

# Type VBI Safety Switches

## Guide Form Specifications

## Product Overview

### 1 SAFETY SWITCHES

	General Duty	Heavy Duty	Double Throw																																	
Application	General Duty Switches are intended for applications where reliable performance and continuity of service are needed, but where duty requirements are not severe and usual service conditions prevail. (These switches are intended for use primarily with supply circuits rated 240V AC or less where the available fault current is less than 100,000A when used with Class R or T fuses or 10,000A max. when used with Class H fuses.)	Heavy Duty Switches are intended for use in applications where:  1. Rugged construction, reliable performance, continuity of service and ease of maintenance are emphasized, or  2. Available fault currents higher than 10,000A are likely to be encountered, such as in manufacturing plants, mass production industries, and commercial, institutional and other large buildings served by network systems or transformers of higher capacities.  3. System voltage is 600V AC or DC Max.  4. A Type 12 or 4/4X enclosure is required.	Double throw switches are intended to transfer loads from one power source to another. All double throw switches are CSA certified. Switches are rated for use on systems with an available fault current of up to 10,000 AIC when protected with Class H fuses or 200,000 AIC when protected with Class R, J or Class T fuses. They can also be used to connect a single source of power to either of two loads. In this application it is necessary to field modify fusible switches so that the fuses are on the load side of the switching mechanism.																																	
Short Circuit Withstand Ratings	Suitable for use on systems capable of delivering not more than 100,000 RMS symmetrical amperes of fault current as follows:  <table><tr><td>Sw. Rating</td><td>AIC Rating</td><td>Protective Device①</td></tr><tr><td>30-200A</td><td>10,000</td><td>Circuit Breaker</td></tr><tr><td>30-200A</td><td>10,000</td><td>Class H Fuse</td></tr><tr><td>30-200A</td><td>100,000</td><td>Class R Fuse</td></tr><tr><td>100-200A</td><td>100,000</td><td>Class J or T Fuse</td></tr></table>	Sw. Rating	AIC Rating	Protective Device①	30-200A	10,000	Circuit Breaker	30-200A	10,000	Class H Fuse	30-200A	100,000	Class R Fuse	100-200A	100,000	Class J or T Fuse	Suitable for use on systems capable of delivering not more than 200,000 RMS symmetrical amperes of fault current as follows:  <table><tr><td>Sw. Rating &amp; Tpye</td><td>AIC Rating</td><td>Protective Device①</td></tr><tr><td>All Heavy Duty &amp; DT</td><td>10,000</td><td>Circuit Breaker</td></tr><tr><td>30-600A HD &amp; DT</td><td>10,000</td><td>Class H Fuse</td></tr><tr><td>30-600A HD</td><td>200,000</td><td>Class R, J or T Fuse</td></tr><tr><td>30-600A DTFC &amp; DTNFC DT</td><td>200,000</td><td>Class R, J or T Fuse</td></tr><tr><td>800 &amp; 1200A HD</td><td>200,000</td><td>Class L or T Fuse</td></tr></table>	Sw. Rating & Tpye	AIC Rating	Protective Device①	All Heavy Duty & DT	10,000	Circuit Breaker	30-600A HD & DT	10,000	Class H Fuse	30-600A HD	200,000	Class R, J or T Fuse	30-600A DTFC & DTNFC DT	200,000	Class R, J or T Fuse	800 & 1200A HD	200,000	Class L or T Fuse	
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30-600A HD	200,000	Class R, J or T Fuse																																		
30-600A DTFC & DTNFC DT	200,000	Class R, J or T Fuse																																		
800 & 1200A HD	200,000	Class L or T Fuse																																		
Fuses	Fusible switches will accept the following CSA class fuses:  30 "LF" - 30A max plug Fuses 30-200A "GD" Class H & K, Class R with kit 100-200A "GD" Class J-move base 100-200A "GD" Class T with kit	Fusible switches will accept the following CSA class fuses:  30-600A "HD" Class H & K, Class R with kit 30-600A, 600V "HD" Class J-move base 100-600A, 240V "HD" Class J-move base 100-200A "HD" Class T with kit 400-600A "HD" Class T-move bases 800-1200A "HD" Class L, Class T with kit②	Fusible switches will accept the following CSA class fuses:  30-200A "DT" - Class H & K, Class R with kit 30 & 60A 600V "DT" - Class J-move base 100-200A "DT" - Class J-move base, Class T with kit 400-600A "DT" - Class J-standard, Class T-move bases																																	
Cover Interlocks	Voidable – cover interlocks on switches prevent the switch door from being opened when in the "ON" position. No cover interlock on plug fuse type switches.	Voidable dual cover interlocks standard on all heavy duty switches. Prevents cover from being opened when switch is in the "ON" position and prevents switch from being turned "ON" when door is opened.	Dual cover interlocks standard on all double throw switches. Prevents cover from being opened when switch is in the "ON" position and prevents switch from being turned "ON" when door is opened.																																	
Specifications	CSA certified under file #24563 as enclosed switches. Fusible switches also suitable as service entrance when neutral bonded to the enclosure is installed. Meets CSA C22.2 No.4 Enclosed Switches.		CSA certified under file #24563 as enclosed switches. Meets CSA C22.2 No.4 Enclosed switches.																																	
	Meet NEMA standard KS-1-2001 for type GD switches.	Meet NEMA standard KS-1-2001 for type HD switches.	Meet NEMA standard KS-1-2001 type HD for "DT" switches.																																	
Seismic Qualifications	All GD & HD switches and "DT" type double throw switches have been tested and comply with the 2010 California Building Code (CBC) and with the 2009 International Building Code (IBC) - Compliance Level SDS = 1.85 g																																			
Groundable Neutral (All neutrals are bondable for service entrance use.)	Fusible switches have groundable neutral blocks factory installed.	All switches (both Fusible and Non-Fusible) are either supplied with factory installed neutrals or accept field addable neutrals.	All 2-3 pole DT will accept field addable neutrals.																																	
Padlocks	Padlockable cover latch. OFF padlock provisions on handle.	Padlockable cover latch and multiple OFF padlock provisions on handle.	Padlockable cover latch and multiple OFF padlock provisions on handle.																																	
HP & Load Break Ratings	All General Duty, Heavy Duty and Double Throw Switches are both load break and horsepower rated.																																			

