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Noise Reduction Package for Machine Room Hydraulic Power Units (HPU)

PUBLICATION CATALOGING DATA

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General Safety

Before beginning the installation procedure, review the following general areas of safety precautions per your company's requirements.

Lockout Procedure

Electrical Safe Working Practices

Portable Electrical Tools

Mechanic's Hand Tools

Machine Rooms

It is the field supervisor's responsibility to ensure that the new equipment is in accordance with all applicable safety codes.

Introduction

This document describes the proper installation procedure for the components included in the noise reduction package kits for hydraulic power units. These kits are for Otis standard 80-gallon (A**20390R / A**20390AF), 140-gallon (A**20390Q), and 190-gallon (A**20390P) submersible power units in machine room applications. The same principles can be used on other units or competitor equipment, but parts must be cut to fit. The results of sound pressure loss will vary, but some installations may achieve up to 7 dBA reduction in sound pressure level. Pipes in direct contact with walls will create noise. Eliminate contact between pipe and wall and establish clearance in order to install pipe isolation.

CAUTION: Installing this sound reduction package may affect heat dissipation from the power unit and the pipe line. For currently hot running units, consider installing oil cooler p/n AAA20391A1.

There are four components to this kit: isolating rubber trim, adhesive rubber sheeting, one pipe stand isolation (for a 2 in. pipe), and 27 ft. of pipe sound wrapping (for a 2 in. pipe). See Table 1 for complete kit part numbers.

Table 1: Complete Noise Reduction Package

Description	Part Number
Noise Reduction Package, 80-gallon, for 2 in. Pipe	AAA27076HG3
Noise Reduction Package, 140- and 190-gallon, for 2 in. Pipe	AAA27076HG4

For additional pipe stand isolation, pipe sound wrapping, or solutions for other pipe sizes, see Table 2.

Table 2: Additional Pipe Wrap and Pipe Stand Isolation

Description	Part Number
Pipe Wrap, 13.5 ft., for 2 in. Pipe	AAA27076HG5
Pipe Wrap, 13.5 ft., for 2.5 in. Pipe	AAA27076HG6
Pipe Wrap, 13.5 ft., for 3 in. Pipe	AAA27076HG7
Pipe Wrap, 13.5 ft., for 4 in. Pipe	AAA27076HG8
Pipe Stand Isolation, for 2 in. Pipe	AAA336SN1
Pipe Stand Isolation, for 2.5 in. Pipe	AAA336SN2
Pipe Stand Isolation, for 3 in. Pipe	AAA336SN3
Pipe Stand Isolation, for 4 in. Pipe	AAA336SN4

Noise Reduction Components Installation

Isolating Rubber Trim Installation

The rubber trim comes as a 10 ft. long strip. Cut it to fit and place on the top edges of all four tank walls (Figure 2) per the dimensions in Table 3.

Table 3: Isolating Rubber Trim Dimensions

Tank Size	Section Lengths (see Figure 1)			Remarks
	Walls A & B (Sides)	Wall C (Back)	Wall D (Front)	
80-gallon	18 in. each	34 in.	30 in.	
140-gallon	27 in. each	37 in.	29 in.	See **NOTE**
190-gallon	27 in. each	37 in.	29 in.	

NOTE: Trim on Wall D should be placed between the controller tab locations (see Figure 3 for more details).
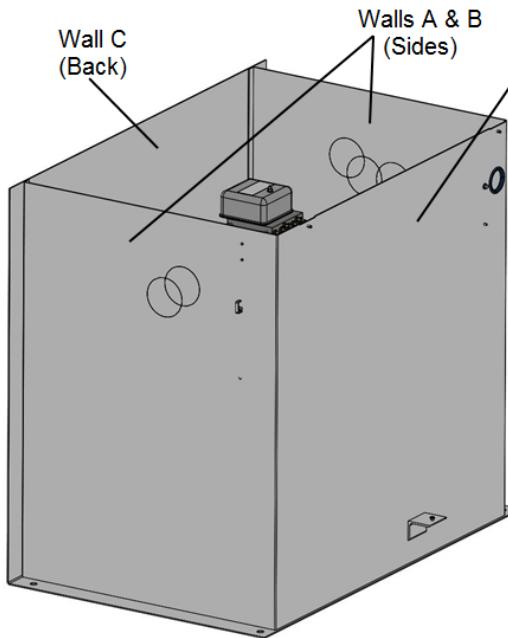

