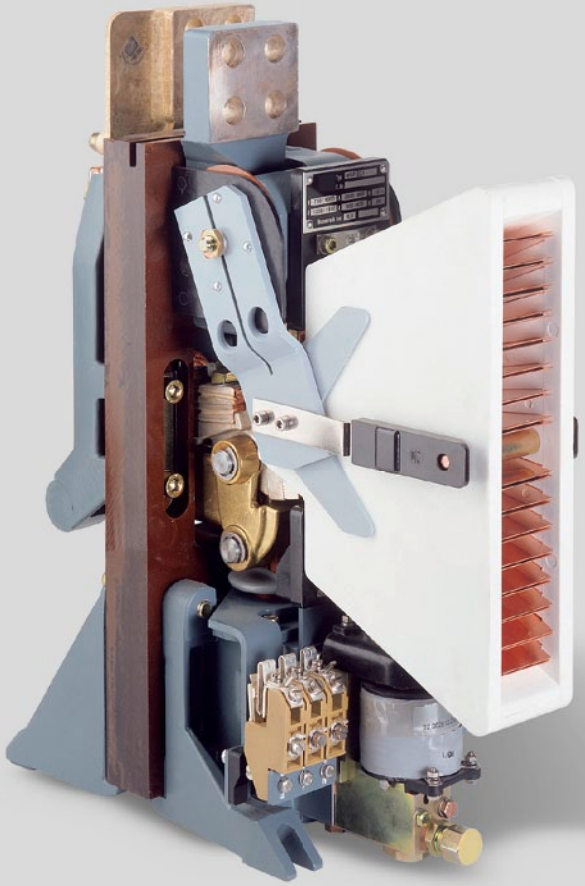
vossloh KIEPE



AC Contactor

Kiepe WSP 20.1

Introduction

The development of the new electric tractive vehicles from the former West German Federal Railways in the middle of the 1950s paved the way for the powerful Kiepe WSP20 AC Contactor developed by Kiepe.

This contactor functions as a motor isolating contactor, heating contactor and/or as a contactor for excitation of electric braking. More than 16,000 units (in words: sixteen thousand) have been sold since the middle of the 1950s.

This brochure gives a coherent account of the data mentioned in the literature [1] and in the different technical documents [2].

Description

In order to be able to reach the necessary contact pressure for full performance, the Kiepe WSP20 AC Contactor is equipped with an electropneumatic drive.
This electropneumatic drive consists of a pneumatic cylinder with a built-in solenoid valve (Fig. 1).

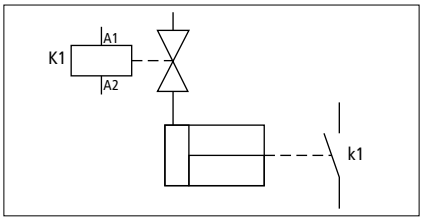


Fig. 1 Circuit symbol of an electropneumatic contactor

Examples of usage as a heating contactor in supplying the heating lines (now called: train lines) or as a motor isolating contactor are shown in the schematic diagram of an AC locomotive (Fig. 2).

The contact tips of the main switch are designed as rolling contacts.
Through the shifting of the contact tips, the load current is always led by contact points with a flawless surface.

The extinguishing of the arc is carried out with the aid of an electromagnetic blow-out.

During construction of the contactor, special attention was paid to assembly and maintenance accessibility. Attachment, connection as well as the servicing of the spark chamber, auxiliary switches and solenoid valve are all possible from the front. Electrical connection can take place both via cable lugs as well as by means of power rails.
A functional test of the contactor can also be carried out without control voltage with the push of a button on the solenoid valve, provided that at least compressed air is available.

The contactor has been subjected to extensive tests [1] before being approved for installation in the new series of tractive vehicles of the former West German Federal Railways.

