Specifications

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Standard

The seller's standard conditions of sale set forth in Price Sheet 150 for sales in the United States (Price Sheet 153 for sales outside the United States) apply.

Special To This Product

Inclusions

The EdgeRestore Underground Distribution Restoration System isolates faulted cable sections and restores service to customers. The EdgeRestore system virtually eliminates the present practice in which a cable fault will cause a fuse to operate and interrupt service to an underground residential distribution (URD) loop until a crew is dispatched to restore service by performing manual switching operations using the loadbreak elbows. The EdgeRestore system greatly reduces the need for an emergency truck roll to restore service and reduces fuse and loadbreak elbow handling.

The EdgeRestore Underground Distribution Restoration System is designed for ANSI Type 1 and ANSI Type 2 distribution transformers and has a 15-kV and 25-kV voltage rating. EdgeRestore system controls communicate with other EdgeRestore system controls via peer-to-peer power line communications. They work in tandem with single-phase reclosers, fault interrupters, or fuses protecting underground residential distribution (URD) loops. The EdgeRestore system will restore service under the following scenarios:

- **Loop faults.** The EdgeRestore system can isolate a faulted section of cable and restore service to the loop. Restoration time is under 60 seconds.
- **Single loss of source.** For URD loops served by two sources, the system can restore service in under 60 seconds in response to a single loss of source.

The EdgeRestore Underground Distribution Restoration System consists of:

- One H1A EdgeRestore® Bushing Well Interrupter
- One H1B EdgeRestore® Bushing Well Interrupter
- A normally open or normally closed control
- One current sensor
- A bushing well interrupter support system that mounts to the transformer parking stand
- Miscellaneous installation supplies and hardware

The EdgeRestore system comes permanently configured at the factory with the following parameters:

Loss of voltage timer:	50 seconds
Overcurrent reset time:	120 seconds
Stable voltage timer:	5 minutes
Loss of voltage return to normal timer:	5 minutes

Exclusions

The EdgeRestore Underground Distribution Restoration system does not include single-phase overhead reclosers serving the loop, which are recommended for full optimization of the EdgeRestore system operation. The TripSaver® II Cutout-Mounted Recloser can be used for this application; refer to S&C Specification Bulletin 461-33. Fuses are also not provided with the EdgeRestore system.

Usual Operating Conditions

The EdgeRestore system will perform as intended when installed in an ANSI Type 1 or ANSI Type 2 distribution transformer at temperatures within the range of -30°C to +65°C (-22°F to +149°F). The system is an IP-68 rated device.

Application Note

Bushing well interrupters can be opened, when necessary, without power using the manual operating lever. However, control power must be present to close the bushing well interrupter after the vacuum interrupter has been opened. Control power is provided during operation through 120 Vac power from the transformer. Enough onboard power is stored in the control's capacitors to complete the full restoration sequence. A cordless power module is available for use during setup, testing, and to perform a local closing operation when control power is unavailable. See "Table 5. Accessories" on page 9.

Packing Note

A complete EdgeRestore Underground Distribution Restoration System kit consists of three cartons that include the following:

- The H1A EdgeRestore Bushing Well Interrupter
- The H1B EdgeRestore Bushing Well Interrupter
- The installation kit, which includes:
    - The control (normally open or normally closed)
    - A current sensor
    - A bushing well interrupter support system
    - Miscellaneous installation supplies and hardware

When ordering multiple EdgeRestore Underground Distribution Restoration Systems, the three cartons may come with each bushing well interrupter carton type on its own pallet (H1A pallet, H1B pallet) and the installation kit cartons on a third pallet.

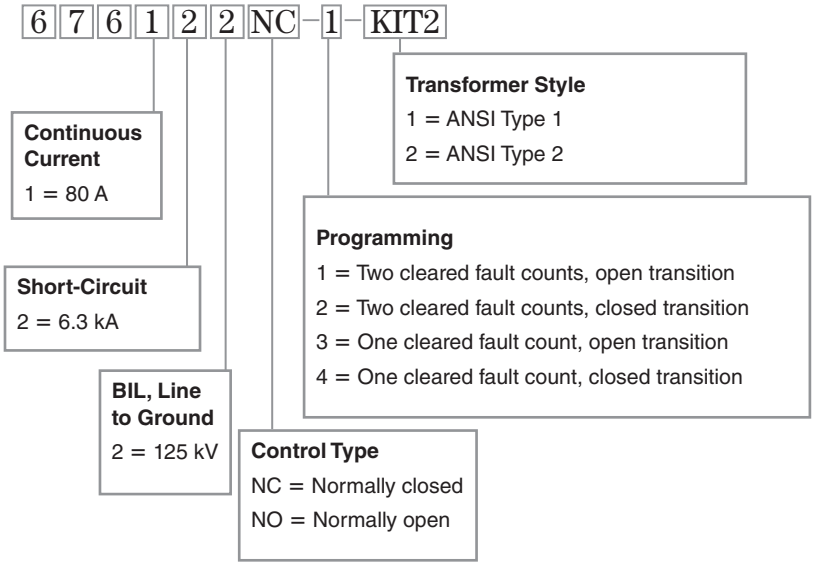
If a packing variation is desired, i.e., all the EdgeRestore systems for one installation job are to be sorted and combined on a single pallet, contact the local S&C Sales Office.

Storage Note

Cartons should be stored in an indoor, moisture free environment away from direct UV radiation.

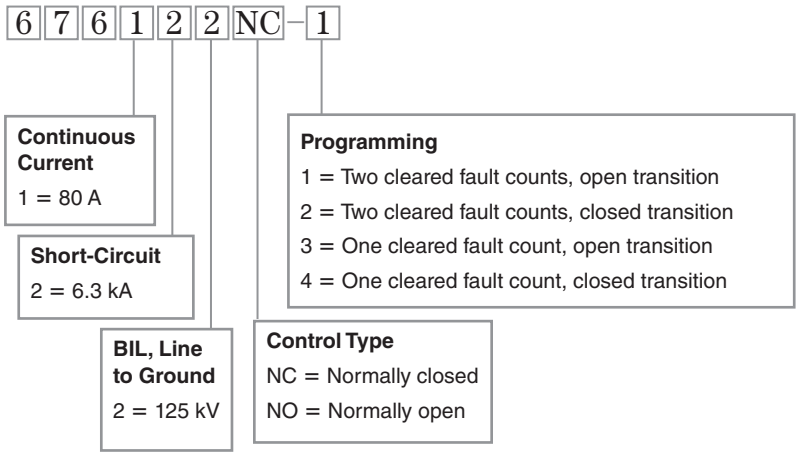
Anatomy of an EdgeRestore Underground Distribution Restoration System Kit Part Number

Example Kit Catalog Number: 676122NC-1-KIT2 is an 80-A, 6.3-kA, 125-kV BIL, normally closed control with two cleared fault counts and an open return to normal transition in a kit that ships with one H1A bushing well interrupter, one H1B bushing well interrupter, and one installation accessory kit, including the control, for an ANSI Type 2 transformer.



