E

Operating instructions

According to IEC/EN 60 ... 947-1/-4-1/-2-1 for low-voltage switchgear,
Directive 94/9/EG for explosion-protected areas,
EN 60079-14 for electrical equipment for gas explosion endangered areas
EN 50281-1 for electrical equipment for dust explosion endangered area

II (2) GD

Low-voltage switchgear

Power manual motor starter MS 325

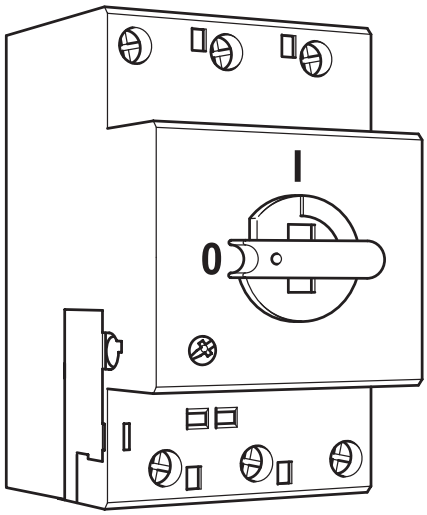

Table of contents

⚠ Safety instructions

- Type MS 325 ABB manual motor starters are suitable for the protection of motors of the protective system EEx e. It has been checked and certified by the Physikalisch Technische Bundesanstalt (PTB) in Braunschweig.
- Mounting and installation may only be done by trained technical personnel, who observe the relevant regulations!
- Insufficiently tightened locking screws lead to an inadmissible rise in temperature!
- A triggered device may only be restarted after elimination of the cause of failure by trained technical personnel.
- The device may only be opened by technical personnel authorized by the manufacturer. Non-observance results in the expiry of all warranty claims!

Power manual motor starter MS 325

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EN 50281-1 for electrical equipment for dust explosion endangered area

Technical Data

Rated operating voltage U_e [V]	690
Rated insulation voltage U_i [V~]	690
Rated current I_e [A]	0.1 ... 25 / 14 ranges
Tripping class	10A
Rated frequency [Hz]	50/60, other frequencies (16 2/3 … 400) on request
Electromagnetic tripping Response values	0.1 ... 0.63 A: 7.5 - 12 times (x Ie) 0.63 … 2.50 A: 9 - 14 times 2.5 ... 6.30 A: 10 - 15 times 6.3 … 25 A: 12.5 - 17.5 times
Disconnected characteristics according to	IEC/EN 60947-1
Service life mechanical/electrically	100.000 connections
Permissible ambient temperature - Storage [°C] - Operation [°C]	 -50 to +80 -20 to +50
Temperature compensation [°C]	-20 to +50
Phase-failure protection	asymmetrical load activates premature release
Protection system	IP20
Connection cross sections	Clamp screw size: Pozidrive size 2
Torque of the cage clamps Wire [mm²] Rope, 7-stranded [mm²] Wire strand [mm²]	max. 1.4 Nm 1 x 10 / 2 x 4 1 x 10 / 2 x 4 1 x 6
Mounting position	any
Mounting	can be snapped on ⊓ 35 mm
Approvals and authorizations	see page 10

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General description

The MS 325 is offered in 14 different current ranges: 0.16 - 25 A.
The tripping function prevents a short-circuit on the basis of a current-dependent delayed bimetal overload release and an instantaneous electromagnetic overload release.
The overload release is adjustable to the consumer current by a setting knob. The overload release is firmly adjusted by the factory depending upon current range.

Transport, storage

- ABB manual motor starters are accordingly packed ex factory for the in each case agreed upon transport mode.
- Avoid blows and impacts.
- Pay attention to possible damage of the packing or of the device.
- Store the device dry and weather-protected.
- Protect the device against dirt.

Installation

Mounting, electrical connection and start-up are only to be done by trained technical personnel. Adhere to the unit-referred conditions and specifications of the manufacturer. In the case of violation the protection of the explosion proof motor/consumer is no longer upright.

- Ensure that motor and wiring correspond to the release class
- Mounting on mounting rail: Hang device in from above and engage
- Removing from mounting rail: Actuate latching clip on the device underside with screwdriver
- Connect the electrical conductors according to the valid guidelines/conductor cross sections: Observe the max. screw tightening torque of 1.4 Nm.

Operation

- Setting of the motor rated current on the front adjustment knob. Adjust the desired rated current value on the head of the arrow.
- Short-circuit protection: The devices are stable up to a certain limit depending upon mode of operation (values on rating plate, in the catalogue or on request). When exceeding this limit suitable fuses must be installed in series (approximate values on request).
- The tripping period at the coordinate points I_A/I_N (motor starting current ratio) must be smaller than heating up period t_E of the motor. Whether this requirement is fulfilled, must be examined using the tripping characteristic.
  The appropriate tripping characteristics are contained in this documentation. They can also be requested from the manufacturer.
- Motors for heavy starting (ramp-up time > 1.7 x t_E –time) are to be protected according to the specifications of the EEC Design Test Certificate for EEx e - motors by start up monitoring.
- All 3 main current paths must be flowed through by current, in order to achieve the indicated equipment characteristics.
- Operate only in closed areas without less favourable operating conditions (e. g. dust, corrosive steams, damaging gases).
- Suitable encapsulations are to be foreseen in dusty and damp rooms.
- In the case of Ex applications proof of the effectiveness of the installed protection devices is required before start-up!

