



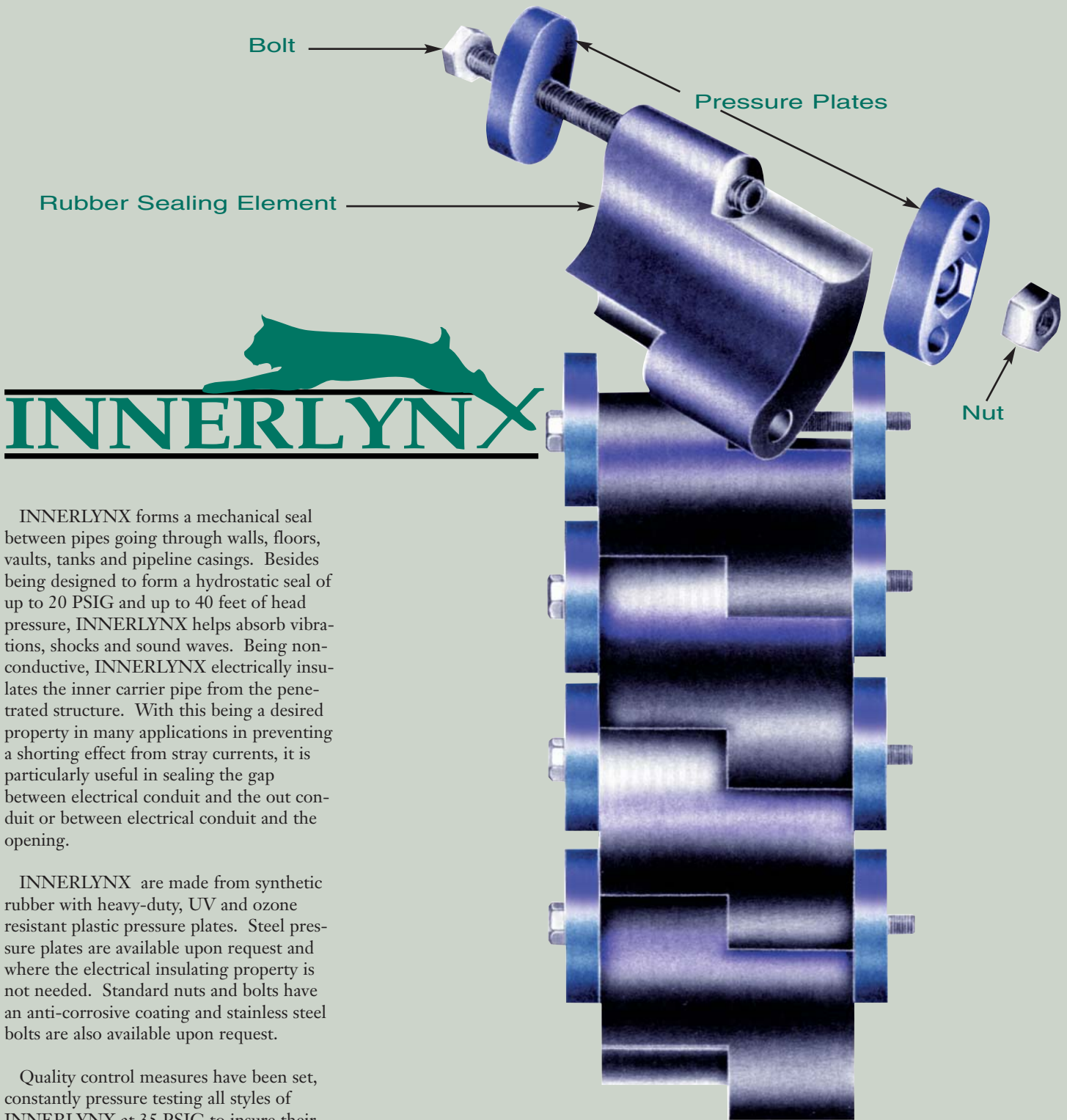
ADVANCE PRODUCTS & SYSTEMS, INC.



  
**INNERLYNX**

SEALS PIPE PENETRATIONS...FAST

# INTRODUCTION TO INNERLYNX



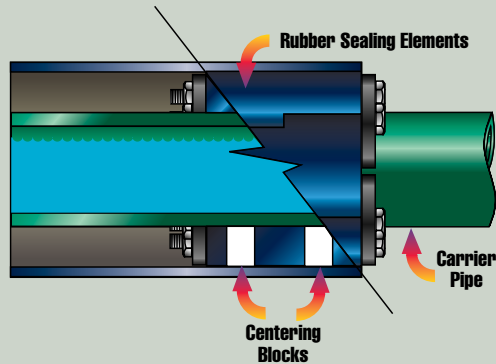
INNERLYNX forms a mechanical seal between pipes going through walls, floors, vaults, tanks and pipeline casings. Besides being designed to form a hydrostatic seal of up to 20 PSIG and up to 40 feet of head pressure, INNERLYNX helps absorb vibrations, shocks and sound waves. Being non-conductive, INNERLYNX electrically insulates the inner carrier pipe from the penetrated structure. With this being a desired property in many applications in preventing a shorting effect from stray currents, it is particularly useful in sealing the gap between electrical conduit and the out conduit or between electrical conduit and the opening.

