

Rexroth IndraControl VAK 10.1, VAK 40.1 Drawer Keyboard

R911338463
Edition 01

Instructions



Title

Rexroth IndraControl
VAK 10.1, VAK 40.1
Drawer Keyboard

Type of Documentation

Instructions

Document Typecode

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Development automation systems control hardware HB (MaKo/PiGe)

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1 About this Documentation

Overview – target groups and product phases

The activities, product phases and target groups that refer to the present documentation are marked in red color in the following figure.

Example: In the product phase "Mounting (assembly/installation)", the target group "mechanic/electrician" can execute the activity "install" using this documentation.

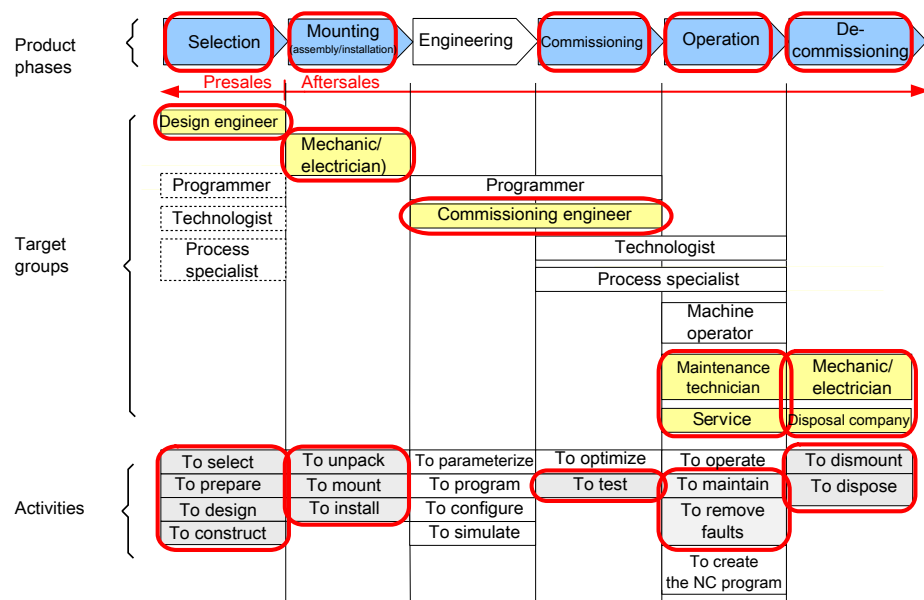


Fig.1-1: Assigning the present documentation to the target groups, product phases and activities of the target group

Purpose

This document instructs the technical staff of the machine manufacturer on how to perform the mechanic and electrical installation in a safe way and on how to commission the device.

Required qualifications: Individual who is able to assess the tasks assigned and identify possible safety risks owing to qualification in the subject, knowledge and experience. The individual should also be familiar with the standards and regulations.

Availability

This document is part of the present product delivery. This document has to be available to the user at any time. The product has to be passed on together with this document only.

Product Identification and Scope of Delivery

Scope

This document is valid for all variants whose type designation code starts with "VAK 10.1" or "VAK 40.1".

The type designation code specifications are located on the type plate of the device, see also [chapter 2.1 "Product Identification" on page 4](#).

Further documents

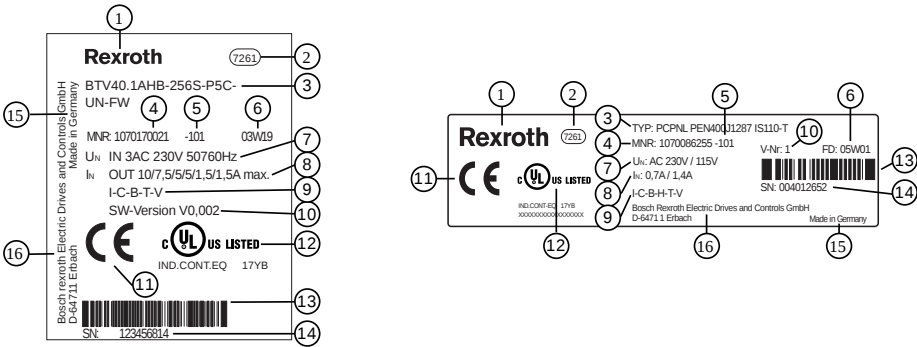
Title	Codes and notes
Rexroth IndraControl	DOK-SUPPL*-VAK*40.1***-PR02-EN-P
VAK 10.1/40.1	R911311650
Drawer Keyboard	Project Planning Manual

Fig.1-1: Further documents

2 Product Identification and Scope of Delivery

2.1 Product Identification

The type plate is located on the rear panel.



