OMRON

Motor Condition Monitoring Devices

K6CM series

K6CM takes the burden of monitoring off maintenance engineers.

Stay alert to signs of motor failure through monitoring conditions.

- K6CM's threshold setting keeps users informed of maintenance timing
- "Motor Condition Monitoring Tool" for PCs
- Clamp-type CT which is easy to install on existing equipment

No need for time-consuming patrol inspection or expertise.

K6CM informs you of the motor's maintenance

[Problems]

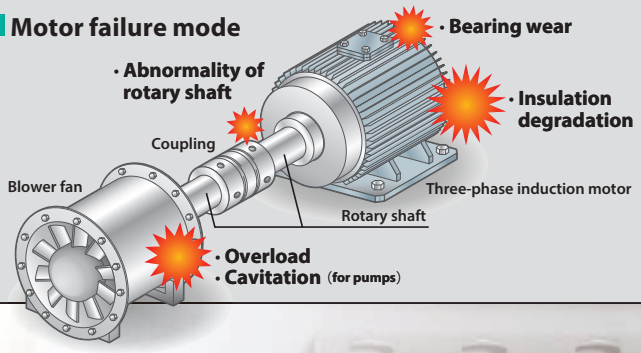
It's difficult to prevent motor issues caused by degradation.

The conventional motor condition check had several check items. Therefore a skilled maintenance engineer was required to judge the motor's maintenance timing. Additionally, inspection was time-consuming because there were many motors.

Example of patrol inspection items

Phenomenon / Symptoms	Vibration	Heat generation	Decreased electrical resistance	Overcurrent
Bearing wear	✓	✓		✓
Insulation degradation			✓	
Overload	✓	✓		✓
Open phase		✓		

Motor failure mode



AWARDS

K6CM Motor Condition Monitoring Devices

- Development Award of the TPM Award for Excellent Products 2018
- GOOD DESIGN AWARD 2018

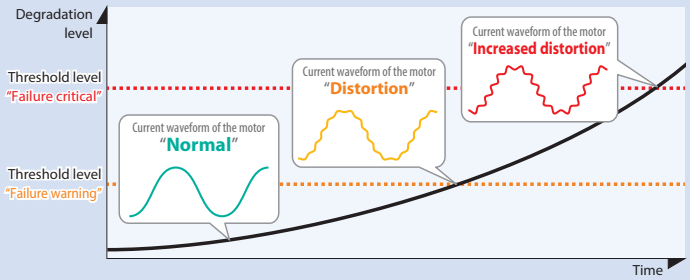
timing.

[Solution from OMRON]

Motors can be maintained in advance of failure due to degradation.

K6CM (comprehensive current diagnosis type) can consistently monitor motor conditions by observing the current waveform of the motor. Additionally, you can understand the motor's maintenance timing without depending on an engineer, because K6CM provides threshold value setting.

What is comprehensive current diagnosis?



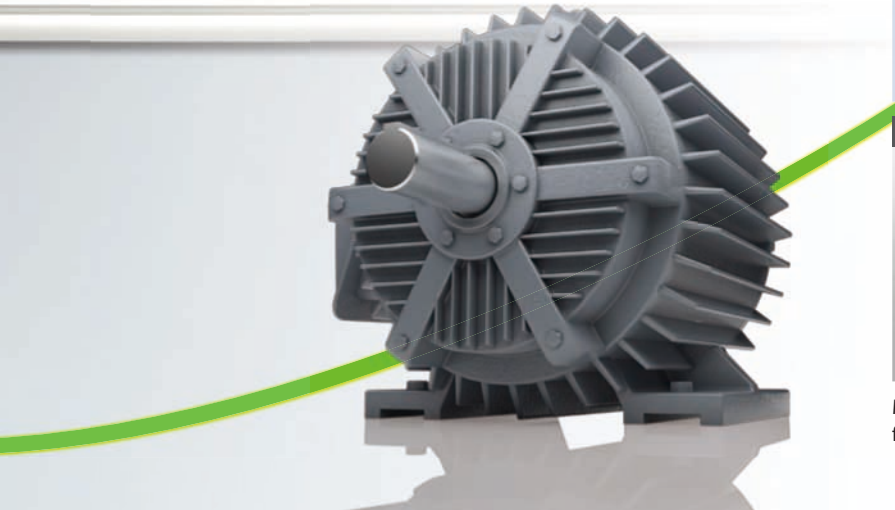
When an abnormality occurs in the load such as bearing, rotary shaft, or reducer, the motor does not rotate smoothly and a distortion occurs in its current waveform.
K6CM measures its distortion as a degradation level.

