SmartDRIVE® ACH580 Variable Speed Drives with E-Clipse Bypass | Submittal Data

Submittal No: 301-3002 | **Effective:** July 10, 2024 | **Supersedes:** NEW

JOB: _____ **REPRESENTATIVE:** _____

ENGINEER: _____ **CONTRACTOR:** _____

All Taco SmartDrives ACH580 are ABB ACH580 variable frequency drives.

MOTOR DESIGN DATA

ITEM NO. _____ **HP** _____ **VOLTAGE / PHASE / CYCLE (HZ)** _____

DRIVE OPTIONS

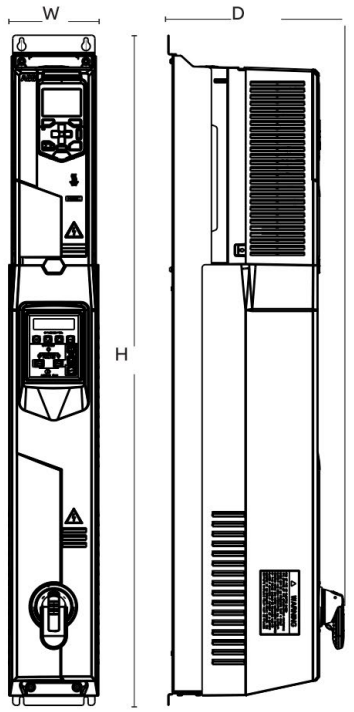
Enclosure	☐ NEMA Type 1 / IP21 - Side Bypass Panel ☐ NEMA Type 12 / IP55 - Side Bypass Panel ☐ NEMA Type 1 / IP21 - Vertical Bypass Panel
Electrical Configuration	☐ 2 Contactor Bypass - Mechanical Disconnect ☐ 2 Contactor Bypass - Mechanical Disconnect w/ Service Switch ☐ 2 Contactor Bypass - Circuit Breaker ☐ 2 Contactor Bypass - Circuit Breaker w/ Service Switch
I/O Modules	☐ External 24V DC/AC and digital IO extension (2xRO and 1xDO) ☐ BACnet/IP ☐ Modbus TCP ☐ LonWorks ☐ Ethernet/IP

TECHNICAL SPECIFICATIONS

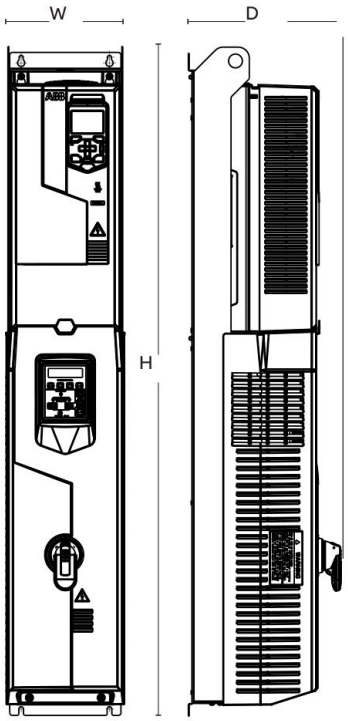
PRODUCT COMPLIANCE			
ACH580-VxR/BxR	UL508A		
SUPPLY CONNECTION			
Input Voltage (U_1)	208/240V, 480V, 600V		
Input Voltage Tolerance	+10% / -15%		
Phase	3-phase		
Frequency	48 to 63 Hz		
Line Limitations	Max ±3% of nominal phase to phase input voltage		
Power Factor (cos φ) at nominal load	0.98		
Efficiency at Rated Power	98.0%		
Power Loss	Approximately 2% of rated power		
MOTOR CONNECTION			
Supported Motor Control	Scalar and Vector		
Supported Motor Types	Asynchronous motor		
Voltage	3-phase, from 0 to supply voltage		
Frequency	0 to 500 Hz		
Short Term Overload Capacity Variable Torque	110% for 1 min/10min		
Peak Overload Capacity Variable Torque	1.35 for 2 second (2 sec / 10 min)		
Switching Frequency	2, 4, 8 or 12 kHz Automatic fold back in case of overload		
Acceleration/Deceleration Time	0 to 1800 s		
Short Circuit Current Rating (SCCR)	**240V**	**480V**	**600V**
-VCR, -BCR	100 kA	100 kA	10 kA
-VDR*, -BDR* * External fuses are required for 100 kA rating	100 kA	100 kA	100 kA
INPUTS AND OUTPUTS (DRIVE)			
2 Analog Inputs	Selection of Current/Voltage input mode is user programmable.		
Voltage Reference	0 (2) to 10 V, R_{in} > 200 kΩ		
Current Reference	0 (4) to 20 mA, R_{in} = 100 Ω		
Potentiometer Reference Value	10 V ±1% max. 20 mA		