- 1

Logotype
- 2

Division or plant number
- 3

Type code (type designation code)
- 4

Parts number
- 5

State of revision
- 6

Date of manufacture (yyWwww)
- 7

Nominal voltage
- 8

Nominal current
- 9

Test marking
- 10

Version number
- 11

CE marking
- 12

Underwriters Laboratories Inc. mark
- 13

Serial number as barcode
- 14

Serial number
- 15

Designation of origin
- 16

Company address

Fig.2-1: Type plates, example

2.2 Scope of Delivery

- Drawer keyboard
- Instructions
- Mounting kit

3 Using the Safety Instructions

3.1 Safety Instructions – Structure

The safety instructions are structured as follows:

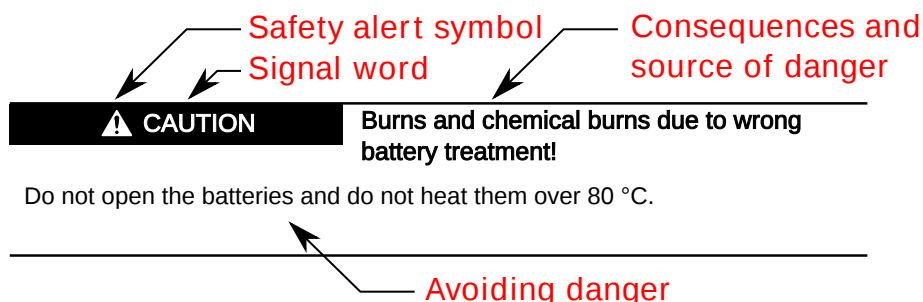


Fig.3-1: Safety instructions – structure

3.2 Explaining Signal Words and Safety Alert Symbol

The safety instructions in this documentation contain specific signal words (danger, warning, caution, notice) and, if necessary, a safety alert symbol (according to ANSI Z535.6-2006).

The signal word is meant to draw the reader's attention to the safety instruction and signifies the degree of danger.

The safety alert symbol (a triangle with an exclamation point), which precedes the signal words danger, warning and caution is used to alert the reader to personal injury hazards.

⚠ DANGER

In case of non-compliance with this safety instruction, death or serious injury **will** occur.

Spare Parts, Accessories and Wear Parts

WARNING

In case of non-compliance with this safety instruction, death or serious injury **can** occur.

CAUTION

In case of non-compliance with this safety instruction, minor or moderate injury could occur.

NOTICE

In case of non-compliance with this safety instruction, property damage could occur.

4 Intended Use

The drawer keyboards are used to extend the input in connection with Bosch Rexroth visualization devices.

The two drawer keyboards are designed for use in the following cases:

- To operate graphic user interfaces
- To navigate within graphic user interfaces

The drawer keyboards may only be operated under the mounting and installation conditions, the position, and the ambient conditions (temperature, degree of protection, humidity, EMC etc.) specified in this documentation.

NOTICE

Keyboard damage due to unapproved lubricant and cleaner.

Before use, check new lubricants or cleaners for compatibility with the material of the devices.

5 Spare Parts, Accessories and Wear Parts

No spare parts or accessory parts are available for drawer keyboards.

