

RCK-1 Reciprocating Compressor Kit

Datasheet

Bently Nevada Machinery Condition Monitoring



Description

The RCK-1 is a single-cylinder, single-stage, dual-action compressor that simulates the mechanical function of an industrial reciprocating compressor. The RCK-1 incorporates transducers in accordance with API 618 Reciprocating Compressor Best Practices, which provides for measurement of Crank Frame Velocity, Crosshead Acceleration, Rod Position, Crank and Head End Cylinder Pressure, Gas and Valve temperature for both Suction and Discharge, along with Single-Event and Multi-Event Timing.

The RCK-1 is a research and development tool which can simulate common reciprocating compressor faults such as valve and piston ring leaks, as well as mechanical drive train wear in the form of connecting rod bearing clearance. The kit equips each head with a pair of Bypass Blocks (patent pending) that allow you to induce small valve leaks at any of the suction or discharge valves. You can then detect the leak directly with analysis of the Pressure vs. Volume characteristics, or indirectly with analysis of the Gas and Valve temperature outputs.

When used with the prescribed Bently Nevada Machinery Management hardware and software, the kit is a valuable training tool for demonstrating the operation of our reciprocating compressor machinery management solution.

Specifications

Physical

Electrical Power Requirements	95-125 Vac, 50/60 Hz, 16A maximum
Pressure Range	0 to 40 psig
Motor Running Speed Range	0 to 150 RPM \pm 20 RPM
Transducer Data	Please refer to the datasheets listed below for more information concerning specific transducer information.
147385	Rod Position and Keyphasor Proximity Probe Datasheet
141636	Velocity Transducer Datasheet
141638	Acceleration Transducer
166815	Cylinder Pressure Transducers
RTD	
Construction	3-wire, 100 Ω , $\alpha=0.00385 \Omega/\Omega/^{\circ}\text{C}$
Maximum Temperature	260 $^{\circ}\text{C}$ (500 $^{\circ}\text{F}$)
Dimensions	
Case Height	559 mm (22 in)
Case Width	762 mm (30.0 in)
Case Depth	762 mm (30.0 in)
Unit Height	381 mm (15.0 in)
Unit Width	610 mm (24.0 in)
Unit Depth	610 mm (24.0 in)
Case Weight	204 kg (45.0 lbm)
Unit Weight	498 kg (110 lbm)
Total Package Weight	70.3 kg (155 lbm)

Environmental

Operational Temperature Range	+10 $^{\circ}\text{C}$ to +40 $^{\circ}\text{C}$ (+50 $^{\circ}\text{F}$ to +105 $^{\circ}\text{F}$)
Storage Temperature Range	-18 $^{\circ}\text{C}$ to +65 $^{\circ}\text{C}$ (0 $^{\circ}\text{F}$ to +150 $^{\circ}\text{F}$)
Humidity	95% non-condensing humidity
Exposure	Shipping container designed to meet IP54 for dust and water exposure

Compliance and Certifications

EMC

EN 61000-6-2

EN 61000-6-4

EN 61000-3-2

EN 61000-3-4

EMC Directive 2014/30/EU

Electrical Safety

EN 61010-1

EU LV Directive 2014/35/EU

Ordering Information



For the detailed listing of country and product specific approvals, refer to the *Approvals Quick Reference Guide* (108M1756) available from www.Bently.com.

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179880-AA-BB

A: Probe Selection

0 1	3300 XL NSv sensor, 1m (3.3 ft)
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B: Proximity Selection

0 1	3300 XL NSv sensor with Mod 161521-01
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Accessories

181908	220V Step-Down Transformer.
181911-01	Configuration Disc (System 1 software, 3500). The Configuration Disc is only compatible with 3500 Configuration software version 3.91 and later. The Configuration Disc is only compatible with System 1 software version 6.12 and later.

3500 Mini-Rack Monitoring System with the Following Module Configuration

3500/15	Power Supply. Top slot only. Please refer to Power Supply datasheet 141530 for ordering options.
SLOT 1	3500/22-01-01-01-01 TDI. 3500/22-01-01-01 for CSA/NRTL/C approval. 3500/22-01-01-02 for CSA/ATEX approval.
SLOT 2	3500/77M-04-00 Recip Cylinder Pressure Monitor. 3500/77M-04-01 if CSA/NRTL/C Approval is desired.
SLOT 3	3500/70M-02-00 Recip Impulse/Velocity Monitor. 3500/70M-02-01 if CSA/NRTL/C Approval is desired.

SLOT 4	3500/65-02-00 16-Channel Temperature Monitor. 3500/65-02-01 if FM(C/US) Approval is desired.
SLOT 5	3500/72M-02-00 Rod Position Monitor. 3500/72M-02-01 if CSA/NRTL/C Approval is desired.
SLOT 6	Empty Slot.
SLOT 7 (Upper)	3500/25-01-02-00 Keyphasor Module. 3500/25-01-02-01 if CSA/NRTL/C Approval is desired.
SLOT 8	Empty Slot.
3500/01-01	Rack Configuration Software and Configuration Manual.

Cables

129525-A0005-02	3500 Transducer Signal to External Termination Block Cable. Quantity of 3.
134544-A0005-02	3500 Transducer Signal to External Termination Block Cable. Quantity of 1.
129530-A0005-02	3500 Transducer Signal to External Termination Block Cable. Quantity of 1.

Software

Please contact your Bently Nevada salesperson for ordering information concerning the most recent System 1 Recip Solutions Software.

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