

SKF Microlog Inspector

Easy-to-use technology designed to increase productivity, safety and efficiency



SKF Microlog Inspector is ideally suited for process, quality, safety and regulatory compliance inspections.

Automated inspections for data accuracy

The SKF Microlog Inspector is an advanced system developed by SKF for recording inspection data that is used by operators as a replacement for verbal or paper inspection trails. This technology prompts corrective action when observed conditions deviate from established parameters, often preventing a more serious problem.

SKF Microlog Inspector plant or planet wide communications

By becoming a truly independent application, which can be installed on many Windows Mobile portable computers, SKF Microlog Inspector uses an easy communication method. The user simply presses the device's Synchronize button to transfer collected data – SKF's @ptitude software does not even need to be running for communications to occur!



No longer dependent on USB transfer alone, a key advantage of SKF's Microlog Inspector is its ability to transfer data over LAN, WiFi and even cellular data networks (3G/GPRS). Operators don't have to return to the host computer to upload their data. With SKF Microlog Inspector, the operator simply presses the device's Synchronize button in the field, and the collected data is uploaded to the SKF @ptitude software database, locally or anywhere in the world!

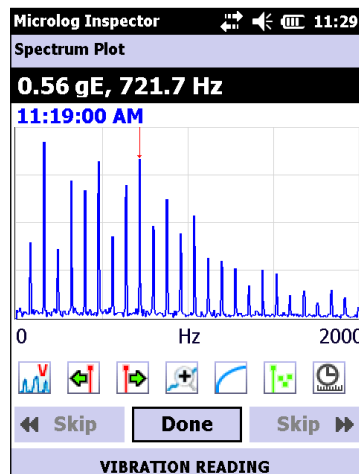
Customers can install the SKF Microlog Inspector application on multiple devices used throughout their organization and download specific inspection rounds directly to the operator. Data collection and feedback displays are intuitive and easy to use.



Inspection history.



On-screen trending and FFT displays.



Intuitive screens for recording and reviewing inspection and process data.

Key features

- Hardware independence across most current Windows Mobile portable devices.
- Intuitive prompts for corrective action when alarms are exceeded.
- Inspection data documented for compliance reporting and audits.
- Standardized notes available to document machinery and process conditions.
- Capable of collecting velocity, acceleration, temperature and FFT data with the SKF patented Wireless Machine Condition Detector.
- Generate work notifications.
- Dynamic route filter view displays only data to be collected.
- Barcode and RFID support

Flexible technology to meet every inspection need

This powerful inspection system is ideally suited for operational efficiency, process and quality inspections, environmental, safety and regulatory compliance inspections, predictive and preventive maintenance inspections, as well as asset basic care and total productive maintenance inspection.

When used with the Wireless Machine Condition Detector sensor, collected vibration data enables early problem detection in low, mid and high frequency ranges. Routine collection of vibration data during inspection rounds makes critical machine data available on a regular basis, eliminating unnecessary inspection trips and freeing up maintenance personnel to focus on scheduled repairs.

Based on the collected data, the system guides the user through corrective actions. If required, the user is instructed to collect additional data to identify root cause. SKF Microlog Inspector allows you to create your own formulas to calculate performance efficiencies and losses.



Start with your front line

Because of their proximity to equipment, operators are usually the first to detect even the slightest changes in process conditions and machinery health, including abnormal readings, odd noises, excessive heat and vibration, leaks or pressure, and more.

Too often, their observations go unreported or are not effectively acted upon, eventually leading to machine failures, unplanned downtime and higher operating costs. An Operator Driven Reliability (ODR) program from SKF can help.

By enabling front line operators to take a more proactive role in communicating findings and initiating timely corrective actions for degrading equipment, an ODR program from SKF helps operations teams become an integral part of your overall reliability-based asset management strategy.

