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TK84 TEMPORARY TRANSDUCER INTERFACE



USER GUIDE

BENTLY NEVADA

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BENTLY NEVADA

...WORLDWIDE SERVICE...

CORPORATE OFFICE

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Manual No. 82594-01 • Printed AUG 1988
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BENTLY NEVADA®

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INTRODUCTION

PURPOSE

The TK84 Optical Package consists of the TK84 Temporary Transducer Interface, optical Keyphasor sensor, optical Keyphasor mounting kit, cables, reflective tape, carrying case, and manual as shown in Figure 1. The TK84 Temporary Transducer Interface is a two-channel, portable unit. Channel A is a signal conditioner for an optical Keyphasor transducer. Channel B is a power source for a proximity probe transducer. Use the TK84 with diagnostic equipment as an optical Keyphasor trigger input or to temporarily power proximity probe transducers during machine assembly, probe installation, or machine balancing.

FEATURES

- Portable (Low weight, small size)
- Low cost
- Battery powered
- Optical Keyphasor and Proximitor power supply in one unit
- Magnetic or clamp mounting for temporary optical pickup

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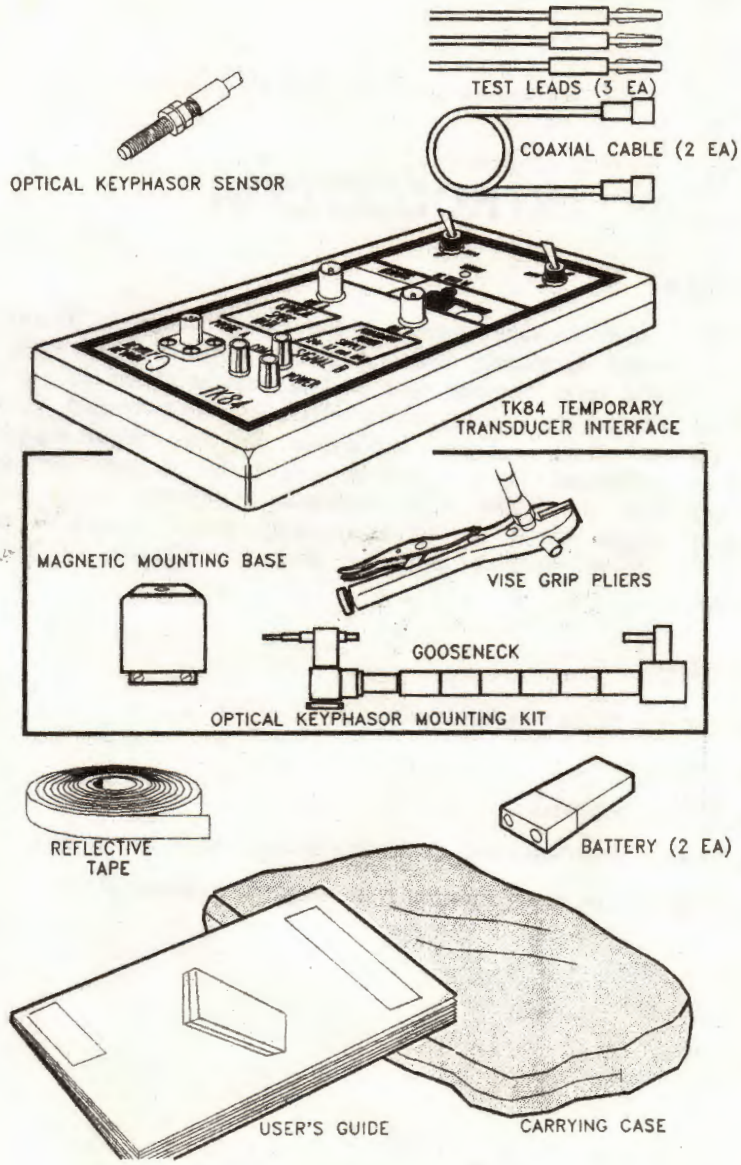


Figure 1. TK84 Optical Package.