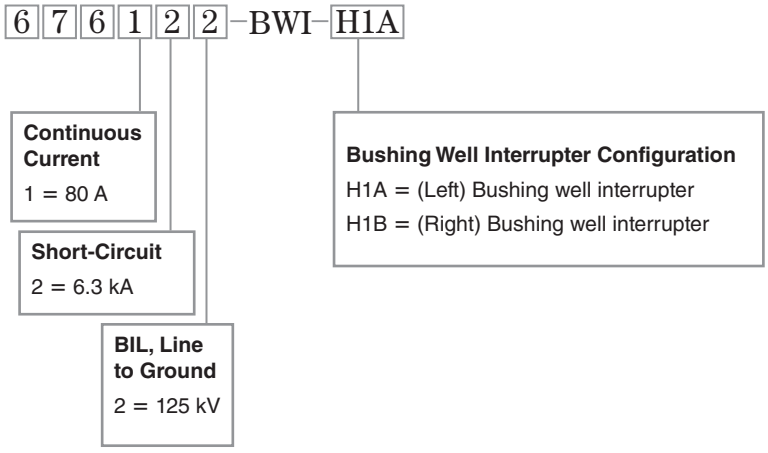
Anatomy of an EdgeRestore Underground Distribution Restoration System Control Part Number

Example Control Catalog Number: 676122NC-1 is a normally closed control programmed to operate after two cleared fault counts and an open return to normal transition to normal. Both an H1A and H1B bushing well interrupter are required for an installation, along with a control and installation kit.



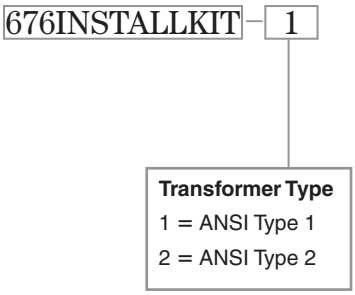
Anatomy of an EdgeRestore Underground Distribution Restoration System Bushing Well Interrupter Part Number

Example Bushing Well Interrupter Catalog Number: 676122-BWI-H1A is the H1A EdgeRestore Bushing Well Interrupter. Both an H1A and H1B bushing well interrupter are required for an installation, along with a control and installation kit.



Anatomy of an EdgeRestore Underground Distribution Restoration System Installation Kit Part Number

Example Installation Kit Catalog Number: 676INSTALLKIT-1 includes only the current sensor, bushing well interrupter support system, and miscellaneous installation supplies and hardware less a control.



How to Order a Complete EdgeRestore Underground Distribution Restoration System

Order a complete EdgeRestore system for one transformer from Table 1 on page 8.

Catalog Number: 6 7 6 1 2 2 NC – 3 – KIT 2

Complete system for installation on single transformer. Includes 2 bushing well interrupters, an installation kit, and a normally closed control programmed for one cleared fault count with open return to normal transition for installation on an ANSI Type 2 transformer.

How to Order Replacement Bushing Well Interrupters, Installation Kits, or Controls

Obtain the part number of the replacement parts from Tables 2 through Table 4 on page 9 and order them as separate line items. Match the catalog numbers to what was originally ordered for the EdgeRestore system.

Catalog Number: 6 7 6 1 2 2 NO – 1

A normally open control programmed for two cleared fault counts and an open return to normal transition

Catalog Number: 6 7 6 1 2 2 – BWI – H1A

A bushing well interrupter with an H1A (left) configuration

Catalog Number:
6 7 6 I N S T A L L K I T – 2

An installation kit, including all parts needed for installation on an ANSI Type 2 transformer, less a control.

Table 1. EdgeRestore Underground Distribution Restoration System Complete Kit

50/60-Hz Ratings					ANSI Transformer Style ②	Programming Type ③	Control Type	Catalog Number
Voltage, kV			Current, Amperes					
Nom.	Maximum Voltage (Single Phase to Ground)	BIL, Line to Ground	Cont. ①	Short-Circuit, Sym.				
15 and 25	15.2	125	80	6300	Type 1	Two cleared fault counts, open transition	Normally closed	676122NC-1-KIT1
							Normally open	676122NO-1-KIT1
					Type 2		Normally closed	676122NC-1-KIT2
							Normally open	676122NO-1-KIT2
					Type 1	Two cleared fault counts, closed transition	Normally closed	676122NC-2-KIT1
							Normally open	676122NO-2-KIT1
					Type 2		Normally closed	676122NC-2-KIT2
							Normally open	676122NO-2-KIT2
					Type 1	One cleared fault count, open transition	Normally closed	676122NC-3-KIT1
							Normally open	676122NO-3-KIT1
					Type 2		Normally closed	676122NC-3-KIT2
							Normally open	676122NO-3-KIT2
					Type 1	One cleared fault count, closed transition	Normally closed	676122NC-4-KIT1
							Normally open	676122NO-4-KIT1
					Type 2		Normally closed	676122NC-4-KIT2
							Normally open	676122NO-4-KIT2

① Bushing well interrupters have a four-hour 100 A overload capability.

② Dimensions for the complete EdgeRestore system as installed in typical transformers meeting critical dimensions consistent with IEEE Standard C57.12.38 are on pages 10 through 15.

③ Programming includes the number of cleared fault counts the control will operate after (one or two) and the return-to-normal transition (open or closed). Cleared fault counts is the number of overcurrents followed by the subsequent loss-of-voltage event sensed by the controls upstream from the faulted section of cable.

Table 2. EdgeRestore Underground Distribution Restoration System Control

Control Type	Programming ①	Catalog Number	Page Number for Dimensional Drawing
Normally closed (NC)	Two cleared fault counts, open transition	676122NC-1	18
	Two cleared fault counts, closed transition	676122NC-2	
	One cleared fault count, open transition	676122NC-3	
	One cleared fault count, closed transition	676122NC-4	
Normally open (NO)	Two cleared fault counts, open transition	676122NO-1	
	Two cleared fault counts, closed transition	676122NO-2	
	One cleared fault count, open transition	676122NO-3	
	One cleared fault count, closed transition	676122NO-4	

① Programming includes the number of cleared fault counts the control will operate after (one or two) and the return-to-normal transition (open or closed). Cleared fault counts is the number of overcurrents followed by the subsequent loss-of-voltage event sensed by the controls upstream from the faulted section of cable.

