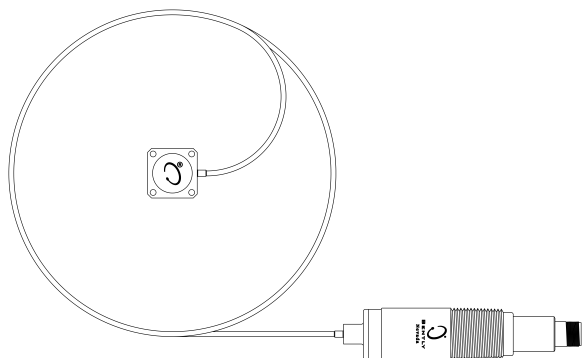


330750 and 330752 High Temperature Velomitor System

Datasheet

Bently Nevada Machinery Condition Monitoring

141639 Rev. R



Description

The 330750 and 330752 High Temperature Velomitor System sensor head and integral cable are designed for high temperature environments. This enables you to mount the sensing head on surfaces with temperatures as high +400°C (+752°F).

To accomplish this, the transducer design segregates the sensing element from the signal conditioning electronics. The two are permanently connected using an integrated cable. The integrated cable eliminates connectors which are a significant source of transducer failures.

The cable enables you to position the signal conditioning electronics in a cooler location. The internal electronics withstands temperatures of 55°C to +121°C (-67°F to +250°F).

The integrated design makes it possible to capture machinery performance data comparable to other Bently Nevada Velomitor transducers, but at significantly higher temperatures.

For lower temperature environments, use the standard 330500 Velomitor Piezo-velocity Sensor. You can install it in locations with a maximum operating temperature of +121°C (+250°F).



Measuring Housings for Transducer Placement

If you are measuring a machine housing to determine where to place transducers, consider which kinds of measurements you want to obtain. Most common machine malfunctions like imbalance or misalignment originate at the rotor and cause a change—usually an increase—in rotor vibration.

To obtain the best quality data, you need to place the transducer on the bearing housing or machine casing where machine vibration is best transmitted through the housing. Choose a location that maximizes amplitude and frequency response and avoids detecting signals that don't represent actual machine vibration. Improper installation can degrade the transducer's performance or produce signals that don't represent actual machine vibration.

Bently Nevada provides engineering services to determine the optimum location to place transducers. We also can install transducers if needed. For assistance, contact your local customer care representative or Bently Nevada at Bently.com.



Earlier versions of the 330750 and 330752 High Temperature Velomitor System were limited to environments with a maximum temperature of +300°C (+572°F). The serial number of current versions are preceded by the letter "G".

Specifications

Parameters are specified from +20 to +30°C (+68 to +86°F) and 100 Hz unless otherwise indicated.



Operating the Velomitor transducer outside the specified limits may result in false readings, failure of the transducer or loss of machine monitoring.

Electrical

Sensitivity	5.7 mV/mm/s (145 mV/in/s) ±5%
Frequency Response	15 to 2000 Hz (900 to 120,000 cpm) ± 3.0 dB; 20 to 1000 Hz (1,200 to 60,000 cpm) ± 0.9 dB
Transient Temperature Sensitivity	0.0762 mm/s/°C (0.003 in/s/°C), typical, as defined in ISO 5347-18:1993(E)
Amplitude Range	635 mm/s (25 in/s) peak below 680 Hz. 2940 m/s ² (300 g) peak above 680 Hz. Vibration at frequencies above 2 kHz decreases this range.
Transverse Sensitivity	Less than 5% of Sensitivity
Amplitude Linearity	±2% to 152 mm/s (6 in/s) peak
Mounted Resonant Frequency	Greater than 5 kHz
Output Bias Voltage	-12 ±2.0 VDC
Broadband Noise Floor (15Hz to 2kHz)	0.127 mm/s (0.005 in/s) rms nominal
Grounding	Case Isolated
Maximum	305 meters (1000 feet) with


Cable Length	no degradation of signal.
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Environmental Limits

Operating and Storage Temperature Range	
Sensing Head	Maximum mounted surface temperature -55°C to +400°C (-67°F to +752°F)
Integral Hardline Cable	-55° to +400°C (-67° to +752°F)
Electronics	-55° to +121°C (-67° to +250°F)
Shock Survivability	24,535 m/s ² (2500 g) peak
Relative Humidity	To 100% non-submerged; case is hermetically sealed.

