NIFTI Application Guide

Sensor Node Installation Using Vacuum Bagging

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1 Introduction

NIFTI Sensor Nodes can be installed utilising the NIFTI Mounting Pads. Installing the Sensor Nodes with these adhesives ensures that the Sensor Nodes are securely installed to the test body. However, this installation is only suitable for speeds up to 300 knots. If the Sensor Node is intended for use at speeds greater than 300 knots, additional installation steps are highly recommended to ensure the Sensor Nodes remain fitted to the test surfaces during flight. One such additional installation step is to use vacuum bagging to secure the Sensor Node. This guide details the materials and steps required to apply vacuum bagging installation on the NIFTI Sensor Node

DISCLAIMER: The steps shown in this Application Guide are for information and guidance purposes only. Consult authorised personal for applicable materials and procedures suitable for your specific application.

2 Materials and Equipment

The suggested materials and equipment for use are listed below.[1]

Material/Equipment	Example image
Vacuum Bagging Film	
Vacuum Bagging Sealant Tape	
Breather Cloth	
Vacuum Valve – Comprises of the Base Plate and Through-Bag Connector	

[1] For best performance it is not recommended to reuse old materials.

Quick-Connect Fitting	
Vacuum Gauge	
Vacuum Pump	
Teflon Tape/ Thread Seal	

Table 1: Vacuum Bagging Materials and Equipment.

3 Vacuum Bagging Technique

The following steps detail a vacuum bagging technique for a flat surface. Before applying vacuum bagging, the Sensor Node should be installed following the standard installation guide as outlined in the "*NIFTI Installation and Removal Guide*". Once the Sensor Node has been installed, vacuum bagging can be applied to further secure the Sensor Node.

The methodology described below:

1. Install a Sensor Node following detailed steps outlined in standard installation guide "*NIFTI Installation and Removal Guide*".
2. Place the vacuum valve base plate next to the installed Sensor Node.

Figure 1: NIFTI Sensor Node and Valve Base Plate positioning.

3. Cut a piece of breather cloth large enough to cover both the Sensor Node and the valve base plate. Place the breather cloth under the valve base plate and over the Sensor Node as shown.

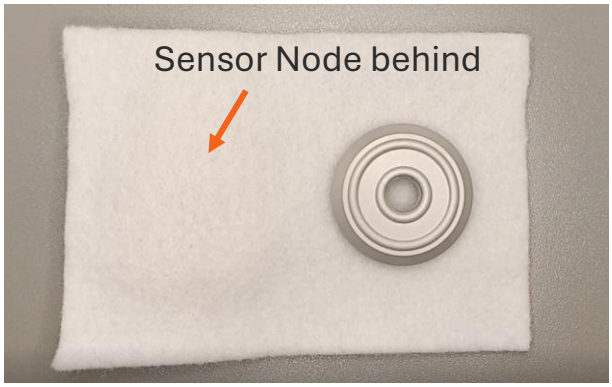

Figure 2: Breather Cloth positioned over Sensor Node and under valve base plate.

4. Cut vacuum bagging film to size leaving space for sealant tape. Position vacuum bagging over the breather cloth, Sensor Node and valve base plate.

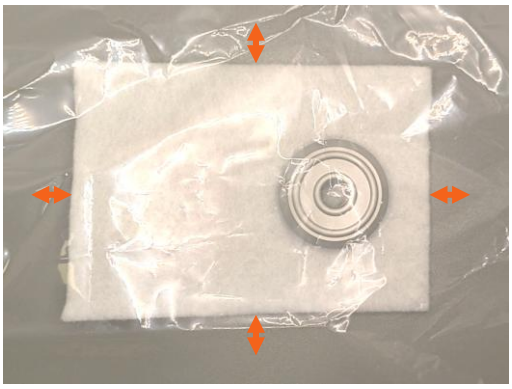

Figure 3: Vacuum bagging film covering application area.

5. Apply sealant tape around the outside of breather cloth, leaving the backing on. Keep the sealant tape as one length, curving it around each corner rather than cutting strips of tape. Ensure the end overlaps with, and is firmly pressed into, the start.

Figure 4: Sealant tape applied to surface around breather cloth.

6. Fix vacuum bagging film in place with sealant tape by removing the backing from one end and working your way around, pressing the film down as you go as shown below.

Figure 5: Sealant tape backing removal starting at one end and working around.

Figure 6 6: Vacuum bagging film fixed in place by sealant tape.

7. Cut an opening at the valve base plate centre for vacuum valve attachment. A cross is recommended over a circular hole to prevent the film from tearing or stretching when inserting the through-bag connector. An excessive cut may cause leakage issues, compromising the adhesion.

Figure 77: Piercing hole over valve base plate.

8. Attach the through-bag connector to base plate and seal the thread using Teflon tape to prevent leakage.

Figure 88: Attachment of vacuum valve to base plate and Teflon tape.

9. Connect vacuum valve, line, and pump. Depressurise bagging until a vacuum of at least -66 kPa (-9.6 psi) is attained.

Figure 9 9: Applying pressure to vacuum bagging.

Figure 10: pressure gauge showing at least 66 kPa.

10. Maintain the vacuum for at least 10 minutes before removal.

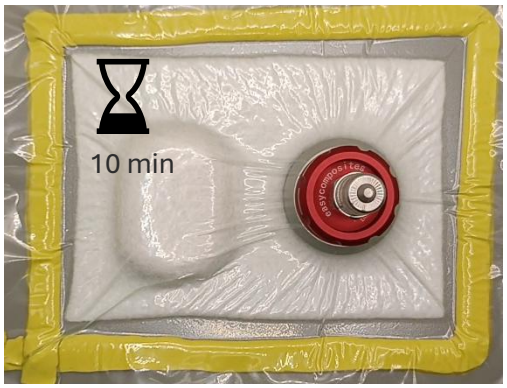

Figure 11 10: Maintaining seal for 10 minutes.

Figure 12 11: Seal removal.

11. Vacuum bagging has been successfully applied, and the Sensor Node is ready for use.