

# Adjustable Frequency Drives

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*MVX9000 Microdrives*

## MVX9000



MVX Drive with 3-Contactor Bypass

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## Product Description

Eaton's Cutler-Hammer® MVX9000 is offered in a variety of enclosure options to provide protection for operator and equipment. Enclosure ratings include Type 1, 12, 3R and 4X. (Enclosure ratings are defined in **Tab 1**.)

Model MVX9000 sensorless vector adjustable frequency AC drives are designed to provide adjustable speed control of three-phase motors. These microprocessor-based, sensorless vector drives have standard features that can be programmed to tailor the drive's performance to suit a wide variety of application requirements.

The MVX9000 sensorless vector product line utilizes a 32-bit microprocessor and insulated gate bipolar transistors (IGBTs) which provide quiet motor operation, high motor efficiency and smooth low speed performance. The size and simplicity of the MVX9000 make it ideal for hassle free installations where size is a primary concern.

Models rated at 575 and 480 volts, 3-phase, 50/60 Hz are available in sizes ranging from 1 to 10 hp. Models rated at 240 volts, single- or 3-phase, 50/60 Hz are available in sizes ranging from 1/2 to 7-1/2 hp.

The standard drive includes a digital display, operating and programming keys on a removable keypad. The display provides drive monitoring as well as adjustment and diagnostic information. The keys are utilized for digital adjustment and programming of the drive as well as for operator control. Separate terminal blocks for control and power wiring are provided for customer connections. Other features provided as standard include built-in DC braking, RS-485 serial communications and PID control.

The enclosed microdrives can be configured with standard modification codes including options for various cover controls, two- and three-contactor bypass, communications and traditional disconnect switch offerings.



Type 1/3R with Keypad Cover

## Type 1 Enclosure

The Type 1 version of the MVX9000 sensorless vector product line utilizes a door-mountable (option) keypad. The keypad, with digital display, can be used for operating and programming the MVX9000 drive. Type 1 enclosed MVX9000s offer a standard gasketed cover in a ventilated enclosure.

## Type 12 Enclosure

The Type 12 design uses a seam welded, dust-tight enclosure. These enclosures use the latest advances in cooling technology to offer space saving designs as well as providing ample space for modifications.



*Type 12 Design*

## Type 3R Enclosure

The Type 3R design incorporates the MVX9000 technology into a compact, rainproof enclosure. Type 3R enclosures are available with a door mount keypad option utilizing a steel flange door to protect the keypad.

## Type 4X Enclosure

The Type 4X enclosed MVX utilizes a seam-welded stainless steel enclosure. These enclosures use the latest advances in cooling technology to offer space saving designs as well as providing ample space for modifications.

## Features

- **Drive Keypad Access** — Through-the-door access to STOP/START, speed potentiometer drive keys and programming available as an option on Type 1, 3R and 12
- Available as non-combination or combination with fusible or circuit breaker disconnect
- **Fusible Disconnect** — 30A or 60A with Class CC / J fuses or R fuses
- **Circuit Breaker** — Thermal magnetic circuit breaker with trip rating based on maximum drive FLA
- **Operating Mechanism** — Rotary or flange type with provisions for padlocking in the OFF position. An interlock defeater is built into the operating mechanism to permit the cover to be opened with the disconnect on
- **Cover Control** — Control devices available installed or in field assembly kits
- **Options** — Bus Choke, Bypass/Isolation Contactors, EMI Filter, Line Reactors, DeviceNet Interface and more

The compact design allows the controller to be located adjacent to the motor.