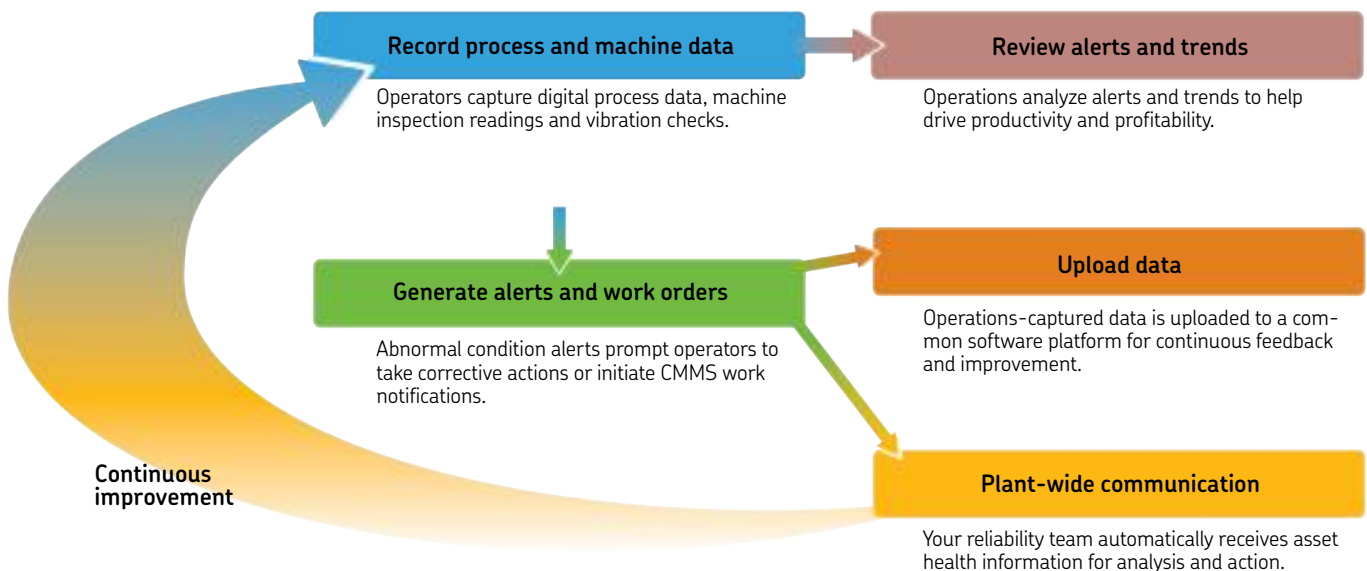
While reducing unplanned downtime and increasing plant productivity and safety, SKF ODR also encourages operations and maintenance departments to communicate more effectively and work together to achieve your business goals.

SKF ODR combines our proven ODR process with SKF software, sensors and hardware for a comprehensive, single-source ODR solution. Across one facility or several, SKF ODR offers a range of benefits, including:

- Increased productivity and profitability
- Reduced maintenance and repair costs
- Reduced unplanned downtime
- Improved asset availability
- Reduced energy and operating costs
- Continuous improvement capabilities
- Root Cause Failure Analysis support
- Improved health, safety and environmental compliance

Operator Driven Reliability with SKF

SKF can help you tailor an ODR program that empowers your operators and enables sustainable, continuous improvements.



Feature rich software completes the system



SKF @ptitude Inspector software completes the system, allowing for more in-depth analysis and the communication of machine condition data between operations, maintenance, engineering and plant management. FFT data collected with the SKF

Microlog Inspector and Wireless Machine Condition Detector is uploaded for analysis by your Maintenance Engineers. SKF @ptitude Inspector incorporates an easy-to-use interface to speed up system implementation. Users can create and modify routes in a hierarchical form, define data collection points, types and schedules, define security levels and include specific instructions for operators. These setups transfer to the device the moment the operator logs on.

SKF @ptitude Inspector Scheduler enables you to automatically schedule a specific action, such as generating a report to identify any missed or overdue collection points, or measurement data that is out of compliance parameters. Reports and other actions can be scheduled to automatically run upon completion of a data collection