Figure 1: Rubber Trim Locations
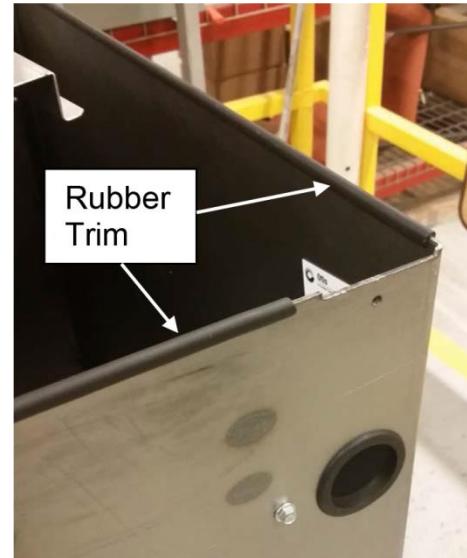

Figure 2: Rubber Trim
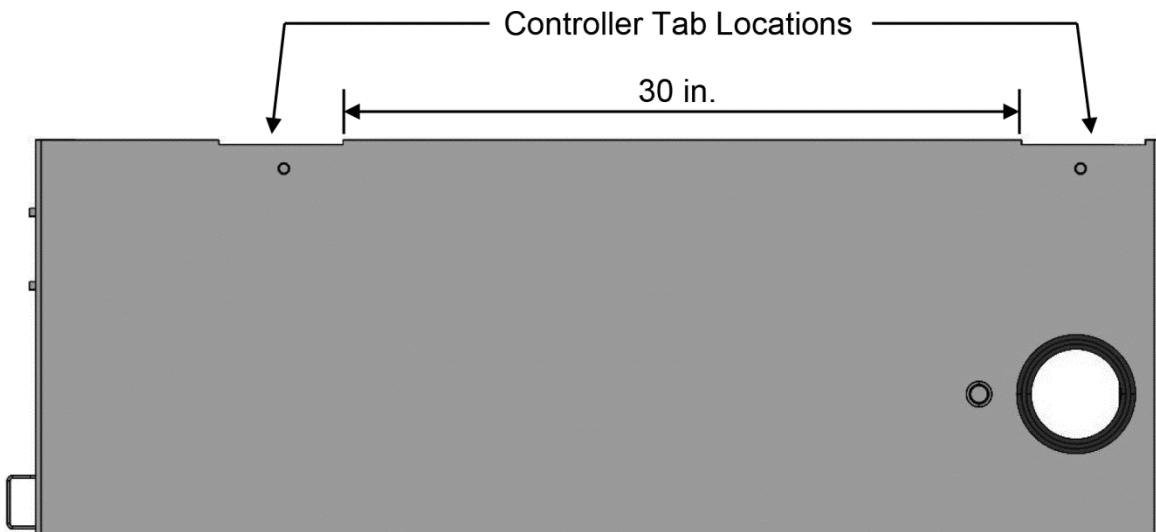
Figure 3: Tank Front (Wall D) Trim

Adhesive Rubber Sheeting Installation

In cases where the HPU is against a wall, in a corner, or has a controller mounted to the tank, applying the rubber sheeting to all sides may be difficult. The adhesive rubber sheeting will be most effective if applied to all five sides of the tank, especially on the wider panels. Move the power unit or controller temporarily to provide adequate access to clean all surfaces and apply adhesive rubber sheeting to all sides of the tank.

NOTE: Before sizing and cutting the sheets, all sides of the tank, including the lid, must be cleaned thoroughly with Simple Green® (p/n VP-420481) cleaner and rinsed three times with water to remove residue.
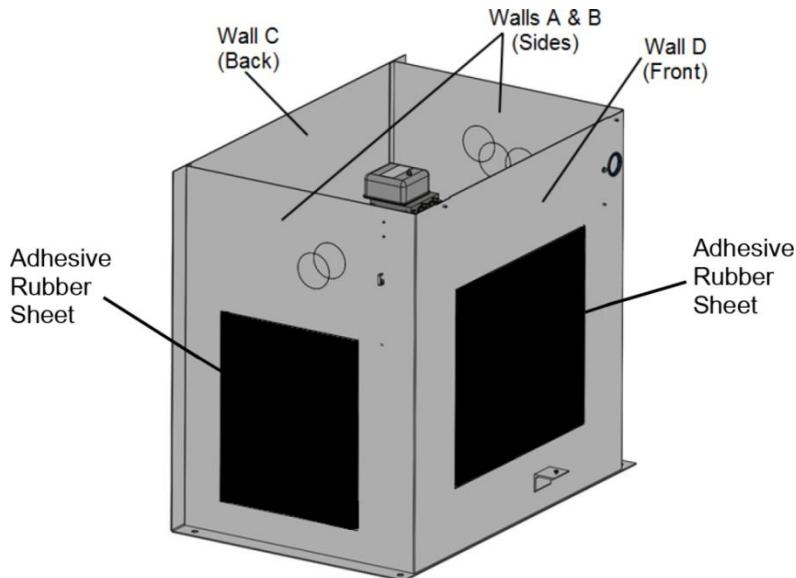

