COOPER Bussmann

Automotive Products

Circuit Protection Solutions for the Transportation Markets

Contents

Cooper Bussmann Automotive Products l 7300 W. Wilson Ave l Chicago, IL 60706-4792 l Phone: 1-800-323-1226
Website: http://www.bussauto.com

Overcurrent devices provide two main purposes in an electrical circuit:

1. To protect components, equipment, and associated wiring from costly damage.
2. To isolate sub-systems from the main system once a current fault has occurred.

Fuses and circuit breakers are commonly selected as the preferred overcurrent device.

Fuses

The key component of a fuse is the “element”, a short piece of metallic wire or strap made of a material with a relatively low and predictable melting point. Fuses are current sensitive devices and selected to be the weakest link in the circuit. Circuit protection is provided when the fuse link melts and safely interrupts the overcurrent demand. The key criteria to judge the performance of a fuse is the time versus current characteristic curve. This curve can be used to match the fuse with the anticipated overcurrent load expected in the application.

Thermal Circuit Breakers

The basic components of a thermal circuit breaker are the composite alloy reed, two precious metal contacts, and the interconnecting terminals. When an overcurrent occurs, heat is generated as the current flows through the reed causing the reed to deflect and snap open. This separates the contacts and safely interrupts the current flow. Two important parameters used to judge the performance of thermal circuit breakers are the time versus current characteristic curve, similar to the fuse, along with the speed at which the contacts snap open. The relative speed at which the contacts separate is a measure of the cycle life under electrical loading demands. Cooper Bussmann - Automotive Products carefully designs its snap acting reed element to insure long cycle performance for its products.

TYPES OF OVERCURRENT

Any current that exceeds the ampere rating of the fuse or circuit breaker should be considered an overcurrent. Overcurrent situations are generally classified as either a short circuit or an overload condition.

Short Circuit

Short circuit is a current condition that greatly exceeds the rating of the device. It is caused when a malfunction or accident creates a break in the normal path allowing electricity to flow directly to ground. This shorter current path bypasses the resistance offered by the circuit components connected in the normal current path. In this situation there is virtually no resistance to impede the current and the current will build to a level where the heat generated can cause insulation and/or equipment breakdown.

Overload

An overload is an overcurrent that is within the normal current path. Overloads occur when the current exceeds the value for which the equipment or associated wiring is rated. This typically occurs when too many devices are connected to the circuit or when a device connected to the circuit malfunctions. Sustained overloads may slowly cause overheating of the wiring and the components. The circuit protection device must open before these types of overloads cause damage.

SELECTING OVERCURRENT PROTECTION

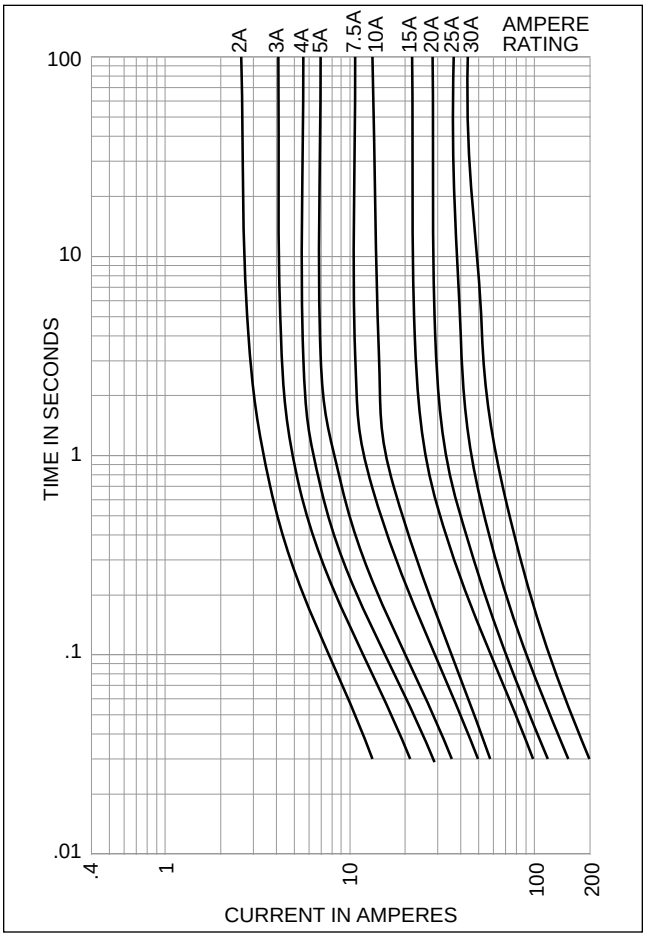
During normal conditions, an overcurrent protection device must carry the current without nuisance openings. However, when an overload or short circuit occurs the device must interrupt the overcurrent and withstand the voltage across the device after arcing. To properly select an overcurrent device the following items must be carefully considered:

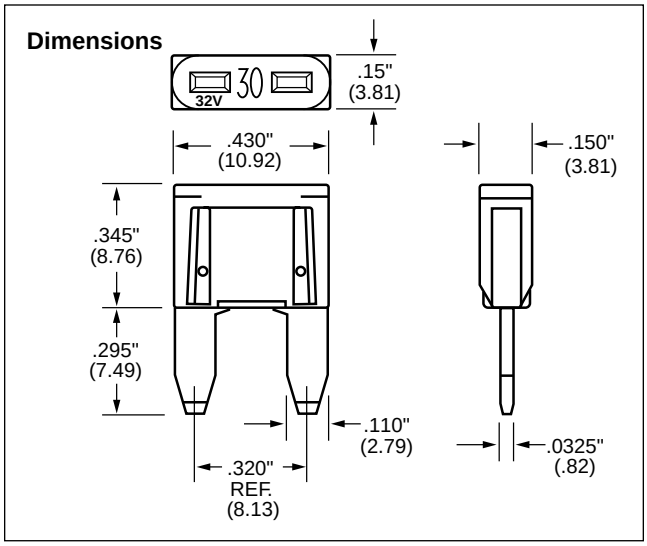
- **Voltage rating:** represents the maximum system voltage present in the circuit in which the overcurrent device is installed. The system voltage should not exceed this value for proper operation of the device during an overcurrent event.
- **Current rating:**
  This is the amperage value marked on the circuit protection device. The circuit protection device is designed to handle this value under steady operating conditions and at ambient temperatures near 25°C. Since field applications often deliver loading conditions and ambient temperatures that very from ideal nominal settings, it is recommended that circuit designers select device ratings above the nominal circuit current to prevent nuisance trips.
- **Characteristics of equipment to be protected/In-rush characteristics:**
  During the operation of protected equipment, system current can significantly vary. This is particularly evident when motor or other inductive loads in the circuit cause large current surges during start-up or shut-down. Circuit protection designers should be aware of these surges and/or in-rush characteristics and select the overcurrent protection device to either accept or reject these current fluctuations as desired.
- **Available short circuit current:**
  During a fault or short circuit condition the fuse or circuit breaker may receive a burst of current due to a rapid discharge of available supply current into the circuit. Large DC battery supplies and high current rated electric distribution buses often have this potential for severe short circuits. In these situations the current protection device should be rated to safely clear these instantaneous peak current possibilities.
- **Ambient conditions:**
  The time it takes to interrupt the current is dependent upon the ambient current temperature characteristics. Ambient temperature refers to the temperature of the air immediately surrounding the circuit protection device. The effective fuse or circuit breaker ambient temperature to be considered can be appreciably different than the outside room or larger enclosure containing the device. This can occur when the device is contained in a tight area or it is mounted in or near a heat producing component such as a transformer or resistor. When selecting a fuse or circuit breaker at ambient temperatures significantly different from the stated nominal temperature, the circuit designer should adjust the selected overcurrent protection rating based on the published derating curves.

Fuses — may be preferred when fast response to a short circuit condition is required or when high available short circuit currents could occur. Fuses are also less sensitive to high ambient temperature conditions. Fuse characteristic curves can be used to carefully size the device to a critical or special application.

Circuit Breakers — may be preferred for mild overload and short circuit faults. They have a clear advantage of resetability. Four different methods for reset are generally available:

- Type I *(automatic reset):* the circuit breaker cycles continuously during an overload condition until the overload is removed or corrected.
- Type II *(modified reset):* the circuit breaker contains an additional resistive component that causes the device to remain open as long as power is available.
- Type III *(manual reset):* the circuit breaker contains a trip indicator button or lever that must be manually activated to return the device to normal operation.
- Type III *(switchable):* same as the manual Type III with the option of allowing the user to disable the circuit using an external trip button.





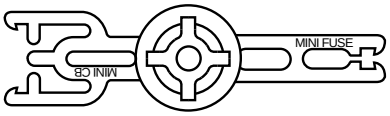
ATM Mini® – Fuse
Fast Acting

SPECIFICATIONS

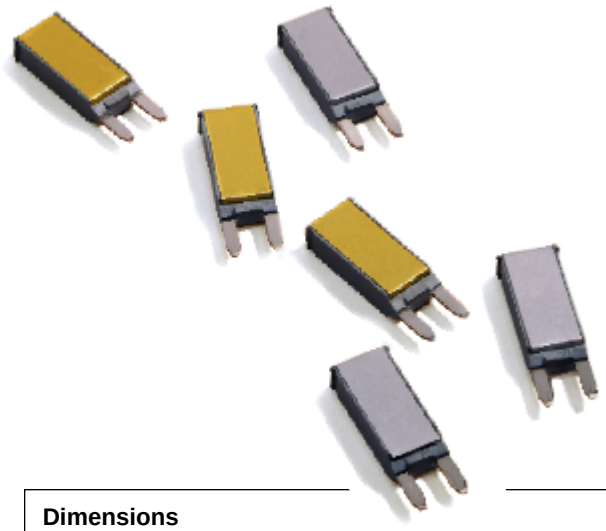
Ampere Ratings: 2 to 30 Amperes
Voltage Rating: 32 Volts DC (or less)
Housing Material: UL Rated 94VO Thermoplastic
Terminals: Silver plated
Interrupting Rating: 1,000 Amperes
Marking: Amperage marking is OCR Compliant
Agency Approvals: UL Recognized (3-30A)
Guide JFHR2, File E56412

Part No.	Amp Rating	Color
ATM-2	2	Gray
ATM-3	3	Violet
ATM-4	4	Pink
ATM-5	5	Tan
ATM-7.5	7.5	Brown
ATM-10	10	Red
ATM-15	15	Lt. Blue
ATM-20	20	Yellow
ATM-25	25	Natural
ATM-30	30	Green

MINI® Fuse Puller - Part Number 32002



See page 13 for more information.

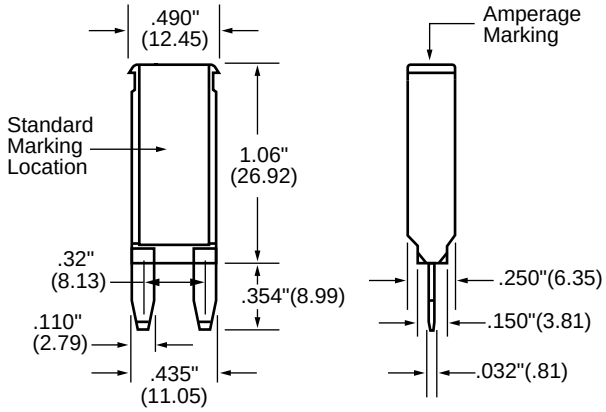


Series 21X Mini Circuit Breakers
Auto & Modified Reset

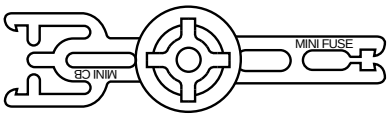
SPECIFICATIONS

Single Pole Thermal Type Breakers
Ratings: 7.5A, 10A, 15A, 20A, 25A, 30A; Voltage of 14VDC.
Operating Temperature: –40°F (–40°C) to 185°F (85°C).
Storage Temperature: –40°F (–40°C) to 260°F (125°C).
Cover: Gray 94VO Thermoplastic housing with standard gold cover (Type I) or silver cover (Type II).
Marking: Standard marking includes amp/volt ratings, part number, and date code. OCR marking available.
Termination Type: Compatible with 280 Type fuse blocks using 8.1mm centerline.
Approvals: Complies with SAE standard J553 Type I and Type II Circuit Breakers.

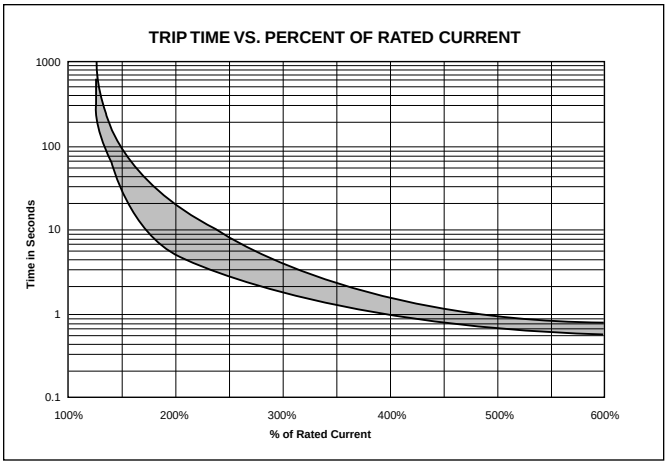
Dimensions

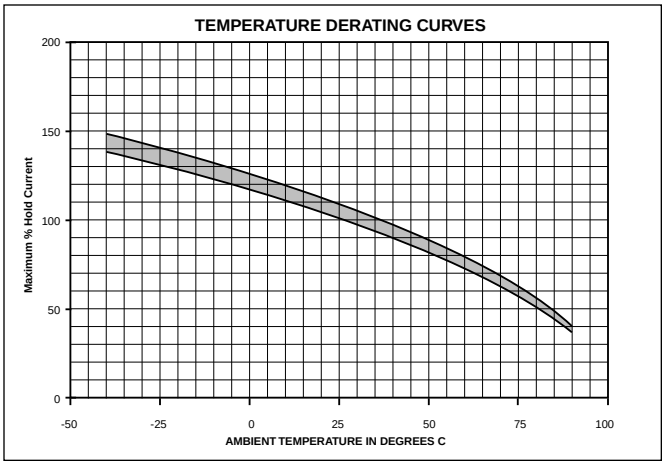


MINI Circuit Breaker Puller - Part Number 32002



See page 13 for more information.





PART NUMBERING SYSTEM

Series	Rating		Marking	Special Options
q q q	q q	–	q q	q
211 – Type I, 14VDC 212 – Type II,	7.5 – 7.5 amps 10 – 10 amps 15 – 15 amps 20 – 20 amps 25 – 25 amps 30 – 30 amps		00 – Std. Marking (Consult Factory for Special Options)	(Consult Factory for Special Options)

Vehicle Electrical Center

Bussmann®

Series 3000 VEC

The Series 3000 VEC is a state of the art electrical distribution module for DC powered vehicles.

The VEC utilizes a patented programmable 3-D matrix technology which can easily be modified to accommodate changes in your electrical systems.

The module has been designed to accept automotive components having 2.8MM wide terminals on 8.1MM centerline spacing.

The Series 3000's compact size, only 4" x 4", provides the ultimate in component density. These dimensions match many commonly available devices (mini fuses, relays, circuit breakers, etc.) which are installed as plug-in components into the housing.

The internal design consists of multi-layer metal grids, each which can be readily customized to accommodate a wide range of circuit options. Layer spacing is designed to allow for direct plug-in of input and output connectors on any of three sides of the panel. Up to two 800 Series (2 position) input connectors can be provided, and up to four 280 Series (8 position) input/output connectors can be selected.

Harness designs can be simplified and cost reduced because jumpers and splices in the harness are eliminated by internally programming them into the grid matrix.

The Series 3000 is ideal for distributed power and auxiliary "add-on" applications. Larger distribution designs can be accommodated with multiple VEC's.

Current VEC applications include: Class 3-8 trucks, buses, RV's, CON-AG equipment and automotive power distribution systems.

The Series 3000 VEC detailed specifications and performance test results are available upon request.

