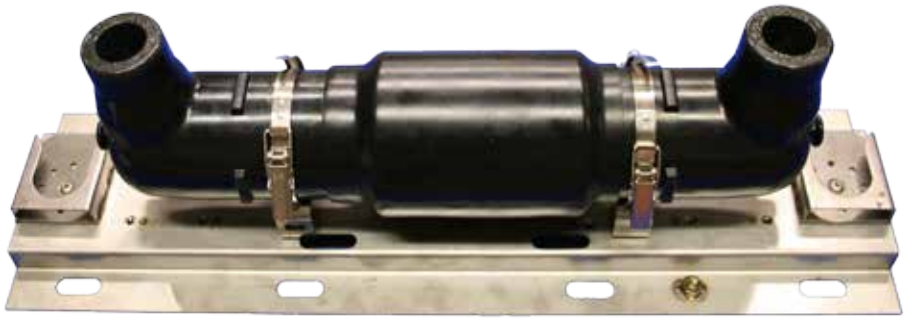
Fusing Equipment
Catalog Data
CA132025EN

Effective April 2015
Supersedes 240-92 October 2008

COOPER POWER SERIES

Edison™ modular fuse, vault application products



Description

Eaton's Cooper Power™ series Edison™ modular fuses (EMF) are fully shielded and insulated in-line fuses for use in dead front, overhead or underground, submersible cable distribution systems. The fuse consists of the EMF full range current-limiting fuse encapsulated in EPDM rubber. Terminal connections consist of an IEEE Std 386™-2006 standard 200 A bushing wells, permitting the use of 200 A deadbreak and loadbreak bushing inserts and elbows. The deadfront and submersible design makes this fuse ideal for vault applications. Stainless steel mounting brackets with integral parking stands allow the fuses to be mounted easily with minimal support structure.

Installation

See Installation and Instruction Sheet S240-92-1 for details on the fuse mounting.

Features

The EMF fuse comes in a two-position feedthrough design. The optional stainless steel bracket can be mounted either horizontally or vertically and the parking stands can be rotated to match the installation. Hold-down clamps allow for fuse removal without removing the mounting bracket.

Time-Current Characteristics

Time-Current Characteristics (TCC) curves and let-through curves for the rubber-encapsulated current limiting fuse can be found in R240-91-161 for 5.5/8.3 kV EMF (both minimum melt and maximum clear curves) and R240-91-162 for 15.5/17.2 kV EMF (both minimum melt and maximum clear curves).

Additional Options

Bracket options are listed in Table 7. All bracket components are manufactured from stainless steel and can be configured to meet a specific application, like the adjustable foot bracket shown in Figure 2, or the use of the quick release mounting clamps shown in Figure 1.

A three-position design can be configured using Eaton's Cooper Power series 15 and 25 kV Class rotatable feedthru insert. This configuration offers an additional bushing, providing a fused tap arrangement. For more information on the rotatable feedthru insert, see Catalog Sections 500-13 for 15 kV Class and TD650015EN for 25 kV Class, shown in Figure 3.

A fuse-operational indicator can be added to the EMF fuse by mounting Eaton's Cooper Power series S.T.A.R.™ hot line voltage indicator on the capacitive test point on the load-side elbow. The hot line indicator provides reliable means of identifying energized circuits by the pulsating of the high-intensity LED display. If the Edison Modular Fuse operates, the LED indication no longer blinks. The line personnel should then test the fuse to verify that it has operated. For more information on the STHL voltage indicator, see Catalog Section CA320010EN.

Production tests

Tests are conducted on 100 percent of production in accordance with Eaton requirements.

- Physical Inspection
- I^2t Testing
- Resistance Testing
- Partial Discharge
- AC 60 Hz 1 Minute Withstand

Table 1. Electrical Characteristics for 5.5 kV/8.3 kV

Description	kV
Nominal Voltage Class	8.3 kV
Maximum Design Voltage	26.3 kV
Corona Extinction	19 kV rms
AC Withstand Level	40 kV rms
DC Withstand Level	78 kV rms
Impulse Withstand Level	125 kV
Frequency	60 Hz
Continuous Current	10-200 A

Table 2. Electrical Characteristics for 15.5/17.2 kV

Description	kV
Nominal Voltage Class	15.5/17.2 kV
Maximum Design Voltage	26.3 kV
Corona Extinction	19 kV rms
AC Withstand Level	40 kV rms
DC Withstand Level	78 kV rms
Impulse Withstand Level	125 kV
Frequency	60 Hz
Continuous Current	10-125 A*

Note: 15.5 kV fuses have been tested to 17.2 kV. A Certified Test Report is available by contacting your Eaton representative.