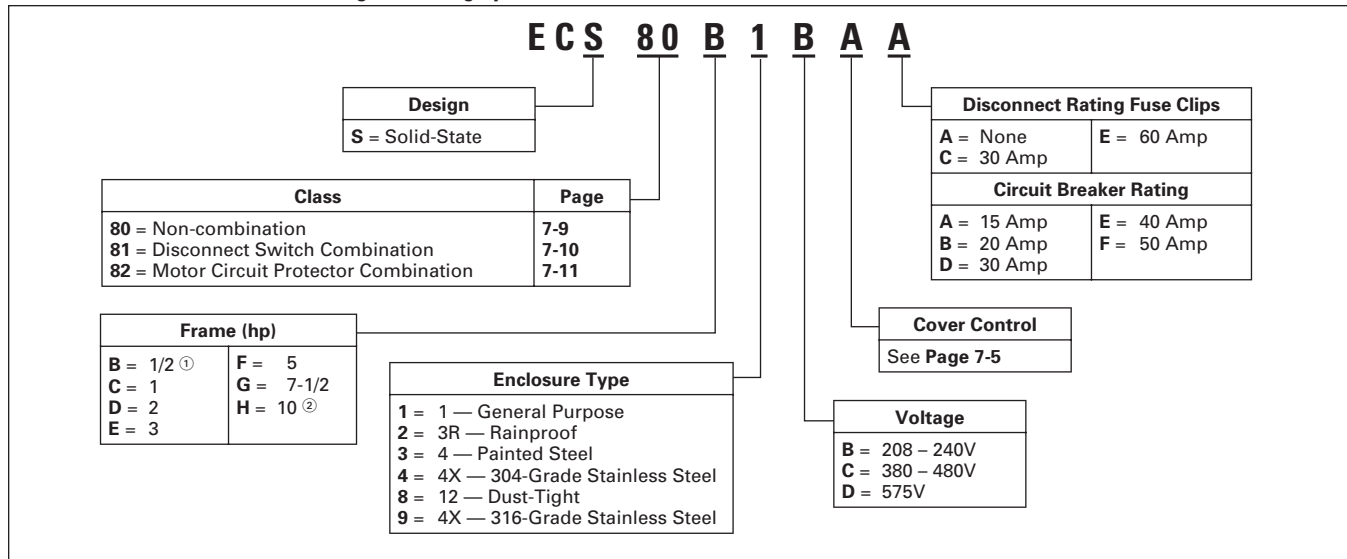
## Standards and Certifications

**Note:** See **Page 18-2** for additional information on Standards and Certifications that apply to all Cutler-Hammer Enclosed Control products.

- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- ABS Type Approval
- CE Mark available (Requires EMI filter)

## Catalog Number Selection

Table 7-1. Enclosed Microdrive Catalog Numbering System



<sup>①</sup> Frame (hp) only available at 208 – 240V.

<sup>②</sup> Frame (hp) only available at 380 – 480V.

## Cover Control

**Table 7-2. MVX Non-reversing Pilot Devices**

Description	Factory Installed	Type 1, 3R Kits for Field Installation	Type 12, 4X Kits for Field Installation
	Position 9 Alpha	Catalog Number	Catalog Number
None START/STOP Pushbuttons with Red RUN Pilot Light with Red RUN/Green OFF Lights	A	—	—
	B	C400T21	C400T1
	C	C400T22 <sup>①</sup>	—
	D	C400T23 <sup>①</sup>	—
ON/OFF Pushbuttons with Red RUN Pilot Light with Red RUN/Green OFF Lights	E	—	C400T2
	F	—	—
	G	—	—
HAND/OFF/AUTO Selector Switch with Red RUN Pilot Light with Red RUN/Green OFF Lights	H	C400T24	C400T12
	J	C400T25 <sup>①</sup>	—
	K	C400T26 <sup>①</sup>	—
Red RUN Pilot Light Green OFF Pilot Light Red RUN/Green OFF Pilot Lights START/STOP Selector Switch with Red RUN Pilot Light with Red RUN/Green OFF Lights	L	C400T10 <sup>①</sup>	C400T9 <sup>①</sup>
	M	C400T11 <sup>①</sup>	C400T10 <sup>①</sup>
	N	C400T12 <sup>①</sup>	C400T11 <sup>①</sup>
	P	—	C400T13
	Q	—	—
	R	—	—
Speed Potentiometer	S	—	—

<sup>①</sup> Add Code Letter from table below to Catalog Number for voltage — kits only. Example: C400T10A.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120V 60 Hz	A	240V 60 Hz	B	480V 60 Hz	C
208V 60 Hz	E	380V 50 Hz	L	600V 60 Hz	D

**Table 7-3. MVX Reversing Pilot Devices**

Description	Factory Installed	Type 1, 3R Kits for Field Installation	Type 12, 4X Kits for Field Installation
	Position 9 Alpha	Catalog Number	Catalog Number
None FORWARD/REVERSE/STOP Pushbuttons with 2 Red Pilot Lights with 2 Red/1 Green Lights	A	—	—
	T	C400T50	C400T6
	U	C400T51 <sup>②</sup>	—
UP/STOP/DOWN Pushbuttons with 2 Red Pilot Lights with 2 Red/1 Green Lights	V	C400T52 <sup>②</sup>	—
	W	—	—
	X	—	—
FORWARD/OFF/REVERSE Selector Switch with 2 Red Pilot Lights with 2 Red/1 Green Lights	Y	—	—
	Z	C400T53	C400T15
	1	C400T54 <sup>②</sup>	—
2 Red Pilot Lights Green OFF Pilot Light 2 Red/1 Green Pilot Lights Speed Potentiometer	2	C400T55 <sup>②</sup>	—
	3	—	<sup>③</sup>
	4	C400T11 <sup>②</sup>	C400T10 <sup>②</sup>
	5	—	—
	S	—	—

<sup>②</sup> Add Code Letter from table below to Catalog Number for voltage — kits only. Example: C400T10A.

Rating	Code Letter	Rating	Code Letter	Rating	Code Letter
120V 60 Hz	A	240V 60 Hz	B	480V 60 Hz	C
208V 60 Hz	E	380V 50 Hz	L	600V 60 Hz	D

<sup>③</sup> Order 2 C400T9 <sup>②</sup>.

