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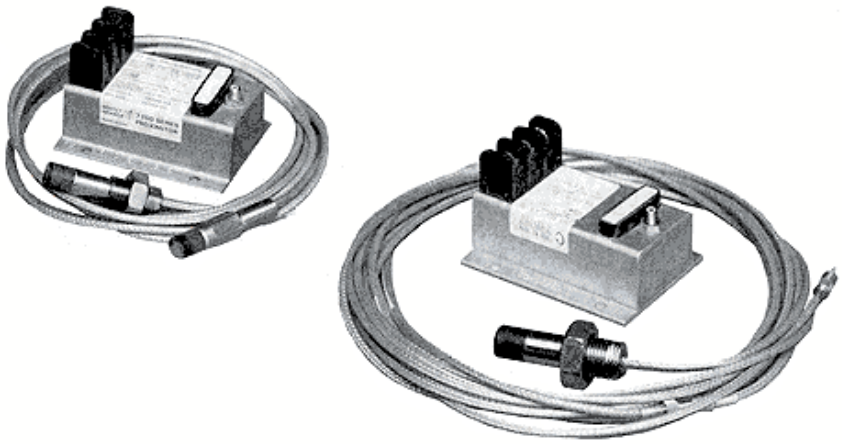
7200 Proximity Transducer Systems

11 mm and 14 mm

Longer range noncontacting transducers for vibration and position measurements

The 7200 11 mm and 14 mm Proximity Transducer Systems are noncontacting, gap-to-voltage transducer systems that measure static as well as dynamic distances between the probe tip and the observed target. The general application is any requirement for an accurate, reliable, noncontacting displacement measurement. However, the most common use is for shaft position and vibration measurements on rotating and reciprocating machinery. They are designed to measure radial vibration and axial thrust motion on large machine rotors. The systems offer 160 mils (4 mm) of linear measuring range.

A system consists of a probe with integral coaxial cable, an extension cable, and Proximitor®. All 7200 proximity transducer systems are compatible with 3300 Monitoring Systems.



7200 Proximity Transducer Systems 11 mm (top) 14 mm (bottom)

Applications

The 7200, 11 and 14 mm Systems have a frequency response of 0 Hz (dc) to 10 kHz and can be used to make the following types of measurements:

- Radial vibration for indicating bearing condition and such machine malfunctions as rotor imbalance and misalignment.
- Axial thrust position for determining thrust bearing wear or potential bearing failure.
- Shaft average radial position, for determining attitude angle, an indicator of rotor stability.
- Vibration amplitude and phase angle for plotting diagnostic information in Polar and Bode formats.
- Eccentricity to measure the amount of rotor bow.
- Keyphasor® for speed and phase measurements.

How a proximity transducer system works

Operating on the eddy current principle, the proximity probe senses the distance between the probe tip and the observed surface. The Proximitor® generates a radio frequency signal, which is radiated through the probe tip into the observed surface. Eddy currents are generated in the surface, and the loss of strength in the return signal is detected by the Proximitor®, which conditions the signal for linear display on a monitor.

Proximity probes

Five configurations of the 11 mm and three of the 14 mm probe are available to accommodate both English and metric thread requirements (See Tables 1 and 2). The 11 mm probes are constructed of fiberglass. The 14 mm probes are constructed of a high performance plastic capable of withstanding unusually harsh, wet and/or chemical environments.

Both transducers are suitable for use in a confined space and offer a scale factor of 100 mV/mil (4 V/mm).

Extension cables

The combination of a probe with an integral lead and an extension cable is designed to achieve a system length of either five or nine metres from probe tip to Proximitor®. Probes are available with integral leads of various lengths. Leads under five metres require an extension cable.

All probes with five or nine metre leads connect directly to the Proximitor, eliminating the need for an extension cable.

The 11 mm systems use the 24710 Extension Cable. Four versions are available with or without armor.

The 14 mm uses the 81305 Extension Cable and is available in two different lengths. The 81305 Extension Cable is compatible only with the 81725, 14 mm Proximitor® and may be ordered with or without armor.

