HARCO FITTINGS

PRODUCT SHEET

OFFERING PRODUCTS FOR UTILITY, IRRIGATION, AND DRAINAGE MARKETS

About the Harrington Corporation (HARCO)

HARCO is a producer of gasketed joint injection-molded PVC fittings and push-on gasketed joint ductile fittings. Don Harrington formed the company in 1966. The first product was a gasketed coupling to join plain end PVC pipe. Success after that was based on product innovations, effectiveness in manufacturing, and company discipline in providing superior service. HARCO has become a leading developer of pipe fittings for the utility, irrigation, and drainage markets. HARCO was the first manufacturer in the United States to produce injection molded gasketed PVC fittings for SDR 26 & SDR 21 pipe, injection molded gasketed PVC fittings for SDR 35 sewer pipe, and injection molded gasketed PVC fittings for C900 PVC pipe. HARCO developed the first compact ductile iron MJ fittings (AWWA C153) in 1977. HARCO also developed the Swivel Joint Lateral Connection System and a series of Lateral Isolation Valves for serving lateral-to-main connections. Recent acquisitions have allowed HARCO to expand into manufacture of Sch 40 and Sch 80 fittings, sewer fittings up to 36", and storm water solutions such as drain basins and inline drains. HARCO also offers a line of HDPE Fittings and other products for HDPE applications. HARCO will now be manufacturing molded Plastic Irrigation Pipe fittings(PIP) from 6” to 12”. HARCO manufactures fittings at its facilities in Lynchburg, VA and Janesville, WI and operates warehouses in Winter Haven, FL; Dallas, TX; and Phoenix, AZ.

PVC FITTINGS

- *Gasketed IPS Molded Pressure Fittings, 1½" to 8"*
- *Gasketed Bell IPS Drainage, SDR 26 and 21, 4” to 12”*
- *Gasketed SDR 35 Sewer Fittings, 4" to 27"*
- *Gasketed SDR 26 Sewer Fittings, 4” to 27”*
- *Solvent Weld SDR 35 Fittings, 10" to 30"*
- *Gasketed SDR 18 Sewer Fittings, 6" & 8"*
- *Gasketed Molded Pressure Fittings for C907 and C900 Pipe, 4" to 8"*
- *Gasketed and Solvent Weld C900 Drainage, DR18 and DR25, 8" to 12"*
- *Gasketed and Solvent Weld C905 Drainage, DR18 and DR25, 14" to 24"*
- *Solvent Weld Sch 40 & 80 DWV Fittings, 8" to 24"*
- *Hub Bell Profile Fittings, 8" to 30"*
- *Solvent Weld Molded PIP Fittings 6” to 12”*
- *Special Application Sewer Products (Riser and 2-Way Clean-outs)*

DUCTILE IRON FITTINGS

- *Gasketed Fittings for PVC sewer Pipe, DI-OD Ductile Iron and C900 PVC Pipe, 4" to 12"*
- *Gasketed Fittings for IPS-Size PVC Pipe, 1½" to 12"; for C905 Pipe, 14" to 18"*
- *Lateral Isolation Valves, 2" to 4"*

PVC DRAIN BASINS

- *8" to 36"*

PP COMPRESSION

- *3G Compression Fittings, ¾" to 2"*
  - *IPS SDR*
  - *IPS SIDR*
  - *CTS*
  - *Kitec/XPA/Q-Line*
- *Universal Transition Coupling Compression Fittings*
- *Philmac Ball Valves, 3/4” to 2”*

HDPE FITTINGS

- *Fabricated Butt Fusion Fittings*
- *Molded Butt Fusion Fittings, ½" to 12"*
- *Molded Socket Fusion Fittings, ½" to 4"*
- *Electrofusion Fittings, ¾" to 24"*
- *Transitions & Adapters*

HARCO

THE HARRINGTON CORPORATION
P.O. Box 10335 ◆ Lynchburg, VA 24506
Phone: (434) 845-7094 Fax: (434) 845-8562

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www.harcofittings.com

UTILITY CATALOG

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PVC-IPS FITTINGS

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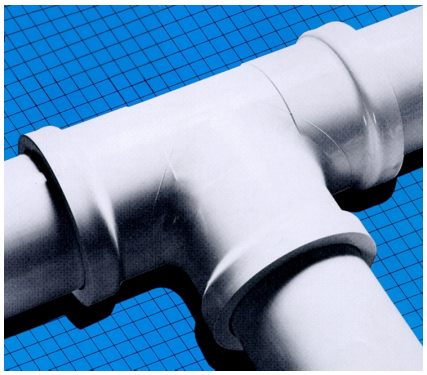
HARCO FITTINGS

PRODUCT SHEET



PVC FITTINGS FOR IPS PIPE

IPS PVC PRESSURE

1 1/2" Thru 8" Sizes

High Strength

Easy Installation

All PVC System

High Flow Capacity

Engineered for Durability

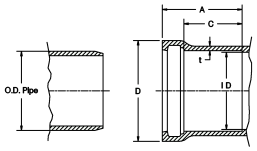
HARCO Class 200 PVC Fittings

HARCO Class 200 Pressure Pipe Fittings will fit all IPS Pipe (Iron Pipe Size). IPS Pipe is available in SDR 21, Class 200; SDR 26, Class 160; Schedule 40 and Schedule 80. HARCO offers a wide selection of sizes 1 1/2" thru 8", and a full complement of reducers, reducing tees, and adapters. HARCO's large inventory assures you of fast and complete orders.

SUGGESTED SPECIFICATION

All fittings for Iron Pipe Size pipe shall be manufactured in one piece of injection molded PVC compound meeting ASTM D1784. Fittings shall be Class 200 and conform to requirements of DR 21. Fittings shall be designed to withstand a minimum of 630 psi quick burst pressure at 73 degrees F., tested in accordance with ASTM D1599. Bell shall be gasketed joint conforming to ASTM D3139 with gaskets conforming to ASTM F477. Push Joint Ductile Iron fittings shall be allowed as alternative when PVC sizes are not available.

