144181-51

01 / Identify the installed arrangement

Bently Nevada 144181-51 is the five-metre 3300 XL 5/8 mm Proximitor Sensor. With a compatible probe and extension cable it converts probe-to-target clearance into a proportional voltage for machinery monitoring.

Measurement-chain context

Install the five-metre Proximitor with the documented probe, extension cable, conductive target and compatible monitor input.

Application scope

The completed transducer chain supports shaft relative vibration, axial position and other documented proximity measurements on rotating machinery.

Pre-work record

Isolate the measurement loop

Before removal, record OUT, COM, V+ wiring and disconnect power according to the site procedure.

Preserve electrical length

Check that probe plus extension cable matches the five-metre system marking; a visual connector match is insufficient.

Verify target calibration

The family datasheet assumes AISI 4140 steel by default; another shaft material needs its own calibration basis.

Electrical and interface reference

Nameplate system length	5 m
Nameplate scale factor	7.87 V/mm (200 mV/mil)
Nominal nameplate supply	-24 VDC
Family nonincendive supply	-17.5 to -26 VDC, per drawing 140979
Family barrier supply	-23 to -26 VDC

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02 / Fit, reconnect and commission

Protect the coaxial path

Inspect ClickLoc mating surfaces, cable routing and connector protection; avoid oil ingress and mechanical strain.

Set the operating gap

Use the machine drawing and monitor procedure to establish the correct gap voltage, then record the as-left value.

Prove the monitor response

After replacement, compare bias, vibration trend, alarm states and the channel configuration with the recorded baseline.

System behavior

The supplied marking identifies a five-metre system sensor with nominal scale factor 7.87 V/mm (200 mV/mil) and a -24 VDC supply. Its terminal labels are OUT, COM and V+; the coaxial connector accepts the probe/extension-cable path. These are nameplate facts for the offered 144181-51 unit.

Bently Nevada describes the 3300 XL 8 mm transducer chain as a probe, an extension cable and a Proximitor Sensor. Its output follows the clearance to a conductive target, enabling static position and dynamic vibration measurement. The manufacturer also documents backward interchangeability with 3300 5 mm and 8 mm components, but a mixed XL/non-XL chain is limited to the non-XL system performance specification.

Family performance figures are conditional on the complete standard XL system, AISI 4140 target, -24 VDC supply, 10 kΩ load and specified gap. When fitting a replacement, retain the installed five-metre electrical length, check target calibration and set the probe gap by the machine drawing and monitor procedure.

Applicability

Nameplate values identify the offered 144181-51. The additional electrical and performance rows are 3300 XL 8 mm family specifications, not a stand-alone guarantee for a mixed-component or differently calibrated installation.

Why can 144181-51 show a plausible bias but inaccurate vibration amplitude?

A mixed XL/non-XL chain, wrong electrical length, target material or load can change the scale factor even when a DC gap voltage appears reasonable. Check the complete chain and compare a controlled response with the installed calibration basis.

How should the five-metre chain for 144181-51 be identified?

Record the probe order code, integral lead length and extension-cable length, then confirm their combined system length agrees with the five-metre sensor marking. Inspect the connector style and any calibrated target-material option.

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03 / Troubleshoot and hand over

Which supply checks matter before energizing 144181-51?

Verify polarity at V+ and COM, the actual supply at the sensor under load, and whether barriers are installed. The family datasheet gives different permitted voltage ranges for the nonincendive and barrier arrangements.

Can 144181-51 be exchanged into a non-XL 3300 probe loop?

The manufacturer documents physical and electrical interchangeability with certain non-XL 3300 5 mm and 8 mm components. The mixed loop does not inherit the full XL system performance; use the applicable non-XL specification and confirm monitor calibration.

What should be measured after setting the gap on 144181-51?

Record the DC bias at the monitor and at the sensor if accessible, then compare the measured gap against the approved machine drawing. The family nominal -9 VDC point is a reference, not a substitute for the actual installation procedure.

Why does field-cable length matter for 144181-51?

The family datasheet allows up to 305 m between the Proximitor and monitor with specified shielded field wiring, but longer runs attenuate high-frequency response. Check the frequency-response graph and the machine channel bandwidth.

How is a suspected open probe path on 144181-51 investigated?

Inspect ClickLoc seating and cable damage, check the probe/extension continuity against the manufacturer procedure with power isolated, then separate sensor, cable and probe faults before changing the monitor configuration.

What acceptance record is useful for 144181-51 after replacement?

Keep the full component markings, target material, supply and gap voltage, monitor scaling, alarm response and an as-left trend snapshot. This distinguishes a hardware change from a configuration or mechanical-clearance change.

Technical basis: Bently Nevada 3300 XL 8 mm Proximity Transducer System Datasheet, 141194 Rev. AN; supplied 144181-51 nameplate

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