



Safety switch / load disconnect switch

Series 8146/5-V37,

Series 8150/5-V37,

Series 8146/5-V11

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1 General Information

1.1 Manufacturer

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1.2 Information regarding the operating instructions

ID-No.: 147924 / 8146647300

Publication Code: 2016-10-04-BA00-III-en-11

The original instructions are the English edition.
They are legally binding in all legal affairs.

1.3 Further documents

- Data sheet

For further languages, see www.stahl-ex.com.

1.4 Conformity with standards and regulations

See certificates and EC Declaration of Conformity: www.stahl-ex.com.

The device has IECEx approval. See IECEx homepage: <http://iecex.iec.ch/>

Further national certificates can be downloaded via the following link:

<http://www.r-stahl.com/downloads/certificates.html>.

2 Explanation of the symbols

2.1 Symbols in these operating instructions

Symbol	Meaning
	Tips and recommendations on the use of the device
	General danger
	Danger due to explosive atmosphere
	Danger due to energised parts



2.2 Warning notes

Warning notes must be observed under all circumstances, in order to minimize the risk due to construction and operation. The warning notes have the following structure:

- Signalling word: DANGER, WARNING, CAUTION, NOTICE
- Type and source of danger/damage
- Consequences of danger
- Taking countermeasures to avoid the danger/damage

	DANGER
	Danger to persons Non-compliance with the instruction results in severe or fatal injuries to persons.
	WARNING
	Danger to persons Non-compliance with the instruction can result in severe or fatal injuries to persons.
	CAUTION
	Danger to persons Non-compliance with the instruction can result in light injuries to persons.
NOTICE	
Avoiding material damage Non-compliance with the instruction can result in material damage to the device and / or its environment.	

2.3 Symbols on the device

Symbol	Meaning
	CE marking according to the current applicable directive.
	According to marking, device approved for hazardous areas.

3 Safety notes



3.1 Operating instructions storage

- Read the operating instructions carefully and store them at the mounting location of the device.
- Observe applicable documents and operating instructions of the devices to be connected.


3.2 Safe use

- Read and observe the safety notes in these operating instructions!
- Use the device in accordance with its intended and approved purpose only.
- We cannot be held liable for damage caused by incorrect or unauthorized use or by non-compliance with these operating instructions.
- Before installation and commissioning, make sure that the device is not damaged.
- Work on the device (installation, maintenance, overhaul, repair) may only be carried out by appropriately authorized and trained personnel.
- During installation and operation observe the information (characteristic values and rated operating conditions) on the rating, data and information plates located on the device.
- Always consult with R. STAHL Schaltgeräte GmbH in case of operating conditions which deviate from the technical data.
- Replace the switch after each short circuit in the main circuit, since with hermetically sealed equipment the state of the switching contacts cannot be checked.
- Excessively hard or easy switching is indicative of damage in the switch. Further use of the switch must be prevented. The switch must be checked by trained personnel.

3.3 Modifications and alterations

	DANGER
	Explosion hazard due to modifications and alterations to the device! Non-compliance results in severe or fatal injuries. <ul style="list-style-type: none"> • Do not modify or alter the device.
	No liability or warranty for damage resulting from modifications and alterations.


4 Function and device design

	DANGER
	<p>Explosion hazard due to improper use! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> Use the device only according to the operating conditions described in these operating instructions.

4.1 Function

The safety (8146/5-V37, 8150/5-V37)/ load disconnect switches (8146/5-V11) are used as main connection switches for distribution units and motor circuits. They also ensure that machines in hazardous areas are disconnected from electrical power during cleaning and repair work.

The safety / load disconnect switches are approved for use in hazardous areas of Zones 1, 2, 21 and 22.

	<p>Safe disconnection of all poles is ensured only in intended and proper operation.</p>
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



5 Technical data

Explosion Protection

Global (IECEX)

Gas and dust	<p>8146/5: IECEX PTB 06.0090, 8150/5: IECEX PTB 09.0049</p> <p>8146/5: Ex db eb [ia Ga] [ib] mb q IIA, IIB, IIC T6, T5, T4 Gb 8150/5: Ex db eb [ia Ga] [ib] mb q IIA, IIB, IIC T6, T5, T4 Gb</p> <p>8146/5: Ex tb IIIA, IIIB, IIIC T80 °C, T95 °C, T130 °C Db 8150/5: Ex tb IIIC T80 °C, T95 °C, T130 °C Db</p>
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Europe (ATEX)

Gas and dust	<p>8146/5: PTB 01 ATEX 1024, 8150/5: PTB 09 ATEX 1109</p> <p>8146/5:  II 2(1) G Ex db eb ia ib [ia Ga] mb q IIA, IIB, IIC T6, T5, T4 Gb 8150/5:  II 2(1) G Ex db eb ia/ib [ia Ga] mb q IIA, IIB, IIC T6, T5, T4 Gb</p> <p>8146/5:  II 2 D Ex tb IIIA, IIIB, IIIC T80 °C, T95 °C, T130 °C Db 8150/5:  II 2 D Ex tb IIIC T80 °C, T95 °C, T130 °C Db (marking on rating plate is possible)</p>
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Certifications and certificates

Certificates	<p>IECEX, ATEX, Kazakhstan (TR), Russia (TR), Belarus (TR) Safety Switch (...V37) acc. to EN62626-1, class1</p>
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Further parameters

Further information	see respective certificate and operating instructions
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Technical Data

Design	10 A	12 / 16 A	16 A	20 A
Electrical data				
Main contacts				
Rated operational voltage	690 V AC	690 V AC	690 V AC	690 V AC
Rated insulation voltage	750 V	750 V	690 V	690 V
Rated impulse withstand voltage	6 kV	6 kV	6 kV	6 kV
Rated operational current	10 A	12 / 16 A	16 A	20 A
Service life of electrical / mechanical parts	20.000 operations			
Max. short-circuit protection	16 A, tripping characteristic: gG acc. to IEC/EN 60291-1	25 A ($I_e = 16$ A); 16 A ($I_e = 12$ A), tripping characteristic: gG acc. to IEC/EN 60291-1	25 A, tripping characteristic: gG acc. to IEC/EN 60291-1	35 A, tripping characteristic: gG acc. to IEC/EN 60291-1
Auxiliary contacts				
Rated operational voltage	400 V AC	400 V AC	400 V AC	500 V AC
Rated operational current	6 A	6 A	10 A	10 A
Terminals	1.5 / 1.5 ... 2.5 / 4 mm ² finely stranded / solid wire	1.5 / 1.5 ... 2.5 / 4 mm ² finely stranded / solid wire	1.5 ... 6 mm ² finely stranded / solid	1.5 ... 6 mm ² finely stranded / solid

Technical Data

Design	25 A	40 A	63 / 80 A	125 / 160 / 180 A		
Electrical data						
Main contacts						
Rated operational voltage	690 V AC	690 V AC	500 V AC (80 A) / 690 V AC (63 A)	400 V AC (180 A) / 500 V AC (150 A) / 690 V AC (125 A)		
Rated insulation voltage	690 V	750 V	750 V	750 V		
Rated impulse withstand voltage	6 kV	6 kV	6 kV	6 kV		
Rated operational current	25 A	40 A	63 / 80 A	125 / 160 / 180 A		
Service life of electrical / mechanical parts	20.000 operations					
Max. short-circuit protection	35 A, tripping characteristic: gG acc. to IEC/EN 60291-1	80 A, tripping characteristic: gG acc. to IEC/EN 60291-1	63 A: 125 A, 80 A: 160 A, tripping characteristic: gG acc. to IEC/EN 60291-1	125 A: max. 200 A / 690 V max. 250 A / 500 V 160 A / 180 A: max. 250 A / 400 V tripping characteristic: gG acc. to IEC/EN 60291-1		
Auxiliary contacts						
Rated operational voltage	500 V AC	Switching capacity				
		AC-12 8080/1-1	8080/1-3 8080/1-4	AC-15 8080/1-1	8080/1-3 8080/1-4	DC-12 8080/1-
Rated operational current	10 A	max. 250 V max. 500 V **) max. 6 A max. 5000 VA	max. 250 V max. 400 V **) max. 6 A max. 4000 VA	max. 250 V max. 500 V **) max. 6 A max. 1000 VA	max. 250 V max. 400 V **) max. 6 A max. 1000 VA	max. 125 V max. 6 A max. 400 W
**) Only for equal potential						
Terminals	1.5 ... 6 mm ² finely stranded / solid	0.75 ... 2.5 mm ² finely stranded / solid	0.75 ... 2.5 mm ² finely stranded / solid	0.75 ... 2.5 mm ² finely stranded / solid		

Operation with frequency-controlled three-phase drives:

NOTE	
<p>The safety switch (.V37) and load switch (8146/5-V11) are suitable for operation with frequency-controlled three-phase drives. For this use, it must be ensured that the switch-off criteria of the respective frequency converter are met. Leading auxiliary contacts must be used.</p> <p>Non-compliance may lead to material damage!</p> <ul style="list-style-type: none"> • Check switch-off times of the frequency converter. • With increasing frequencies, from 100 Hz increased conductor resistances occur. The following reduction factors must therefore be observed for the rated operational currents. 	