STANDARD JOINT DIMENSIONS - IN INCHES



NOMINAL DIAMETER	O. D. PIPE	A	C	D	T	ID
1 1/2	1.900	3.168	2.418	1.938	0.107	1.720
2	2.375	3.273	2.523	2.413	0.133	2.149
2 1/2	2.875	3.383	2.633	2.913	0.158	2.601
3	3.500	3.520	2.770	3.538	0.191	3.166
4	4.500	4.103	2.990	4.558	0.246	4.072
6	6.625	4.571	3.458	6.683	0.358	5.993
8	8.625	5.161	3.898	8.708	9.463	7.805

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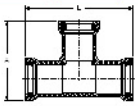
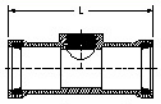
TEE (GxGxG)



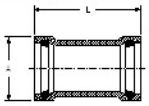
SIZE	PART #	STYLE	A	L	WT
1½ x 1½	112-150	M	6	9.1	1
2 x 1½	112-215	M	6.1	9.1	1.3
2 x 2	112-220	M	6.1	9.1	1.4
2½ x 1½	112-251	A	8.4	9.9	1.4
2½ x 2	112-252	M	6.8	9.9	2
2½ x 2½	112-255	M	6.8	9.9	1.7
3 x 1½	112-315	A	9.4	10.9	2.5
3 x 2	112-320	M	7.7	11.4	2.8
3 x 2½	112-325	M	8	11.9	3.1
3 x 3	112-330	M	7.7	10.9	2.8
4 x 2	112-420	M	8.6	13.1	4.3
4 x 2½	112-425	M	8.5	13.1	4.9
4 x 3	112-430	M	8.8	13.1	4.9
4 x 4	112-440	M	9.3	13.1	5.6
5 x 5	112-550	M	11	14.8	10
6 x 2	112-620	A	12.2	11.6	2.8
6 x 3	112-630	M	11.5	12.5	3
6 x 4	112-640	M	11.8	16.3	11
6 x 6	112-660	M	11.5	16.4	12.3
8 x 4	112-840	M	13.9	19.5	18.7
8 x 6	112-860	M	14.4	19.5	19.3
8 x 8	112-880	M	14.9	19.5	21.3

SERVICE TEE (GxGxFIPT) (Tapered NPT



SIZE	PART #	STYLE	L	WT
1½ x ¾	151-153	FB	8.5	0.8
1½ x 1	151-154	M	8.5	0.8
1½ x 1¼	151-155	Fab	10.9	0.8
2 x ½	151-202	HB	9.2	1.2
2 x ¾	151-203	M	9.2	1.2
2 x 1	151-204	M	9.2	1.2
2 x 1¼	151-205	M	9.2	1.2
2 x 1½	151-206	M	9.2	1.2
2½ x ½	151-252	HB	9.9	1.5
2½ x ¾	151-253	HB	9.9	1.5
2½ x 1	151-254	M	9.9	1.5
2½ x 1¼	151-255	M	9.9	1.5
2½ x 1½	151-256	M	9.9	1.5
2½ x 2	151-258	M	9.9	1.5
3 x ½	151-302	HB	11	2.5
3 x ¾	151-303	HB	11	2.5
3 x 1	151-304	M	11	2.5
3 x 1¼	151-305	M	11	2.5
3 x 1½	151-306	M	11	2.5
3 x 2	151-308	M	11	2.5
4 x ½	151-402	HB	10.7	3.1
4 x ¾	151-403	HB	10.7	3.1
4 x 1	151-404	M	10.7	3.1
4 x 1¼	151-405	M	10.7	3.1
4 x 1½	151-406	M	10.7	3.1
4 x 2	151-408	M	10.7	3.1
6 x ½	151-602	HB	9.3	5.8
6 x ¾	151-603	HB	9.3	5.8
6 x 1	151-604	HB	9.3	5.8
6 x 1¼	151-605	HB	9.3	5.8
6 x 1½	151-606	M	9.3	5.8
6 x 2	151-608	M	11.5	5.8

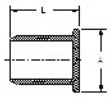
REPAIR COUPLING (GxG) KNOCK-ON STYLE (No



SIZE	PART #	STYLE	A	L	WT
1½	109-015	M	2.8	6.5	0.5
2	109-020	M	3.3	7.8	0.7
2½	109-025	M	3.8	8.4	0.9
3	109-030	M	4.5	9	1.3
4	109-040	M	5.9	10.6	2.7
5	109-050	M	7	11.2	4.1
6	109-060	M	8.3	11.6	5.6
8	109-080	M	10.4	11.1	10.3
10	109-100	C	11.5	11.5	14
12	109-120	C	12	12	22

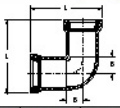
PLUG (Spigot)

Poured concrete thrust blocks only



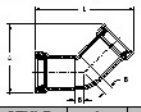
SIZE	PART #	STYLE	A	L	WT
1½	144-015	Fab	2.7	5.2	0.2
2	144-020	M	3	2.7	0.2
2½	144-025	Fab	3.4	5.3	0.8
3	144-030	M	3.8	3.5	0.4
4	144-040	M	5	3.5	0.4
6	144-060	M	6.8	5.4	2.3
8	144-080	M	8.9	6.4	3.8

90° BEND (GxG)



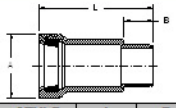
SIZE	PART #	STYLE	B	L	WT
1½	118-015	M	1	4.8	0.6
2	118-020	M	1.3	6.2	0.8
2½	118-025	M	1.6	6.8	1.3
3	118-030	M	2	7.7	1.8
4	118-040	M	2.5	9.5	3.8
5	118-050	Fab			3.8
6	118-060	M	3.6	12.3	9
8	118-080	M	4.5	14.9	16.3

45° BEND (GxG)



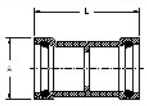
SIZE	PART #	STYLE	A	B	L	WT
1½	122-015	Fab	5.8	0.9	9.1	0.9
2	122-020	M	5.3	0.6	7.8	0.8
2½	122-025	M	6.1	0.7	8.3	1.1
3	122-030	M	6.6	0.9	9.1	1.6
4	122-040	M	8.4	1.1	11	3.4
6	122-060	M	11.3	1.6	13.6	7.8
8	122-080	M	13.8	2	15.8	13.3

SPIGOT x GASKET ADAPTER



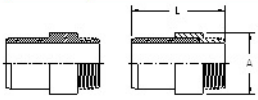
SIZE	PART #	STYLE	A	B	L	WT
1½	130-015	M	2.7	1.1	4.5	0.3
2	130-020	M	3.3	1.4	4.9	0.5
2½	130-025	M	3.8	2	5.3	0.7
3	130-030	M	4.5	2	5.8	0.9
4	130-040	M	5.9	2.3	6.4	1.7
5	130-050	M	7	3	9.1	3
6	130-060	M	8.3	3	8	3.8

LINE COUPLING (GxG) (w/ Stop)