INNERLYNX are made from synthetic rubber with heavy-duty, UV and ozone resistant plastic pressure plates. Steel pressure plates are available upon request and where the electrical insulating property is not needed. Standard nuts and bolts have an anti-corrosive coating and stainless steel bolts are also available upon request.

Quality control measures have been set, constantly pressure testing all styles of INNERLYNX at 35 PSIG to insure their integrity. Standard maximum operating temperature is 300° F.

Twelve different sizes of Innerlynx are available for most pipe sizes with diameters from 1/2" to 100". Custom sizes can also be made.

INNERLYNX can be installed easily and quickly by one worker with no special tools required.



**IL-CB** - Pipe INNERLYNX with centering block feature. Centering blocks are plastic reinforcements positioned in the bottom 90° of the INNERLYNX assembly. Centering Blocks assure a penetrating pipe will stay “centered” within its casing and adds extra support against heavy loads. This and the fact that, unlike pipeline boots, they are set within the outer casing and protected from sharp aggregate and equipment, makes them a perfect endseal for pipelines.

Note: See page 8 for sizing



**IL-C** - Standard pipe INNERLYNX with insulating type plate.

**IL-S304/S316** - Pipe INNERLYNX with stainless steel hardware.



**IL-T**- Silicone, high temperature fire seal. These seals have a temperature rating of up to 400° F. A dual seal will provide a three hour fire rating. (UL approval pending.)



## Sealing An Oversize Annulus With A Double Seal Of INNERLYNX

When an annular space is larger than the expanded thickness of a single INNERLYNX, it is necessary to use an intermediate sleeve and another INNERLYNX assembly as seen in the examples above. With a differential of up to five pipe sizes between carrier and sleeve the intermediate pipe should be three pipe sizes larger than the carrier. Use the charts on page 5-6 for both diameters of pipe or call our product specialists who will be happy to assist.

## VARIOUS APPLICATIONS FOR INNERLYNX SEALS AND WALL SLEEVES:

- Pipelines
- Buildings
- Power Generating Plants
- Water Plants
- Waste Treatment Plants
- Offshore Production Platforms
- Compressor Stations

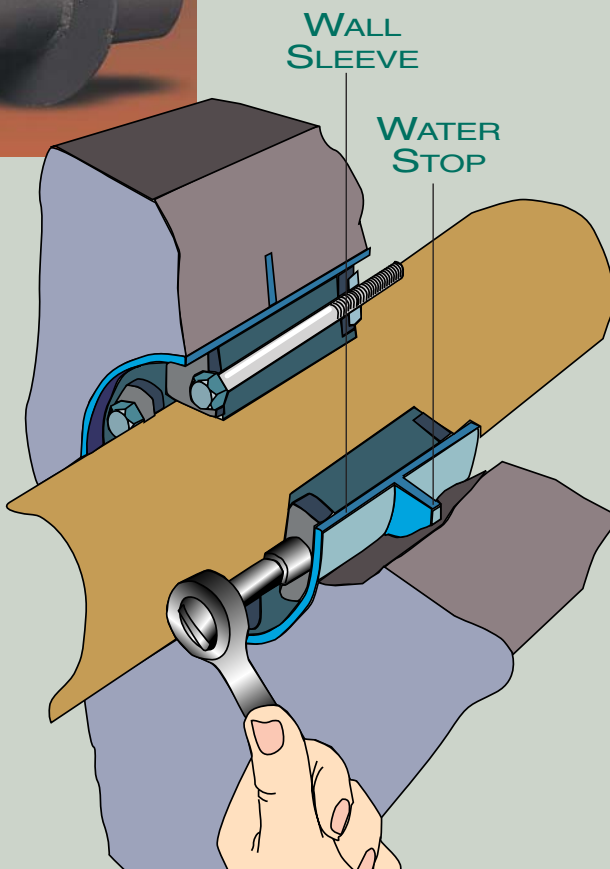
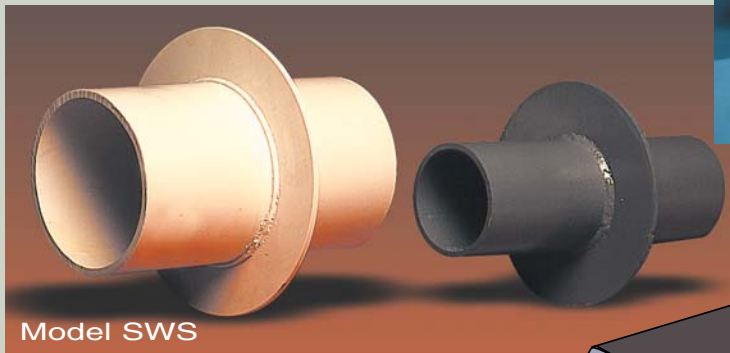
## FOR USE ON:

- Road Crossings
- Wall Penetrations  
Interior & Exterior
- Fire Protection Piping
- Discharge Lines
- Electrical Conduit
- Instrument Lines

# WALL SLEEVES

## WHY USE WALL SLEEVES

Protect your investment and use APS wall sleeves to provide a better seal than a core drilled hole. In the absence of wall sleeves, mechanical/utility piping vibration can cause costly wall damage. In addition, wall sleeves make it easy to repair piping without damaging the wall.



Advance Products & Systems offers three types of wall sleeves:

1. **Model SWS** made of steel with a welded steel water stop; primed
2. **Model PWS** made of plastic with a welded plastic water stop
3. **Model GWS** made of steel with a welded steel water stop; GAL-VO-PLAST® coating

### APS WALL SLEEVES PROVIDE:

- Quality Assurance
- A Wide Variety Of Sizes
- Customized Wall Sleeves
- Water Resistance
- Easy Installation
- No Hard Labor
- A One Man Job
- Fast Turn-around

The APS wall sleeves are designed to mate with the Advance INNERLYNX seals for leak free performance. Wall sleeves are all standard schedule 40 wall thickness. APS standard length is 12 inches; however, we can customize any size wall sleeve, keeping in mind a 6 inch minimum is required. Each model is available with a water stop that anchors the sleeve to prevent thrust movement and insure positive water sealing. APS standard water stops are centered, unless otherwise specified.

All common sizes of pipe-to-hole or pipe-to-sleeve combinations are shown in the chart on pages 5 & 6. However, there are many other combinations which will also work. To calculate other types of pipe not listed in the IL sizing specification on these pages refer to IL Non-Standard Sizes on Page 8.

Plastic Wall Sleeves	
Nominal Size	Sleeve I.D.
2"	2.067"
3"	3.068"
4"	4.026"
6"	6.065"
8"	7.981"
10"	10.02"
12"	11.938"
14"	13.124"
16"	14.93"

Steel Wall Sleeves	
Nominal Size	Sleeve I.D.
2"	2.067"
2 1/2"	2.469"
3"	3.068"
3 1/2"	3.548"
4"	4.026"
6"	6.065"
8"	7.981"
10"	10.020"
12"	12.000"
14"	13.250"
16"	15.250"
18"	17.250"
20"	19.250"
24"	23.250"
30"	29.250"
36"	35.250"
42"	41.250"

Recommended Minimum Wall Thickness For Sealing	
Wall Thickness	IL Model
2 1/4"	200
2 1/4"	275
3"	300
3"	315
4"	325
5"	400
5"	425
4 1/2"	475
5"	500
5"	525
5"	575
6"	600

Larger sizes are available.



# GAL-VO-PLAST® WALL SLEEVES TO REPLACE GALVANIZING



**Model GWS**  
Standard length in stock is 12". Also available in shorter and longer lengths.

## GAL-VO-PLAST® Wall Sleeves vs. Galvanized Wall Sleeves

### GAL-VO-PLAST®

- More durable
- Faster availability, especially for custom wall sleeves
- Longer installation life
- All coating performed in-house
- Considerably more economical

### Galvanizing

- Does not resist corrosion as long
- Custom wall sleeves usually require an additional two weeks to galvanize
- More expensive
- Must be sent out of factory to be galvanized



Advance Products & Systems can provide quick turn-around on wall sleeve orders due to a well stocked inventory.

## GAL-VO-PLAST® WALL SLEEVES

### SPECIALLY DEVELOPED PROPRIETARY COATING SYSTEM REPLACES GALVANIZING

Advance Products and Systems' new GAL-VO-PLAST® Wall Sleeves were developed to be more durable and last longer than galvanized wall sleeves. Extensive testing has been done which proves the GAL-VO-PLAST® to be a far superior product and at the same time to be considerably more economical.