INPUTS AND OUTPUTS (DRIVE) CONTINUED	
2 Analog Outputs	AO1 is user programmable for current or voltage. AO2 current
Voltage Reference	0 to 10 V, R_{load}: > 100 kΩ
Current Reference	0 to 20 mA, R_{load}: < 500 Ω
Applicable Potentiometer	1 kΩ to 10 kΩ
Internal Auxiliary Voltage	24 V DC ±10%, max. 250 mA
Accuracy	+/- 1% full scale range at 25°C (77°F)
Output Updating Time	2 ms
6 Digital Inputs	12 to 24 V DC, 10 to 24 V AC, Connectivity of PTC sensors supported by a single digital input. PNP or NPN connection (5 DIs with NPN connection). Programmable
Input Updating Time	2 ms
3 Relay Outputs	Maximum switching voltage 250 V AC/30 V DC. Maximum continuous current 2 A rms Programmable, Form C
Contact Material	Silver Tin Oxide ($AgSnO_2$)
PTC, PT100 and PT1000	Any of the analog inputs, or digital input 6, are configurable for PTC with up to 6 sensors.
Adjustable Filters on Analog Inputs and Outputs	
All Control Inputs Isolated from Ground and Power	
OPERATION	
Air Temperature	-15 to +50 °C (5 to 122 °F): No frost allowed. Output derated above +40 °C (104 °F)
Installation Site Altitude	0 to 1000 m (3281 ft) above sea level Output derated above 1000 m (3281 ft)
Relative Humidity	5 to 95% No condensation allowed. Maximum relative humidity is 60% in the presence of corrosive gasses
Atmospheric Pressure	70 to 106 kPa (10.2 to 15.4 PSI) 0.7 to 1.05 atmospheres
Seismic	Risk category IV Certified (IBC 2018)