Commissioning

- Test the release mechanics by means of pointed item at the test window.
- Check if all connections have been duly executed.
- Check rated current setting. The actual currents apply.

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Example of the suitability of a selected manual motor starter:

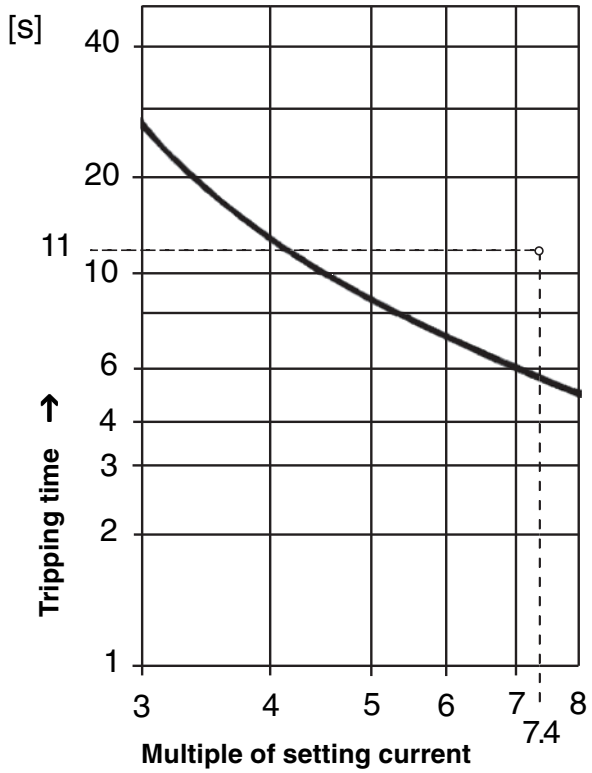
The motor with increased security has the following data (normal starting up):

Output = 7.5 kW

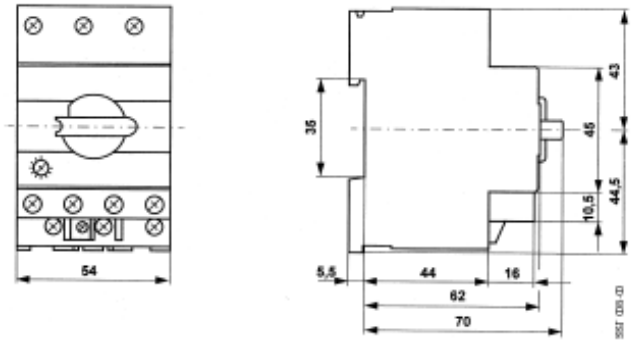
I_A/I_N = 7.4

t_E-Time = 11 seconds

Tripping curve downwards, the tripping time is lower than the t_E-time of the motor.



