

## Modifications—Flex Center

### Introduction

The Safety Switch Flex Center is a special facility at the site of our Cleveland, Tennessee, plant that is dedicated to providing customized safety switches that meet customer's challenging applications.

Eaton's Flex Center is a solutions center that provides real value:

- A dedicated and knowledgeable engineering/manufacturing/customer service team to meet your needs
- A production facility stocked with a full arsenal of equipment to get the job done
- The industry's shortest lead-time
- Easy ordering through our distributors

Description	Suffix	Item
Nameplates	NP	1
Fungus proofing	FP	2
Special paint		3
Lock-on provisions on heavy-duty safety switches for most enclosure types	LO	4
Trapped key interlock systems	TK	5
Upper cover viewing window	W	6
Lower cover viewing window	LW	7
Neutral assemblies factory installed for double-throw safety switches	N	8
Class "R" fuse clips factory installed for heavy-duty switches	5 or 6	9
Class "T" fuse clips factory installed for heavy-duty switches	T	10
Class "J" fuse clips factory installed for heavy-duty and double-throw safety switches	J	11
Fuse pullers factory installed	FE	12
Special crimp lug pads factory installed for general-duty and heavy-duty switches	CK	13
Copper lugs factory installed	CL	14
Equipment ground lugs factory installed	G	15
Custom lug configurations	L	16
Auxiliary contacts factory installed	2 or 3	17
Control pole factory installed	CP	18
Switching neutral double-throw	SN	19
Neutral assemblies factory installed for single-throw non-fusible safety switches	N	20
How to order		21
How to price		22

### 1. Nameplates

Price covers up to three lines of text with a maximum of 25 characters per line. Standard nameplates are laser-engraved plastic and have black letters on a white background. Rotary-engraved phenolic nameplates are also available at a premium. Additional color combinations and larger nameplates are available. Contact the Flex Center for price and availability for these special requirements. Customer must specify the text when placing an order.

#### Item 1

##### Description

Plastic nameplate—up to three lines

Phenolic nameplate—up to three lines

### 2. Fungus Proofing

All non-metallic components of the switch are coated with a moisture and fungus-resistant varnish. The inhibitor used meets military specification: MIL-V-173C for MOISTURE AND FUNGUS-RESISTANT TREATMENT. The treated switch meets military specification: MIL-T-152E for MOISTURE AND FUNGUS-RESISTANT TREATMENT OF COMMUNICATIONS, ELECTRONICS AND ASSOCIATED EQUIPMENT. Not UL listed.

#### Item 2

##### Ampere Rating

30  
60  
100  
200  
400  
600  
800  
1200

To order, **add Suffix FP** to standard safety switch catalog number. *Example: DH363FGKFP.*

### 3. Special Paint

Special paint colors are available for order quantities of five or more switches. Colors available are red, orange, yellow, green, black and white. Custom color is applied over the standard ANSI-61 gray finish.

Minimum quantity of five of the same color is required. Order by description. For quantities less than five, higher ampere ratings, or other color request, contact the Safety Switch Flex Center.

#### Item 3

##### Ampere Rating

30  
60  
100  
200  
400  
600

### 4. Lock-On Provisions on Heavy-Duty Safety Switches for Most Enclosure Types

Available on 30–800A heavy-duty and double-throw safety switches. Provision will accept a single lock.

To order, **add Suffix LO** to the standard catalog number. *Example: DH362FRKLO.*

#### 5. Trapped Key Interlock Systems

Available only on heavy-duty and double-throw safety switches. Trapped key systems are used on safety switches to prevent unauthorized operations or to predetermine a series of power transfers by an authorized operator.

Before system construction can begin, the following information must be provided to the Flex Center:

- User—name, address and telephone number
- Complete coordination (lock scheme) required with order

To order, **add Suffix TK** to the standard catalog number. *Example: DH363FWKTK.*

#### Item 5

Ampere Rating	Switch Type
30–1200	Heavy-duty
30–800	Double-throw

#### 6. Upper Cover Viewing Window

Upper viewing window is centered over the switching contacts to provide visual verification of ON/OFF status. Available on most heavy-duty NEMA 4X stainless steel and NEMA 12/3R and double-throw enclosures. Not available on non-metallic enclosures. To order, **add Suffix W** to the standard catalog number.

**Note:** 30–100A window switches are now provided with a full view cover window for blade verification and blown fuse indication.