Reduction factors:

from 100 Hz	0.933 x I
from 200 Hz	0.871 x I
from 300 Hz	0.836 x I
from 400 Hz	0.812 x I

Technical Data

Design	10 A
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Electrical data

Main contacts

Switching capacity acc. to IEC/EN 60947-3; DIN VDE 0660, part 107

U _e	AC-3		P
	I		
230 V ~	10 A		2.2 kW
400 V ~	10 A		4.0 kW
440 V ~	10 A		4.0 kW
500 V ~	10 A		5.5 kW
690 V ~	10 A		7.5 kW

U _e	DC-1		DC-13 (L/R = 300 ms)	
	I		U _e	I
220 V	6 A ³⁾		230 V	0.4 A
110 V	6 A ²⁾			
60 V	6 A ¹⁾			
24 V	10 A ¹⁾			

- 1) 1 conducting path
- 2) 2 conducting paths in series
- 3) 3 conducting paths in series



Design	12 / 16 A
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Electrical data

Main contacts

Switching capacity acc. to IEC/EN 60947-3; DIN VDE 0660, part 107

U _e	AC-3		AC-3	
	I	P	I	P
230 V ~	12 A	3.0 kW	16 A	4.0 kW
400 V ~	12 A	5.5 kW	16 A	7.5 kW
440 V ~	12 A	5.5 kW	16 A	7.5 kW
500 V ~	12 A	7.5 kW	16 A	7.5 kW
690 V ~	12 A	7.5 kW	16 A	11.0 kW

U _e	DC-1		DC-13 (L/R = 300 ms)	
	I	U _e	U _e	I
220 V	6 A ³⁾	230 V	0.4 A	
110 V	6 A ²⁾			
60 V	6 A ¹⁾			
24 V	10 A ¹⁾			

- 1) 1 conducting path
- 2) 2 conducting paths in series
- 3) 3 conducting paths in series



Technical Data

Design	16 A
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Electrical data

Main contacts

Switching capacity acc. to IEC/EN 60947-3; DIN VDE 0660, part 107

U _e	AC-3		U _e	I	
	I	P			
230 V ~	16 A	4.0 kW			
400 V ~	16 A	7.5 kW			
440 V ~	16 A	7.5 kW			
500 V ~	16 A	7.5 kW			
690 V ~	16 A	11.0 kW			
U _e	DC-1, DC-23		DC-13 (L/R = 300 ms)		
	I		U _e	I	
220 V	16 A ³⁾		250 V	1.1 A	1) 1 conducting path 2) 2 conducting paths in series 3) 3 conducting paths in series
120 V	16 A ²⁾		125 V	2.2 A	
60 V	16 A ¹⁾		60 V	5.0 A	

Design	20 A
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Electrical data

Main contacts

Switching capacity acc. to IEC/EN 60947-3; DIN VDE 0660, part 107

U _e	AC-3		U _e	I	
	I	P			
230 V ~	20 A	5.5 kW			
400 V ~	20 A	7.5 kW			
440 V ~	20 A	11.0 W			
500 V ~	20 A	11.0 kW			
690 V ~	20 A	18.5 kW			
U _e	DC-1, DC-23		DC-13 (L/R = 300 ms)		
	I		U _e	I	
220 V	20 A ³⁾		250 V	1.1 A	1) 1 conducting path 2) 2 conducting paths in series 3) 3 conducting paths in series
120 V	20 A ²⁾		125 V	2.2 A	
60 V	20 A ¹⁾		60 V	5.0 A	

Technical Data

Design	25 A
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Electrical data

Main contacts

Switching capacity acc. to IEC/EN 60947-3; DIN VDE 0660, part 107

U _e	AC-3	
	I	P
230 V ~	25 A	5.5 kW
400 V ~	25 A	11.0 kW
440 V ~	25 A	11.0 kW
500 V ~	25 A	15.0 kW
690 V ~	25 A	22.0 kW

U _e	DC-1, DC-23		DC-13 (L/R = 300 ms)	
	I	U _e	I	U _e
220 V	25 A ³⁾	250 V	1.1 A	
120 V	25 A ²⁾	125 V	2.2 A	
60 V	25 A ¹⁾	60 V	5.0 A	

- 1) 1 conducting path
- 2) 2 conducting paths in series
- 3) 3 conducting paths in series

Design	40 A
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Electrical data

Main contacts

Switching capacity acc. to IEC/EN 60947-3; DIN VDE 0660, part 107

U _e	AC-3	
	I	P
240 V ~	40 A	11.0 kW
400 V ~	40 A	22.0 kW
440 V ~	40 A	22.0 kW
500 V ~	40 A	22.0 kW
690 V ~	40 A	37.0 kW

U _e	DC-23, DC-1	
	I	U _e
220 V	40 A ³⁾	
120 V	40 A ²⁾	
60 V	40 A ¹⁾	

- 1) 1 conducting path
- 2) 2 conducting paths in series
- 3) 3 conducting paths in series



Technical Data

Design 63 / 80 A

Electrical data

Main contacts

Switching capacity acc. to IEC/EN 60947-3; DIN VDE 0660, part 107

U _e	AC-3		AC-3	
	I	P	I	P
230 V ~	63 A	18.5 kW	80 A	22.0 kW
400 V ~	63 A	30.0 kW	80 A	45.0 kW
440 V ~	63 A	37.0 kW	80 A	45.0 kW
500 V ~	63 A	37.0 kW	80 A	55.0 kW
690 V ~	63 A	55.0 kW		

U _e	DC-23, DC-1	
	I	
220 V	80 A ³⁾	
120 V	80 A ²⁾	
60 V	80 A ¹⁾	

1) 1 conducting path
2) 2 conducting paths in series
3) 3 conducting paths in series

Design 125 / 160 / 180 A

Electrical data

Main contacts

Switching capacity acc. to IEC/EN 60947-3; DIN VDE 0660, part 107

U _e	AC-3		AC-3		AC-3	
	I	P	I	P	I	P
230 V ~	180 A	55.0 kW	160 A	45.0 kW	125 A	37.0 kW
400 V ~	180 A	90.0 kW	160 A	90.0 kW	125 A	55.0 kW
440 V ~			160 A	90.0 kW	125 A	75.0 kW
500 V ~					125 A	75.0 kW
690 V ~					125 A	110.0 kW

U _e	DC-23, DC-1	
	I	
220 V	180 A ³⁾	
120 V	180 A ²⁾	
60 V	180 A ¹⁾	

1) 1 conducting path
2) 2 conducting paths in series
3) 3 conducting paths in series

Technical Data

Design	10 A
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Ambient conditions

Ambient conditions

Type 8146/5-V..-	No. of poles		max. current [A]	Conductor cross-section 1) [mm ²]		Temperature class / perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
300-...*	3	1	10	2,5	4	T6: -40 ... +51 °C T6: -40 ... +54 °C ²⁾ T5: -40 ... +69 °C ²⁾
300-00-...*	3	0				
400-...	4	0	10	2,5	4	T6: -40 ... +51 °C T6: -40 ... +54 °C ²⁾ T5: -40 ... +69 °C ²⁾

*When using a conductor cross-section of min. 1.5 mm², the temperature class and ambient temperature are reduced to T4: -40 ... + 40 °C

1) Engineering note:

The maximum conductor cross-sections given were determined using the H07V.

The minimum bending radius was assumed to be 4 x outer diameter in accordance with VDE 0298-3.

2) only with heat-resistant cable > 70 °C on cable entries or/and > 85 °C on clamping points

Grease: specified on rating plate

Technical Data

Design	12 / 16 A
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Ambient conditions

Ambient conditions

Type 8146/5-V..-	No. of poles		max. current [A]	Conductor cross-section 1) [mm ²]		Temperature class / perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
301-...*	3	1	12 / 16	2.5	4	T6: -40 ... +51 °C T6: -40 ... +54 °C ²⁾ T5: -40 ... +69 °C ²⁾

*When using a conductor cross-section of min. 1.5 mm², the temperature class and ambient temperature are reduced to T4: -40 ... + 40 °C

1) Engineering note:

The maximum conductor cross-sections given were determined using the H07V.

The minimum bending radius was assumed to be 4 x outer diameter in accordance with VDE 0298-3.

2) only with heat-resistant cable > 70 °C on cable entries or/and > 85 °C on clamping points

Grease: specified on rating plate

Technical Data

Design **16 A**

Ambient conditions

Ambient conditions

Type 8146/5-V..-	No. of poles		max. current [A]	Conductor cross-section ¹⁾ [mm ²]		Temperature class / Perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
302-...*	3	1	16	2.5	6	T6: -40 ... +51 °C T6: -40 ... +54 °C ²⁾ T5: -40 ... +69 °C ²⁾
302-00-...*	3	0				
102-..*	3	0				
302-...-.5*	3	0	16	2.5	10	T4: -40 ... +60 °C
402-...*	4	0	16	2.5	6	T6: -40 ... +48 °C T6: -40 ... +51 °C ²⁾ T5: -40 ... +66 °C ²⁾
602-...*	6	2	16	2.5	6	T6: -40 ... +47 °C T5: -40 ... +62 °C ²⁾

* When using a conductor cross-section of min. 1.5 mm², the temperature class and ambient temperature are reduced to T4: -40 ... + 40 °C

Type
8150/5-V..-

302-...	3	1	16	2.5	6	T6: -40 ... +50 °C T6: -40 ... +65 °C ²⁾
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¹⁾ Engineering note:

The maximum conductor cross-sections given were determined using the H07V.

The minimum bending radius was assumed to be 4 x outer diameter in accordance with VDE 0298-3.