① The protective device can either be a fuse installed in a fusible switch or an upstream fuse or circuit breaker protecting a non-fusible switch. The ampere rating of the upstream protective device must not exceed the switch ampere rating.

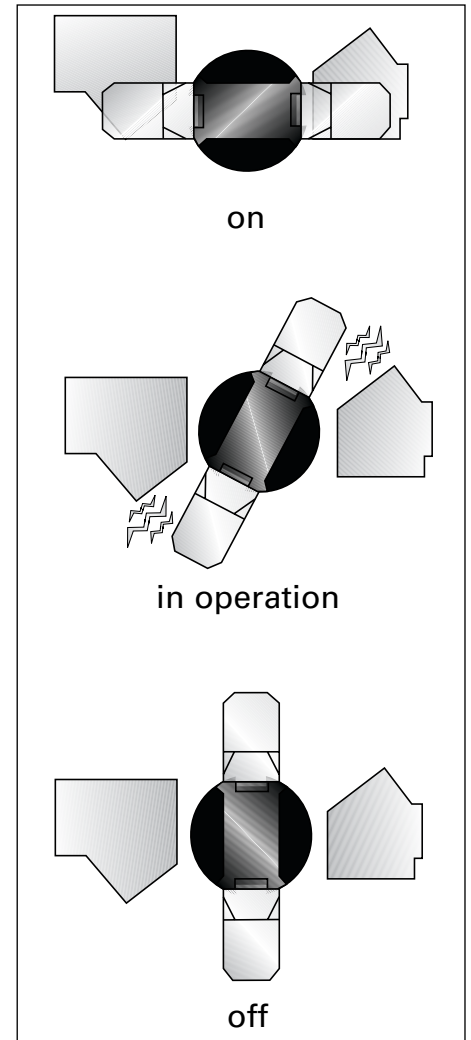
② Class T kit available for 240V max. applications on 1200A switches.