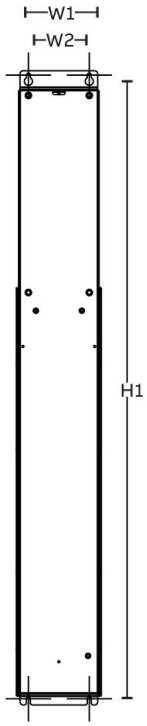
Dimensions
Vertical Bypass



Vx1-1 to Vx1-2



Vx1-3 to Vx1-4



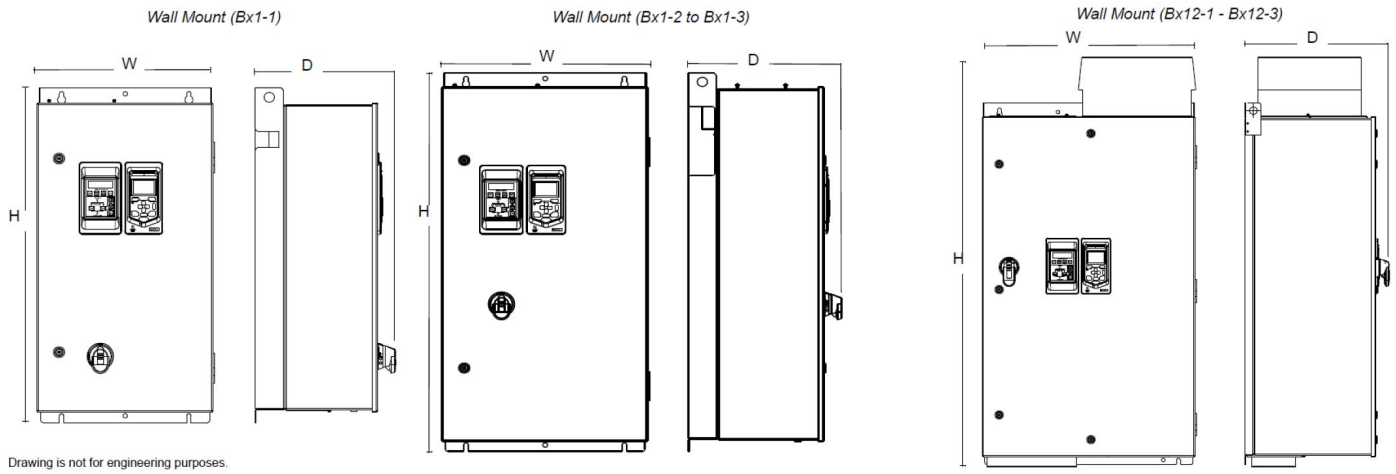
Mounting dimensions

Dim Ref	Power Range [HP]			Height (H)		Width (W)		Depth (D)		Weight		Mounting Dimensions					
												Height (H1)		Width (W1)		Width (W2)	
	240V	480V	600V	in.	mm	in.	mm	in.	mm	lb.	Kg	in.	mm	in.	mm	in.	mm
Vertical E-Clipse Bypass NEMA Type 1																	
Vx1-1	1 - 5	1 - 7.5	N/A	40.18	1021	5.39	137	10.55	268	30.0	13.6	39.51	1004	4.93	125	3.86	98
Vx1-2	7.5 - 10	10 - 15	2 - 15	44.10	1120	5.39	137	10.77	274	50.7	23.0	43.43	1103	4.93	125	3.86	98
Vx1-3	15 - 20	20 - 30	20 - 30	47.70	1212	8.44	214	10.90	277	59.5	27.0	46.47	1180	8.19	208	6.30	160
Vx1-4	25	40 - 60	N/A	56.82	1143	8.44	214	12.00	305	86.0	39.0	55.70	1415	8.19	208	6.30	160
Vx1-5	N/A	N/A	40 - 75	56.82	1443	8.35	212	13.26	337	117.0	53.3	55.70	1415	8.19	208	6.30	180

Standard configuration dimensions for reference only.

Dimensions

Side Bypass



Dim Ref	Power Range [HP]			Height (H)		Width (W)		Depth (D)		Weight		Mounting Dimensions			
												Height (H1)		Width (W1)	
	240V	480V	600V	in.	mm	in.	mm	in.	mm	lb.	Kg	in.	mm	in.	mm
Side E-Clipse Bypass NEMA Type 1															
Bx1-1	1 - 7.5	1 - 15	2 - 15	33.16	842	17.63	447	13.90	353	84.0	38.1	31.89	810	12.60	320
Bx1-2	10 - 25	20 - 60	20 - 60	40.60	1030	20.7	526	15.30	388	139.0	63.0	39.30	998	15.70	400
Bx1-3	30 - 60	75 - 125	40 - 125	47.72	1212	28.24	717	19.04	484	448.0	203.2	46.26	1175	23.62	600

Standard configuration dimensions for reference only.

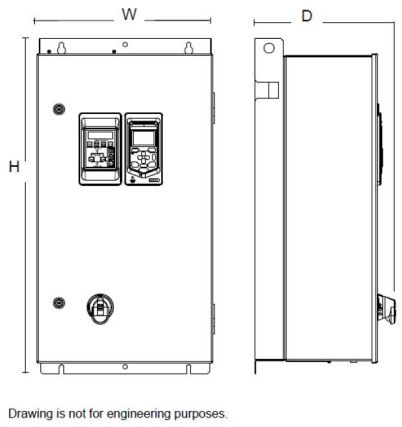
Dim Ref	Power Range [HP]			Height (H)		Width (W)		Depth (D)		Weight		Mounting Dimensions			
												Height (H1)		Width (W1)	
	240V	480V	600V	in.	mm	in.	mm	in.	mm	lb.	Kg	in.	mm	in.	mm
Side E-Clipse Bypass NEMA Type 12															
Bx12-1	1 - 7.5	1 - 15	2 - 15	33.16	842	17.63	448	13.90	353	84.0	38.0	31.89	810	12.60	320
Bx12-2	10 - 25	20 - 60	20 - 60	40.60	1030	20.7	526	15.30	388	139.0	63.0	39.30	998	15.70	400
Bx12-3	30 - 60	75 - 125	40 - 125	54.18	1376	28.24	717	19.04	484	448.0	203.2	46.26	1175	23.62	600

Standard configuration dimensions for reference only.

Dimensions

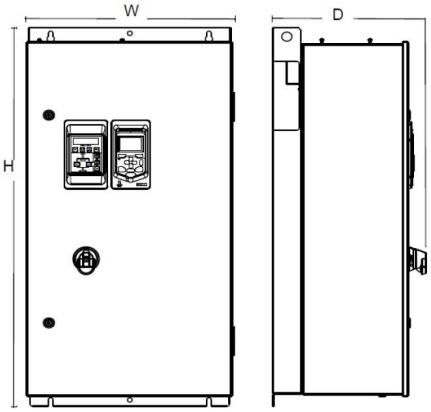
Side Bypass with Line Reactor

Wall Mount (Bx1-1)

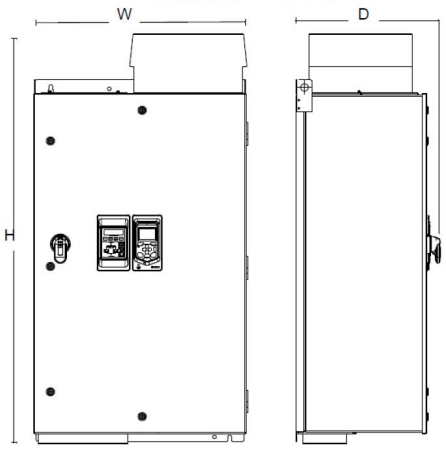


Drawing is not for engineering purposes.