²⁾ only with heat-resistant cable > 70 °C on cable entries or/and > 85 °C on clamping points

Grease: specified on rating plate

Technical Data

Design 20 A

Ambient conditions

Ambient conditions

Type 8146/5-V..-	No. of poles		max. current [A]	Conductor cross-section ¹⁾ [mm ²]		Temperature class / Perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
303-...*	3	1	20	4	6	T6: -40 ... +40 °C T5: -40 ... +55 °C ²⁾
303-00-...*	3	0				
403-...*	4	0	20	4	6	T5: -40 ... +51 °C ²⁾
	4	0		6		
603-...	6	2	20	4	6	T6: -40 ... +41 °C T5: -40 ... +56 °C ²⁾
	6	2		6		
	6	0	20	4	6	T6: -40 ... +46 °C T5: -40 ... +61 °C ²⁾ T5: -40 ... +52 °C
	6	0		6		

*When using a conductor cross-section of min. 2.5 mm², the temperature class and ambient temperature are reduced to T4: -40 ... + 40 °C

Type
8150/5-V..-

303-...	3	1	20	4	6	T6: -40 ... +42 °C T5: -40 ... +57 °C ²⁾
	3	1		20		

¹⁾ Engineering note:

The maximum conductor cross-sections given were determined using the H07V.

The minimum bending radius was assumed to be 4 x outer diameter in accordance with VDE 0298-3.

²⁾ only with heat-resistant cable > 70 °C on cable entries or/and > 85 °C on clamping points

Grease: specified on rating plate

Technical Data

 Design **25 A**

Ambient conditions

Ambient conditions

Type 8146/5-V..-	No. of poles		max. current [A]	Conductor cross-section ¹⁾ [mm ²]		Temperature class / Perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
304-...*	3	1	25	4	6	T6: -40 ... +40 °C T5: -40 ... +55 °C ²⁾
104-...*	3	0				
404-...	4	0	25	4	6	T5: -40 ... +51 °C ²⁾
	4	0				
	4	2	25	4	6	T5: -40 ... +45 °C T5: -40 ... +51 °C ²⁾
	4	2				
604-...	6	2	25	4	6	T5: -40 ... +49 °C ²⁾
	6	2				
	6	0	25	4	6	T6: -40 ... +42 °C T5: -40 ... +50 °C T5: -40 ... +57 °C ²⁾
	6	0				

*When using a conductor cross-section of min. 2.5 mm², the temperature class and ambient temperature are reduced to T4: -40 ... +40 °C

 Type
8150/5-V..-

304-...	3	1	25	4	6	T5: -40 ... +50 °C ²⁾
	3	1				
404-...	4	0	25	4	6	T5: -40 ... +46 °C ²⁾ T5: -40 ... +40 °C
	4	0				

¹⁾ Engineering note:

The maximum conductor cross-sections given were determined using the H07V.

The minimum bending radius was assumed to be 4 x outer diameter in accordance with VDE 0298-3.

²⁾ only with heat-resistant cable > 70 °C on cable entries or/and > 85 °C on clamping points

Grease: specified on rating plate

Technical Data

Design 40 A

Ambient conditions

Ambient conditions

Type 8146/5-V...-	No. of poles		max. current [A]	Conductor cross-section 1) [mm ²]		Temperature class / Perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
305-...-K	3	2	40	10	25	T6: -40 ... +48 °C T6: -40 ... +51 °C ²⁾ T5: -40 ... +66 °C ²⁾
305-00-...- K	3	0				
305-...-5	3	0	40	10	35	
405-...-K	4	0	40	10	25	T6: -40 ... +45 °C T6: -40 ... +48 °C ²⁾ T5: -40 ... +63 °C ²⁾
605-...-K	6	2	40	10	25	T6: -40 ... +47 °C T5: -40 ... +51 °C T5: -40 ... +62 °C ²⁾
605-00-...- K	6	0				
Type 8150/5-V...-						
305-...-K	3	2	40	10	25	T6: -40 ... +45 °C T5: -40 ... +49 °C T5: -40 ... +60 °C ²⁾
605-...-K	6	2	40	10	25	T6: -40 ... +46 °C T5: -40 ... +48 °C T5: -40 ... +61 °C ²⁾

1) Engineering note:

The maximum conductor cross-sections given were determined using the H07V.

The minimum bending radius was assumed to be 4 x outer diameter in accordance with VDE 0298-3.

2) only with heat-resistant cable > 70 °C on cable entries or/and > 85 °C on clamping points

Grease: specified on rating plate

Technical Data

Design 63 / 80 A

Ambient conditions

Ambient conditions

Type 8146/5-V...-	No. of poles		max. current [A]	Conductor cross-section 1) [mm ²]		Temperature class / perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
306-...-K	3	2	50	10	25	T6: -40 ... +43 °C
	3	2	63	16	25	T6: -40 ... +42 °C T5: -40 ... +57 °C 2)
	3	2	80	25	25	T6: -40 ... +40 °C T5: -40 ... +44 °C T5: -40 ... +55 °C 2)
306-00-...- K	3	0	50	10	25	T6: -40 ... +43 °C
	3	0	63	16	25	T6: -40 ... +42 °C T5: -40 ... +57 °C 2)
	3	0	80	25	25	T6: -40 ... +40 °C T5: -40 ... +44 °C T5: -40 ... +55 °C 2)
306-...	3	2	63	35	50	T6: -40 ... +58 °C T5: -40 ... +73 °C 2)
	3	2	63	50	50	T6: -40 ... +60 °C T5: -40 ... +75 °C 2)
	3	2	80	35	50	T6: -40 ... +48 °C T5: -40 ... +53 °C T5: -40 ... +63 °C 2)
	3	2	80	50	50	T6: -40 ... +53 °C T5: -40 ... +57 °C T5: -40 ... +68 °C 2)
306-...-5	3	0	63	25	95	T4: -40 ... +60 °C
406-...-K	4	0	63	35	50	T6: -40 ... +55 °C T5: -40 ... +70 °C 2)
	4	0	63	50	50	T6: -40 ... +57 °C T5: -40 ... +72 °C 2)
	4	0	80	35	50	T6: -40 ... +45 °C T5: -40 ... +50 °C T5: -40 ... +60 °C 2)
	4	0	80	50	50	T6: -40 ... +50 °C T5: -40 ... +54 °C T5: -40 ... +65 °C 2)

Technical Data

Ambient conditions

Type 8146/5-V...-	No. of poles		max. current [A]	Conductor cross-section 1) [mm ²]		Temperature class / perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
606-...	6	2	50	10	50	T6: -40 ... +41 °C T5: -40 ... +56 °C 2)
	6	2	63	16	50	T6: -40 ... +41 °C T5: -40 ... +56 °C 2)
	6	2	63	25	50	T6: -40 ... +47 °C T5: -40 ... +62 °C 2)
	6	2	80	25	50	T5: -40 ... +51 °C 2)
	6	2	80	35	50	T6: -40 ... +43 °C T5: -40 ... +58 °C 2)
606-00-...	6	0	50	10	50	T6: -40 ... +41 °C T5: -40 ... +56 °C 2)
	6	0	63	16	50	T6: -40 ... +41 °C T5: -40 ... +56 °C 2)
	6	0	63	25	50	T6: -40 ... +47 °C T5: -40 ... +62 °C 2)
	6	0	80	25	50	T5: -40 ... +51 °C 2)
	6	0	80	35	50	T6: -40 ... +43 °C T5: -40 ... +58 °C 2)
Type 8150/5-V...-						
306-...-K	3	2	63	16	50	T5: -40 ... +50 °C 2) T5: -40 ... +46 °C
	3	2	63	25	50	T6: -40 ... +42 °C T5: -40 ... +51 °C T5: -40 ... +57 °C 2)
	3	2	80	25	50	T5: -40 ... +47 °C 1) T5: -40 ... +43 °C
	3	2	80	25	50	T6: -40 ... +40 °C T5: -40 ... +41 °C T5: -40 ... +55 °C 1)
606-...	6	2	50	16	50	T6: -40 ... +45 °C T5: -40 ... +60 °C 2)
	6	2	63	16	50	T5: -40 ... +46 °C 2) T5: -40 ... +42 °C
	6	2	63	25	50	T6: -40 ... +43 °C T5: -40 ... +47 °C T5: -40 ... +58 °C 2)
	6	2	80	25	50	T5: -40 ... +41 °C

Technical Data

Ambient conditions

Type 8146/5-V..-	No. of poles		max. current [A]	Conductor cross-section 1) [mm ²]		Temperature class / perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	

Type
8146/5-V..-

307-..-5	3	0	80	50	150	T4: -40 ... +60 °C
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1) Engineering note:

The maximum conductor cross-sections given were determined using the H07V.

The minimum bending radius was assumed to be 4 x outer diameter in accordance with VDE 0298-3.