[1] *Elektrische Bahnen*
30. Jahrgang (1959), Issue 4
Pages 91...93

[2] *Dimensions 3SK8151*
Date of issue: 9/1978

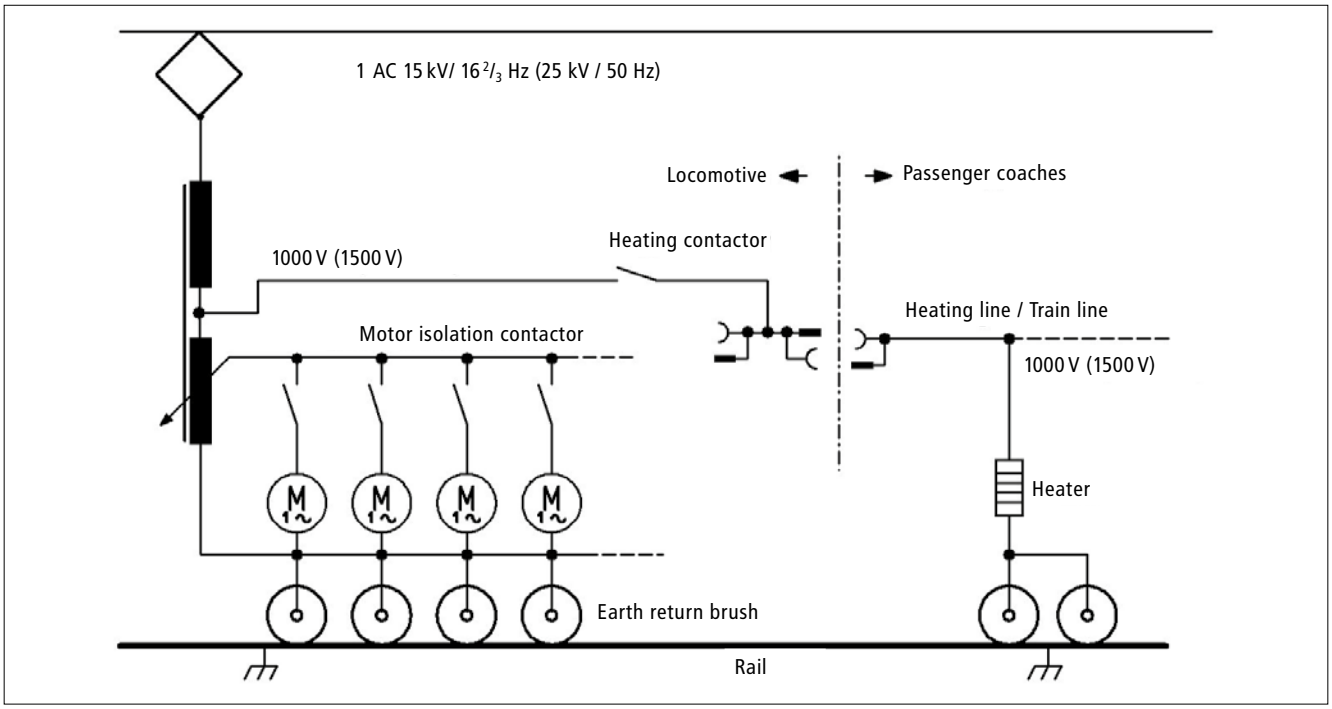


Fig. 2 Schematic circuit diagram of an E-Loco for alternating current with connection to heating lines and/or train lines

In the switching capacity tests carried out, the contactors' limits were not reached and were only restricted by the available testing resources.
A maximum switching performance of 30 kVA / 335 V / $\cos\phi$ = 0,95 / 16 $^2/_3$ Hz was easily achieved.