#### 7. Lower Cover Viewing Window

Lower viewing window is positioned over fuses and provides visual verification of blown fuse indicators for Littelfuse, Inc.™ fuses. Available in 200–600A, two- and three-pole heavy-duty NEMA 4X stainless steel and NEMA 12/3R enclosures. Not available on nonmetallic enclosures. To order, **add Suffix LW** to standard catalog number.

**Note:** 30–100A window switches are now provided with a full view cover window for blade verification and blown fuse indication.

#### Items 6 and 7

##### Viewing Window (Upper or Lower) Ampere Rating

30–200
400–800

Contact the Safety Switch Flex Center for lead-time.

#### 8. Neutral Assemblies Factory Installed for Double-Throw Safety Switches

#### Item 8

Ampere Rating	Switch Type Two- and Three-Pole
30	Fusible and non-fusible
60	Fusible and non-fusible
100	Fusible and non-fusible
200	Fusible and non-fusible
400	Non-fusible
600	Non-fusible
400	Fusible
600	Fusible
800	Non-fusible

To order, **add Suffix N** on non-fusible switches OR replace 6th character F with N on fusible switches. The total price is the standard switch price plus the price adder.

*Example 1: DT361URKN* non-fusible double-throw, three-pole, 30A switch with factory-installed neutral assembly.

*Example 2: DT363NRK* fusible double-throw, three-pole, 100A switch with factory-installed neutral assembly.

#### 9. Class “R” Fuse Clips Factory Installed for Heavy-Duty Switches

#### Item 9

Ampere Rating	Voltage
30	240 and 600
60	240 and 600
100	240 and 600
200	240 and 600
400	240 and 600
600	240 and 600

To order, **add Suffix 5** to the standard catalog number for 240V application.

**Add Suffix 6** to standard catalog number for 600V application. Total price is the standard catalog number price plus the price adder from the table above depending on the number of safety switch poles.

*Example: DH324FRK5* heavy-duty, three-pole, 200A switch at 240V with factory-installed Class “R” fuse clips.

#### 10. Class “T” Fuse Clips Factory Installed for Heavy-Duty Switches

#### Item 10

Ampere Rating	Voltage
200	240
	600
400	240
	600
600	240
	600
800	240
	600
1200	240
	600

To order, **add Suffix T** to the standard catalog number (catalog number identifies voltage). Total price is the standard catalog number price plus the price adder depending on the number of safety switch poles.

*Example: DH364FGKT* heavy-duty, three-pole, 200A fusible switch at 480V with factory-installed Class “T” Fuse Clips.

#### 11. Class “J” Fuse Clips Factory Installed for Heavy-Duty and Double-Throw Safety Switches

#### Item 11

Ampere Rating	Voltage	Switch Type
30	240	Heavy-duty and double-throw
	600	Heavy-duty and double-throw
60	240	Heavy-duty and double-throw
	600	Heavy-duty and double-throw
100	240	Heavy-duty and double-throw
	600	Heavy-duty and double-throw
200	240	Heavy-duty and double-throw
	600	Heavy-duty and double-throw
400	600	Double-throw
	600	240
	600	Heavy-duty

Total price is the standard catalog number price plus the price adder from the table above depending on the number of safety poles. Order by description. A table of common 30A heavy-duty switches with “J” fuse clips factory installed is shown on **Page V2-T1-19 (field modification kits are not available for 30A heavy-duty switches).**

### Common 30A Heavy-Duty Switches with “J” Fuse Clips Factory Installed

Voltage	Switch Type Three-Pole	Catalog Number
240	NEMA 1	DH321FGKJ
	NEMA 3R	DH321FRKJ
	NEMA 12	DH321FDKJ
	NEMA 4X	DH321FWKJ
600	NEMA 1	DH361FGKJ
	NEMA 3R	DH361FRKJ
	NEMA 12	DH361FDKJ
	NEMA 4X	DH361FWKJ

To order, **add Suffix J** to the standard catalog number (catalog number identifies voltage). Total price is the standard catalog number price plus the price adder depending on the number of safety switch poles.

*Example:* **DH363FGKJ** heavy-duty, three-pole, 200A fusible switch at 480V with factory-installed Class “J” fuse clips.

### 12. Fuse Pullers Factory Installed

#### Item 12

Ampere Rating	Switch Type
30–60	Heavy-duty
100	Heavy-duty
200	General-duty and heavy-duty

To order, **add Suffix FE** to the standard catalog number.  
*Example:* **DH361FRKFE**.