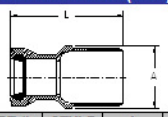
SIZE	PART #	STYLE	A	L	WT
1½	108-015	M	2.8	6.5	0.5
2	108-020	M	3.3	6.7	0.7
2½	108-025	M	3.8	7	0.9
3	108-030	M	4.5	7.2	1.3
4	108-040	M	5.9	10.6	2.7
6	108-060	M	8.3	9.3	5.6
8	108-080	M	10.4	11.1	10.3
10	108-100	C	11.5	11.5	14
12	108-120	C	12	12	22

PE (Plain End) x MALE NPT ADAPTER



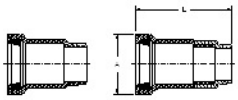
SIZE	PART #	STYLE	A	L	WT
1½	133-015	Fab	2.2	5.2	0.3
2	133-020	M	2.6	4.1	0.3
2½	133-025	Fab	3.3	6.3	0.8
3	133-030	Fab	4	6.9	1.3
4	133-040	Fab	5	7.5	2
6	133-060	Fab	7.3	9.8	5.3

REDUCER S.E.B. (SxG)



SIZE	PART #	STYLE	A	L	WT
2 x 1½	116-215	M	2.8	7	0.5
2½ x 2	116-252	M	3.4	7	0.8
3 x 2	116-320	M	3.7	7.9	0.9
3 x 2½	116-325	M	4.2	7.4	1.3
4 x 2	116-420	M	4.7	10	1.5
4 x 2½	116-425	M	5	8.3	1.8
4 x 3	116-430	M	4.7	10.1	1.9
5 x 4	116-540	Fab	5.8	7.8	3
6 x 3	116-630	M	7	9	3.5
6 x 4	116-640	M	6.9	8	2.7
6 x 5	116-650	M	7	10	4.9
8 x 6	116-860	M	9	9.3	5.8

GASKET x MALE NPT ADAPTER



Size on size and reducing sizes of these adapters also available in HARCO Ductile Iron. Do not use joint restraint.

SIZE	PART #	STYLE	A	L	WT
1½	131-015	M	2.8	4.3	0.5
2	131-020	M	3.3	4.6	0.5
2½	131-025	M	3.8	4.8	1.2
3	131-030	M	4.5	5	1.5
4	131-040	Fab	5.9	8.5	2.8
5	131-050	M			3
6	131-060	Fab	8.3	10.9	10.3

STYLE LEGEND:

A	Assembled using one piece molded fitting with MIPT x Gasketed adapter or Spigot adapter for branch or Bell
C	Manufactured by Certain-Teed Corporation
Fab	Fabricated using SCH-40 PVC fittings with HARCO Spigot adapters (or pipe) solvent welded together
FB	Flo style one piece molded, reduced by use of flush style thread x thread bushing
HB	Harco style one piece molded, reduced by use of flush style thread x thread bushing
M	One piece molded

PLEASE CALL FOR OTHER AVAILABLE SIZES

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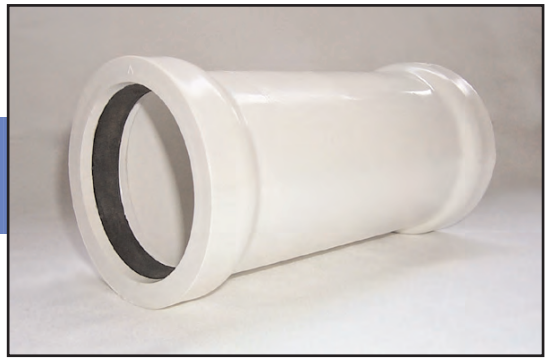
HARCO FITTINGS

Product Sheet



PVC Pressure Repair Coupling

HARCO Knock-On Style Gasketed Fitting

IPS PVC PRESSURE

Gasketed Joint

Knock-On Style for Quick Installation

No Threads
No Bolts
No Glue

Makes PVC Pipe Repairs Easy!

After Installation, Water Pressure Can Resume Immediately

Make PVC Pipe Repairs Easy!

The Harco "Knock-On" repair coupling is the best repair coupling available on the market today. Harco's unique gasket design allows for travel in both directions, making it as easy to slide the coupling back onto the existing pipe as it was to slide it onto the repair section.

The square face bell design allows for a larger object, such as a bar or wood block, to be placed against the fitting in order to knock the repair coupling into place. All Harco repair couplings are pressure rated to 200 p.s.i. and, with no bolts, nothing to tighten to engage the gasket, no glue and no set time before backfilling can begin, the repair coupling is completed as soon as it is installed. You can immediately turn the water pressure back on and resume normal operations.

The combination of all these features makes the Harco "Knock-On" repair coupling the simplest and quickest repair coupling on the market today. When the water is turned off time is of the utmost importance, so use Harco repair couplings and get your system running again immediately.

Product Data

SIZE	PART NUMBER	CTN. QTY.	CTN. WT.
1½	109-015	24	12
2	109-020	24	19
2½	109-025	24	27
3	109-030	24	38
4	109-040	12	40
5	109-050	6	26
6	109-060	6	40
8	109-080	4	53
10	109-100	1	14
12	109-120	1	22

10" and 12" manufactured by Certain-Teed Corporation.

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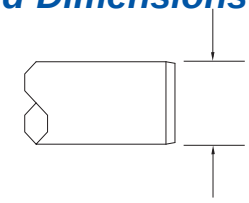
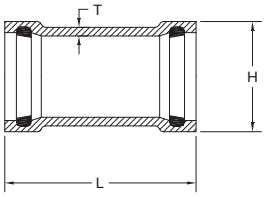
PVC Pressure Repair Coupling