Table 3. EdgeRestore Bushing Well Interrupters

One Line Diagram	50/60-Hz Ratings					Bushing Well Configuration ②	Catalog Number	Page Number for Dimensional Drawing
	Voltage, kV			Current, Amperes				
	Nom.	Maximum Voltage (Single Phase to Ground)	BIL, Line to Ground	Cont. ①	Short-Circuit, Sym.			
	15 and 25	15.2	125	80	6300	H1A	676122-BWI-H1A	16
						H1B	676122-BWI-H1B	17

① Bushing well interrupters have a four-hour 100 A overload capability.

② When ordering a replacement H1A bushing well interrupter for use on an ANSI Type 1 transformer, order support bracket kit part number CVA-1227-1. Alternatively, the bracket from the bushing well interrupter to be replaced may be removed and installed on the replacement bushing well interrupter.

Table 4. Installation Kit

Transformer Type	Description	Catalog Number
ANSI Type 1	Includes current sensor, bushing well interrupter support system, and miscellaneous installation supplies and hardware	676INSTALLKIT-1
ANSI Type 2	Includes current sensor, bushing well interrupter support system, and miscellaneous installation supplies and hardware	676INSTALLKIT-2

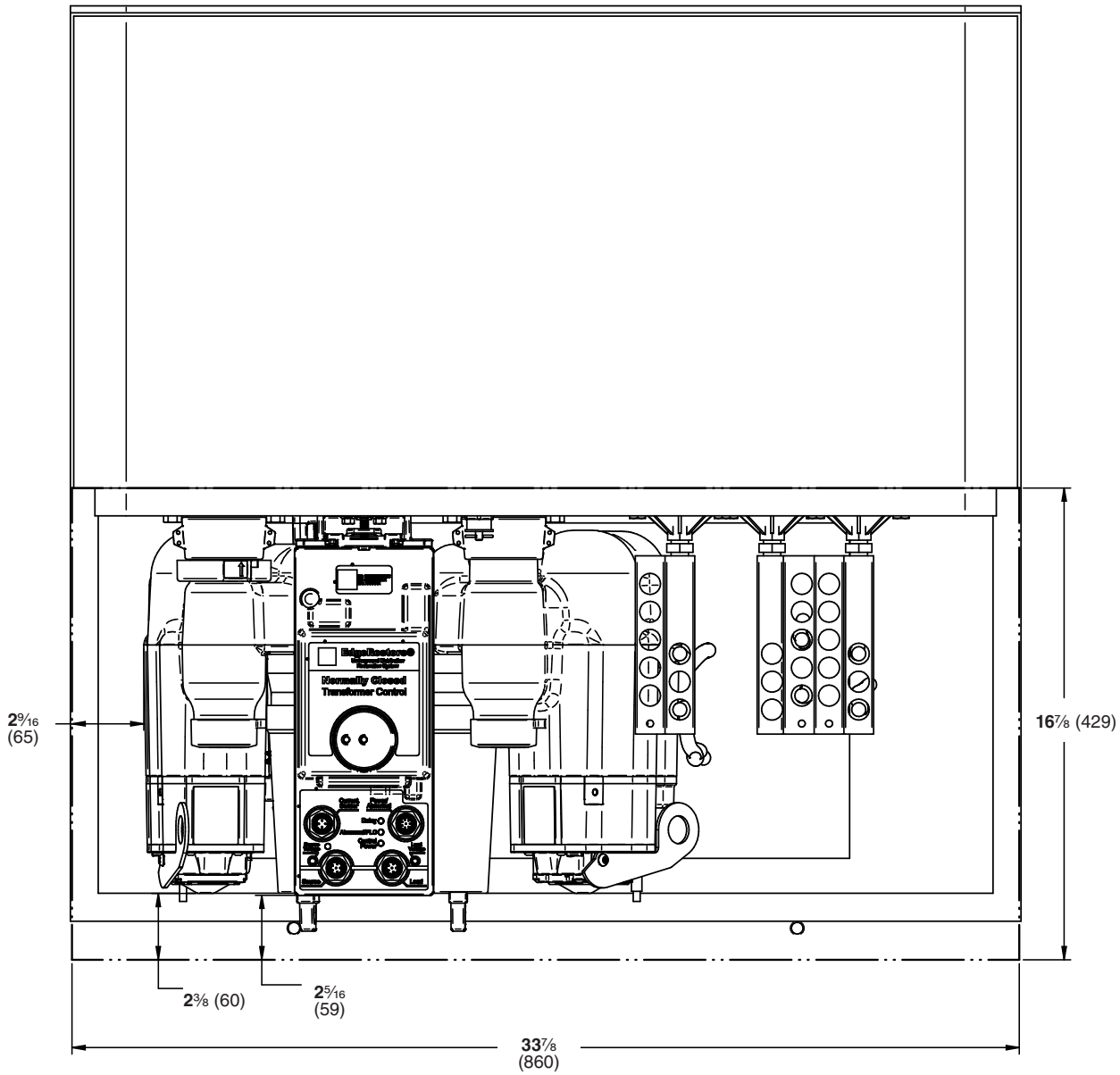
Table 5. Accessories

Item	Description	Catalog Number
Cordless power module. Battery-powered power supply for use during commissioning and when control power is not present	With lithium battery	5954
	Without lithium battery	5955
Ubicquia UbiGrid Distribution Transformer Monitoring (DTM+)	Provides monitoring of EdgeRestore system health and status. Also monitors single-phase pad-mounted transformer primary current, secondary voltage and current, oil temperature, and oil pressure. Includes externally-mounted antenna. Bundled with a 10-year cellular data and service plan and UbiVu Intelligent Asset Management. Available in the U.S. and Canada.	TR-13627

EdgeRestore Underground Distribution Restoration System installed in an ANSI Type 1 Transformer

Transformer conforming to dimensions in IEEE Standard C57.12.38 is shown. Consult the transformer manufacturer's drawing for exact dimensions.