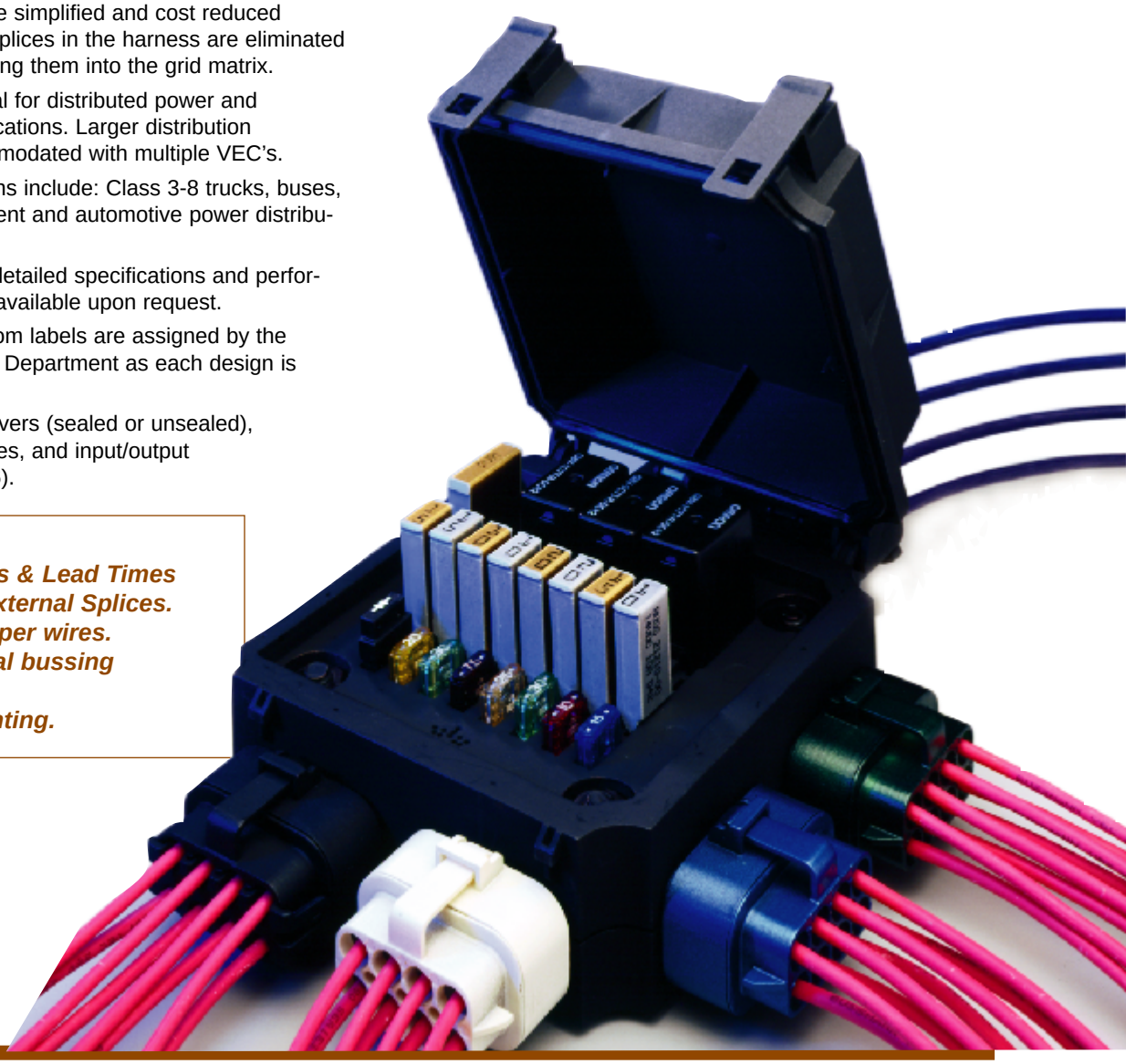
Part numbers and custom labels are assigned by the Bussmann Engineering Department as each design is customer specific.

VEC options include covers (sealed or unsealed), outboard mounting bases, and input/output connectors (see page 6).

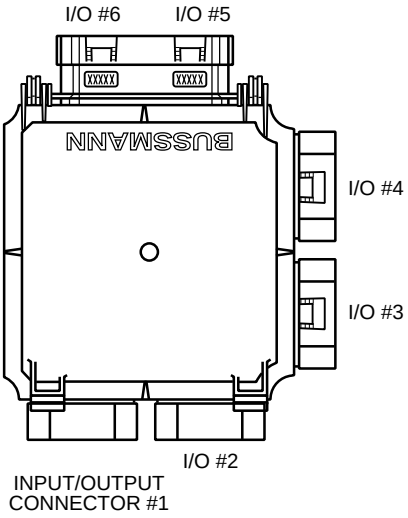
- ***Reduce***
  - ***– Tooling Costs & Lead Times***
  - ***– Number of External Splices.***
  - ***– Need for jumper wires.***
- ***Allows for internal bussing to relays.***
- ***Low Profile Mounting.***

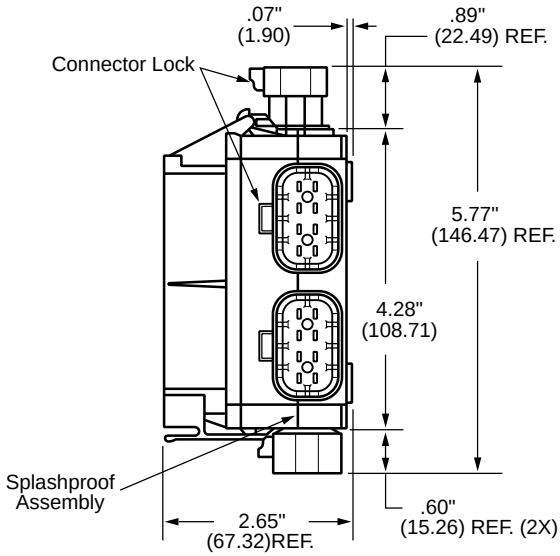
SPECIFICATIONS

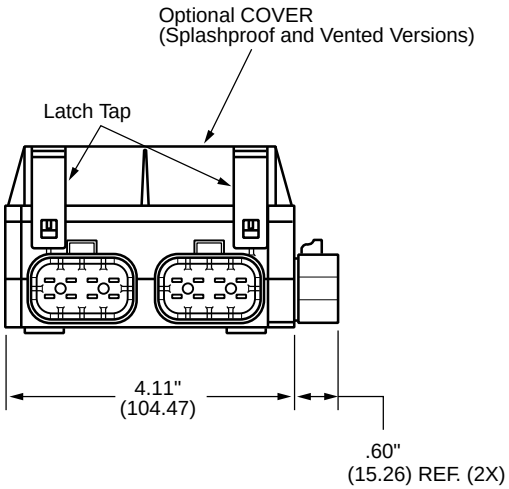
Electrical Ratings, Amperage:
VEC Housing and Connector Material: Black, UL rated 94VO Thermoplastic, –40°C to 125°C
Input Capacity For All Circuits: 200 Amps maximum
Input Terminal Rating: Accepts industry standard 8.0mm blade terminals; 60 Amps per terminal max.
Output Terminal Rating: Accepts industry standard 2.8mm blade terminals; 30 Amps per terminal max.
Recommended Wire Size: Input Wires (unsealed) — #8-18; Input Wires (sealed) — #8; Output Wires (sealed and unsealed) — #10-22
Top Level Plug-in Components: 30 Amps max. device rating.

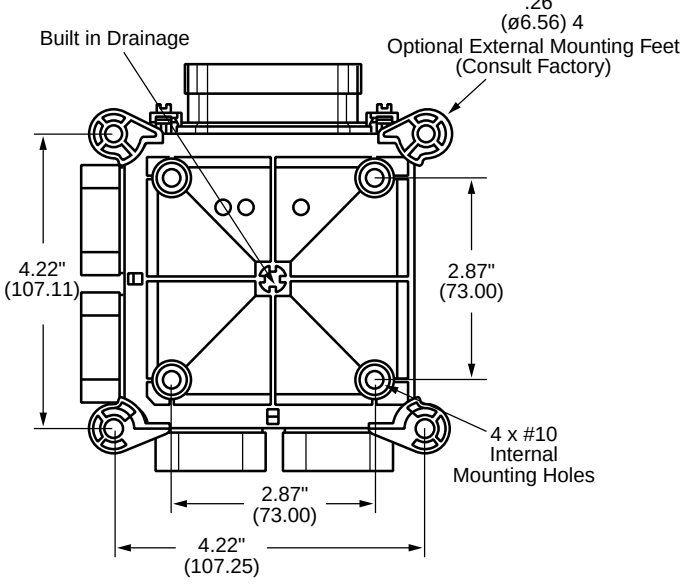


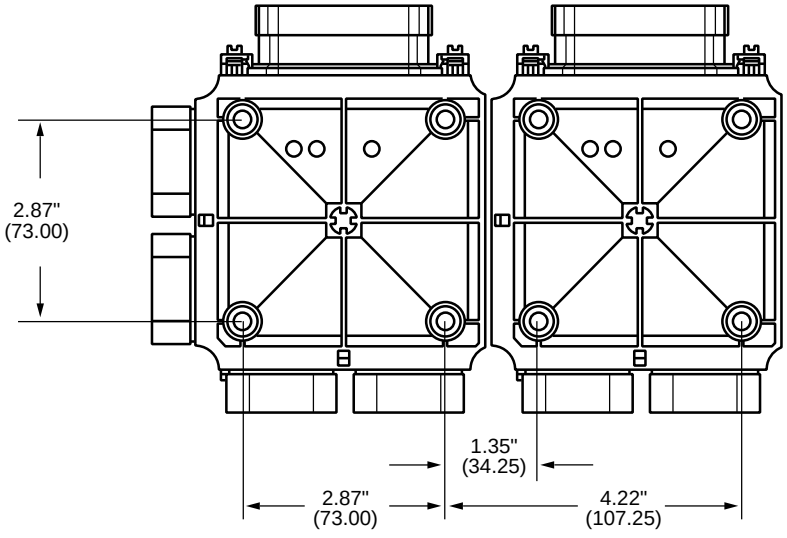
Dimensions

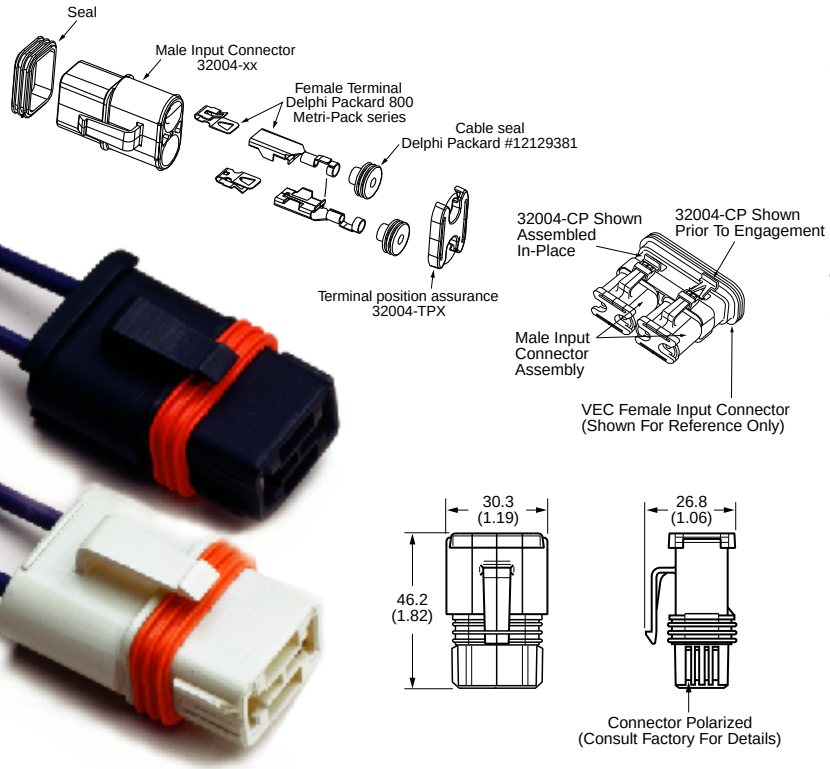

I/O #6
I/O #5
BUSSMANN
I/O #4
I/O #3
I/O #2
INPUT/OUTPUT
CONNECTOR #1


.07"
(1.90)
.89"
(22.49) REF.
Connector Lock
5.77"
(146.47) REF.
4.28"
(108.71)
Splashproof
Assembly
2.65"
(67.32)REF.
.60"
(15.26) REF. (2X)


Optional COVER
(Splashproof and Vented Versions)
Latch Tap
4.11"
(104.47)
.60"
(15.26) REF. (2X)


Built in Drainage
.26"
(ø6.56) 4
Optional External Mounting Feet
(Consult Factory)
4.22"
(107.11)
2.87"
(73.00)
4 x #10
Internal
Mounting Holes
2.87"
(73.00)
4.22"
(107.25)


2.87"
(73.00)
1.35"
(34.25)
2.87"
(73.00)
4.22"
(107.25)



MALE INPUT CONNECTOR
32004 - X X

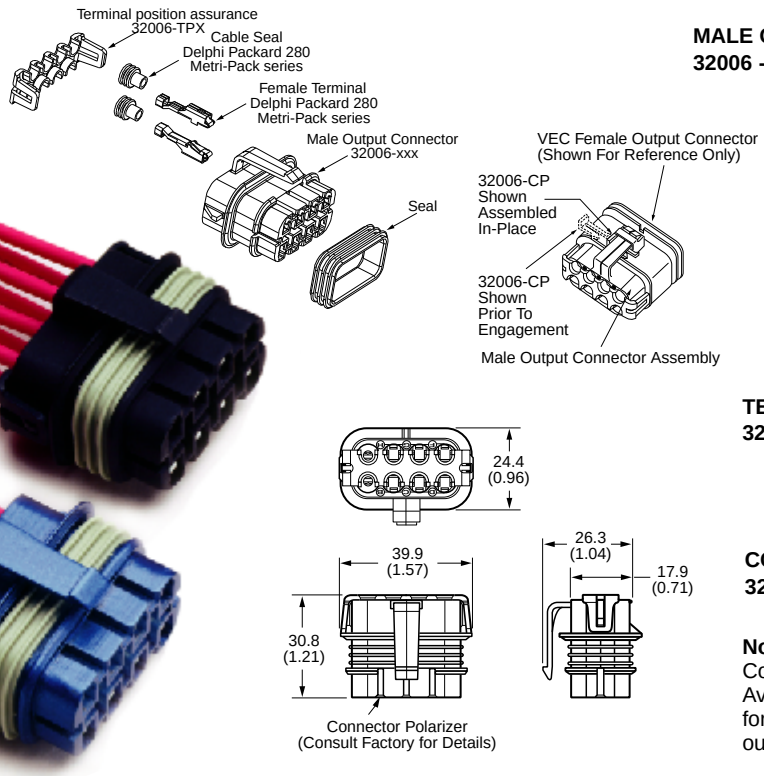
- Sealed / Non-Sealed Configuration
  - **1** = for Non-Sealed Version
  - **2** = for Sealed Version
- Color of Part
  - **A** = Black
  - **B** = Gray

TERMINAL POSITION ASSURANCE
32004 -TPX

- Sealed / Non-Sealed Configuration
  - **1** = for Non-Sealed Version
  - **2** = for Sealed Version

CONNECTOR POSITION ASSURANCE
32004 - CP (Ship in Bulk)

Note: Terminals and Terminal Seal Components are not provided with connectors. Available from Delphi-Packard. Contact factory for part list. Sealed connector option includes outer body seal.