Product Sheet

Weights and Dimensions

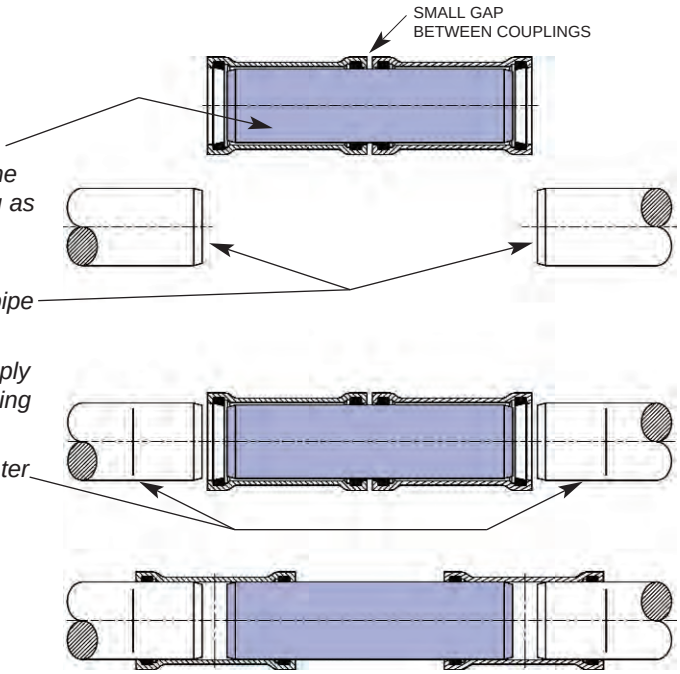




SIZE	PRODUCT #	H	L	T	WEIGHT	PIPE O.D.
1½	109-015	2.8	6.5	.107	0.5	1.900
2	109-020	3.3	7.8	.133	0.7	2.375
2½	109-025	3.8	8.4	.158	0.9	2.875
3	109-030	4.5	9.0	.191	1.3	3.500
4	109-040	5.9	10.6	.246	2.7	4.500
5	109-050	6.9	11.2	.300	4.1	5.560
6	109-060	8.3	11.6	.358	5.6	6.625
8	109-080	10.5	11.1	.463	10.3	8.625
10	109-100	12.4	11.5	.725	14.0	10.750
12	109-120	14.6	12.0	.835	22.0	12.750

Installation Instructions

1. *Cut out and remove damaged section of pipe as required.*
2. *Cut and bevel new pipe to fit the gap of the repair section, accounting for the overhang of the gasket race of the repair couping as shown.*
3. *Using generous amounts of pipe lube, install repair couplings on pipe section as shown.*
4. *Bevel ends of pipe in ground. Apply pipe lube to pipe ends and coupling gaskets.*
5. *Mark pipe to use as guide to center coupling over joint.*
6. *Align and slide repair couplings over the original pipe to marks centering the couplings over the cut.*



NOTES:

- *Gap between ends of pipe will have no effect on system performance.*
- *In systems using mechanical joint restraint or glue joint fittings, care must be taken with repairs in the restrained lengths to see that proper thrust restraint is maintained.*

IPS PVC PRESSURE

Gasketed Joint

Knock-On Style for Quick Installation

No Threads
No Bolts
No Glue

Makes PVC Pipe Repairs Easy!

After Installation, Water Pressure Can Resume Immediately

HARCO

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PVC SEWER FITTINGS

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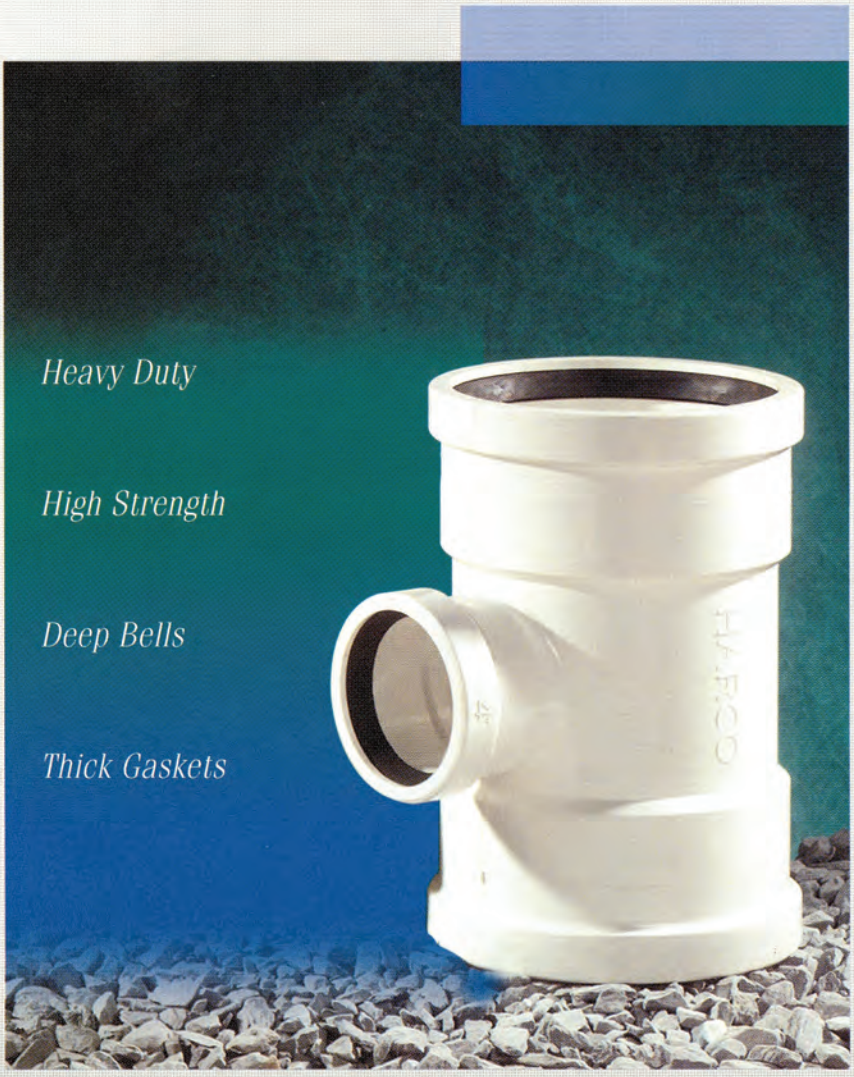
How can HARCO **Sewer Fittings** cost thousands less?

Simple: because they last. And last. And last. When sewer fittings don't break, you don't have to go back in the hole for repairs. That saves you time, manpower and money.

And the fact is, nobody in the business makes fittings this tough. We build them with more material to install easier, test faster, and stand up to more stress. You take less time, do less work, and spend less money. The choice couldn't get any simpler than that.



3 good reasons why HARCO sewer fittings cost thousands less.

HARCO fittings are built to last longer and take more punishment.
As a result, you save thousands in dig-up time and replacement costs.

1. STRONGER. We use more material so fittings last longer, even in high stress situations. When they don't break, you don't have to dig them up again.
2. DEEPER BELLS. Sockets allow a greater margin of error and fuller engagement of components. The result is a sure fit with increased component strength.
3. THICKER GASKETS. HARCO gaskets are thicker and more forgiving. All this quality means lines can be tested and approved faster, so you save time and avoid the high cost of failure and retrofitting.

Harco has been manufacturing top quality fittings since 1966. Harco's gasketed PVC sewer fittings have been known as the best in the industry for more than 25 years. Don't gamble on minimum specifications. Rely on maximum results. Specify HARCO fittings.

Experienced Contractors and Suppliers Know the Value of HARCO Quality

"We have tried every fitting on the market and had problems with all of them except HARCO. We have recently standardized on HARCO sewer fittings; we won't install anything but their fittings."
Bill Phares, William A. Hazel Co.