* 17.2 kV rating is only available to 100 A.

Application peak let-thru current

Maximum peak let-thru curves provide the opportunity of comparing an unprotected system or one protected with an expulsion fuse, boric acid fuse, or recloser to a system protected with current-limiting fuses. For example, as shown in Figure 5, an unprotected circuit with 20,000 A available fault current can deliver a maximum peak current to a fault of about 60,000 A (find the intersection of the 20,000 A available current line with peak current line, and read the result on the left maximum let-thru axis). This would be the current delivered, regardless of the size of any expulsion fuse that could be applied. Protecting this apparatus with a 15.5 kV, 100 A, EMF fuse however, would limit the peak let-thru current to the apparatus to about 6000 A. This is the same peak let-thru delivered to a fault by a system having only 2200 A available current.

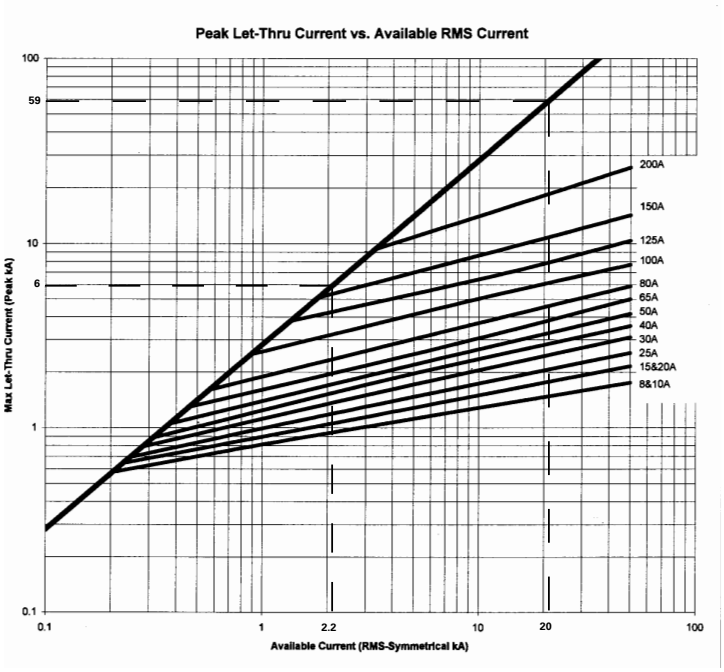


Figure 1. Peak let-thru current vs. available RMS current.

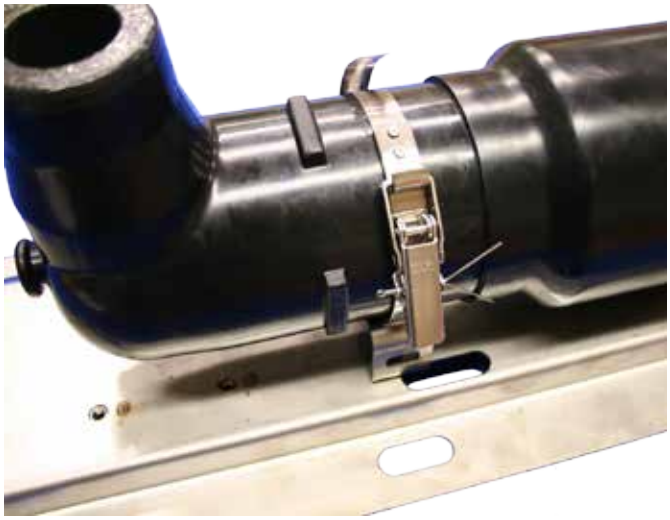


Figure 2. Quick release mounting clamp allows quick and easy means of installing and removing fuse.