With a factory floor signal light

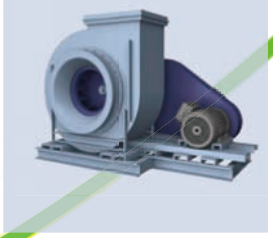
With an office PC

With the accessory software "Motor Condition Monitoring Tool", you can monitor motor conditions remotely.

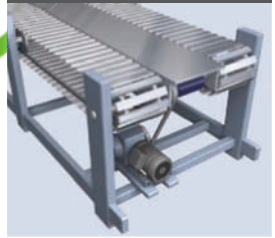
* The screen is a sample image.



Rotary fan



Conveyor



Pump

Monitors the 3-phase induction motor which is the driving force of every facility.

Motor Condition Monitoring Device Lineup

Note. Applicable motor type: three-phase induction motor

type 01 Comprehensively monitors motor and load abnormalities through degradation level

K6CM-CIM

Load abnormality | Overload | Open phase

Comprehensive current diagnosis type

Alarm bar display
- Green : Status normal
- Yellow : Failure warning
- Red : Failure critical

Display
- [PV] : Present value
- [MIN] : Minimum value
- [MAX]: Maximum value

Switches the units of the measured value displayed
- [CIM] : Degradation level
- [A] : Current

<Actual size>

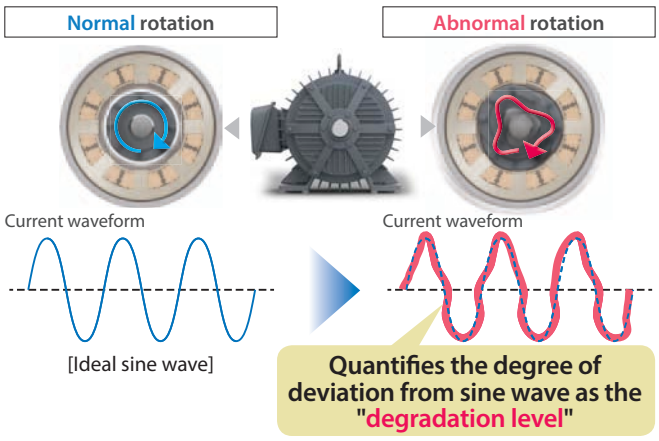
CT
K6CM-CICB

Easy setup!

To perform monitoring, simply clamp the CT to the power line connected to the three-phase induction motor.

Detects abnormalities of three-phase induction motors

When an abnormality occurs in a three-phase induction motor, a change occurs in the "stator" and "rotor" of the motor, which affects the current waveform.
Comprehensive current diagnosis makes it possible to capture condition changes by comparing the normal current waveform (ideal sine wave) and abnormal current waveform.



Also detects load abnormalities

When a load abnormality occurs, the current waveform of the motor changes, which allows the load abnormality to be detected.

1. Abnormalities in load (blower fan) and rotary shaft
2. Effect on the current waveform of the motor

type 02 Monitors bearing abnormalities through vibration and temperature

Pre-amplifier and Vibration & temperature sensor
K6CM-VBS

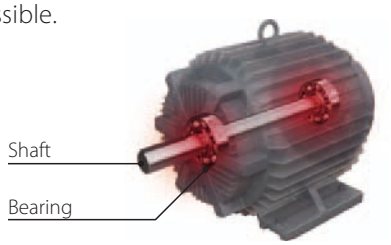
K6CM-VBM

Bearing wear | Overload | Open phase

Vibration & temperature monitoring type

Detects abnormalities in bearings

By constantly monitoring for vibrations, it can detect signs of abnormalities in bearings and the like as soon as possible.



Constantly monitors temperature

The surface temperature of the routinely inspected motor can be measured at the same time as vibrations.