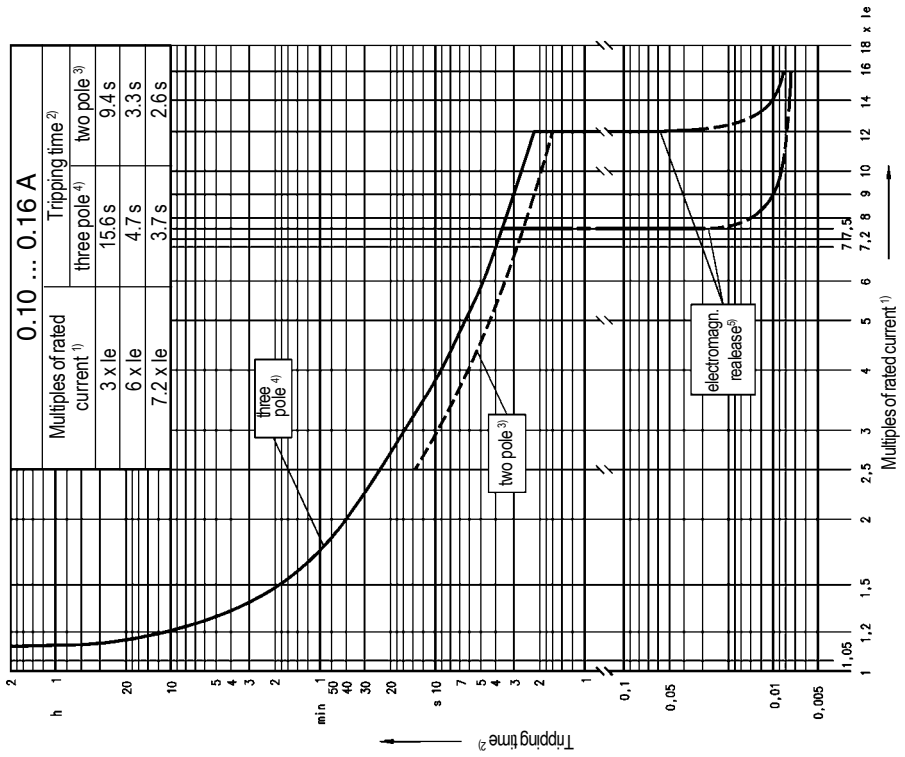
Dimensions

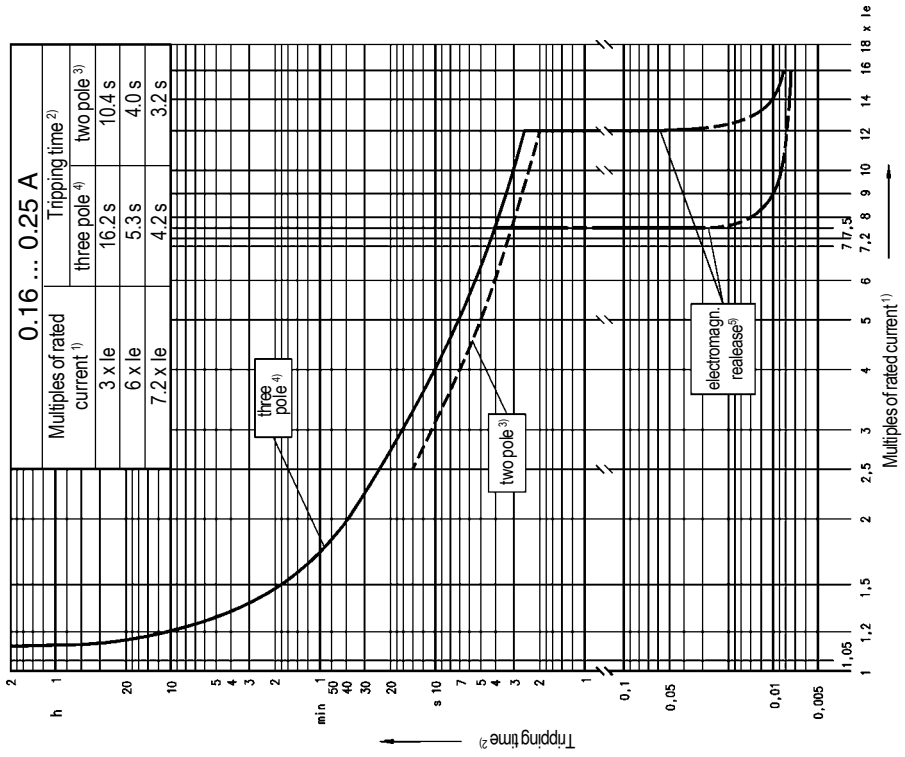


Approvals and authorizations

Approvals			Ship classification companies				
UL USA	CSA Canada	Phys.-Techn. Bundesanstalt PTB EEx "e" Germany	GL Germany	LRS Great Britain	BV France	DNV Norway	
■	■	■	■	■	■	■	

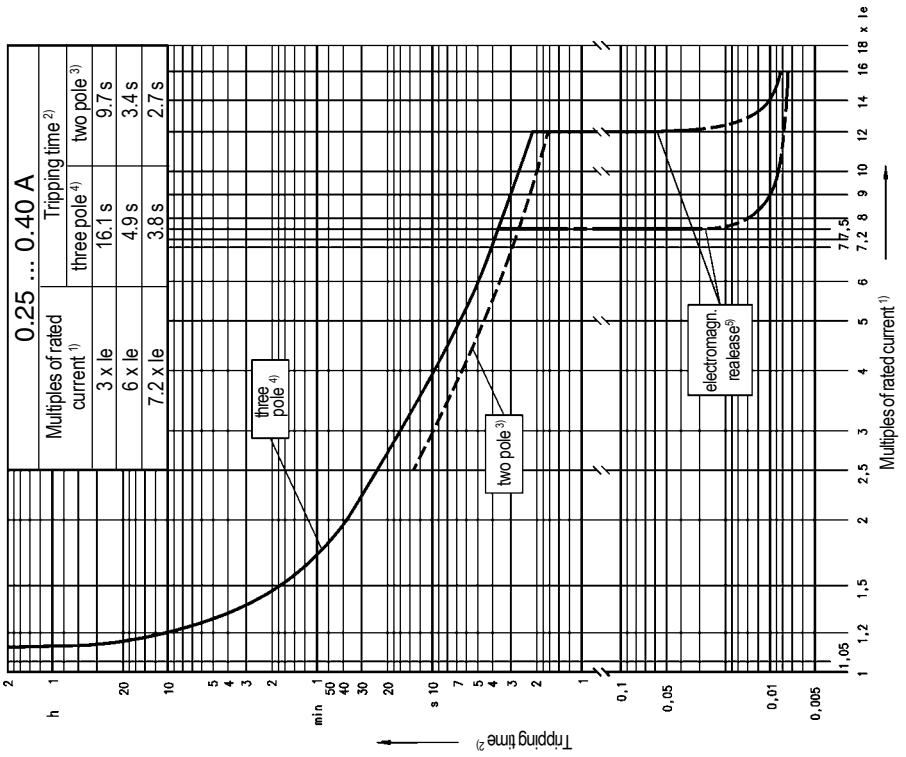
■ Approval available; rating plates carry the test symbol, if sign obligation exists.

