30	Incl.
40	473.	40	40	Incl.
50	473.	50	50	473.
60	473.	60	60	473.
75	730.	75	75	473.
100	730.	100	100	730.
125	730.	125	125	730.
150	1,170.	150	150	730.
200	1,170.	200	200	1,170.
250	2,500.	250	250	1,170.
300	2,500.	300	300	2,500.
350	2,500.	350	350	2,500.
400	2,500.	400	400	2,500.

⑥ External dynamic braking resistors not included. Consult factory.

Discount Symbol..... SS-2

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Table 120. 480V Control Options

Catalog Number Suffix	Door-Mounted Speed Potentiometer	Door-Mounted Speed Potentiometer with HOA Selector Switch	Manual/Auto Reference Switch (22 mm)	Start & Stop Pushbuttons (22 mm)
K1	K2	K5	K6	
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	200.00	263.00	128.00	360.00

Table 121. 480V Light Options

Catalog Number Suffix	Power On/Fault Pilot Lights (22 mm)	Green Stop Light (22 mm)	Red Run Light (22 mm)	Misc. Light (22 mm)	PTT Light (22 mm)	Adder for LED Each
L1	LD	LE	LU	LW	LY	
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
3/4 – 100	560.00	190.00	190.00	200.00	270.00	70.00

Table 122. 480V Enclosure Options

Catalog Number Suffix	Floor Stand 22" (558.8 mm)	Space Heater w/out CPT	Space Heater w/CPT	Socket Type Control Relay	On-Delay Timer	Off-Delay Timer
S5	S9	SA	SB	SE	SF	
Enclosure Size	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
A	—	336.00	436.00	200.00	280.00	280.00
B	368.00	336.00	436.00	200.00	280.00	280.00
C	431.00	462.00	562.00	200.00	280.00	280.00
D	—	615.00	815.00	200.00	280.00	280.00

Table 123. 480V Power Options

Catalog Number Suffix	Input					Output
	Two Auxiliary Contacts Installed	Input Disconnect (HMCP) 100 kAIC	Input Line Fuses 200 kAIC	Input Power Surge Protection	TVSS Transient Voltage Surge Suppressor	Output Contactor
K9	P1	P3	P7	P8	PE	
hp	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$	Adder U.S. \$
1 – 10	31.50	525.00	263.00	500.00	1,800.00	210.00
15 – 20	31.50	525.00	315.00	500.00	1,800.00	242.00
25 – 30	31.50	580.00	420.00	500.00	1,800.00	305.00
40 – 50	31.50	580.00	420.00	500.00	1,800.00	441.00
60 – 75	31.50	1,155.00	525.00	500.00	1,800.00	630.00
100	31.50	1,155.00	525.00	500.00	1,800.00	810.00
125 – 150	31.50	1,565.00	735.00	500.00	1,800.00	1,440.00
200	31.50	1,890.00	865.00	500.00	1,800.00	3,090.00
250	31.50	3,150.00	990.00	500.00	1,800.00	3,635.00
300 – 350	31.50	3,360.00	990.00	500.00	1,800.00	3,635.00
400	31.50	3,360.00	1,260.00	500.00	1,800.00	3,780.00

Table 124. 480V Bypass Options

Catalog Number Suffix	Bypass Pilot Lights for RA Option	Manual HOA Bypass Controller
L2	RA	
hp	Adder U.S. \$	Adder U.S. \$
1 – 20	200.00	1,810.00
25	200.00	1,995.00
30	200.00	2,100.00
40 – 50	200.00	2,165.00
60 – 75	200.00	3,550.00
100	200.00	3,655.00
125 – 150	200.00	4,830.00
200	200.00	9,430.00
250 – 350	200.00	12,960.00
400	200.00	13,630.00

① See Page 68 for details.

② Bypass options applicable only in the Pump Panel three-phase design.