# Feature Comparison

## Product Overview

### 1 SAFETY SWITCHES

General Duty	Heavy Duty	Double Throw	Features / Ratings
▪	▪	▪	30 thru 600 Amps
—	▪	—	800 and 1200 Amps
▪	▪	▪	240 Volt AC
—	▪	▪	600 Volt AC
▪	▪	▪	250 Volt DC
—	▪	—	600 Volt DC
▪	▪	▪	Double-break visible blade design (30-200A)
▪	▪	▪	Quick-make, quick-break switching action
▪	▪	▪	Highly visible ON/OFF handle indication
—	▪	—	Handle design for hook stick operation
▪	▪	▪	Padlockable cover latch
▪	▪	▪	Padlockable handle
■③	—	▪	Single voidable cover interlock
—	▪	▪	Dual voidable cover interlock
▪	▪	▪	Type 1 enclosure
▪	▪	▪	Type 3R enclosure
—	▪	—	Type 12 enclosure
—	▪	—	Type 4/4X enclosures
▪	▪	▪	Generous wiring gutters that meet CSA and CEC wire-bending space requirements
▪	▪	▪	Lugs suitable for copper or aluminum at 60° or 75°C
▪	▪	▪	CU/AL wire lugs that meet CSA C22.2 No.65-03 requirements
—	▪	▪	Suitable for field-convertible compression connectors
■④	▪	▪	All plated copper current carrying parts (except lugs)
▪	▪	▪	Spring reinforced Fuse Clips (except 30A general duty)②
—	▪	▪	Clear pivoting line terminal shield
▪	▪	▪	Replacement parts
—	▪	—	Field addable 200% neutral
■⑦	■①⑦	■①⑦	Provisions for CSA Class T, R and H Fuses
—	▪	■①	Provisions for CSA Class J and L Fuses
—	▪	▪	Metal nameplate
60-200A	▪	▪	Aux. switch kits
—	■④	—	Type 4X with stainless steel interior parts
■⑤	▪	—	Rolled flange enclosure design (30-200A)
—	▪	▪	Isolated ground kits



### Double Break Switching Action

Like the time-proven Vacu-Break Design, the Siemens VBI double break switching action breaks the arc in two places in 30-200A ratings. This reduces heat generation and increases switching speed by doubling the breaking distance. The result is enhanced performance and increased longevity. We also provide the most visible blade design available today. Unlike conventional knife blade switches, the blades are self-aligning to ensure positive contact. In addition, they have no wear and friction point since the “electrical hinge” has been eliminated. The result is a very fast, positive and reliable switching action for even the most severe applications.

① 400, 600V & 600A fusible, double-throw switches accept only Class J or T fuses. Only 800 & 1200A HD switches will accept Class L fuses.

② 30A general duty switches have fuse clips constructed of spring type copper.

③ Not supplied on 30A outdoor & plug fuse switches.

④ 30-200A Type VBI in stainless steel enclosures.

⑤ 60-200A.

⑥ 200A general duty switches have aluminum neutral assemblies.

⑦ 100-200A GD, 100-600A DT and 100-1200A HD switches will accept Class T fuses.

# Safety Switches

## General Duty and Heavy Duty

## Product Overview

### 1 SAFETY SWITCHES

### Enclosure Types

- A Type 1** enclosures are intended for indoor use primarily to provide protection against contact with the enclosed equipment in locations where unusual service conditions do not exist.
- B Type 3R** enclosures are intended for outdoor use primarily to provide a degree of protection against falling rain and sleet and must remain undamaged by the formation of ice on the enclosure. They are not intended to provide protection against conditions such as dust, internal condensation, or internal icing.
- C Type 4, 4X** enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust, rain, splashing water and hose-directed water. They are not intended to provide protection against conditions such as internal condensation or internal icing. Also meets 4X definition by providing a high degree of protection against corrosion. Siemens 30-200A stainless steel 4X switches are supplied stainless interior parts and hardware as standard.
- D Type 4** enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust, rain, splashing water and hose-directed water. They are not intended to provide protection against conditions such as internal condensation or internal icing.
- E Type 12<sup>®</sup>** enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt and dripping water. They are not intended to provide protection against conditions such as internal condensation.