MALE OUTPUT CONNECTOR
32006 - X X X

- Sealed / Non-Sealed Configuration
  - **1** = for Non-Sealed Version
  - **2** = for Sealed Version
- Connector Cavity Configuration
  - **1** = for Tang-less Female Connector
  - **2** = for with Tang Female Connector
- Color of Part
  - **A** = Black
  - **B** = Gray
  - **C** = Green
  - **D** = Blue

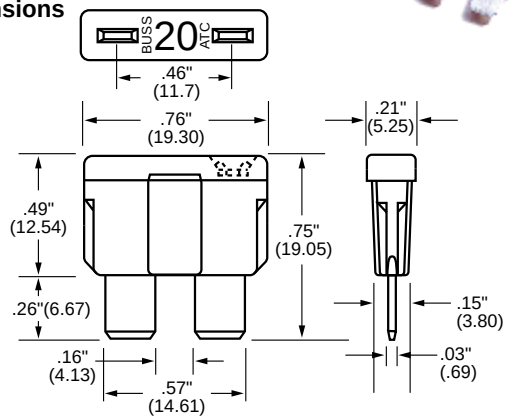
TERMINAL POSITION ASSURANCE
32006 - TPX

- Sealed / Non-Sealed Configuration
  - **1** = for Non-Sealed Version
  - **2** = for Sealed Version

CONNECTOR POSITION ASSURANCE
32006 - CP (Ship in Bulk)

Note: Terminals and Terminal Seal Components are not provided with connectors. Available from Delphi-Packard. Contact factory for part list. Sealed connector option includes outer body seal.

Dimensions

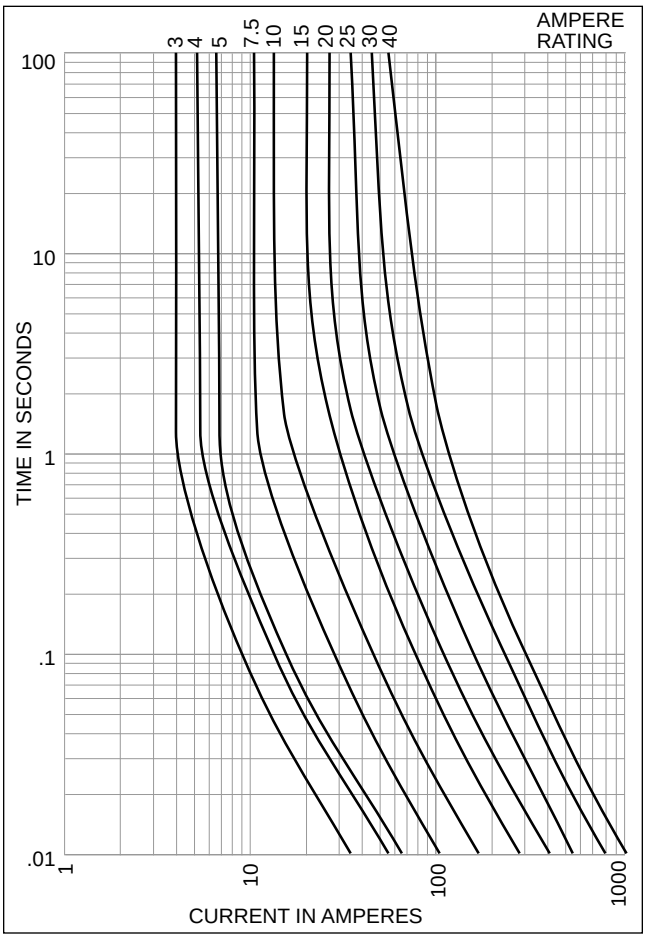


ATC® Blade – Type Fuse
Fast Acting

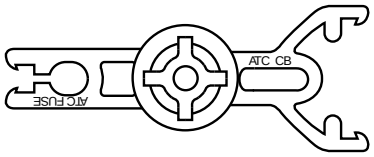
SPECIFICATIONS

Ampere Rating: 1 to 40 Amperes
Voltage Rating: 32 Volts DC (or less)
Housing Material: UL Rated 94VO Thermoplastic
Terminal Material: Tin plated
Interrupting Rating: 1,000 Amperes
Marking: Amperage marking is OCR Compliant
Agency Approvals: UL Recognized, (3-40A)
(Guide JFHR2, File E56412)

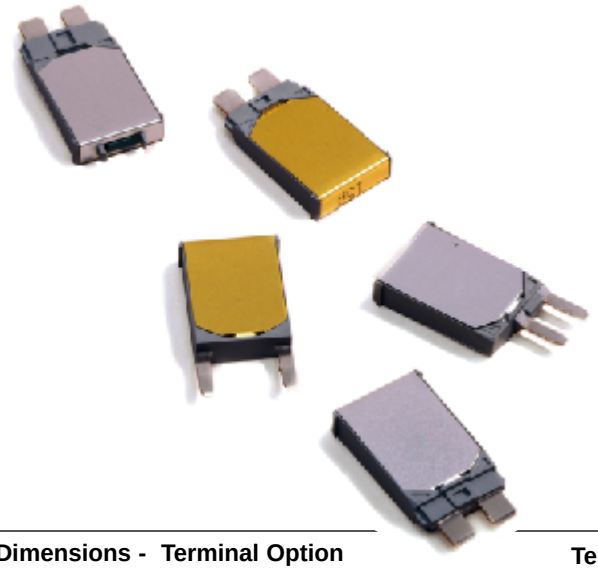
Part No.	Amp Rating	Color
ATC-1	1	Black
ATC-2	2	Gray
ATC-3	3	Violet
ATC-4	4	Pink
ATC-5	5	Tan
ATC-7.5	7.5	Brown
ATC-10	10	Red
ATC-15	15	Lt. Blue
ATC-20	20	Yellow
ATC-25	25	Clear
ATC-30	30	Green
ATC-40	40	Amber



ATC® Fuse Puller - Part Number 32003



See page 13 for more information.

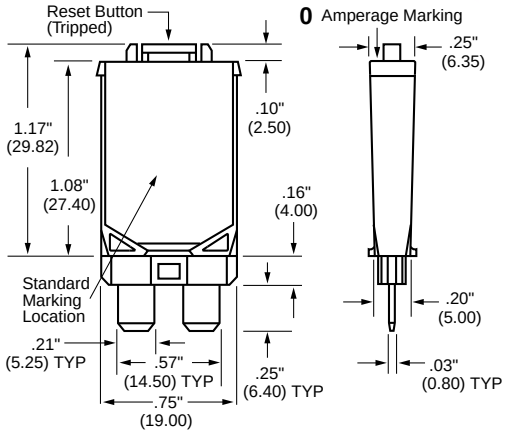


Series 22X ATC® Circuit Breakers
Auto & Modified Reset

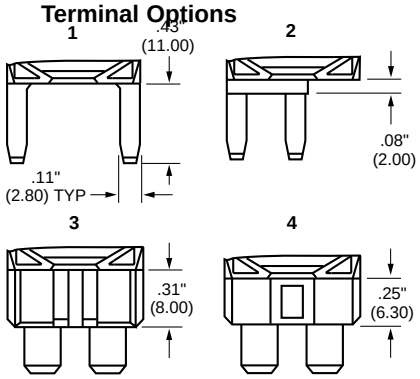
SPECIFICATIONS

Single Pole Thermal Type Breakers
Ratings: 7.5A, 10A, 15A, 20A, 25A, 30A;
Voltage of 14VDC; 24VDC on 223 Series.
Operating Temperature: –40°F (–40°C) to 185°F (85°C).
Storage Temperature: –40°F (–40°C) to 260°F (125°C).
Cover: Gray 94VO Thermoplastic housing with standard gold cover (Type I) or silver cover (Type II and Type III).
Marking: Standard marking includes amp/volt ratings, part number, and date code. Type III Reset Buttons are color-coded to amperage ratings. OCR marking is available.
Termination Type: Compatible with 280 Type or ATC fuse blocks.
Approvals: Complies with the requirements of SAE standard J553 Type I, Type II, and Type III Circuit Breakers.

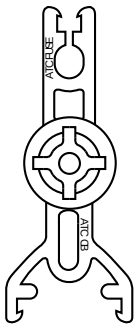
Dimensions - Terminal Option



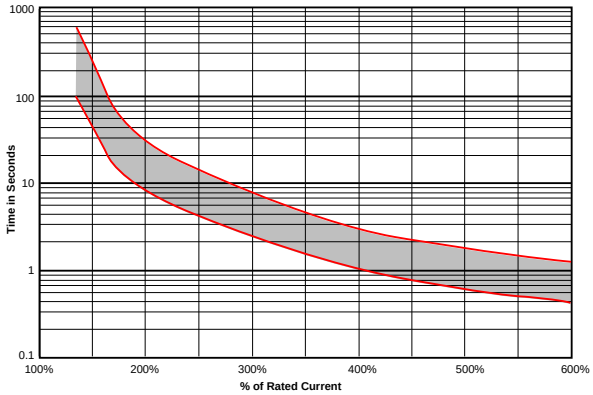
Terminal Options

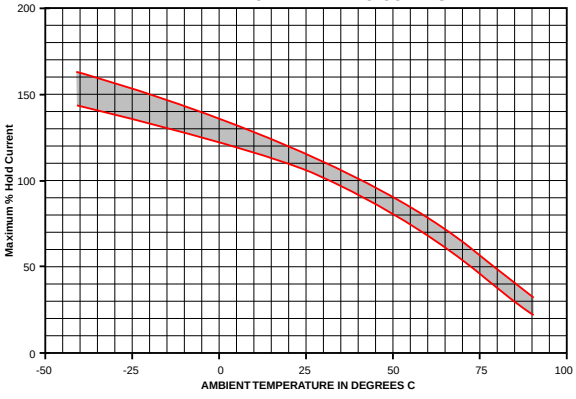


ATC® Circuit Breaker Puller Part Number 32003



See page 13 for more information.

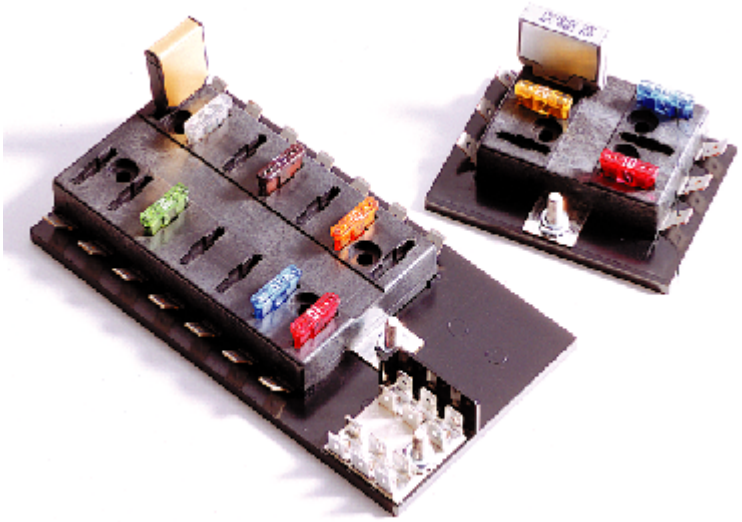




PART NUMBERING SYSTEM

Series	Rating		Terminal	Marking
◻◻◻	◻◻	–	◻	◻
221 – Type I, 14VDC 222 – Type II, 14VDC 223 – Type III, 24VDC	7.5 – 7.5 amps 10 – 10 amps 15 – 15 amps 20 – 20 amps 25 – 25 amps 30 – 30 amps		0 – ATC Fuse, 4mm Insertion Depth 1 – 16.2mm Centerline 280 2 – 8.1mm Centerline 280 (MINI) 3 – ATC Fuse, Delphi Packard Autofuse Block (e.g. 12004943) 4 – ATC Fuse, Blocks with Raised Shrouds, 6.4mm Insertion Depth	00 – Std. Marking

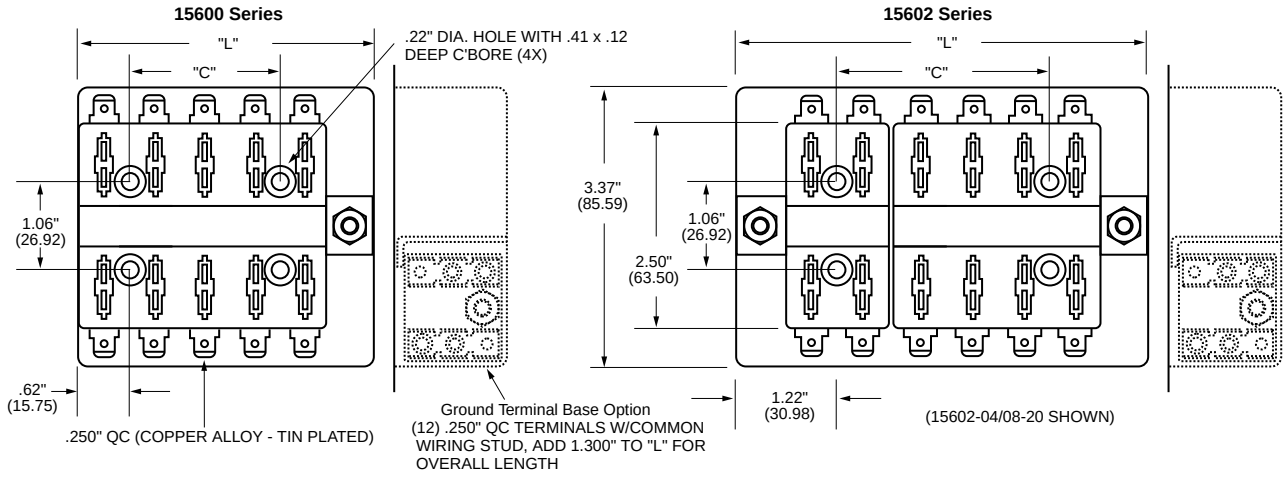
ATC® Blade-Type Fuse Panels



SPECIFICATIONS

Interchangeable Blade Terminals: Accepts ATC® blade-type fuses or Series 22X circuit breakers.
Wiring: Output terminals - .250" x .032" QC rated 30A max. per circuit; Input terminals - #10-32 stud input rated 100A max.
Recommended Wire Size: Input Power #4-6; Output Circuits #12-16.
Positions: Provides 4 to 20 output circuits.
Material: Black, UL rated 94VO thermoplastic, –20°F to 150°F (0°C to 65°C).
Applications: Compact and lightweight, yet rugged enough for use in trucks, buses, boats, RV's, etc. Recommended for supplemental accessory power requirements. See 15700 Series or 3000 Series VEC for main power distribution systems.
Other Features: No top cover needed; recessed trifurcated fuse contacts. Recessed mounting holes.

Dimensions



No. of Fuses	"C"	15600 "L"	15602 "L"	No. of Fuses	"C"	15600 "L"	15602 "L"
04	–	1.84	2.44	14	3.12	4.97	5.56
06	.62	2.47	3.06	16	3.76	5.59	6.19
08	1.25	3.09	3.68	18	4.37	6.22	6.81
10	1.87	3.75	4.32	20	5.00	6.84	7.43
12	2.50	4.34	4.94				

Dimensions in inches. Multiply by 25.4 for metric.