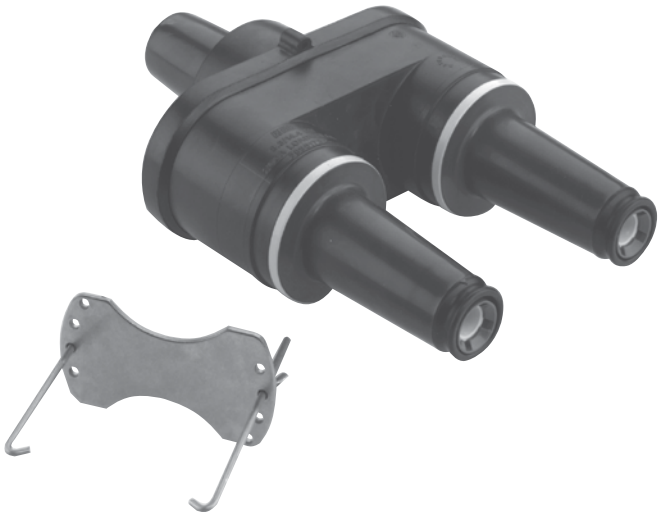


Figure 4. Rotatable feedthru insert with patented torque-limiting ratchet.

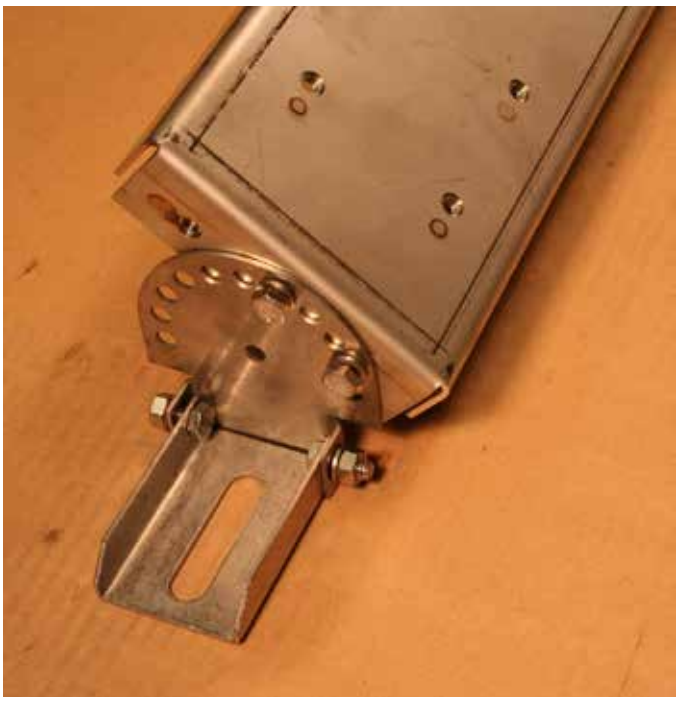


Figure 3. Adjustable foot bracket provides adjustment of standard channel bracket/fuse in relation to wall.

Figure 5. S.T.A.R. hot line voltage indicator (STHL).

Ordering information and electrical characteristics

To order an EMF fuse, determine the amperage, voltage, and mounting requirements of the application and specify the fuse and bracket options required from Tables 3-6 for fuses and Table 7 for bracket options.

Table 3. Order Information and Electrical Ratings 5.5 kV Fuse

	Fuse Rating		min melt I²t	Total Clear I²t	Max. Interrupting Rating (kA Symmetric) at 5.5 kV
Catalog Number	kV	A	A²sec	A²sec	
55F010EMF0202	5.5	10	1495	11747	50
55F015EMF0202	5.5	15	2335	17047	50
55F020EMF0202	5.5	20	2335	17047	50
55F025EMF0202	5.5	25	3363	22530	50
55F030EMF0202	5.5	30	9341	56980	50
55F040EMF0202	5.5	40	9341	56980	50
55F050EMF0202	5.5	50	13451	73980	50
55F065EMF0202	5.5	65	17277	84657	50
55F080EMF0202	5.5	80	38873	174929	50
55F100EMF0202	5.5	100	69108	281777	50
55F125EMF0202	5.5	125	83167	576333	50
55F150EMF0202	5.5	150	119760	761674	50
55F200EMF0202	5.5	200	212907	1233333	50