Dimensions in inches (mm)

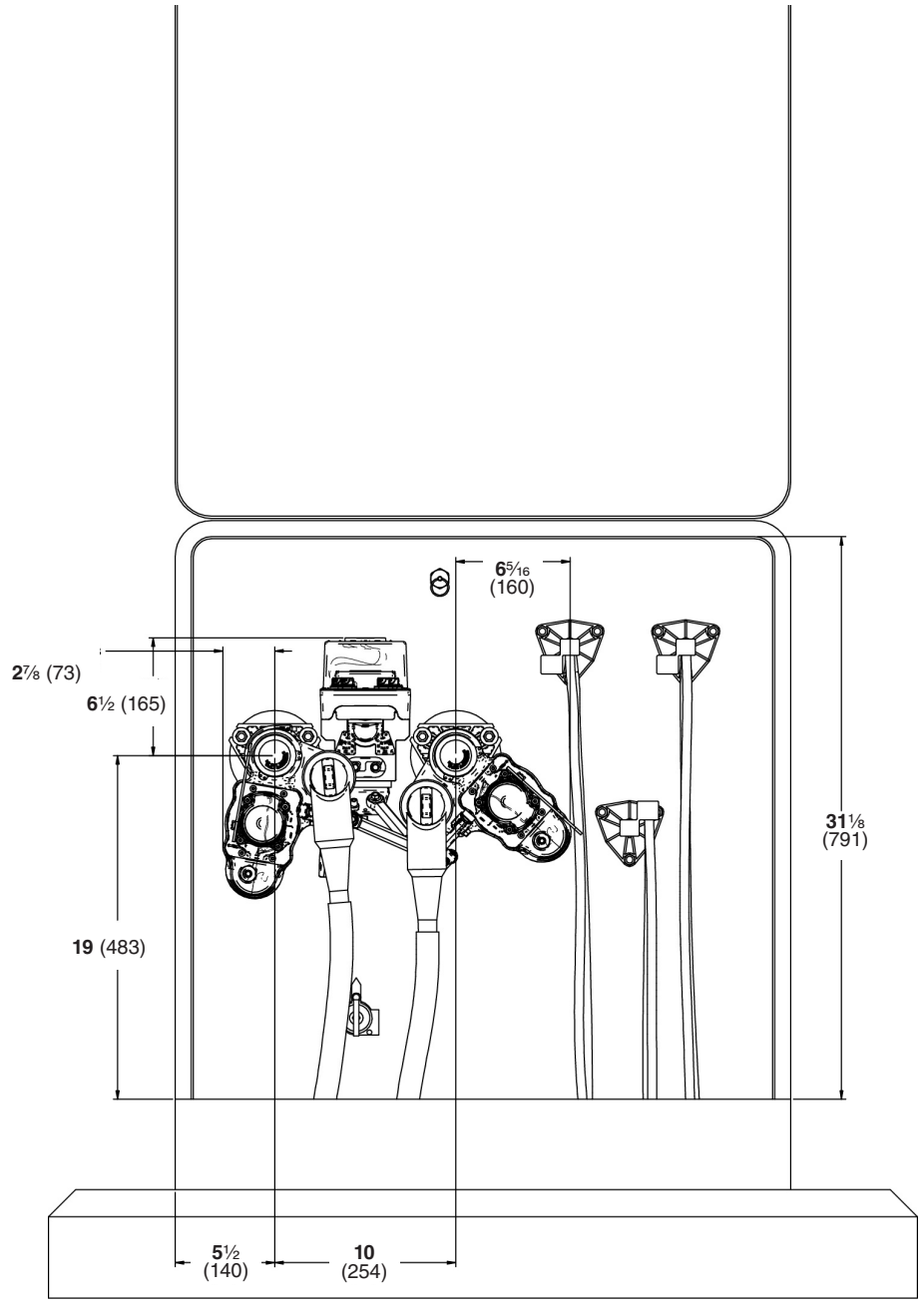


TOP VIEW

EdgeRestore Underground Distribution Restoration System installed in an ANSI Type 1 Transformer

Transformer conforming to dimensions in IEEE Standard C57.12.38 is shown. Consult the transformer manufacturer's drawing for exact dimensions.

Dimensions in inches (mm)