This eliminates the need to measure the temperature on site.

type 03 Constantly monitors the insulation resistance

ZCT
K6CM-ISZBI

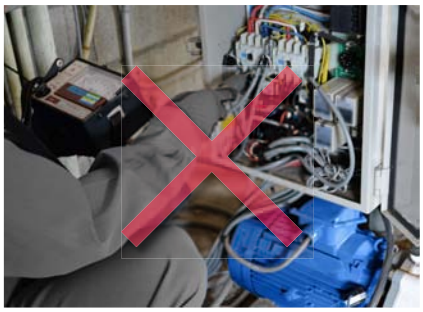
K6CM-ISM

Insulation degradation

Insulation resistance monitoring type

Measures insulation resistance

With conventional products, measurement with a Megger Tester was necessary to check for insulation degradation. K6CM-ISM can be used to perform this inspection during operation, making it possible to constantly monitor degradation trends while reducing the burden on the maintenance personnel.



This eliminates the need for complicated insulation resistance measurements.

Measures insulation resistance on secondary side of inverter

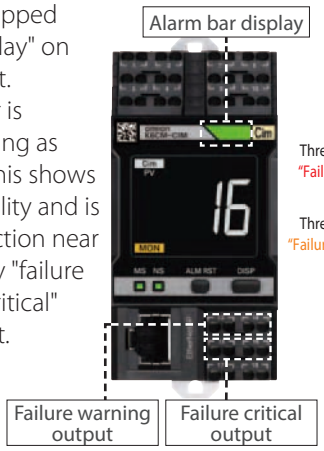
The "insulation resistance" of the motor can be measured even if an inverter is used.

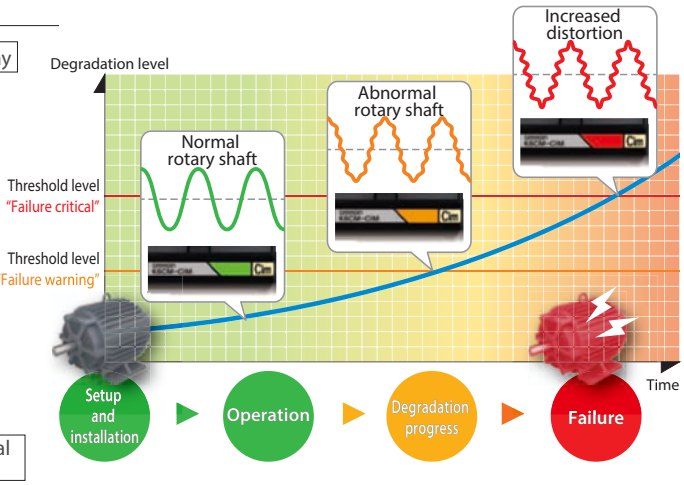
Features Three functions for monitoring motor condition

1 Visual inspection through alarm bar display and two-step output

Alarm bar and output function

The K6CM series is equipped with an "alarm bar display" on the front of the product.
The condition of motor is displayed by color-coding as green, yellow, or red. This shows the degree of abnormality and is helpful for visual inspection near the motor. Accordingly "failure warning" and "failure critical" statuses are also output.



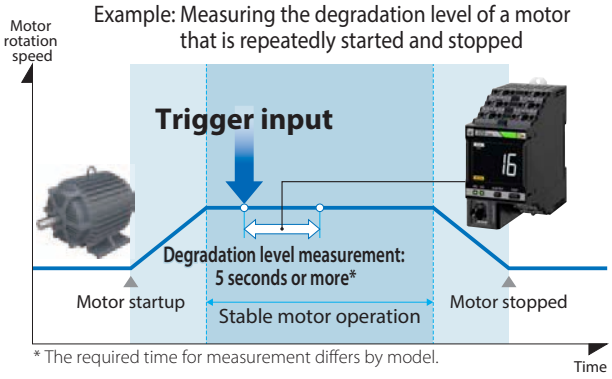


2 Monitors stable values even when load fluctuates

Trigger input function

Equipped with a "trigger input function" that measures the measurement timing according to the motor operation in order to accurately diagnose the condition of motors that are repeatedly started and stopped.
The motor condition is determined from the operation signals (auxiliary output of the contactor and the PLC control signal), and measurement is only performed when the motor operation is stabilized, enabling fixed point observation on a daily or monthly basis under the same conditions.

Example: Measuring the degradation level of a motor that is repeatedly started and stopped

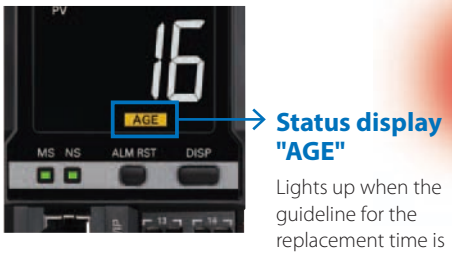


* The required time for measurement differs by model.