Table 4. Order Information and Electrical Ratings 8.3 kV Fuse

	Fuse Rating		min melt I²t	Total Clear I²t	Max. Interrupting Rating (kA Symmetric) at 8.3kV
Catalog Number	kV	A	A²sec	A²sec	
83F010EMF0202	8.3	10	1495	20900	50
83F015EMF0202	8.3	15	2335	30358	50
83F020EMF0202	8.3	20	2335	30358	50
83F025EMF0202	8.3	25	3363	40353	50
83F030EMF0202	8.3	30	9341	102750	50
83F040EMF0202	8.3	40	9341	102750	50
83F050EMF0202	8.3	50	13451	134509	50
83F065EMF0202	8.3	65	17277	155493	50
83F080EMF0202	8.3	80	38873	310985	50
83F100EMF0202	8.3	100	69108	473667	50
83F125EMF0202	8.3	125	83167	1024667	50
83F150EMF0202	8.3	150	119760	1431133	50
83F200EMF0202	8.3	200	212907	2480000	50

Table 5. Order Information and Electrical Ratings 15.5 kV Fuse

	Fuse Rating		min melt I²t	Total Clear I²t	Max. Interrupting Rating (kA Symmetric) at 15.5kV
Catalog Number	kV	A	A²sec	A²sec	
155F008EMF0202	15.5	8	1495	9124	43
155F010EMF0202	15.5	10	1495	9124	43
155F015EMF0202	15.5	15	2335	14595	43
155F020EMF0202	15.5	20	2335	14595	43
155F025EMF0202	15.5	25	3363	21521	43
155F030EMF0202	15.5	30	9341	62117	43
155F040EMF0202	15.5	40	9341	63518	43
155F050EMF0202	15.5	50	13451	92408	43
155F065EMF0202	15.5	65	17277	119596	43
155F080EMF0202	15.5	80	29940	330000	43
155F100EMF0202	15.5	100	53227	680000	43
155F125EMF0202	15.5	125	83167	915000	50*

* The lab limit at 17.2 kV is 43 kA and at 15.5 kV is 50 kA. All 15.5 kV fuses were tested at 17.2 kV 43 kA with the exception of the 125 A fuse which was tested at 15.5 kV only.

Table 6. Order Information and Electrical Ratings 17.2 kV Fuse

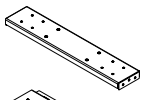
	Fuse Rating		min melt I²t	Total Clear I²t	Max. Interrupting Rating (kA Symmetric) at 17.2kV
Catalog Number	kV	A	A²sec	A²sec	
172F008EMF0202	17.2	8	1495	16233	43
172F010EMF0202	17.2	10	1495	16233	43
172F015EMF0202	17.2	15	2335	26155	43
172F020EMF0202	17.2	20	2335	26155	43
172F025EMF0202	17.2	25	3363	38840	43
172F030EMF0202	17.2	30	9341	110223	43
172F040EMF0202	17.2	40	9341	112558	43
172F050EMF0202	17.2	50	13451	166791	43
172F065EMF0202	17.2	65	17277	219667	43
172F080EMF0202	17.2	80	29940	426000	43
172F100EMF0202	17.2	100	53227	850000	43

Table 7. Base Catalog Configuration

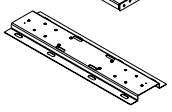
Base Catalog Number

EMFBRK XX XX XX XX

Base (choose one base design)

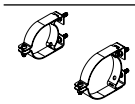


CB — Standard Channel Base



HB — Top-Hat Channel Base

Clamps (choose one clamp design)



BC — Bolted Channel Mounting Clamp

QR — Quick-Release Channel Mounting Clamp

Pocket Brackets (choose one bracket design)