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Dimensions

Enclosure Box A NEMA Type 12

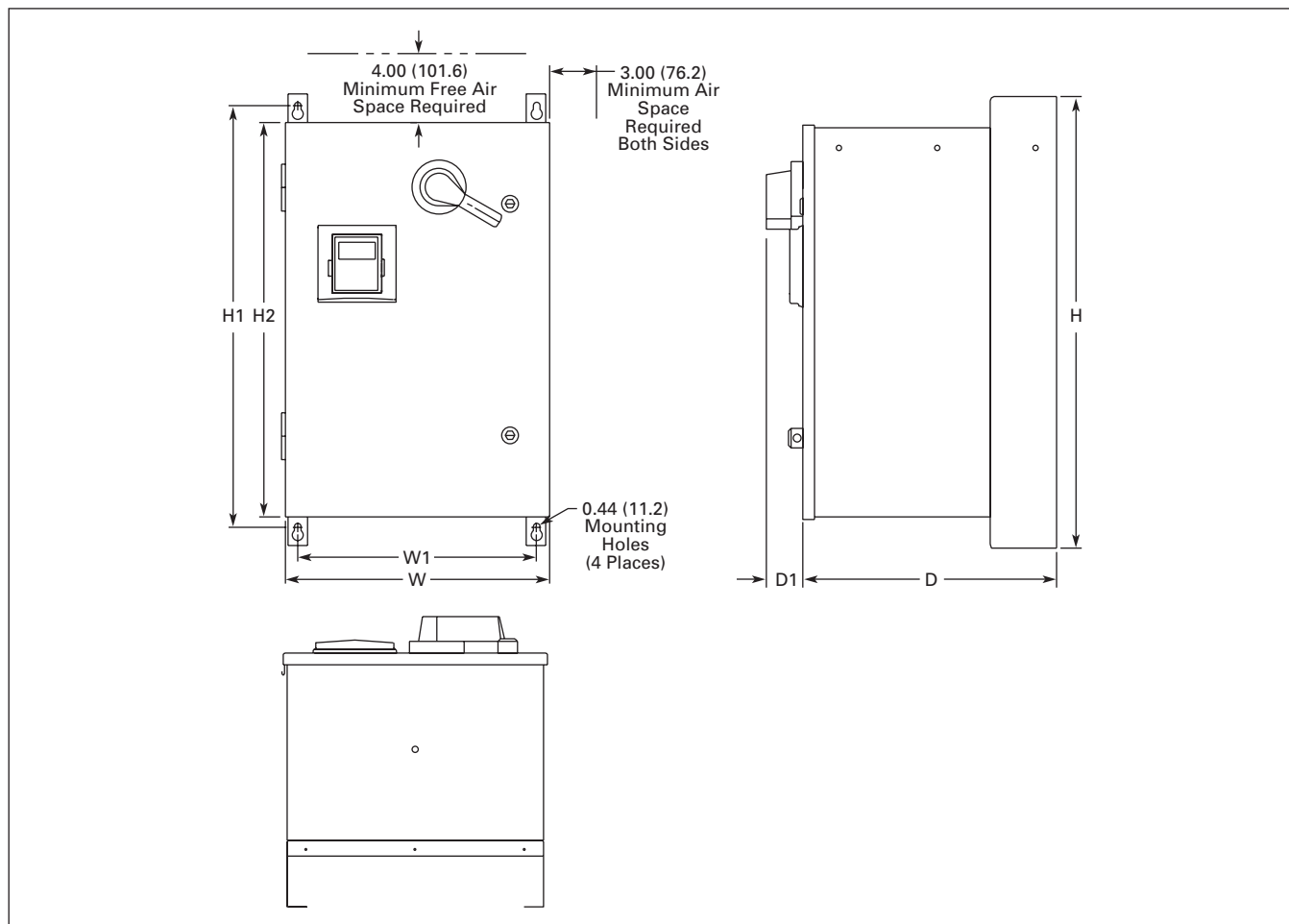


Figure 35. NEMA Type 12 SVX9000 Pump Application Drive Dimensions

Table 125. NEMA Type 12 SVX9000 Pump Application Drive Dimensions

Voltage AC	hp (I <sub>H</sub> )	hp (I <sub>L</sub> )	Approximate Dimensions in Inches (mm)							Approx. Weight Lbs. (kg)	Approx. Ship Weight Lbs. (kg)
			H	H1	H2	W	W1	D	D1		
<b>Three-Phase</b>											
208V	3/4 – 10	1 – 15	29.00 (736.6)	27.00 (685.8)	25.35 (643.9)	16.92 (429.8)	15.30 (388.6)	16.26 (413.0)	2.34 (59.4)	120 (54)	160 (73)
230V	3/4 – 10	1 – 15									
480V	1 – 25	1 – 30									
<b>Single-Phase</b>											
230V	—	3/4 – 10	29.00 (736.6)	27.00 (685.8)	25.35 (643.9)	16.92 (429.8)	15.30 (388.6)	16.26 (413.0)	2.34 (59.4)	120 (54)	160 (73)
480V	—	3/4 – 20									

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Enclosure Box B NEMA Type 12