Figure 4: Adhesive Rubber Sheets

80-Gallon Tanks

For 80-gallon tanks, one 54 in. x 37.5 in. sheet of the adhesive rubber sheeting will be provided in a cardboard packaging.

CAUTION: Do not fold or roll up the rubber sheets once unpacked. Do not peel off the liner until the sheets have been cut and ready for installation.

Use a tape measure and permanent marker on the clear liner side of the sheets to outline and prepare the cuts as shown in Figure 5. Write the name of the panel that the cut sheet will be applied to directly on the clear liner. Use an Otis-approved box cutter or scissors to cut the sheets.
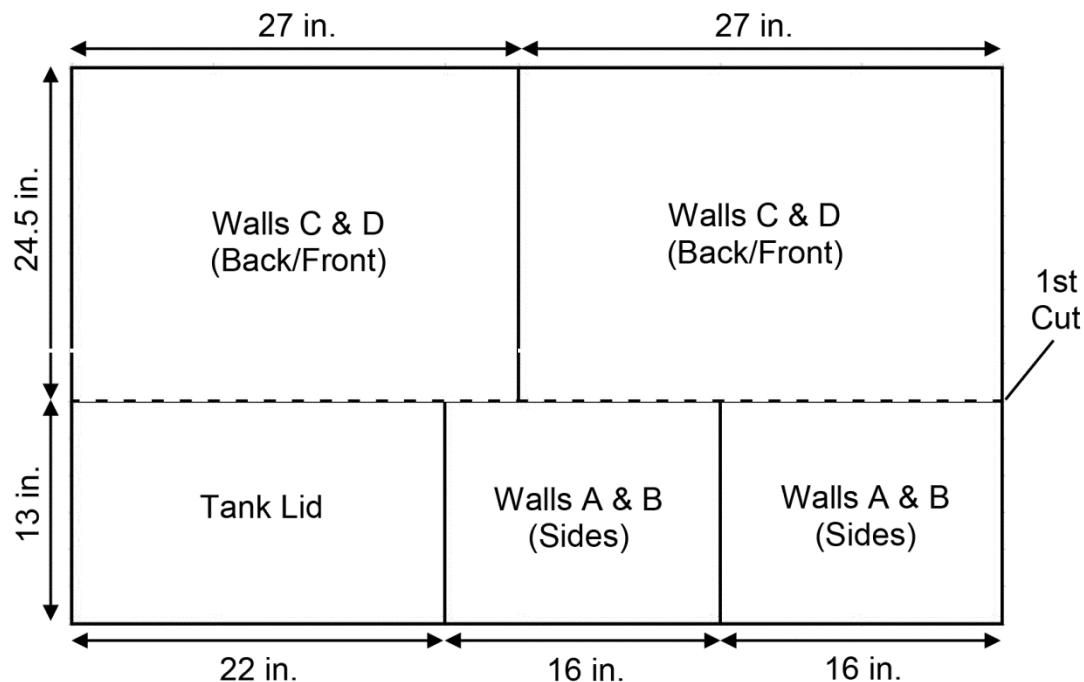
Figure 5: 80- Gallon Tank Rubber Sheeting Dimensions

Stage the cut sheets onto the tank panels and trace with a permanent marker before applying the cut sheet. Center the sheet on the panel. Place the sheet on the front panel (Wall D) so that it does not interfere with the controller mounting angle (see Figure 6 for proper orientation).