6 Ambient Conditions

	In operation	Transport	Storage
Max. ambient temperature	+5 °C up to +45 °C	-20 °C up to +60 °C	
Max. temperature gradient	Temporal temperature changes up to 3 K per minute		
Humidity	Min. rel. humidity 5% Max. rel. humidity 85% Min. absolute humidity 1 g/m³ Max. absolute humidity 25 g/m³ Condensation not allowed Corresponds to climatic class 3K3 acc. to EN 60721-3-3	Min. rel. humidity 5% Max. rel. humidity 75% Min. absolute humidity 1 g/m³ Max. absolute humidity 25 g/m³ Condensation not allowed Corresponds to climatic class 2K2 acc. to EN 60721-3-2	Min. rel. humidity 5% Max. rel. humidity 85% Min. absolute humidity 1 g/m³ Max. absolute humidity 25 g/m³ Condensation not allowed Corresponds to climatic class 1K2 acc. to EN 60721-3-1
Air pressure	Up to 3000 m above sea level acc. to EN 61131-2		
Mechanical strength	Max. vibration: Frequency range: 10 up to 150 Hz Excursion: 0.075 mm for 10 to 57 Hz Acceleration: 1g for 57 to 150 Hz acc. to EN 60068-2-6	Max. shock: 15 g 11 ms acc. to EN 60068-2-27 no disturbance of the function	
Degree of pollution according to EN 60664-1	2		
Overvoltage category according to EN 60664-1	2	-	

Fig.6-1: Ambient conditions

7 Technical Data

Keypad	86 buttons
Status display	3 LEDs
Plug-in connector	Type A male connector

Standards

Voltage supply	5 V $\pm$ 5 %
Current consumption	30 mA
Cable length	1.0 m
Front panel surface	Aluminium varnished
Color	RAL 7035 light gray
Degree of protection	IP 65 acc. to EN 60 529
Weight	Approx. 2.6 kg

Fig.7-1: Technical data

8 Standards

8.1 Used Standards

The drawer keyboards correspond to the following standards:

Standard	Description
EN 60,204-1	Safety of machinery - Electrical equipment of machines
EN 60 61000-6-4	Electromagnetic compatibility (EMC) - Generic emission standard
EN 60 61000-6-2	Generic standards - Immunity for industrial environments
EN 60664-1	Overvoltage category II
EN 60950	Clearances and creepage distances office (environment) and power units
ISO 13850	Machinery Safety. EMERGENCY STOPS
EN 60 529	Degrees of protection (including housings and installation compartments)
EN 60,068-2-6	Vibration test
EN 60068-2-27	Shock test
EN 60721-3-3	Classification of ambient conditions, operation
EN 60721-3-2	Classification of ambient conditions, transport
EN 60721-3-1	Classification of ambient conditions, storage
DIN EN 61 131-2	Programmable logic controllers Equipment and tests requirements
UL 508	Industrial Control Equipment

Fig.8-1: Used standards

8.2 CE Marking

8.2.1 Declaration of Conformity



The electronic products that are described in the present instructions, comply with the requirements and the target of the following EU directive and with the following harmonized European standards:

EMC directive 2004/108/EC

The electronic products described in the present instructions are intended for use in industrial environments and comply with the following requirements:

Standard	Title	Edition
DIN EN 61000-6-4 (VDE 0839-6-4)	Electromagnetic Compatibility (EMC) Part: 6-4: Generic standards – Emission standard for industrial environments (IEC 61000-6-4:2006)	September 2007
DIN EN 61000-6-2 (VDE 0839-6-2)	Electromagnetic Compatibility (EMC) Part: 6-2: Generic standards – Noise immunity for industrial environments (IEC 61000-6-2:2005)	March 2006

Fig.8-2: Standards for electromagnetic compatibility (EMC)



Non-compliance with CE conformity due to modifications to the device.

The CE marking is only valid for the device in its delivery status. After having modified the device, the CE conformity is to be verified.

8.3 UL/CSA Certified



The devices are certified according to

- **UL508** (Industrial Control Equipment) and
- **C22.2 No. 142-M1987** (CSA)

UL File No. E210730

However, there can be combinations or extension stages with limited or missing certification. Thus, verify the registration according to the UL marking on the device.



Loss of UL/CSA conformity due to modifications to the device.

The UL and CSA marking is only valid for the device in its delivery status. After modifying the device, the UL and CSA conformity is to be verified.

Mounting

9 Interfaces

9.1 General Information

NOTICE

Material damages to electronics due to missing functional earth ground connection!

Connect the functional earth ground.



To avoid malfunctions, use only shielded cables and metallic or conductive connector/coupling covers with large-area shield support.