Physical

Weight (typical)	
2 meters	635 grams (1.40 lb)
4 meters	794 grams (1.75 lb)
6 meters	953 grams (2.10 lb)
8 meters	1,111 grams (2.45 lb)
Mounting	See 330750 System Dimensional Drawing on page 10. See 330752 System Dimensional Drawing on page 11.
Case	300 series stainless steel
Connector	2-pin Mil-C-5015 receptacle, hermetically-sealed, 304 stainless steel shell.
Polarity	When the applied velocity is from the base to the top of the transducer, Pin A becomes positive with

	respect to Pin B.
Bend Radius	Minimum bend radius of 51mm (2.0in)
 Before installing this product, we recommend you read the 330750 and 330752 High Temperature Velomitor System User Guide (document 135090)	

Compliance and Certifications

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

EMC

EMC Directive 2014/30/EU

RoHS

RoHS Directive 2011/65/EU

Maritime

330400 and 330425 only

ABS 2009 Steel Vessels Rules

1-1-4/7.7,4-8-3/1.11.1,4-9-7/13

Hazardous Area Approvals



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

CSA/NRTL/C

Ex ia IIC
 Class I, Zone 0, AEx ia IIC

Class I, Division 1, Groups A, B, C and D
 Class II, Division 1, Groups E, F and G
 Class III, Division 1

Ex nL IIC
 Ex ec IIC
 Class I, Division 2, Groups A, B, C and D

ATEX/IECEx

Ex II 1 G

Ex ia IIC or IIB Ta, T4 492°C

Ex II 3 G

Ex na IIC or IIB Ta, T4, T1 492°C Gc
 Ex ec IIC or IIB Ta T4, T1 492°C Gc

Ta, T1, T4 492°C
 Ta, T4, T1 492°C

Temperature Class	Temperature Range	Equipment	
T4	-40°C to +100°C	Electrical Housing	
T1	-40°C to +400°C	Sensor and Cable	
T1	-40°C to +482°C	Sensor and Cable (3509000)	
Entity Parameters for Zone 0/1 and Zone 2			
Group	IIC		IIB
Type	33045	33075	33075 35090 35090

	0 33045 0 Type S	0 33075 0 Type S	2 33075 2 Type S	0	0
Ui	30V	28V	28V	28V	29.2V
Ii	200mA	120mA	120mA	153mA	279mA
Pi	1.5W	1.0W	1.0W	.84W	1.95W
Ci	7 nF	1 nF	1 nF	37 nF	37 nF
Li	30 μH	30 μH	30 μH	30 μH	30 μH

Ordering Information



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

330750-AA-BB

A: Length	
20	2 meters
40	4 meters
60	6 meters
80	8 meters
B: Approvals	
0 5	Multiple Approvals (CSA, ATEX, and IECEx)

330752-AA-BB

A: Length	
25	2.5 meters
40	4 meters
60	6 meters
80	8 meters
B: Approvals	
0 5	Multiple Approvals (CSA, ATEX, and IECEx)


Interconnection Cables

The standard cable lengths below are available. You can order custom cable lengths in increments of one foot at additional cost. Some cables have a minimum and maximum length. For details, see each part description below.


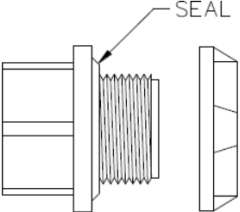
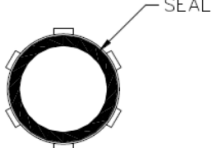
Standard Cable Lengths


Feet	Meters (approximate)
6 ft	1.8 m
8 ft	2.4 m
10 ft	3.0 m
12 ft	3.6 m
15 ft	4.5 m
17 ft	5.0 m
20 ft	6.0 m
25 ft	7.6 m
30 ft	9.0 m
33 ft	10.0 m
50 ft	15.2 m
99 ft	30.0 m