PART NUMBERING SYSTEM

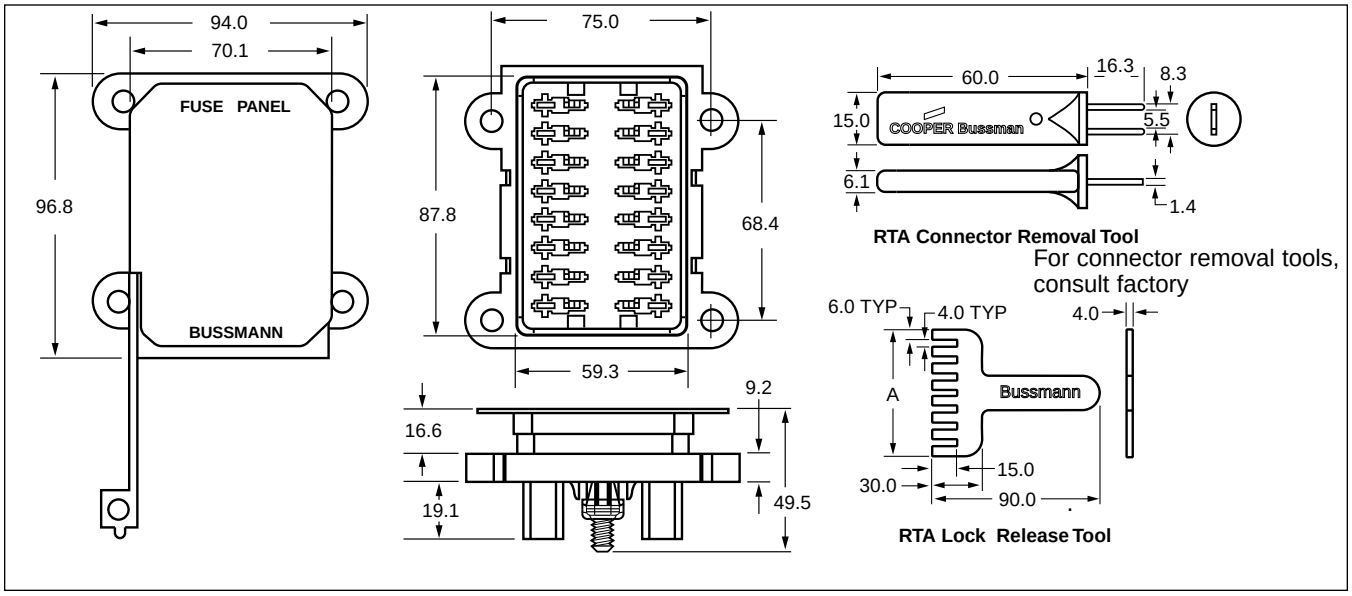
Series	No. of Fuses &/or Circuit Breaker Positions	Hardware Options	Ground Terminal Base
q q q q q –	q q –	q	q
q –	q q / q q –	q	q
0 – Single Stud, Single Supply Circuit 2 – Double Stud, Split Supply Circuits	04-20 Left Side 04-16 / Right Side 04-16 (max. combination of 20)	0 – W/O nuts 1 – Nuts shipped bulk 2 – Nuts assembled	0 – None 1 – Include Ground Pad

Rear Terminal ATC® Fuse Block

SPECIFICATIONS

Blade Terminals: Accepts ATC® blade-type fuses or Series 220 ATC® circuit breakers.
Power Input: 1/4-20 stud for ring terminal. 200 amp max. input.
Positions: Provides 8 to 24 output circuits.
Material: 94VO Thermoplastic.
Ambient Temperature: –40°C to 125°C.
Recommended Wire Size: Input Power #4-6; Output Circuits #10-16.
Applications: Power distribution system for trucks, buses, boats, RV's etc. 15702-product line allows for two separate powered circuits.
Other Features: Splash resistant cover. Rear terminal wiring for through panel mounting. No wiring or connections exposed to front of panel. Secondary lock feature for securing of output terminals. Packard style output terminals can be removed from 15700 product with use of special tool. Does not require distribution block removal for replacement or rearrangement of wires.

Accepts Delphi Pack-Con Terminals in output positions. Consult factory for other terminal options and information. Output terminals are not supplied with fuse block.



PART NUMBERING SYSTEM

Series	No. of Positions	Hardware Options	Cover Option	Output Clip Option	Terminal Lock Option
15700 –	16	–			
15702 –	Left Side / Right Side	–			

1 – Single Stud, Single Supply Circuit
2 – Double Stud, Split Supply Circuit

Left Side 04-12 / Right Side 04-12
(max. total of 16)
(increments of 4)
For 8-24 pole option consult factory.

0 – W/O nuts
1 – Nuts shipped bulk
2 – Nuts assembled

0 – No cover
1 – w/ fuse cover
2 – w/ CB cover

0 – No clips
1 – with clips

0 – No locks
1 – with locks

Fuse/Circuit Breaker Puller

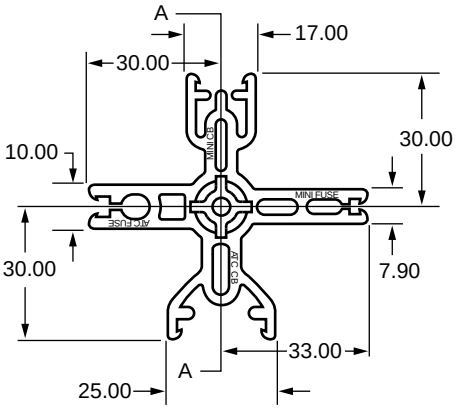
Bussmann®

Series 32000 Series
Automotive Fuse and
Circuit Breaker Extraction Tool

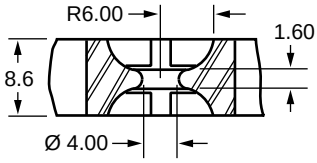
FEATURES / BENEFITS

- **Custom Configurable Design**
  Get Only the Extractors You Need
- **Common Platform for any Style**
  Eliminates Design Changes When Protection Requirements Change
- **Center Snap-Lock Mounting Hole**
  Easy Mounting Using Simple Split-Ball Snap-Lock Post
- **Positive Stop Locking Action**
  Tight Grip Allows Devices to be Removed and Inserted
- **High Temperature Resilient Nylon 6/6 (105°C)**

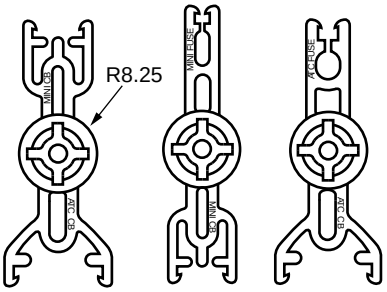
Dimensions



32000



SCETION A-A



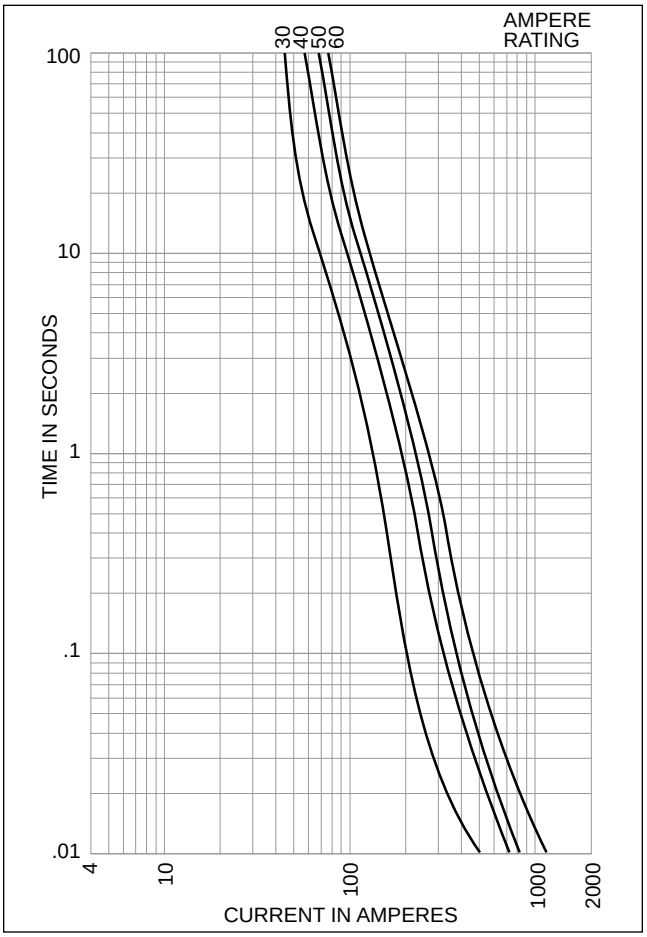
32001 **32002** **32003**

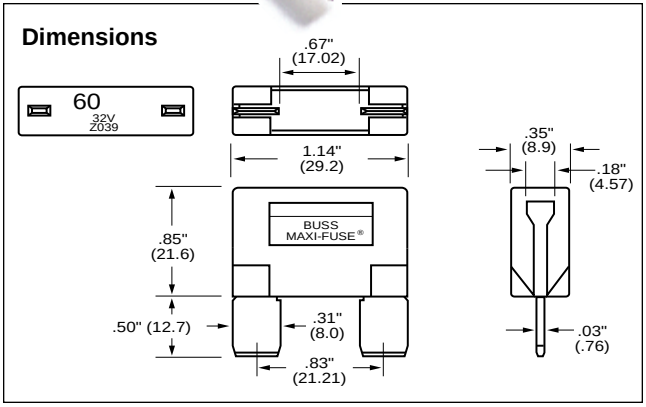
PART NUMBERING SYSTEM

Series **Configuration**

ą ą ą ą q

	Top	Right	Bottom	Left
0 –	MINI CB	MINI FUSE	ATC CB	ATC FUSE
1 –	MINI CB	BLANK	ATC CB	BLANK
2 –	MINI CB	BLANK	MINI FUSE	BLANK
3 –	ATC CB	BLANK	ATC FUSE	BLANK





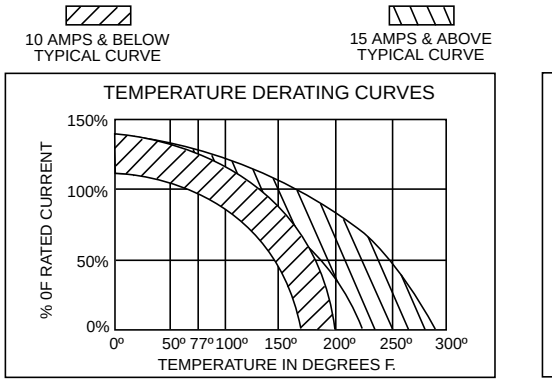
MAX Maxi™ – Fuse
Time Delay – Fast-Acting

SPECIFICATIONS

Ampere Rating: 20 to 80 Amperes
Voltage Rating: 32Volts DC (or less)
Housing Material: UL Rated 94VO Thermoplastic
Terminal Material: Silver plated
Interrupting Rating: 1,000 Amperes
Marking: Amperage marking is OCR Compliant.

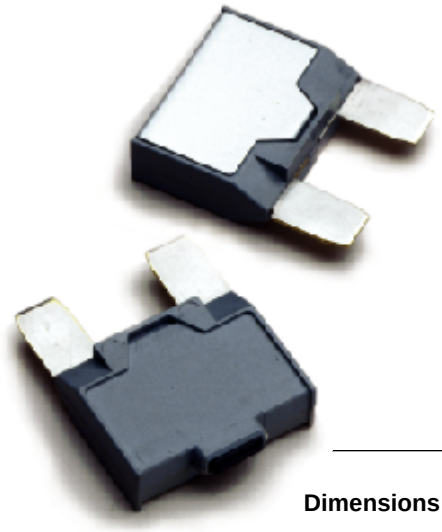
Part No.	Amp Rating	Color
MAX-20	20	Yellow
MAX-30	30	Green
MAX-40	40	Orange
MAX-50	50	Red
MAX-60	60	Blue
MAX-70	70	Tan
MAX-80	80	Neutral

Series 19X MAXI® Circuit Breakers
Auto, Manual & Modified Reset

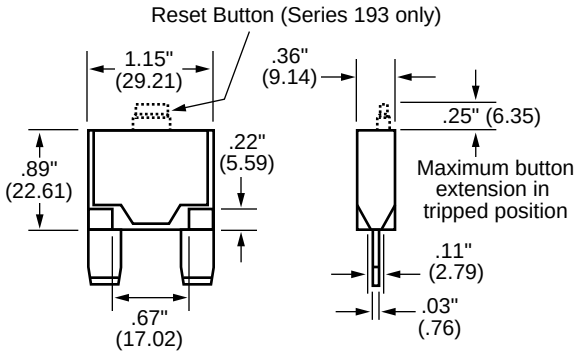


SPECIFICATIONS

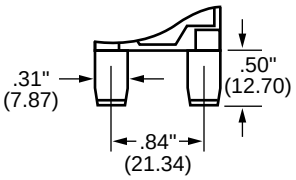
Single Pole Thermal Type Breakers
Ratings: 8A to 50A; Series 191 & 192
12 VDC; Series 193, 194 & 195 24 VDC.
Operating Temperature: –20°F (–10°C) to 150°F (65°C).
Housing Material: Gray 94VO Thermoplastic
Storage Temperature: –20°F (–10°C) to 200°F (93°C).
Applications: Autos, trucks, RV's, buses, boats, portable generators, welding equipment, etc.
Interchangeable Blade Terminals: with MAXI® blade fuse.
Approvals: Complies with SAE standard J553.



Dimensions



Terminal Options



01 MAXI

PART NUMBERING SYSTEM

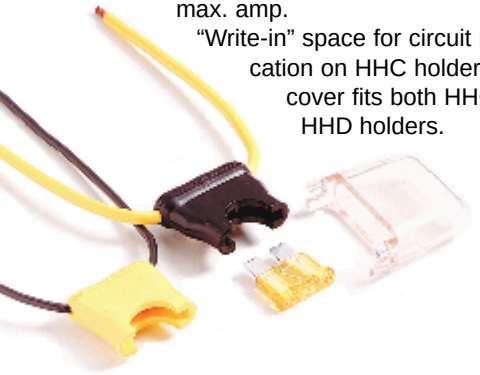
Series	Rating		Terminal	Cover		Button (193 Series Only)	Marking
q q q	q q	–	q q	q	–	q	q
191 – Auto Reset (12 VDC) 192 – Modified Reset (12 VDC) 193 – Manual Reset (24 VDC) 194 – Auto Reset (24 VDC) 195 – Modified Reset (24 VDC)	08 – 8 amps 10 – 10 amps 15 – 15 amps 20 – 20 amps 25 – 25 amps 30 – 30 amps 35 – 35 amps 40 – 40 amps 50 – 50 amps		01 – MAXI	M – Metal* P – Plastic		Blank – No button 1 – Black 2 – White	Consult factory for special markings.

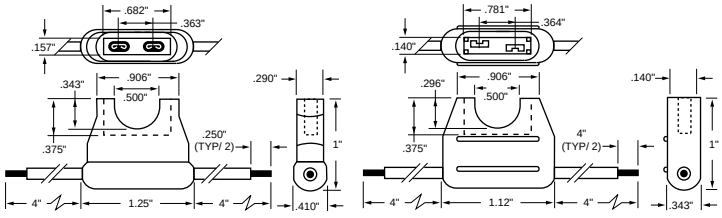
* Metal cover aids heat dissipation.
Mandatory for Modified Resets (192 & 195).
Recommended, but not mandatory on Auto Resets (191 & 194).
Not available on Manual Resets (193).

In-Line Fuseholders for Blade-Type Fuses

HHC and HHD

In-Line Fuseholders for ATC® Blade-Type Fuses.
Voltage Rating: 32V, See table for max. amp.
"Write-in" space for circuit identification on HHC holder. Plastic cover fits both HHC and HHD holders.





Dimensions in inches. Multiply by 25.4 for metric.

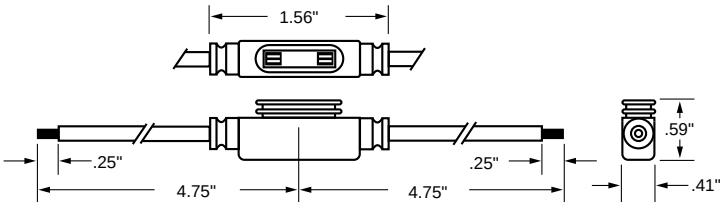
ATC® Blade Type Holder

Catalog No.	Description	Fuse Size	Electrical Connection
HHC	Yellow fuseholder	3–20 amps	#16 lead wire, black wire
HHD	Black fuseholder	3–30 amps	#12 lead wire, yellow wire
HHD-C	Cover only	Fits both HHC & HHD	Clear polycarbonate

*Cover for ATC® Circuit Breaker — consult factory.

HHL and HHM

In-Line Fuseholders for MINI® Fuses.
Voltage Rating: 32V, See table for max. amp.
Body material withstands high temps.
Protective cover has removable straps.



Dimensions in inches. Multiply by 25.4 for metric.

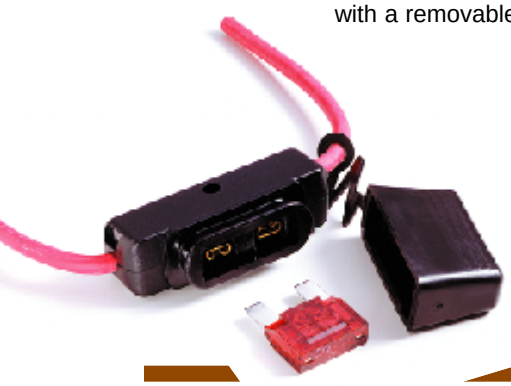
MINI® Fuse Blade Type Holder

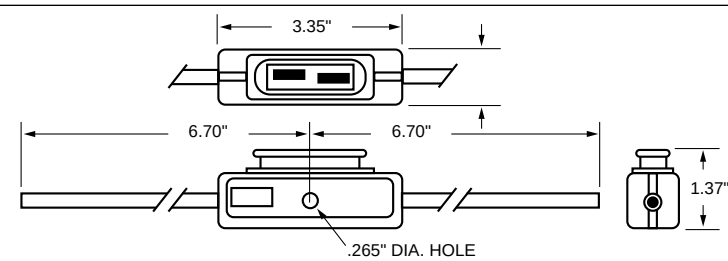
Catalog No.	Description	Fuse Size	Electrical Connection
HHL	Fuseholder w/cover	2–20 amps	#16 lead wire; 4" length
HHL-B	Body only		
HHM	Fuseholder w/cover	2–30 amps	#12 lead wire; 4" length
HHM-B	Body only		
HHM-C	Cover only		

*Cover for Mini® Circuit Breaker — consult factory.