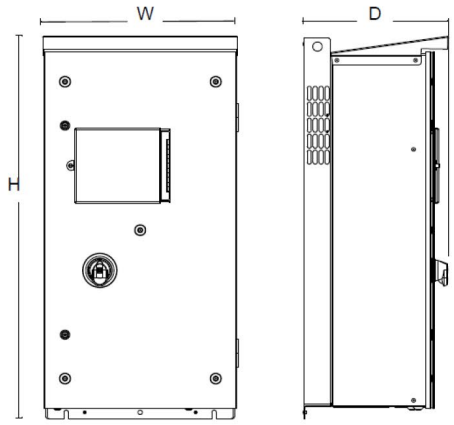
Wall Mount (Bx1-2 to Bx1-3)



Wall Mount (Bx12-1 - Bx12-3)



Wall Mount (Bx3R-1 - Bx3R-2)



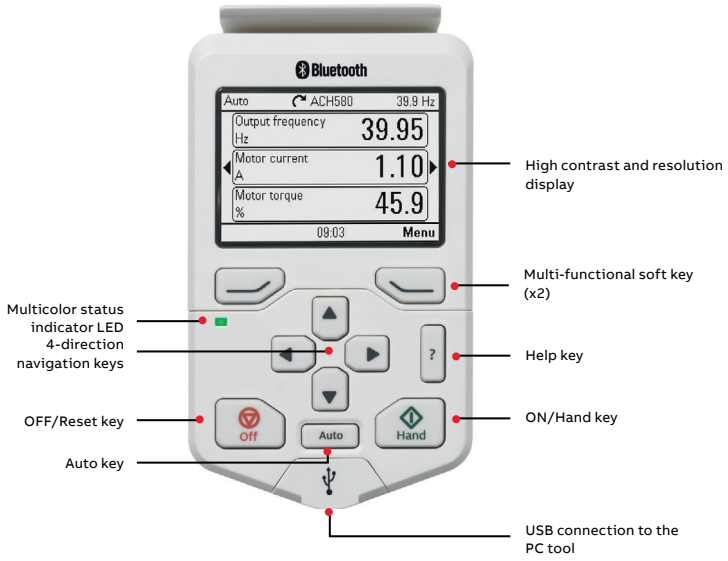
Dim Ref	Power Range [HP]			Height (H)		Width (W)		Depth (D)		Weight		Mounting Dimensions			
												Height (H1)		Width (W1)	
	240V	480V	600V	in.	mm	in.	mm	in.	mm	lb.	Kg	in.	mm	in.	mm
E-Clipse Bypass NEMA Type 1 with Line Reactor															
Bx1-1	1 - 7.5	1 - 15	2 - 15	33.16	842	17.63	447	13.90	353	84.0	38.1	31.89	810	12.6	320
Bx1-2	10 - 25	20 - 60	20 - 30	40.60	1030	20.7	526	15.30	388	139.0	63.0	39.30	998	15.7	400
Bx1-4	30 - 40	75	N/A	61.90	1571	19.3	490	19.00	482	200.0	91.7	60.88	1546	10.0	254
Bx1-5	50 - 60	100 - 125	N/A	73.40	1865	34.8	883	20.40	518	740.0	335.7	61.38	1559	26.0	660
Side E-Clipse Bypass NEMA Type 12 with Line Reactor															
Bx12-1	1 - 7.5	1 - 15	2 - 15	33.16	842	17.63	448	13.90	353	84.0	38.0	31.89	810	12.6	320
Bx12-2	10 - 25	20 - 60	20 - 30	40.60	1030	20.7	526	15.30	388	139.0	63.0	39.30	998	15.7	400
Bx12-4	30 - 60	75 - 125	N/A	48.00	1219	36.0	914	21.00	553	380.0	172.4	46.50	1181	34.5	876

Standard configuration dimensions for reference only.

CONTROL PANEL FEATURES

The SmartDrive® ACH580 Assistant Control Panel features:

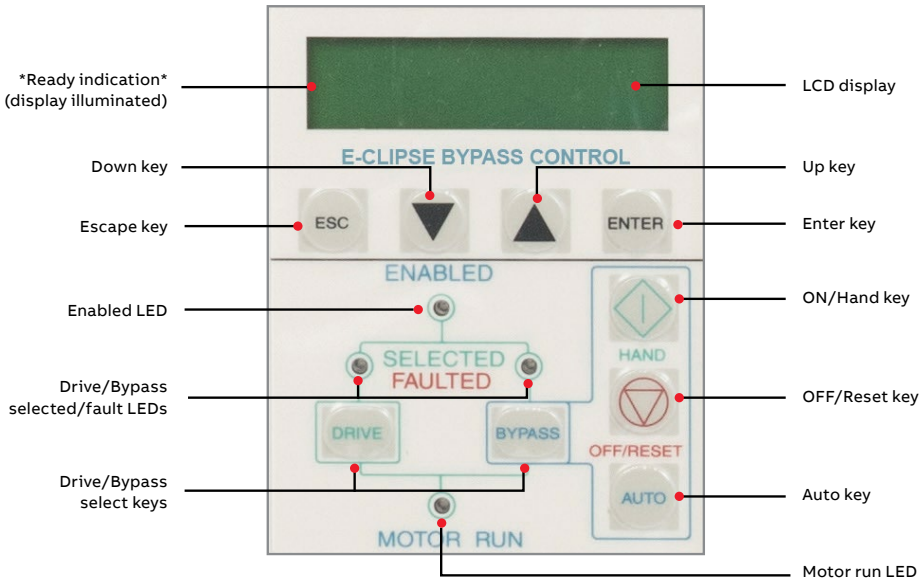
- Intuitive to operate
- Primary Setting menu to ease drive commissioning
- Real-time clock
- Diagnostic and maintenance functions
- Full-graphic display, including chart, graph, and meter options
- 21 editable home views
- USB interface for PC and tool connection as standard
- Parameters are alpha-numeric
- North American version supports 14 languages as standard
- Dedicated “Help” key
- 4 user sets
- Parameter stored in control panel memory for later transfer to other drives or for backup of a particular system
- Back-up and restore parameters and/or motor data
- Automatic back-up 2 hours after parameter change
- Modified parameter display
- Creates unique short menu
- Shows parameters that differ from the default



E-CLIPSE CONTROL PANEL FEATURES

The SmartDrive® ACH580 E-Clipse Control Panel features:

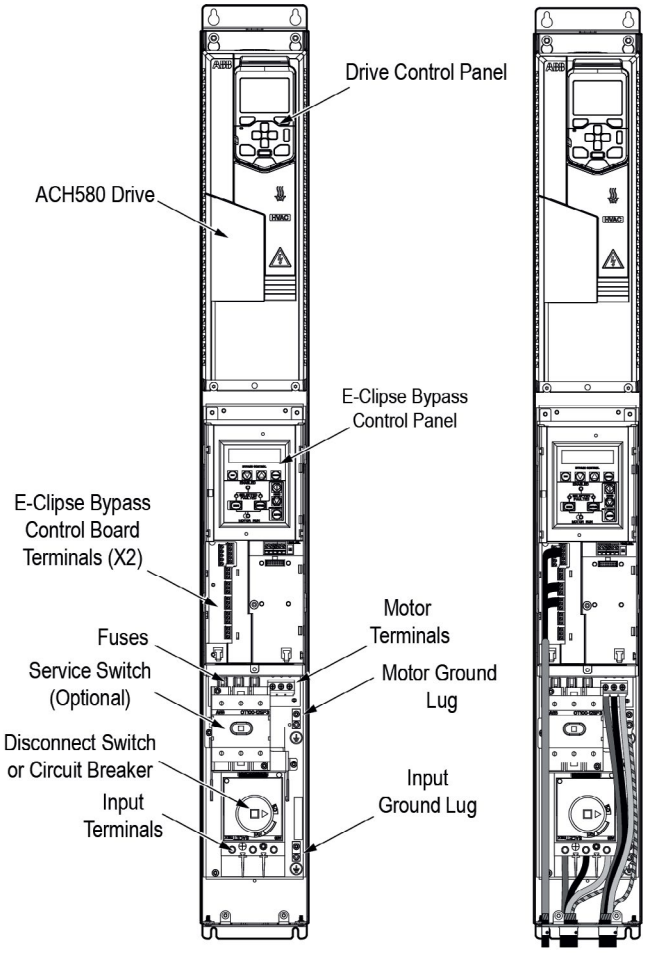
- Dedicated programming and operating controls (keys) are logically grouped on the keypad by their function.
  - H-O-A, Drive/Bypass Selection keys (Control)
  - UP/DOWN arrows, ESC, ENTER keys (Programming)
- LCD display provide:
  - Operating Control Status
  - Bypass Status
  - Fault/Warning annunciation
  - Parameter Lists and Values
  - Power On indication
- Individual LEDs arranged to provide a logical control path visual:
  - System Enabled
  - Separate multi colored Drive and Bypass “SELECTED/FAULTED LEDs in separate paths
  - Motor Run Indicator
  - LEDs that illuminate, change color, and flash to provide visible indication of system status
- Provides System control from one location