### Load Break Ratings

All Siemens safety switches are load break rated. The load break rating is assigned by CSA after the switching unit has successfully performed the following tests:

Switch Ampere Rating	Number of ON/OFF Operations per Minute	Number of Operations		
		With Current	Without Current	Total
30-100	6	6000	4000	10000
200	5	6000	2000	8000
400	4	1000	5000	6000
600	3	1000	4000	5000
800	2	500	3000	3500
1200	1	500	2000	2500

### Horsepower Ratings

All Siemens safety switches, where appropriate, are horsepower rated. The assignment of such ratings is made by CSA only after the switching unit has undergone testing to determine its acceptability which includes repeated interruption of the locked rotor current of the motor for which it is to be rated as follows:

Max HP Rating	Number of ON/OFF Operations per minute	Number of Cycles of Operation
100	6	50
500	1	10

### Non-Fusible Safety Switch AIC Ratings When Protected by a Circuit Breaker<sup>②③</sup>

Breaker Frame	Non-Fused Switch	Short Circuit Current Rating
NEG, NGB, ED4	30 DT (240V)	18 kA Thru 240 VAC
NEB, NEG, NGG, NGB, ED4	60-100A GD & DT (240V)	18 kA Thru 240 VAC
NEB, NEG, NGG, NGB, ED4	30-100A HD & DT (600V)	18 kA Thru 480 VAC
ED6	30-100A HD & DT (600V)	18 kA Thru 600 VAC
FD6-A, JD6-A	200A HD & DT (600V)	18 kA Thru 600 VAC
JD6-A, LD6-A	400A DT (240V)	18 kA Thru 240 VAC
JD6-A, LD6-A	400A HD & DT (600V)	18 kA Thru 600 VAC
LD6-A	600A DT (240V)	25kA Thru 240 VAC
LD6-A	600A HD & DT (600V)	25kA Thru 600 VAC
NNG	1200A HD (600V)	25 kA Thru 600 VAC

① VBII Type 12 switches are also rated 3R & 3S for outdoor use. Type 3R is defined in B above. 3S rated enclosures provide a degree of protection against windblown dust and allow operation when the enclosure is ice laden.

② All switches above are rated at 10 KA when protected by any CSA certified or cUL Listed CB

③ Circuit breaker trip rating must not exceed switch ampere rating

# Catalogue Numbering System

## Type VBII Safety Switch Catalogue Numbering System

## Product Overview

**H F C 3 6 4 N R CH**

### Switch Type

**L** = General Duty  
10k AIC Max.  
(Plug Fused &  
60A Max  
Non-Fused)  
**G** = Gen. Duty  
**H** = Heavy Duty  
**DT** = Double Throw

### Special Applications With:

**CH** = Crouse-Hinds Receptacle  
**W** = Viewing Window

### Fused or Non-Fused

**F** = Fused  
**NF** = Non-Fused

### C = Built to meet Canadian requirements

### Number of Poles

**1** = 1  
**2** = 2  
**3** = 3  
**4** = 4  
**6** = 6

### Voltage

**1** = 120V or 120/240V  
**2** = 240V  
**6** = 600V

### Enclosure Type

**Omit** = Type 1, Indoor  
**R** = Type 3R, Outdoor  
**S** = Type 4/4X, Stainless Steel  
**J** = Type 12, Industrial

### With or Without Neutral

**Omit** = Less Neutral  
**N** = With Neutral

### Amperes

**1** = 30A  
**2** = 60A  
**3** = 100A  
**4** = 200A  
**5** = 400A  
**6** = 600A  
**7** = 800A  
**8** = 1200A

## Type VBII Accessories Catalogue Numbering System

**H R 6 4**

### Switch Type

**H** = Heavy Duty  
**G** = General Duty

### Accessory Type

**A1** = Auxiliary Switch 1/NO and 1/NC  
**A2** = Auxiliary Switch 2/NO and 2/NC  
**A3** = Auxiliary Switch Low Current  
**CL** = Compression Lug Barrier /  
Mounting Kit  
**G** = Ground Lug Kit  
**G2** = Insulated Ground Lug Kit  
**LC** = Copper Lug Kit  
**NC** = Neutral  
**NC2** = 200% Neutral  
**P** = Fuse Puller Kit  
**R** = Class R - Fuse Clip Kit  
**T** = Class T - Fuse Kit

### Amperes

**1** = 30A  
**2** = 60A  
**12** = 30/60A  
**3** = 100A  
**23** = 60/100A  
**123** = 30/60/100A  
**1234** = 30/60/100/200A  
**4** = 200A  
**56** = 400/600A  
**5678** = 400/600/800/1200A  
**78** = 800/1200A