9.2 Overview

The following connecting cable is available at the drawer keyboard:

Connection type	Connector type (at the cable)	Connection, external
USB	USB A	USB-A female connector

Fig.9-1: Interface at the drawer keyboard

10 Mounting

10.1 Installation Notes

- Lay all connecting cables in loops and use strain reliefs for all cables.
- Keep as much distance as possible to noise sources.

10.2 Mounting

For mounting the drawer keyboard proceed as follows:

**Loss of degree of protection IP 65!**

The housing in which the drawer keyboard is installed, has to fulfill the following conditions:

- free from impurities
- sufficient mechanical strength and flatness

These criteria influence the required degree of protection IP to a great extent.

Further required measures are to be taken depending on the mounting location, e. g. the stabilization of the mounting frame.

1. Create a mounting cut-out with 8 holes, diameter 4.5 mm, according to the illustrations "Mounting cut-out" on the following pages.
2. Remove the paper strip from the seal on the rear side of the front panel.
3. Insert the drawer keyboard from the front into the cut-out. The mounting bolts M4 are inserted into the drilled holes, see [fig. 10-4 "Mounting of the device " on page 13](#).
4. Fasten the display by screwing the nuts at the rear side of the mounting bolts, see [fig. 10-4 "Mounting of the device " on page 13](#).

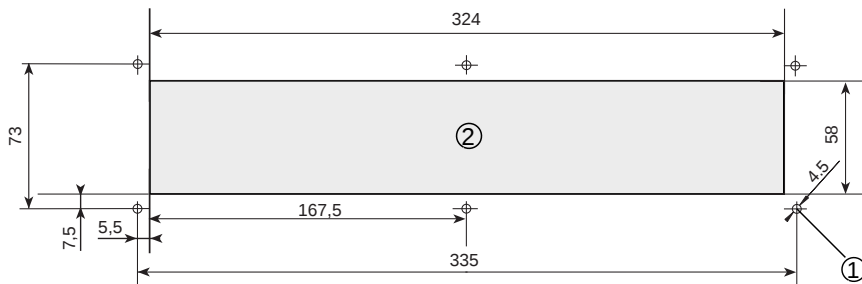
NOTICE**Mechanic damage due to wrong mounting torque.**

Tighten the screws and nuts with the corresponding torque according to the following table.