**Note:** Standard NEMA 12/3R, 4 and 4X switches through 200A are supplied with fuse pullers from the factory.

### 13. Special Crimp Lug Pads Factory Installed for General-Duty and Heavy-Duty Switches (Crimp Lugs are Not Included)

To order **add Suffix CK** to the standard safety switch catalog number.

#### Item 13

##### Ampere Rating

400–600
800

Heavy-duty Type DH switches, 30–200A are adaptable to crimp lugs, simply remove the box lugs.

### 14. Copper Lugs Factory Installed

#### Item 14

Ampere Rating	Switch Type
30	Heavy-duty
	Double-throw
60	Heavy-duty
	Double-throw
100	Heavy-duty
	Double-throw
200	Heavy-duty
400	General-duty and heavy-duty
600	General-duty and heavy-duty

To order, **add Suffix CL** to the standard safety switch catalog number. The total price is the standard switch price plus the price adder.

*Example:* **DH221FGKCL** heavy-duty, two-pole, 30A fusible switch at 240V with copper lugs factory installed.

### 15. Equipment Ground Lugs Factory Installed for General-Duty and Heavy-Duty Switches

#### Item 15

##### Ampere Rating

30–100
200
400–1200

To order, **add Suffix G** to the standard Safety Switch Catalog Number. The total price is the standard switch price plus the price adder.

### 16. Custom Lug Configurations

Customer-specified lug arrangements are available on heavy-duty and double-throw safety switches. Contact the Safety Switch Flex Center for price and lead-time.

### 17. Auxiliary Contacts Factory Installed Provide Early-Make/Early-Break Operation

#### Item 17

**General-Duty Switches 200–600A, Non-Metallic 30–200A, Heavy-Duty 30–1200A and Double-Throw Switches 30–800A**

Ampere Rating	Description
30–200	1NO/1NC
	2NO/2NC
400–1200	1NO/1NC
	2NO/2NC

To order 1NO/1NC contacts, **add Suffix 2** to the standard safety switch catalog number.

To order 2NO/2NC contacts, **add Suffix 3** to the standard safety switch catalog number.

The total price is the standard switch price plus the price adder.

*Example:* **DH423FGK2** Heavy-duty, four-pole, 100A fusible switch at 240V with factory-installed 1NO/1NC contacts.

*Example:* **DT324FGK22** double-throw, three-pole, 200A fusible switch at 240V with two factory-installed contacts (one installed in the normal ON position and one installed in the auxiliary ON position).

### 18. Control Pole Factory Installed Provides Late-Make/Early-Break Operation

The K-Series control pole provides one normally open contact, late-make, early-break operation. It mounts in the exact location as the neutral block using the same pre-drilled holes. This is directly connected to the power pole operating shaft. Direct connection and visible blades provide more secure electrical interlocking than handle linkage operation of a snap/switch type interlock. This reliability meets the requirements of many specifications for four-pole switches when the fourth pole is required for secure electrical interlocking.

#### Item 18

Ampere Rating	Switch Type
30–1200	Heavy-duty
30–200	Double-throw
400–600	General-duty

To order, **add Suffix CP** to the standard safety switch catalog number. The total price is the standard switch price plus the price adder.

*Example:* **DH267FGKCP** heavy-duty, two-pole, 800A fusible switch at 480V with factory-installed control pole.

**19. Switching Neutral Double-Throw**

UL listed for three-pole and four-pole non-fusible double-throw safety switches. Switching neutrals are required for separately derived systems when bonding the neutral of the generator to a grounding system at the generator.

**Item 19****Ampere Rating**

30–200
400
600
800

To order, add Suffix **SN** to the standard safety switch catalog number. The total price is the standard switch price plus the price adder.

*Example:* **DT324URKSN** non-fusible double-throw, three-pole, 200A switch with factory-installed switching neutral.

**20. Neutral Assemblies Factory Installed for Single-Throw Non-Fusible Safety Switches**

Available on 200–600A general-duty safety switches and 30–1200A heavy-duty safety switches.

**Item 20****Ampere Rating**

30–60
100
200 NEMA 4, 4X, 12
200 NEMA 1, 3R
400
600
800
1200

To order, add Suffix **N** to the standard safety switch catalog number.

*Example:* **DH364UWKN** Heavy-duty, three-pole, 200A, NEMA 4X.