### THE TEST\*

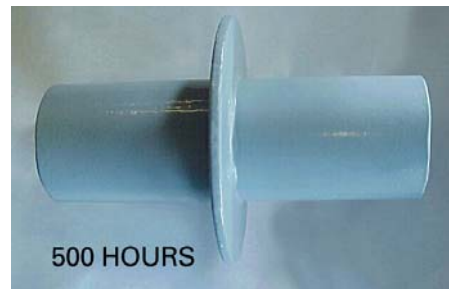
Two wall sleeves with two different types of protective coatings were submitted for testing at an independent lab. This test consisted of a 500-hour exposure test (equal to two years) in a B 117 salt fog chamber. This test has been used to a considerable extent for the purpose of comparing different materials and finishes.

One sample had hot dipped galvanized coating and the other had GAL-VO-PLAST® coating. The coatings were of uniform thickness and showed good adhesion.

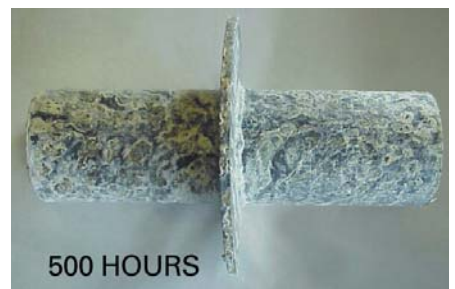
After testing, the submitted wall sleeves were removed from the salt fog chamber for visual examination.

The visual examination revealed no indications of oxidation on any of the exposed surfaces of the GAL-VO-PLAST® coating.

The visual examination revealed considerable oxidation of the galvanized coating on all exposed surfaces.



GAL-VO-PLAST® coated wall sleeve after testing



Galvanized wall sleeve after testing

\*Copies of testing are available upon request.

## INNERLYNX - Model IL - Sizing Specifications - Standard Sizes

Nominal Pipe Size	Pipe O.D.	Inner Pipe through a Core Drilled Hole			Inner Pipe through a PVC Wall Sleeve			Inner Pipe through a Sleeve	
		Core Drill ID	IL Size	IL Per Seal	Sleeve ID	IL Size	IL Per Seal	Sleeve ID	IL Size
<b>DI - Ductile Iron Pipe Size, Plastic Pipe Size, or any pipe with same O.D.</b>									
2"	2.500"	4.0"	#300	6	3.998"	#300	6	4.026"	#300
2 1/4"	2.750"	5.0"	#325	4	5.016"	#325	4	5.047"	#325
3"	3.960"	6.0"	#325	5	6.031"	#325	5	6.065"	#325
4"	4.800"	8.0"	#400	5	7.943"	#400	5	7.981"	#400
6"	6.900"	10.0"	#400	7	9.976"	#400	9	10.020"	#400
8"	9.050"	12.0"	#400	9	11.890"	#425	9	12.000"	#400
10"	11.100"	14.0"	#400	10	13.072"	#325	12	15.250"	#575
12"	13.200"	16.0"	#425	12	14.940"	#315	14	17.250"	#575
14"	15.300"	18.0"	#425	14	16.808"	#300	32	19.250"	#575
16"	17.400"	20.0"	#425	16	18.863"	#300	37	21.250"	#575
18"	19.500"	24.0"	#525	17	22.540"	#400	19	23.250"	#475
20"	21.600"	26.0"	#525	19				25.250"	#475
24"	25.800"	30.0"	#575	28				29.250"	#475
30"	32.000"	36.0"	#575	34				37.250"	#500
36"	38.300"	42.0"	#575	42				43.250"	#500
42"	44.500"	50.0"	#500	37				49.250"	#525
48"	50.800"	56.0"	#500	42				55.250"	#525
60"	61.610"	66.0"	#575	67				68.250"	#600
<b>CTS - Copper Tubing Size, Plastic Tubing Size or any pipe with same O.D.</b>									
3/4"	0.875"	2.0"	#200	4	2.067"	#200	4	2.067"	#200
1"	1.125"	2.5"	#275	6	2.500"	#275	5	2.469"	#275
1 1/4"	1.375"	2.5"	#200	5	3.068"	#300	4	2.469"	#200
1 1/2"	1.625"	3.0"	#275	7	3.068"	#275	7	3.068"	#275
2"	2.125"	3.5"	#275	9	3.998"	#315	6	3.548"	#300
2 1/2"	2.625"	4.0"	#275	11	3.998"	#275	10	4.026"	#275
3"	3.125"	5.0"	#315	8	5.016"	#315	8	5.047"	#315
4"	4.125"	6.0"	#275	10	6.031"	#315	10	6.065"	#315
6"	6.125"	8.0"	#315	15	7.943"	#315	15	7.981"	#315
8"	8.125"	10.0"	#315	19	9.967"	#315	19	10.020"	#315
10"	10.125"	14.0"	#475	14	13.072"	#400	10	13.250"	#400
12"	12.125"	16.0"	#475	16	14.940"	#425	12	15.250"	#400
<b>EMT - Thin Wall Steel Conduit</b>									
3/4"	0.922"	2.0"	#200	4	2.067"	#200	4	2.067"	#200
1"	1.163"	3.0"	#315	4	3.068"	#315	4	3.068"	#315
1 1/4"	1.510"	3.0"	#300	4	3.068"	#300	4	3.068"	#300
1 1/2"	1.740"	3.5"	#315	5	3.068"	#275	8	3.068"	#275
2"	2.197"	4.0"	#315	6	3.998"	#315	6	4.026"	#315
2 1/2"	2.875"	4.0"	#200	9	3.998"	#200	9	4.026"	#200
3"	3.500"	5.0"	#300	8	5.016"	#300	8	5.047"	#300
4"	4.500"	6.0"	#300	10	6.031"	#300	10	6.065"	#300