For probes without integral leads of five or nine metres, extension cables are required when making up a total system length of five or nine metres. It is important that extension cables are retained in the system to maintain critical system length.

Proximitors

The 11 mm uses the 19049 Proximitor, and the 14 mm uses the 81725 Proximitor®. Both a five and nine metre Proximitor® are available for both. A three-conductor, shielded cable is available to provide the signal output and power source input between Proximitors and Bently Nevada monitors. Proximitors can be placed up to 1,000 feet (305 metres) from standard Bently Nevada monitors for signal connections.

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Specifications

Specifications were determined with a –24 Vdc power supply, 10 kΩ load, and an AISI 4140 steel target at +72°F (+22°C).

INPUT

Power: –18 Vdc to –24 Vdc at 13 mA maximum.

Leadwire Length: 1,000 feet (305 metres) maximum between Proximitor® and 3300 monitor. Consult manual for frequency roll-off at longer lengths.

OUTPUTS

Calibrated Range:

11 mm: 160 mils (4.1 mm). Begins at approximately 40 mils (1.0 mm) from probe face.

14 mm: 160 mils (4.1 mm). Begins at approximately 20 mils (0.5 mm) from probe face.

Scale Factor: 100 mV/mil (3.94 V/mm), ±10% (measured in increments of 20 mils over the calibrated range) if calibrated as a system. Within ±16% including interchangeability errors.

Linearity: Within 4.5 mils (0.1 mm) of a 100 mV/mil straight line if calibrated as a system. Within 6.5 mils (0.16 mm) of a 100 mV/mil straight line including interchangeability errors.

Frequency Response: 0 to 10 kHz (0 to 600,000 cpm); –5% at 10 kHz (600,000 cpm).

Temperature Sensitivity:

11 mm: Typically –5% of full scale change at +150°F (+65°C) at 120 mils (3.05 mm) gap.

14 mm: Typically –5% of full scale change at +150°F (+65°C) at 100 mils (2.54 mm) gap.

Minimum Target Diameter:

11 mm: 1.3 inches (33 mm)

14 mm: 1.7 inches (42 mm)

ENVIRONMENTAL LIMITS

Operating Temperature:

Proximitor®: –60°F to +212°F (–51°C to +100°C).

Probe and Extension Cable: –30°F to 350°F (–34°C to +177°C).

Relative Humidity: To 95%, noncondensing.

System Weight: 1.3 lbs. (.59 kg).

Note: Contact your nearest Bently Nevada sales representative regarding transducer operation in a radiation environment.

Ordering Information

11 mm Standard Mount Probe

A B C D

□□□□□ - □□ - □□ - □□ - □□

Option Descriptions

□□□□□ **Probe Part Number Option**

Select from Table 1.

A □□ Unthreaded Length Option

Order in increments of 0.5 inches [0|5] for English thread, 10 mm [0|1] for metric threads.

English thread configurations:

Maximum unthreaded length:

8.0 inches [8|0]

Minimum unthreaded length:

0.0 inches [0|0]

Example: [0|5] = 0.5 inches

Metric thread configuration:

Maximum unthreaded length:

210 mm [2|1]

Minimum unthreaded length:

0.0 mm [0|0]

Example: [0|6] = 60 mm

B □□ Case Length Option

Order in increments of 0.5 inches [0|5] for English thread, 10 mm [0|1] for metric threads.

English thread configurations:

Maximum case length:

9.5 inches [9|5]

Minimum case length:

1.0 inches [1|0]

Example: [2|5] = 2.5 inches

Metric thread configurations:

Maximum case length:

240 mm [2|4]

Minimum case length:

30 mm [0|3]

Example: [0|5] = 50 mm

C □□ Total Cable Length Option

05 0.5 metres ±0.15 metres (20 inches ±6 inches).

10 1.0 metres ±0.15 metres (39 inches ±6 inches).

50 5.0 metres ±0.5 metres (197 inches ±20 inches).