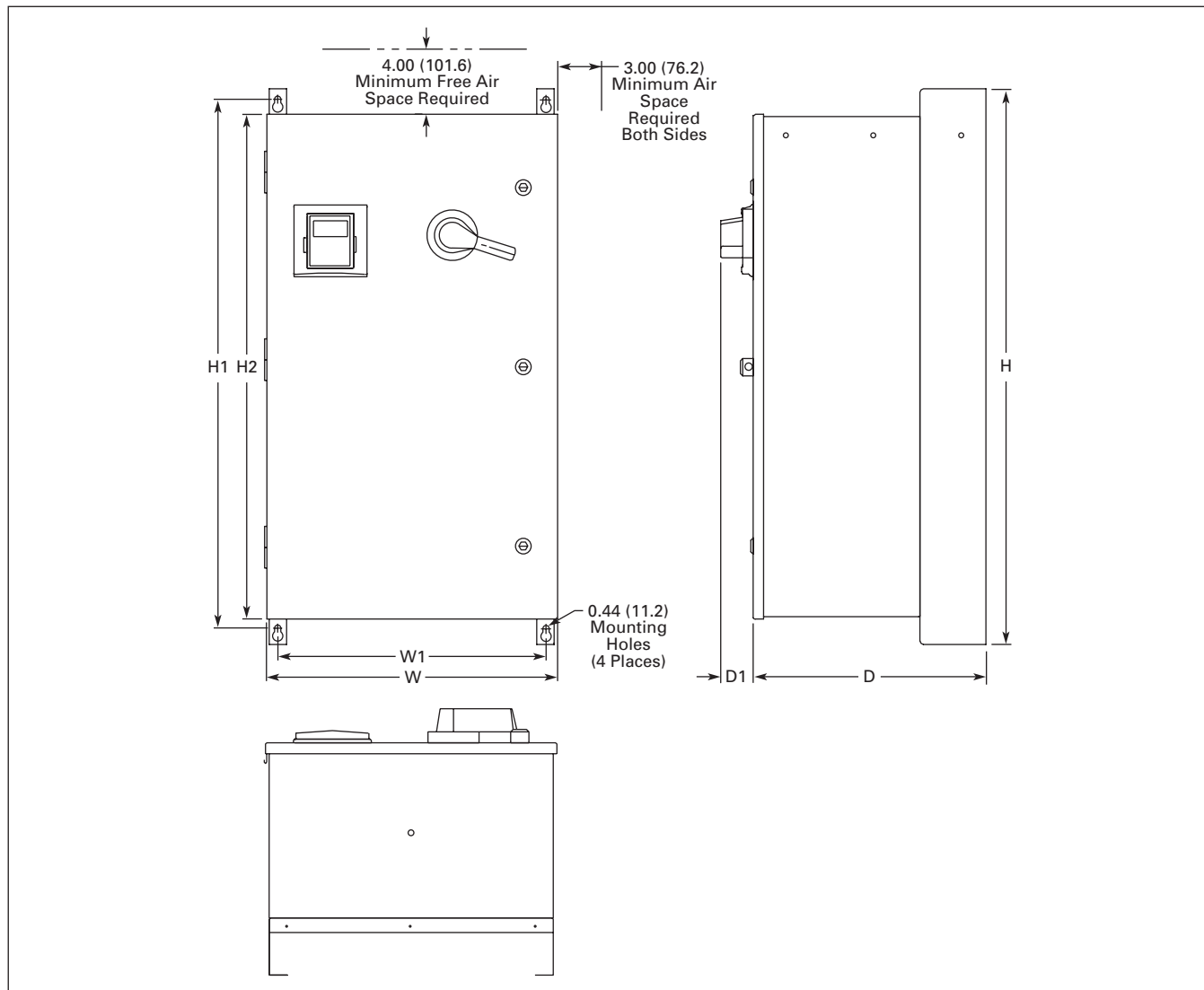


Figure 36. NEMA Type 12 SVX9000 Pump Application Drive Dimensions

Table 126. NEMA Type 12 SVX9000 Pump Application Drive Dimensions

Voltage AC	hp (I <sub>H</sub> )	hp (I <sub>L</sub> )	Approximate Dimensions in Inches (mm)							Approx. Weight Lbs. (kg)	Approx. Ship Weight Lbs. (kg)
			H	H1	H2	W	W1	D	D1		
<b>Three-Phase</b>											
208V	15 – 25	20 – 30	40.00	38.00	36.35	20.92	19.30	16.76	2.34	185	229
230V	15 – 25	20 – 30	(1016.0)	(965.2)	(923.3)	(531.4)	(490.2)	(425.7)	(59.4)	(84)	(104)
480V	30 – 60	40 – 75									
<b>Single-Phase</b>											
230V	—	15 – 20	40.00	38.00	36.35	20.92	19.30	16.76	2.34	185	229
480V	—	25 – 30	(1016.0)	(965.2)	(923.3)	(531.4)	(490.2)	(425.7)	(59.4)	(84)	(104)