## Modification Codes

Table 7-4. A — Auxiliary Contacts (when bypass contactor chosen)

Modification	Catalog Number Suffix	Description
Top Mounted Auxiliary Contacts (Unwired) ①	A13	1NO
	A14	1NC
	A15	1NO-1NC
	A16	2NO
	A17	2NC
	A18	2NO-1NC
	A19	1NO-2NC
	A20	3NO
	A21	3NC
	A22	3NO-1NC
	A23	2NO-2NC
	A24	1NO-3NC
	A25	4NO
A26	4NC	

① For drive only run contacts, see Mods C12 and C14.

Table 7-5. B — Breaker Modifications, Bell Alarm, DC Bus Choke

Modification	Catalog Number Suffix	Description
Breaker	B1	1NO-1NC Auxiliary Contacts
	B2	2NO-2NC Auxiliary Contacts
	B3	Shunt Trip on Circuit Breaker — 48 – 127V AC or DC
Bell Alarm	B16	Bell Alarm for GHC
Bus Choke	B20	240V or 480V DC Bus Choke, Open Core and Coil ②

② A DC bus choke may be used in place of an AC line reactor for line harmonic current reduction and for power source exceeding 500 kVA. The DC bus choke will not provide any protection for line voltage unbalance or transients.

Table 7-6. C — Control Power Transformers, Control Relays, Control Sources, Bypass Contactors

Modification	Catalog Number Suffix	Description	
Control Power Transformer	C1	Standard Size CPT, 120V/60 Hz, 110V/50 Hz Secondary with 2 Primary and 1 Secondary Fuse	
	C42	50 VA Extra Capacity CPT, 120V/60 Hz, 110V/50 Hz Secondary with 2 Primary and 1 Secondary Fuse	
	C3	100 VA Extra Capacity CPT, 120V/60 Hz, 110V/50 Hz Secondary with 2 Primary and 1 Secondary Fuse	
	C5 ③	200 VA Extra Capacity CPT, 120V/60 Hz, 110V/50 Hz Secondary with 2 Primary and 1 Secondary Fuse	
	C7 ③	300 VA Extra Capacity CPT, 120V/60 Hz, 110V/50 Hz Secondary with 2 Primary and 1 Secondary Fuse	
	C8 ③	400 VA Extra Capacity CPT, 120V/60 Hz, 110V/50 Hz Secondary with 2 Primary and 1 Secondary Fuse	
	Control Relay ④	C13	RUN Relay, 24V DC
	Separate Control	C35	Wired for Separate Control
C45		Separate Source Disc (Type 1/12 fusible only)	
Customer Supplied	C36	Customer Supplied Components to Be Installed	
	C37	Customer Supplied Wiring Diagram to Use	
	Bypass Contactors ⑤	C46/J1	Isolation Contactor
C46/J2		Output Contactor	
C46/J3		Bypass Contactor ⑤	
C46/J4		Isolation/Output/Bypass Contactors ⑤	
C46/J5		3 Contactor Bypass Package — Includes CPT, Pilot Lights, Selector Switch, Auxiliary Contacts and Control Relay ⑤	

③ Requires oversize enclosure.

④ Provides additional contacts for drive run indication.

⑤ Includes bimetallic overload.

Table 7-7. D — Device Labels, DIN Rail

Modification	Catalog Number Suffix	Description
Device Labels	D1	Device Labels — Specify
DIN Rail	D8	DIN Rail Installed

Table 7-8. E — Enclosure Modifications, Elapsed Time Meter

Modification	Catalog Number Suffix	Description
Enclosure	E3	Oversized Enclosure
Elapsed Time Meter	E9	Type 1, 3R, 12, 4X

**Table 7-9. F — Fuse Clips, Fuse Blocks, EMI Filter**

Modification	Catalog Number Suffix	Description
Fuse Blocks	<b>F4</b>	Power Fuses Included — Order by Description
	<b>F5</b>	30A Control Circuit Fuseholder (KTK) Mounted on Panel (unwired) Fuse Not Supplied
	<b>F6</b>	30A Control Circuit Fuseholder Mounted on Panel (unwired), 5A KTK Fuse Supplied
EMI Filter <sup>②</sup>	<b>F22</b>	240V or 480V 3-Phase <sup>①</sup>
	<b>F23</b>	240V 1-Phase <sup>①</sup>

- ① The EMI filter is not necessary to meet the CE mark requirements for EMC when installing the MVX in an EC country.
- ② Requires oversized enclosure.