Threads	Mounting torques
M4	1.4 Nm

Fig.10-1: Tightening torques

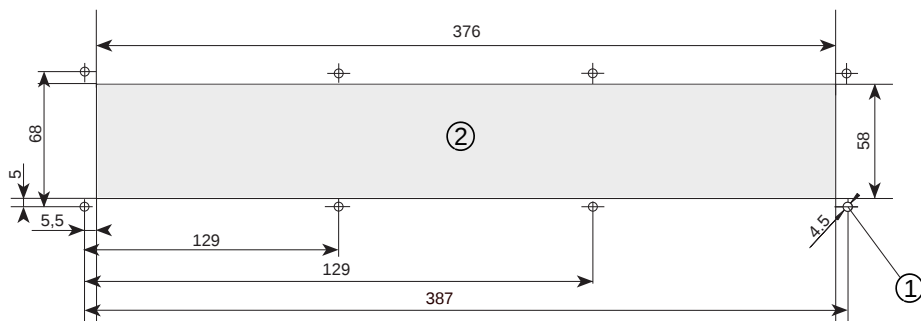
Mounting



① Drilled hole for the mounting bolts, bore diameter 4.5 mm

② Mounting cut-out

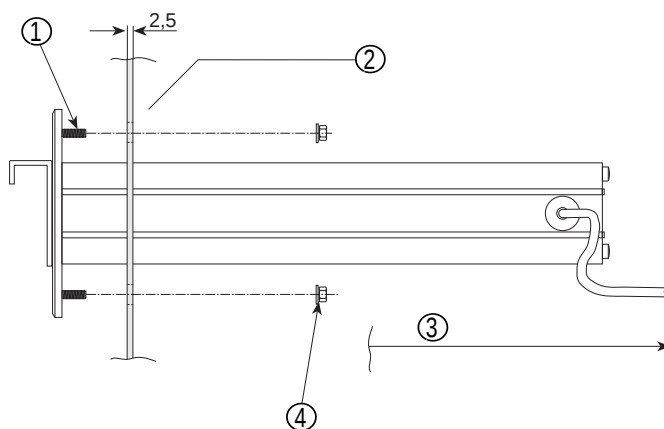
Fig.10-1: Mounting cut-out VAK 10.1



① Drilled hole for the mounting bolts, bore diameter 4.5 mm

② Mounting cut-out

Fig.10-2: Mounting cut-out VAK 40.1



① 6 or 8 press-fit bolts M4 × 16

② Mounting plate

③ Installation depth at least 209 mm

④ 6 or 8 nut M4

Fig.10-3: Mounting of the device

10.3 Housing Dimensions

10.3.1 Front View

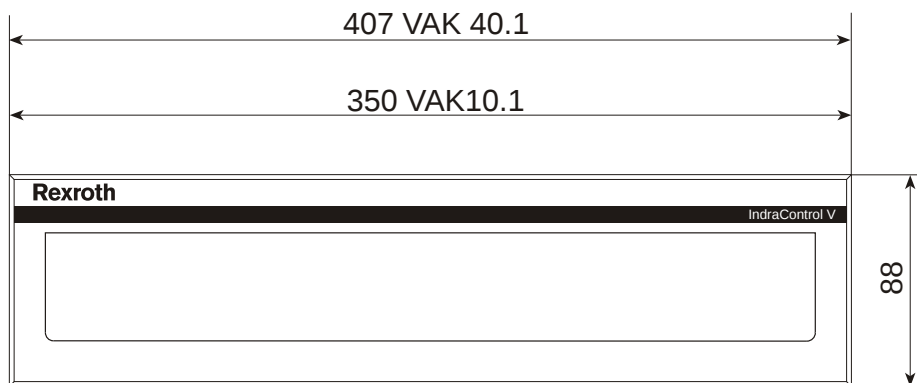


Fig.10-4: Front View

Mounting

10.3.2 Side View

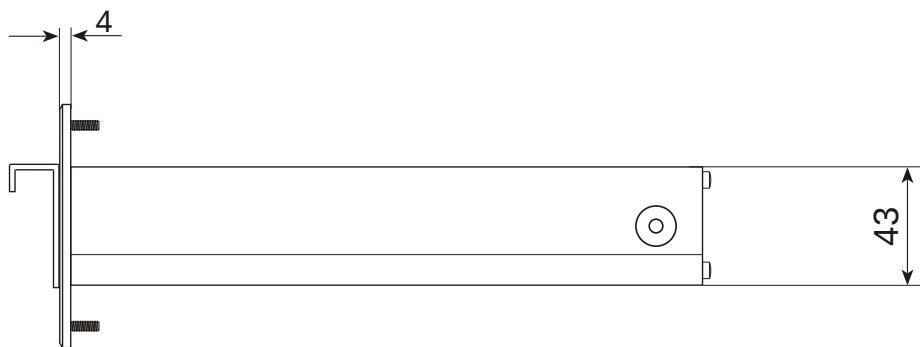
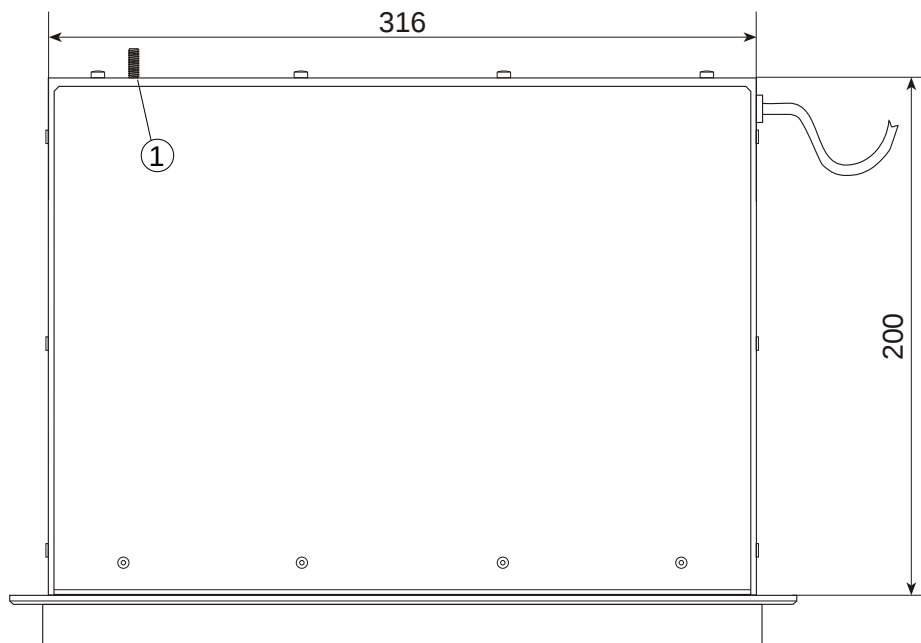


