

R. STAHL HazLoc Enclosed Fusible and Non-Fusible Rotary Disconnect Switches



Features (All Models)

- 15–150A models
- **No conduit seals required for Class I, Division 2 areas**
- Lightweight construction compared to cast metal enclosures
- Available in Fused and Non-Fused versions
- 3-pole horsepower rated switch
- Increased safety terminals and integrated ground bar
- Padlockable robust rotary handle
- Lockout/Tagout compliant
- Multiple entry methods available

Stainless Steel Disconnects

- 316L stainless steel construction for maximum corrosion resistance
- Fused version supplied with hinged cover and ¼-turn latch
- Non-fused version supplied with screw cover
- Enclosure NEMA 3, 4, 4X, IP66

FRP Disconnects

- Fiberglass Reinforced Polyester (FRP) with screw cover, recessed gasket and captive stainless steel cover screws
- Enclosure NEMA 3, 4, 4X, IP66



8150/5-V11D060000000

R. STAHL HazLoc Enclosed Fusible and Non-Fusible Rotary Disconnect Switches Selection Guide

Part Number	Price	Rated Current (A)	Enclosure	Fusible/Non-Fusible	Drawing
8150/5-V11E010000000	\$1,658.00	15	316L stainless steel	Non-fusible	PDF
8150/5-V11E040000000	\$1,788.00	32			PDF
8150/5-V11D060000000	\$2,720.00	63			PDF
8150/5-V11D080000000	\$4,940.00	125			PDF
8150/5-V11D090000000	\$5,681.00	150			PDF
8146/5-V11E010000000	\$1,442.00	15	FRP (fiberglass-reinforced polyester)	Non-fusible	PDF
8146/5-V11E040000000	\$1,555.00	32			PDF
8146/5-V11D060000000	\$2,366.00	63			PDF
8146/5-V11D080000000	\$4,296.00	125			PDF
8146/5-V11D090000000	\$4,940.00	150			PDF
7150/5-V11E01AA00000	\$2,657.00	15	316L stainless steel	Fusible	PDF
7150/5-V11E04AA00000	\$3,126.00	30			PDF
7150/5-V11D06AA00000	\$4,994.00	60			PDF
7150/5-V11D08AA00000	\$7,006.00	125			PDF
7146/5-V11E01AA00000	\$2,312.00	15	FRP (fiberglass-reinforced polyester)	Fusible	PDF
7146/5-V11E04AA00000	\$2,720.00	30			PDF
7146/5-V11D06AA00000	\$4,420.00	60			PDF
7146/5-V11D08AA00000	\$5,790.00	125			PDF

R. STAHL HazLoc Enclosed Fusible and Non-Fusible Rotary Disconnect Switches Accessories Selection Guide

Part Number	Price	Description	Drawing
8150ASSEMBLY	\$43.00	Replacement mounting brackets for use with stainless steel models 4 brackets per disconnect required	PDF



8150ASSEMBLY

R. STAHL HazLoc Enclosed Non-Fusible Rotary Disconnect Switches (FRP Enclosure)

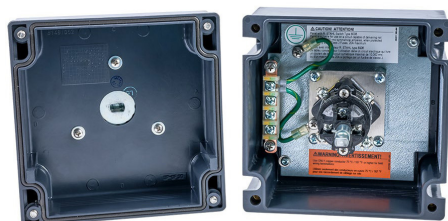


R. STAHL HazLoc rotary disconnect switches are engineered for hazardous locations and harsh environments. Features include corrosion-resistant enclosures and a wide temperature range. They are ideal for close-proximity installation of field equipment such as control panels, motors, skids or machinery and are built to withstand demanding conditions while ensuring safety and ease of use in various applications. These switches offer unmatched reliability where there is a need to completely de-energize for service or maintenance.

Features

- 3-pole horsepower (hp) rated switch
- Non-fused
- Suitable for voltages up to 600 VAC / 240 VDC (restrictions may apply)
- Robust, padlockable rotary handle
- Lightweight construction
- Fiberglass-reinforced polyester (FRP)
- Suitable for low ambient temperatures
- Enclosure type 3, 4, 4X, IP66
- No conduit seals required
- Quad certified: FMus, cFME, IECEx, ATEX

8146/5-V11E010000000



	NEC® 500 CE Code Appendix J					
	Class I		Class II		Class III	
Division	1	2	1	2	1	2
Ex interface						
Installation in		•	•	•	•	•

	CE Code Section 18 NEC® 505 NEC® 506					
	Class I					
Zone	0	1	2	20	21	22
Ex interface						
Installation in		•	•		•	