"We have never had any problems with HARCO fittings. I don't think there has ever been a claim against HARCO fittings since we started working together."
David Lenoir, Pipeline Supply

"You make the best fitting on the market. We use HARCO 100%!"
Richard Pierson, R. E. Pierson

HARCO

434/845-7094

Harrington Corporation
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Lynchburg, VA 24506
www.harcofittings.com

SUGGESTED SPECIFICATIONS PVC Sewer Fittings shall conform to the requirements of ASTM D-3034 and F-1336 specification with minimum wall thickness of SDR 35 as defined in section 7.4.1. Fittings in sizes 4" through 8" shall be molded in one piece with elastomeric joints and minimum socket depths as specified in sections 6.2 and 7.3.2. Fittings 10" and larger shall be molded or fabricated in accordance with section 7.11 with manufacturers' standard pipe bells and gaskets. Gaskets shall have a minimum cross sectional area of 0.20 sq. in. and conform to ASTM F-477 specification. PVC material shall have a cell classification of 12454-B or C as defined in ASTM D-1784.

Does a Heavy, Stronger PVC Sewer Fitting Make a Difference?

Here's what contractors say about HARCO's PVC sewer fittings:

"We have tried every fitting on the market and had problems with all of them except HARCO. We have recently standardized on HARCO sewer fittings, we won't install anything else."

Bill Phares.-William A. Hazel Co.

"I will not use any other fitting but HARCO, they are the strongest fittings made."

S. Brooks Archbell, Jr-Peters & White...804-487-1000

"HARCO is the best fitting made. We use HARCO 100%."

Richard Pierson- R.E. Pierson...609-728-2703

"Will ONLY accept HARCO Fittings."

R.H. Moore-South Carolina

"HARCO has the best fitting on the market and we use it exclusively."

Dewey Zeller-Sambol Const...908-249-2900

"You don't have to advertise those fittings, (HARCO sewer fittings) everyone knows they are the best fittings. We won't use any other fittings but HARCO's."

Bruce Aylor-William A. Hazel Co.

"We will only use HARCO fittings because we have more faith in HARCO and it's a stronger fitting."

Mike Archbell-A & W Const Co...757-499-4157

"We have never had problems with HARCO fittings. Contractors prefer and demand HARCO fittings."

David Lenoir-Pipeline Supply

"Had problems with other fittings' skinny gaskets and will only use a HARCO fitting."

Ashra Ochetetler-Beer & Slaybaugh Contracting

"We have standardized on HARCO sewer fittings because it's a much better fitting."

Vico Const. Co(1997)

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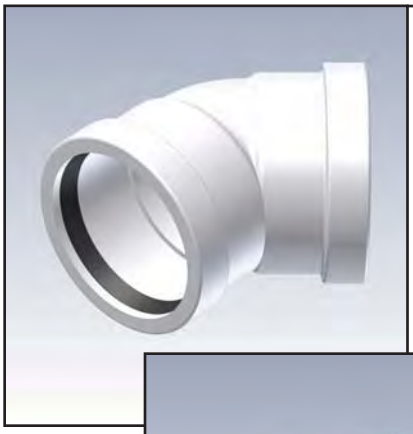
HARCO FITTINGS

Product Flyer

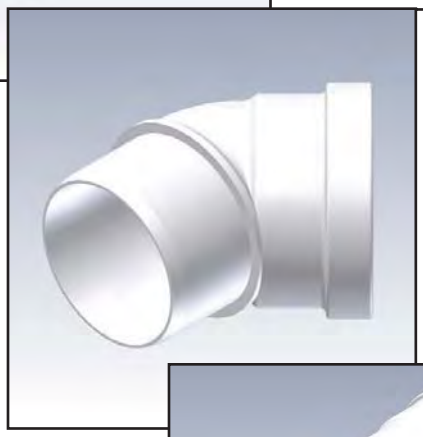
Extra Heavy Wall, SDR18, SEWER FITTINGS

SEWER



6” 45° Bend
GxG

Part No. 51-22-060



6” 45° Bend
SxG

Part No. 51-23-060

8” x 4” Wye
GxGxG

Part No. 51-01-0804

8” x 6” Wye
GxGxG

Part No. 51-01-0806

100 % Thicker and Heavier than SDR 35

50% Thicker and Heavier than SDR 26

Fits ASTM D-3034 PVC Sewer Pipe, SDR35 and SDR26

One-Piece Molded PVC

SDR18 Wall Thickness

Deep Bell Push-On Fittings

Thick Gaskets

**** Note: 8 x 6 Tee Wye available as assembly**

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PVC C-900 FITTINGS

HARCO FITTINGS

Product Sheet

PVC FITTINGS FOR C900 PIPE

PVC for C900

Engineered for Durability

Size 4”-12”

High Strength

All PVC System

Easy Installation

High Flow Capacity

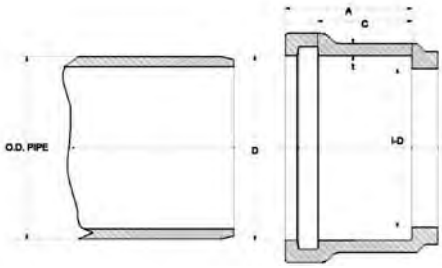
HARCO CLASS 150 PVC FITTINGS

HARCO PVC fittings are injection molded from virgin PVC compound for the same high strength and corrosion resistance you are now receiving from the C-900 pipe. These HARCO PVC fittings make possible an all PVC system. Fittings meet DR18 requirements of AWWA C-900.

SUGGESTED SPECIFICATION

All fittings for C-900 pipe shall be manufactured in one piece of injection molded PVC compound meeting ASTM D1784. Fittings shall be designed to withstand a minimum of 755 psi quick burst pressure @ 73°F tested in accordance with ASTM D1599. Bells shall be gasketed joint conforming to ASTM D3139 with gaskets conforming to ASTM F477. Ductile Iron or Cast Iron Push-on Joint or M.J. will be allowed as alternative when PVC sizes are not available.