S1* — Rotatable Stand-Off Pocket

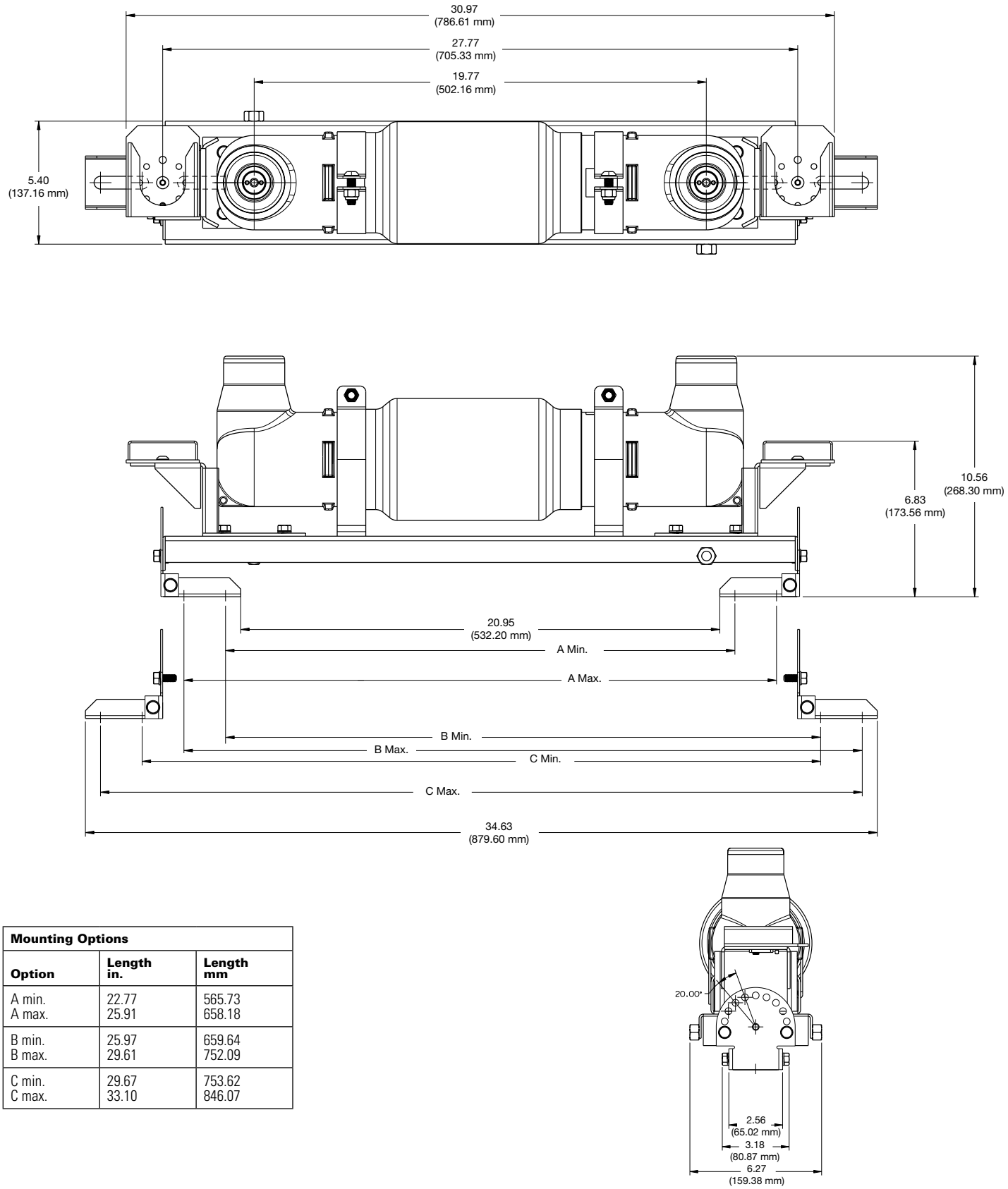
S3 — Extended Stand-Off Channel Bracket with Pocket

* Only for Top-Hat Channel Base

Foot

F1** — Adjustable Foot Bracket (See Figure 3)

** Only for Standard Channel Base



Mounting Options		
Option	**Length in.**	**Length mm**
A min. A max.	22.77 25.91	565.73 658.18
B min. B max.	25.97 29.61	659.64 752.09
C min. C max.	29.67 33.10	753.62 846.07

Figure 6. Standard channel base CB, clamp BC, pocket brackets S3, and Foot F1.