Please note: This chart is a guide only and APS is not responsible for mistakes, omissions and errors, etc.  
 For larger sizes, please call.

Nominal Pipe Size	Pipe OD	Inner Pipe through a Core Drilled Hole			Inner Pipe through a PVC Wall Sleeve			Inner Pipe through a Steel Wall Sleeve		
		Core Drill ID	IL Size	IL Per Seal	Sleeve ID	IL Size	IL Per Seal	Sleeve ID	IL Size	IL Per Seal
<b>IPS - Iron Pipe Size, Plastic Pipe Size, API Pipe Size, Electrical Conduit Size, or any pipe with same O.D.</b>										
1/2"	0.840"	2.0"	#200	4	2.067"	#200	4	2.067"	#200	4
3/4"	1.050"	2.5"	#275	6	3.068"	#315	4	2.469"	#275	6
1"	1.315"	3.0"	#315	4	3.068"	#315	4	3.068"	#315	4
1 1/4"	1.660"	3.0"	#275	8	3.068"	#300	5	3.068"	#300	5
1 1/2"	1.900"	3.5"	#300	5	3.068"	200	6	3.548"	#300	5
2"	2.375"	4.0"	#300	6	3.998"	#300	6	4.026"	#300	6
2 1/2"	2.875"	4.0"	#200	9	3.998"	#200	9	4.026"	#200	9
3"	3.500"	5.0"	#300	8	5.016"	#300	8	5.047"	#300	8
3 1/2"	4.000"	6.0"	#325	5	6.031"	#325	5	6.065	#325	5
4"	4.500"	6.0"	#300	10	6.031"	#300	10	6.065"	#300	10
5"	5.563"	8.0"	#425	6	7.943"	#425	6	7.981"	#425	6
6"	6.625"	10.0"	#475	9	9.976"	#475	9	10.020"	#475	10
8"	8.625"	12.0"	#475	12	11.890"	#475	12	12.000"	#475	12
10"	10.750"	14.0"	#400	11	13.072"	#425	10	13.250"	#425	10
12"	12.750"	16.0"	#400	12	14.940"	#325	13	15.250"	#425	12
14"	14.000"	18.0"	#575	16	16.808"	#425	13	17.250"	#400	14
16"	16.000"	20.0"	#575	18	18.863"	#425	15	19.250"	#400	15
18"	18.000"	22.0"	#575	20	22.540"	#525	16	21.250"	#400	17
20"	20.000"	24.0"	#575	22	22.540"	#425	18	23.250"	#400	18
22"	22.000"	26.0"	#575	24				25.250"	#400	21
24"	24.000"	28.0"	#575	26				27.250"	#400	23
26"	26.000"	30.0"	#575	28				29.250"	#400	24
28"	28.000"	32.0"	#575	30				33.250"	#500	24
30"	30.000"	34.0"	#575	32				35.250"	#500	26
32"	32.000"	36.0"	#575	34				37.250"	#500	27
34"	34.000"	38.0"	#575	36				37.250"	#500	29
36"	36.000"	40.0"	#575	36				41.250"	#500	31
42"	42.000"	46.0"	#575	44				47.250"	#500	36
48"	48.000"	52.0"	#575	50				53.250"	#500	41

Nominal Pipe Size	Type of Pipe	Pipe O.D.	Inner Pipe through a Core Drilled Hole			Inner Pipe through a Steel Wall Sleeve		
			Hole Diameter	IL Number	Quantity of IL	Sleeve I.D.	IL Number	Quantity of IL