	IECEx / ATEX					
	0	1	2	20	21	22
Zone						
Ex interface						
Installation in		•	•		•	•

R. STAHL HazLoc Enclosed (FRP) Non-Fusible Rotary Disconnect Switches Specifications

Part Number	Rated Current (A)	Rated Voltage		Horsepower Rating (480 VAC)	Required Max Back-Up Fuse (Class J) (A)*	Short-Circuit Current Rating (sym RMS) (kA)	cFMEus Temperature Class	IECEx/ATEX Temperature Class		Ambient Temperature**	Terminal Capacity***
		VAC	VDC					Gas	Dust		
8146/5-V11E010000000	15	600	125	10	20	10	T6	T6	80 °C	-50 °C [-58 °F] to +40 °C [+104 °F]	14–8 AWG
8146/5-V11E040000000	32	600	–	20	50	10	T5	T5	95 °C	-50 °C [-58 °F] to +55 °C [+131 °F]	12–6 AWG
8146/5-V11D060000000	63	600	240	40	150	20	T5	T5	95 °C	-50 °C [-58 °F] to +55 °C [+131 °F]	10–1/0 AWG
8146/5-V11D080000000	125	600	240	100	200	25	T5	T5	95 °C	-50 °C [-58 °F] to +55 °C [+131 °F]	10 AWG to 300 kcmil
8146/5-V11D090000000	150	480	240	100	200	25	T4	T4	130 °C	-50 °C [-58 °F] to +55 °C [+131 °F]	10 AWG to 300 kcmil

* Required back-up fuse upstream in the circuit for short-circuit protection

** Ambient temperature of -50 °C is dependent on entries used. Proper entry hardware selection is critical to maintaining ambient ratings.

***Use ONLY copper conductors rated 75 °C [167 °F] or higher for field wiring terminations.

R. STAHL HazLoc Enclosed Non-Fusible Rotary Disconnect Switches (FRP Enclosure)



R. STAHL HazLoc Enclosed (FRP) Non-Fusible Rotary Disconnect Switches Technical Data	
Explosion Protection	
Area of Application	European Union (ATEX) Canada IECEx USA
FMus Certificate	FM18US0275X
cFM Certificate	FM18CA0132X
Marking FMus	Class I, Div. 2, Groups A, B, C, D Class II, III, Div. 1, Groups E, F, G, T* Zone 1, AEx db eb IIC T* Gb Enclosure Type 3, 4, 4X
Marking cFM	Ex db eb IIC Gb Class I, Div. 2, Groups A, B, C, D Class II, III, Div. 1, Groups E, F, G, T* Enclosure Type 3, 4, 4X
Marking cFM Note	Zone 2 IIC per Canadian Electrical Code Table 18
IECEx Certificate	IECEx PTB 06.0090
ATEX Certificate	PTB 01 ATEX 1024
Explosion Protection Note	Gas temperature class and dust surface temperature T*
Certificates	ATEX (PTB), Canada (FM), IECEx (PTB), USA (FM)
Electrical Data	
Auxiliary Contact NC	None
Auxiliary Contact NO	None
Additional Short Circuit Protection	Additional fuse necessary
Short Circuit Protection Note	Required back-up fuse in the electrical circuit (Class J)
Frequency Range	50–60 Hz
Fuse	Required back-up fuse upstream in the circuit (Class J)
Mechanical Data	
Degree of Protection (IP)	IP66
Enclosure Type (UL 50 and UL 50E)	3, 4, 4X
Additional Terminal	None
Service Life (min)	10 ⁵ operating cycles
Handle Color	Black
Protective Collar Color	Black
Seal	Silicone, foamed
Locking Position	OFF – Accepts up to 3 locks

*See selection table

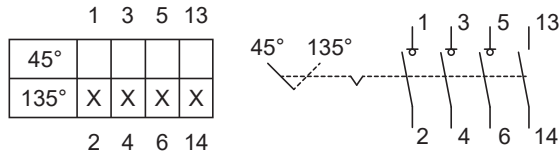
R. STAHL HazLoc Enclosed (FRP) Non-Fusible Rotary Disconnect Switches Horsepower Ratings								
Part Number	Rated Current (A)	Horsepower Rating						
		600 VAC	480 VAC	240 VAC	120 VAC	60 VDC	125 VDC	250 VDC
8146/5-V11E010000000	15	10	10	5	2	-	-	-
8146/5-V11E040000000	32	30	20	10	3	-	-	-
8146/5-V11D060000000	63	60	40	20	10	-	-	-
8146/5-V11D080000000	125	125	100	50	25	-	10 (2)	20 (3)
8146/5-V11D090000000	150	-	100	50	25	-	10 (2)	20 (3)

Note: The numbers within parentheses indicate how many switch contacts need to be wired in series to achieve the indicated horsepower rating in DC applications.