HHX

In-Line Fuseholder for MAXI™ Fuses.
Voltage Rating: 32V, 60A Max.
Firewall mounting hole permits two or more holders to be mounted together. Cover comes with a removable strap.



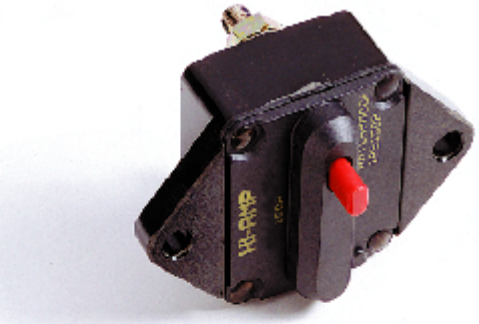


Dimensions in inches. Multiply by 25.4 for metric.

MAXI™ Fuse Blade Type Holder

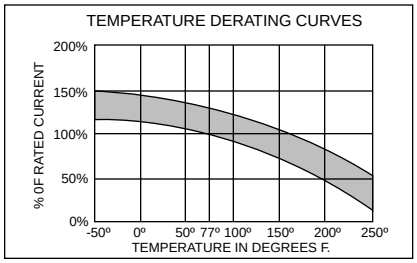
Catalog No.	Description	Fuse Size	Electrical Connection
HHX	Fuseholder w/cover	20–60 amps	#6 lead wire; 5" length
HHX-B	Body only		
HHX-C	Cover only		

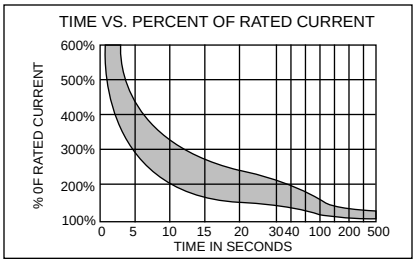
Auto, Manual & Switchable Reset Circuit Breakers



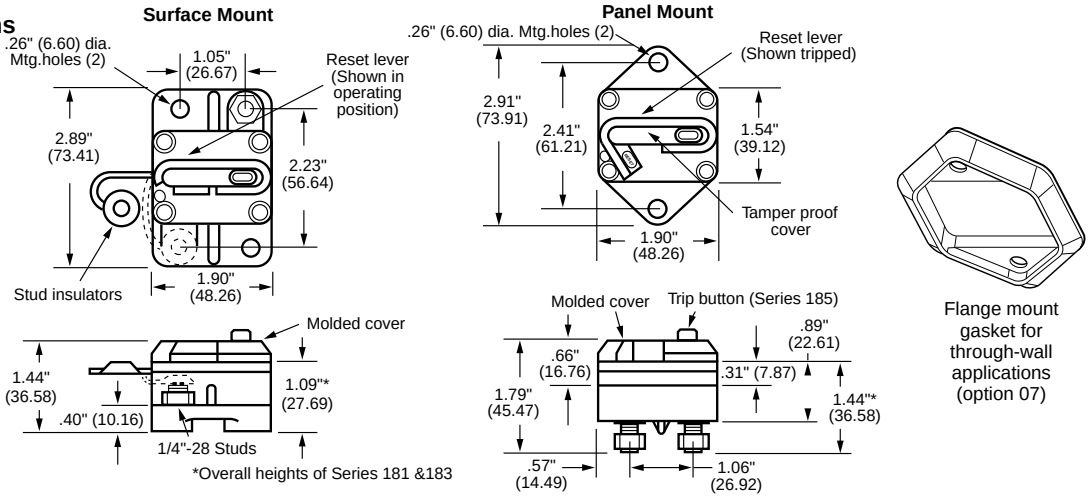
SPECIFICATIONS

Single Pole Thermal Type Breakers
Ratings: 25A to 150A; 30 VDC, 3000 Amp Interrupt Capacity.
Operating Temperature: –25°F (–32°C) to 180°F (82°C).
Storage Temperature: –30°F (–34°C) to 300°F (149°C).
Applications: Typically used in auxiliary and accessory circuits -- trucks, buses, RV's and marine applications. Others might include battery chargers and DC audio systems. Series 181, 184 & 185 are sealed for engine compartment and bilge area applications.
Housing: Thermoset plastic; UL rated 94VO; 311°F (155°C). Stud insulators are provided on covered units with F (Surface Mount) bases.
Mounting: Panel or surface.
Indicator: Series 184 & 185 have a unique reset mechanism which provides visible indication of tripped condition.
Approvals: Complies with SAEJ1625





Dimensions



PART NUMBERING SYSTEM

Series

q q q

181 – Auto Reset
183 – Auto Reset*
184 – Manual Reset
185 – Switchable/Manual

*183 Available in Panel Mount Only (Coverless)

Rating

q q q

025 – 25 amps
030 – 30 amps
035 – 35 amps
040 – 40 amps
050 – 50 amps
060 – 60 amps
070 – 70 amps
080 – 80 amps
090 – 90 amps
100 – 100 amps
110 – 110 amps
120 – 120 amps
135 – 135 amps
150 – 150 amps

Mounting

q –

F – Surface Mount
P – Panel Mount

Terminal Hdwr.

q q

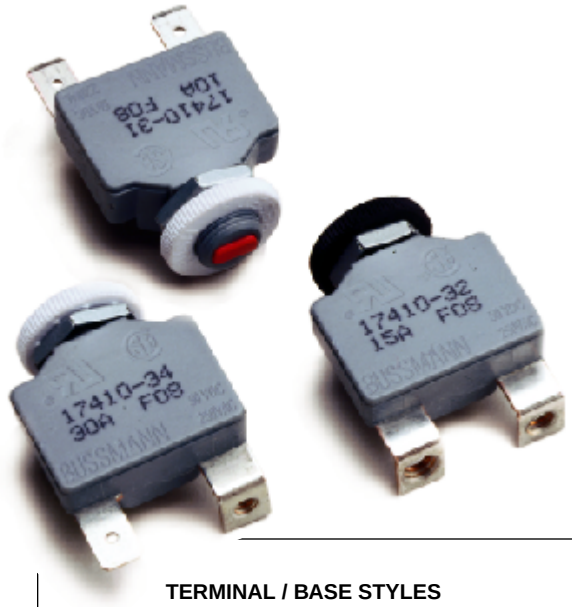
00 – Ship w/o nuts
01 – Sems nuts installed
02 – Sems nuts shipped bulk
03 – Stainless Steel Std. nuts & washers installed
04 – Stainless Steel Std. nuts & washers shipped bulk
07 – Flange gasket & Sems nuts installed (Panel Mount Only)

Marking

q q

0 – Blank cover
1 – Standard Marking; Part Number, Amp Rating
181, 184, 185 Series - Top Surface
183 Series - Side Surface
Consult factory for special markings.

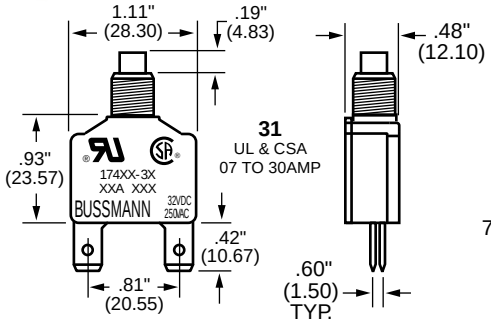
Manual Reset Circuit Breakers



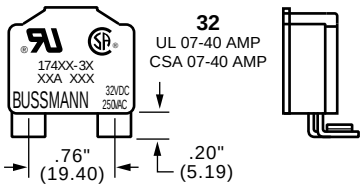
SPECIFICATIONS

Single Pole Thermal Type Breakers
Ratings: 7A to 40A; 200A @ 250 VAC Interrupt Capacity.
Operating Temperature: –10°F (–23°C) to 150°F (65°C).
Housing Material: Gray 94VO Thermoplastic.
Storage Temperature: –20°F (–29°C) to 200°F (93°C).
Applications: Branch circuit protection for multiple power outlet strips, trucks, RV's, boats, buses, portable generators, building equipment, etc.
Approvals: Series 174 is rated to 250VAC/32VDC and meets UL Standard 1077 and CSA C22.2 No. 5.1-M91; UL E74569; CSA LR60443; see individual terminal styles for specific rating approvals.

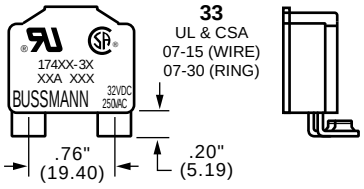
TERMINAL / BASE STYLES



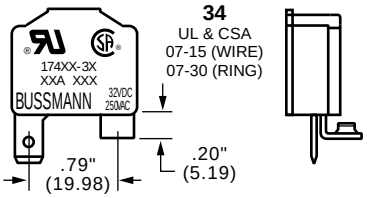
31
UL & CSA
07 TO 30AMP



32
UL 07-40 AMP
CSA 07-40 AMP

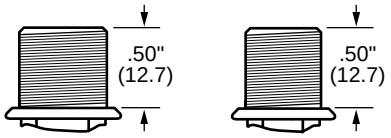


33
UL & CSA
07-15 (WIRE)
07-30 (RING)



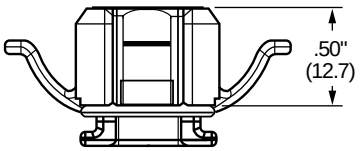
34
UL & CSA
07-15 (WIRE)
07-30 (RING)

BUSHING / NECK STYLES



7/16 - 28 THREAD **1**

3/8 - 24 THREAD **2**



SNAP - ON

BUTTON MARKING OPTIONS

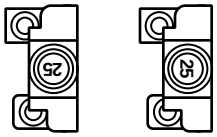
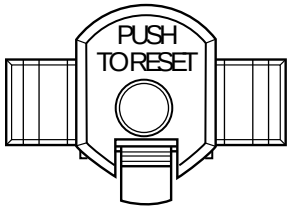
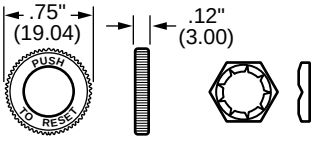


FIGURE A (STANDARD)

FIGURE B

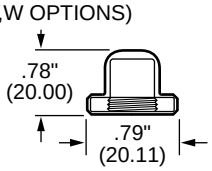


HARDWARE VARIATIONS



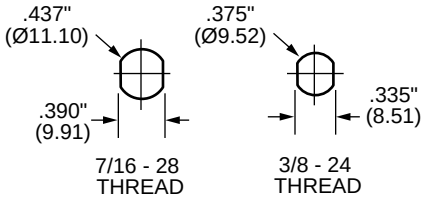
PLASTIC KNURL NUT (STANDARD)
.625" (15.88) ALUMINUM KNURL NUT OPTIONAL (S,T,V,W OPTIONS)

PALNUT



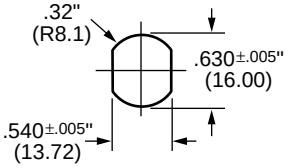
* PLASTIC BOOT
* ALSO AVAILABLE IN BULK
3/8-24 P/N B151-7135-3
7/16-28 P/N B151-7135-1

RECOMMENDED BUSHING PANEL CUTOUT



7/16 - 28 THREAD

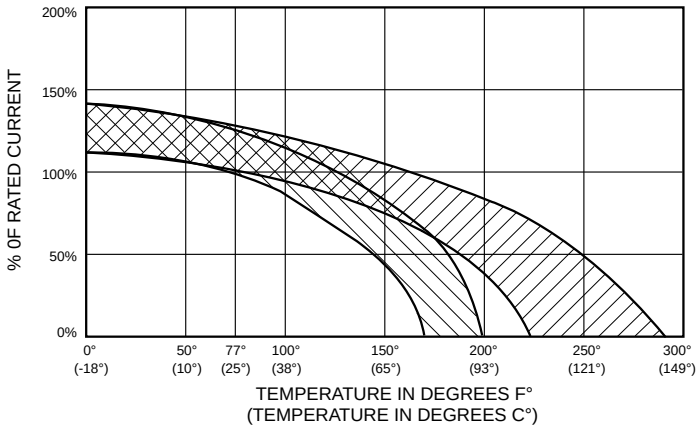
3/8 - 24 THREAD

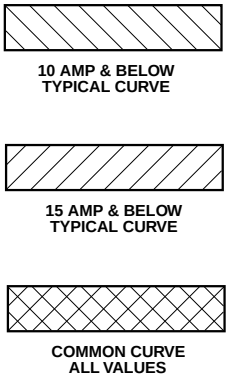


SNAP - ON

Temperature Derating Curves for 7-40 Amp. Circuit Breakers

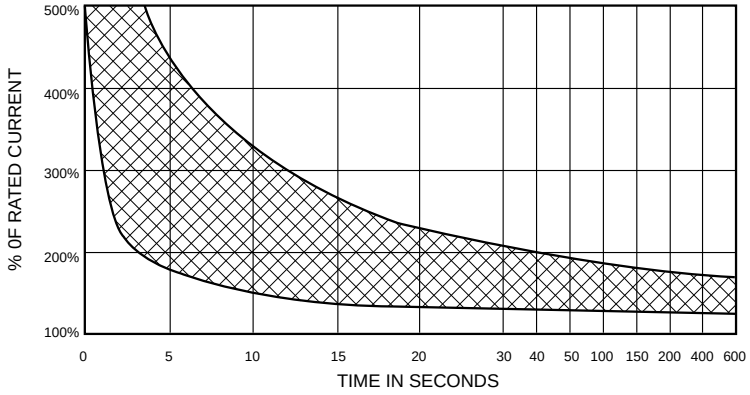
174 SERIES TEMP. VS. CURRENT CURVES





TIME vs. Percent of Rated Current Curves for 7-40 Amp. Circuit Breakers

174 SERIES TRIP CURVES



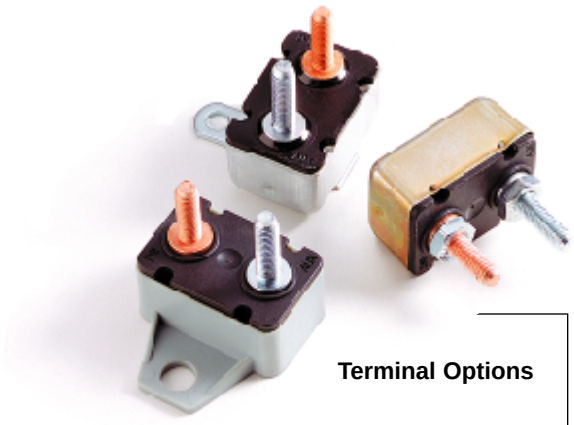
PART NUMBERING SYSTEM

Series	Rating	Terminal/ Base	Bushing/ Neck	Button	Hdwr. Pkg.	Bushing Hdwr.	Special Options
174 – Type III 250 VAC/ 32VDC Manual Reset	07 – 7 amps 08 – 8 amps 10 – 10 amps 15 – 15 amps 20 – 20 amps 25 – 25 amps 30 – 30 amps 35 – 35 amps* 40 – 40 amps*	1 – .25" Quick Connect 2 – 10-32 screw - 90° bend 3 – 6-32 screw - 90° bend 4 – .25" Quick Connect with 6-32 screw - 90° bend	1 – 7/16-28 thread 2 – 3/8-24 thread 3 – Snap-on	A – White w/no marking B – Red w/no marking C – Black w/no marking** D – White w/amp marking Fig. A E – White w/amp marking Fig. B F – Red w/amp marking Fig. A G – Red w/amp marking Fig. B	1 – Pack bulk (standard) 2 – Assemble to bushing 3 – No hardware included	A – White plastic self-lock knurled nut B – Black plastic self-lock knurled nut C – White plastic self-lock knurled nut & zinc plated palnut D – Black plastic self-lock knurled nut & zinc plated palnut E – No bushing hardware required F – Zinc plated palnut G – Boot & zinc plated palnut S – Knurlnut, palnut, black nameplate w/white "Push-to-Reset" T – Knurlnut, palnut, white nameplate w/black "Push-to-Reset" V – Knurlnut and white nameplate w/black "Push-to-Reset" W – Knurlnut and black nameplate w/white "Push-to-Reset"	0 – No hardware 1 – Bulk brass screws for screw terminals 2 – Bulk brass screws and lock-washers for screw terminals 3 – Assembled brass screws for screw terminals 4 – Assembled brass screws and lock-washers for screw terminals

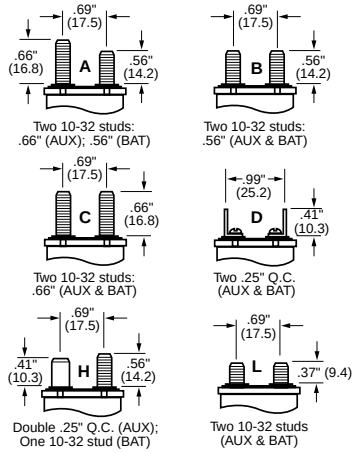
*#2 Terminal Style Only.