**CISP (Extra Heavy) - Cast Iron Soil Pipe**

2	CISP-EX	2.380	4.00"	#300	6	4.026"	#300	6
3	CISP-EX	3.500	5.00"	#300	8	6.065"	#425	4
4	CISP-EX	4.500	6.00"	#300	10	6.065"	#300	10
5	CISP-EX	5.500	8.00"	#425	6	7.981"	#425	6
6	CISP-EX	6.500	10.00"	#475	10	10.020"	#475	10
8	CISP-EX	8.620	12.00"	#475	12	12.000"	#475	12
10	CISP-EX	10.750	14.00"	#400	11	13.250"	#425	10
12	CISP-EX	12.750	16.00"	#400	13	15.250"	#425	12
15	CISP-EX	15.880	20.00"	#575	18	19.250"	#400	15

Nominal Pipe Size	Type of Pipe	Pipe O.D.	Inner Pipe through a Core Drilled Hole			Inner Pipe through a Steel Wall Sleeve		
			Hole Diameter	IL Number	Quantity of IL	Sleeve I.D.	IL Number	Quantity of IL

**CISP (Service Weight) - Cast Iron Soil Pipe**

2	CISP-SW	2.300"	4.00"	#315	6	4.026"	#315	6
3	CISP-SW	3.300"	5.00"	#315	8	6.065"	#425	4
4	CISP-SW	4.300"	6.00"	#315	10	6.065"	#315	10
5	CISP-SW	5.300"	8.00"	#425	5	7.981"	#425	5
6	CISP-SW	6.300"	10.00"	#475	10	10.020"	#475	10
8	CISP-SW	8.380"	12.00"	#475	12	12.000"	#475	12
10	CISP-SW	10.500"	14.00"	#475	15	13.250"	#425	10
12	CISP-SW	12.500"	16.00"	#475	17	15.250"	#425	12
15	CISP-SW	15.620"	20.00"	#575	18	19.250"	#475	21

**HOW TO FIGURE SIZE AND NUMBER OF INNERLYNX NEEDED TO MAKE ONE COMPLETE SEAL:**

**Formula 1** - To figure which IL Style No. is needed -  
 I.D. of Casing/Hole minus O.D. of carrier pipe = y  
 y divided by 2 = Sealing Range  
 Find the correct Sealing Range and the corresponding Style No. on the chart below.

**Formula 2** - To figure how many of Style IL needed -  
 I.D. of Casing/Hole plus O.D. of carrier pipe = z  
 z times the corresponding IL Multiplier = Qty. of IL needed  
 Find the corresponding IL Multiplier on the chart below.  
 Note: If the calculation ends in .79 or lower - round down to the nearest whole number.  
 If the calculation ends in .80 or higher - round up to the nearest whole number.

**Example:** 4" Ductile Iron Pipe into a 10" core drilled hole.  
 I.D. of hole = 10"  
 O.D. of carrier pipe = 4.80"

**Formula 1:** 10" - 4.80" = y = 5.20"  
 5.20 divided by 2 = 2.600"  
 2.600" falls between the range for IL 500

**Formula 2:** 10" + 4.80" = z = 14.80"  
 IL Multiplier for IL 500 = .406  
 z multiplied by .406 = 14.80" x .406 = 6.009  
 Round down to the nearest whole number  
**Answer: 6 IL 500**

IL Style NO.	Sealing Range		IL Multiplier
	(untightened)	(tightened)	
IL 200	0.500	0.625	1.395
IL 275	0.620	0.781	1.725
IL 300	0.687	0.875	1.039
IL 315	0.820	1.033	1.068
IL 325	0.935	1.187	0.506
IL 400	1.437	1.812	0.433
IL 425	1.125	1.500	0.433
IL 475	1.625	2.000	0.598
IL 500	2.375	2.812	0.406
IL 525	2.187	2.500	0.406
IL 575	1.810	2.352	0.506
IL 600	3.200	4.000	0.262

**Model IL - Sizing Specifications**

These Pipe INNERLYNX are for sealing carrier pipes from casings when casings are required such as highway, railroad and bridge crossings. They fit between the I.D. of the casing pipe and the O.D. of the carrier to form a watertight seal.  
 Ordering information: See IL sizing specifications on chart below. For larger sizes, please call.  
 All dimensions are assumed to be IPS.