Cable Part Numbers

Part number	Description
 When entering a part number, use 'NN' in the part numbers to specify the length (in feet) of the cable you want to order.	
9571-NN	Standard interconnect cable Shielded 0.382 mm ² (22 AWG) cable with a moisture-resistant female connector at the HTVS end and ring lugs at the monitor end. Temperature range -29 to 121°C (-20 to 250°F). See Standard Interconnect Cable on page 13.
84661-NN	Standard armored interconnect cable Stainless steel armor over shielded 0.382 mm ² (22 AWG) cable with a moisture-resistant female connector at the HTVS end and ring lugs at the monitor end. Temperature range -29 to 121°C (-20 to 250°F). See Standard Armored Interconnect Cable on page 13.
89477-NN	Right angle interconnect cable Standard Armored Interconnect Cable. See Standard Right-angle Interconnect Cable on page 13.
122129-NN	Short run interconnect cable Shielded 0.963 mm ² (18 AWG) cable with a moisture-resistant female connector

Part number	Description
	at the HTVS end and ring lugs at the monitor end. Temperature range -29 to 121°C (-20 to 250°F). See Short Run Interconnect Cable on page 14.
02173034	CE installation interconnect cable (**required for CE installations) Shielded 0.382 mm ² (22 AWG) cable with a splash-proof boot over a female connector at the HTVS end and flush cut at the monitor end. Temperature range -55 to 125°C (-67 to 257°F). See CE Installation Interconnect Cable on page 14.
02173006	0.963 mm² (18 AWG) bulk cable Shielded twisted pair. Same cable as used on 89477-NN and 122129-NN. Specify the number of feet.
02173007	0.382 mm² (22 AWG) bulk cable Shielded twisted pair. Same cable as used on 9571-NN and 84661-NN. Specify the number of feet. The maximum length that should be used with the HTVS is 305 m (1000 ft)
00502025	Spare connector Same connector as used on 9571-NN and 84661-NN
101212-01	Right angle connector Right angle connector kit. Same connector as used on 89477-NN.
00531061	Spare mating connector

Part number	Description
	Mating connector for 330750 and 330752 Velomitor System.
330535	Standard temperature cable 22 AWG, double-shielded cable
00530574	Cable Mounting Clamp Mating connector clamp to be used with 00531061
03818073	Electronics Housing Strap One-inch rigid conduit strap for securing the electronics housing. 
03818071	Electronics Mounting Hub One-inch weather tight hub used to mount the electronics housing in a weatherproof enclosure. 
03818072	Seal Ring One-inch sealing lock ring used to mount the electronics housing. Two rings are required to mount the electronics. 

Part number	Description
169546	Cable Clamp Stainless steel mesh tie down clamp for the hardline cable. For temperatures greater than 260C (500F). 