### Maximum Voltage

**2** = 240V Max  
**6** = 600V Max

# General Duty Enclosed Switches

## Plug Fuse and 60A Special Application Type

*Selection*

### Features

- CSA Certified under file #24563
- Compact size
- Horsepower rated
- Indoor and outdoor enclosures
- Quick make-quick break mechanism
- Visible "ON"-"OFF" indications
- Padlock-off handle feature
- Door padlock provision
- All fusible switches suitable for use as service entrance equipment
- Bondable neutral (where indicated)
- Lugs suitable for copper or aluminum wire
- Switches accept plug fuses only - fuses not included
- Hubs® — see page 1-21
- Lugs — see page 1-21
- Ground Bar Kit: **GSGK60**®
- Knockout diagrams — see page 1-26 and 1-27

### Dimensions - in. (mm)

Enclosure Type	Height	Width	Depth
1	8¼ (210)	5½ (140)	3 (76)
3R	8¼ (210)	5½ (137)	3½ (79)

### Wire Range Table

Switch Type	Wire Range
120/240 Volt Fusible 30 Amp	#14 AWG - #8 AWG Al/Cu <sup>④</sup>
120/240 Volt Non-Fusible 60 Amp	#14 AWG - #3 AWG Al/Cu



**1**  
SAFETY  
SWITCHES

Ampere Rating	Indoor — Type 1		Outdoor — Type 3R		Horsepower Ratings <sup>①</sup>	
	Catalogue Number	Ship. Wt. (lbs.)	Catalogue Number	Ship. Wt. (lbs.) Pkg. of 10	1-Phase, 2-Wire	
					Standard	Maximum

### 120/240 Volt Fusible

#### 1-Pole and Solid Neutral<sup>②</sup>

#### 120 Volt — 1-Phase, 2-Wire

30	LFC111N	3.6	—	—	1/2	2
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#### 2-Pole and Solid Neutral<sup>②</sup>

#### 120/240 Volt — 2-Phase, 3-Wire

30	LFC211N	3.5	LFC211NR	35	1/2	2
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### 240 Volt Non-Fused

#### 2-Pole Special Application Switch

#### 240 Volt — 1-Phase, 2-Wire

60	—	—	LNFC222R <sup>③</sup>	35	3	10
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①Dual horsepower ratings:

Std. — applies when non-time delay plug fuses are installed.

Max — applies when time-delay plug fuses are installed.

②Has service entrance label. CSA certified as

"Enclosed Switches" (suitable for use as service equipment where indicated).

③Bottom cable entry and exit only. No hub provision supplied. **GSGK60** is included and factory installed.

④Line lugs are CSA approved for #14 to #6 Cu/Al cable.

# General Duty Safety Switches

## Features (60-200A)

## Product Overview



1. Cover interlock
2. Tangential knockouts through 200A for easy conduit lineup
3. Quick-make, quick-break operating mechanism that ensures positive operation
4. Provisions for T, R, J, H, and K class fuses (T & J 100-200A)
5. Generous wiring gutters that meet or exceed CEC wire-bending space requirements
6. Visible blade, double-break switch action
7. Positive 2 or 3 point mounting
8. Highly visible red handle grip
9. Informative door labeling which includes replacement parts list
10. Handle and cover padlocking provisions
11. Side-hinged door that opens 180 degrees for easier wiring
12. A unique enclosure design that adds rigidity and strength. Its rolled edge prevents cuts and scrapes to conductors and to installer's hands



# General Duty Safety Switches

Selection

1  
SAFETY  
SWITCHES




System	Ampere Rating	Indoor — Type 1		Horsepower Ratings <sup>①</sup>							
				240V AC						250 Volt DC	
		Catalogue Number	Ship. Wt. (lbs.) Std. Pkg.	1-Phase, 2-Wire		2-Phase, 4-Wire		3-Phase, 3-Wire			
				Std.	Max.	Std.	Max.	Std.	Max.		