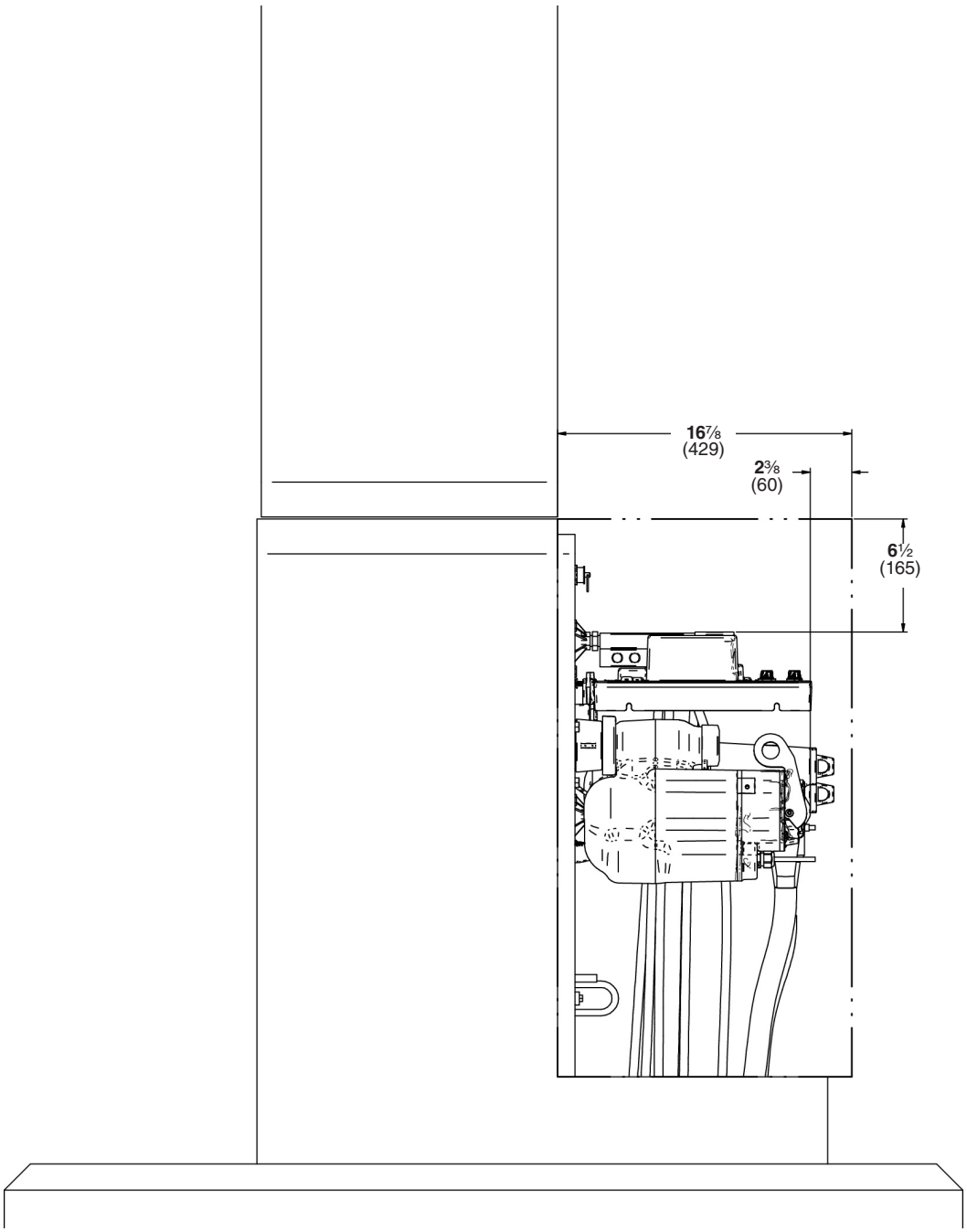


FRONT VIEW

EdgeRestore Underground Distribution Restoration System installed in an ANSI Type 1 Transformer

Transformer conforming to dimensions in IEEE Standard C57.12.38 is shown. Consult the transformer manufacturer's drawing for exact dimensions.

Dimensions in inches (mm)

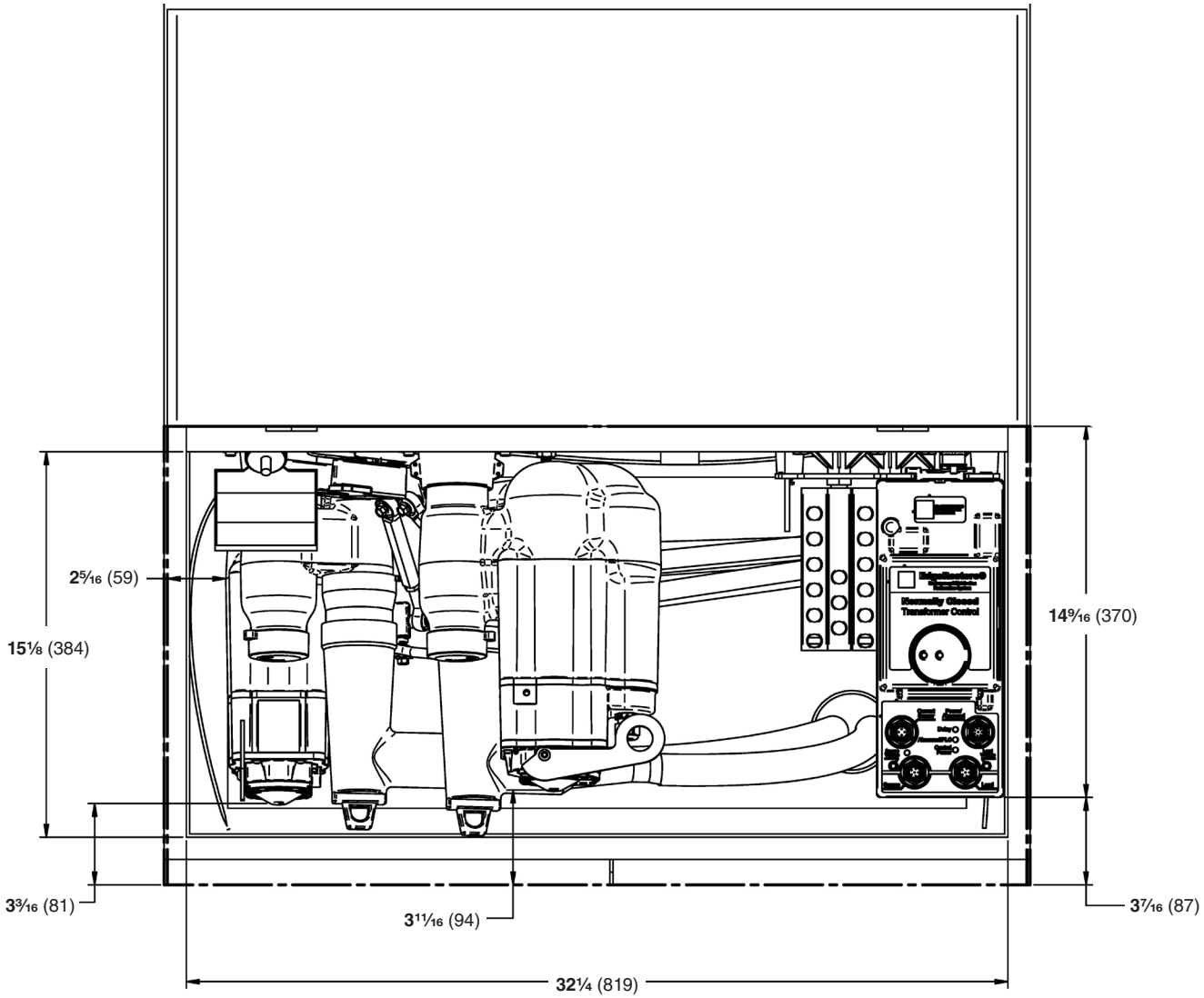


SIDE VIEW

EdgeRestore Underground Distribution Restoration System installed in an ANSI Type 2 Transformer

Transformer conforming to dimensions in IEEE Standard C57.12.38 is shown. Consult the transformer manufacturer's drawing for exact dimensions.