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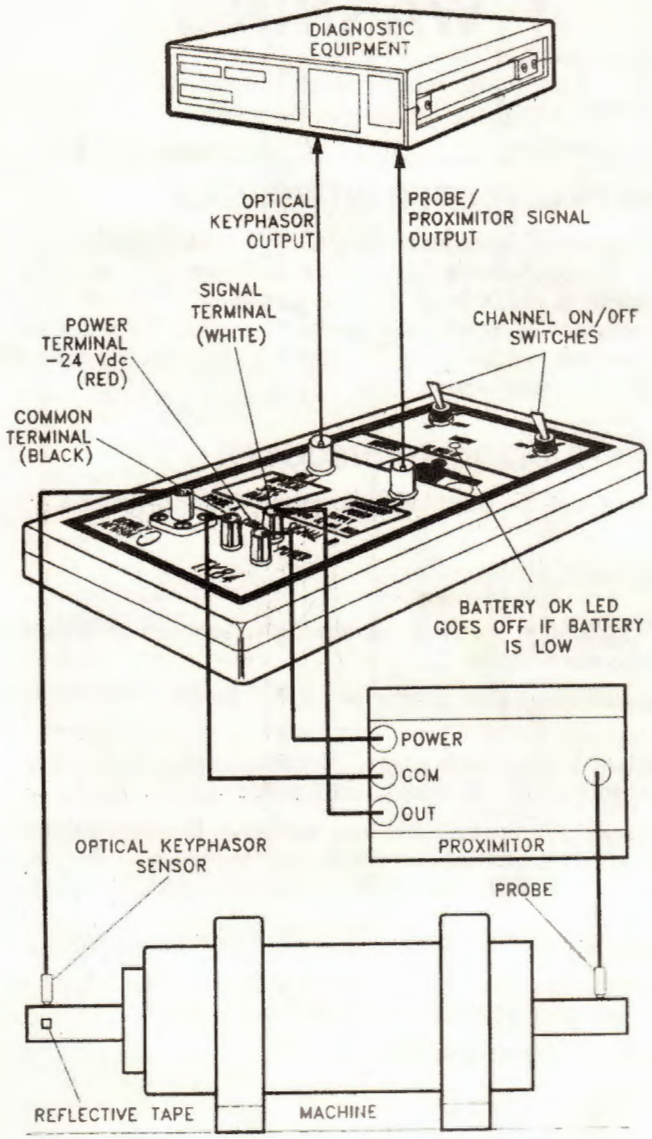


Figure 2. TK84 Controls and Connections.

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OPERATION

WARNING

Contact with rotating machinery causes severe injury. Be careful; keep safe distance.

POWERING TRANSDUCER INTERFACES

The TK84 Temporary Transducer Interface powers transducers such as Proximitors or Bently Nevada Corporation accelerometer interface units. The output power is -24 Vdc at 12 mA maximum. This is adequate to power one Proximitor or accelerometer interface unit. Figure 2 shows the necessary connections. Test leads and alligator clips are supplied with the package for making these connections.

OPTICAL KEYPHASOR TRANSDUCER

Refer to Figure 3 and the steps below to install the mounting kit.

1. Clean shaft surface.
2. Place reflective tape on shaft. A one-inch square of reflective tape is adequate for most shafts.
3. Install optical Keyphasor sensor in pickup holder. Secure with lock nuts.
4. Install pickup holder, with optical Keyphasor sensor attached, in the end of the gooseneck. Tighten pickup holder locking knob.
5. Connect gooseneck to magnetic base using the threaded adapter. (An alternate mounting method is with the vise grip pliers. Do not use the threaded adapter when connecting gooseneck to vise grip pliers.)
6. Mount the magnetic base (or vise grip pliers) on the machine.
7. Loosen lever and adjust gooseneck so pickup is about 3 inches from shaft. Do not bend gooseneck more than 90 degrees.
8. Tighten lever to secure gooseneck.

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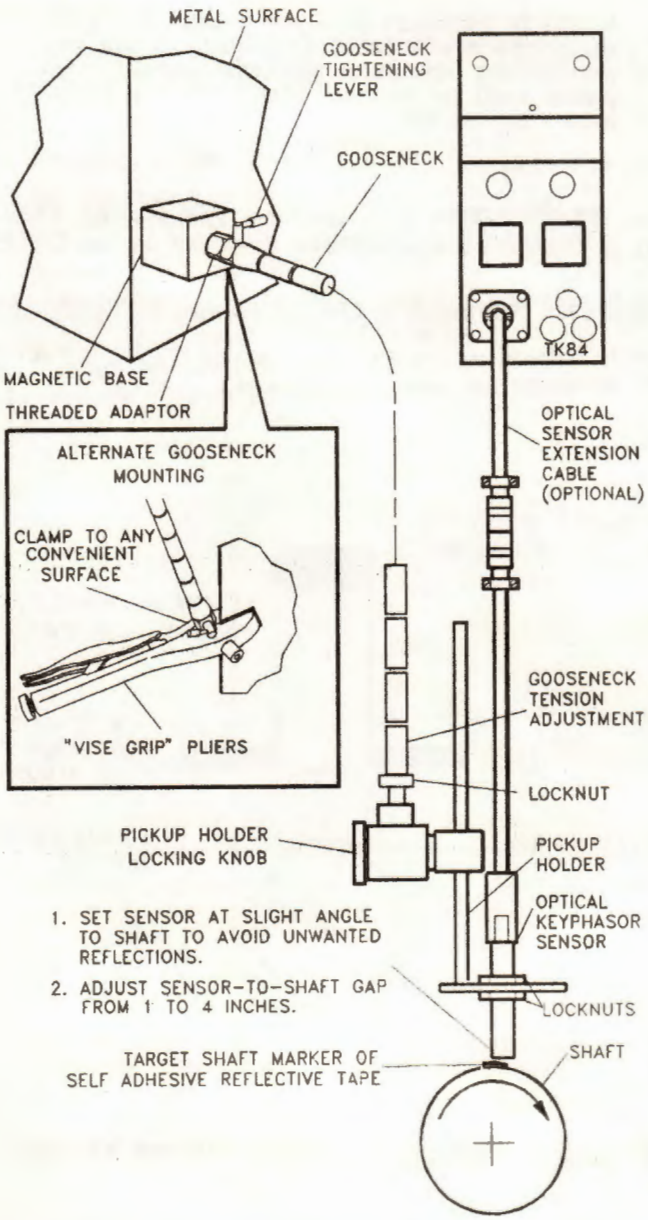