STANDARD JOINT DIMENSIONS - IN INCHES



Nominal Diameter	A	C	D	I-D	t	O.D.
4	4.3	3.1	4.86	4.45	.32	4.80
6	4.8	3.5	6.96	6.38	.45	6.90
8	5.4	4.0	9.13	8.38	.58	9.05

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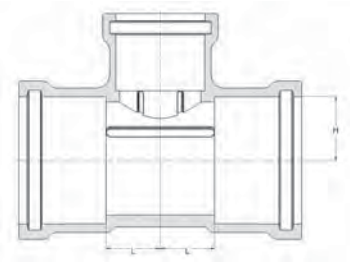
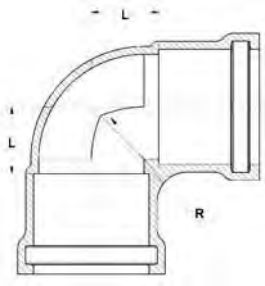
PVC Fittings for C900 Pipe *Product Sheet*



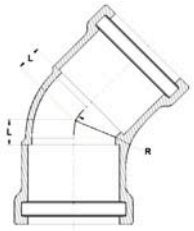
Tee

Cat. No.	Size	L	H	Wt
312-0404	4 x 4	2.8	2.8	6.7
312-0604	6 x 4	2.8	3.9	11.5
312-0606	6 x 6	3.9	3.9	14.5
312-0804	8 x 4	2.8	5.1	19.0
312-0806	8 x 6	3.9	5.1	23.0
312-0808	8 x 8	5.1	5.1	26.0



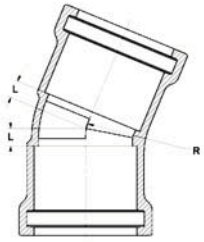
90 Bend

Cat. No.	Size	L	R	Wt
318-040	4	2.8	2.2	6.0
318-060	6	3.9	3.2	12.0
318-080	8	5.1	4.2	23.0



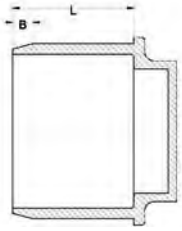
45 Bend

Cat. No.	Size	L	R	Wt
322.040	4	1.3	2.2	4.1
322-060	6	1.8	3.2	8.2
322-080	8	2.2	4.2	16.1



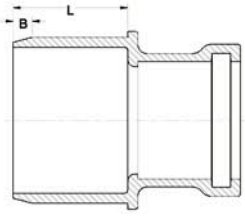
22 ½ Bend

Cat. No.	Size	L	R	Wt
324-040	4	0.9	2.2	4.0
324-060	6	1.2	3.2	8.0
324-080	8	1.3	4.2	15.0



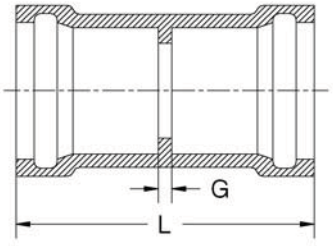
Plug

Cat. No.	Size	L	B	Wt
344-060	6	4.75	0.8	3.1
344-080	8	5.25	1.0	6.2



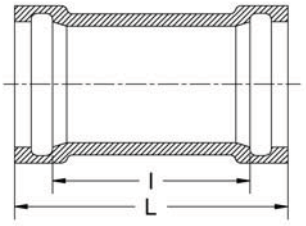
Reducer

Cat. No.	Size	L	B	Wt
317-0604	6 x 4	4.75	0.8	10.4
317-0806	8 x 6	5.25	1.0	19.6



Line Coupling

Cat. No.	Size	L	G	Wt
308-040	4	8.9	0.4	2.9
308-060	6	10.0	0.5	6.0
308-080	8	11.3	0.6	11.5



Repair Coupling

Cat. No.	Size	L	I	Wt
309-040	4	8.9	6.6	3.4
309-060	6	10.0	7.5	6.7
309-080	8	11.3	8.6	12.5

Please see price list and engineering data sheets for more sizes & configurations.

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HARCO FITTINGS

Product Sheet

TAPPED SERVICE TEE FOR C-900 PVC PIPE

C-900

HARCO Molded, One-Piece PVC Service Tee

Tapped tees designed for C-900 PVC pipe are available from HARCO Fittings in 4", 6" and 8" sizes with AWWA or NPT threads (¾" through 2"). These fittings are manufactured to the same design and standards as the tough HARCO C907 fittings. *These fittings eliminate the problems of direct tapping of C-900 PVC pipe and the uncertainty of incorrectly installed saddles.* With the same corrosion resistance of PVC pipe, HARCO tapped service tees allow for a totally corrosion proof service connection.

HARCO Fittings service tee threads are molded in a reinforced boss...the one-inch thickness assures that the corporation stop will not pull out. These threads have withstood 5,000-pound pull-out tests and will withstand 75 foot-pounds of torque without damage, thereby *preventing overtorquing problems.* By eliminating the direct tap, *the potential weak spot introduced by putting a hole in the pipe is eliminated, the pipe wall integrity is preserved and the safety hazard associated with tapping is removed.*

Tapped Tees vs. Saddle in Main

- Dull bits and drilling procedures can cause stress on pipe, creating potential future pipe failure.
- Saddle can be mispositioned. Bolts can be too tight or too lose.
- Metallic saddle will corrode. Iron to brass results in dissimilar metal corrosion.
- Drilling shavings can enter pipe; failure to recover coupon or shavings will contaminate pipe and create blockage.
- Drilled hole in pipe wall destroys structural integrity. Saddle will not replace missing material. Creates combined stresses beyond hole.
- Pipe temperature is critical on drilling holes in pipe. Too hot or too cold will crack pipe.
- No assurance to owner that all contractor personnel are properly trained in drilling holes and installing saddles.

Tapped Tees vs. Press Hot Taps

- Safety: potential always exists for accident if all procedures are not followed or if pipe is defective.
- Tapped Tees eliminate a tap at an over-stressed point in the pipe because of two gaskets joints within 13".
- Two gasketed joints provide extra isolation and degree of freedom between service and main.

- *1" Thick Molded Boss Reinforces Wall and Provides Superior Strength*
- *Eliminates Overtorque of Saddle Bolts*
- *No Corrosion*
- *Easy and Quick Installation*

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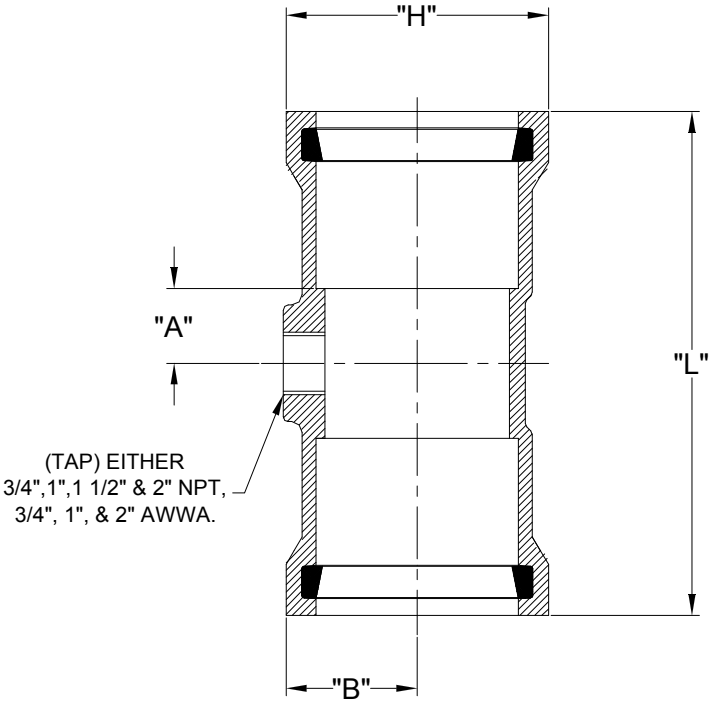
TAPPED SERVICE TEE FOR C-900 PIPE