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VFD Pump Panels

Enclosure Box C NEMA Type 12

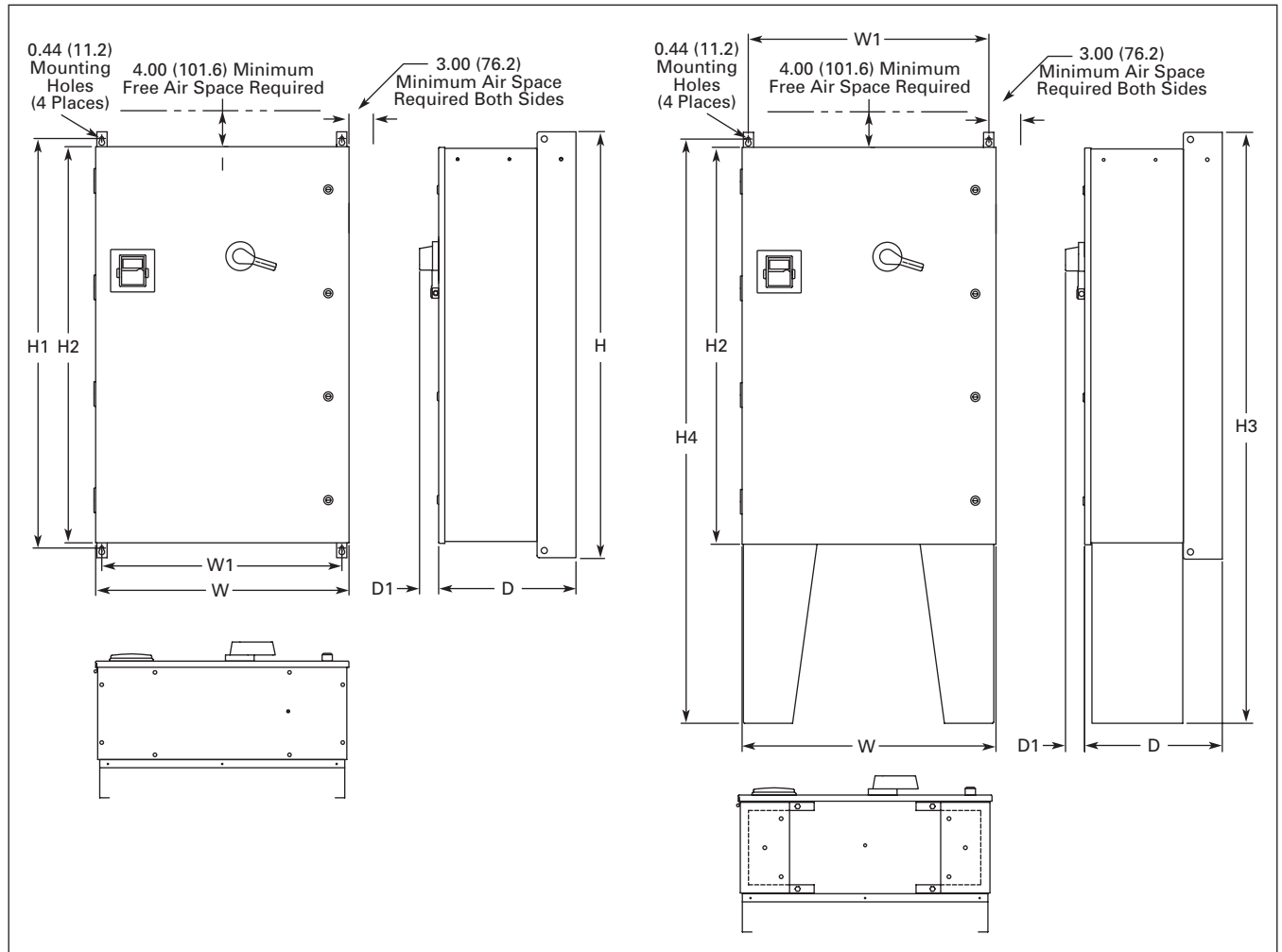


Figure 37. NEMA Type 12 SVX9000 Pump Application Drive Dimensions

Table 127. NEMA Type 12 SVX9000 Pump Application Drive Dimensions

Voltage AC	hp (I <sub>H</sub> )	hp (I <sub>L</sub> )	Approximate Dimensions in Inches (mm)									Approx. Ship Weight Lbs. (kg)
			H	H1	H2	H3	H4	W	W1	D	D1	
<b>Three-Phase</b>												
208V	30 – 50	40 – 60	52.00	50.00	48.35	72.00	71.19	30.92	29.30	16.78	2.34	①
230V	30 – 50	40 – 60	(1320.8)	(1270.0)	(1228.1)	(1828.8)	(1808.2)	(785.4)	(744.2)	(426.2)	(59.4)	
480V	75 – 125	100 – 150										
<b>Single-Phase</b>												
230V	—	25 – 40	52.00	50.00	48.35	72.00	71.19	30.92	29.30	16.78	2.34	①
480V	—	40 – 60	(1320.8)	(1270.0)	(1228.1)	(1828.8)	(1808.2)	(785.4)	(744.2)	(426.2)	(59.4)	

① Consult factory.