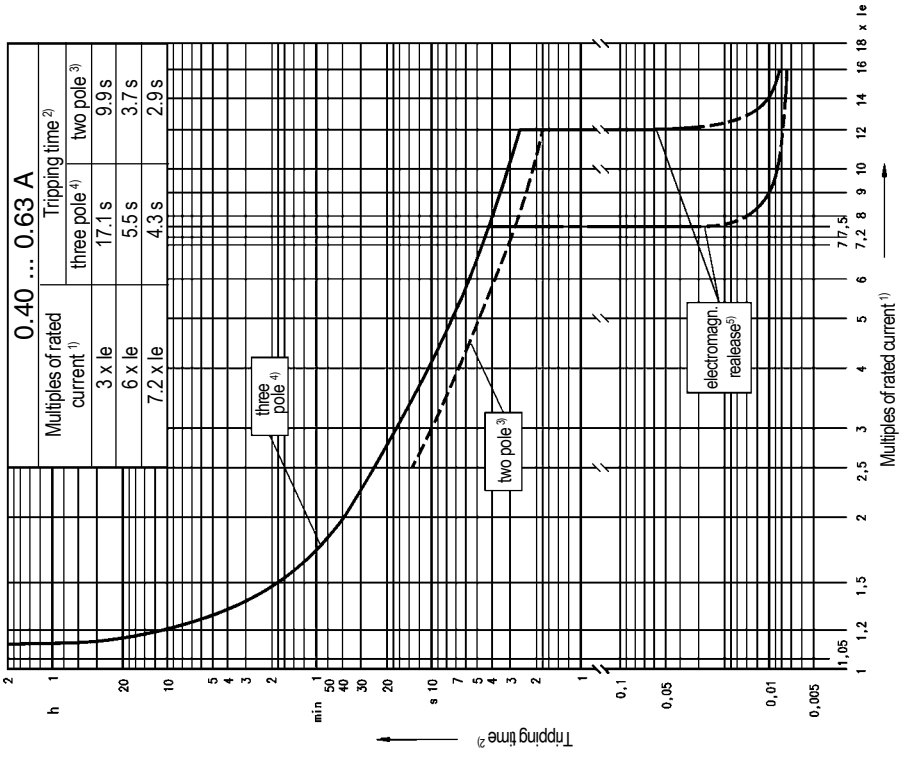




	1)	2)	3)	4)	5)
(D)	Vielfaches vom Nennstrom	Auslösezeit	2-polig	3-polig	Elektromagn. Auslösung
(F)	Multiple du courant de reglage	Temps de déclenchement	2 broches	3 broches	Déclencheur électromagn.
(S)	Multipelfaktor för utlösningsström	Utlösningstid	2-polig	3-polig	Elektromagnetisk utlösare
(I)	Multiplo della corrente di regolazione	Tempo di apertura	Bipolare	Tripolare	Scatto elettromagnetico
(SP)	Múltiplos de la intensidad aplicada	tiempo de disparo	de 2 polos	de 3 polos	Interruptor electromagnético
(RUS)	Коэффициент тока уставки	Время срабатывания	Двухполюсный	Трехполюсный	Электромагнитный расцепитель

(D)	Auslösekennlinien	(S)	Utlösningskurvor	(SP)	Curvas características de disparo
(E)	Tripping characteristics	(I)	Caratteristiche di intervento	(RUS)	Характеристики срабатывания
(F)	Courbes de déclenchement				





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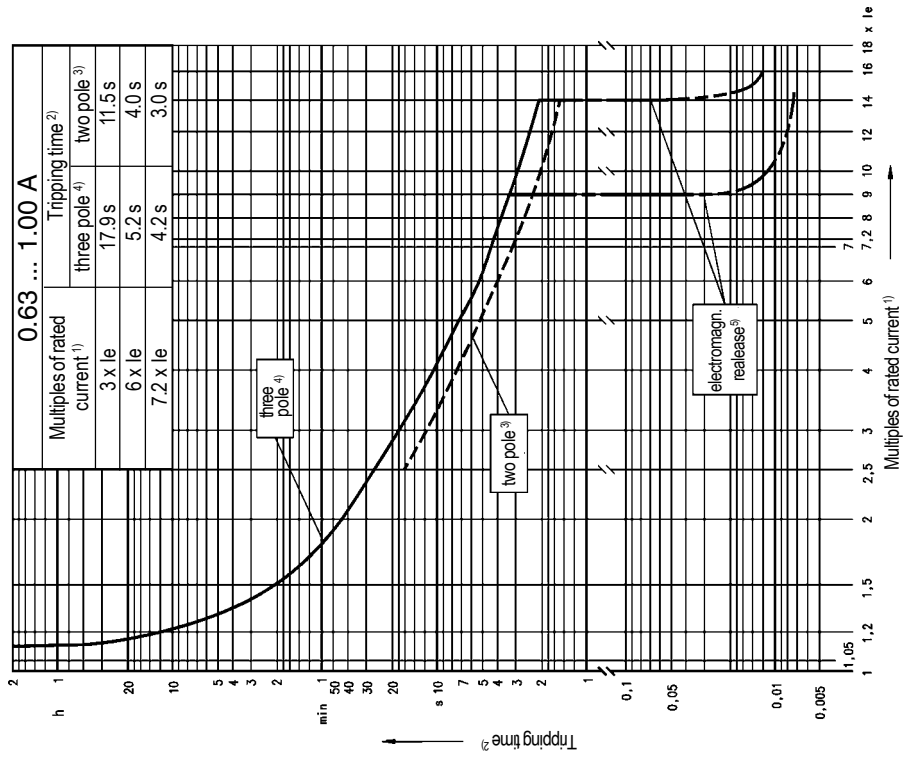