Graphs and Figures

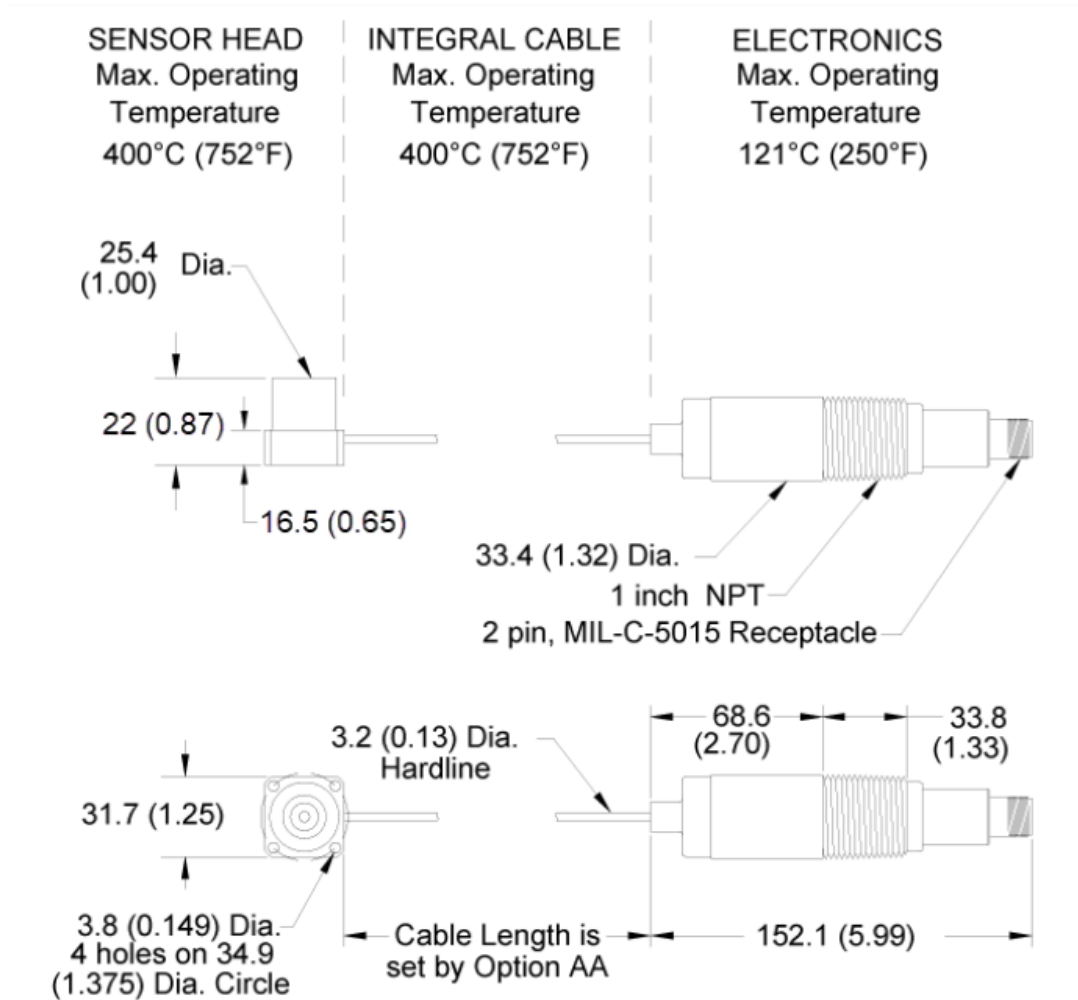


Figure 1: 330750 System Dimensional Drawing

(All dimensions are in millimeters (inches))