**21. How to Order**

Step One: Contact the Safety Switch Flex Center for price and delivery on product being modified. An authorized negotiation (TSP) number will be provided to track your order.

Safety Switch Flex Center  
Phone: **1-888-329-9272**  
Fax: **1-423-478-0270**

Step Two: Enter the order on VISTALINE™ by description (with catalog number if it applies) and reference the authorized negotiation (TSP) number.

Vista suffix will be “ETS.”  
Product code will be “BE90.”

For order entry assistance, contact CSC at:  
Phone: **1-800-356-1243**  
Fax: **1-800-752-8602**

**22. How to Price**

Step One: Select catalog number from **Pages V2-T1-15** through **V2-T1-84** of this catalog or Vista of the switch that needs to be modified.

Step Two: Use the correct price (from Vista or the current Price and Availability Digest) of the switch that needs to be modified. If no price exists, Flex Center will provide one.

Step Three: Refer to the modification on **Pages V2-T1-17** through **V2-T1-20** for price additions.

*Example:* **DT363URK**  
*Options:* factory installed Neutral (N)  
Copper lugs (CL)  
(3 x 120.00)

Step Four: Contact the Safety Switch Flex Center for authorized price and lead-time.

**Note:** Existing DSP, CSP and DOP pricing does not apply.

For application, availability or pricing questions, contact the Safety Switch Flex Center at **1-888-329-9272**.

**Additional Safety Switch Flex Center Design Offerings**

- Left-hand design (30–200A)
- Cover-mounted status lights and selector switches
- Integrated:
  - Transient Voltage Surge Suppression (TVSS)
  - Current transformers
- Double-throw receptacle switches
- 200% neutrals
- Seam-welded stainless steel
- Gang-operated kits:
  - Mechanically interlocks two or three separate switches
- Cam-Lok® and Posi-Lok® receptacles
- Reverse feed
- Integrated wattmeter
- Custom enclosures
- Double-throw switches with windows
- 316 grade stainless steel
- Breather/drains
- Voltage/phase monitor

**Literature**

The Safety Switch Flex Center's innovative approach to flexible engineering, manufacturing and customer service provides the shortest production, design and delivery cycle in the industry. Find out more about how the Safety Switch Flex Center can give you the safety switch solution you need...when you need them. Order Sales Aid SA00801002E from Eaton's Literature Fulfillment Center by calling **1-800-957-7050**.

## Technical Data and Specifications

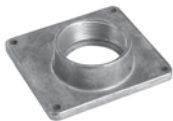
### Standard Lug Capacities

Description	Minimum Wire Size	Maximum Wire Size	Wire Type
30A DP	#14 #12	#10 #10	Cu <b>or</b> Al
30A DG	#14	#6	Cu/Al
30A DH, DT	#14	#2	Cu/Al
60A DG	#14	#1/0	Cu/Al
60A DH, DT	#14	#2	Cu/Al
100A DG <sup>①</sup>	#14	#1/0	Cu/Al
100A DH, DT	#14	#1/0	Cu/Al
200A DG, DT	#6	250 kcmil	Cu/Al
200A DH Type 1 and 3R	#6	250 kcmil	Cu/Al
200A DH Type 4 and 12	#6	300 kcmil	Cu/Al
400A DG, DH, DT	(2) #1/0 (1) #1/0	(2) 300 kcmil (1) 750 kcmil	Cu/Al <b>or</b> Cu/Al
600A DG, DH, fusible DT	(1) #2 (1) #1/0	(1) 600 kcmil (1) 750 kcmil	Cu/Al <b>and</b> Cu/Al
600A non-fusible DT	(2) #250	(2) 500 kcmil	Cu/Al
800A DH	(4) #1/0	(4) 750 kcmil	Cu/Al
800A DT	(3) #250	(3) 500 kcmil	Cu/Al
1200A DH, DT	(4) #1/0	(4) 750 kcmil	Cu/Al
<b>Copper-Body Lugs</b>			
30A Cu	#14	#6	Cu
60A Cu	#14	#4	Cu
100A Cu	#6	#1/0	Cu
200A Cu	#6	250 kcmil	Cu
400A Cu	#1/0	500 kcmil	Cu
600A Cu	(2) #1/0	(2) 500 kcmil	Cu

## Dimensions

Approximate Dimensions in Inches (mm)