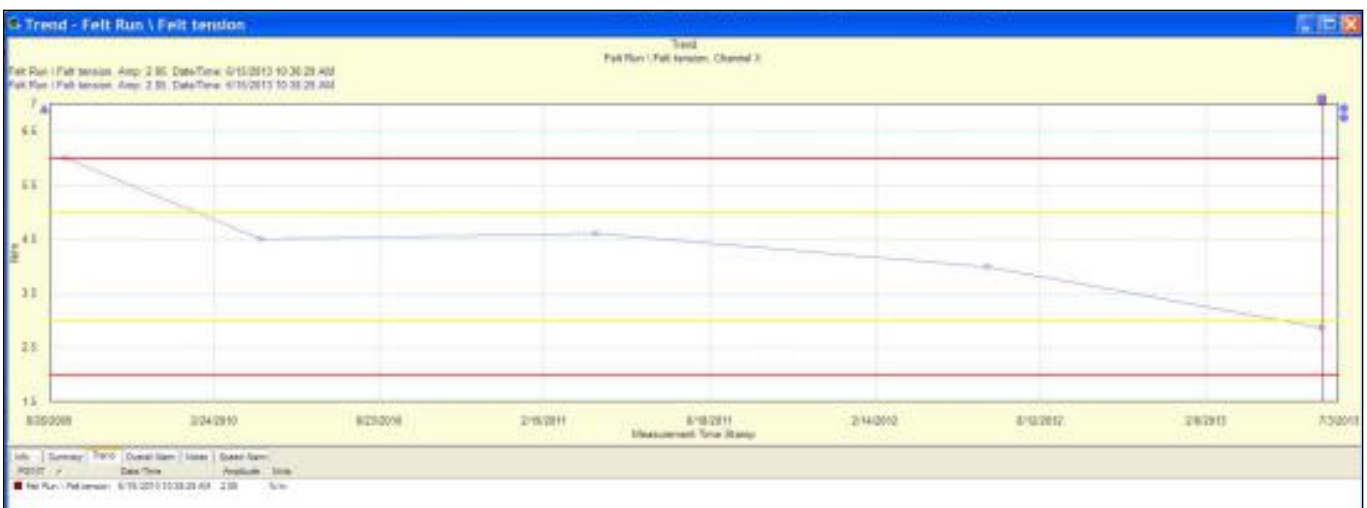
upload or at another convenient time to allow you to focus on other pressing issues. Text and SMS messages keep you informed of any changes that require action.

Enterprise wide communications

SKF @ptitude Inspector easily scales to your specific needs, whether it is operator inspection rounds, condition monitoring data collection or in-depth vibration analysis and expert advice.

It can also incorporate data from other sources, such as OPC servers, and seamlessly interface with your organization's Computerized Maintenance Management System (CMMS), Enterprise Resource Planning (ERP) or other information management systems. In this way, SKF @ptitude Inspector's integrated platform forms the hub to share information, foster teamwork, and facilitate consistent and reliable decision-making across functional departments.

SKF @ptitude Inspector 2012 Edition or newer is required for support of all features in SKF Microlog Inspector.



System requirements

SKF Microlog Inspector mobile application:

- Microsoft Windows Mobile 2003 (Second edition) Professional operating system or newer. Windows Phone 7 is not supported.
- 128 MB of RAM minimum
- Minimum 15 MB of free RAM after installation
- QVGA screen resolution 240 × 320 pixels; full VGA 480 × 640 pixels at 192 DPI supported.
- Microsoft .NET Compact Framework v3.5 (deployed with application)
- Microsoft SQL Compact Edition v3.5 (deployed with application)
- For wireless machine condition detector (WMCD) support, one of the following Bluetooth stacks are required:
 - Microsoft
 - Broadcom (Widcomm)
 - Bluetopia ^{1, 2, 3}
- SKF @ptitude Analyst 2012 Edition or newer is required
- USB, LAN or WiFi
- Mobile carrier SIM card for 3G or GRPS use

SKF Microlog Inspector Installer desktop application:

- Microsoft Windows XP (limited support for Windows 7, 32 bit, administrative privileges required)
- Microsoft .NET 2.0
- 25 MB free memory
- Microsoft ActiveSync 4.5 or Windows Mobile device center

1 Only supported on Symbol / Motorola Industrial hardware.

2 Requires Windows Mobile 5.0 (or above).

3 Requires Stonestreet One BTE Explorer version 2.11 (or above).



Specifications – SKF's I-Pro and S-Pro data managers



SKF Microlog Inspector systems: CDM 6700 series I-Pro (left), CDM 5700 series S-Pro (center) and CDM 5660 S-Pro (right).