Dimensions in inches (mm)

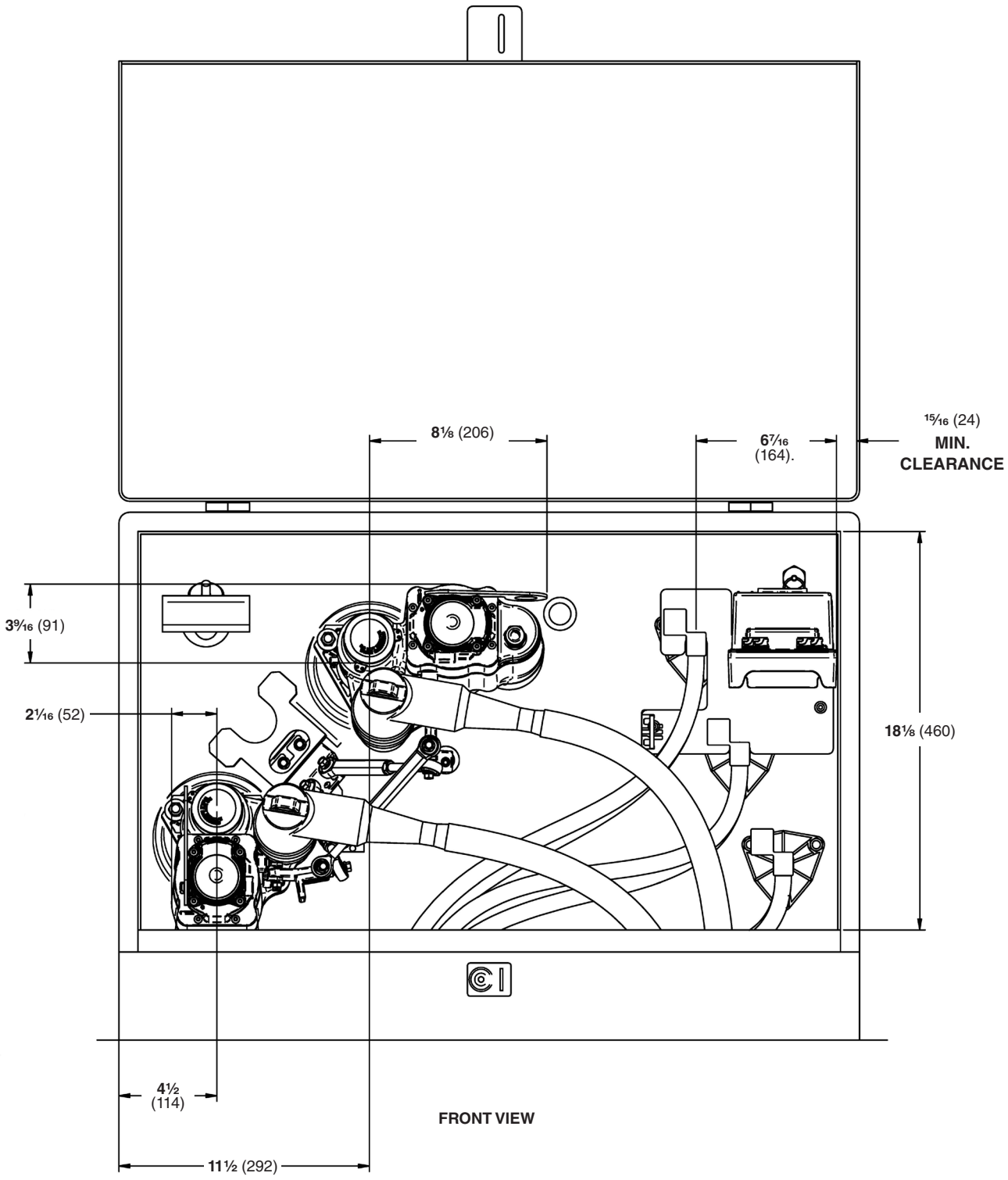


TOP VIEW

EdgeRestore Underground Distribution Restoration System installed in an ANSI Type 2 Transformer

Transformer conforming to dimensions in IEEE Standard C57.12.38 is shown. Consult the transformer manufacturer's drawing for exact dimensions.

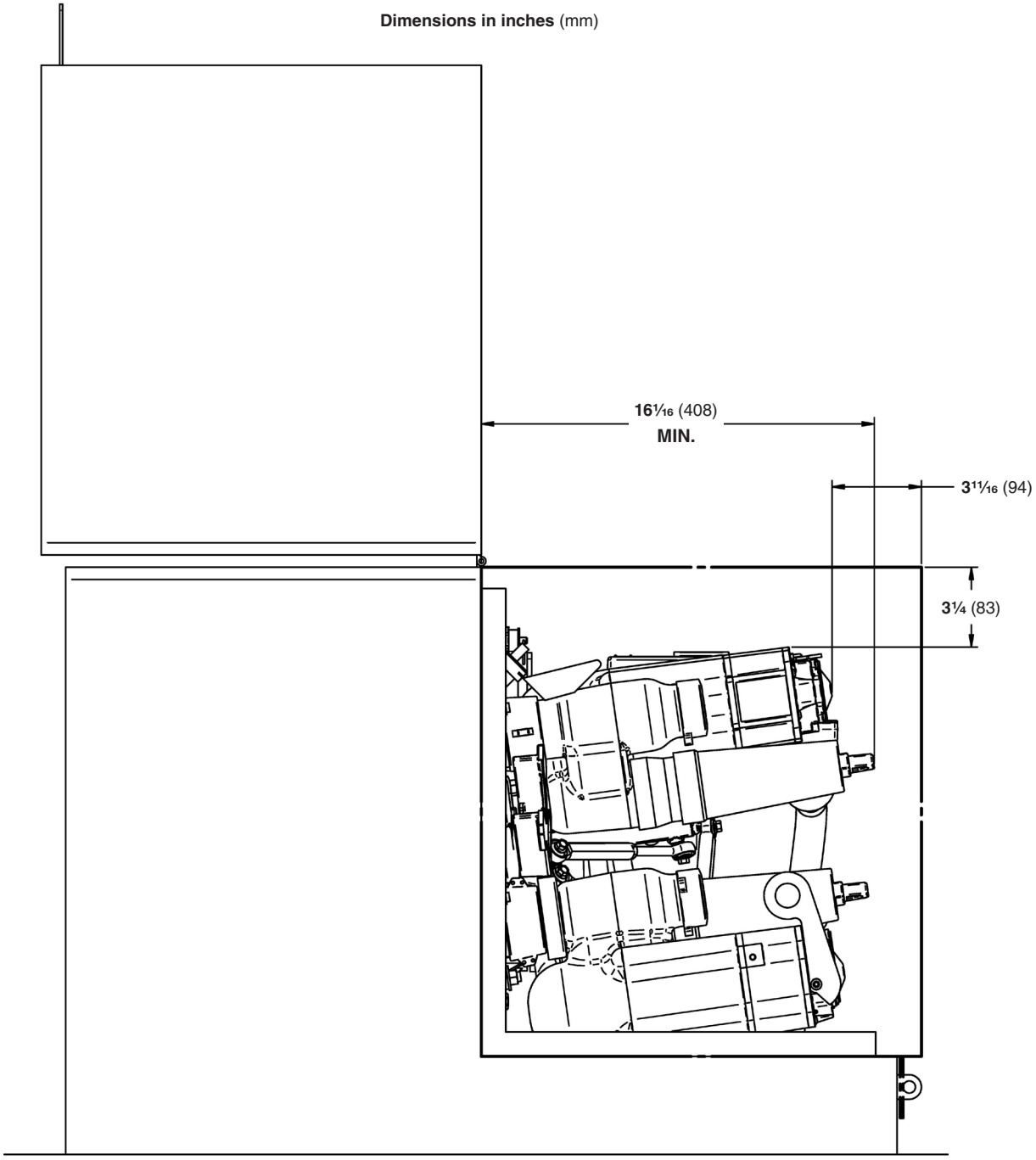
Dimensions in inches (mm)