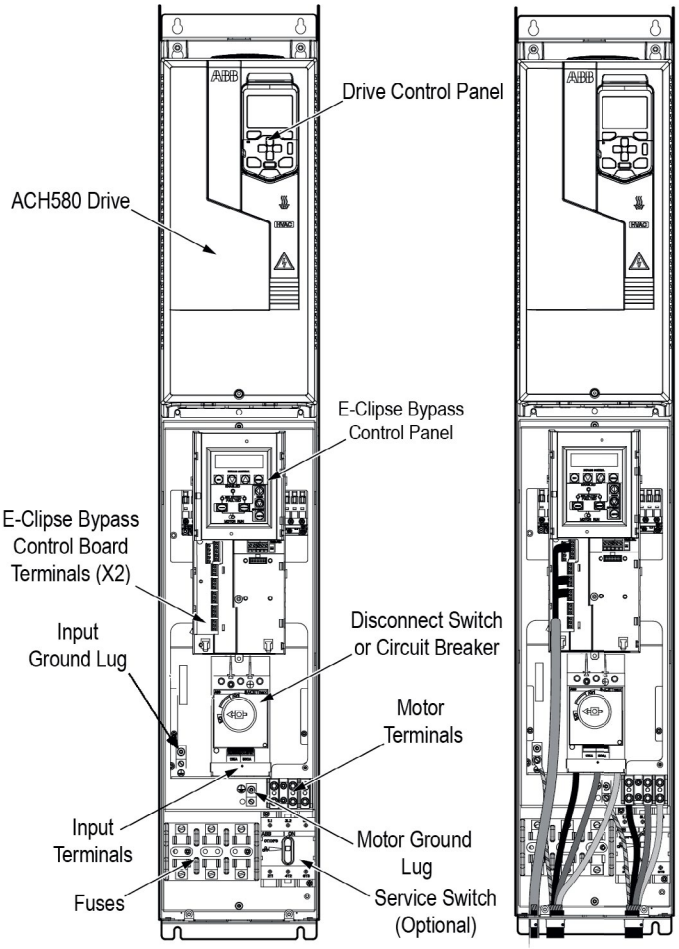
E-CLIPSE CABLE CONNECTIONS

The following illustrations show the ACH580 with ABB E-Clipse bypass cable connection points for the various enclosure styles. The illustrations indicate the location of input and output power connections as well as equipment and motor grounding connection points.

ACH580 drives are configured for wiring access from the bottom only on Vertical ABB E-Clipse bypass units and from the top only on Standard ABB E-Clipse bypass units. At least three separate metallic conduits are required, one for input power, one for output power to the motor and one for control signals.