Specifications	CMDM 6700 series I-Pro	CMDM 5700 series S-Pro	CMDM 5660 series S-Pro
Physical characteristics			
Dimensions: L x W x D (length x width x depth)	195 x 80 x 34 mm (7.66 x 3.15 x 1.34 in.)	225 x 85 x 58 mm (9.8 x 3.3 x 2.3 in.)	234 x 91 x 43 mm (9.2 x 3.6 x 1.7 in.)
Weight	491 g (17 oz.)	900 g (36 oz.)	980 g (31 oz.) configuration dependent
Environmental			
Operating temperature range	-20 to +60 °C (-4 to +140 °F)	-20 to +50 °C (-4 to +120 °F)	-20 to +40 °C (-4 to +104 °F)
Storage temperature range	-30 to +70 °C (-22 to +158 °F)	-20 to +50 °C (-4 to +120 °F)	-25 to +70 °C (-13 to +158 °F)
Relative humidity	5 to 95%, non-condensing	5 to 95%, non-condensing	5 to 95%, non-condensing
Environment sealing / rain and dust resistance	IP 67 compliant	IP 65 compliant	IP 54 compliant
Drop specification	2,4 m (8 ft.) to concrete per MIL-STD 810G	1,2 m (4 ft.) MIL-STD 810G	Multiple drops to concrete 1,8 m (6 ft.)
Power			
Battery type	Lithium ion, 3,7 V (4 000 mAh cells), customer replaceable	Lithium ion, 3,7 V (4 000 mAh cells), customer replaceable	Lithium ion, 7,4 V (2 200 mAh cells), customer replaceable
Battery capacity	14,8 Wh	14,8 Wh	15,8 Wh
Communications			
Standard communication	USB, LAN, WiFi, Bluetooth	USB, Wireless LAN, Wireless WAN, Bluetooth	USB, WiFi
Camera			
Camera	Integrated 5 megapixel auto focus color camera with LED flash	Not available	Not available

Specifications (continued)

Specifications	CMDM 6700 series I-Pro	CMDM 5700 series S-Pro	CMDM 5660 series S-Pro
Performance characteristics			
Operating system	Microsoft Windows embedded handheld 6.5.3	Microsoft Windows embedded handheld 6.5.3	Microsoft Windows Mobile 2005
Microprocessor	Texas Instrument 1 GHz OMAP3 multi-engine processor	Texas Instrument 1 GHz OMAP3 multi-core processor	Intel XScale PXA255 processor, 400 MHz
Memory and storage			
RAM memory	512 MB	512 MB	128 MB
Internal slots	Customer accessible micro-SD slot for removable memory card up to 32 GB	Customer accessible micro-SD slot for removable memory card up to 32 GB	Secure Digital (SD), Compact-Flash (CF) Type II
Display	Transmissive VGA 89 mm (3.5 in.), 640 × 480 pixels, 16 bit color, high durability touch screen, LED backlight, ambient light sensor	Transmissive TFT-LCD touchscreen, VGA 89 mm (3.5 in.), 640 × 480 pixels, 16 bit color, ambient light sensor, LED backlight, high durability touch screen,	Transflective daylight readable color display, 320 × 240 pixels, 97 mm (3.8 in.) diagonal
Keypad options			
Numeric	Large numeric keypad with backlit shifted plane legends	Large backlit numeric keypad	Large numeric keypad
QWERTY numeric	QWERTY numeric	Not available	Not available
Scanner / barcode imager / RFID Reader			
	EA30 high performance motion tolerant 2D imager; white LED illumination; red laser aimer optimized for all lighting conditions; 35 degree downward scan angle; capable of scanning all common 1D and 2D barcodes; 1D as small as 5 mil; PDF as small as 6,6 mil; data matrix as small as 7,5 mil; standard UPC codes from distances up to 33 cm (13 in.).	1D short range laser barcode scanner, 2D imager	SE 950:1D standard range scan engine. Reading range: 10 cm to 12 m.
RFID Reader	Integrated or hand held RFID Reader	Not available	Not available
Regulatory approvals and compliance			
Electrical safety	1000CP01, 1000CP01U, 1000CP01C Safety: cULus Listed, DEMKO, BSMI EMC: Class B FCC/ICES EN, GOST-R Radio: FCC with HAC, Industry Canada, CE 0981, A-tick (AU), C-tick (NZ), NCC, OFTA, IDA, ICASA, POSTEL, NTC, ETA, SIRIM, ANATEL, 61 countries in total Environmental: EU Directives- WEEE; RoHS; batteries and accumulators, packaging and waste packaging	Safety: 60950-1 EMC: FCC, CE Laser: IEC/EN 60825-1 Class 2 Environmental WEEE, RoHS Radio: FCC, CE Battery: UL 1642, IATA	Certified to UL60950, CSA C 22.2 No. 60950, EN60950/IEC 950
Hazardous area ratings			
Hazardous area ratings	<i>Models CMDM 6710 and CMDM 6711: Non-NI</i> <i>Models CMDM 6720 and CMDM 6721: cULus listing, ISA/ANSI 12.12.01</i> Class I, Division 2, Groups A, B, C and D Class II, Division 2, Groups F and G Class III, Division 2	<i>Model CMDM 5700 series: ATEX Zone 1, IECEx Class I, Division 1</i>	ATEX, II 2 G EEx q (ib) IIC T4