3 Self-diagnosis function that improves system reliability

Self-diagnosis function

When constantly monitoring for a long period of time, unexpected failures and other problems of measuring devices must be taken into consideration.
The K6CM series is equipped with a self-diagnosis function as standard. The reliability of the system is improved by monitoring the service life of the device to be measured.



Status display "AGE"

Lights up when the guideline for the replacement time is reached.

Value Design for Panel

Our shared Value Design for Panel (herein after referred to as Value Design) concept for the specifications of products used in control panels will create new value for our customers' control panels.
Combining multiple products that share the Value Design concept will further increase the value provided to control panels.

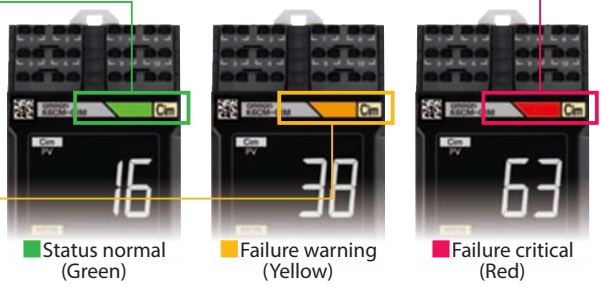
Motor Condition Monitoring Tool

The setting and monitoring tool software "Motor Condition Monitoring Tool" and the K6CM series are linked. Both allow the motor condition to be monitored visually with green, yellow, and red color-coding.

Motor condition list display

The conditions of up to 10 motors are displayed as a list through the K6CM series connected to the network. The data of up to 30 K6CM units can be viewed. (Three types of K6CM can be installed to one motor)

Displays condition list at same time as device displays



Status normal (Green)
Failure warning (Yellow)
Failure critical (Red)

Error history display

Displays the alarm statuses of multiple motors.
Allows changes in the motor condition to be checked as a time series.

Trend graph display

Allows the measured value trends to be checked on graphs.

Initial setting

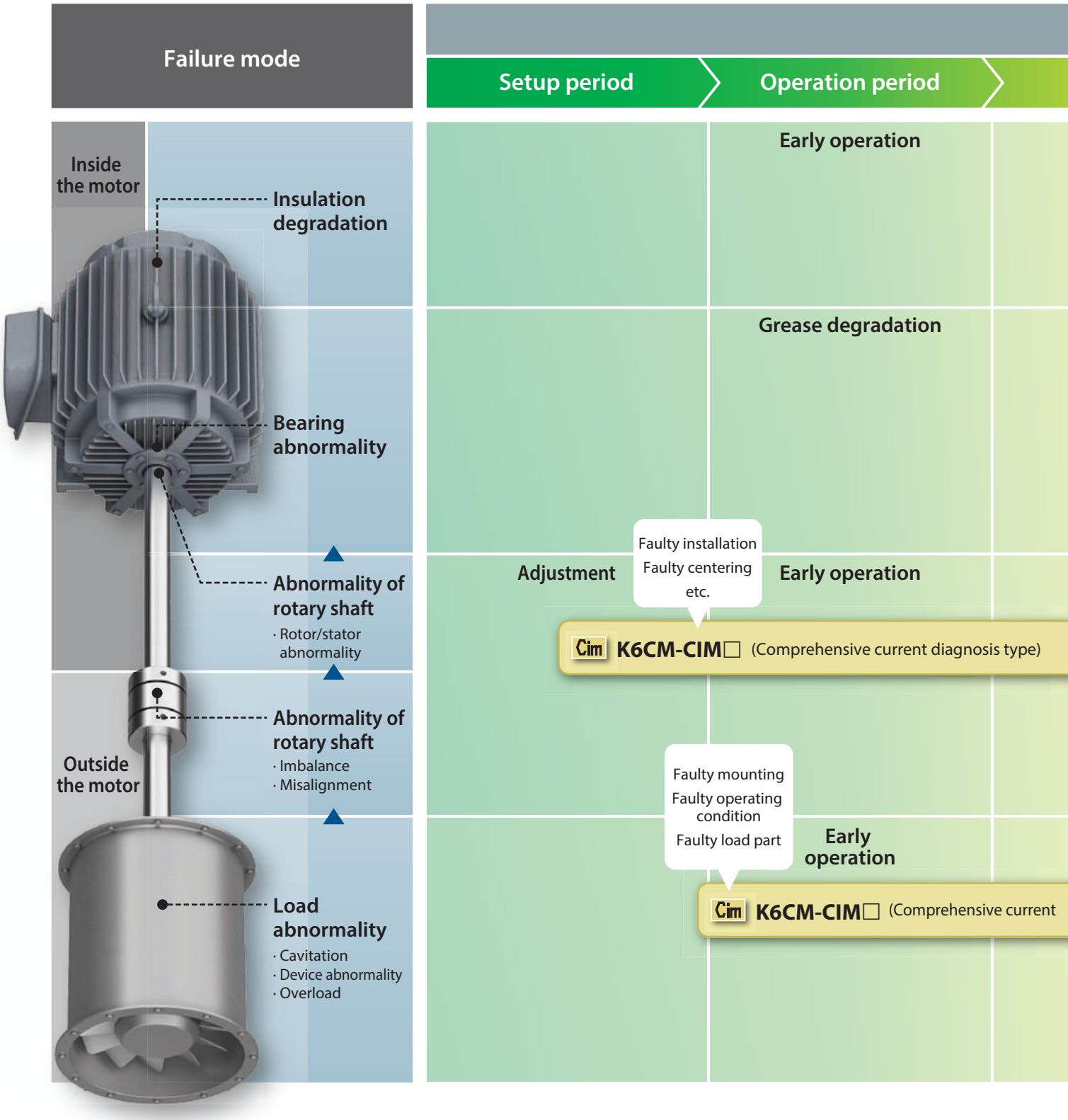
Initial settings of the K6CM series such as trigger input settings, motor information registration, network settings, and threshold adjustment can be made from a PC.