Nominal Carrier Pipe Size (nominal)	Casing Pipe Size (nominal)	IL Number	Qty. of IL	Qty of ILs with Centering Blocks Included
1/2"	2 1/2"	#300	3	0
3/4"	3"	#300	4	0
1"	3"	#300	4	0
1 1/4"	3 1/2"	#300	5	0
1 1/2"	4"	#325	3	0
2"	4"	#300	6	0
2"	6"	#475	5	0
2 1/2"	5"	#325	4	0
3"	5"	#300	9	0
3"	6"	#425	4	0
3 1/2"	6"	#325	5	0
4"	6"	#300	11	0
4"	8"	#400	5	0
4"	10"	#500	6	0
6"	10"	#400	7	0
6"	12"	#500	8	0
8"	12"	#400	9	0
8"	14"	#500	9	0
10"	14"	#425	10	0
10"	16"	#575	10	3
12"	16"	#425	12	0
12"	18"	#575	12	3
14"	18"	#400	13	4
14"	20"	#500	13	4
16"	20"	#400	15	4
16"	22"	#500	15	4
18"	22"	#400	17	4
18"	24"	#500	16	4
20"	24"	#400	19	5
20"	24"	#500	18	5
22"	26"	#400	21	5
22"	28"	#500	20	5
24"	28"	#400	22	5
24"	30"	#500	21	5
26"	30"	#400	24	6
26"	32"	#500	23	6
28"	32"	#400	25	7
28"	34"	#500	25	6
30"	34"	#400	27	7
30"	36"	#500	26	7
32"	36"	#400	29	8
32"	38"	#500	27	7
34"	38"	#400	31	8
34"	40"	#500	29	8
36"	40"	#400	32	8
36"	42"	#500	31	8
42"	48"	#500	36	9
48"	54"	#500	41	11
54"	60"	#500	45	12

Standard ILs come with centering blocks, upon request. 10" x 16", for example, would come with 10 ILs total; 7 of them would be the plain, standard type, and 3 would have centering blocks.

If no centering blocks are desired, please specify IL-PLAIN. For the size mentioned above (10"x16"), 10 ILs would be provided, with all 10 of them being the plain type (no centering blocks).

This chart is a guide only and we are not responsible for mistakes, omissions, errors, etc.

## INNERLYNX MODELS AND APPLICATIONS

Model	Type	Seal Element	Pressure Plates	Fasteners Bolts & Nuts	Temperature Range (°F)	Applications
C	Standard	EPDM Black	Composite	Plated Steel	-40 to +250	Suitable for most standard applications including: aboveground, direct underground burial, wet conditions and where cathodic protection - electrical insulation is desired.
O	Oil Resistant	Nitrile Green	Composite	Plated Steel	-40 to +210	Nitrile rubber is suitable for most hydrocarbons, fats, oils, greases, hydraulic fluids, chemicals and solvents (gasoline, jet fuel, water, motor oil, kerosene, methane, etc.).
S304	304 Stainless Steel	EPDM Black	Composite	304 Stainless Steel	-40 to +250	For chemical processing wastewater treatment. EPDM rubber is resistant to most inorganic acids and alkalis, some organic chemicals (acetone, alcohol, ketones).
S316	316 Stainless Steel	EPDM Black	Composite	316 Stainless Steel	-40 to +250	For applications where lower grade stainless steel hardware is not suitable and a higher degree of corrosion resistant hardware is required.
OS304	Oil Resistant 304 Stainless Steel	Nitrile Green	Composite	304 Stainless Steel	-40 to +210	Combination of stainless steel hardware and oil-resistant rubber.
OS316	Oil Resistant 316 Stainless Steel	Nitrile Green	Composite	316 Stainless Steel	-40 to +210	Combination of higher grade stainless steel hardware and oil resistant rubber where the ultimate corrosion protection is desired.
T	High/Low Temperature	Silicone Grey	Plated Steel or Stainless Steel	Plated Steel or Stainless Steel	-67 to +400	Silicone rubber is excellent where temperature extremes are a factor. UL approval pending.
FD	Fire Seals	Silicone Grey	Plated Steel or Stainless Steel	Plated Steel or Stainless Steel	-67 to +400	

**NEW**

**NEW**

*Stainless Steel Pressure Plates are non-stock items and can be special ordered.*