Expand your capabilities with SKF Microlog Inspector accessories

Wireless machine condition detector (WMCD) [CMVL 8000-K]



The SKF patented Wireless Machine Condition Detector is a Bluetooth enabled SKF patented wireless device that captures and transmits temperature, velocity vibration (overall machine vibration), enveloped acceleration vibration (bearing and gear vibration) and Fast Fourier Transfer (FFT) data to the SKF Microlog Inspector.

Vibration monitoring

When performing measurements, the WMCD's sensor input signal is processed to produce two vibration measurements for each measurement POINT. Velocity vibration identifies phenomena that are observable in the low to mid frequency range and indicates such structural problems as misalignment, unbalance, mechanical looseness and more. Enveloped acceleration measurements filter out general machinery noise to focus in on bearing and gearmesh vibration signals, allowing earlier problem detection.

Temperature

Temperature measurements enhance the "early warning" benefit of the instrument by offering a useful indication of mechanical condition or the load applied to a specific component, since as a bearing or its lubrication fail, friction causes its temperature to rise.

Alarm capabilities

Data collected with the WMCD is wirelessly transferred to the SKF Microlog Inspector system, where it is displayed on the screen in easy to identify, color coded bars: green for acceptable, yellow for alert and red for danger.

Measurements

- Overall velocity: 10 Hz to 1 kHz (tolerances measured within the frequency range are in accordance with ISO 2954)
- Velocity (amplitude range): 0,3 to 55, 0 mm/s (RMS), (0.02 to 3.00 in./s [Eq. Peak]), meets ISO Standard 10861-1
- Enveloped acceleration: 0,3 to 20,0 gE
- Enveloped acceleration band 3: 500 Hz to 10 kHz
- FFT:
 - Maximum frequency:
 - Velocity: 1 000 Hz
 - Enveloped acceleration: 2 000 Hz
 - Number of lines:
 - Velocity: 400
 - Enveloped acceleration: 800
 - Averages:
 - Velocity: 2
 - Enveloped acceleration: 1
 - Window: Hanning
 - Detection type:
 - Velocity: RMS if mm/s and PK if in./s
 - Enveloped acceleration: Peak to Peak

Hand held RFID reader [CMRF 6500 and CMRF 6700]



Compatible with the SKF Microlog Inspector I-Pro systems, RFID provides exceptional point identification capabilities with pinpoint location accuracy for critical asset tracking in harsh environments where barcode tags would deteriorate.

The CMDM 6700 I-Pro series is available with an integrated RFID reader, which also includes a scanner and camera – all in one device!

For additional product accessories information, please reference the SKF Microlog Inspector / SKF MARLIN Systems Accessories Catalog, publication CM/P1 11644 EN.

Ordering information

SKF Microlog Inspector is available for purchase as a system with a portable computer or as an application only. SKF @ptitude Analyst 2012 Edition software is required.