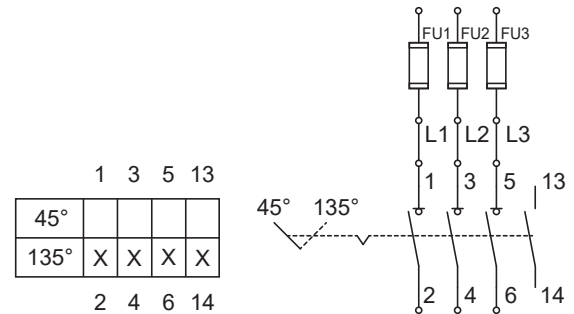
R. STAHL HazLoc Enclosed Fusible and Non-Fusible Rotary Disconnect Switches



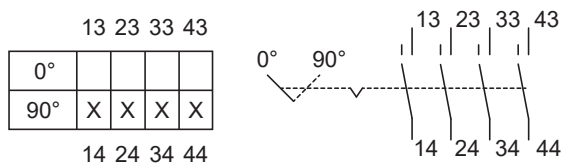
Connection Diagrams



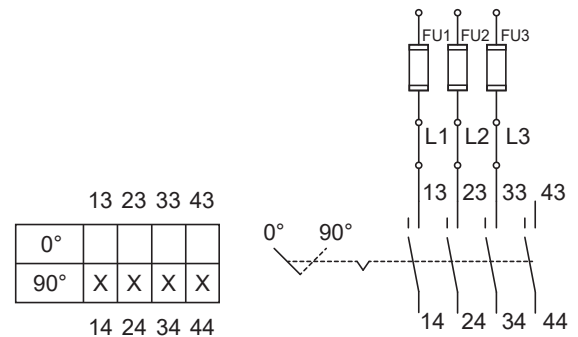
81/5-V11E010000000**



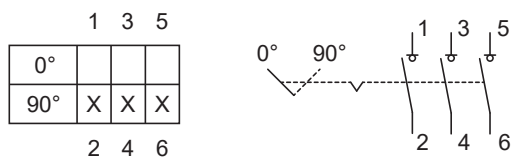
71/5-V11E01AA00000**



81/5-V11E040000000**



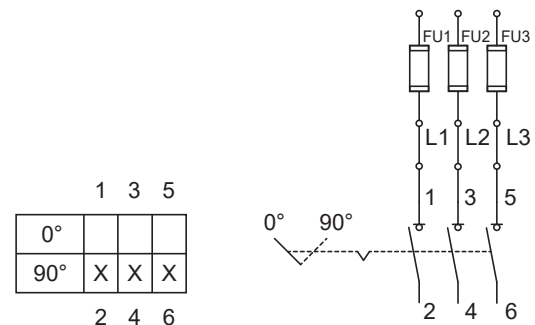
71/5-V11E04AA00000**



81/5-V11D060000000**

81/5-V11D080000000**

81/5-V11D090000000**



71/5-V11D06AA00000**

71/5-V11D08AA00000**

R. STAHL HazLoc Enclosed Fusible and Non-Fusible Rotary Disconnect Switches



What are Hazardous Locations?

Hazardous locations are defined as premises, buildings or parts thereof where fire or explosion hazards may exist due to the presence of flammable gases or vapors, flammable liquids, combustible dusts or easily ignitable fibers or flyings.

Flammable gases, vapors and combustible dusts exist almost everywhere, but fortunately they are usually present only in minute quantities. A location is not defined as hazardous simply due to the presence of flammable gases, vapors, or combustible dusts. The quantities or concentrations must be sufficient to present a potential explosion hazard.

The electrical codes that deal with these types of hazardous location areas do not cover certain materials such as high explosives like dynamite, munitions and fireworks. Other rules and regulations handle areas involving these materials.

Understanding Global Hazardous Location Requirements

The evolution of hazardous location electrical codes and standards throughout the world has taken two distinct paths.

In North America, a Class, Division system has been used for decades as the basis for area classification of hazardous (classified) locations. Because the hazards and methods of protecting electrical equipment from these hazards vary for different materials, hazardous locations are divided into three Classes and two Divisions. Classes are based on the type of hazard and the explosive characteristics of the material, and Divisions are based on the occurrence or risk of fire or explosion that the material presents. While the United States and Canada have some differences in acceptable wiring methods and product standards, their Class, Division systems are very similar.

