Bently Nevada 3500/77M 176449-07

01 Function and selected configuration

Product function

Bently Nevada 3500/77M 176449-07 turns chamber-pressure measurements and configured mechanical data into compressor protection variables and rod-load information.

Selected configuration

The 176449-07 monitor conditions up to four approved pressure signals for reciprocating-compressor protection. It compares the configured measured variables with user-set alarms and provides channel information for operation and maintenance.

Functional path

Pressure transducers	Cylinder I/O	Configured pressure monitor	Variables / alarms

Input paths	1-4 pressure channels
Transducer signal	Approved positive-voltage pressure
Input impedance	50 kilohms

The pressure path uses each transducer calibration to relate its positive voltage to cylinder pressure. The five chamber variables are discharge, suction, maximum and minimum pressure plus compression ratio. Rod compression, rod tension and degree of rod reversal additionally require the configured mechanical parameters.

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02 Technical operating envelope

Input paths	1-4 pressure channels
Transducer signal	Approved positive-voltage pressure
Input impedance	50 kilohms
Termination	Matching internal/external I/O
Frequency response	0-5.5 kHz
Pressure accuracy	+/-0.5% full range at+25 C

Sensor supply	+23.0 VDC +/-0.8 V
Per-channel current limit	24.5 mA
Power consumption	7.8 W with sensor supplies fully loaded
Buffered offset	Inverted;-2.265 VDC
Measured variables	8 per channel

Calculated rod loads require configured mechanical inputs. Pressure accuracy and supply ratings describe the specified monitor arrangement and are not standalone I/O processor ratings.

Signal interpretation

The pressure path uses each transducer calibration to relate its positive voltage to cylinder pressure. The five chamber variables are discharge, suction, maximum and minimum pressure plus compression ratio. Rod compression, rod tension and degree of rod reversal additionally require the configured mechanical parameters.

Interface boundary

The system provides Alert setpoints for each active measured variable and Danger setpoints for two selected variables per channel. Diagnostic buffered outputs are inverted and offset by -2.265 VDC. Channel wiring, transducer calibration and mechanical configuration must agree before relying on the computed rod-load values.

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03 System integration and applications

Cylinder pressure supervision

Track suction, discharge, minimum and maximum chamber pressures.

Compression assessment

Use calibrated chamber measurements to establish compression ratio.

Rod-load evaluation

Combine pressure channels with the correct mechanical configuration.

Protection-path maintenance

Restore field mapping and prove the assigned pressure alarms after replacement.

System and supply context

3500/77M 176449-07 requires the matching monitor/I/O combination and approved pressure transducers. External termination hardware and sensors are separate unless itemized.

Application boundary

Pressure and rod-load functions apply to the configured reciprocating-compressor system. Correct sensor scales and mechanical parameters are part of the measurement boundary.

Which chamber variables does 3500/77M 176449-07 calculate?

Discharge, suction, maximum and minimum pressure, plus compression ratio, are the five single-chamber variables.

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04 Engineering selection decisions

How many pressure channels are supported by 3500/77M 176449-07?

The 3500/77M monitor supports one to four approved positive-voltage pressure-transducer inputs.

How does 3500/77M 176449-07 obtain rod-load information?

Peak rod compression, peak rod tension and degree of rod reversal combine channel measurements with configured mechanical parameters.

What pressure accuracy is specified for 3500/77M 176449-07?

Accuracy is within+/-0.5% of transducer full range at+25 degrees C and within+/-1.0% over-30 to+65 degrees C, based on the stated 0.5-10 V span.

What sensor power is provided in the pressure system using 3500/77M 176449-07?

The transducer supply is+23.0 VDC +/-0.8 V with 24.5 mA current limiting per channel. Match the approved sensor and corresponding I/O arrangement.

Restore the intended component	Use 143737-01 only for its external-termination I/O role and 176449-07 for the monitor role. Reconnect the correct field path without exchanging cylinder assignments.
Interpret buffered outputs correctly	Account for inversion and the -2.265 VDC offset when comparing diagnostic voltages. A direct raw-sensor comparison without that transformation is misleading.

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05 Configuration boundary and references

Lifecycle and support

The current manufacturing and factory-support phase of 3500/77M 176449-07 is not confirmed. Apter Power availability is assessed separately from manufacturer lifecycle status.

Replacement assessment

Match the monitor versus external-I/O role, full spare number, transducer calibration and chamber assignments. A similar 3500 front label does not establish the same field connection.

Document roles

Use the original manufacturer excerpt for its preserved technical tables and drawings. This product brief explains selection and system context. The separate installation guide covers preparation, connection, tests and handover; it does not replace manufacturer instructions.

Technical basis

Bently Nevada 3500/77M Recip Cylinder Pressure Monitor, 147485 Rev. Y.

Related product navigation

- Bently Nevada 3500/62 163179-03
- Bently Nevada 3500/05-01-01-00-00-00

These are related references, not confirmed substitutes or an automatically approved assembly.

Product enquiries