2) only with heat-resistant cable > 70 °C on cable entries or/and > 85 °C on clamping points

Grease: specified on rating plate

Technical Data

Design 125 / 160 / 180 A

Ambient conditions

Ambient conditions

Type 8146/5-V..-	No. of poles		max. current [A]	Conductor cross-section 1) [mm ²]		Temperature class / Perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
308-...-K	3	1	125	95	120	T6: -40 ... +46 °C T5: -40 ... +62 °C ²⁾ T4: -40 ... +72 °C ²⁾
	3	1	125	120	120	T6: -40 ... +51 °C T5: -40 ... +65 °C ²⁾ T4: -40 ... +72 °C ²⁾
308-...	3	1	125	95	150	T6: -40 ... +47 °C T5: -40 ... +62 °C ²⁾ T4: -40 ... +72 °C ²⁾
608-...	6	2	125	95	150	T6: -40 ... +40 °C T5: -40 ... +55 °C ²⁾ T4: -40 ... +72 °C ²⁾
Type 8150/5-V..-						
308-...-K	3	1	125	95	120	T5: -40 ... +50 °C T4: -40 ... +63 °C ²⁾
	3	1	125	120	120	T5: -40 ... +44 °C T5: -40 ... +59 °C ²⁾ T4: -40 ... +68 °C ²⁾
Type 8146/5-V..-						
308-...-K	3	1	160	95	120	T5: -40 ... +40 °C T5: -40 ... +50 °C ²⁾ T4: -40 ... +55 °C ²⁾
	3	1	160	120	120	T5: -40 ... +45 °C T5: -40 ... +49 °C T4: -40 ... +60 °C ²⁾
308-...	3	1	160	95	150	T5: -40 ... +40 °C T5: -40 ... +47 °C ²⁾ T4: -40 ... +55 °C ²⁾
	3	1	160	120	150	T5: -40 ... +45 °C T5: -40 ... +51 °C ²⁾ T4: -40 ... +60 °C ²⁾
608-...	6	2	160	95	150	T4: -40 ... +40 °C T4: -40 ... +55 °C ²⁾
	6	2	160	120	150	T4: -40 ... +45 °C T4: -40 ... +55 °C ²⁾



Technical Data

Ambient conditions

Type 8146/5-V..-	No. of poles		max. current [A]	Conductor cross-section 1) [mm ²]		Temperature class / Perm. ambient temperature
	Main contacts	Auxiliary contacts		min.	max.	
Type 8150/5-V..-						
308-...-K	3	1	160	95	120	T4: -40 ... +44 °C 2)
	3	1	160	120	120	T5: -40 ... +41 °C 2) T5: -40 ... +51 °C 2)
Type 8146/5-V..-						
310-...-K	3	1	180	95	120	T4: -40 ... +40 °C 2)
	3	1	180	120	120	T4: -40 ... +50 °C 2)
310-...	3	1	180	95	150	T4: -40 ... +40 °C 2)
	3	1	180	120	150	T4: -40 ... +50 °C 2)
610-...	6	2	180	120	150	T4: -40 ... +50 °C 2)

1) Engineering note:

The maximum conductor cross-sections given were determined using the H07V.

The minimum bending radius was assumed to be 4 x outer diameter in accordance with VDE 0298-3.

2) only with heat-resistant cable > 70 °C on cable entries or/and > 85 °C on clamping points

Grease: specified on rating plate

Technical Data

Mechanical data

Degree of protection	IP66 acc. to IEC/EN 60529
Material	
Enclosure	8146/5-V..: Polyester resin, glass-fibre-reinforced, dark grey, similar to RAL 7024 Surface resistance ($10^9 \Omega$ Flame-resistant according to IEC/EN 60695, UL 94, ASTM D635 8150/5-V..: Stainless steel 1.4404 (AISI 316L), brush finished
Gasket	8146/5-V..: Foamed silicone, optional EPDM 8150/5-V..: Foamed silicone
Enclosure cover	Safety Switch (V37): In switching position ON removable, in OFF position locked
Enclosure cover	Load switch (V11): In switching position ON locked, in OFF position removable
Handle	Can be locked with 3 padlocks in 0-position

Mounting / Installation

Cable entries	Standard: In polyamide, Series 8161 Special: In metal
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For further technical data, see www.stahl-ex.com.

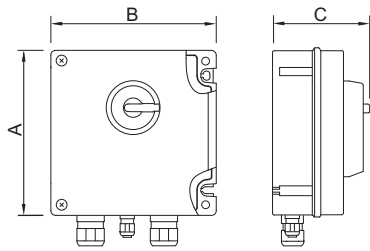
6 Transport and storage

- Transport and store the device only in the original packaging.
- Store the device in a dry place (no condensation) and vibration-free.
- Do not drop the device.

7 Mounting and installation

7.1 Dimensions / fastening dimensions

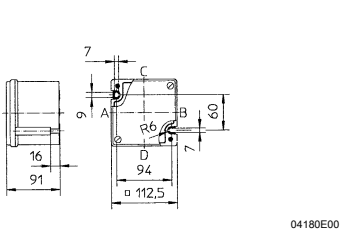
Dimensional drawings (all dimensions in mm) - subject to alterations



04120E00

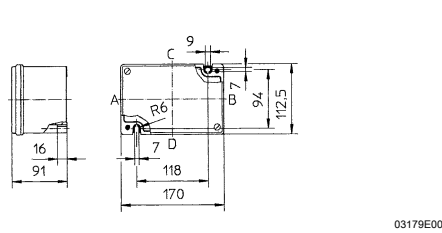
			Dimensions [mm]		
			A	B	C
3-pole	10, 12 / 16 A	8146/5-V..-300-50-...	112.5	112.5	131
		8146/5-V..-301-50-...	112.5	112.5	131
	16 A	8146/5-V..-302-50-...	170	112.5	132
		8146/5-V..-302-..-5..	340.5	170	132
		8150/5-V..-302-50-...	176.5	176.5	132
		8146/5-V..-302-50-0250	227	112.5	172
		8146/5-V11-102	170	170	172
	20 A	8146/5-V..-303-50-...	170	170	132
	25 A	8146/5-V..-304-50-...	170	170	132
		8150/5-V..-304-50-...	176.5	176.5	132
		8146/5-V11-104	227	170	171
	40 A	8146/5-V..-305-....-K	340.5	170	176.5
		8146/5-V..-305-..-5..	340.5	340.5	195
		8150/5-V..-305-...-K	360	176.5	194
63 / 80 A	8146/5-V..-306-...-K	340.5	170	195	
	8146/5-V..-306-...	340.5	340.5	195	
	8146/5-V..-306-..-5..	681.5	340.5	195	
	8150/5-V..-306-S1-...	360	360	196	
80 A	8146/5-V..-307-..-5..	681.5	340.5	195	
125 / 160 A	8146/5-V..-308-...-K	681.5	340.5	205	
	8146/5-V..-308-...	681.5	681.5	205	
180 A	8146/5-V..-310-...-K	681.5	340.5	205	
	8146/5-V..-310-...	681.5	681.5	205	
4-pole	16 A	8146/5-V11-402-..-....	170	112.5	131
	25 A	8146/5-V11-404-..-....	170	170	132
	40 A	8146/5-V11-405-..-....-K	340.5	340.5	195
	63 / 80 A	8146/5-V11-406-..-....-K	340.5	340.5	195
6-pole	16 A	8146/5-V..-602-60-...	170	170	172
	25 A	8146/5-V..-604-60-...	227	170	172
	40 A	8146/5-V..-605-....-K	340.5	340.5	205
	63 / 80 A	8146/5-V..-606-...	681.5	340.5	205
	125 / 160 A	8146/5-V..-608-...	1023	681.5	243
	180 A	8146/5-V..-610-...	1023	681,5	243

Dimensional Drawings (All Dimensions in mm) - Subject to Alterations



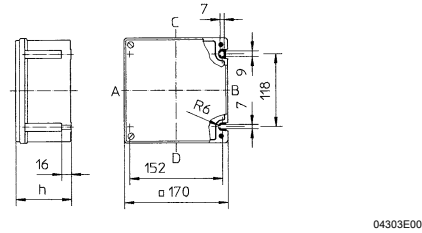
04180E00

8146/.03.



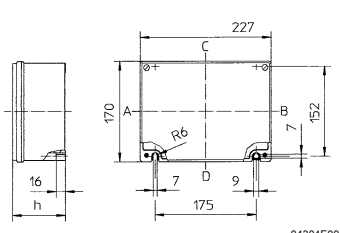
03179E00

8146/.04.



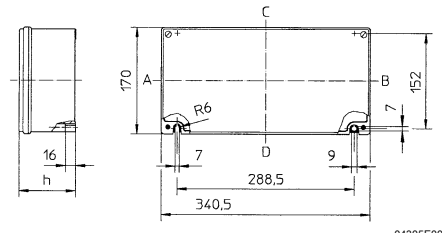
04303E00

8146/.05.



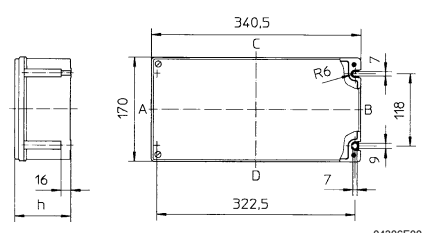
04304E00

8146/.06.



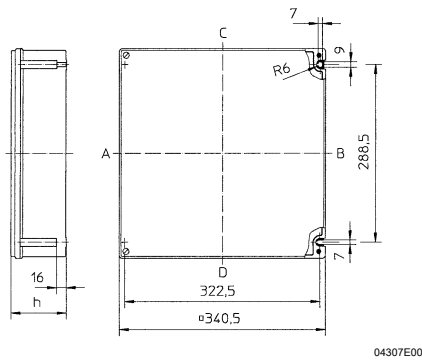
04305E00

8146/.07.



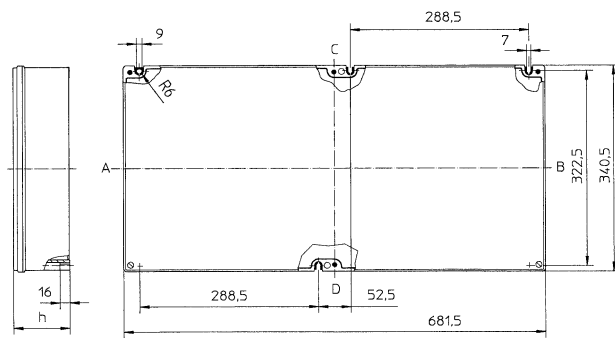
04306E00

8146/.S7.