In other parts of the world, areas containing explosive atmospheres are defined using the Zone system. Zones are based predominantly on the International Electrotechnical Commission (IEC) and European Committee for Electrotechnical Standardization (CENELEC) standards. In order to provide multiple options of classification in hazardous locations, North America has additionally introduced a Zone system. In Canada, the Zone system for area classification has become the preferred (required) method, though the Class, Division system is still prominent in current facilities.

Hazardous Location Basics

In North America, hazardous locations are separated into three Classes based on the explosive characteristics of the materials. The Class or type of material is further separated into Divisions or Zones based on the release of the flammable material. The Zone system has three levels of hazard in contrast to the Division system's two levels.

Here's a broad overview of each Class:

Class I locations are those in which flammable "gases or vapors" are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures. The terms "gases or vapors" differentiate between materials that are in a gaseous state under normal atmospheric conditions, such as hydrogen or methane, and a vapor such as gasoline that is flashed off from a liquid under normal atmospheric conditions. Further subdivision of Class I into Divisions (this concept applies to Class II and Class III as well) or Zones is based on the probability that an explosive gas atmosphere may be present in a location. If the risk is extremely low, the location is considered unclassified.

Class II locations are those that are hazardous due to the presence of combustible or electrically conductive dusts. The dust must be present in sufficient quantities for a fire or explosion hazard to exist. The fact that there is some combustible dust present does not mean a Class II hazardous location exists. Class II substances are also divided into three groups for similar reasons as Class I materials.

Class III locations are those which are hazardous due to the presence of easily ignitable fibers or flyings. However, the material is not suspended in the air in quantities which are sufficient enough to produce ignitable mixtures. Easily ignitable fibers and flyings present a serious fire risk, not normally an explosion hazard. The greater danger with Class III materials is that if a layer forms throughout a facility, an ignition will cause a flash fire which moves at near explosive speeds.

Characteristics of Hazardous Locations			
Hazardous Materials	Schemes/Classifications		
	Class, Division System NEC® 500 / CEC Appendix J	Class, Zone System NEC® 505, 506	Zone System CEC Section 18 IECEx/ATEX
Gases or Vapors	Class I, Division 1	Class I, Zone 0, Zone 1	Zone 0
	Class I, Division 2	Class I, Zone 2	Zone 1, Zone 2
Combustible Dusts	Class II, Division 1	Zone 20, Zone 21	Zone 20
	Class II, Division 2	Zone 22	Zone 21, Zone 22
Fibers or Flyings	Class III, Division 1	Zone 21	Zone 20
	Class III, Division 2	Zone 22	Zone 21, Zone 22

R. STAHL HazLoc Overview

North American Standards



NEC 500 / Canadian Electrical Code Annex J18 Marking Example

Class I	Division 1	Groups A, B, C, D	T4
Hazardous Classification Rating	Area Definition	Material Group	Temperature Class (T Code)

Hazardous Classification Rating

- Class I - Combustible Gases
- Class II - Combustible Dusts
- Class III - Fibers and Flyings

Area Definition

- Division 1 - Locations in which dangerous concentrations of incandive gases or vapors may be present in normal operating conditions.
- Division 2 - Locations in which dangerous concentrations of gases or vapors are kept in closed containers or systems and which can only be released as a result of fault conditions.

Material Group

- A - Atmospheres containing acetylene or equivalent hazard
- B - Atmospheres containing hydrogen or equivalent hazard
- C - Atmospheres containing ethylene or equivalent hazard
- D - Atmospheres containing propane or equivalent hazard
- E - Atmospheres containing combustible metal dusts
- F - Atmospheres containing combustible carbonaceous dusts
- G - Atmospheres containing combustible dusts not in Group E or F

Temperature Class

Max. Surface Temperature	NEC 500 / CE Code Appendix J	NEC 505 / CE Code Section 18
450 °C [842 °F]	T1	T1
300 °C [572 °F]	T2	T2
280 °C [536 °F]	T2A	
260 °C [500 °F]	T2B	
230 °C [446 °F]	T2C	
215 °C [419 °F]	T2D	
200 °C [392 °F]	T3	T3
180 °C [356 °F]	T3A	
165 °C [329 °F]	T3B	
160 °C [320 °F]	T3C	
135 °C [275 °F]	T4	
120 °C [248 °F]	T4A	T4
100 °C [212 °F]	T5	T5
85 °C [185 °F]	T6	T6

NEC 505 Marking Example

Zone 1, AEx	db eb	IIC	T4	Gb
Canadian Electrical Code Section 18 Marking Example				
Ex	db eb	IIC	T4	Gb
Area Classification	Type of Protection	Material Group	Temperature Class (T Code)	Equipment Protection Level

Area Classification

Zone 0 – A location in which an explosive gas atmosphere is present continuously.