Product Sheet



SIZE	PROD. NO.	A	B	H	L	T	WT	THREADS
4	351- 40X	3.6	3.2	6.9	12.0	0.32	5.0	NPT
	352- 40X							AWWA
6	351- 60X	3.9	4.1	8.5	13.0	0.45	9.2	NPT
	352- 60X							AWWA
8	351- 80X	4.1	5.2	11.0	14.9	0.58	16.0	NPT
	352- 80X							AWWA

Note: For tap sizes, replace "X" in the product number as follows:

3 = ¾"
4 = 1"
6 = 1½"
8 = 2"

For Example: 351-403 = 4" x ¾" Fitting

Suggested Specifications

Tapped Service Tees shall be manufactured in one piece of injection molded PVC compound meeting ASTM 1784, with outlet threads molded in place. Fittings shall be Class 150 psi and conform to wall thickness DR 18. Bells shall be gasketed type joint conforming to ASTM D3139 with gaskets conforming to ASTM F477. Fittings shall withstand 755 psi quick burst test in accordance with ASTM 1599. Fittings shall be as manufactured by HARCO, Lynchburg, Virginia or an approved equal.

Installation Instructions

Inspect fittings and assure that interior is clean and free of dirt. Cut and bevel pipe to a 15° angle, ¾" long. Lubricate fitting gaskets and pipe ends; insert pipe into fitting. The corporation stop can be installed before or after installation of the fitting in the mainline. The corporation stop's tapered thread should be spirally wound with two to three layers of tetraflouroethylene (Teflon™) pipe thread. No other sealant is recommended. Tighten the inserted corporation stop to a torque of approximately 30 foot-pounds. Install service line and curb stop, and record location for future connection.

Pullout Resistance Comparison

SIZE	LOAD AT FAILURE	TYPICAL COPPER FLARE CONNECTION FAILURE	REMARKS
4" PVC Pipe Tee ¾" NPT Thread	5,320 lbs.	3,175 lbs.	Threads Stripped in PVC Pipe Tee
4" PVC Pipe Tee 1" NPT Thread	9,160 lbs.	3,500 lbs.	Threads Stripped in PVC Pipe Tee
6" PVC Pipe Tee ¾" NPT Thread	9,090 lbs.	3,175 lbs.	Threads Stripped in PVC Pipe Tee
6" PVC Pipe Tee 1" NPT Thread	9,090 lbs.	3,500 lbs.	Threads Stripped in PVC Pipe Tee

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PITTSBURGH TESTING LABORATORY

ESTABLISHED 1881

ROA-4151

FINAL REPORT
of

QUICK BURST TEST ON HARCO PVC
FITTINGS FOR C-900 PVC PIPE

Reported to: The Harrington Corporation, Lynchburg, Virginia

TEST Hydrostatic quick-burst test of HARCO Class 150 PVC injection molded gasketed fittings for C-900 PVC pipe.

TEST PROCEDURE Fittings are to be tested in general accordance with ASTM D-1599. Push-in plugs are to be installed and externally restrained in test frame. Ultimate test pressures and observations shall be recorded.

RESULTS

Fitting	Harco Cat. Number	Production Code ID No.	Ultimate Test Press.	Comments
4x4" Tee	30355	5/33	900 psi	Rupture
4" 90 Bend	30550	6/33	920 psi	Split
4" Coupling	30150	4/32	980 psi	Rupture (brittle)
6" 45 Bend	30640	6/33	940 psi	Split
6" Coupling	30140	3/32	960 psi	Rupture (brittle)

COMMONWEALTH OF VIRGINIA
JOSEPH E. GREER
No. 13065
PROFESSIONAL ENGINEER

Respectfully submitted,

PITTSBURGH TESTING LABORATORY

Joseph E. Greer

J. E. Greer, PE - Staff Engineer

M. Baratta, PE
Roanoke District Manager

JEG:nm

January 23, 1985

RESULTS OF LONG TERM PRESSURE TEST OF HARCO PVC900 FITTINGS

PURPOSE: To check Harco Class 150 psi (DR 18) fittings for long term strength in accordance with the long term testing requirements of AWWA C900-81, section 2.2.3.1 (page 4) and table 4 (page 7). This section and table require DR 18 (CL 150 psi) pipe to withstand 500 psi for 1000 hrs. at 73 Deg ± 4 Deg F.

PROCEDURE: Fittings were assembled with test plugs and restrained end closure in accordance with ASTM 1598.

RESULTS:

PRODUCT NUMBER	FITTING	PROD. CODE	TEST PRESSURE	TIME (HRS)	RESULTS
30355	4" TEE	5/33	500	3,353	No leaks or failures
30150	4" Repair Coupling	12/33	500	3,353	No leaks or failures
30140	6" Repair Coupling	12/33	500	3,353	No leaks or failures

Water bath temperature maintained at 73 Deg ± 4 Deg F during first 1500 hr. temperature then maintained between 54 Deg and 74 Deg F for the duration. Note: At hour 3,353, pressure was increased to burst fittings for the following results:

PRODUCT NUMBER	FITTING	PROD. CODE	ULTIMATE PRESSURE (PSI)	RESULTS
30355	4" TEE	5/33	900	Gasket extruded
30150	4" Repair Coupling	12/33	875	Coupling split
30140	6" Repair Coupling	12/33	900	Coupling split

I certify that the above data is true and correct.