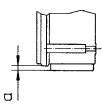
04307E00

8146/.08.



04308E00

8146/.09.



04309E00

Flange thickness [mm]	Dimension a [mm]
2.8	7
5.8	10

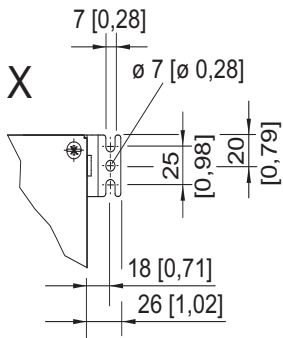
Additional dimension for flange mounting

Enclosure	Enclosure height h				
	8146/...1 91 mm	8146/...2 131 mm	8146/...3 150 mm	8146/...5 190 mm	8146/...6 230 mm
8146/.03.	X	-	-	-	-
8146/.04.	X	-	-	-	-
8146/.05.	X	X	-	-	-
8146/.06.	X	X	-	-	-
8146/.07.	X	X	X	X	-
8146/.S7.	X	-	X	-	-
8146/.08.	X	X	X	X	X
8146/.09.	X	X	X	X	-

X ... can be supplied

The dimensions can be found in the drawings supplied with the device.

All dimensions in mm - subject to modifications



14282E00

8150/. fastening dimensions

7.1.1 U-clamp (single, double) with clamping range 1.5 ... 6 mm² Single U-clamp 1.5 ... 6 mm²

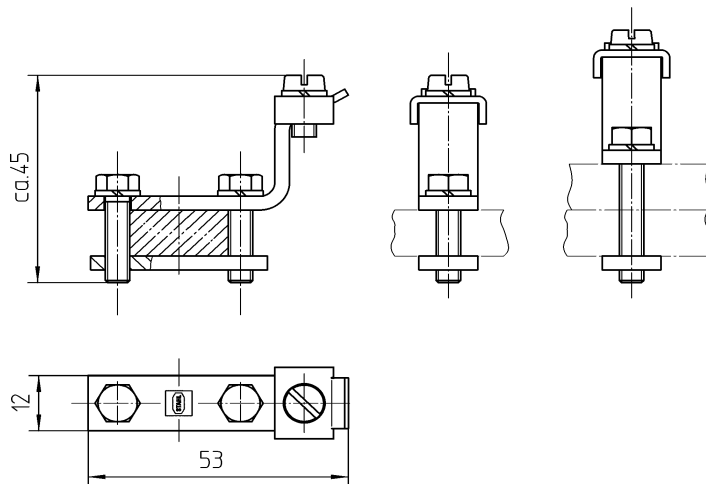
clampable conductor cross-sections:

finely stranded	1.5 ... 4 mm ²
stranded	1.5 ... 6 mm ²

Tightening torque

Bar fastening and conductor connection	3.5 Nm
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Dimensional Drawings (all dimensions in mm) - Subject to alterations



16139E00

Double U-clamp 1.5 ... 6 mm²

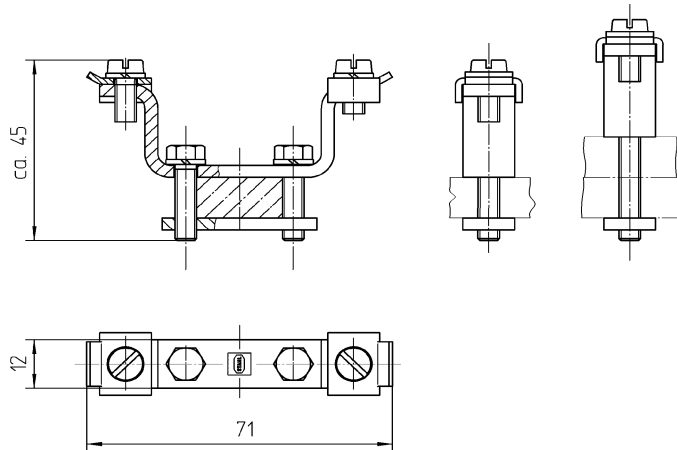
clampable conductor cross-sections (per contact):

finely stranded	1.5 ... 4 mm ²
stranded	1.5 ... 6 mm ²

Tightening torque

Bar fastening and conductor connection	3.5 Nm
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Dimensional Drawings (all dimensions in mm) - Subject to alterations



16146E00

7.1.2 Busbar terminal for round conductors 50 ... 240 mm²

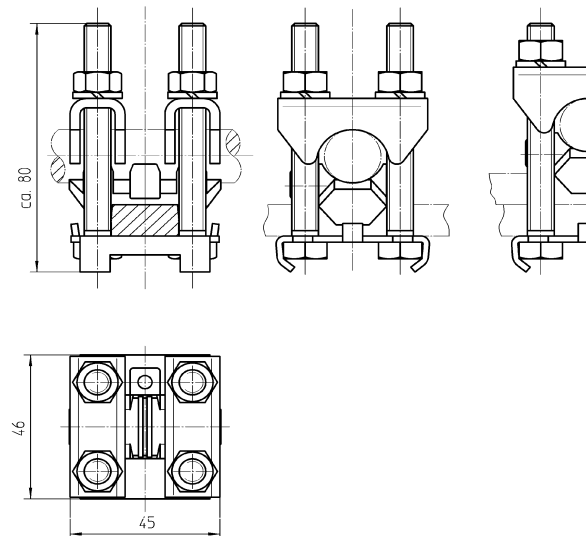
clampable conductor cross-sections:

finely stranded	50 ... 185 mm ²
stranded	50 ... 240 mm ²

Tightening torque

15 Nm

Dimensional Drawings (all dimensions in mm) - Subject to alterations



16138E00

7.1.3 PE/PAN rails

Rail size 1 (10 mm x 3 mm) max. 80 A

Connection 1 x 0.75 ... 4 mm² with core end sleeve
 cross-section 2 x 0.75 ... 4 mm² conductors with the same cross-section and structure
 tion 1 or 2 ring cable lugs M4
 With lug: 1 x 6 ... 10 mm²
 Torque: 1.2 Nm

Rail size 2 (12 mm x 4 mm) max. 110 A

Connection 1 x 1.5 ... 10 mm² with core end sleeve
 cross-section 2 x 1.5 ... 10 mm² conductors with the same cross-section and structure
 tion 1 or 2 ring cable lugs M5
 With lug: 1 x 16 ... 35 mm²
 Torque: 2 Nm

Rail size 3 (18 mm x 6 mm) max. 250 A

Connection Lug M6 (5 Nm): 1 x 1.5 ... 10 mm²
 cross-section Lug M8 (10 Nm): 1 x 16 ... 70 mm²
 tion


7.1.4 Mounting steel lugs


Mounting lugs for rail size 1 and 2

To attach a lug, 2 screws with washer assembly must be replaced by one lug at the corresponding clamping point.

- Remove 2 adjacent screws.
- Remove the bar using a wire cutter.
- Attach the lug using the enclosed screws and spring washers.

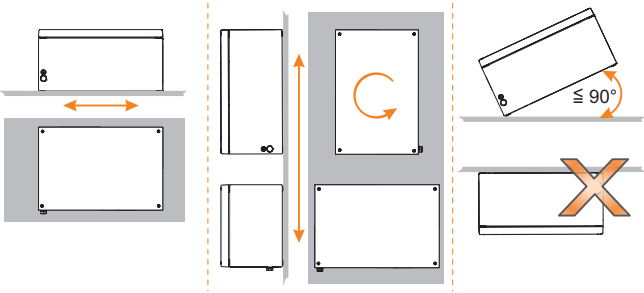
7.2 Mounting / dismounting, operating position

DANGER	
	<p>Explosion hazard due to incorrect installation of the device! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Carry out installation strictly according to the instructions and national safety and accident prevention regulations to maintain the explosion protection. • Select and install the electrical device so that explosion protection is not affected due to external influences, i.e. pressure conditions, chemical, mechanical, thermal and electric impact such as vibration, humidity and corrosion (see IEC/EN 60079-14). • The device must only be installed by trained qualified personnel who is familiar with the relevant standards.

	DANGER
	<p>Explosion hazard due to open holes and unused cable entries! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Always close open holes and unused cable entries using approved stopping plugs or plugs. • When selecting cable entries, observe the thread type and thread size in the equipment documentation.


This device is suitable for outdoor and indoor use.


- Provide a protective roof or wall if enclosure and explosion protected electric equipment is used outdoors.