Zone 1 – A location in which an explosive gas atmosphere is likely to occur periodically or occasionally in normal operation.

Zone 2 – A location in which an explosive gas atmosphere is not likely to occur in normal operation but, if it does occur, it will exist for a short period only.

Zone 20 – A location in which an explosive dust atmosphere, in the form of a cloud of dust in air, is present continuously.

Zone 21 – A location in which an explosive dust atmosphere, in the form of a cloud of dust in air, is likely to occur in normal operation.

Zone 22 – A location in which an explosive dust atmosphere, in the form of a cloud of dust in air, is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Material Group

IIC - Atmospheres containing acetylene & hydrogen or gases of an equivalent hazard

IIB+H2 - Atmospheres containing hydrogen in addition to the gases of IIB

IIB - Atmospheres containing ethylene or gases of an equivalent hazard

IIA - Atmospheres containing propane or gases of an equivalent hazard

IIIC - Atmospheres containing combustible conductive dusts

IIIB - Atmospheres containing combustible non-conductive dusts

IIIA - Atmospheres containing flyings (fibers)

Equipment Protection Level (EPL)

(Indicates locations in which the equipment is suitable for installation)

Ga – Zone 0, 1 and 2

Gb – Zone 1 and 2

Gc – Zone 2

Da – Zone 20, 21 and 22

Db – Zone 21 and 22

Dc – Zone 22

Ma – Very high level of protection for mines

Mb – High level of protection for mines

R. STAHL HazLoc Overview

North American Standards



Protection Methods NEC 500 / Canadian Electrical Code Annex J18 Marking				
Type of Protection	Class	Division	North American Standard UL/CSA/FM/NFPA	Basic Concept of Protection
Explosion-Proof	I	Division 1, 2	UL 1203 CSA C22.2 No. 30 FM 3615	
Nonincendive	I, II	Division 2	UL 121201 CSA C22.2 No. 213 FM 3611	
	III	Division 1, 2		
Intrinsic Safety	I, II, III	Division 1, 2	CSA C22.2 No. 60079-11 UL 913 FM 3610	
Purge and Pressurization	I, II, III	Division 1, 2 Depending on type (X, Y, Z)	NFPA 496 FM 3620	
Dust-Ignition-Proof	II	Division 1, 2	FM 3616	
Dust-Tight	II	Division 2	UL 121201 CSA C22.2 No. 213 FM 3611	

Other Protection Methods		
Products often utilize a combination of protection methods to provide an optimal solution that is both easy to install and maintain while ensuring safety.		
Type of Protection	Application	Basic Concept of Protection
Flameproof components or Ex de	Class I, Div. 2 Class I, Zone 1 Class II, Div. 2	 The component is made using a flameproof enclosure with increased safety terminals. Each component can then be installed inside a suitable enclosure.
Indirect Entry or Ex de	Class I, Div. 2 Class I, Zone 1 Class II, Div. 2	 Combination of an explosion-proof enclosure attached to a non-incendive or increased safety connection enclosure. The electrical connection is done with certified junctions.

Protection Methods NEC 505 / Canadian Electrical Code Section 18 Marking					
Type of Protection	Ex Code	EPL	Zone	North American Standard UL/CSA	Basic Concept of Protection
Flameproof	da	Ga	0	60079-1	
	db	Gb	1		
	dc	Gc	2		
Increased Safety	eb	Gb Db	1	60079-7	
	ec	Gc Dc	2		
Intrinsic Safety	ia	Ga Da	0, 20	60079-11	
	ib	Gb Db	1, 21		
	ic	Gc Dc	2, 22		
Encapsulation	ma	Ga Da	0, 20	60079-18	
	mb	Gb Db	1, 21		
	mc	Gc Dc	2, 22		
Purge and Pressurization	px	Gb Db	1, 21	60079-2	
	py	Gb Db	1, 21		
	pz	Gc Dc	2, 22		
Powder-Filled	qb	Gb	1	60079-5	
Liquid Immersion	ob	Gb	1	60079-6	
	oc	Gc	2		
Equipment Dust Ignition Protection By Enclosure "t"	ta	Da	20	60079-31	
	tb	Db	21		
	tc	Dc	22		
Optical Radiation	op pr	Gb Db	1, 21	60079-28	
	op is	Ga Da	0,20		
	op sh	Ga Da	0,20		