Bently Nevada 991-25-70-01-05

01 Scope and system boundary

Installed function

Bently Nevada 991-25-70-01-05 is a two-wire thrust transmitter with a 25-0-25 mil measurement range, a 7.0 m NSv transducer-system length and 35 mm DIN-rail mounting. The 25-0-25 mil selection measures displacement on both sides of the shaft reference. A correct probe gap leaves usable travel in both directions. The transmitter combines probe conditioning with a two-wire current output, while the receiving control system supplies the application alarm and protection logic.

Functional sequence

01	7.0 m NSv chain
02	Integrated conditioning
03	2-wire 4-20 mA
04	Receiver alarm logic

Before work starts

Check	Technical purpose
Establish the mechanical measurement window	Before adjusting the loop, establish the shaft reference and available axial travel. The selected span is 25-0-25 mils. Position the probe so neither movement direction reaches the end of its usable gap range before the required thrust travel is covered.
Assemble the 7 m NSv system	Confirm that probe lead and extension lengths add to 7.0 m. Connect the matching NSv components to the transmitter input. There is no separate Proximitor to add in series with this transmitter.

Isolation and handling

Verify the receiving system treats the sub-3.6 mA fault state separately from a valid thrust reading. Preserve isolation when adding diagnostic instruments to PROX OUT.

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02 Connections and readiness

Interface preparation

Interface	Function	Check
Probe input	One NSv probe with its matching extension.	This selected transmitter requires a total 7.0 m system length.
Two-wire loop	Loop power and proportional axial-position signal.	Measure +12 to +35 V DC at the transmitter terminals.
TEST input	Variable DC input for checking current-loop output.	A loop check does not prove mechanical gap or probe calibration.
PROX OUT / COM	Dynamic and gap information for diagnostics.	Non-isolated from the loop; use the 122115-01 adapter with grounded AC test equipment.

Engineering considerations

The typical ±1.5% full-scale loop accuracy is specified from the TEST input to the voltage across a 250-ohm loop load at the stated reference conditions. It is not a blanket accuracy claim for every target, installation or diagnostic instrument. PROX OUT has its own scale-factor and loading requirements.

Relevant setup data

Item	Value or condition
PROX OUT impedance	10 kilohm
PROX OUT calibration load	10 megohm
PROX OUT linear gap range	0.25-1.65 mm (10-65 mils)
PROX OUT scale factor	7.87 mV/µm (200 mV/mil), ±6.5% typical

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03 Installation and replacement

Work sequence

01	Establish the mechanical measurement window
02	Assemble the 7 m NSv system
03	Build the two-wire loop
04	Check zero and span
05	Maintain diagnostic isolation
06	Prove fault and recovery behavior

Execution details

Stage	Action and reason
Build the two-wire loop	Measure the supply at the transmitter rather than only at the power source. Its required terminal voltage is +12 to +35 V DC. Include cable resistance in the load calculation; the 1000-ohm maximum is associated with 35 V DC.
Check zero and span	Use the independent adjustments for loop calibration after the physical gap is correct. A variable DC source at the TEST input can check loop behavior without equating that test to a physical probe calibration. Use an appropriate reference load and instrument.
Maintain diagnostic isolation	PROX OUT has 10 kilohm output impedance and is calibrated for a 10 megohm load. Keep the diagnostic cable within the 3 m maximum. Battery-operated or isolated equipment avoids an unintended earth path; use the 122115-01 adapter for grounded AC-powered equipment.
Prove fault and recovery behavior	Exercise a controlled Not OK condition while the receiving protection is in its approved test state. Confirm the low-current fault response, restoration after the fault clears and the correct interpretation of positive and negative thrust positions. Restore the protection only after these separate checks pass.

Before energization

Use an NSv probe and cable combination with a total electrical length of 7.0 m. Adjust probe gap so both directions of the thrust range remain measurable. Supply +12 to +35 V DC at the transmitter terminals. Check total loop resistance against the actual available supply voltage.

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04 Commissioning and fault isolation

Functional acceptance

Test	Action	Expected result
Normal position	Apply known positions across the required travel.	Current follows both normal and counter-direction movement.
Loop loading	Check terminal supply and total loop resistance.	The supply/load combination remains within its specified limit.
Not OK response	Introduce an approved controlled probe fault.	Current falls below 3.6 mA and the receiver identifies the fault.
Recovery	Clear the test fault and restore the connection.	The signal returns and the receiver resumes the intended valid-state interpretation.

Interpret the symptom

Observation	Investigation	Decision boundary
Cannot reach full scale in one direction	Check initial probe gap and available normal/counter travel.	Correct the mechanical measurement window before changing span.
Current falls below 3.6 mA	Investigate the probe connection and Not OK condition.	Treat the low-current state as a fault, not a valid thrust position.
Diagnostic instrument changes the loop	Check grounding and test-adapter isolation.	Do not assume the coaxial diagnostic connector is isolated.
Loop test passes, machine reading wrong	Compare the TEST-input test with the actual probe path.	They exercise different portions of the measurement chain.

Controlled return to service

Keep the initial mechanical reference, probe and extension identities, total electrical length, zero/span settings, loop supply and receiver scaling. Note the diagnostic adapter used during testing. Verify alarm handling separately from the proportional reading because this transmitter does not provide every rack-monitor function.

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05 Technical checks and handover

Questions that affect the work

Why can incorrect probe gap prevent Bently Nevada 991-25-70-01-05 from reaching full scale?
A gap set too near either end of the usable probe range can exhaust the available travel in the normal or counter direction before the current loop reaches full scale.

How does Bently Nevada 991-25-70-01-05 signal a failed probe connection?
A Not OK condition drives the current below 3.6 mA within 100 microseconds; the signal returns within 0.1 s after the condition clears.

Can an earthed oscilloscope connect directly to Bently Nevada 991-25-70-01-05 PROX OUT?
Use the 122115-01 Test Adapter with grounded AC-powered instruments because PROX OUT is not isolated from the current loop.

What does the accuracy rating of Bently Nevada 991-25-70-01-05 actually cover?
The typical ±1.5% full-scale rating is measured from the TEST input to the voltage across a 250-ohm loop resistance.

Final checks

Check	Requirement
1	Use the zero and span adjustments without disturbing the mechanical probe setting.
2	Connect grounded AC-powered diagnostic instruments through the isolating test adapter.
3	Verify a Not OK fault is interpreted correctly by the receiving control system.
4	Test normal and counter-direction movement before enabling the machinery protection logic.

Related catalogue pages

Bently Nevada 991-25-50-01-05

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Technical basis

Bently Nevada 141618 Rev. R, pages 1-4