Trim the rubber sheet for the tank lid so that it does not cover the data plate information. Stage the sheet in the center and remove any extra as shown in Figure 7a. Alternatively, offset the sheet and reuse the removed section on the opposite side (see Figure 7b).
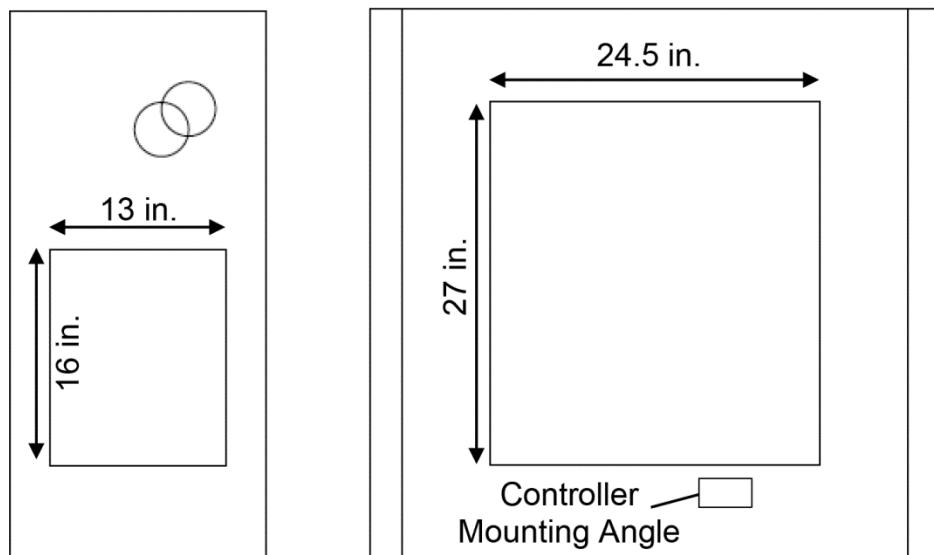
Figure 6: 80-Gallon Tank Sides and Front/Back Rubber Sheet Orientation
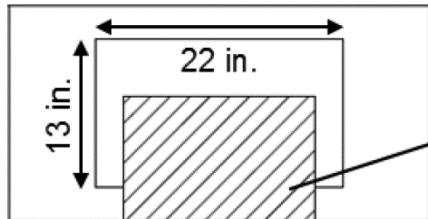
**Figure 7a: 80-Gallon Tank Lid
Rubber Sheet Orientation 1**
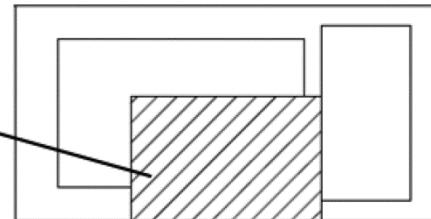
**Figure 7b: 80-Gallon Tank Lid
Rubber Sheet Orientation 2**

Once the sheets have been cut and labeled and the tank properly cleaned and marked with the adhesive location, peel off the clear liner before applying evenly to the tank panel.

140- and 190-Gallon Tanks

For 140- and 190-gallon tanks, two 54 in. x 37.5 in. sheets of the adhesive rubber sheeting will be provided in a cardboard packaging.

CAUTION: Do not fold or roll up the rubber sheets once unpacked. Do not peel off the liner until the sheets have been cut and ready for installation.