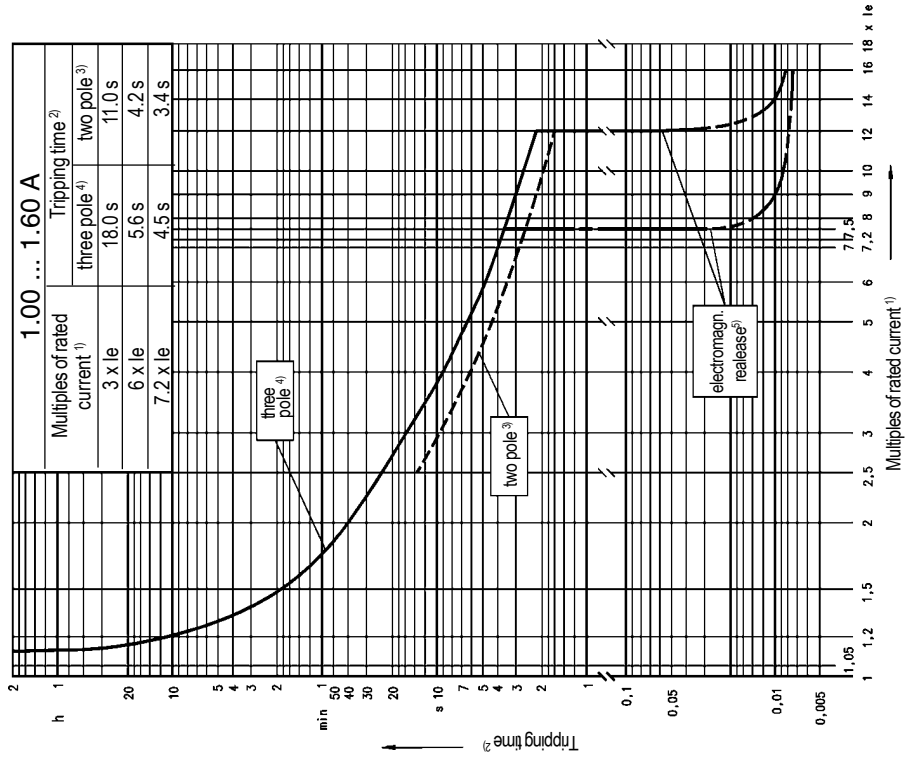

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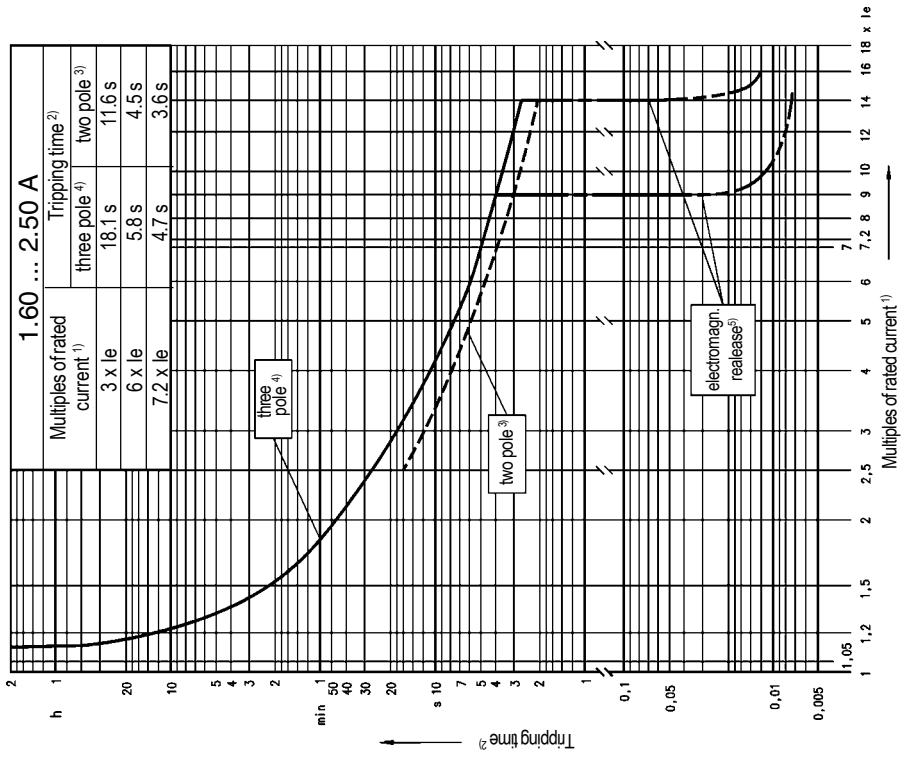