**No marking available on Black

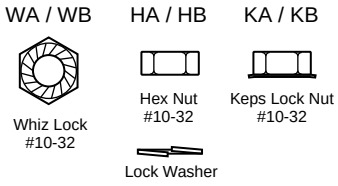
Auto, Manual & Modified Reset Circuit Breakers



Terminal Options

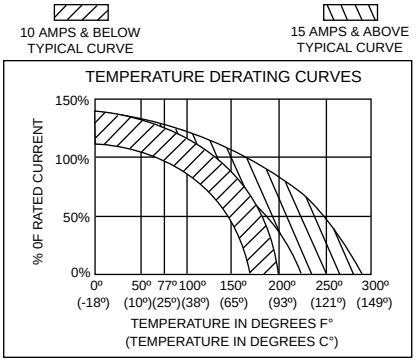


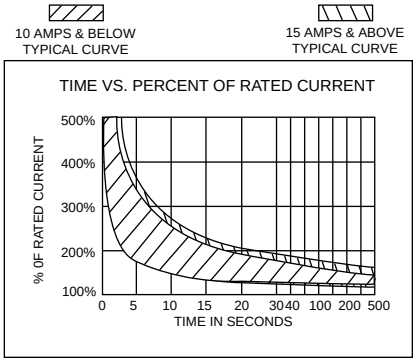
Hardware



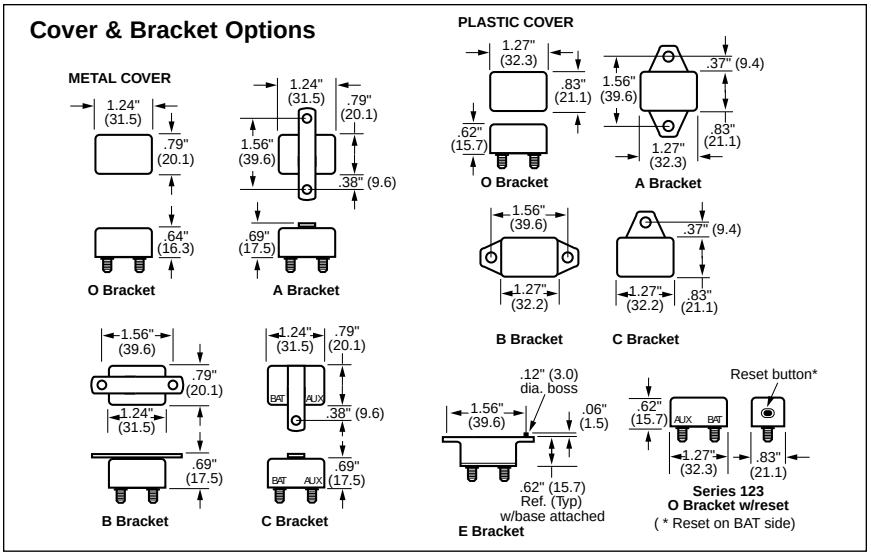
SPECIFICATIONS

Single Pole Thermal Type Breakers
Ratings: 8A to 50A; 12 VDC; 24 VDC.
Operating Temperature: –10°F (–23°C) to 150°F (65°C).
Storage Temperature: –20°F (–29°C) to 200°F (93°C).
Applications: Battery chargers, trucks, buses, RV's, trolling motors, etc.
Approvals: Complies with SAE Standard J553.





Cover & Bracket Options

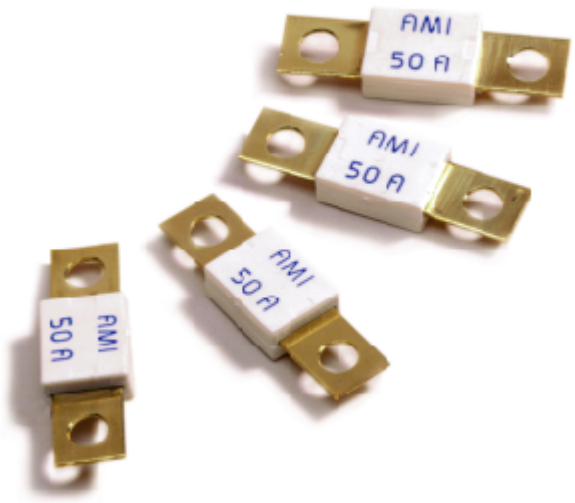


PART NUMBERING SYSTEM

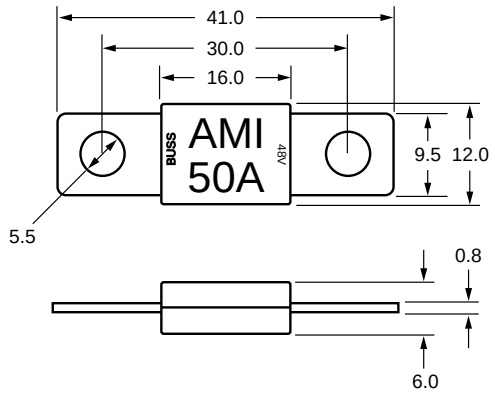
Series	Terminal	Rating	Bracket	Mtg. Holes	Cover*	Options	Hardware
121 – Auto Reset 12 VDC	A – Two 10-32 studs; .66 (Aux), .56 (Bat)	08 – 8 amps	0 – No bracket	0 – No bracket	M – Metal*	01 – Waterproof (metal covers only)	WA – Whiz-lock nut assembled
122 – Modified 12 VDC	B – Two 10-32 studs; .56 (Aux & Bat)	10 – 10 amps	A – Bracket	1 – .140 dia.	P – Plastic*	02 – Splashproof (optional on metal covers - add 02 suffix; std. on plastic covers - omit 02 suffix.)	WB – Whiz-lock nut bulk unassembled
123 – Manual 24 VDC	C – Two 10-32 studs; .66 (Aux & Bat)	12 – 12 amps	B – Bracket	2 – .196 dia.			HA – Nut & lock washer assembled
124 – Auto 24 VDC	***D – Two .250 QC; (Aux & Bat)	15 – 15 amps	C – Bracket	3 – .237 dia. (metal only)			HB – Nut & lock washer bulk unassembled
125 – Modified 24 VDC	** H – One 10-32 stud .56 (Bat), Double .250 QC (Aux)	20 – 20 amps	E – Bracket (plastic only)	4 – .265 dia. (plastic only)			KA – Keps lock nut assembled
	L – Two 10-32 studs; .37 (Aux & Bat)	25 – 25 amps		5 – .228 dia. (plastic only)			KB – Keps lock nut bulk unassembled
		30 – 30 amps		6 – .221 dia. (metal only)			
		35 – 35 amps					
		40 – 40 amps					
		50 – 50 amps					

*Series 123 available in plastic cover only. Series 122 & 125 available in metal cover only.
**40A maximum
***30A maximum

Bolt In Automotive Fuses



Dimensions



SPECIFICATIONS

Bolt In Terminals: 0.8mm thick blades for secure mounting.
Material: Tin plated brass terminals with UL rated 94VO white thermoplastic housing.
Applications: Power distribution protection for automotive systems on 48VDC or less systems requiring interrupting ratings up to 1000A.

Time Current Specifications

Amp Rating	150% of I_N	200% of I_N	300% of I_N	500% of I_N	100% I_N Carry	Millivolt Drop @ 100% I_N	Interrupting Capability
50	90-3600 sec.	5-100 sec.	0.3-10 sec.	0.1-1 sec.	Min. 100 hrs.	Max. 110 mV	1KA @ 48VDC
80							
100							

PART NUMBERING SYSTEM

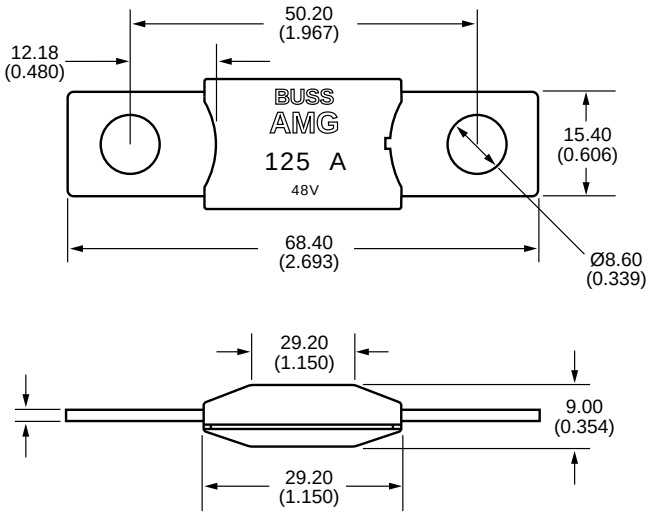
Series **Rating**

q q q – q q q

050 – 50 amps
080 – 80 amps
100 – 100 amps

Bolt In Automotive Fuses

Dimensions



SPECIFICATIONS:

Bolt-In Mounting Configurations: Mounts on 8mm or less studs on 50.8mm centers.
Material: Copper terminals with UL Rated 94VO white thermoplastic housing
Applications: For high current (100A - 300A) applications on 48VDC or less systems requiring interrupting ratings up to 1000A.
For use with the Bussmann HMG Fuseholder - see page 21.

Time Current Specifications

Amp Rating	135% of I_N	200% of I_N	350% of I_N	600% of I_N	100% I_N Carry	Millivolt Drop @ 100% I_N	Interrupting Capability
100	120-1800 sec.	1-30 sec.	0.1-5 sec.	0.02-1 sec.	Min. 4 hrs.	Max. 150 mV	1KA @ 48VDC
125							
150							
175							
200							
250							
300							

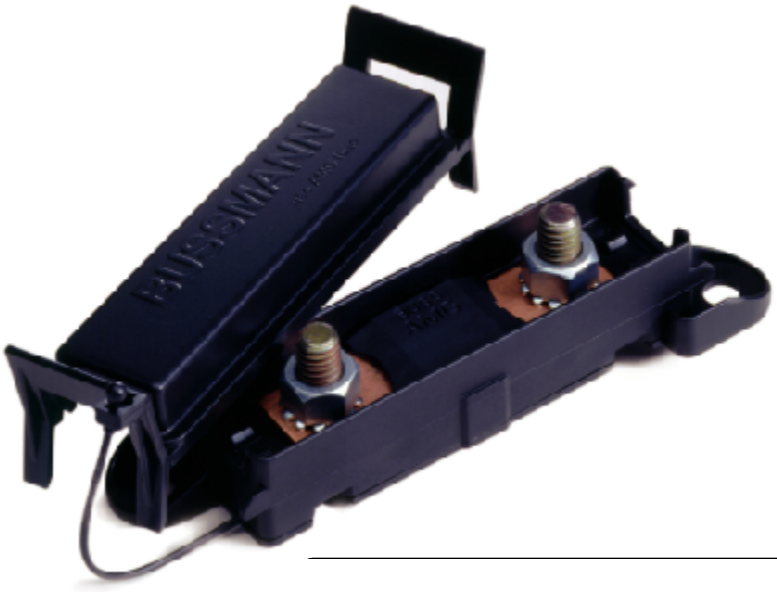
PART NUMBERING SYSTEM

Series **Rating**

AMG – q q q

100 – 100 amps
125 – 125 amps
150 – 150 amps
175 – 175 amps
200 – 200 amps
250 – 250 amps
300 – 300 amps

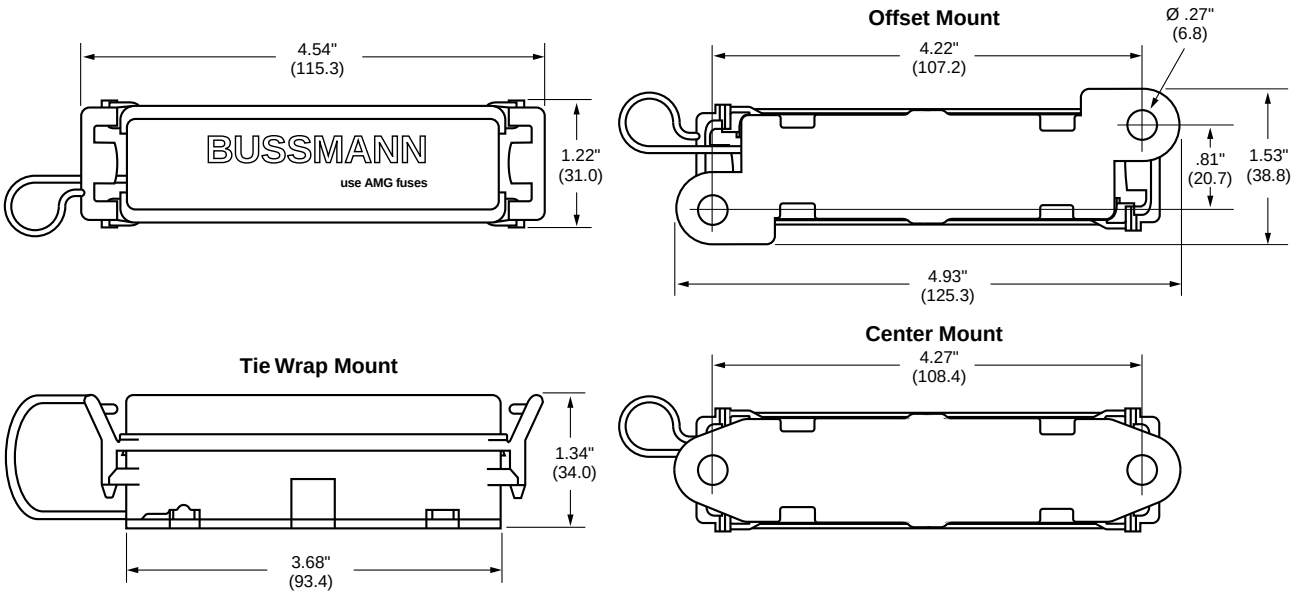
Automotive Bolt-In Fuseholder for the AMG Fuse



SPECIFICATIONS

Electrical: Use with AMG Fuses from 100 to 300 Amps.
Body: Black 94VO Thermoplastic
Cover With Tether: Black 94VO Thermoplastic
Recommended Wire Size: #2-8
Ambient Temperature: –40°C to 125°C.
Recommended Torque: 17n.m
Fuse Mounting: M8 or 5/16-18 Threaded Studs and Hex Nuts.
Cable Positions: 6 total – location optional –Consult factory.
Holder Mounting Dimensions: See Below.
- **Side Stackable Feature.**
- **Bottom Side Insulated From Mounting Panel.**
- **Splash Resistant Cover.**