Figure 3. Temporary Optical Keyphasor Pickup.

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NOTE

It may be necessary to adjust gooseneck tension using tension adjustment. Loosen lock nut and turn tension adjustment clockwise (viewed from pickup end) to tighten. Secure tension adjustment with lock nut.

9. Connect optical sensor cable to TK84 PROBE A connector.
10. Connect TK84 OUT A to a voltmeter (To use the TK83 Balance Master 2, connect to the SIGNAL connector in the DIRECT/GAP mode).
11. Set TK84 CHAN A switch to ON. Make sure BATTERY OK light is lit.

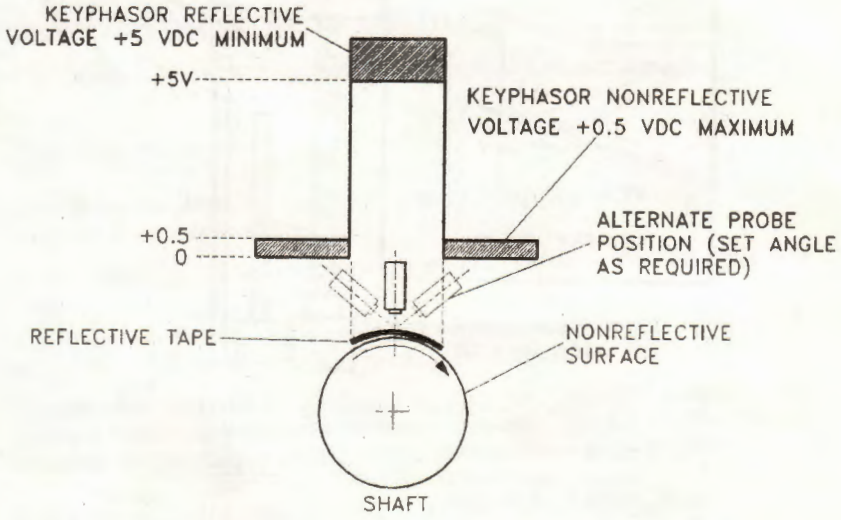


Figure 4. Optical Keyphasor Output Voltage.

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12. Rotate shaft (or move sensor) so that sensor is pointed toward non-reflective surface.

13. Adjust distance from shaft (1 to 4 inches) and, if required, angle to shaft (up to 45°) until the gap voltage is +0.5Vdc or less. See Figure 4.

NOTE

Set the sensor at an angle to the shaft to avoid unwanted reflections from shiny shaft surfaces. Reflections from the reflective tape beaded surface are still received.

14. Rotate shaft or move sensor slightly until it points toward the reflective tape. The voltage reading should be at least +5Vdc. If not, move sensor closer to tape until you read +5 Vdc or greater. Then, repeat steps 12 through 14 to obtain the minimum and maximum voltages in Figure 4.

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IN CASE OF DIFFICULTY

TEST AND VERIFICATION

Perform the following checks to be sure the TK84 is functioning properly.