Use a tape measure and a permanent marker on the clear liner side of the sheets to outline and prepare the cuts as shown in Figures 8 and 9. Write the name of the panel that the cut sheet will be applied to directly on the clear liner. Use an Otis-approved box cutter or scissors to cut the sheets.
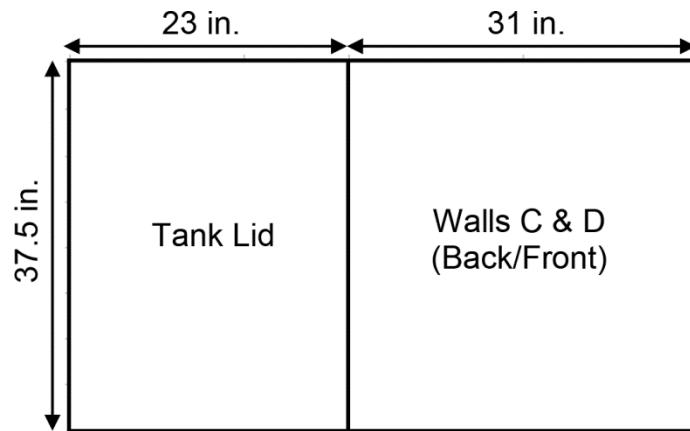
**Figure 8: 140- and 190-Gallon Tank Rubber Sheet 1 Dimensions**
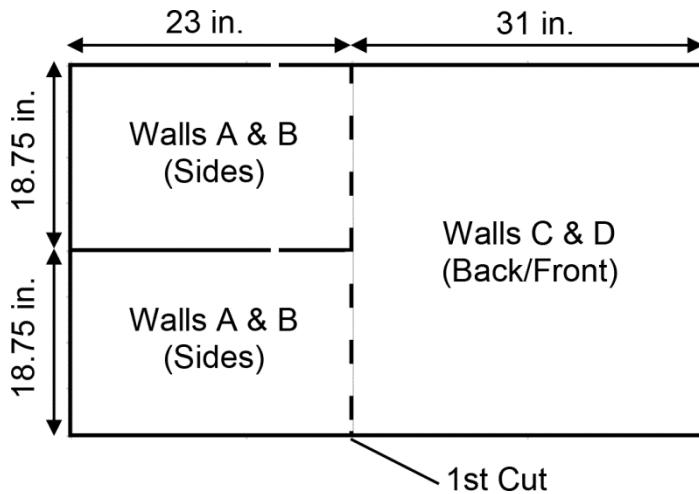
Figure 9: 140- and 190-Gallon Tank Rubber Sheet 2 Dimensions

Stage the cut sheets onto the tank panels and trace with a permanent marker before applying the cut sheet. Center the sheet on the panel. Place the sheet on the front panel (Wall D) so that it does not interfere with the controller mounting angle (see Figure 10 for proper orientation).

If a controller was mounted to the tank and the applied rubber sheeting makes it difficult to re-mount it, modify the sheet further to fit within the footprint of the controller.

Alter the rubber sheet for the tank lid so that it does not cover the data plate information. Stage the sheet in the center and remove any extra (see Figure 11).

NOTE: For the 190-gallon tank only, there is enough space to apply the removed rubber sheet from the tank lid cutout to the bottom of the front tank panel (see Figure 10).
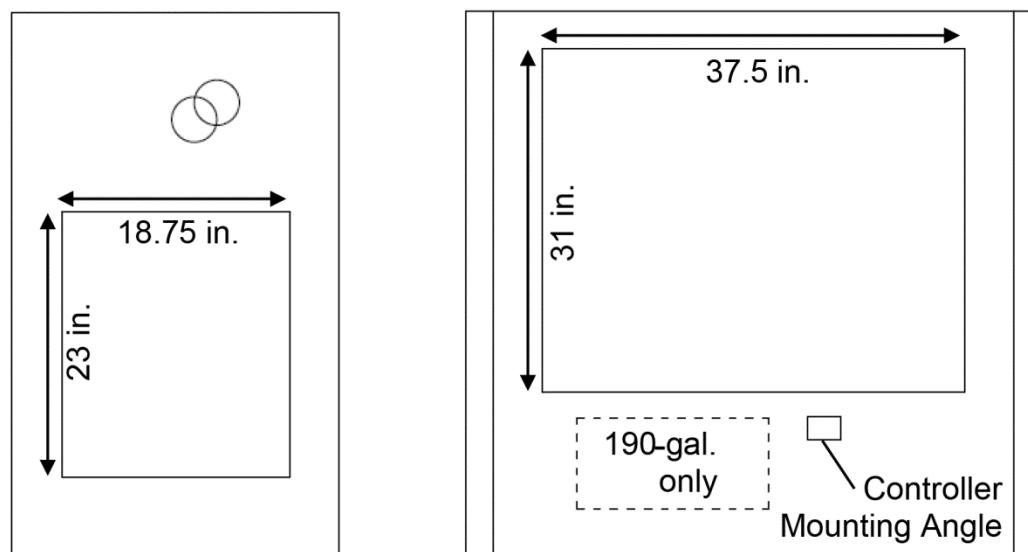
Figure 10: 140- and 190-Gallon Tank Sides and Front/Back Rubber Sheet Orientation
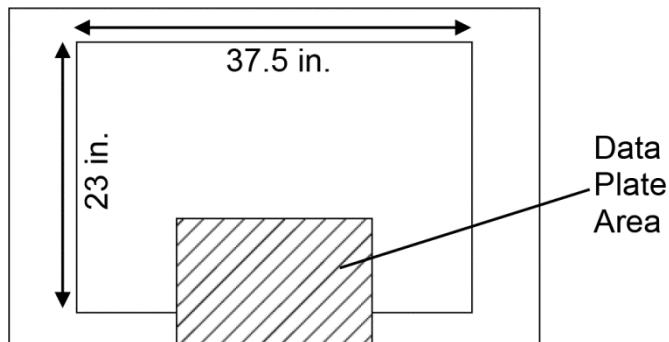
Figure 11: 140- and 190-Gallon Tank Lid Rubber Sheet Orientation