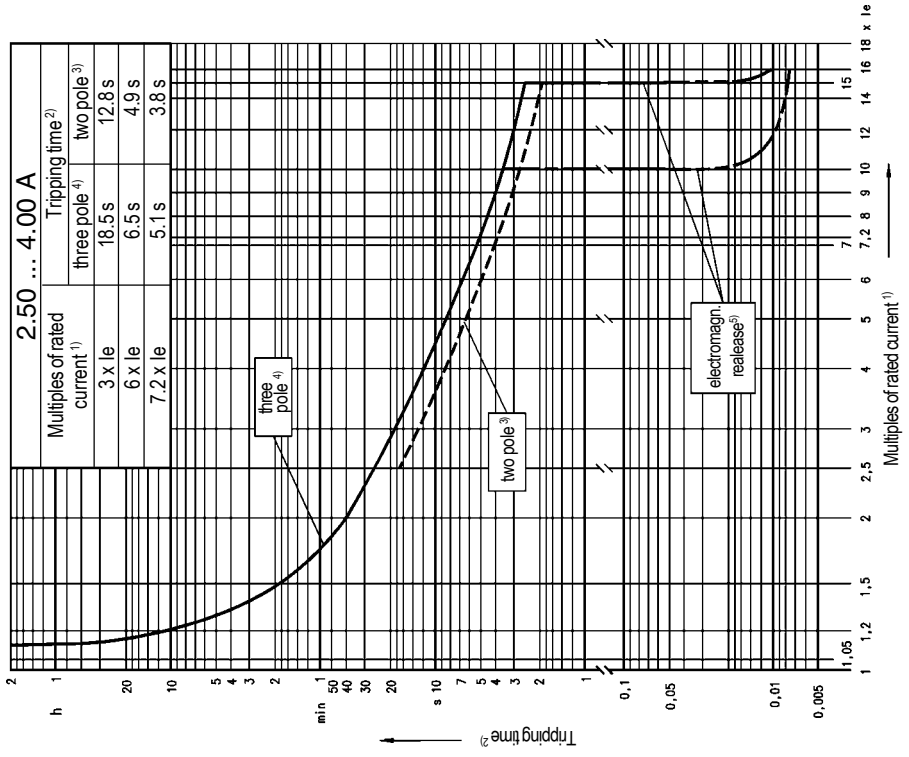

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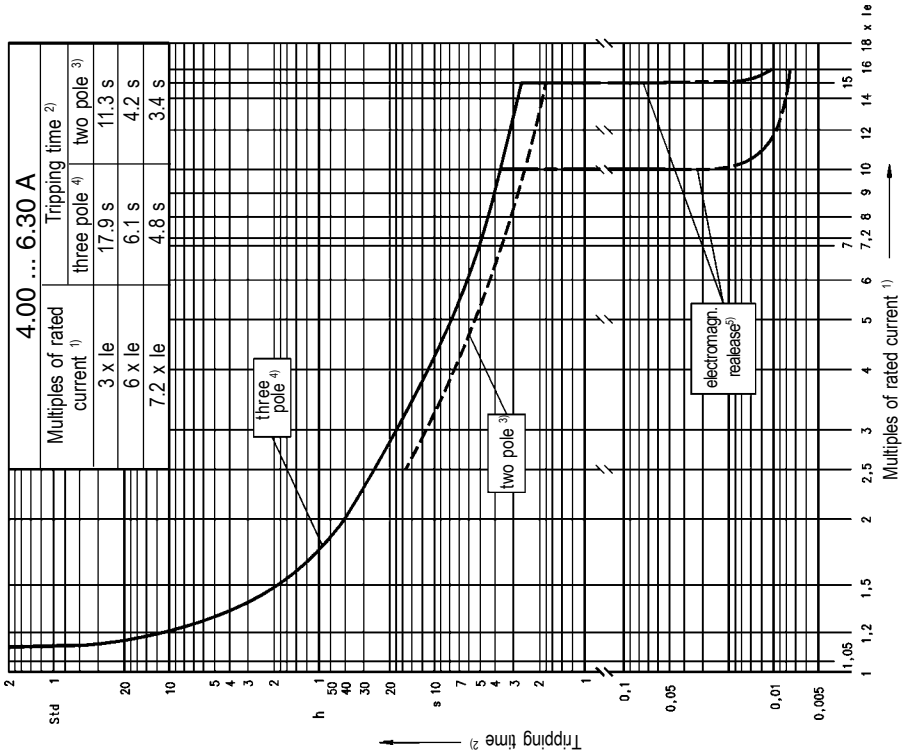

