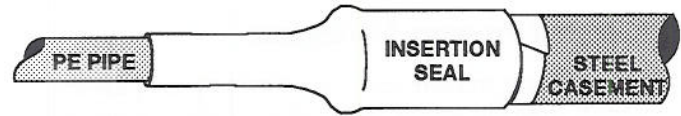


PS Series

EPDM Cold Shrink Gas Pipe Insertion Seals



1. Product Description

3M Brand Pipe Insertion Seals are based on 3M Cold Shrink technology. Each seal consists of an EPDM rubber tube which is expanded over a removeable core. The EPDM seal shrinks in diameter when the core ribbon is removed by unwinding with a counter-clockwise motion. No tools, heat or chemicals are needed.

PS Series Pipe Insertion Seals are used by Gas Utilities to seal the open space between a steel casing and plastic gas pipe. Insertion and encasement are two common applications for the PS products.

For insertion, workers install a length of polyethylene gas pipe inside an existing steel service line to avoid costly and disruptive excavation. Encasement is a similar operation, but in this situation the steel casement serves to protect the plastic pipe (when crossing under roadways, for example). In both situations, PS products are used to seal off the air pocket in the steel casement. This prevents the potentially dangerous migration of gas, plus seals against entry of water.

Product Features

- Simple installation
- No torches or heat required
- Good thermal stability
- Seals tight, retains its resiliency and pressure even after years of aging and exposure
- Resists fungus
- Resists acids and alkalies
- Resists ozone and ultraviolet light

2. Applications

The PS Series kits are used for sealing between polyethylene gas pipe and steel casement. The main purpose of the seal is to prevent gas leakage from the gas main side, (external pressure) through the surrounding soil into the steel casement. The seal also excludes water from the steel casement.

Pipe Insertion Seal Selection Table

Product No.	PE Pipe Size	Steel Casement Size	Relaxed Tube Length
PS-2	5/8" O.D. (15,9 mm)	3/4" IPS (19,0 mm)	6" (152,4 mm)
	7/8" O.D. (22,2 mm)	1" IPS (25,4 mm)	6" (152,4 mm)
PS-3*	5/8" O.D. (15,9 mm)	1-1/4" IPS (31,8 mm)	6" (152,4 mm)
	7/8" O.D. (22,2 mm)	1-1/4" IPS (31,8 mm)	6" (152,4 mm)
	1-1/8" O.D. (28,6 mm)	1-1/4" IPS (31,8 mm)	6" (152,4 mm)
PS-4	1-1/8" O.D. (28,6 mm)	1-1/4" IPS (31,8 mm)	6" (152,4 mm)
	7/8" O.D. (22,2 mm)	1-1/4" IPS (31,8 mm)	6" (152,4 mm)

* Use PS-3 for all tracer wire applications.

Table 1

3. Data: Physical and Electrical Properties

Test Method	Typical Value*
• Color	Black
• 100% Modulus (ASTM D-412)	170 psi (1.17 MPa)
• 300% Modulus (ASTM D-412-75)	700 psi (4.7 MPa)
• Ultimate Tensile (ASTM D-412-75)	1680 psi (11.6 MPa)
• Ultimate Elongation (ASTM D-412-75) Original	635%
• Die C Tear (ASTM D-624C-73) Original	220 pli (38.5 KN/m)
• Fungus Resistance (ASTM G-21) 28 Days Exposure	53 No Growth
• Shore A Hardness (ASTM D-2240-75)	48

* All values are averages, based on several determinations and are not intended for specification purposes.

4. Performance Test

Material Compatibility:

The cold shrink EPDM rubber material was tested for compatibility with PE pipe. There were no measurable signs of stress cracking, swelling or other degradation of either the EPDM rubber or the PE pipe.

External Pressure Withstand:

PS seals were pressure tested to 10 psi external pressure. Results from this testing indicated the amount of gas that could leak or permeate through a PS seal is negligible.