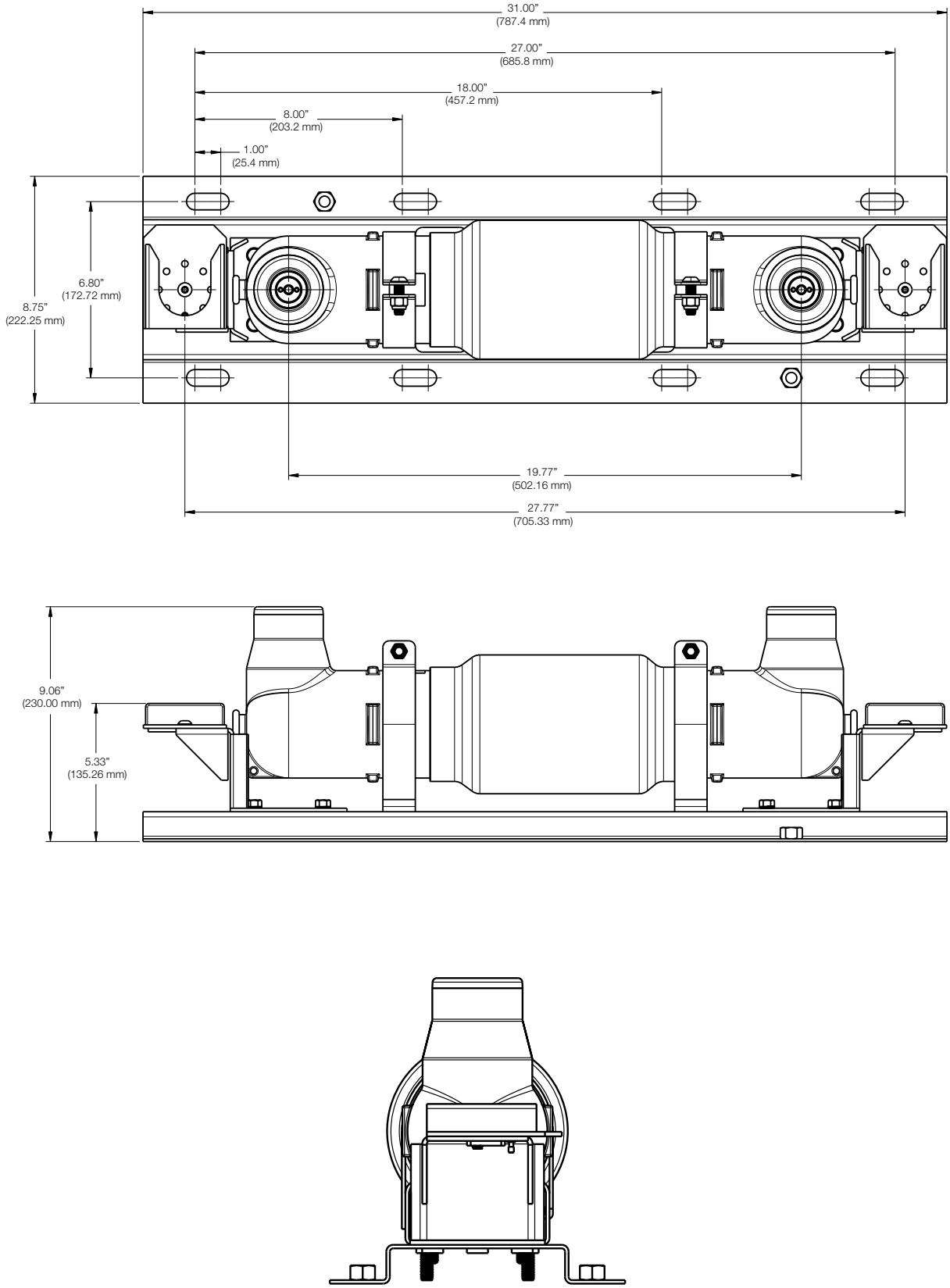


Figure 7. Top-hat channel base HB.

Table 8. Replacement Parts and Special Tools

Catalog Number	Description	Qty
EMFADAPTER	Replaceable bushing adapter	1
EMFBRKCB	Channel base bracket	1
EMFBRKF1	Channel base adjustable foot	1
EMFBRKHB	Top-Hat base bracket	1
EMFBRKQR	Quick release clamp	1
EMFBRKBC	Bolted channel clamp	1
EMFBRKS1	Rotatable standoff pocket	1
EMFBRKS3	Standoff pocket extended bracket	1
EMFSOCKET	Special bushing adapter tool	1

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