**Table 7-10. H — Space Heater, Heater Packs Installed**

Modification	Catalog Number Suffix	Description
Space Heater	<b>H1</b>	Space Heater and Thermostat
	<b>H2</b>	Space Heater and NC Interlock (100 Watt)
Install Heater Packs (Freedom Series) <sup>③</sup>	<b>H5</b>	<b>Class 20</b>
		/D1 H2001B-3
		/D2 H2002B-3
		/D3 H2003B-3
		/D4 H2004B-3
		/D5 H2005B-3
		/D6 H2006B-3
		/D7 H2007B-3
		/D8 H2008B-3
		/D9 H2009B-3
		/D10 H2010B-3
		<b>Class 10</b>
		/D25 H2101B-3
		/D26 H2102B-3
/D27 H2103B-3		
/D28 H2104B-3		
/D29 H2105B-3		
/D30 H2106B-3		
/D31 H2107B-3		
/D32 H2108B-3		
/D33 H2109B-3		
/D34 H2110B-3		
/D35 H2111B-3		
/D36 H2112B-3		
/D37 H2113B-3		
/D38 H2114B-3		

- ③ Use only when C46 or R7 modifications are required.

**Table 7-11. K — Keypad**

Modification	Catalog Number Suffix	Description
Keypad	<b>K1</b>	Door-Mounted AFD Keypad (Type 1 and 12)
	<b>K2</b>	Door-Mounted AFD Keypad (Type 3R)
	<b>K3</b>	AFD Copy Keypad (mounted on drive)
	<b>K4</b>	Door-Mounted AFD Copy Keypad (Type 1 and 12)
	<b>K5</b>	Door-Mounted AFD Copy Keypad (Type 3R)

**Table 7-12. L — Lightning Arrestor, Carton Label, Line Reactor, Load Reactor**

Modification	Catalog Number Suffix	Description
Lightning Arrestor <sup>④</sup>	<b>L1</b>	Lightning Arrestor
Label	<b>L10</b>	Carton Label — Customer Marking — Specify
Line Reactor (Type 1/12 design limited to either line or load reactor, not both)	<b>L12</b>	240V or 480V 3% Input Line Reactor, 3-Phase, Open Core and Coil <sup>⑤</sup>
	<b>L13</b>	240V 3% Input Line Reactor, 1-Phase, Open Core and Coil <sup>⑤</sup>
	<b>L14</b>	240V or 480V 5% Input Line Reactor, 3-Phase, Open Core and Coil <sup>⑤</sup>
	<b>L15</b>	240V 5% Input Line Reactor, 1-Phase, Open Core and Coil <sup>⑤</sup>
	<b>L16</b>	Line Reactor by Description
	Output Line Filter (Type 1/12 design limited to either line or load reactor, not both)	<b>L17</b>
<b>L18</b>		Load Reactor by Description

- ④ Requires oversized enclosure.
- ⑤ If the power source exceeds 500 kVA, 3% line unbalance, or if transient voltages from power factor capacitor switching events are present, an input line reactor must be used. The input line reactor will also reduce line current harmonics.
- ⑥ The output line dv/dt filter is required when the distance from the drive to the motor exceeds 33 feet (10.1m). The total cable run should not exceed 165 feet (50.3m).

**Table 7-13. N — Nameplates**

Modification	Catalog Number Suffix	Description
Nameplates	<b>N1</b>	Nameplate on Enclosure — Order Wording to Be Inscribed

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Table 7-14. P — Pilot Lights, Pushbuttons, Phase Loss Relay, Phase Reversal Relay

Modification	Catalog Number Suffix	Description
Push-to-Test Pilot Lights	<b>P1</b>	Push-to-Test Pilot Light (Red RUN)
	<b>P2</b>	Push-to-Test Pilot Light (Green OFF)
	<b>P3</b>	Combination of <b>P1</b> and <b>P2</b> Above
	<b>P4</b>	Push-to-Test Pilot Light (Amber RUN)
	<b>P54</b>	Push-to-Test Pilot Light — Red BYPASS
	<b>P55</b>	Push-to-Test Pilot Light — Amber INVERTER ENABLE
	<b>P56</b>	Push-to-Test Pilot Light — Red INVERTER RUNNING
	<b>P57</b>	Push-to-Test Pilot Light — Green STOPPED
Pushbuttons	<b>P5</b>	EMERGENCY STOP — Mushroom Head
	<b>P7</b>	START/STOP
	<b>P8</b>	ON/OFF
	<b>P9</b>	START
	<b>P10</b>	ON
	<b>P11</b>	OFF
	<b>P12</b>	FORWARD/REVERSE/STOP
	<b>P52</b>	UP/STOP/DOWN
Pilot Lights	<b>P18</b>	Pushbutton with Legend Plate (Order by Description)
	<b>P19</b>	Amber Light "POWER AVAILABLE" Wired to Load Side of 2 Fuses or Circuit Breaker
	<b>P20</b>	Pilot Light (Amber) Wired to Coil
	<b>P23</b>	Pilot Light — Red RUN
	<b>P24</b>	Pilot Light — Red ON
	<b>P25</b>	Pilot Light — Green OFF
	<b>P58</b>	Pilot Light — Red BYPASS
	<b>P59</b>	Pilot Light — Amber INVERTER ENABLE
	<b>P60</b>	Pilot Light — Red INVERTER RUNNING
	<b>P61</b>	Pilot Light — Green STOP
<b>P26</b>	Pilot Light (Order by Description)	
Illuminated Pushbutton	<b>P27</b>	Illuminated Pushbutton (Order by Description)
Phase Loss Relay	<b>P28</b>	Phase Loss Relay
Phase Reversal Relay	<b>P30</b>	Phase Reversal Relay
Phase Unbalance Relay	<b>P32</b>	Phase Unbalance Relay
Phase Monitoring Relay	<b>P34</b>	Phase Monitoring Relay