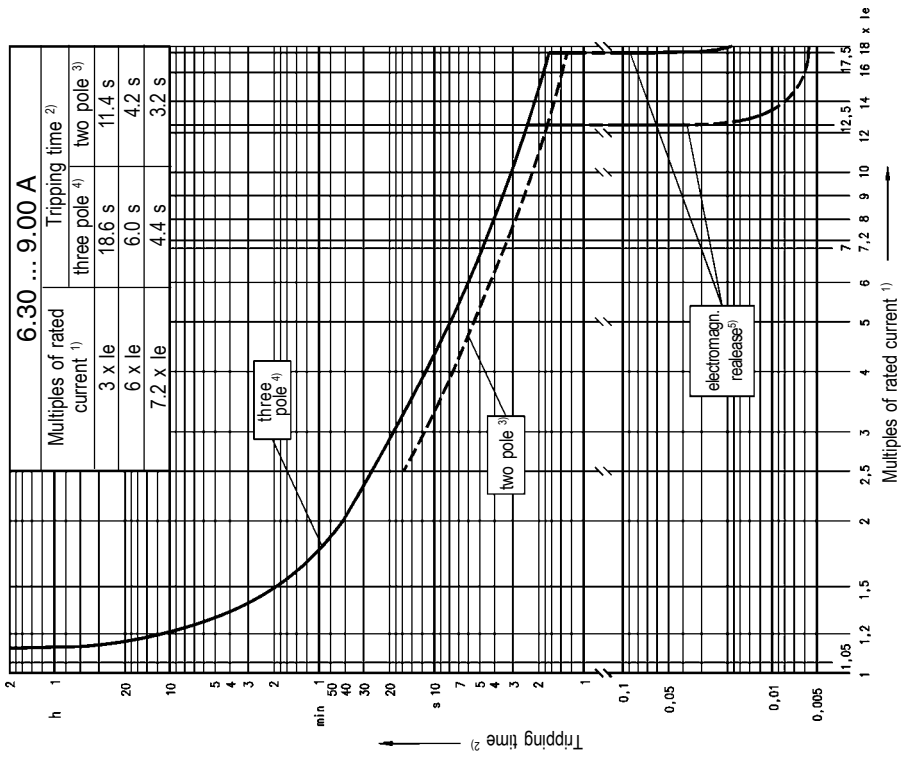

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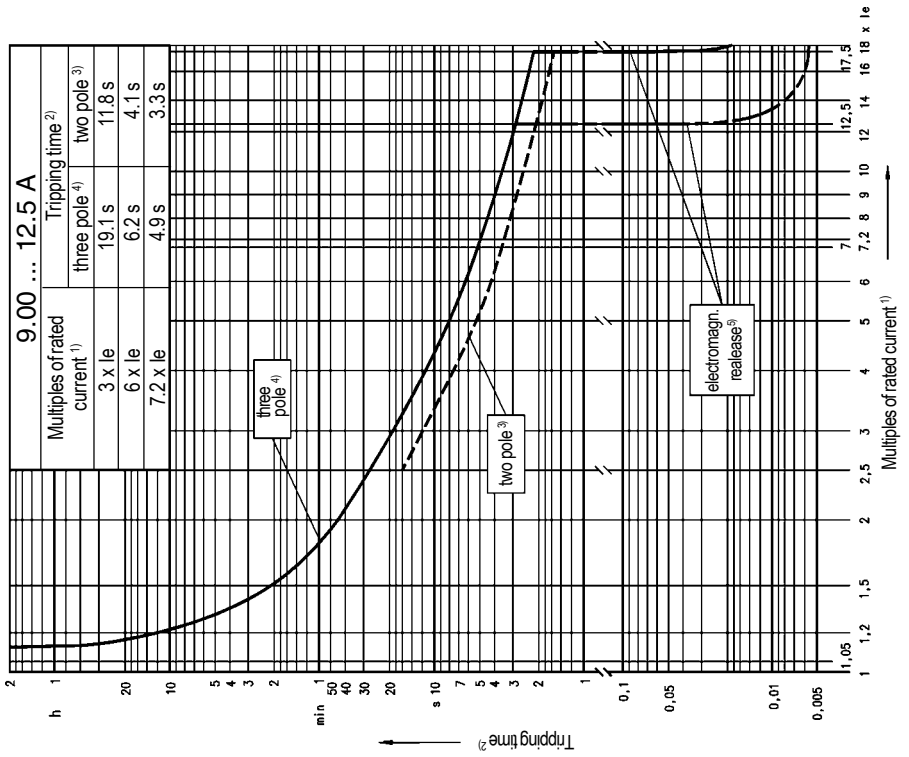