## 240 Volt Fusible


### 2-Pole, 2-Fuse, and Solid Neutral<sup>②③④</sup>

### 240 Volt AC/250 Volt DC

	30 60 100 200	GFC221N GFC222N GFC223N GFC224N	35 <sup>⑤</sup> 14 23 47	1 1/2 3 7 1/2 15	3 10 15 —	— — — —	— — — —	3 7 1/2 15 25	7 1/2 15 30 60	5 10 20 40
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### 3-Pole, 3-Fuse, and Solid Neutral<sup>④</sup>

### 240 Volt AC/250 Volt DC

	30 60 100 200	GFC321N GFC322N GFC323N GFC324N	24 <sup>⑤</sup> 15 25 49	1 1/2 3 7 1/2 15	3 10 15 —	— — — —	— — — —	3 7 1/2 15 25	7 1/2 15 30 60	5 10 20 40
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① Dual horsepower ratings: Std.- applies when non-time delay fuses are installed. Max.- applies when time-delay fuses are installed.

② These switches are CSA certified for application on grounded B-phase systems.

③ Suitable for use on 3-phase motor loads.

④ Suitable for use as service entrance when neutral is bonded to the enclosure.

⑤ 10 switches per standard package.

⑥ 5 switches per standard package.

# General and Heavy Duty Safety Switches

## Dimensions

### Safety Switch Dimensions & Shipping Weights

Catalogue Number	Height - Inches (mm)			Width - Inches (mm)		Depth - Inches (mm)		Knockout Diagram <sup>①</sup>	Shipping Weight (lbs.)
	Box A	With Door B	With Rain Shed C	Box D	With Handle E	Box F	With Handle G		
GFC221N	7.79 (202)	8.13 (207)	—	5.50 (140)	5.94 (151)	3.00 (76)	5.88 (149)	S1	35 <sup>②</sup>
GFC222N	14.26 (362)	15.45 (392)	—	6.64 (169)	8.70 (221)	5.05 (128)	8.63 (219)	S6	14
GFC223N	21.95 (558)	23.15 (588)	—	9.84 (245)	11.70 (297)	5.05 (128)	8.63 (219)	S10	23
GFC224N	29.90 (760)	31.07 (789)	—	14.62 (391)	16.68 (424)	6.36 (162)	10.92 (277)	S12	47
GFC321N	7.97 (202)	8.19 (208)	—	7.19 (183)	7.69 (195)	3.00 (76)	5.88 (149)	S2	24 <sup>②</sup>
GFC322N	14.26 (362)	15.45 (392)	—	6.64 (169)	8.70 (221)	5.05 (128)	8.63 (219)	S6	15
GFC323N	21.95 (558)	23.15 (588)	—	9.64 (245)	11.70 (297)	5.05 (128)	8.63 (219)	S10	25
GFC324N	29.90 (760)	31.07 (789)	—	14.62 (371)	16.68 (424)	6.36 (162)	10.92 (277)	S12	49
HFC221J	14.27 (363)	17.33 (440)	—	6.64 (169)	9.02 (229)	5.32 (135)	10.46 (266)	—	13
HFC221N	14.26 (362)	15.45 (392)	—	6.64 (169)	9.01 (229)	5.05 (128)	10.17 (258)	S6	12
HFC221NR	14.39 (366)	—	15.77 (401)	6.64 (169)	9.01 (229)	5.05 (128)	10.17 (258)	S8	13
HFC221S	14.27 (263)	17.33 (440)	—	6.64 (169)	9.01 (229)	5.32 (135)	10.46 (266)	—	13
HFC222J	16.22 (412)	19.31 (491)	—	9.17 (233)	11.47 (291)	5.33 (135)	10.46 (266)	—	19
HFC222N	16.26 (413)	17.46 (444)	—	9.15 (232)	11.53 (293)	5.05 (128)	10.17 (258)	S16	18
HFC222NR	16.26 (413)	—	17.77 (451)	9.16 (233)	11.53 (293)	5.05 (128)	10.17 (258)	S17	19
HFC222S	16.22 (413)	19.31 (491)	—	9.17 (233)	11.47 (291)	5.33 (135)	10.46 (266)	—	19
HFC223J	21.96 (558)	23.16 (588)	—	9.65 (245)	12.02 (305)	5.34 (136)	10.46 (266)	—	24
HFC223N	21.95 (558)	23.15 (588)	—	9.64 (245)	12.01 (305)	5.05 (128)	10.17 (258)	S10	23
HFC223NR	21.95 (558)	—	23.46 (596)	9.64 (245)	11.97 (304)	5.05 (128)	10.17 (258)	S11	24

② Knocks not provided on Type 4 / 4X and 12 or on 800 & 1200A switches.