Table 7-15. R — Relays, Overload Relay Modifications, DeviceNet™ Interface Mode

Modification	Catalog Number Suffix	Description
Relay	<b>R2</b>	Overvoltage Relay
	<b>R7</b>	Overload Relay (Order by Description)
Relay Modifications	<b>R45</b>	Auto Reset Only on Overload Relay
DeviceNet Interface Module	<b>R69</b>	DeviceNet Communication Interface

Table 7-16. S — Selector Switches, Suppressor, Surge Capacitor, Speed Pot

Modification	Catalog Number Suffix	Description
Selector Switches	<b>S3</b>	HAND-OFF-AUTO Selector Switch
	<b>S10</b>	OFF-AUTO Selector Switch
	<b>S11</b>	START-STOP Selector Switch
	<b>S12</b>	ON-OFF Selector Switch
	<b>S16</b>	FORWARD-REVERSE Selector Switch
	<b>S38</b>	INVERTER-OFF-BYPASS Selector Switch
	<b>S40</b>	Selector Switch (Order by Description)
Surge Capacitor	<b>S37</b>	Surge Capacitor Wired to Disconnect Line Side
Speed Pot	<b>S39</b>	Speed Potentiometer

Table 7-17. T — Timers, Terminal Blocks, Terminal Points, Ring Lug

Modification	Catalog Number Suffix	Description
Timers	<b>T3</b>	Pneumatic Timer Mounted in Enclosure, Unwired, 180 Seconds Maximum
	<b>T4</b>	Pneumatic Timer (Order by Description)
	<b>T5</b>	Solid-State Timer (Order by Description)
Terminal Blocks	<b>T9</b>	With 1 Single-Circuit Terminal Block, Unwired
	<b>T10</b>	With 2 Single-Circuit Terminal Blocks, Unwired
Terminal Points	<b>T11</b>	With 6 Terminal Points, Unwired
	<b>T12</b>	With 12 Terminal Points, Unwired
	<b>T13</b>	With 16 Terminal Points, Unwired
	<b>T14</b>	Terminal Point per Customer Specification, Unwired
	<b>T15</b>	Terminal Point per Customer Specification, Wired
Ring Lug	<b>T16</b>	Ring Lug Connections on Power Wires
	<b>T17</b>	Ring Lug Connections on Control Wires

Table 7-18. U — Undervoltage Relay

Modification	Catalog Number Suffix	Description
Undervoltage Relay	<b>U2</b>	Undervoltage Relay, Non-adjustable
Under and Over Relay	<b>U7</b>	Under and Overvoltage Relay