1. Visually inspect for physical damage to case, connectors, and switches.
2. Set CHAN A switch to ON and CHAN B switch to OFF. BATTERY OK WHEN LIT indicator should come on; If not, replace battery.
3. Set CHAN B switch to ON and CHAN A switch to OFF. BATTERY OK WHEN LIT indicator should come on; If not, replace battery.
4. Connect Proximitor to POWER and COM terminals to provide load. (You can use a 3K ± 500 ohm resistor if a Proximitor is not available.)
5. Set CHAN B switch to ON.
6. Connect DC voltmeter between POWER and COM terminals and measure the voltage. It should be from -22 to -26 Vdc.
7. Set CHAN B switch to OFF.
8. Connect optical probe cable to PROBE A connector.
9. Connect TK84 OUT A to voltmeter (You may use a TK83 Balance Master 2. Connect to TK83 SIGNAL connector in the DIRECT/GAP mode).
10. Set TK84 CHAN A switch to ON.
11. Place a reflective target (white paper or other reflective object) in front of optical sensor. The voltmeter (or TK83) reading should be greater than 5 Vdc when you put the target in front of the probe, and drop to less than 0.5 Vdc when you remove it.

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PROBLEMS

Problem	Cause / Solution
BATTERY OK WHEN LIT off.	Battery low. / Replace battery.
No output from CHAN B OUT with Proximitor transducer connected.	Loose or wrong connections. / Check connections.
	Check power output voltage to Proximitor at TK84 POWER terminal. Output should be -22 to -26 Vdc.
Erratic output from optical Keyphasor transducer.	Probe receiving unwanted reflections from shiny spots on shaft. / Readjust gap and angle of probe to shaft (See Optical Keyphasor Transducer paragraph in Operation section).
	Reflective tape is dirty. / Replace reflective tape.
Constant low output from optical Keyphasor transducer.	Pickup not receiving reflection from shaft. / Readjust probe-to-shaft gap and angle as required.
	Reflective tape target wrong size or coated with oil. / Replace tape. Pickup defective. / See Test and Verification paragraph.
Constant high voltage output from optical Keyphasor transducer.	Pickup receiving steady reflection from shiny shaft. / Adjust probe-to-shaft gap and angle as required.

For technical assistance or service, call

Bently Nevada Corporation.

800-227-5514

In Nevada call (702) 782-3611

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ORDERING INFORMATION

Component	Part No.
TK84 Optical Package	82608-01
TK84 Temporary Transducer I/F	82447-01
Optical Keyphasor sensor	10798-03
Optical Keyphasor mounting kit	20211-05
Optical Keyphasor sensor holder	20197-01
Gooseneck	04490700
Vise grip pliers	20210-01
Magnetic mounting base	46000-01
Standoff adapter	49273-01
Reflective tape (15 feet)	81769-01
Battery, 9 Vdc alkaline (NEDA 1604A)	01810700
Carrying case	04160101
Manual	82594-01
Male - Male coaxial cable (6 feet)	02211505
Black banana lead (48 inches)	01600480
Red banana lead (48 inches)	01600482
White banana lead (48 inches)	01600489
Alligator clip	02259524
Red alligator clip boot	02259528
Black alligator clip boot	02259526
Optional - Reflective tape (150 feet)	02290050
Optical Sensor extension cable	20545-xx *

* xx = Length in feet, 99 feet maximum.

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SPECIFICATIONS

POWER REQUIREMENTS

9 Vdc transistor battery, alkaline, 5.4 Vdc to 10.0 Vdc. (NEDA 1064A or equivalent)

BATTERY LIFE

The values given below show minimum battery life for a fresh battery with sensors connected. The table shows the range of battery life for the range of Proximitor current drain.

Prox Current	Channel A On	Channel B On	Both On
5 mA (min)	17 hours	20 hours	9 hours
12 mA (max)	17 hours	8 hours	5 hours

LOW-BATTERY CONTROL

The low-battery control circuit disables the optical and Proximitor power supply circuits when the battery voltage drops between +4.8 Vdc and +5.4 Vdc.

OPERATING TEMPERATURE RANGE

0° C to +50° C (32° to 122° F)

STORAGE TEMPERATURE RANGE

-20° C to +70° C (68° to 158 °F)

Note: A battery stored above +40° C has a reduced shelf life.

RELATIVE HUMIDITY

5% to 90%, non-condensing, operating or stored.

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OPTICAL (Channel A)

REFLECTIVE TAPE SIZE

One inch square, typical

OUTPUT VOLTAGE

From reflective tape (light) = +5 Vdc minimum
From shaft (dark) = +0.5 Vdc maximum

PROXIMITOR POWER (Channel B)

OUTPUT VOLTAGE

-22.0 Vdc to -26.0 Vdc, with rated load, measured between the POWER and COM terminal.

RATED LOAD OUTPUT CURRENT

5.0 mA to 12.0 mA

OUTPUT NOISE VOLTAGE

10 mV peak to peak maximum (on oscilloscope) or 3 mVac maximum (on an average reading voltmeter) measured between the POWER and COM terminals.

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