	<ul style="list-style-type: none"> • Alignment of enclosure depending on mounting type: • For vertical mounting: any alignment • For horizontal mounting: cover on top • Hanging position/overhanging cover is not permitted!
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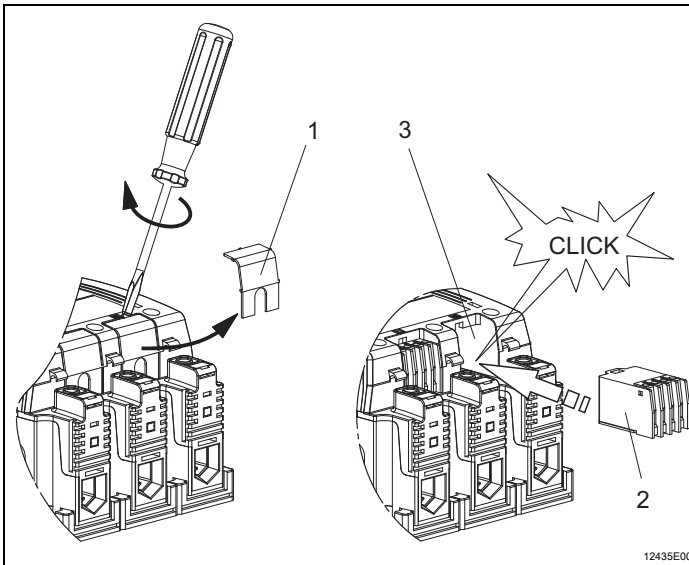
7.2.1 Mounting auxiliary contacts

(possible for switches 40 A and higher)

	<p>Before mounting an auxiliary contact, the cover must be removed. The IP protection of the switch, IP 20 (finger safe), remains active even if the cover is removed.</p>
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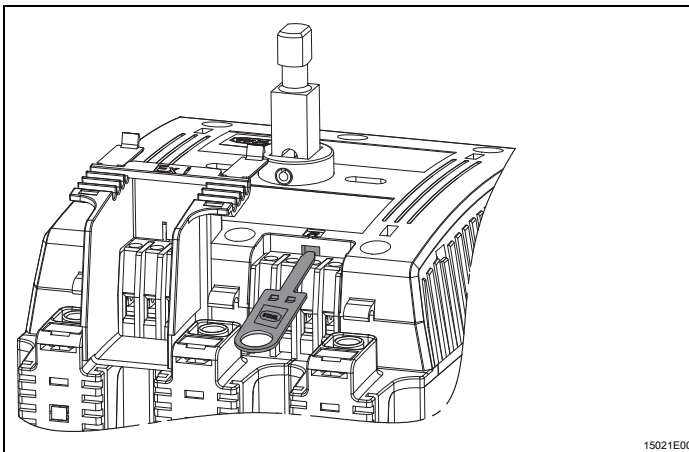
	<p>The switching function of the auxiliary contact depends on the installation slot used (left: delayed (ON), leading (OFF); right: synchronising).</p>
---	---

Mounting



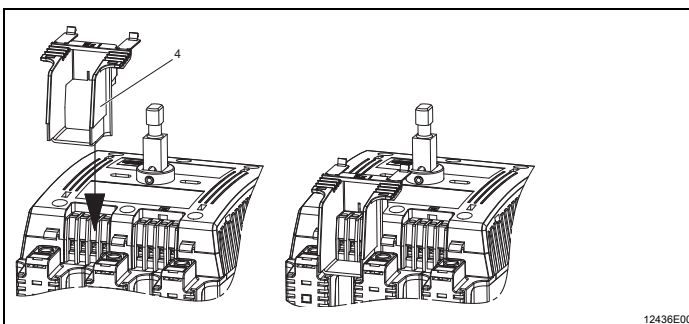
- Carefully remove the cover (1) of the installation slot (3) using a screwdriver or a knife.
- Carefully insert the auxiliary contact (2) into the installation slot until it engages.
- Affix the enclosed circuit diagram indicating the respective switching function to the rating plate of the switch.

Dismounting



- Insert the auxiliary contact key between the auxiliary contact and the switch cover with the Stahl logo pointing upwards (!).
- Pull out the auxiliary contact along with the auxiliary contact key.

Mounting cover for Ex i auxiliary contact



- Attach the cover (4) from the top to the auxiliary contact until it engages into the lug.

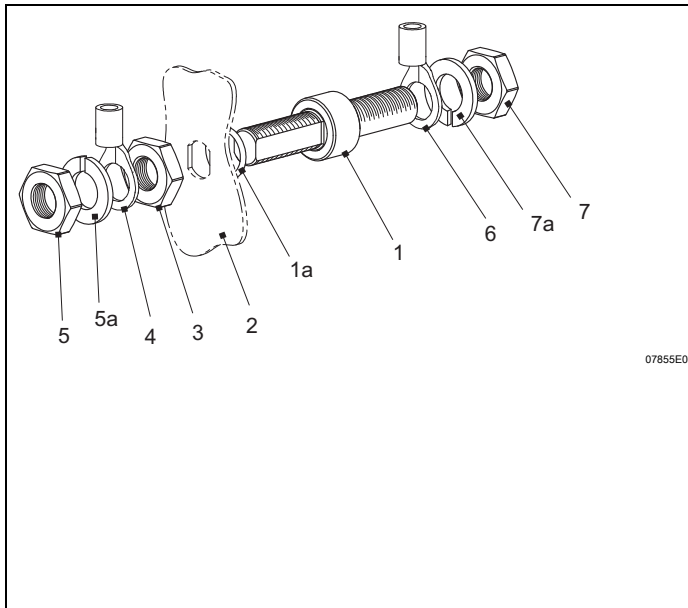
7.2.2 Mounting earthing assemblies Assembly 8195

<p>03680E00</p>	<ul style="list-style-type: none"> • Connection cross-section: 1.5 ... 4 mm² • Tightening torque clamping unit: 2 Nm
-----------------	---

Assembly 85

<p>07871E00</p>	<p>Protective conductor for cable cross-section up to 10 mm²</p> <p>Outside:</p> <ul style="list-style-type: none"> • Loosen the screw (3). • Insert the core under the clamping bracket (4). • Tighten (4.5 Nm) the screws (3). <p>Inside:</p> <ul style="list-style-type: none"> • Unscrew the screw (1). • Insert the cable lug onto the screw. • Tighten the screw (1) together with the cable lug (1.4 Nm).
-----------------	---

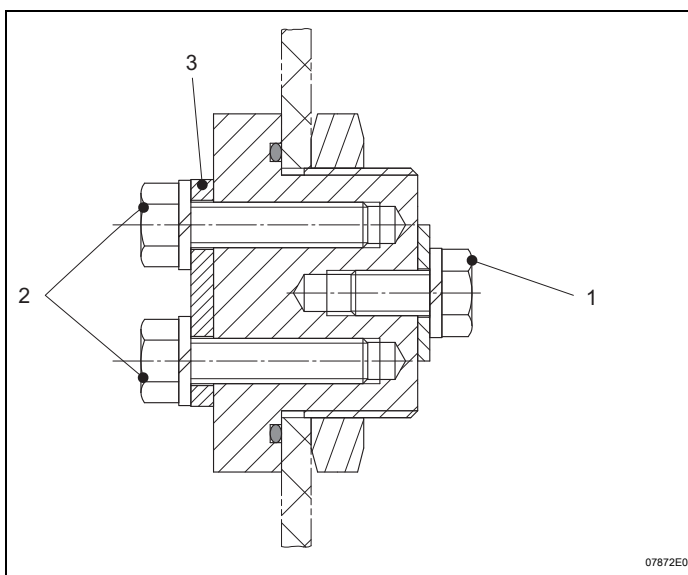
Assembly 245



Protective conductor for cable cross-section (25 mm^2)

- Insert the earth bolt (1) into a suitable bore of the enclosure wall (2) and fasten it by means of a hexagon nut (3).
- Push the inner PE cable lug (4) onto the earth bolt (1).
- Fasten (16 Nm) the PE cable lug using a split washer and hexagon nut (5).
- Push the outer PE cable lug (6) onto the earth bolt (1).
- Fasten (16 Nm) the PE cable lug using a split washer and hexagon nut (7).

Assembly 70



Protective conductor for cable cross-section (16 mm^2)




Outside:

- Loosen the screws (2).
- Insert the conductor under the clamping bracket (3).
- Tighten (4.7 Nm) the screws (2).

Inside:

- Unscrew the screw (1) with split washer and washer.
- Insert the cable lug onto the screw.
- Tighten the screw with split washer, washer and cable lug (4.7 Nm).

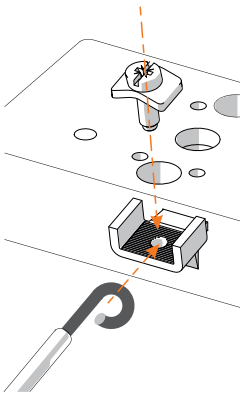
7.3 Installation

	<p style="text-align: center;">DANGER</p> <p>Explosion hazard due to impermissible cable entries! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Only use cable entries approved for the required type of protection. • When selecting cable entries, observe the thread type and thread size in the equipment documentation. • Make sure that the conductor diameter matches the clamping cross-section of the cable entries.
	<p style="text-align: center;">DANGER</p> <p>Explosion hazard due to cable glands without strain relief! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Lead cables and conductors securely. • If the cables are laid loosely, use only cable entries approved for this type of cable laying.
	<p style="text-align: center;">WARNING</p> <p>Danger of electric shock due to energised parts! Non-compliance can result in severe or fatal injuries.</p> <ul style="list-style-type: none"> • All connections and wiring must be disconnected from the power supply. • Secure the connections against unauthorized switching.

7.3.1 Electrical Connection

- Please observe the information given in chapter "Technical Data".
- The conductor must be connected carefully.
- The conductor insulation must reach to the clamping units.
- Do not damage the conductor (nicking) when stripping it.
- Ensure that the maximum permissible conductor temperatures and the maximum permissible surface temperature are not exceeded by selecting suitable electric lines and means of running them.
- Avoid mechanical damage to the conductor insulation due to rubbing against sharp-edged metal parts.

- Fit the core end sleeves using a suitable tool.
- Always connect the protective conductor.
- Observe the tightening torque of the terminals.