Table 7-19. W — Wiremarkers

Modification	Catalog Number Suffix	Description
Wiremarkers	<b>W7</b>	Wiremarkers

## Product Selection

Table 7-20. Class ECS80 — Non-combination MX9000 Drives

Volts	Input Amp. Single-/ 3-Phase Rating	Continuous Output Amp. Rating	Type 1 General Purpose	Type 3R Rainproof	Type 4X ① Watertight Stainless Steel	Type 12 Industrial Dust-Tight	Component Microdrive (Open)
			Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
<b>1/2 hp</b>							
208 – 240	5.8/3.4	2.5	ECS80B1BAA	ECS80B2BAA	ECS80B4BAA	ECS80B8BAA	MVXF50A0-2
<b>1 hp</b>							
208 – 240	9/5.2	5	ECS80C1BAA	ECS80C2BAA	ECS80C4BAA	ECS80C8BAA	MVX001A0-2
380 – 480	—/3.3	3	ECS80C1CAA	ECS80C2CAA	ECS80C4CAA	ECS80C8CAA	MVX001A0-4
500 – 600	—/2.4	1.7	ECS80C1DAA	ECS80C2DAA	ECS80C4DAA	ECS80C8DAA	MVX001A0-5
<b>2 hp</b>							
208 – 240	16/9.3	7	ECS80D1BAA	ECS80D2BAA	ECS80D4BAA	ECS80D8BAA	MVX002A0-2
380 – 480	—/5	4	ECS80D1CAA	ECS80D2CAA	ECS80D4CAA	ECS80D8CAA	MVX002A0-4
500 – 600	—/4.2	3	ECS80D1DAA	ECS80D2DAA	ECS80D4DAA	ECS80D8DAA	MVX002A0-5
<b>3 hp</b>							
208 – 240	22.5/13	10	ECS80E1BAA	ECS80E2BAA	ECS80E4BAA	ECS80E8BAA	MVX003A0-2
380 – 480	—/7	5	ECS80E1CAA	ECS80E2CAA	ECS80E4CAA	ECS80E8CAA	MVX003A0-4
500 – 600	—/5.9	4.2	ECS80E1DAA	ECS80E2DAA	ECS80E4DAA	ECS80E8DAA	MVX003A0-5
<b>5 hp</b>							
208 – 240	—/20	17	ECS80F1BAA	ECS80F2BAA	ECS80F4BAA	ECS80F8BAA	MVX005A0-2
380 – 480	—/11	8.2	ECS80F1CAA	ECS80F2CAA	ECS80F4CAA	ECS80F8CAA	MVX005A0-4
500 – 600	—/7.0	6.6	ECS80F1DAA	ECS80F2DAA	ECS80F4DAA	ECS80F8DAA	MVX005A0-5
<b>7-1/2 hp</b>							
208 – 240	—/31	25	ECS80G1BAA	ECS80G2BAA	ECS80G4BAA	ECS80G8BAA	MVX007A0-2
380 – 480	—/17	13	ECS80G1CAA	ECS80G2CAA	ECS80G4CAA	ECS80G8CAA	MVX007A0-4
500 – 600	—/10.5	9.9	ECS80G1DAA	ECS80G2DAA	ECS80G4DAA	ECS80G8DAA	MVX007A0-5
<b>10 hp</b>							
380 – 480	—/21	18	ECS80H1CAA	ECS80H2CAA	ECS80H4CAA	ECS80H8CAA	MVX010A0-4
500 – 600	—/12.9	12.2	ECS80H1DAA	ECS80H2DAA	ECS80H4DAA	ECS80H8DAA	MVX010A0-5

① These are the Catalog Numbers for Type 4X 304-Grade Stainless Steel, as indicated by the seventh digit **4**. Example: ECS80B**4**BAA-C1. To order Type 4X 316-Grade Stainless Steel, change that digit to **9**. To order Type 4 Painted Steel, change that digit to **3**. To order Nonmetallic, change that digit to **5**. For details on these Alternate Enclosures, see **Tab 14**.

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Table 7-21. Class ECS81 — Combination Disconnect Switch MVX9000 Drives

Volts	Input Amp. Single-/3-Phase Rating	Continuous Output Amp. Rating	Fuse Clips	Type 1 General Purpose	Type 3R Rainproof	Type 4X ① Watertight Stainless Steel	Type 12 Industrial Dust-Tight	Component Microdrive (Open)
				Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
<b>1/2 hp</b>								
208 – 240	5.8/3.4	2.6	30A	ECS81B1BAC	ECS81B2BAC	ECS81B4BAC	ECS81B8BAC	MVXF50A0-2
<b>1 hp</b>								
208 – 240	9/5.2	4	30A	ECS81C1BAC	ECS81C2BAC	ECS81C4BAC	ECS81C8BAC	MVX001A0-2
380 – 480	—/3.3	2.5	30A	ECS81C1CAC	ECS81C2CAC	ECS81C4CAC	ECS81C8CAC	MVX001A0-4
500 – 600	—/2.4	1.7	30A	ECS81C1DAC	ECS81C2DAC	ECS81C4DAC	ECS81C8DAC	MVX001A0-5
<b>2 hp</b>								
208 – 240	16/9.3	7.1	30A	ECS81D1BAC	ECS81D2BAC	ECS81D4BAC	ECS81D8BAC	MVX002A0-2
380 – 480	—/5	3.8	30A	ECS81D1CAC	ECS81D2CAC	ECS81D4CAC	ECS81D8CAC	MVX002A0-4
500 – 600	—/4.2	3	30A	ECS81D1DAC	ECS81D2DAC	ECS81D4DAC	ECS81D8DAC	MVX002A0-5
<b>3 hp</b>								
208 – 240	22.5/13	10	30A	ECS81E1BAC	ECS81E2BAC	ECS81E4BAC	ECS81E8BAC	MVX003A0-2
380 – 480	—/7	5.5	30A	ECS81E1CAC	ECS81E2CAC	ECS81E4CAC	ECS81E8CAC	MVX003A0-4
500 – 600	—/5.9	4.2	30A	ECS81E1DAC	ECS81E2DAC	ECS81E4DAC	ECS81E8DAC	MVX003A0-5
<b>5 hp</b>								
208 – 240	—/20	15.9	30A	ECS81F1BAC	ECS81F2BAC	ECS81F4BAC	ECS81F8BAC	MVX005A0-2
380 – 480	—/11	8.6	30A	ECS81F1CAC	ECS81F2CAC	ECS81F4CAC	ECS81F8CAC	MVX005A0-4
500 – 600	—/7.0	6.6	30A	ECS81F1DAC	ECS81F2DAC	ECS81F4DAC	ECS81F8DAC	MVX005A0-5
<b>7-1/2 hp</b>								
208 – 240	—/31	24	60A	ECS81G1BAE	ECS81G2BAE	ECS81G4BAE	ECS81G8BAE	MVX007A0-2
380 – 480	—/17	13	30A	ECS81G1CAC	ECS81G2CAC	ECS81G4CAC	ECS81G8CAC	MVX007A0-4
500 – 600	—/10.5	9.9	30A	ECS81G1DAC	ECS81G2DAC	ECS81G4DAC	ECS81G8DAC	MVX007A0-5
<b>10 hp</b>								
380 – 480	—/21	16	30A	ECS81H1CAC	ECS81H2CAC	ECS81H4CAC	ECS81H8CAC	MVX010A0-4
500 – 600	—/12.9	12.2	30A	ECS81H1DAC	ECS81H2DAC	ECS81H4DAC	ECS81H8DAC	MVX010A0-5