VFD Pump Panels

Enclosure Box A NEMA Type 3R

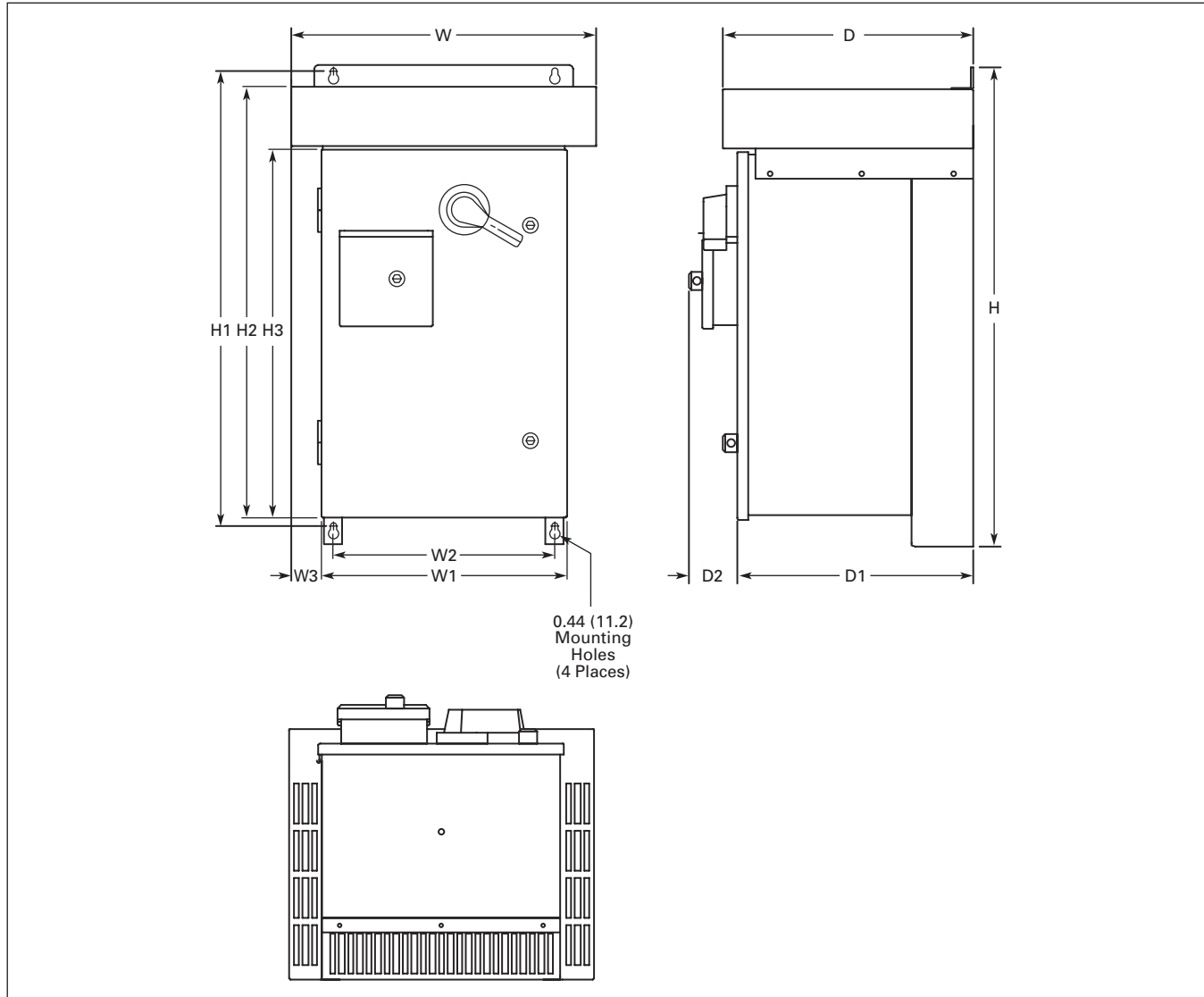


Figure 38. NEMA Type 3R SVX9000 Pump Application Drive Dimensions

Table 128. NEMA Type 3R SVX9000 Pump Application Drive Dimensions

Voltage AC	hp (I <sub>H</sub> )	hp (I <sub>L</sub> )	Approximate Dimensions in Inches (mm)											Approx. Weight Lbs. (kg)	Approx. Ship Weight Lbs. (kg)	
			H	H1	H2	H3	W	W1	W2	W3	D	D1	D2			
<b>Three-Phase</b>																
208V	3/4 – 10	1 – 15	33.00	31.36	29.67	25.35	21.05	16.92	15.30	2.07	17.24	16.26	3.31	170	215	
230V	3/4 – 10	1 – 15	(838.2)	(796.5)	(753.6)	(643.9)	(534.7)	(429.8)	(388.6)	(52.6)	(437.9)	(413.0)	(84.1)	(77)	(98)	
480V	1 – 25	1 – 30														
<b>Single-Phase</b>																
230V	—	3/4 – 10	33.00	31.36	29.67	25.35	21.05	16.92	15.30	2.07	17.24	16.26	3.31	170	215	
480V	—	3/4 – 20	(838.2)	(796.5)	(753.6)	(643.9)	(534.7)	(429.8)	(388.6)	(52.6)	(437.9)	(413.0)	(84.1)	(77)	(98)	