Connection type	Connection terminals	
Version	8146/5-V...-00-.... 8146/5-V...-01-....	8146/5-V...-02-.... / 8150/5-V...-02-.... 8146/5-V...-03-.... / 8150/5-V...-03-.... 8146/5-V...-04-.... / 8150/5-V...-04-....
Main contacts and auxiliary contacts (directly on the switch)		
Connection cross-section		
solid / finely stranded	1.5 ... 4 mm ² solid 1.5 ... 2.5 mm ² finely stranded	1.5 ... 6.0 mm ² One or two conductors can be installed to one connection terminal. Both conductors must have the same cross-section and must be made of the same material.
	10 mm ² solid Only one conductor, which must be bend in form of a hook (see drawing), can be installed to the connection terminal.	
	Caution: only possible without IP20 covering!	
		
Tightening torque	1.8 Nm (16 lb-in)	2 Nm 15518E00
Connection type	Connection terminals	
Version	8146/5-V...-05-.... / 8150/5-V...-05-.... 8146/5-V...-06-.... / 8150/5-V...-06-.... 8146/5-V...-07-.... / 8150/5-V...-07-....	8146/5-V...-08-.... / 8150/5-V...-08-.... 8146/5-V...-09-.... / 8150/5-V...-09-.... 8146/5-V...-10-.... / 8150/5-V...-10-....

Main terminals (directly on the switch)		
Single conductor connection		
solid	6 ... 10 mm ² (AWG 10 ... AWG 8) ¹⁾	6 ... 10 mm ² (AWG 10 ... AWG 8) ¹⁾
finely stranded	6 ... 10 mm ² (AWG 10 ... AWG 8) ¹⁾ 16 ... 50 mm ² (AWG 6 ... AWG 1/0)	6 ... 10 mm ² (AWG 10 ... AWG 8) ¹⁾ 50 ... 150 mm ² (AWG 1/0 ... 300 kcmil)
stranded	16 ... 50 mm ² (AWG 6 ... AWG 1/0)	35 ... 150 mm ² (AWG 2... 300 kcmil)
with cable lug	max. 50 mm ² (max. AWG 1/0) ²⁾ The degree of protection IP2X is not applicable!	max. 150 mm ² (max. 300 kcmil) ²⁾ The degree of protection IP2X is not applicable!
Multiple conductor connection		
solid	2 x 6 mm ² (AWG 10) ^{1) 4)} 2 x 10 mm ² ... 2 x 15 mm ² (2 x AWG 8 ... 2 x AWG 6) ⁴⁾	–
finely stranded	2 x 6 mm ² (AWG 10) ^{1) 4)} 2 x 10 mm ² ... 2 x 15 mm ² (2 x AWG 8 ... 2 x AWG 6) ⁴⁾	2 x 35 mm ² ... 2 x 50 mm ² (2 x AWG 2 ... 2 x AWG 1/0) ⁴⁾ 2 x 25 mm ² ... 2 x 50 mm ² (2 x AWG 4 ... 2 x AWG 1/0) ^{3) 4)}
stranded	2 x 10 mm ² ... 2 x 15 mm ² (2 x AWG 8 ... 2 x AWG 6) ⁴⁾	2 x 25 mm ² ... 2 x 50 mm ² (2 x AWG 4 ... 2 x AWG 1/0) ⁴⁾
with cable lug	max. 2 x 50 mm ² (max. 2 x AWG 1/0) ^{2) 5)}	max. 2 x 150 mm ² (max. 2 x 300 kcmil) ^{2) 6)}
Auxiliary contacts		
solid, finely stranded	0.75 ... 2.5 mm ² (AWG 18 ... AWG 14)	
Pick-off terminal blocks		
Single conductor connection		
solid, finely stranded	0.5 ... 10 mm ² (AWG 20 ... AWG 8)	
Multiple conductor connection		
solid, finely stranded	max. 2 x 6 mm ² (max. 2 x AWG 10)	
Tightening torque		
Main terminals	5 Nm	20 ... 25Nm
Auxiliary contacts	0.4 Nm	
Pick-off terminal blocks	1.5 ... 1.8 Nm	

¹⁾ only with insertion prism

²⁾ with clamping plate and insertion prism

³⁾ with core end sleeve

⁴⁾ only conductors with the same cross-section are permissible!

⁵⁾ Conductors with different cross-sections are permissible! For cross-sections < 25 mm² / AWG 4, the degree of protection IP20 is not applicable!

⁶⁾ Conductors with different cross-sections are permissible! For cross-sections < 70 mm², the degree of protection IP2X is not applicable!

Wiring to terminal blocks: UT10

Stripping length: 10 mm

Torque: 1.5 ... 1.8 Nm

Wiring to terminal blocks: UT6Cross-section: 0.5 ... 10 mm²

Stripping length: 10 / 10 mm

Torque: 1.5 ... 1.8 Nm

Wiring to terminal blocks: 40 A, UT35 / UT35-PECross-section: 1.5 ... 50 mm²

Stripping length: 18 / 18 mm

Torque: 3.2 ... 3.7 Nm / 3.2 ... 3.7 Nm

Wiring to terminal blocks: 63 A, UKH95 / USLKG95Cross-section: 35 ... 95 mm²

Stripping length: 33 / 30 mm

Torque: 15 ... 20 Nm / 3.2 ... 3.7 Nm

Wiring to terminal blocks: 80 A, UKH150 / USLKG95Cross-section: 50 ... 150 mm²

Stripping length: 40 / 30 mm

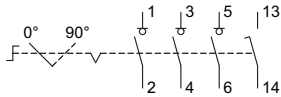
Torque: 15 ... 20 Nm / 15 ... 20 Nm

Main terminals

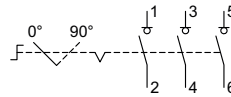
Cable entries tightening torques

Size of the cable entry	Type 8161	
	Connection thread [Nm] at 20 °C	Cap nut [Nm] at 20 °C
M 20 x 1.5	2.3	1.5
M 25 x 1.5	3.0	2.0
M 32 x 1.5	4.5	3.0
M 40 x 1.5	11.0	10.0
M 50 x 1.5	13.0	12.0
M 63 x 1.5	17.0	16.0

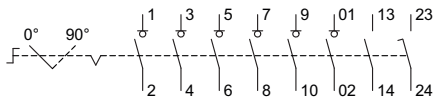
Circuit diagrams



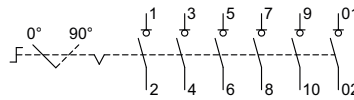
-V..-3..-50-..
3-pole + 1 NO
(ON delayed - OFF leading)



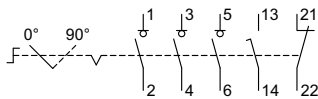
-V..-3..-00-..
3-pole



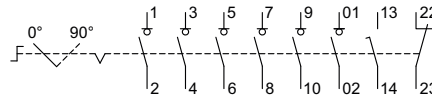
-V..-6..-60-..
6-pole + 1 NO
(1x ON delayed - OFF leading /
1 x switching normally)



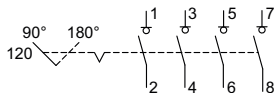
-V..-6..-00-..
6-pole



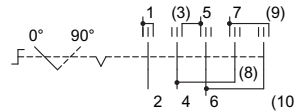
-V..-3..-51-..
3-pole + 1 NO
(1x ON delayed - OFF leading), 1 NC



-V..-6..-51-..
6-pole + 1 NO
(ON delayed - OFF leading), 1 NC



-V11-4..-00
3-pole + N



-V11-102
-V11-104
3-pole reversing switch

7.3.2 Conductor Connection

i	For permissible conductor cross-sections refer to "Technical Data".
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Conductor connection to main terminal

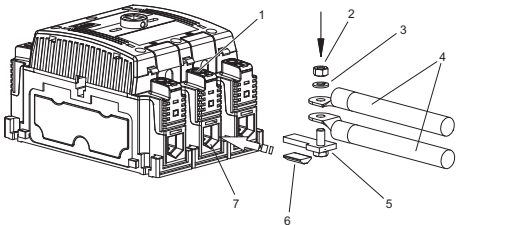
- Strip the conductor.
- Insert the conductor into the main terminal and make sure that the conductor insulation reaches right up to the terminal.
- Tighten the mounting screw with a tightening torque according to the specifications in the "technical data".

Conductor connection to main terminal using an insertion prism

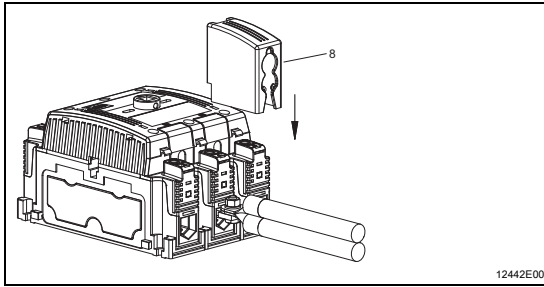
- Strip the conductor.
- Remove the protective foil from the insertion prism and glue the insertion prism in the main terminal.
- Insert the conductor into the main terminal and make sure that the conductor insulation reaches right up to the terminal.
- Tighten the mounting screw with a tightening torque according to the specifications in the "technical data".