FRONT VIEW

EdgeRestore Underground Distribution Restoration System installed in an ANSI Type 2 Transformer

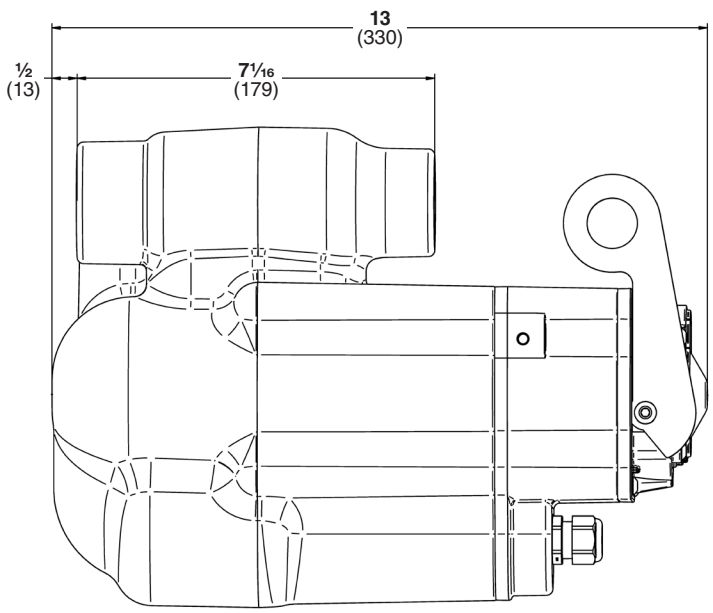
Transformer conforming to dimensions in IEEE Standard C57.12.38 is shown. Consult the transformer manufacturer's drawing for exact dimensions.



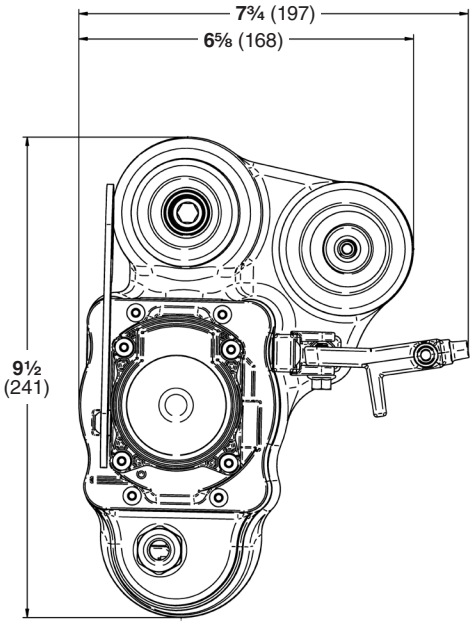
SIDE VIEW

EdgeRestore Bushing Well Interrupter—H1A

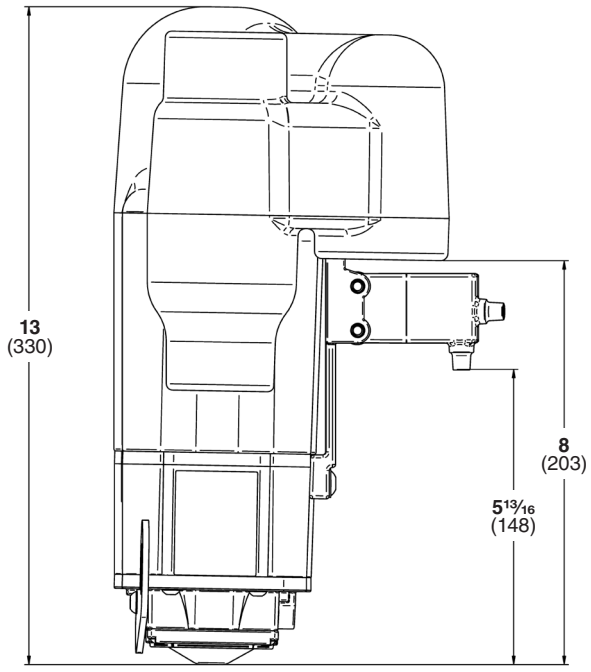
Dimensions in inches (mm)