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VFD Pump Panels

Enclosure Box B NEMA Type 3R

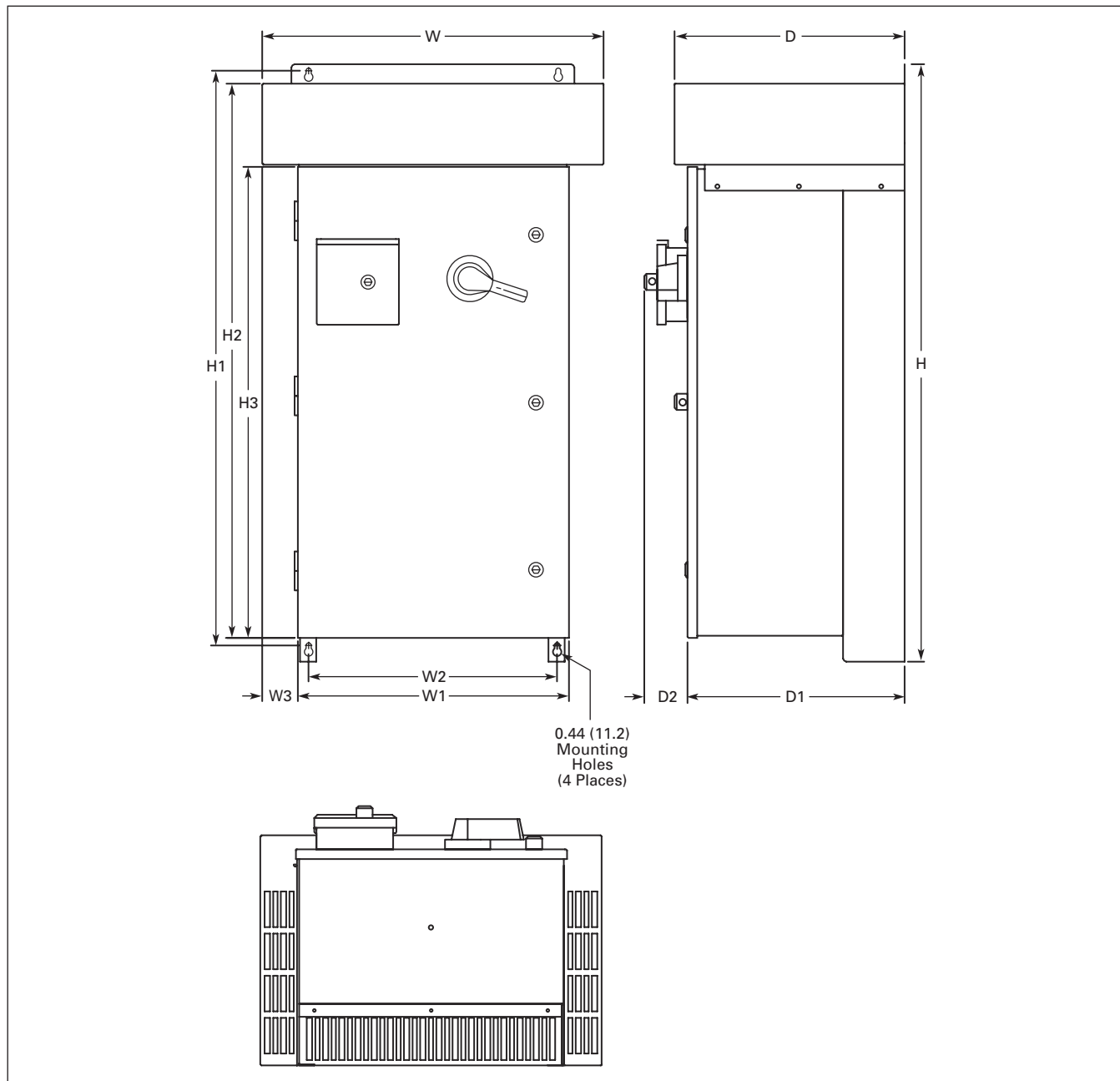


Figure 39. NEMA Type 3R SVX9000 Pump Application Drive Dimensions

Table 129. NEMA Type 3R SVX9000 Pump Application Drive Dimensions

Voltage AC	hp (I <sub>H</sub> )	hp (I <sub>L</sub> )	Approximate Dimensions in Inches (mm)											Approx. Weight Lbs. (kg)	Approx. Ship Weight Lbs. (kg)
			H	H1	H2	H3	W	W1	W2	W3	D	D1	D2		
<b>Three-Phase</b>															
208V	15 – 25	20 – 30	46.09 (1170.7)	44.45 (1129.0)	42.77 (1086.4)	36.35 (923.3)	26.31 (668.3)	20.92 (531.4)	19.30 (490.2)	2.69 (68.3)	17.74 (450.6)	16.76 (425.7)	3.31 (84.1)	235 (107)	290 (132)
230V	15 – 25	20 – 30													
480V	30 – 60	40 – 75													
<b>Single-Phase</b>															
230V	—	15 – 20	46.09 (1170.7)	44.45 (1129.0)	42.77 (1086.4)	36.35 (923.3)	26.31 (668.3)	20.92 (531.4)	19.30 (490.2)	2.69 (68.3)	17.74 (450.6)	16.76 (425.7)	3.31 (84.1)	235 (107)	290 (132)
480V	—	25 – 30	46.09 (1170.7)	44.45 (1129.0)	42.77 (1086.4)	36.35 (923.3)	26.31 (668.3)	20.92 (531.4)	19.30 (490.2)	2.69 (68.3)	17.74 (450.6)	16.76 (425.7)	3.31 (84.1)	235 (107)	290 (132)