① These are the Catalog Numbers for Type 4X 304-Grade Stainless Steel, as indicated by the seventh digit 4. Example: ECS81B4BAC-C1. To order Type 4X 316-Grade Stainless Steel, change that digit to 9. To order Type 4 Painted Steel, change that digit to 3. To order Nonmetallic, change that digit to 5. For details on these Alternate Enclosures, see Tab 14.



Type 3R Combination HMCPE MVX Drive



Type 1 MXV Drive with Disconnect Switch and Bypass

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**MVX9000**

**Table 7-22. Class ECS82 — Combination HMCP Circuit Breaker MVX9000 Drives**

Volts	Input Amp. Single-/3-Phase Rating	Continuous Output Amp. Rating	HMCP Rating Amps.	Type 1 General Purpose	Type 3R Rainproof	Type 4X <sup>①</sup> Watertight Stainless Steel	Type 12 Industrial Dust-Tight	Component Microdrive (Open)
				Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
<b>1/2 hp</b>								
208 – 240	5.8/3.4	2.6	15	ECS82B1BAA	ECS82B2BAA	ECS82B4BAA	ECS82B8BAA	MVXF50A0-2
<b>1 hp</b>								
208 – 240	9/5.2	4	15	ECS82C1BAA	ECS82C2BAA	ECS82C4BAA	ECS82C8BAA	MVX001A0-2
380 – 480	—/3.3	2.5	15	ECS82C1CAA	ECS82C2CAA	ECS82C4CAA	ECS82C8CAA	MVX001A0-4
500 – 600	—/2.4	1.7	15	ECS82C1DAA	ECS82C2DAA	ECS82C4DAA	ECS82C8DAA	MVX001A0-5
<b>2 hp</b>								
208 – 240	16/9.3	7.1	15	ECS82D1BAA	ECS82D2BAA	ECS82D4BAA	ECS82D8BAA	MVX002A0-2
380 – 480	—/5	3.8	15	ECS82D1CAA	ECS82D2CAA	ECS82D4CAA	ECS82D8CAA	MVX002A0-4
500 – 600	—/4.2	3	15	ECS82D1DAA	ECS82D2DAA	ECS82D4DAA	ECS82D8DAA	MVX002A0-5
<b>3 hp</b>								
208 – 240	22.5/13	10	30	ECS82E1BAD	ECS82E2BAD	ECS82E4BAD	ECS82E8BAD	MVX003A0-2
380 – 480	—/7	5.5	15	ECS82E1CAA	ECS82E2CAA	ECS82E4CAA	ECS82E8CAA	MVX003A0-4
500 – 600	—/5.9	4.2	15	ECS82E1DAA	ECS82E2DAA	ECS82E4DAA	ECS82E8DAA	MVX003A0-5
<b>5 hp</b>								
208 – 240	—/20	15.9	30	ECS82F1BAD	ECS82F2BAD	ECS82F4BAD	ECS82F8BAD	MVX005A0-2
380 – 480	—/11	8.6	15	ECS82F1CAA	ECS82F2CAA	ECS82F4CAA	ECS82F8CAA	MVX005A0-4
500 – 600	—/7.0	6.6	15	ECS82F1DAA	ECS82F2DAA	ECS82F4DAA	ECS82F8DAA	MVX005A0-5
<b>7-1/2 hp</b>								
208 – 240	—/31	24	50	ECS82G1BAF	ECS82G2BAF	ECS82G4BAF	ECS82G8BAF	MVX007A0-2
380 – 480	—/17	13	30	ECS82G1CAD	ECS82G2CAD	ECS82G4CAD	ECS82G8CAD	MVX007A0-4
500 – 600	—/10.5	9.9	15	ECS82G1DAA	ECS82G2DAA	ECS82G4DAA	ECS82G8DAA	MVX007A0-5
<b>10 hp</b>								
380 – 480	—/21	16	30	ECS82H1CAD	ECS82H2CAD	ECS82H4CAD	ECS82H8CAD	MVX010A0-4
500 – 600	—/12.9	12.2	30	ECS82H1DAD	ECS82H2DAD	ECS82H4DAD	ECS82H8DAD	MVX010A0-5