### DS075H1



### Plate Type Hubs

For NEMA 3R enclosures (up to 200A)

#### Group 1 General-Duty, Heavy-Duty, Double-Throw Through 100A

Catalog Number	Conduit Size
<b>DS075H1</b>	0.75 (19.1)
<b>DS100H1</b>	1.00 (25.4)
<b>DS125H1</b>	1.25 (31.8)
<b>DS150H1</b>	1.50 (38.1)
<b>DS200H1</b>	2.00 (50.8)

#### Group 2 General-Duty, Heavy-Duty, Double-Throw—200A

Catalog Number	Conduit Size
<b>DS200H2</b>	2.00 (50.8)
<b>DS250H2</b>	2.50 (63.5)
<b>DS300H2</b>	3.00 (76.2)
—	—
—	—

Catalog number **DS900AP** adapter kit permits installation of Group 1 hubs on 200A type general-duty, heavy-duty and double-throw switches.

#### Notes

<sup>①</sup> The maximum size aluminum or copper-clad aluminum wire allowable for applications where the conductor enters or leaves the enclosure through the wall opposite its terminal is #1 gauge.

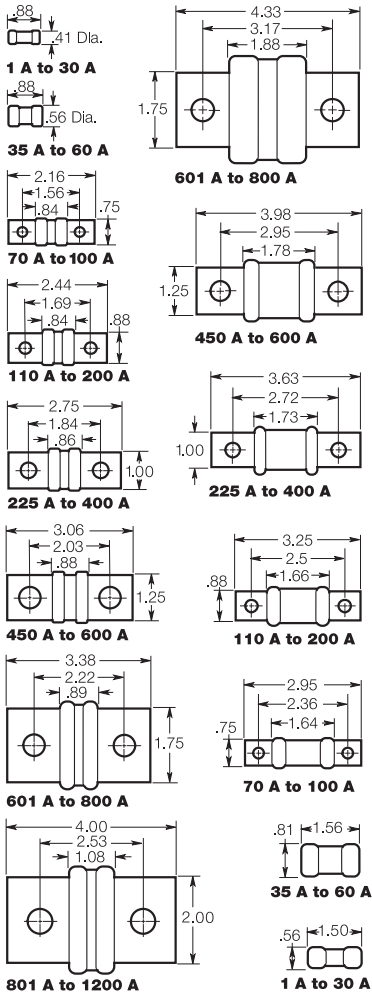
Although certain lug capacities are larger than required, only minimum wire bending space is provided per the requirements noted in NEC<sup>®</sup> Tables 373-6 (a) and (b) for respective ampere ratings.

### Typical Fuse Dimensions in Inches

Note: For typical fuse dimensions in millimeters, see Page V2-T1-23.

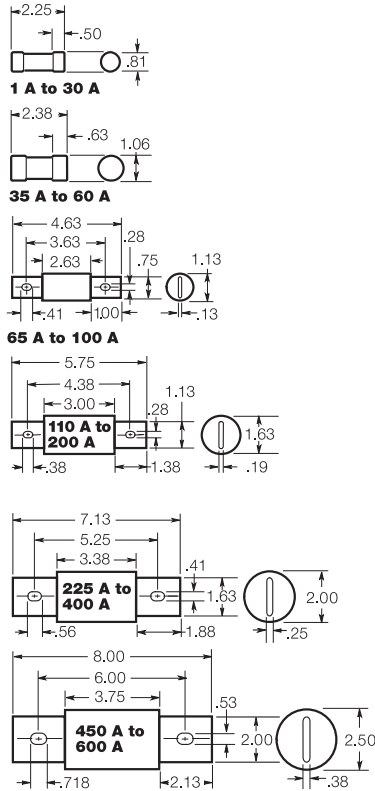
#### Class T

T-Tron™ Fuses  
JJN (300V) JJS (600V)



#### Class J

Low-Peak® and Limitron® Fuses  
LPJ & JKS (600V)

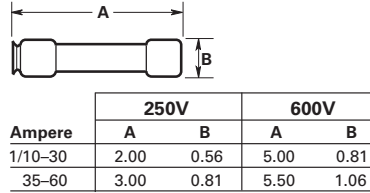


#### Class RK5 and RK1

Fusetron®, Low-Peak and Limitron® Fuses (250 and 600V)

FRN-R and FRS-R; LPN-RK and LPS-RK; KTN-R and KTS-R  
Basic dimensions are same as Class H (formerly NEC ONE-TIME (NON and NOS) and SUPERLAG Renewable RES and REN fuses.