VFD Pump Panels

Enclosure Type C NEMA Type 3R

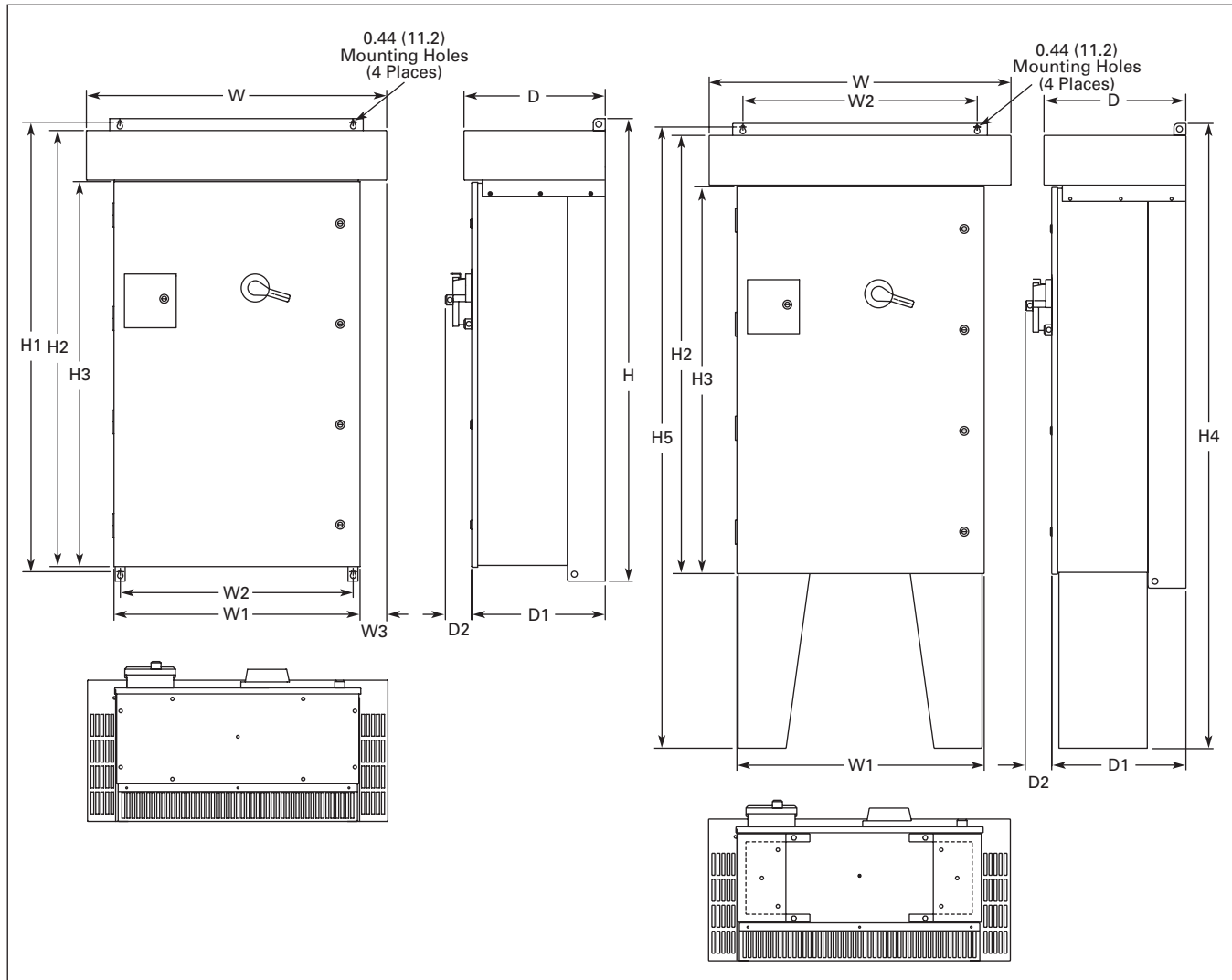


Figure 40. NEMA Type 3R SVX9000 Pump Application Drive Dimensions

Table 130. NEMA Type 3R SVX9000 Pump Application Drive Dimensions

Voltage AC	hp (I <sub>H</sub> )	hp (I <sub>L</sub> )	Approximate Dimensions in Inches (mm)													Approx. Weight Lbs. (kg)
			H	H1	H2	H3	H4	H5	W	W1	W2	W3	D	D1	D2	
<b>Three-Phase</b>																
208	30 – 50	40 – 60	58.09	56.45	54.77	48.35	78.09	77.64	37.73	30.92	29.30	3.34	17.74	16.77	3.31	①
230	30 – 50	40 – 60	(1475.5)	(1433.8)	(1391.2)	(1228.1)	(1983.5)	(1972.1)	(958.3)	(785.4)	(744.2)	(84.8)	(450.6)	(426.0)	(84.1)	
480	75 – 125	100 – 150														
<b>Single-Phase</b>																
230V	—	25 – 40	58.09	56.45	54.77	48.35	78.09	77.64	37.73	30.92	29.30	3.34	17.74	16.77	3.31	①
480V	—	40 – 60	(1475.5)	(1433.8)	(1391.2)	(1228.1)	(1983.5)	(1972.1)	(958.3)	(785.4)	(744.2)	(84.8)	(450.6)	(426.0)	(84.1)	

① Consult factory.