① These are the Catalog Numbers for Type 4X 304-Grade Stainless Steel, as indicated by the seventh digit **4**. Example: ECS82B4BAA-C1. To order Type 4X 316-Grade Stainless Steel, change that digit to **9**. To order Type 4 Painted Steel, change that digit to **3**. To order Nonmetallic, change that digit to **5**. For details on these Alternate Enclosures, see **Tab 14**.



**Type 3R Combination HMCP MVX Drive**



**Type 1 MXV Drive with Disconnect Switch and Bypass**

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Wiring Diagrams

Wiring Diagrams

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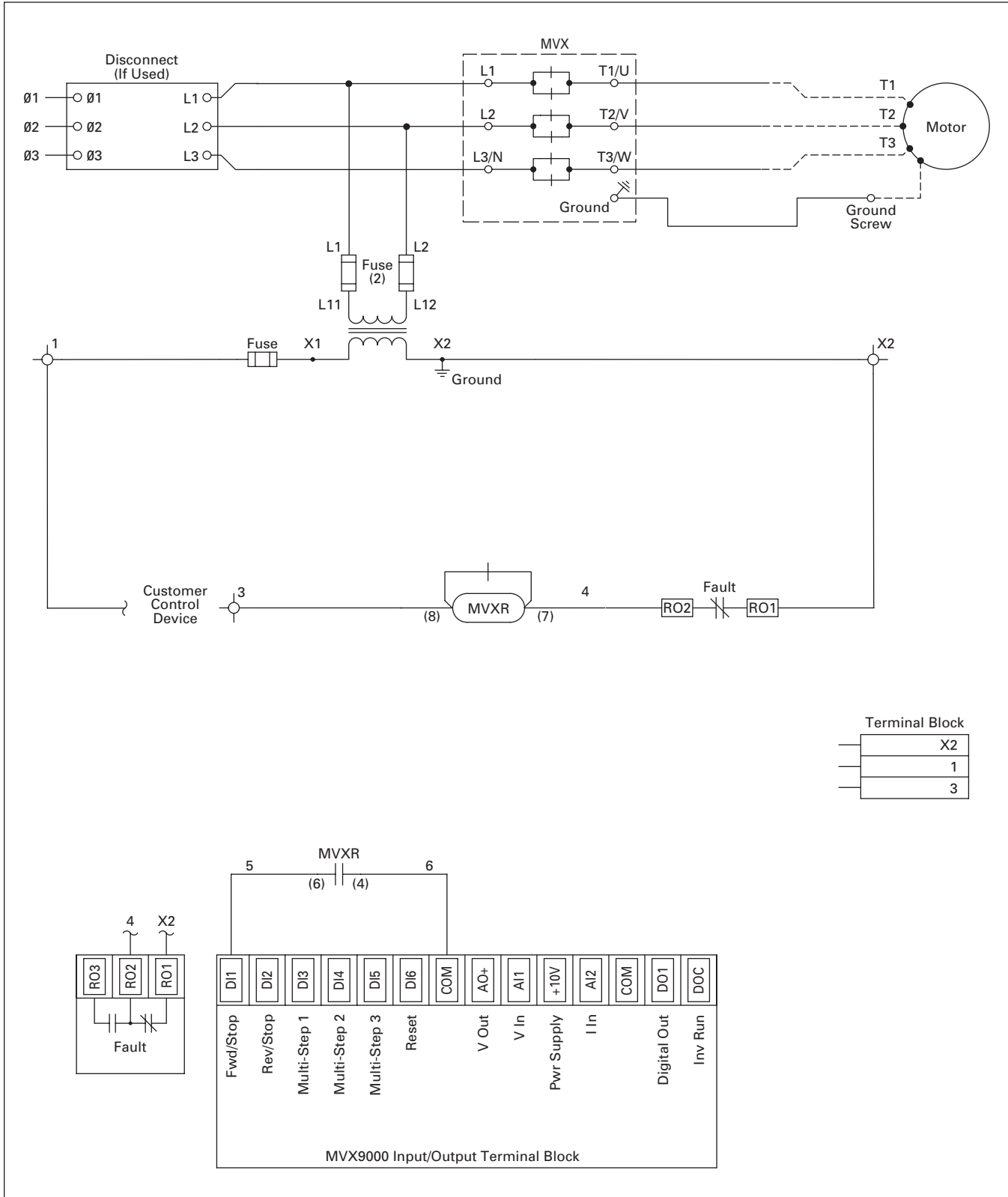


Figure 7-1. MVX9000 Wiring Diagram