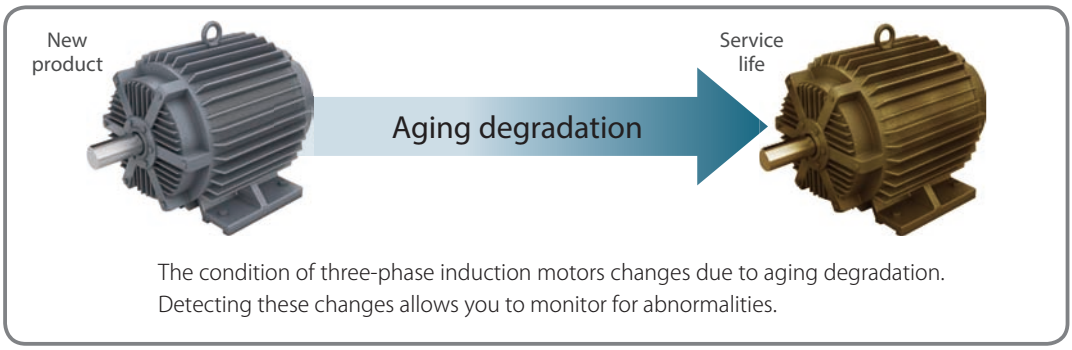
Data can be output as a CSV file

Measured and accumulated data can be output in CSV format. This is useful for creating reports and statistical materials.

Degradation progress/failure mode correspondence table

After installing a three-phase induction motor, performing proper maintenance by monitoring the motor condition will prolong its service life.
Please select the optimal model for the type of abnormality you want to detect.





The condition of three-phase induction motors changes due to aging degradation.
Detecting these changes allows you to monitor for abnormalities.

Motor and load condition

Degradation progress period | **Breakdown period**

Insulation degradation

Insulation breakdown

K6CM-ISM□ (Insulation resistance monitoring type) [Insulation degradation]

Bearing damage

Bearing breakdown

K6CM-CIM□ (Comprehensive current diagnosis type) [Degradation level]

K6CM-VBM□ (Vibration & temperature monitoring type) [Velocity/Acceleration]

Degradation progress of motor

[Degradation level]

K6CM-VBM□ (Vibration & temperature monitoring type) [Velocity]

Degradation progress of load

diagnosis type) [Degradation level]

K6CM-VBM□ (Vibration & temperature monitoring type) [Velocity]

K6CM-VBM□ (Vibration/temperature monitoring type) [Temperature]

K6CM-CIM□ (Comprehensive current diagnosis type) [Overcurrent]

Before you place an order, please read and understand "Agreement for Using the Product" available on Omron's latest "Best control devices Omron", "General Brochure" or Omron's website.

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