90 9.0 metres ±0.9 metres (354 inches ±35 inches).

D □□ Connector Option

00 Without connector.

02 With miniature male coaxial connector.

11 mm Reverse Mount Probe, Without Armor

A B

29776 - □□ - □□

Option Descriptions

A □□ Total Length Option

05 0.5 metres ±0.15 metres (20 inches ±6 inches).

10 1.0 metres ±0.15 metres (39 inches ±6 inches).

50 5.0 metres ±0.5 metres (197 inches ±20 inches)

90 9.0 metres ±0.9 metres (354 inches ±35 inches).

B □□ Connector Option

00 Without connector.

02 With miniature male coaxial connector.

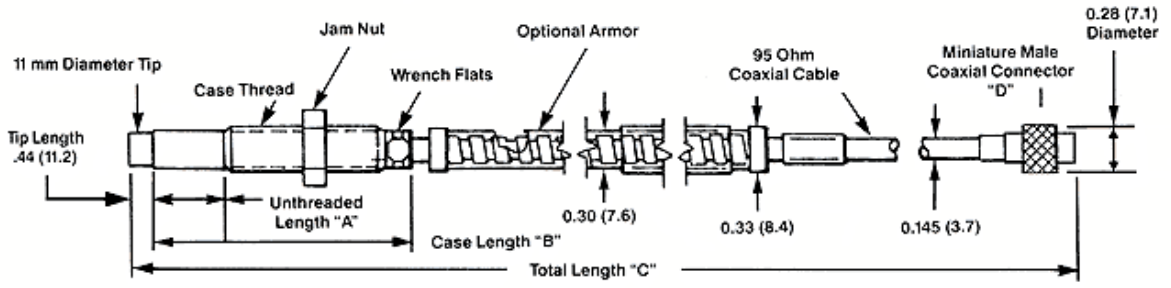
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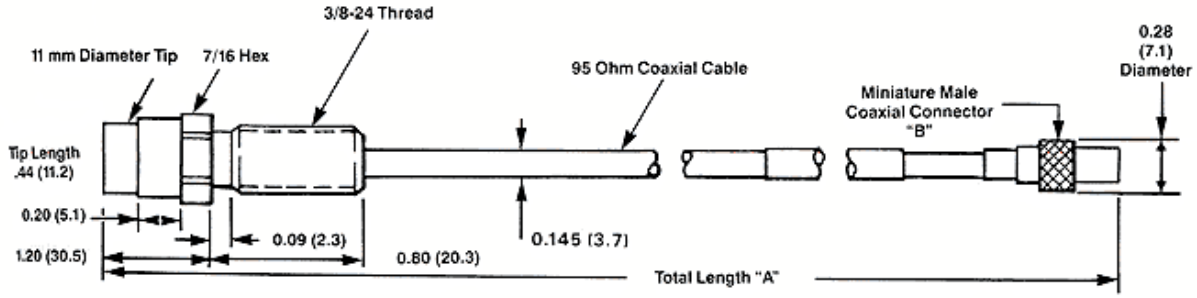
11 mm and 14 mm

11mm Probe Configurations, Figure 1

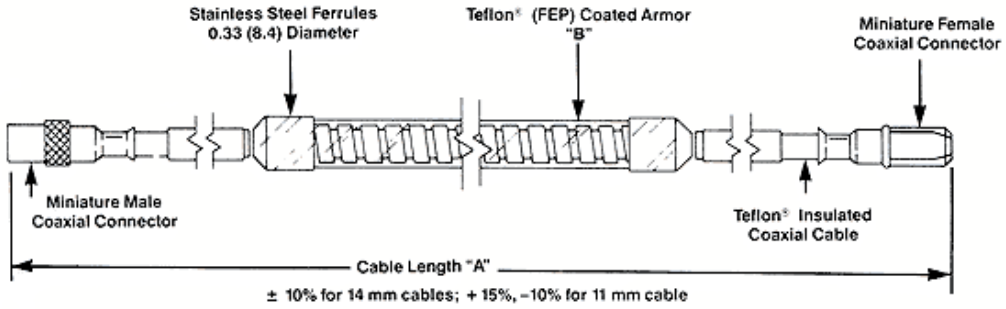
Model 24798, 11 mm Standard Mount.