Fig.10-5: Side view

10.3.3 Top View



① Insert bolt for ground connection

Fig.10-6: Top View

10.4 Electrical Wiring



To avoid malfunctions, use only shielded cables and metallic or conductive connector/coupling covers with large-area shield support.

To connect the drawer keyboards to the control cabinet PCs VSP16/40 and VPP16/40 as well as to a VPB40, VDP16/40 and VSB40, the USB connector of the keyboard has to be connected to the USB female connector of the control cabinet PC.

11 Commissioning

The product can be used directly, no configuration is required.

12 Device Description

12.1 General Information



- | | |
|-------------------------------------|--------------------------------|
| ① Left mouse button | ② Right mouse button |
| ③ LED for numeric keypad activation | ④ LED for Caps Lock activation |
| ⑤ LED for scrolling | ⑥ Right mouse button |
| ⑦ Mouse pointer | ⑧ Left mouse button |

Fig.12-1: Device overview

Keyboard

The keyboard has all functions of a conventional PC keyboard.

Maintenance

12.2 Operation Displays

Three LEDs to display the status are contained on the keyboard.

LED	Display	Description
Num	LED on	Numeric keypad enabled
	LED off	Numeric keypad disabled
Caps-Lock	LED on	Caps lock enabled
	LED off	Caps lock disabled
Scroll	LED on	Scroll function enabled
	LED off	Scroll function disabled

Fig.12-1: LEDs for the operation display on the keyboard

13 Error Causes and Elimination

Typical application errors upon the installation are not known.

14 Maintenance



Ensure that the IP degree of protection of the device is kept during maintenance.

NOTICE

Keyboard damage due to unapproved lubricant and cleaner.

Before use, check new lubricants or cleaners for compatibility with the material of the devices.

Include the following measures in the maintenance schedule:

- At least once a year, all plug and terminal connections of the components are to be checked regarding proper tightness and possible damage. Check that cables are not broken or crushed. Damaged parts must be replaced immediately.

15 Ordering Information

Product features	Product	Production series		Equipment	Housing design		Language version		Interface		Additional equipment
Type Designation Code	VAK	10	.	1	E	-	DE	-	U	-	MPNN
		40					EN				

Fig.15-1: Type designation code

16 Disposal

16.1 Recycling

Our products can be returned to our premises free of charge for disposal. However, the products must be free of impurities like oil, grease or other impurities.

Furthermore, the products returned for disposal must not contain any undue foreign material or foreign components.

Send the products "free domicile" to the following address:

Bosch Rexroth AG
Electric Drives and Controls
Bürgermeister-Dr.-Nebel-Straße 2
97816 Lohr am Main, Germany

16.2 Packaging materials

The packaging materials consist of cardboard, plastic material, wood or expanded polystyrene (EPS). The packaging materials can be recycled without any problem.

For ecological reasons, please refrain from returning the empty packages to us.

17 Service and Support

Our worldwide service network provides an optimized and efficient support. Our experts offer you advice and assistance should you have any queries. You can contact us **24/7**.

Service and Support

Service Germany

Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Helpdesk & Hotline** under:

Phone:	+49 9352 40 5060
Fax:	+49 9352 18 4941
E-mail:	service.svc@boschrexroth.de
Internet:	http://www.boschrexroth.com

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

Service worldwide

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

Preparing information

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances resulting in the malfunction
- Type plate name of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your email address)

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