Note: These fuses can be used to replace existing Class H, RK1 and RK5 fuses relating to dimensional compatibility.



#### Fusetron and Limitron

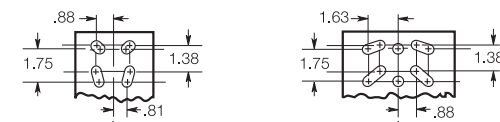
Ampere	250V		600V	
	A	B	A	B
70-100	5.88	1.06	7.88	1.34
110-200	7.13	1.56	9.63	1.84
225-400	8.63	2.06	11.63	2.59
450-600	10.38	2.59	13.38	3.13

#### Low-Peak

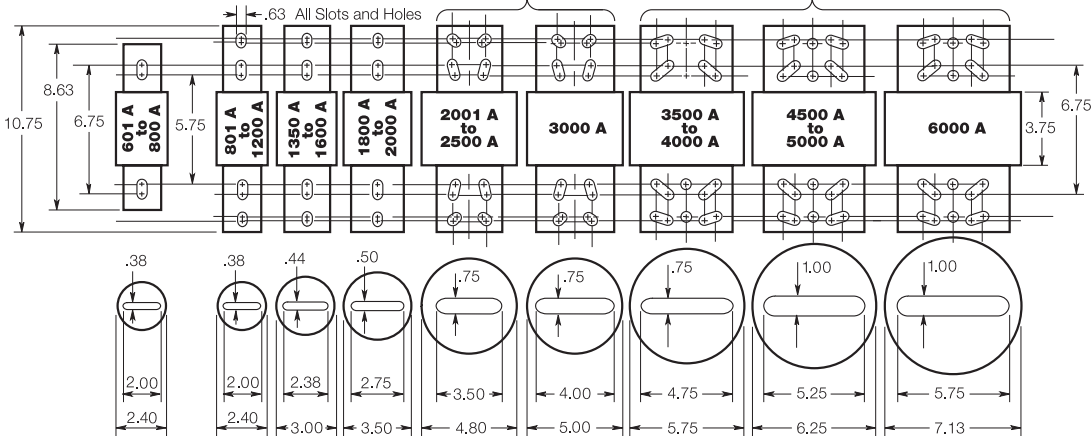
Ampere	250V		600V	
	A	B	A	B
70-100	5.88	1.16	7.88	1.16
110-200	7.13	1.66	9.63	1.66
225-400	8.63	2.38	11.63	2.38
450-600	10.38	2.88	13.38	2.88

#### Class L Low-Peak and Limitron Fuses

KRP-C, KTU & KLU (601-4000A) (600V)



Note: KRP-CL (150-600A) fuses have same dimensions as 601-800A case size. KTU (200-600A) have same dimensions, except tube 3-inch lgth. x 2-inch dia.; terminal 1.63-inch width x 1.25-inch thick.