Once the sheets have been cut and labeled and the tank properly cleaned and marked with the adhesive location, peel off the clear liner before applying evenly to the tank panel.

Pipe Stand Isolation Installation

Pipe stand isolation **only** fits with standard 1-5/8 in. wide channel (B-Line or Unistrut style) supports (see Figure 12). Kits provide isolation for one pipe stand for 2 in. pipe. See Table 2 for additional isolation or other pipe sizes. Figure 13 shows the parts included in pipe stand isolation.

Figure 12: Isolation-Compatible Pipe Stand Style
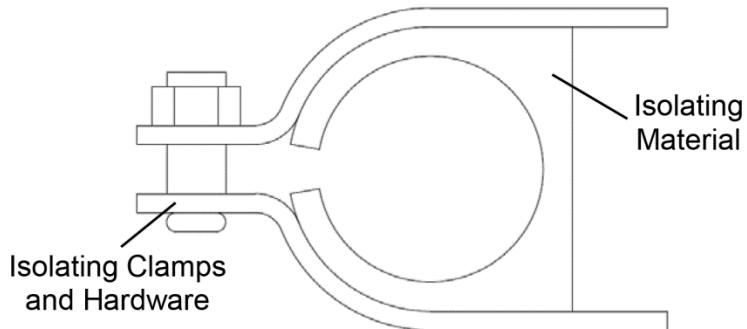
Figure 13: Pipe Stand Isolation Parts

1. Remove the original upper and lower clamps on the vertical channel support.

2. Loosen the hardware on the isolating clamps.

3. Place the isolating material onto the pipe (see Figure 14).

4. Slide the isolating clamps into the grooves on the vertical channel support.

5. Tighten the isolating clamp hardware (see Figure 15). The 5/16 in. nuts torqued to 60 in./lb and the 3/8 in. nuts torqued to 150 in./lb.

NOISE REDUCTION PACKAGE FOR MACHINE ROOM HPU

Figure 14: Pipe Stand Isolation Rubber

Figure 15: Pipe Stand Isolation Installed

Installing Pipe Wrap Isolation

Pipe wrap included in the kit fits with standard 2 in. nominal pipe sizes, for 27 ft. of piping in 4.5 ft. sections. See Table 2 for additional pipe wrap or other pipe sizes.

1. Wrap the insulation material around the pipes using zip ties (provided). Space zip ties approximately every foot on the pipe wrap (see Figure 16).

2. Butt pipe wrap sections up to each other and use duct tape to seal any gaps.

3. Use extra pipe wrap to cover Victaulic fittings and pipe elbows. Cut the pipe wrap to fit different pipe lengths and seal with duct tape.

Figure 16: Pipe Wrap

Appendix A: Related Part Numbers

The following table lists all part numbers this document mentions.

Table 4: Related Part Numbers

Description	Part Number
Noise Reduction Package, 80-Gallon, for 2 in. Pipe	AAA27076HG3
Noise Reduction Package, 140- and 190-Gallon, for 2 in. Pipe	AAA27076HG4
Pipe Wrap, 13.5 ft. Sections, for 2 in. Pipe	AAA27076HG5
Pipe Wrap, 13.5 ft. Sections, for 2.5 in. Pipe	AAA27076HG6
Pipe Wrap, 13.5 ft. Sections, for 3 in. Pipe	AAA27076HG7
Pipe Wrap, 13.5 ft. Sections, for 4 in. Pipe	AAA27076HG8
Pipe Stand Isolation, for 2 in. Pipe	AAA336SN1
Pipe Stand Isolation, for 2.5 in. Pipe	AAA336SN2
Pipe Stand Isolation, for 3 in. Pipe	AAA336SN3
Pipe Stand Isolation, for 4 in. Pipe	AAA336SN4
Simple Green® Cleaner	VP-420481