Wiring Diagrams

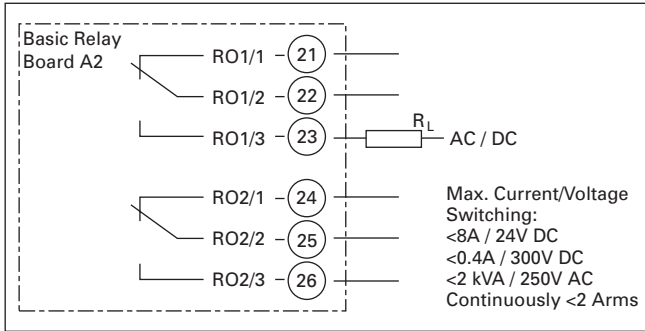


Figure 41. A2 Board Control Wiring

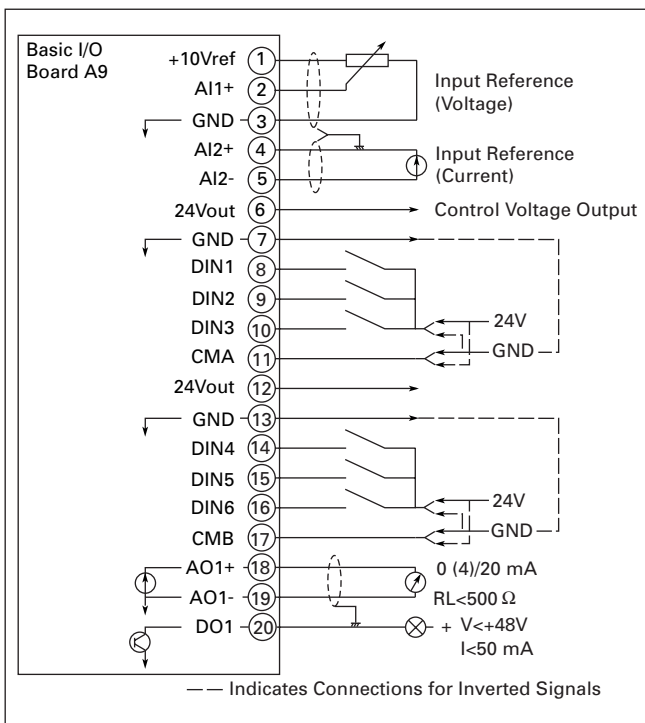


Figure 42. A9 Board Control Wiring

VFD Pump Panels

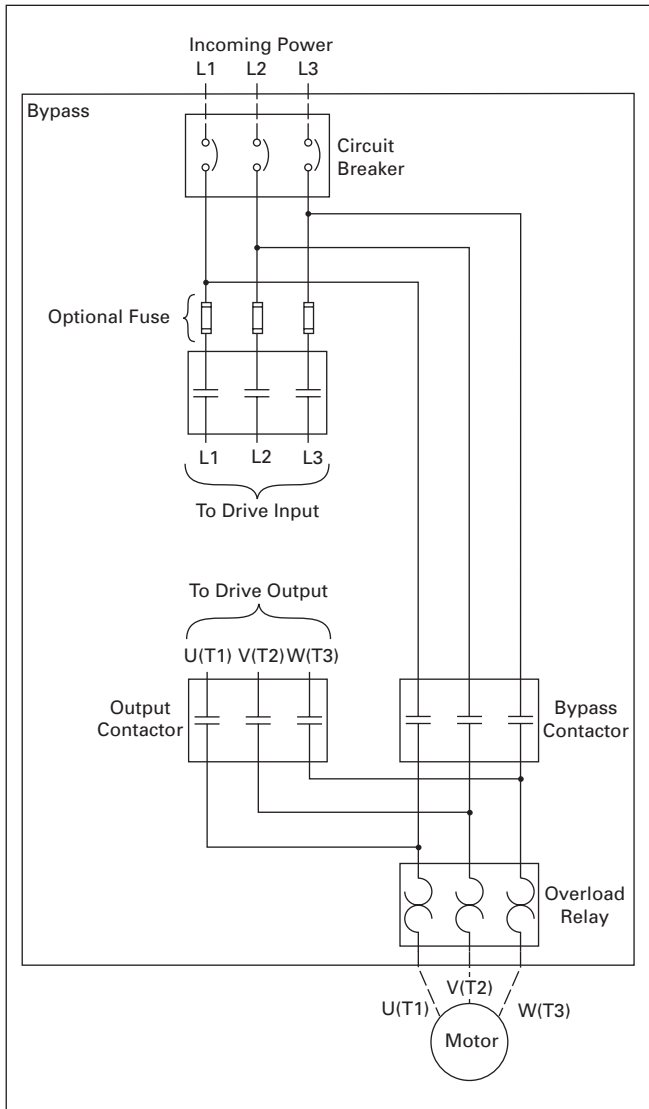


Figure 43. SVX9000 Pump Panel Bypass Power Wiring

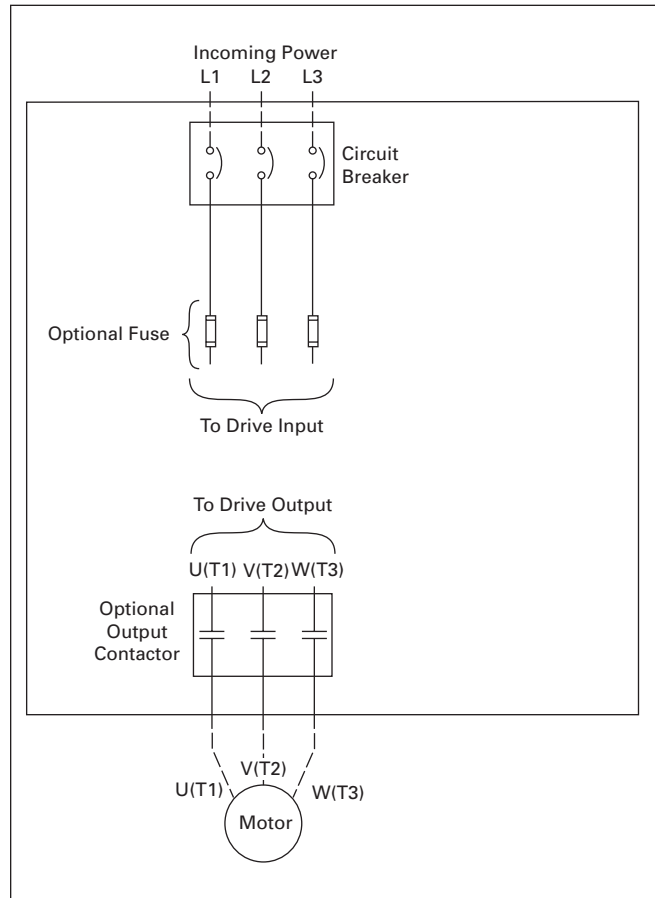


Figure 44. SVX9000 Pump Panel Disconnect Power Wiring

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