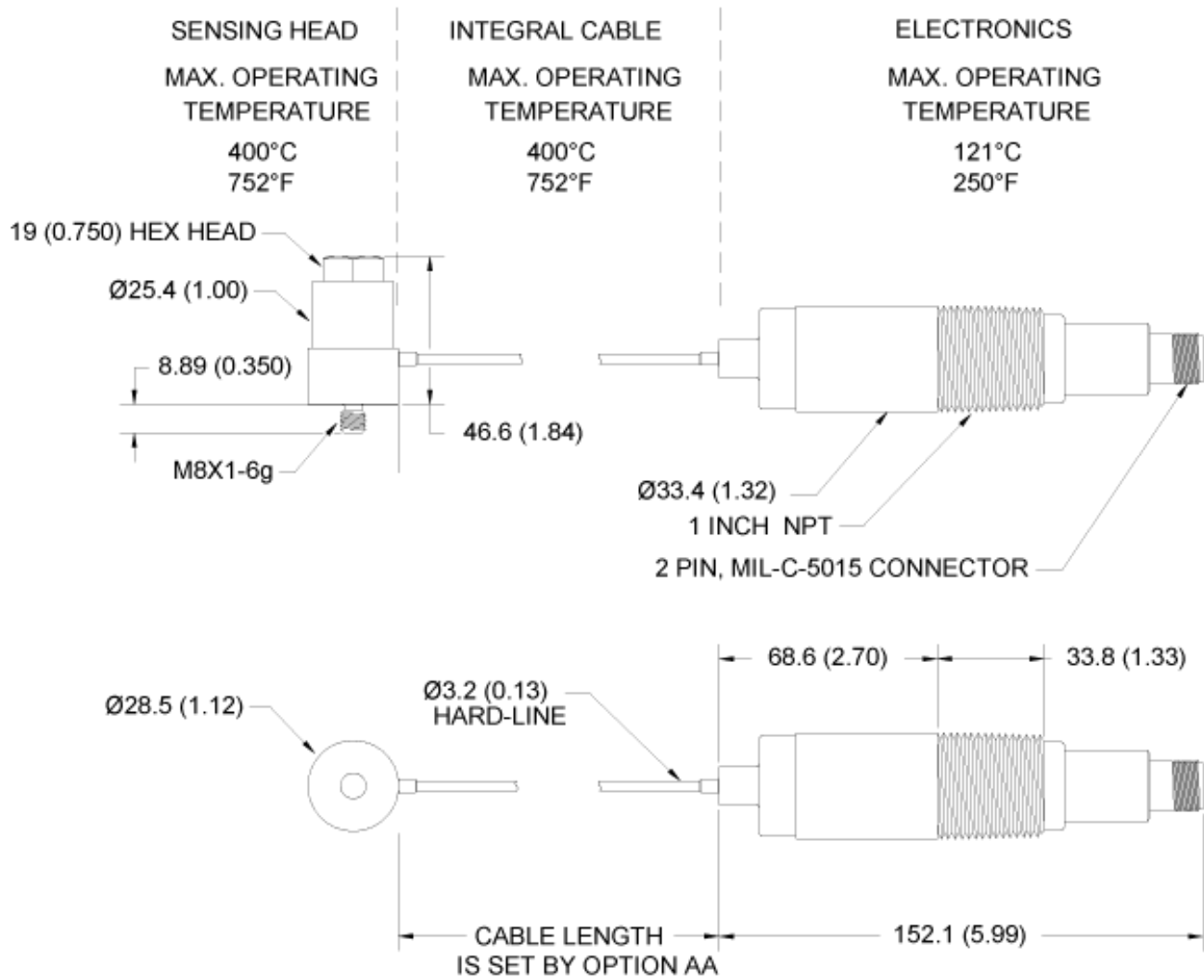


Figure 2: 330752 System Dimensional Drawing

(All dimensions are in millimeters (inches))