7.3.3 Cable lug connection

	<p style="text-align: center;">WARNING</p> <p>Risk of electric shock due to conducting metal parts located outside the switch! Non-compliance can result in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Only operate the switch with installed protection against accidental contact!
	<p style="text-align: center;">WARNING</p> <p>Risk of electric shock due to conducting metal parts if openings are not completely sealed. Non-compliance can result in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Avoid contact with conducting metal parts even if protection against accidental contact is installed. • To obtain the degree of protection IP20, mount a suitable covering in addition to the protection against accidental contact.
	<p style="text-align: center;">WARNING</p> <p>Risk of electric shock due to twisted cable lug connection! Non-compliance can result in severe or fatal injuries.</p> <ul style="list-style-type: none"> • To avoid mechanical load and twisted cables install the protection against accidental contact. • Only operate the switch with installed protection against accidental contact or with a separate anti-twist protection!


	<ul style="list-style-type: none"> • Remove the protective foil from the insertion prism (6) and glue the insertion prism in the main terminal (7). • Insert the clamping plate (5) into the main terminal (7) and tighten the mounting screw of the main terminal (1) with 5 Nm (for 8544) and 20 ... 25 Nm (for 8549). • Insert the conductor with ring cable lug (4) and split washer (3) into the screw (M12) of the clamping plate and tighten it by means of the nut (2) 5 Nm (for 8544) and 50 Nm (for 8549).
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Mounting and dismounting protection against accidental contact

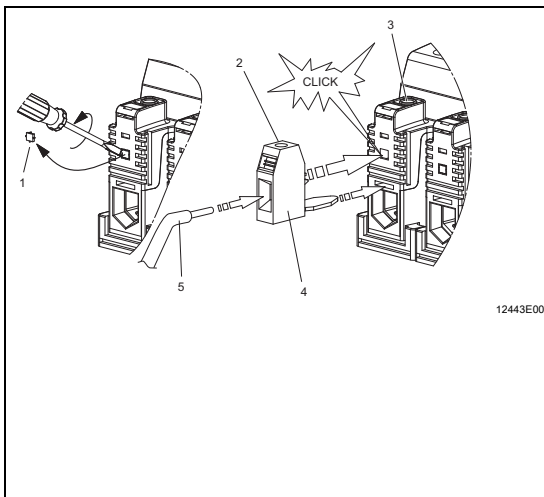


- Attach the protection against accidental contact (8) on the main terminal, the clamping plate and the conductor.
- Dismounting is carried out in reverse order.


7.3.4 Conductor connection to pick-off terminal block

	DANGER
	<p>Explosion hazard due to creepage distances and clearances being too short! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • The customer MUST NOT install pick-off terminal blocks directly next to the intrinsically safe auxiliary contacts!

	DANGER
	<p>Explosion hazard due to unintended loosening of the pick-off terminal block! Non-compliance can result in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Firmly tighten the mounting screw of the main terminal to clamp the pick-off terminal block securely. For required tightening torques please refer to chapter "Electrical connection".



- Remove the covering (1) from the main terminal using a screwdriver.
- Insert the pick-off terminal block (4) until it snaps in the contact.
- Tighten the mounting screw of the main terminal (3) with 5 Nm (for 8544) and 20 ... 25 Nm (for 8549).
- Strip the conductor (5). Insert the conductor into the pick-off terminal block and make sure that the conductor insulation reaches right up to the terminal.
- Tighten the mounting screw of the pick-off terminal block (2) with 1.5 ... 1.8 Nm.

	<p>For further information regarding technical data and installation of switch, see respective operating instructions.</p>
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7.3.5 Back-up fuse

- Secure the system by means of the specified electric back-up fuse.
- Ensure sufficient short-circuit current in the system.


7.3.6 Back-up Fuses for Auxiliary Circuits

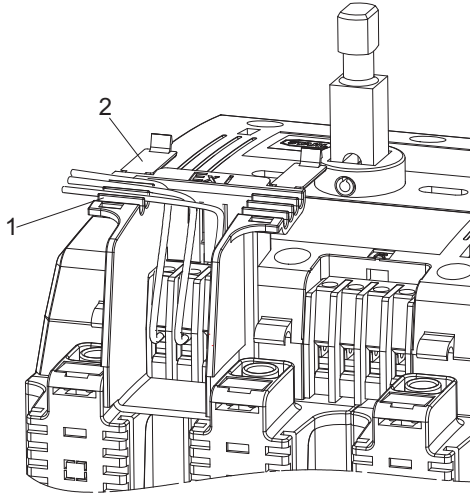
- Basically, auxiliary circuits must be short-circuit protected using 10 A gG.

7.3.7 Intrinsically safe circuits

DANGER	
	<p>Explosion hazard due to incorrect installation of intrinsically safe circuits! Non-compliance can result in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Only insulated conductors with a minimum test voltage of 500 V AC and a minimum quality of H05 are permitted in intrinsically safe circuits (blue terminal blocks). • Make sure that the diameter of individual conductors (and individual finely stranded wires) must not be smaller than 0.1 mm. • The overload protection of the consumers must be performed independently of the back-up fuse.

7.3.8 Intrinsically safe auxiliary contacts

DANGER	
	<p>Explosion hazard due to creepage distances and clearances being too short! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Do not operate the Ex i auxiliary contacts without attached cover! • The customer is only allowed to install an intrinsically safe auxiliary contact if NO pick-off terminal blocks are mounted on the two terminals located on the left and right side of the installation slot used! • The customer MUST NOT install pick-off terminal blocks directly next to the intrinsically safe auxiliary contacts!

 <p style="text-align: right; font-size: small;">12444E00</p>	<ul style="list-style-type: none"> • Strip the conductor. • Insert the conductor into the terminals and make sure that the conductor insulation reaches right up to the terminals. • Tighten the mounting screws of the terminals with 1.5 Nm. • Insert the conductor into the cable duct (1) of the covering and fasten it by means of the lug (2). • Lead the conductor on the side of the switch in order to avoid crosswise wiring of the auxiliary circuits to the main circuits.
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7.3.9 Opening and closing the enclosure cover

Opening the enclosure cover

Observe switch position: safety switch (...V37) in "I" position, load and motor switch (...V11) in "0" position.


- Loosen the cover screws.
- Carefully open or remove the enclosure cover.

Closing the enclosure cover

Observe switch position: safety switch (...V37) in "I" position, load and motor switch (...V11) in "0" position.

- Carefully attach the enclosure cover.
- Tighten cover screws.

8 Parameterization and commissioning

	DANGER
	<p>Explosion hazard due to incorrect installation! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Check the device for proper installation before commissioning. • Comply with national regulations.


Before commissioning, ensure the following:

- Check the mounting and installation.
- Inspect enclosure for damage.
- If necessary, remove foreign bodies.
- If necessary, clean the connection chamber.
- Check whether the cables have been inserted correctly.
- Check if all screws and nuts have been tightened firmly.
- Check whether all the cable entries and stopping plugs have been tightened firmly.
- Check whether all conductors have been clamped firmly.
- Check whether all covers and partitions for live parts have been installed and fastened.
- Seal unused cable entries using plugs with a respective certification and unused holes with stopping plugs certified for the respective type of protection.
- Check the tightening torques.

9 Operation

Safety / load disconnect switches ensure the obligatory isolation of energy supply during cleaning and repair work at the machines and installations. Usual preparatory work such as removal of fuses or disconnection of motors, which should only be performed by qualified electricians, is no longer required.

10 Maintenance and repair

	WARNING
	<p>Risk of electric shock or malfunctioning of the device due to unauthorized work!</p> <p>Non-compliance can result in severe injuries and material damage.</p> <ul style="list-style-type: none"> • Before carrying out work on the device, switch off voltage supply. • Work performed on the device must only be carried out by appropriately authorized and qualified electricians.




10.1 Maintenance

- Consult the relevant national regulations to determine the type and extent of inspections.
- Adapt inspection intervals to the operating conditions.


During maintenance of the device, check at least:

- if the clamping screws holding the cables are securely seated,
- if the device enclosure and / or protective enclosure have cracks or other visible signs of damage,
- compliance with the permissible temperatures (according to EN 60079),
- if the nut is held securely in place

10.2 Maintenance

	DANGER
	<p>Overheating and explosion hazard due to defective switching contacts! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Replace the switch after each short circuit in the main circuit (the element is hermetically sealed and the state of the switching contacts cannot be checked).
	WARNING
	<p>Danger of electric shock due to energised parts! Non-compliance can result in severe or fatal injuries.</p> <ul style="list-style-type: none"> • All connections and wiring must be disconnected from the power supply. • Secure the connections against unauthorized switching.
	Observe the relevant national regulations in the country of use.

10.3 Repair

	DANGER
	<p>Explosion hazard due to improper repair! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Repair work on the devices must be performed only by R.STAHL Schaltgeräte GmbH.

10.4 Returning the device

Use the "Service form" to return the device when repair/service is required.
On the internet site "www.stahl-ex.com" under "Downloads > Customer service":

- Download the service form and fill it out.
- Send the device along with the service form in the original packaging to R. STAHL Schaltgeräte GmbH.

11 Cleaning

- Clean the device only with a cloth, brush, vacuum cleaner or similar items.
- When cleaning with a damp cloth, use water or mild, non-abrasive, non-scratching cleaning agents.
- Do not use aggressive detergents or solvents.

12 Disposal

- Observe national and local regulations and statutory regulation regarding disposal.
- Separate materials when sending it for recycling.
- Ensure environmentally friendly disposal of all components according to the statutory regulations.

13 Accessories and Spare parts

NOTE

Malfunction or damage to the device due to the use of non-original components.
Non-compliance can result in material damage.

- Use only original accessories and spare parts from R. STAHL Schaltgeräte GmbH.



For accessories and spare parts, see data sheet on our homepage www.stahl-ex.com.