Dimensions



PART NUMBERING SYSTEM

Series			Base	Hardware	Style		Options
q	q	q	– q	q	q	–	q

Base
1 – Tie wrap mount
2 – Offset mounted
3 – Center mounted

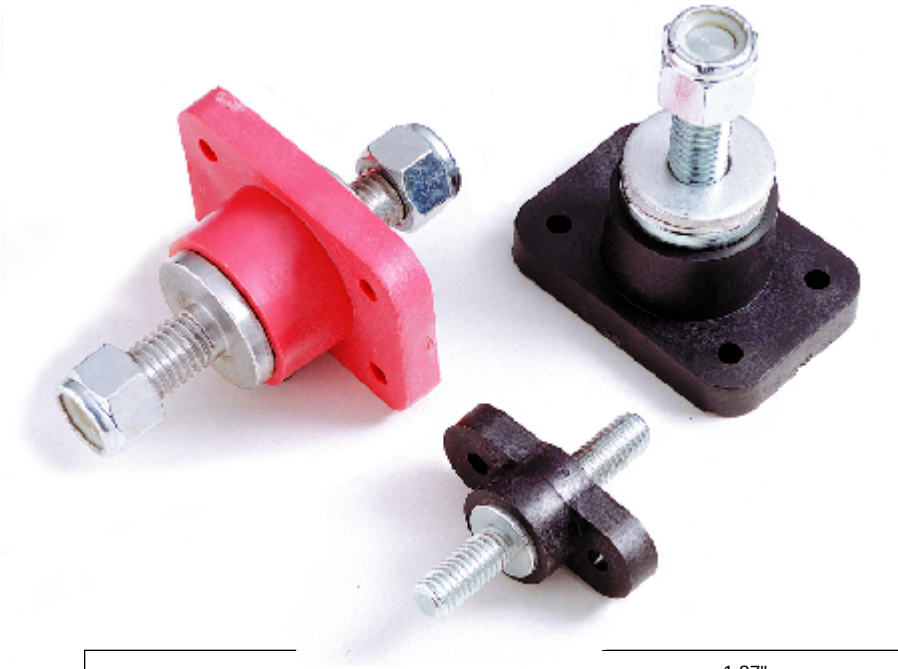
Hardware
1 – 5/16-18 Studs w/nuts installed
2 – 5/16-18 Studs w/nuts bulk
3 – 5/16-18 Studs w/o nuts
4 – M8 x 1.25 studs w/nuts installed
5 – M8 x 1.25 studs w/nuts bulk
6 – M8 x 1.25 studs w/o nuts

Style
0 – No cover
1 – Cover installed
2 – Cover bulk

Options
Consult factory for Bus Bar options and sealed versions

Stud Type Junction Blocks

Bussmann®



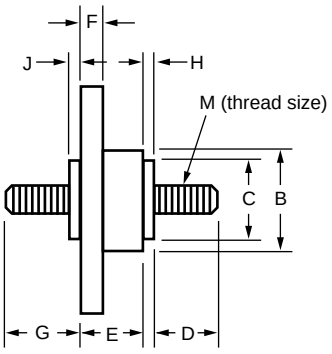
SPECIFICATIONS

Material: Studs on non-feed-thrus are steel plated; feed-thrus are copper alloy.
Applications: Heavy-duty ground or power connection points in AC or DC circuits. Feed-thru or stand alone mount options available for transformers, communication and computer power sections along with various vehicle electrical systems.
Benefits: Modular design offers design and manufacturing flexibility.

Suggested Max. Termination Ratings:

Thread/Stud Sz.	Amperages
#10	50 Amps
#1/4 & M6	100 Amps
#5/16	200 Amps
#3/8	250 Amps
#1/2	400 Amps

Dimensions



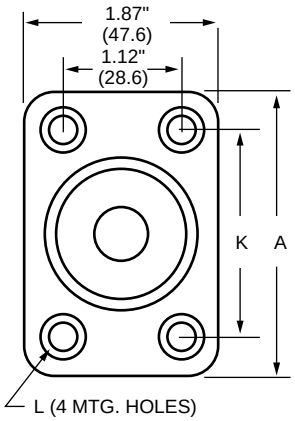


Fig. 1

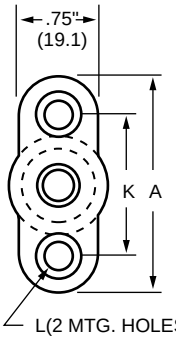


Fig. 2

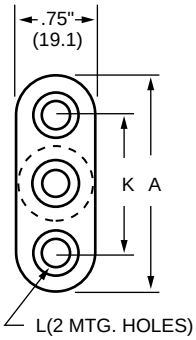
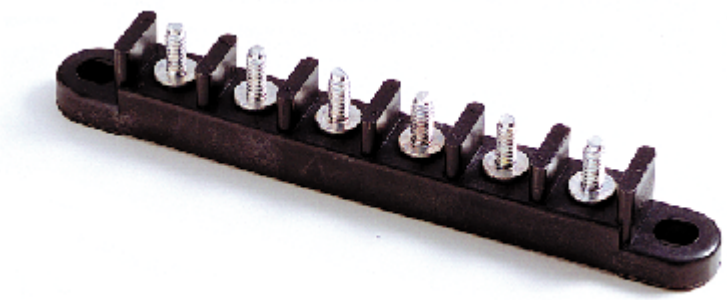


Fig. 3

Part	Fig.	A	B	C	D	E	F	G	H	J	K	L	M	Material	Color
C1925*	1	2.75 (69.8)	1.5 (38.1)	1.25 (31.7)	1.25 (31.7)	1.12 (28.6)	.37 (9.5)	1.12 (28.6)	.19 (4.8)	.19 (4.8)	2.0 (50.8)	.22 dia. w/.44 dia. C'bore x .16 deep	1/2-13	Thermoplastic	Red
C1933	1	2.75 (69.8)	1.44 (36.6)	1.25 (31.7)	1.5 (38.1)	1.12 (28.6)	.37 (9.5)	None	.19 (4.8)	None	2.0 (50.8)	.22 dia.	1/2-13	Thermoplastic	Black
C1933-1	1	2.75 (69.8)	1.44 (36.3)	1.25 (31.7)	1.5 (38.1)	1.12 (28.6)	.37 (9.5)	None	.19 (4.8)	None	2.0 (50.8)	.22 dia.	5/16-18	Thermoplastic	Black
C1938*	2	2.06 (52.4)	.94 (23.8)	.69 (17.5)	.87 (22.2)	.69 (17.5)	.31 (7.9)	.87 (22.2)	.06 (1.6)	.06 (1.6)	1.31 (33.3)	.22 dia. w/.41 dia. C'bore x 14 deep	3/8-16	Thermoplastic	Black
C2791*	3	2.06 (52.4)	.69 (17.5)	.44 (11.2)	.62 (15.9)	.69 (17.5)	.31 (7.9)	.69 (17.5)	.06 (1.6)	.06 (1.6)	1.31 (33.3)	.22 dia. w/.41 dia. C'bore x .14 deep	1/4-20	Thermoplastic	Black
C2909*	3	2.06 (52.4)	.69 (17.5)	.44 (11.2)	.62 (15.9)	1.0 (25.4)	.31 (7.9)	.69 (17.5)	.06 (1.6)	.06 (1.6)	1.31 (33.3)	.22 dia. w/.41 dia. C'bore x 14 deep	10-32	Thermoplastic	Black
C2909-1*	3	2.06 (52.4)	.69 (17.5)	.44 (11.2)	.62 (15.9)	1.0 (25.4)	.31 (7.9)	.69 (17.5)	.06 (1.6)	.06 (1.6)	1.31 (33.3)	.22 dia. w/.41 dia. C'bore x 14 deep	1/4-20	Thermoplastic	Black
C4044*	2	2.06 (52.4)	.87 (22.2)	.62 (15.9)	.62 (15.9)	1.12 (28.6)	.31 (7.9)	.87 (22.2)	.06 (1.6)	.06 (1.6)	1.31 (33.3)	.22 dia. w/.41 dia. C'bore x .14 deep	3/8-16	Thermoplastic	Black
C5898*	2	2.06 (52.4)	.94 (23.8)	.69 (17.5)	.87 (22.2)	.69 (17.5)	.31 (7.9)	.87 (22.2)	.06 (1.6)	.06 (1.6)	1.31 (33.3)	.22 dia. w/.41 dia. C'bore x 14 deep	3/8-16	Thermoplastic	Red
C6344-2	2	2.12 (54.0)	.62 (15.9)	.62 (15.9)	.87 (22.2)	.69 (17.5)	.31 (7.9)	None	.06 (1.6)	None	1.37 (34.9)	.22 dia. w/.37 dia. C'bore x .14 deep	1/2-20	Thermoplastic	Black
C7018*	3	2.06 (52.4)	.69 (17.5)	.44 (11.2)	.47 (11.9)	.69 (17.5)	.31 (7.9)	.53 (13.5)	.06 (1.6)	.06 (1.6)	1.31 (33.3)	.22 dia. w/.41 dia. C'bore x 14 deep	M6	Thermoplastic	Black
JB3816-2	2	2.12 (54.0)	1.0 (25.4)	.62 (15.9)	.94 (23.8)	.69 (17.5)	.31 (7.9)	None	.06 (1.6)	None	1.37 (34.9)	.22 dia. w/.37 dia. C'bore x .14 deep	3/8-16	Thermoplastic	Black
JB3816-3	2	2.12 (54.0)	1.0 (25.4)	.62 (15.9)	.94 (23.8)	.69 (17.5)	.31 (7.9)	None	.06 (1.6)	None	1.37 (34.9)	.22 dia. w/.37 dia. C'bore x .14 deep	3/8-16	Thermoplastic	Red

*Feed-thru Options – Nuts & washers; consult factory.

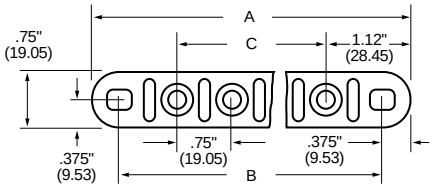


Series C4559

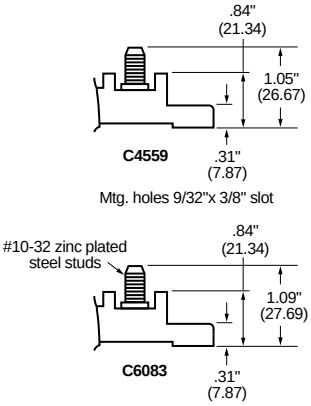
SPECIFICATIONS

Rating: 30A, 600V
Operating Temperature: 250°F (120°C)
Standards: 2 to 16 steel studs with #10-24 threads on .750" centers and a “dog point” to guide nut onto thread.
Torque: Recommended 20 in/lb (25 in/lb max.).
Marking: Numbers and arrows molded on top of barriers indicate terminals.
Approvals: UL E62622; CSA LR15364.

Dimensions

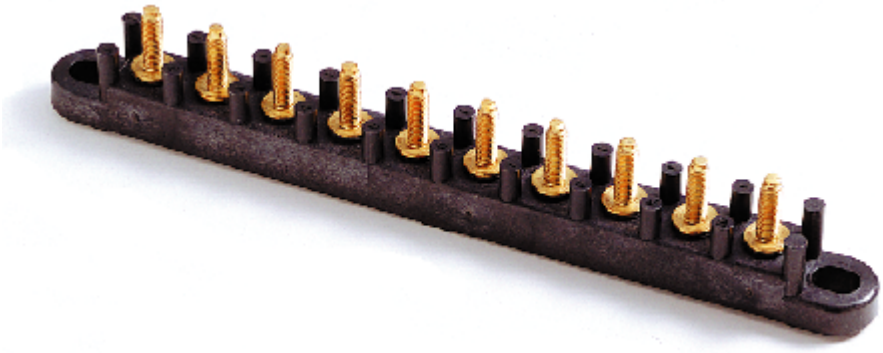


0ther series available with .750" centers:



(A,B,C Dimensions are the same as C4559)

Part No.	A	B	C
C4559-2	3.00 (76.2)	2.25 (57.1)	0.75 (19.0)
C4559-3	3.75 (95.2)	3.00 (76.2)	1.50 (38.1)
C4559-4	4.50 (114.3)	3.75 (95.2)	2.25 (57.1)
C4559-5	5.25 (133.3)	4.50 (114.3)	3.00 (76.2)
C4559-6	6.00 (152.4)	5.25 (133.3)	3.75 (95.2)
C4559-7	6.75 (171.4)	6.00 (152.4)	4.50 (114.3)
C4559-8	7.50 (190.5)	6.75 (171.4)	5.25 (133.3)
C4559-9	8.25 (209.5)	7.50 (190.5)	6.00 (152.4)
C4559-10	9.00 (228.6)	8.25 (209.5)	6.75 (171.4)
C4559-11	9.75 (247.6)	9.00 (228.6)	7.50 (190.5)
C4559-12	10.50 (266.7)	9.75 (247.6)	8.25 (209.5)
C4559-13	11.25 (285.7)	10.50 (266.7)	9.00 (288.6)
C4559-14	12.00 (308.4)	11.25 (285.7)	9.75 (247.6)
C4559-15	12.75 (323.8)	12.00 (308.4)	10.50 (266.7)
C4559-16	13.50 (342.9)	12.75 (323.8)	11.25 (285.7)

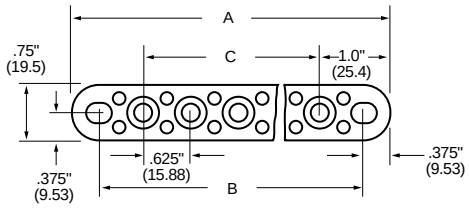


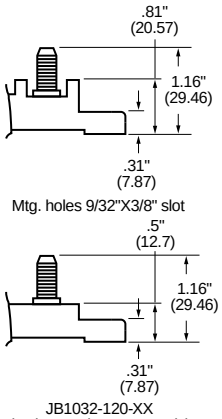
Series C5237

SPECIFICATIONS

Rating: UL: 30A, 300V; CSA: 30A, 600V.
Operating Temperature: 250°F (120°C)
Standards: 1 to 15 brass studs on .625" centers with #10-32 thread and a “dog point” to guide nut onto thread.
Torque: Recommended 20 in/lb (25 in/lb max.).
Marking: Numbers and arrows molded on top of barriers indicate terminals.
Approvals: UL E62622; CSA LR15364.