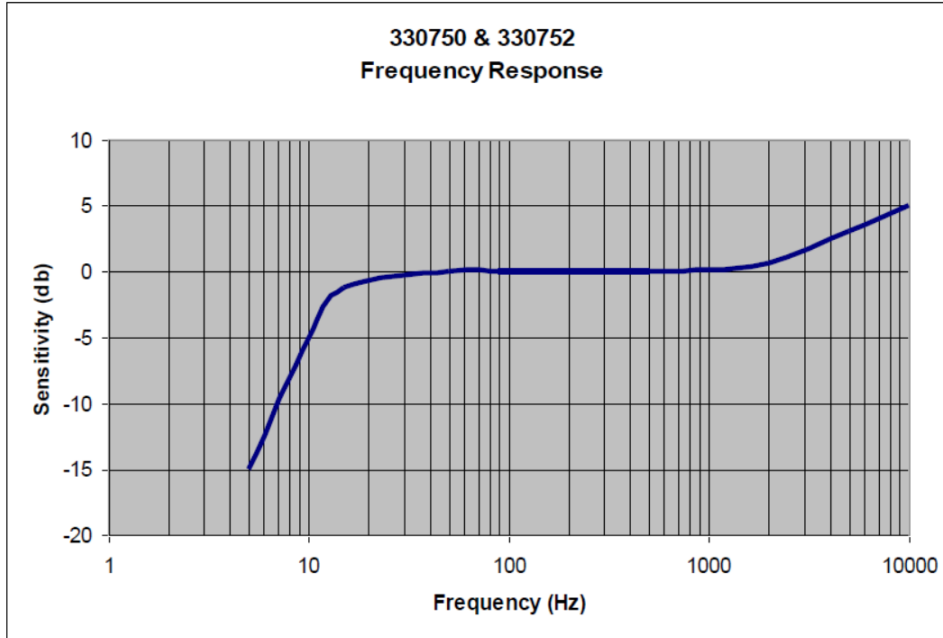


Figure 3: Velocity Amplitude

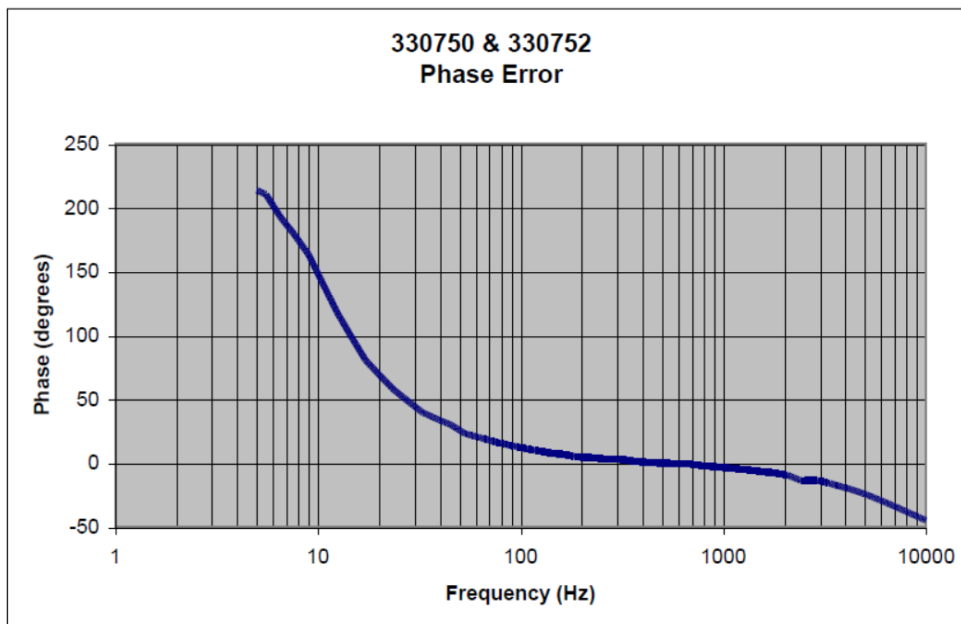


Figure 4: Velocity Phase Error



The Velomitor requires a two-conductor cable. We recommend using a double-shielded cable to minimize noise interference.