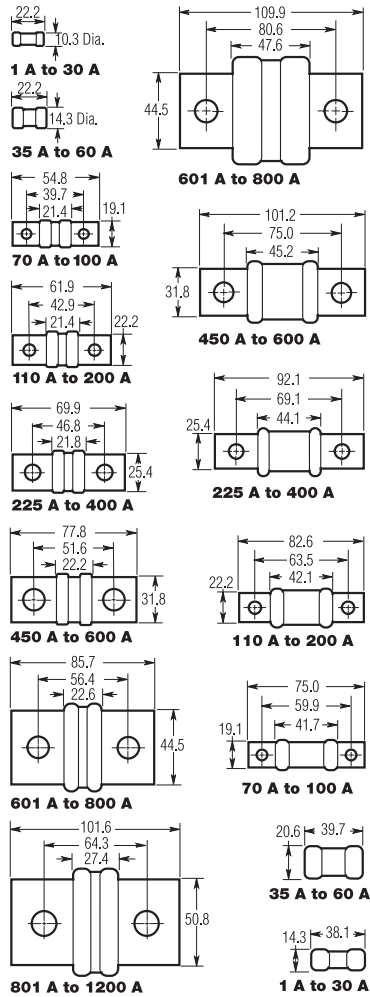




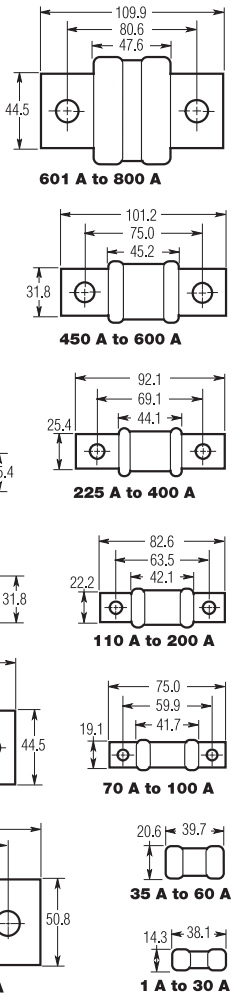
### Typical Fuse Dimensions in Millimeters

#### Class T

**T-Tron Fuses**  
JJN (300V)

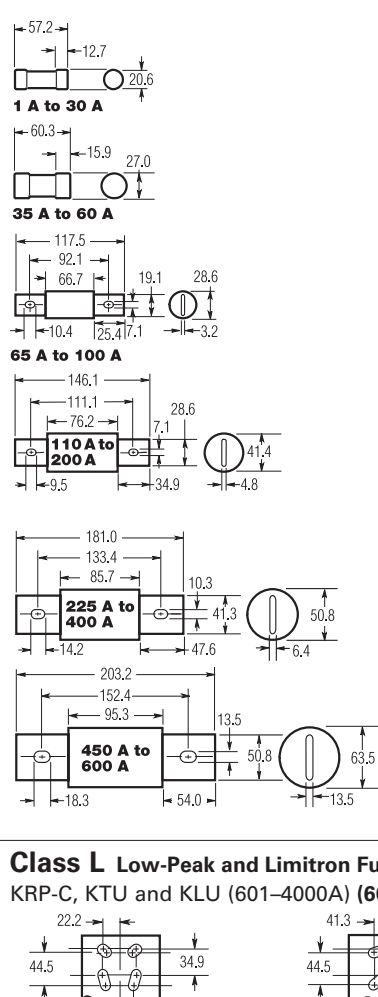


JJS (600V)



#### Class J

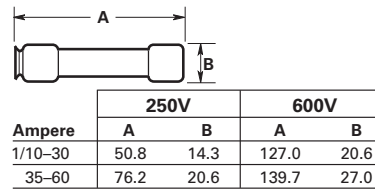
**Low-Peak and Limitron Fuses**  
LPJ and JKS (600V)



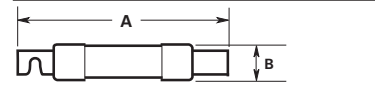
#### Class RK5 and RK1

**Fusetron, Low-Peak and Limitron Fuses (250 and 600V)**  
FRN-R and FRS-R; LPN-RK and LPS-RK; KTN-R and KTS-R  
Basic dimensions are same as Class H (formerly NEC) ONE-TIME (NON and NOS) and SUPERLAG Renewable RES and REN fuses.

**Note:** These fuses can be used to replace existing Class H, RK1 and RK5 fuses relating to dimensional compatibility.



Ampere	250V		600V	
	A	B	A	B
1/10-30	50.8	14.3	127.0	20.6
35-60	76.2	20.6	139.7	27.0



**Fusetron and Limitron**

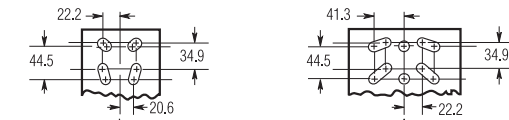
Ampere	250V		600V	
	A	B	A	B
70-100	149.2	26.9	200.0	34.0
110-200	181.0	39.6	244.5	46.7
225-400	219.1	52.3	295.3	65.8
450-600	263.5	65.8	339.7	79.5

**Low-Peak**

Ampere	250V		600V	
	A	B	A	B
70-100	149.2	29.5	200.0	29.5
110-200	181.0	42.2	244.5	42.2
225-400	219.1	60.5	295.3	60.5
450-600	263.5	73.2	339.7	73.2

#### Class L Low-Peak and Limitron Fuses

KRP-C, KTU and KLU (601-4000A) (600V)



**Note:** KRP-CL (150-600A) fuses have same dimensions as 601-800A case size. KTU (200-600A) have same dimensions, except tube 76.2 mm lgth. x 50.8 mm dia.; terminal 41.3 mm width x 31.8 mm thick.

