Bently Nevada 330980-70-05

01 Define the system boundary

1 Establish what is being replaced

Record the complete 330980-70-05 label, the installed probe and extension-cable identities, and the receiving channel. The work concerns a 7.0 m panel-mounted NSv sensor. Distinguish an electronics-only replacement from a full transducer-system conversion. If the probe path is changed, treat calibration and gap checks as part of the same job.

2 Prepare the affected machine channel

Place the affected monitoring/protection channel in the plant-approved maintenance state before disconnecting the sensor. Identify the relevant alarm and trip paths and arrange authorized isolation. Preserve channel settings and conductor identification. ESD protection in the sensor terminals and connector does not remove the need for careful antistatic handling.

3 Verify the companion chain

Add the probe lead and extension lengths and compare the result with 7.0 m. Typical matching combinations are 1.0 + 6.0 m or 0.5 + 6.5 m. Use a compatible NSv or suitable 3300 RAM probe/cable arrangement. If converting a 190-series system, replace the probe, extension cable and Proximitor Sensor together with NSv components.

4 Resolve the target and mounting basis

Confirm target material and the required measurement task before work starts. Standard calibration is to AISI 4140 steel. Retain the panel-mount arrangement and inspect the mounting pad and fasteners. A sensor with a different mounting or length code is not the same ordered assembly, even if it appears mechanically similar.

330980-70-05 / Prepare wiring and connections

02 Keep the two cable circuits separate

Probe-side connection

Inspect the coaxial connections for liquid entry, damaged contacts or an insecure joint. Connector protectors are recommended at the probe-to-extension and cable-to-sensor joints. Avoid loading a connector through cable tension. For probe/cable connectors, finger tightening is preferred and the maximum connector torque is 0.56 N m; do not apply this value to mounting screws.

Monitor-side conductors

Use three-conductor shielded field cable. Accepted conductor area is 0.2 to 1.5 mm2; with ferrules, use 0.25 to 0.75 mm2. The SpringLoc strip needs no special installation tool. Match terminal functions to the actual sensor label and approved wiring drawing, rather than relying on conductor color or an assumed left-to-right terminal order.

Cable route and environmental protection

The field-wire run between sensor and monitor may be up to 305 m, subject to frequency-response constraints. Keep the probe-side calibrated chain separate from this run in the wiring record. Protect coaxial joints from liquids. Silicone tape is an alternative joint protection method, but it is not recommended where the probe/extension joint is exposed to turbine oil.

Pre-energization inspection

Check that each conductor is secure, shield treatment follows the plant drawing, the coaxial joints are protected and the panel mounting is stable. Remove temporary test connections that are not part of the approved circuit. Confirm the sensor environment stays within -52 to +100 C. Probe and extension ratings must not be used as electronics enclosure limits.

330980-70-05 / Energize and establish the gap

03 Measure before interpreting displacement

Check power at the sensor

Measure the supply at the connected sensor relative to its intended common. Without barriers the permissible supply is -17.5 to -26 Vdc; with barriers it is -23 to -26 Vdc. A value more positive than -23.5 Vdc can reduce usable linear range. Resolve supply polarity, drop and barrier configuration before interpreting an abnormal gap signal.

Observe the static response

The recommended probe gap is 1.0 mm. The nominal linear interval is about 0.25 to 1.75 mm, corresponding approximately to -1 to -13 Vdc. Verify the response using the applicable NSv setup procedure and controlled target movement. Do not turn these approximate end values into unexplained exact acceptance thresholds for every material and installation.

Use a meaningful calibration basis

Where a bench comparison is required, retain the reference conditions: 0 to +45 C, -24 Vdc, 10 kohm load, AISI 4140 steel target at least 31 mm across, and 1.0 mm reference gap. Different target materials or a smaller target can change the response. Record any departure from the chosen calibration basis with the measurement results.

Compare sensor and monitor readings

Compare the sensor output response with the receiving channel indication while making a controlled change. Verify that channel scaling and measurement mode agree with the intended radial, thrust, speed or phase task. If local output responds but the monitor does not, investigate the field circuit and channel setup before replacing the probe or sensor again.

330980-70-05 / Investigate abnormal readings

04 Separate electrical and target causes

A fixed or out-of-range voltage

First establish supply polarity and voltage at the sensor. Then inspect probe/cable connection integrity and the actual target gap. Check the calibrated total length before adjusting monitor settings. A disconnected or incompatible transducer path can resemble a gap fault; do not correct the displayed result by changing scaling to hide the underlying cause.

A shifted sensitivity or limited travel

Check target material, target geometry, sensor supply and the probe/cable combination. Reduced linear range can occur when supply is more positive than -23.5 Vdc. A small target or close adjacent probe can also affect response. Compare against a controlled target test before assigning the symptom to the electronics.

Noise or high-frequency attenuation

Inspect shielding and terminations against the installation drawing, and check for fluid-contaminated coaxial joints. Review field-wire length when high-frequency response is poor. The typical system bandwidth is 0 to 10 kHz at +0/-3 dB; the response of the actual wiring route and monitor must also suit the intended measurement.

Suspected probe or cable damage

For an isolated component check using the applicable service procedure, probe DC resistance depends on lead length: 0.5 m is 4.0 +/-0.5 ohms; 1.0 m is 4.2 +/-0.5; 5.0 m is 5.3 +/-0.7; 7.0 m is 5.9 +/-0.9. Extension center-conductor resistance is 0.220 ohm/m and shield resistance is 0.066 ohm/m. Do not test resistance through energized electronics.

330980-70-05 / Complete the handover

05 Demonstrate the channel response

Restore the intended monitoring function

With the machine in the approved test condition, demonstrate the measurement change through the complete channel. For speed or phase reference, verify waveform detection through the receiving instrument. For displacement, verify direction and scaling as appropriate to the channel. Test the relevant channel fault indication and alarm path under the plant-approved procedure before protection is released.

Keep an intelligible service record

Retain full component identities, installed length combination, target/calibration basis, measured supply, static response and monitor results. Record any changed channel settings and temporary bypasses so they can be restored under authorization. The useful handover is a traceable measured outcome, not a generic statement that the sensor powers up.

Method and document boundary

Apter Power field-check guide based on Bently Nevada 3300 XL NSv Proximity Transducer System, Datasheet 147385 Rev. R. Follow the applicable 147357 NSv Proximitor User Guide and approved plant procedures for the detailed installation method. This guide organizes checks and does not assign a safety integrity level or a machine trip setting.

Related cable pages

The following 6.0 m NSv extension references support selection review for a suitable 1.0 m probe lead. Their complete protection and approval options must be checked; a shared length alone does not establish suitability. They are separate offerings, not components implicitly included with 330980-70-05.

Bently Nevada 330930-060-10-00

Bently Nevada 330930-060-04-00

Bently Nevada 330930-060-07-05