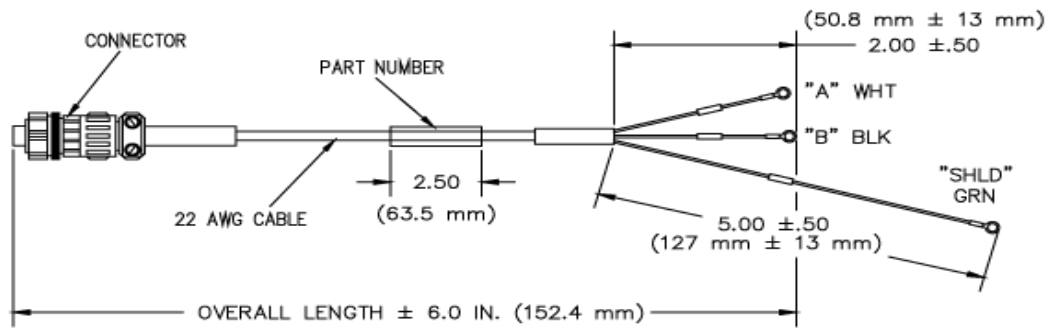


Figure 5: Standard Interconnect Cable

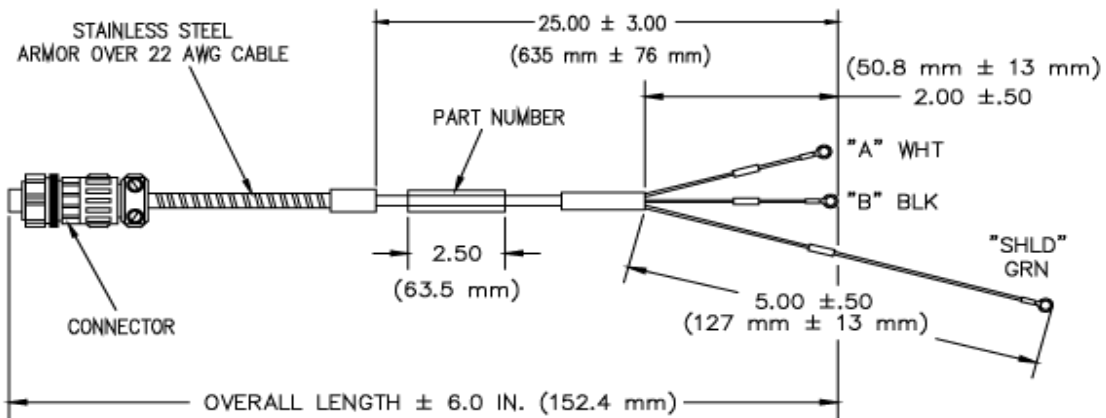


Figure 6: Standard Armored Interconnect Cable

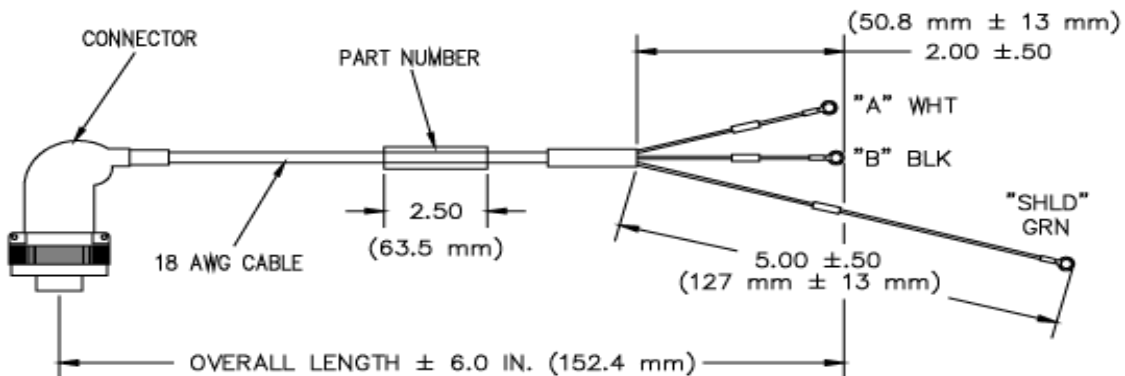


Figure 7: Standard Right-angle Interconnect Cable

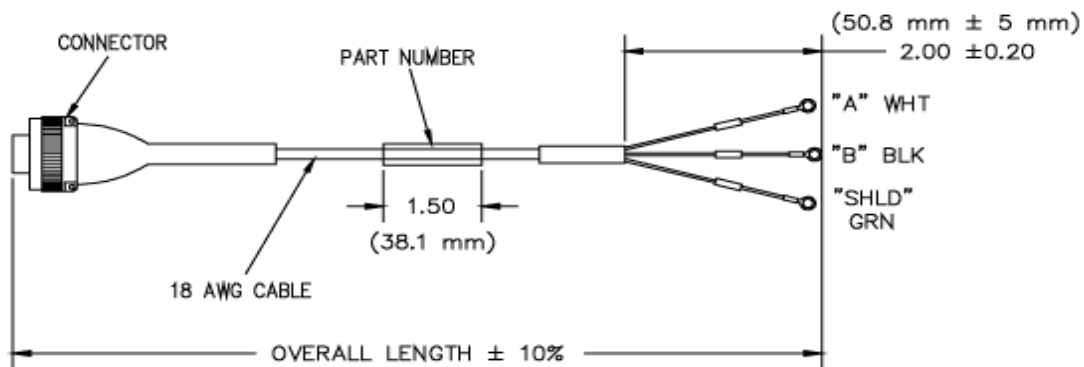


Figure 8: Short Run Interconnect Cable

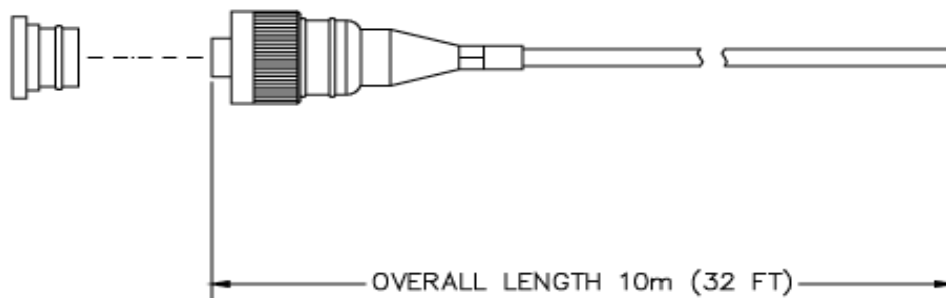


Figure 9: CE Installation Interconnect Cable

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