SKF Microlog Inspector systems

- **CMDM 6710 SKF Microlog Inspector I-Pro non-NI kit, numeric keypad**
- **CMDM 6711 SKF Microlog Inspector I-Pro non-NI kit, QWERTY numeric keypad**
- **CMDM 6720 SKF Microlog Inspector I-Pro NI Class I Division 2 certified, numeric keypad**
- **CMDM 6721 SKF Microlog Inspector I-Pro NI Class I Division 2 certified, QWERTY numeric keypad**
- **CMDM 6710RF – SKF Microlog Inspector I-Pro non-NI kit, numeric keypad, integrated RFID**
- **CMDM 6720RF – SKF Microlog Inspector I-Pro NI Class I Division 2 certified, numeric keypad, integrated RFID**
- **CMDM 6712RF – SKF Microlog Inspector I-Pro non-NI CE certified, numeric keypad, integrated RFID**
- **CMDM 6713RF – SKF Microlog Inspector I-Pro non-NI kit, numeric keypad, integrated RFID, Australia radio**
- **CMDM 6714RF – SKF Microlog Inspector I-Pro non-NI kit, numeric keypad, integrated RFID, New Zealand radio**

Each I-Pro kit includes:

- I-Pro handheld computer device
- SKF Microlog Inspector application installed, single device license
- User manuals
- Communication / recharging dock
- Lithium ion battery
- Micro-USB communication cable (dock to PC)
- Belt holster
- Tethered stylus
- Universal power adapter (for non-US kits)
- Memory card
- Screen protector
- Connection cover
- Built-in color camera

- **CMDM 5760-IS-A-SL SKF Microlog Inspector S-Pro IS kit, ATEX Zone 1, IECEx AND Class 1 Division 1 certified, numeric keypad**

Each S-Pro kit includes:

- S-Pro handheld computer device
- SKF Microlog Inspector application installed, single device license
- User manuals
- Single charging dock, includes USB and US power supply
- 1D short range laser barcode scanner
- WLAN Module / WEH 6.5.3 Classic, WLAN, English
- StylusPen and bracket
- Handstrap
- Dust cover
- ATP Micro SD card, 2 GB

Note: LAN requires CMAC 6173 Ethernet adapter, sold separately.

- **CMDM 5660 SKF Microlog Inspector S-Pro, ATEX Zone 1 certified system**

Each S-Pro kit includes:

- S-Pro handheld computer device
- SKF Microlog Inspector application installed, single device license
- User manuals
- Communication/recharging dock with power supply
- Lithium-ion battery
- USB communication cable (dock to PC)
- Tethered stylus
- Universal power adapter
- Memory card

Note: LAN data transfer not available, however WiFi transfer is.

SKF Microlog Inspector application

- **CMDM 6600-FW-SC-SL**
 - SKF Microlog Inspector single device license
- **CMDM 6600-FW-AD**
 - SKF Microlog Inspector additional device license(s)

For additional product accessories information, please reference the SKF Microlog Inspector / SKF MARLIN Systems Accessories Catalog, publication CM/P1 11644 EN.

Product Support Plans

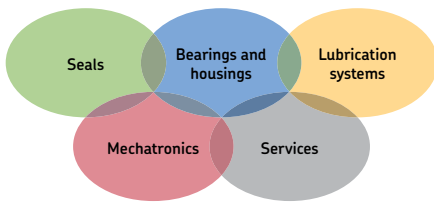
SKF is committed to customer support excellence. The goal of a SKF Product Support Plan (PSP) is to help you increase and optimize your return on investment in SKF products. This includes extending the life of their product and facilitating the success of their program. This allows you to compete in your industry, save downtime and be on the cutting edge of technology.

SKF Product Support Plans give you full confidence that your equipment is maintained to the SKF quality standards. Condition monitoring products are an investment and there is no better way to protect your investment for years than with a SKF Product Support Plan.

Greater peace of mind

- Unlimited telephone technical support
- E-mail/web-based technical support
- Firmware maintenance releases and updates
- SKF Microlog Inspector firmware only plans
- Hardware repairs, modifications, and proactive maintenance
- Hardware loaner units
- Courier return shipping after repair or maintenance
- SKF Knowledge Centre subscription
- SKF Technical Support Self-Help Portal access





The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.

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