# ORDERING INFORMATION

## PLEASE SUPPLY ALL INFORMATION APPLICABLE:

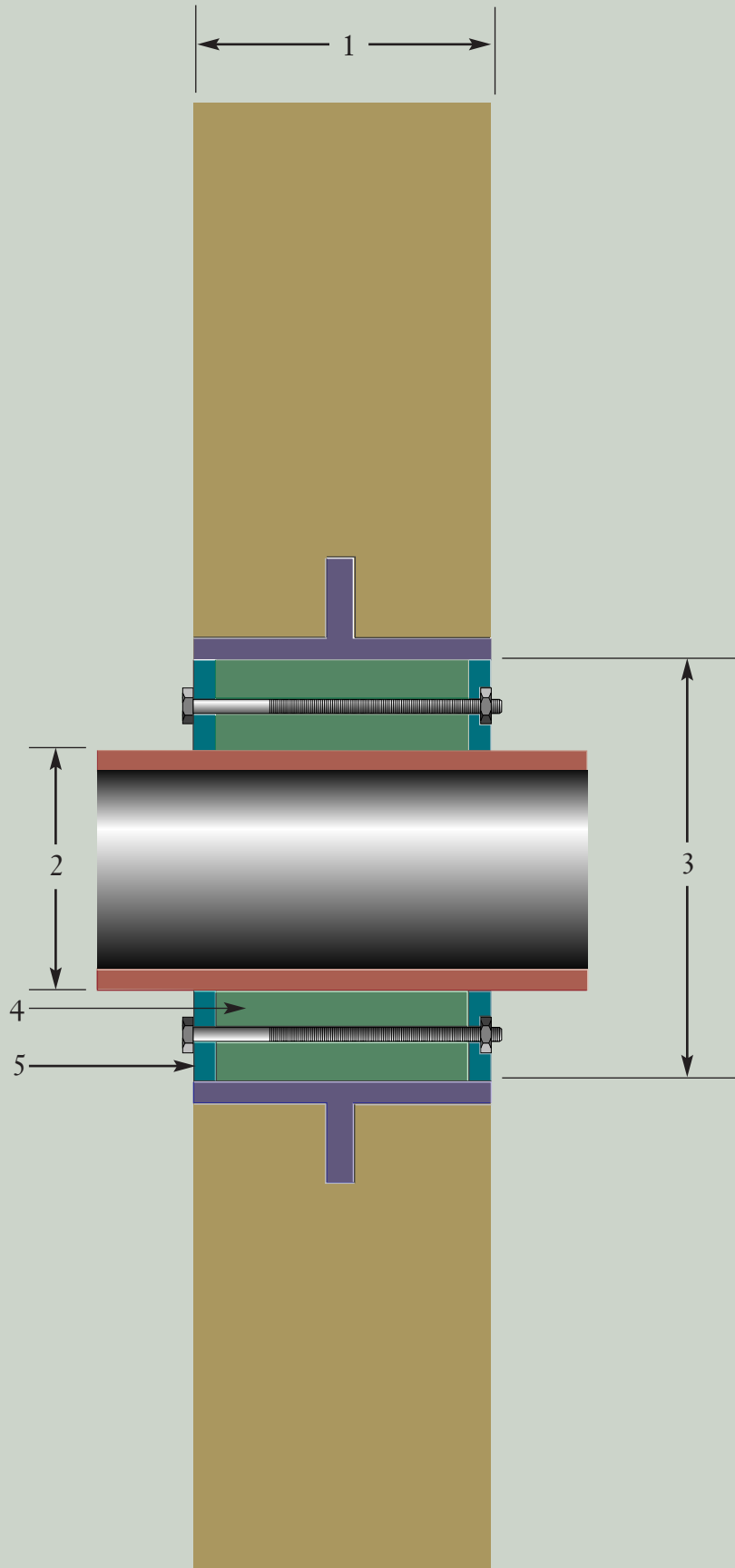
1. Wall Thickness Outside
2. Pipe Outside Diameter
3. Wall Sleeve Inside Diameter
4. Type of INNERLYNX desired
5. Insulated or Steel Pressure Plates

## AVAILABLE TO YOU

APS offers a CD ROM software package for Advance INNERLYNX that helps determine size and quantity of pieces required for your project.



Also available is APS's on-line calculator to help make ordering hassle-free. It can be found on our web site at [apsonline.com](http://apsonline.com) under "Products: INNERLYNX".



## OTHER QUALITY PRODUCTS AVAILABLE

- Flange Isolation Gasket Kits
- Kleeband® Flange Band Protectors
- Radolid® Nut & Bolt Protective Caps
- U-Bolt Cote®
- Casing Insulators & End Seals
- Duocon Centralizers
- Foreman Night Caps
- ISOJOINT®
  - Monolithic Isolation Joints
- Safety Spray Shields

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### Warranty

All products are warranted against failure caused by manufacturing defects for a period of one year. Any product found to be so defective and returned within one year of shipment date will be replaced without charge. The above warranty is made in lieu of, and APS disclaims any and all other warranties expressed or implied, including the warranties of merchantability and fitness for a particular purpose and buyer agrees to accept the products without any such warranties. APS hereby disclaims any obligation or liability for consequential damages, labor costs or any other claims or liabilities of any kind whatsoever.

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