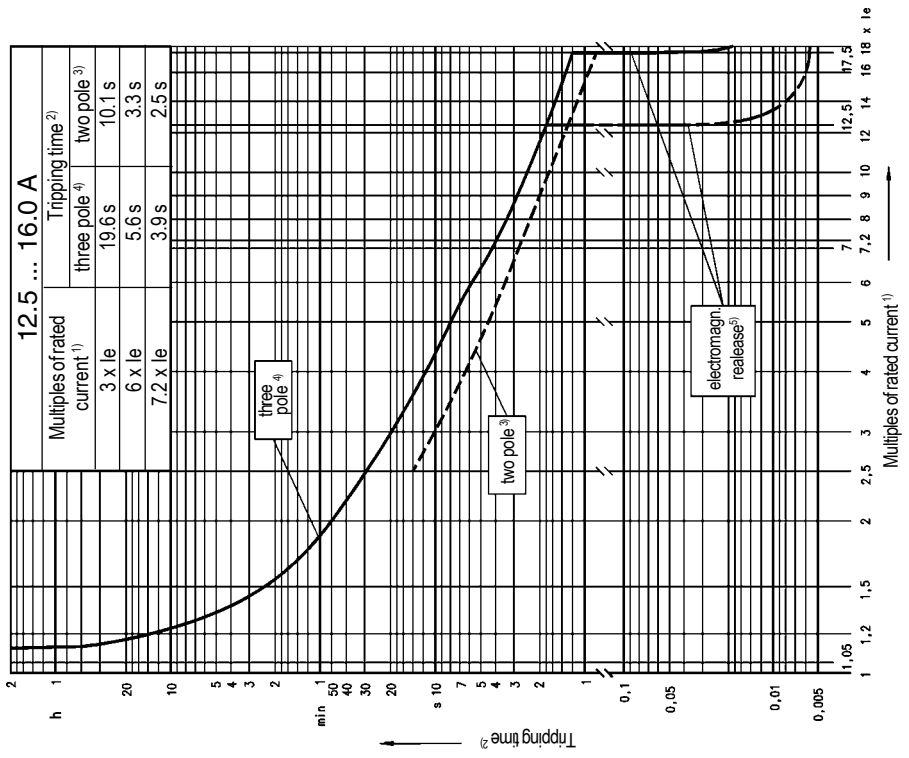

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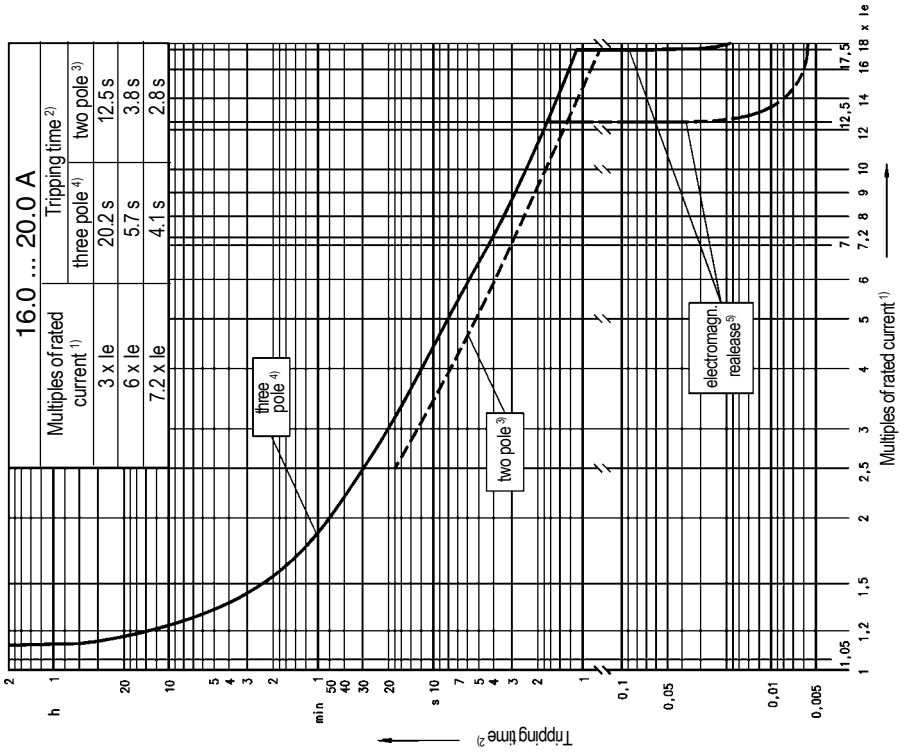

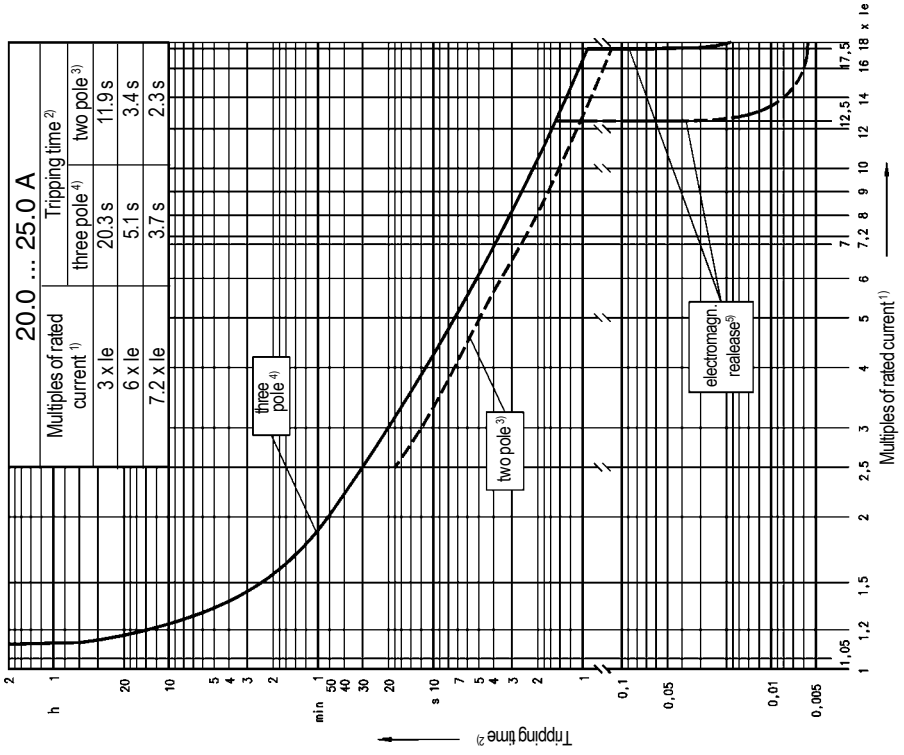

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