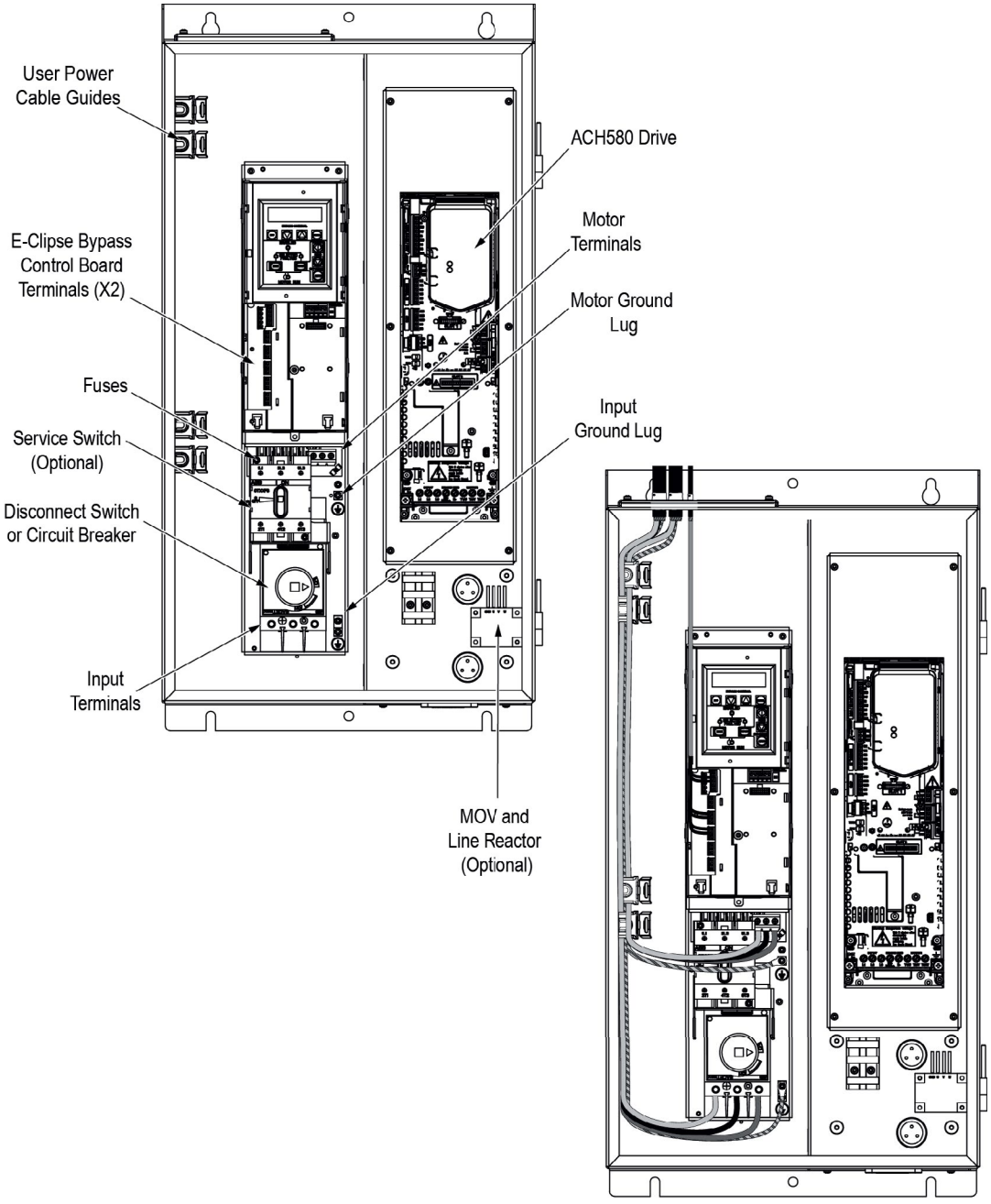


Vx1-1, Vx1-2



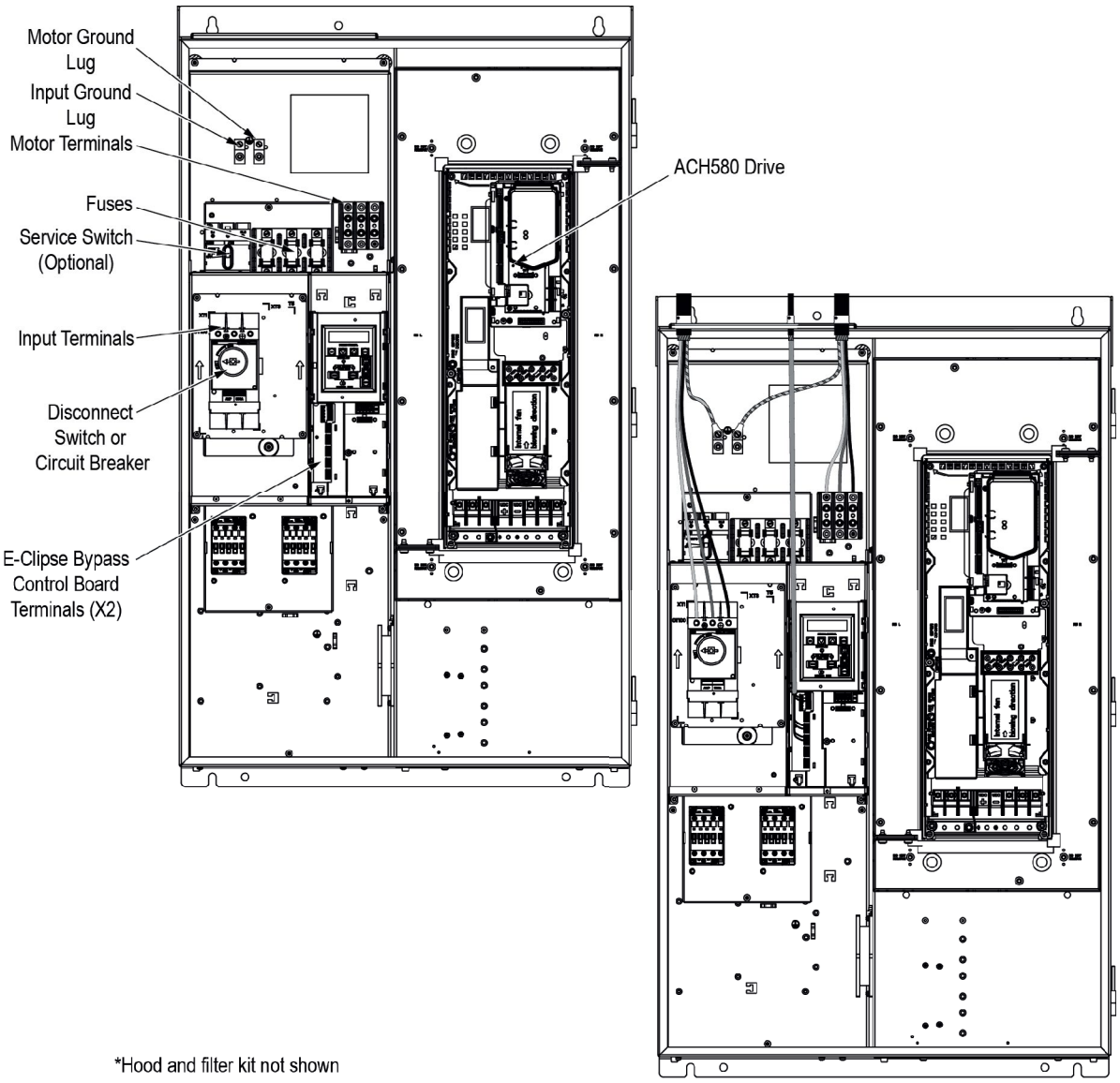
Vx1-3, Vx1-4

E-CLIPSE CABLE CONNECTIONS



Bx1-1, Bx12-1, Bx3R-1

E-CLIPSE CABLE CONNECTIONS

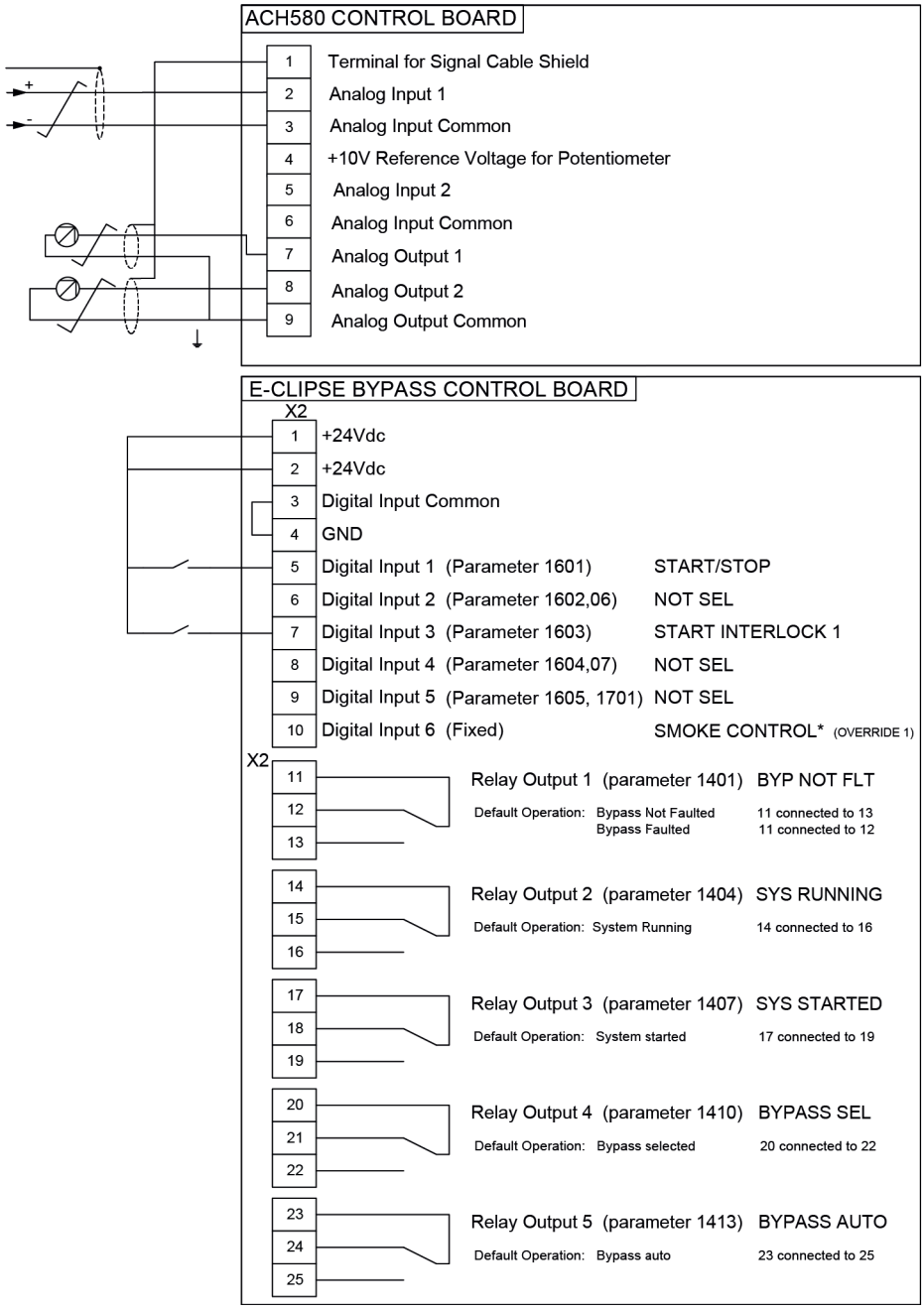


*Hood and filter kit not shown

Bx1-3*, Bx12-3*

CONTROL CONNECTIONS

The control wiring includes connections to an analog speed command signal and a start/stop relay contact for controlling the motor in the AUTO mode. There may also be connections to external run permissive interlock contacts and a connection from the Motor Run contact to an external status indication circuit. For a detailed description of the control circuit functions and alternate Control Connection diagrams, refer to the ACH580 E-Clipse bypass and packaged drive manual.



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