Dimensions



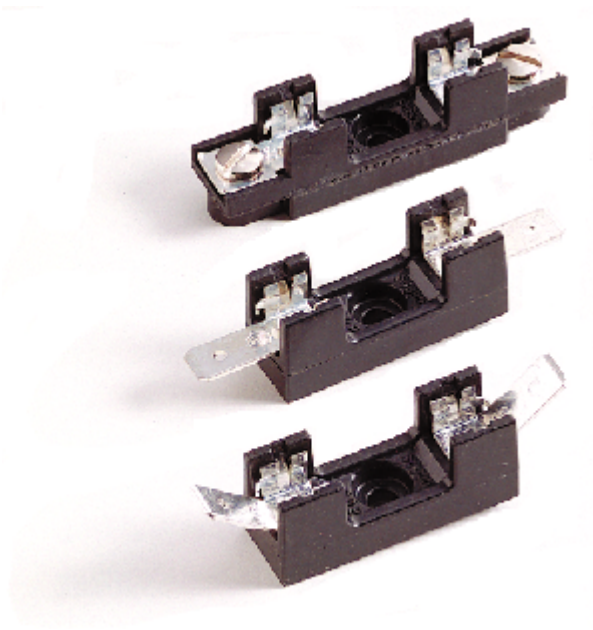


JB1032-120-XX
(no bosses between studs)

Part No.	A	B	C
C5237-1	2.00 (50.8)	1.25 (31.7)	–
C5237-2	2.62 (66.7)	1.87 (47.5)	.625 (15.9)
C5237-3	3.25 (82.5)	2.50 (63.4)	1.25 (31.7)
C5237-4	3.87 (98.4)	3.12 (79.4)	1.87 (47.5)
C5237-5	4.50 (114.3)	3.75 (95.2)	2.50 (63.4)
C5237-6	5.12 (130.8)	4.37 (111.1)	3.12 (79.4)
C5237-7	5.75 (146.0)	5.00 (127.0)	3.75 (95.2)
C5237-8	6.37 (161.9)	5.62 (142.9)	4.37 (111.1)
C5237-9	7.00 (177.8)	6.25 (158.7)	5.00 (127.0)
C5237-10	7.62 (193.7)	6.87 (174.6)	5.62 (142.9)
C5237-11	8.25 (209.5)	7.50 (190.5)	6.25 (158.7)
C5237-12	8.87 (225.4)	8.12 (206.4)	6.87 (174.6)
C5237-13	9.50 (241.3)	8.75 (222.2)	7.50 (190.5)
C5237-14	10.12 (257.2)	9.37 (238.1)	8.12 (206.4)
C5237-15	10.75 (273.0)	10.00 (254.0)	8.75 (222.2)

Glass Fuses — **Bussmann®**

	Ampere Rating	Dia.	Lgth.
 **AGA**	1, 1½, 2, 2½, 3, 5, 6, 7½, 10, 15, 20, 25, 30	1/4"	5/8"
 **AGC**	1/2, 1, 1½, 2, 2½, 3, 4, 5, 6, 7½, 10, 15, 20, 25, 30, 35, 40	1/4"	1¼"
 **AGU**	1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 35, 40, 50, 60	13/32"	1½"
 **AGW**	1, 1½, 2½, 3, 4, 5, 6, 7½, 15, 20, 30, 35	1/4"	7/8"
 **AGX**	2, 2½, 3, 20, 25, 30	1/4"	1"
 **AGY**	50	1/4"	1 7/16"
 **GBC**	1, 2, 2½, 5, 8, 15, 16, 25, 30	1/4"	31/32"
 **GBF**	GBF-25	1/4"	21/32"
 **MDL**	1/2, 3/4, 1, 1½, 2, 2½, 3, 3 2/10, 4, 5, 6¼, 8, 10, 15, 20, 25, 30	1/4"	1¼"
 **SFE-4**	SFE-4	1/4"	5/8"
 **SFE-6**	SFE-6	1/4"	7/8"
 **SFE-7.5**	SFE-7½	1/4"	1"
 **SFE-9**	SFE-9	1/4"	1"
 **SFE-14**	SFE-14	1/4"	1 1/16"
 **SFE-20**	SFE-20	1/4"	1¼"
 **SFE-30**	SFE-30	1/4"	1 7/16"

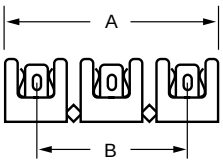


SPECIFICATIONS

Small Dimension Fuse Panel
Accepts: 1/4" x 1-1/4" fuses. We recommend Buss® Series MDL/Time Delay; AGC/Non-Time Delay or GBB for Fast Acting fuse applications.
Poles: Standard panels with 1 to 12 poles.
Ratings: 300V.
Screw terminals: UL 30A, CSA 10A
Solder terminals: UL 25A, CSA 21A
.187" QC terminals: UL 15A, CSA 13A
.250" QC terminals: UL 20A, CSA 16A
Terminals: Solder, screw, .187" QC or .250" QC terminals, all tin plated.
Operating Temperature: –40°F (–40°C) to 175°F (80°C).
Material: UL rated 94VO thermoplastic.
Benefits: Patented design does not rely on fuse for solid, wobble-free mount. Subdivide multipole panels with simple finger pressure. Anti-pivot screw terminals prevent leads from twisting to the side when tightening. Insulating base seals periphery to reduce shorts to chassis from fuse clips.
Approvals: UL E14853A, Guide IZLT2 and CSA LR47235.

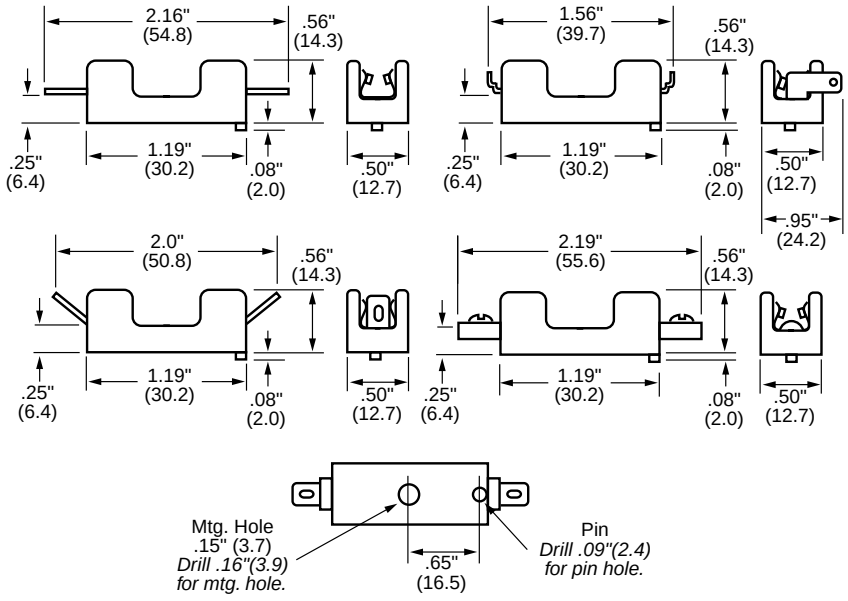
Dimensions

Multiple pole



Poles	A	B
1	.50 (12.7)	–
2	1.12 (28.6)	.62 (15.9)
3	1.75 (44.4)	1.25 (31.8)
4	2.37 (60.3)	1.87 (47.6)
5	3.00 (76.2)	2.50 (63.5)
6	3.62 (92.1)	3.12 (79.4)
7	4.25 (108.0)	3.75 (95.2)
8	4.87 (123.8)	4.37 (111.1)
9	5.50 (139.7)	5.00 (127.0)
10	6.12 (155.6)	5.62 (142.9)
11	6.75 (171.4)	6.25 (158.8)
12	7.37 (187.3)	6.87 (174.6)

Single pole

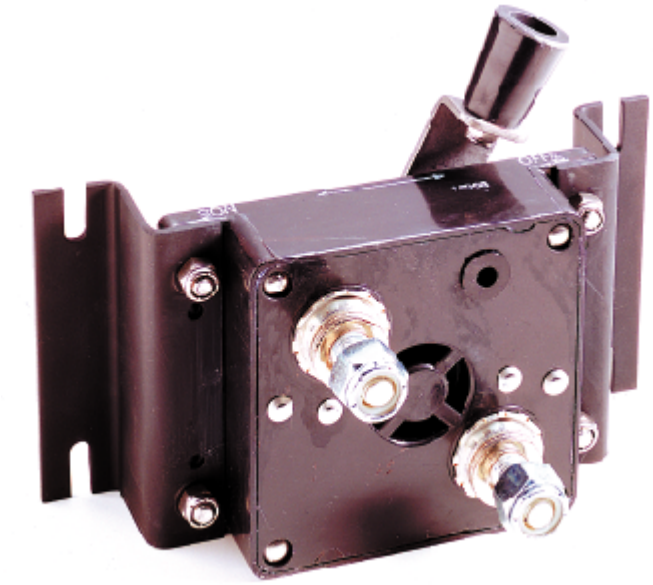


PART NUMBERING SYSTEM

Prefix	Series	Terminal	Terminal Angle	Poles	Options
q q /	q q	q	q q –	q q	q
BK – Bulk Pack*		0 – Solder 1 – .187" QC 2 – .250" QC 3 – Screw	01 – Straight (0°) 02 – 40° 03 – Side**	01 to 12	X – Minus anti-rotation pin under base**

* Standard carton is 10 with total shelf package 100. Bulk Pack is 1,000 for single and 2 pole blocks; 200 for 3 to 8 pole blocks; 50 for 9 to 12 pole blocks.
** Available in single pole only.

Battery Disconnect Switch



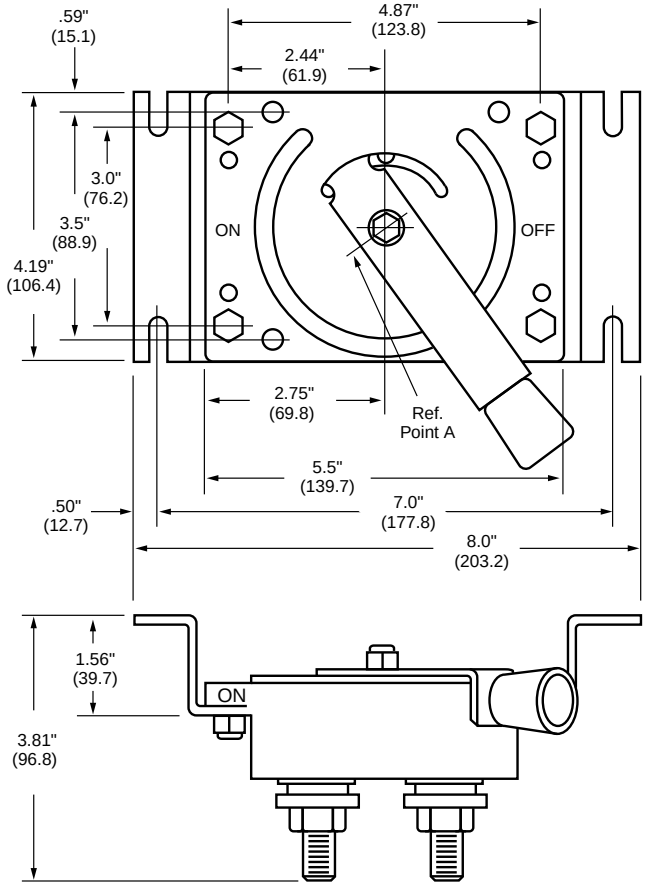
SPECIFICATIONS

Ratings: 50 VAC or VDC max; 400A continuous. Vehicle cranking and max. surge currents to 2000A (based on 20% duty cycle with ON times of 5 seconds max.).
Operating Temperature: 300°F (150°C) max.
Storage Temperature: –40°F (–40°C) to 150°F (65°C).
Applications: A non-fused current interrupt disconnect designed for opening the circuit between a battery and the complete electrical load of a battery powered system.
Options: Three handle styles, mounting brackets, lubricant-filled, silicone sealed.

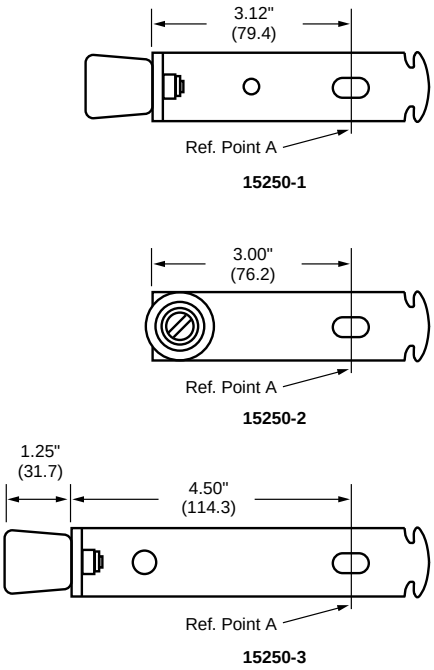
PART NUMBERING SYSTEM

Series				Handle Option	Bracket Option	Lubricant Option	Sealant Option
1	5	2	5	0 – 3	B	L	R
				1	B – Bracket	L – Lubricant	R – Silicone Sealant
				2			
				3			

Dimensions (15250-1B Shown)



Handle Variations



Circuit Protection Cross Reference Guide

This reference covers competitive part numbers of automotive circuit breakers, fuses and related accessories.

With the possibility of performance variations between Bussmann Products and those produced by other manufacturers, Bussmann recommends you verify all applicable specifications or request a sample before making a substitution. Contact your Bussmann representative for detailed information. Actual performance is dependent upon specific application parameters. Bussmann is unable to accept responsibility for any misapplication of Bussmann Products.

Bussmann	Competition	Bussmann	Competition
1AG	AGA	AMI	MIDI
1AG	301	ANN	CNN
3AB	314	ANL	CNL
3ABSB	326	ATC	ATO
3AGSB	313	ATC	257
3AG (1/500 - 3 amp)	AGC (250 volt)	ATM	MIN
3AG (4 - 10 amp)	312 (250 volt)	ATM	297
3AG (4 - 30 amp)	AGC (32 volt)	CBS	812
3AG (4 - 30 amp)	311 (32 volt)	CBF	CBF
7AG	AGW	CBB	ACB
7AG	303	FLB	PAL
8AG	AGX	FLB	295
8AG	362	FLF	PAL
ABC	314	FLF	293
AGA	301	FLM	PAL
AGC (.5 - 3 amp)	AGC	FLM	294
AGC (.5 - 3 amp)	312 (250 volt)	HHC	FHA 1
AGC (4 - 10 amp)	312 (250 volt)	HHD	FHA 2
AGC (4 - 35 amp)	AGC	HHL	FHM 1
AGC (4 - 35 amp)	311 (32 volt)	HHM	FHM 2
AGU (1 - 30 amp)	AGU	HHX	MAH 1
AGU (1 - 30 amp)	512	MAX	MAX
AGU (35 - 60 amp)	AGU	MAX	299
AGU (35 - 60 amp)	511	MEG	MEG
AGW	AGW	MEG	298
AGW	303	MDA	326
AGX	AGX	MDL	313
AGX	362	MDX	313
AGY	AGY	MSL	313
AGY	306	MTH	312
AMG	MEGA		

OEM Circuit Breakers

BUSSMANN	Control Devices, Inc.	FASCO	Mechanical Products	Potter & Brumfield	E-T-A	Weber	Heineman	TI/Klixon
PART NUMBER (SERIES)								
Series 120 SHORTSTOP®								
121 Auto Reset Version	PSA Series	1711 Series/ 1731 Series						
122 Modified Reset Version		1741 Series						
123 Manual Reset Version		1781 Series						
124 Auto Reset Version	PSA Series							
Series 174 FLAT-PAK								
			16XX Series	W58 Series	1658 Series	T11 Series	"HECTOR" Series	
Series 180 HI-AMP								
181 Auto Reset/ Panel Mount Version								CLA Series/ CDLA Series SDLA Series
184 Manual Reset/ Panel Mount Version								CLM Series/ CDLM Series SDLM Series
Series 190 MAXI™ Circuit Breakers								
191 Auto Reset Version	9000 Series							
192 Modified Reset Version	9100 Series							
Series 22 ATC® Circuit Breakers								
221	1771 Series							
222	2771 Series		EXT 200 Series		1160-02			
223					1170-02			

COOPER Bussmann

Automotive Products

Cooper Bussmann
Automotive Products
7300 W. Wilson Ave.
Chicago, IL 60706-4792
Telephone: 800-323-1226
Facsimile: 708-867-2211

Cooper Bussmann
P. O. Box 14460
St. Louis, Missouri 63178-4460
Telephone: 636-394-2877
Facsimile: 800-544-2570

European Headquarters
Cooper Bussmann U.K. Ltd.
Burton-on-the-Wolds
Leicestershire LE12 5 TH England
Telephone: 44-1509-882737
Facsimile: 44-1509-882786

Cooper Bussmann Denmark
5 Literbuen
DK-2740 Skovlunde
Copenhagen, Denmark
Telephone: 45-4485-0900
Facsimile: 45-4485-0901

Cooper Bussmann
Automotive Products
Sales Office - Germany
Goldregenweg 2
85551 Kirchheim
Telephone: 49-89-904-80946
Facsimile: 49-89-903-3086

Cooper Bussmann Asia Pacific
1 Jalan Kilang Timor
#06-01 Pacific Tech Centre
Singapore 159303
Telephone: 65-278-6151
Facsimile: 65-278-3151

Cooper Bussmann Australia
Block X, 391 Park Road
P.O. Box 257
Regents Park, Sydney
NSW 2143, Australia
Telephone: 61-2-9743-8333
Facsimile: 61-2-9743-8070

Cooper Bussmann India
2nd Floor, Unit #5, White House
23-29, St. Marks Road
Bangalore - 560 001, India
Telephone: 91-80-227-0893
Facsimile: 91-80-224-5725

Cooper Bussmann Brazil
Rodovia Santos Dumont, Km 23
Cruz das Almas - 13.300-000
Caixa Postal 095
Itu-Sao Paulo Brazil
Telephone: 55-11-7824-1856
Facsimile: 55-11-7824-1721

Cooper Bussmann Mexico
Arrow-Hart, S.A. de C.V.
Poniente 148, No. 933
02300 Mexico, D.F. Mexico
Telephone: 525-587-0211
Facsimile: 525-567-4049

Bussmann®

Worldwide Circuit Protection Solutions