SIDE VIEW



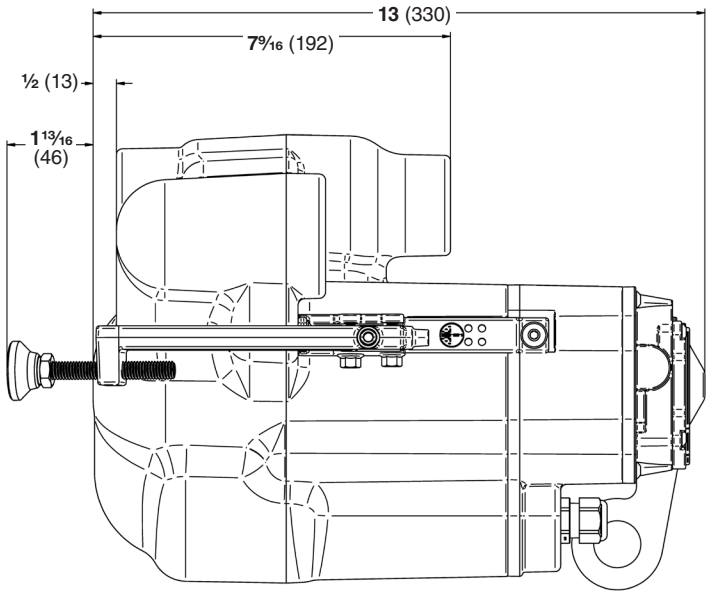
FRONT VIEW



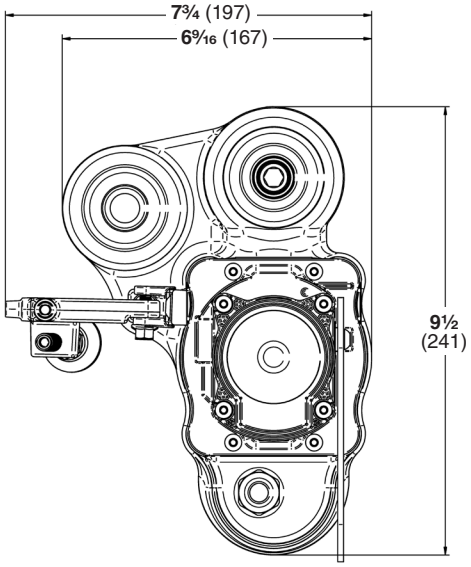
TOP VIEW

EdgeRestore Bushing Well Interrupter—H1B

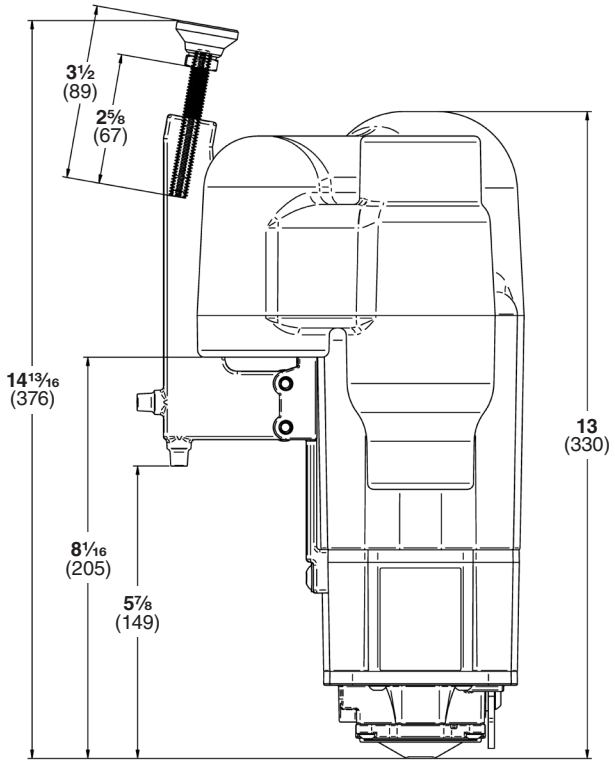
Dimensions in inches (mm)



SIDE VIEW



FRONT VIEW

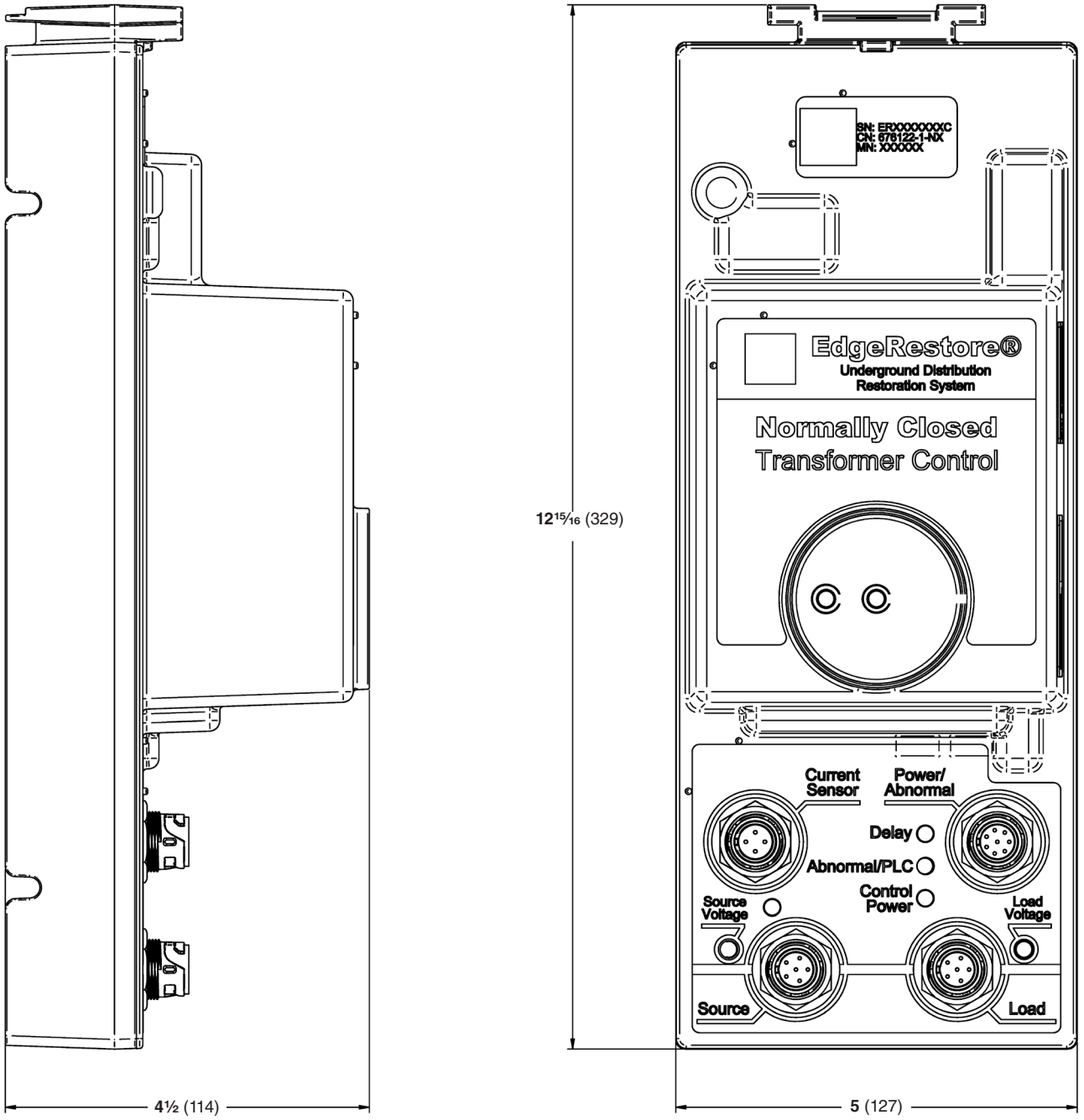


TOP VIEW

EdgeRestore Underground Distribution Restoration System Control

(Normally closed control shown; a normally open control is similar.)

Dimensions in inches (mm)



SIDE VIEW

TOP VIEW