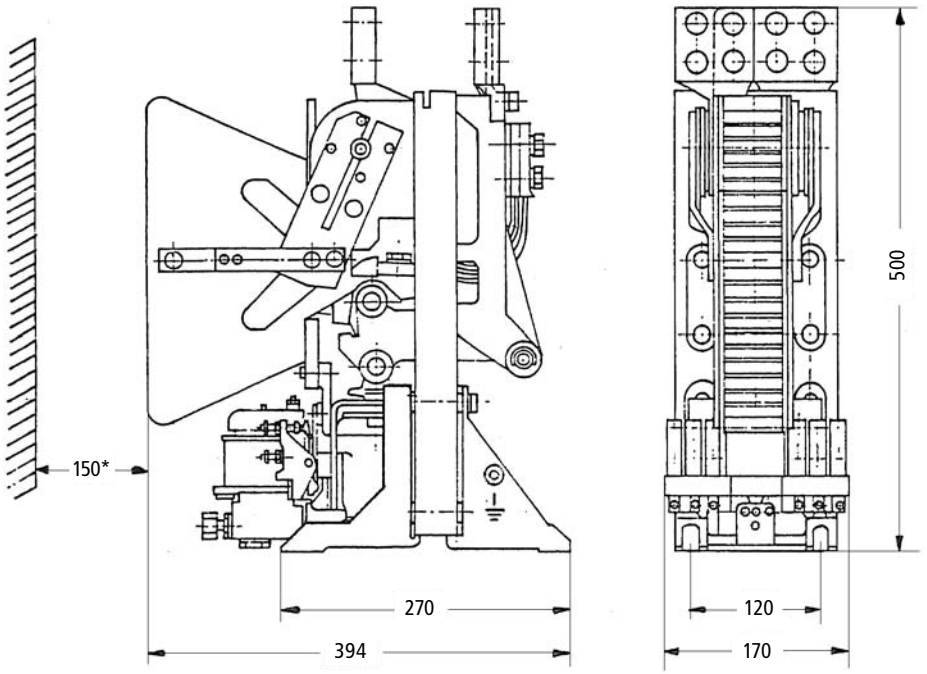
Despite the high switching performance, short-circuit protection must be provided using a fuse or circuit breaker.

Desired weight reduction of the unit soon led to the Kiepe WSP20 L model which, in the late 1960s, was followed by the Kiepe WSP20.1., an even more powerful model (WSP20 I_{th} = 2000 A / WSP20.1 I_{th} = 2500 A).

Technical data			
Type			WSP20.1
Switching Element			
Main contact (normally open contact)			1
Rated insulation voltage U_i			AC 1.5 kV
Rated thermal current I_{th}			2500 A
Connection			M16 screw fixing
Rated Breaking Capacities			
AC 16 $^2/_3$ Hz	675 V	$\cos\phi$ = 0.8	2000 A
AC 16 $^2/_3$ Hz	750 V	$\cos\phi$ = 0.95	2500 A
AC 16 $^2/_3$ Hz	1000 V	$\cos\phi$ = 0.95	800 A
AC 50 Hz	1000 V	$\cos\phi$ = 0.95	900 A
AC 50 Hz	1500 V	$\cos\phi$ = 0.95	600 A
Auxiliary Switch			
Arrangement [1] (Kiepe SN13)			(1NO 1NC) or 2NC (number up to 6 pcs.)
Rated thermal current I_{th}			16 A
Rated insulation voltage U_i			DC 110 V
Rated breaking capacities (DC13)			
- DC 24V			2.1 A
- DC 110V			1.1 A
Short-circuit protection			10 A fuse
Connection			6.3 mm fast-on connector
Control			
Pneumatic actuation			
- nominal pressure			6.3 bar
- operating range [2]			4.4 – 7.6 bar
- connection [3]			G $^1/_4$" internal thread (DIN / ISO 228-1)
Solenoid valve			
- rated control voltage U_S [1]			DC 24 / 110 V ± 25%
- power consumption			approx. 15 W
- connection [1]			M4 screw terminal or 6.3 mm fast-on connector
Other			
Degree of protection			IP00
Ambient temperature			-25 °C ... +40 °C
Mounting position			vertical, with drive down
Weight			approx. 35 kg
Dimensions			see drawing 3SK8151 (appendix 2)

[1] Indicate when ordering
[2] Occasional operation possible from 3.3 bar
[3] Indicate when ordering, others on request

Dimensions



* Minimum distance to insulated parts

For information only!

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