Model 29776, 11 mm Reverse Mount.



Dimensions, 11 mm and 14 mm Extension Cables



NOTE: Letters inside quotation marks refer to probe ordering options.

Dimensions in parentheses are in millimetres.

TABLE 1
11 mm Probe Part Number Option Description

PART NUMBER □□□□□	CASE				CABLE ARMOR
	MOUNTING	THREADS	JAM NUT	WRENCH FLATS	
19048-	Standard	1/2-20	3/4 inch	7/16 inch	No
24798-	Standard	1/2-20	3/4 inch	7/16 inch	Yes
26179-	Standard	M14-1.5	22 mm	12 mm	No
26180-	Standard	M14-1.5	22 mm	12 mm	Yes

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7200 Proximity Transducer Systems

11 mm and 14 mm

Proximitor®, 11 mm

19049 - □□

03 For combined probe and extension cable electrical length of 5 metres (16.4 feet).

04 For combined probe and extension cable electrical length of 9 metres (29.6 feet).

Extension Cable, 11 mm

A B
24710 - □□□ - □□

Option Descriptions

A □□□ Cable Length Option ①

040 4.00 metres (158 inches). ②

045 4.50 metres (177 inches). ②

080 8.00 metres (315 inches).

085 8.50 metres (335 inches).

B □□ Armor Option

00 Without armor.

01 With armor.

14 mm Standard Mount Probe

A B C D
□□□□ - □□ - □□ - □□ - □□

Option Descriptions

□□□□ Probe Part Number Option

Select from Table 2.

A □□ Unthreaded Length Option

Order in increments of 0.5 inches [0|5] for English thread, 10 mm [0|1] for metric threads.

English thread configurations:

Maximum unthreaded length:

8.7 inches [8|7]

Minimum unthreaded length:

0.0 inches [0|0]

Example: [0|5] = 0.5 inches

Metric thread configuration:

Maximum unthreaded length:

210 mm [2|1]

Minimum unthreaded length:

0.0 mm [0|0]

Example: [0|6] = 60 mm

B □□ Case Length Option

Order in increments of 0.5 inches [0|5] for English thread, 10 mm [0|1] for metric threads.

English thread configurations:

Maximum case length:

9.5 inches [9|5]

Minimum case length:

1.0 inches [1|0]

Example: [2|5] = 2.5 inches

Metric thread configurations:

Maximum case length:

240 mm [2|4]

Minimum case length:

30 mm [0|3]

Example: [0|5] = 50 mm

C □□ Total Cable Length Option

10 1.0 metres +.2 metres, –0 metres (39.4 inches ±7.9 inches, –0 inches).

50 5.0 metres ±0.5 metres (197 inches ±20 inches).

90 9.0 metres ±0.9 metres (354 inches ±35 inches).

D □□ Connector Option

00 Without connector.

02 With miniature male coaxial connector.

Proximitor®, 14 mm

81725 - □□

01 For combined probe and extension cable electrical length of 5 metres (16.4 feet).

02 For combined probe and extension cable electrical length of 9 metres (29.6 feet).

Extension Cable, 14 mm

A B
81305 - □□□ - □□

Option Descriptions

A □□□ Cable Length Option

040 4.00 metres (158 inches), ③ ± 10%

080 8.00 metres (316 inches), ± 10%

B □□ Armor Option

00 Without armor

01 With stainless steel armor, Teflon® coated

NOTES:

① *Extension cable physical length equals the electrical length, +15%, –10%.*

② *For use with the 19049-03 five-metre Proximitor® only.*

③ *This Extension Cable is for use only with the 81725 five-metre Proximitor®.*

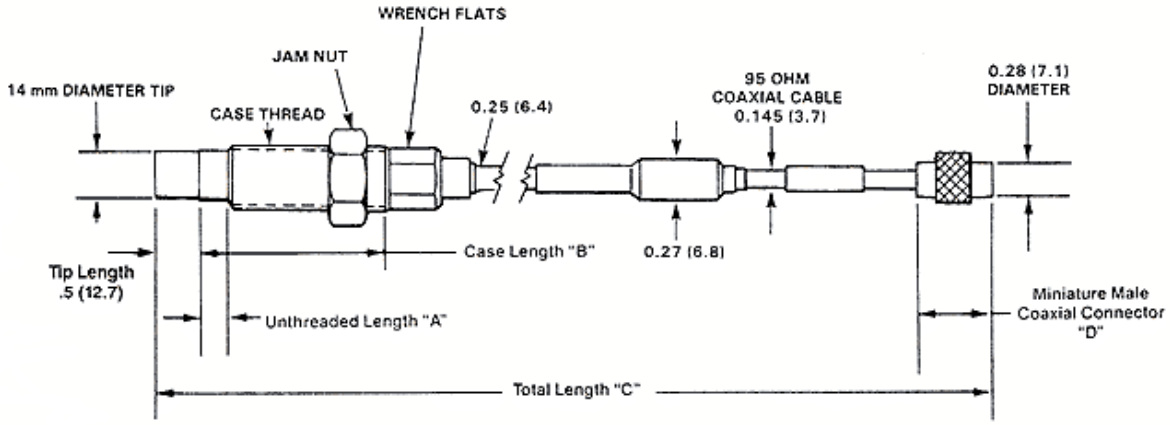
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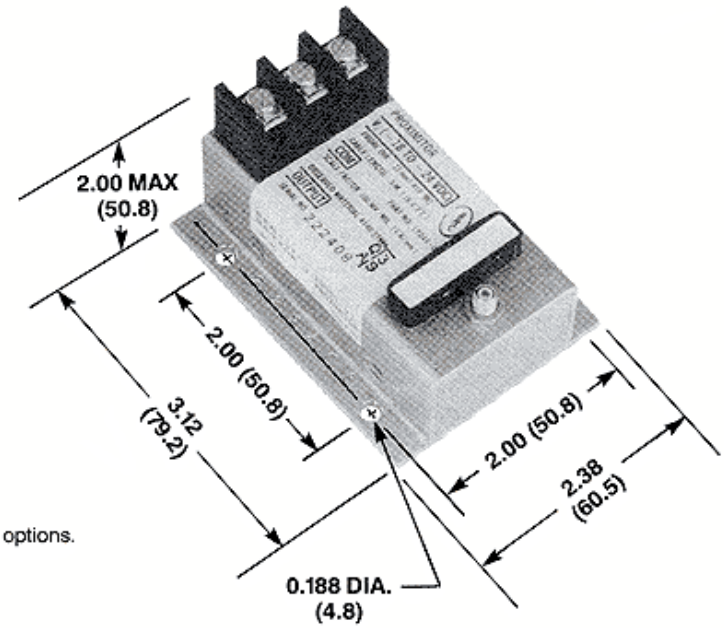
11 mm and 14 mm

14 mm Probe Configuration, Figure 2

Standard Mount, See Table 2.



Dimensions, 11 and 14 mm Proximitors



NOTES: 1. Dimensions in parentheses are in millimetres.
2. 14 mm not available in reverse mount configuration.
3. Bend Radius: 1.00 (25.4) minimum for 95 ohm cable.
1.50 (38.1) minimum for Armor cable.
4. Letters inside quotation marks refer to probe ordering options.

TABLE 2
14 mm Probe Part Number Option Description

PART NUMBER □□□□□	CASE				CABLE ARMOR
	MOUNTING	THREADS	JAM NUT	WRENCH FLATS	
81723-	Standard	5/8-18	15/16 inch	9/16 inch	No
81724-	Standard	M16-1.5	24 mm	12 mm	No
83936-	Standard	5/8-18	5/16 inch	9/16 inch	Yes

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