5. Installation Techniques

- 1 Remove burrs or sharp edges from end of steel casement.
- 2 Slide PS assembly onto steel casement. (Figure 1)

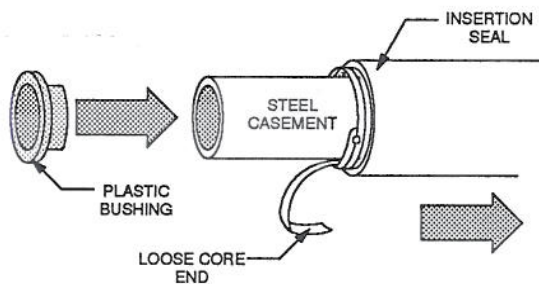


Figure 1

- 3 Install appropriate bushing into end of steel casement. Wrap with Scotch™ Super 33+ Vinyl Tape. (Figure 2)

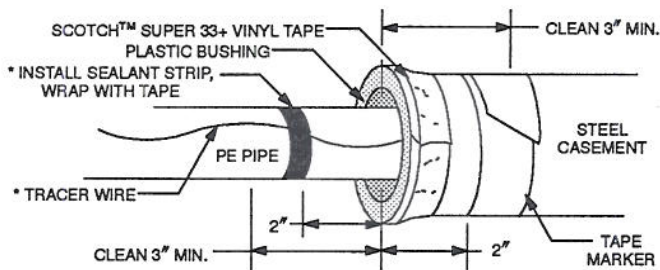


Figure 2

* PS-3 kit only.

- 4 Insert PE pipe (with tracer wire where applicable). Install sealant strip by sandwiching tracer wire between two layers of sealant. Overwrap with one layer of vinyl tape.
- 5 Hold PS assembly and pipe in proper position with one hand and unwind core counter-clockwise with the other hand. (Figure 3)

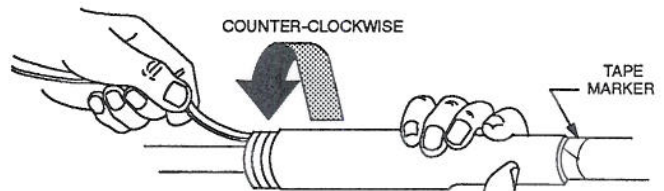


Figure 3

- 6 Care must be taken during the backfilling operation so the rubber Insertion Seal is not punctured. Backfill must be free of rocks or other sharp objects. In locations where termite activity is known or predictable, the soil immediately surrounding the Gas Pipe Seal must be treated with appropriate termiticide to prevent perforation of the seal by termite burrowing.

6. Maintenance

3M Pipe Insertion Seal Kits are stable under normal storage conditions. The components are not impaired by freezing or overheating due to ambient temperatures found in storage or shipping. Normal storage and stock rotation are recommended.

7. Availability

There are three Pipe Insertion Seal Kits available which will accommodate most combinations of polyethylene pipe to steel casement. The PS-2 kit contains two bushings which will accommodate 3/4" and 1" IPS. The PS-3 kit has one bushing to accommodate 1-1/4 IPS, plus one strip of sealant to build up the 5/8" IPS gas tubing and/or seal around a tracer wire. The PS-4 has one bushing to accommodate 1-1/4" IPS.

IMPORTANT NOTICE TO PURCHASER:

All statements, technical information and recommendations related to the Seller's products are based on information believed to be reliable, but the accuracy or completeness thereof is not guaranteed. Before utilizing the product, the user should determine the suitability of the product for its intended use. The user assumes all risks and liability whatsoever in connection with such use.

All statements or recommendations of the seller which are not contained in the Seller's current publications shall have no force or effect unless contained in an agreement signed by an authorized officer of the Seller. The statements contained herein are made in lieu of all warranties expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose which warranties are hereby expressly disclaimed.

SELLER SHALL NOT BE LIABLE TO THE USER OR ANY OTHER PERSON UNDER ANY LEGAL THEORY, INCLUDING BUT NOT LIMITED TO NEGLIGENCE OR STRICT LIABILITY, FOR ANY INJURY OR FOR ANY DIRECT OR CONSEQUENTIAL DAMAGES SUSTAINED OR INCURRED BY REASON OF THE USE OF ANY OF THE SELLER'S PRODUCTS.