Steven H. Bailey, Plant Engineer
THE HARRINGTON CORPORATION

Michael B. Harrington, V.P.
THE HARRINGTON CORPORATION

SINCE
1881

FROEHLING & ROBERTSON, INC.
FULL SERVICE LABORATORIES • ENGINEERING/CHEMICAL
"OVER ONE HUNDRED YEARS OF SERVICE"

Richmond, Virginia
May 26, 1987

The Harrington Corporation
P.O. Box 10335
Lynchburg, Virginia 24506

Attention: Steven H. Bailey

RE: 4" and 6" PVC Tapped Tee
Pull Out Tests
F&R, Inc. No.: 0-56-088

Gentlemen:

Pull out tests were conducted on eight of the above referenced 4" and 6" PVC tapped tees as requested in your letter dated April 30, 1987. The 3/4" and 1" NPT test plugs submitted were welded to high strength tabs, threaded into each tee with two layers of teflon tape with approximately 30 foot pounds of torque and fastened to the upper head of the test machine. Tensile load was applied slowly until failure occurred and the NPT plug was extracted from each speciman. In general, the PVC threads stripping from the PVC tee was the observed mode of failure. The results of the tests were recorded as shown on the attached data sheet. Several sections of typical stripped-out threads are enclosed for reference.

Should you have any questions or require additional information, please contact us at your convenience.

Respectfully submitted,

FROEHLING & ROBERTSON, INC.

Charles C. Crim

Charles C. Crim, P.E.

CCC/cm

May 26, 1987
Con't

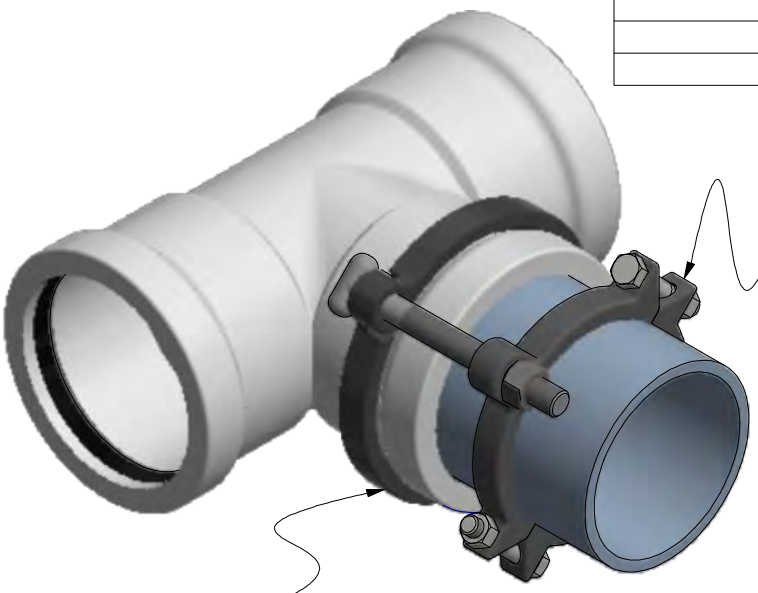
-2-

DATA SHEET

LAB MARK	PIPE TEE	LOAD OF FAILURE	REMARKS
#1	3/4" NPT thread Harco 4" PVC Pipe Tee ASTM 3139 - CL 150	5,300 lbs.	Threads Stripped in PVC Pipe Tee
#2	3/4" NPT thread Harco 4" PVC Pipe Tee ASTM 3139 - CL150	5,320 lbs.	Threads Stripped in PVC Pipe Tee
#3	3/4" NPT Thread Harco 6" PVC Pipe Tee ASTM 3139 C1.size CL 150	6,700 lbs.	Threads Stripped in PVC Pipe Tee
#4	3/4" NPT thread Hanco 6" PVC Pipe Tee ASTM 3139 C1. size CL 150	6,260 lbs.	Threads Stripped in PVC Pipe Tee
#5	1" NPT Thread Harco 6" PVC Pipe Tee ASTM 3139 C1. size CL 150	9,090 lbs.	Threads Stripped in PVC Pipe Tee
#6	1" NPT thread Hanco 6" PVC Pipe Tee ASTM 3139 Cl. size CL 150	8,850 lbs	Threads Stripped in PVC Pipe Tee
#7	1" NPT Thread Harco 4" PVC Pipe Tee ASTM 3139 Cl. size CL 150	8,300 lbs	Threads Stripped in PVC Pipe Tee
#8	1" NPT Thread Harco 4" PVC Pipe Tee ASTM 3139 Cl. size CL 150	9,160 lbs.	Threads Stripped in PVC Pipe Tee

JOINT RESTRAINTS FOR MOLDED HARCO PVC C-900 FITTINGS

SUPPLIERS OF JOINT RESTRAINTS w/ RESTRAINT RODS	
MAKER	**SERIES**
EBAA	15PF00
	15MJ00
FORD	1300-C
	1309-C
SIGMA	PV-LOK PWM
STAR	1000C



RESTRAINED TEE
(RESTRAINTS WILL WORK ON BELLS OF ALL MOLDED HARCO PVC C-900 FITTINGS)

RESTRAINT BELL RING

SIZE	RESTRAINT RODS	BC DIA.	WEIGHT LBS.	PRODUCT NUMBER
4"	2	7.50"	4.1	18-9404
6"	2	10.24"	6.2	18-9406
8"	2	13.07"	9.2	18-9408

MATERIAL: DUCTILE IRON, ASTM A536, GRADE 65-45-12 OR STRONGER

SUGGESTED SPECIFICATION

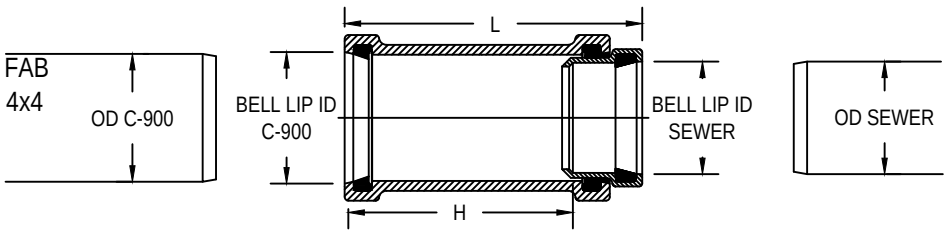
JOINT RESTRAINT DEVICES SHALL BE MANUFACTURED OF DUCTILE IRON, GRADE 65-45-12 OR STRONGER MEETING ASTM A536. RESTRAINTS SHALL BE MINIMUM PRESSURE CLASS 235 PSI.

INSTALLATION INSTRUCTIONS

ASSEMBLE BEHIND SOCKET OF HARCO PVC BELL, WITH THE ROUNDED NOSE OF THE RESTRAINT POINTED AWAY FROM THE FITTING CENTER. ALIGN RESTRAINT BOLT HOLES WITH VALVE, HYDRANT OR OTHER JOINT RESTRAINT. INSTALL TIE RODS OR BOLTS AND PULL SNUG TO ELIMINATE ANY STACK.

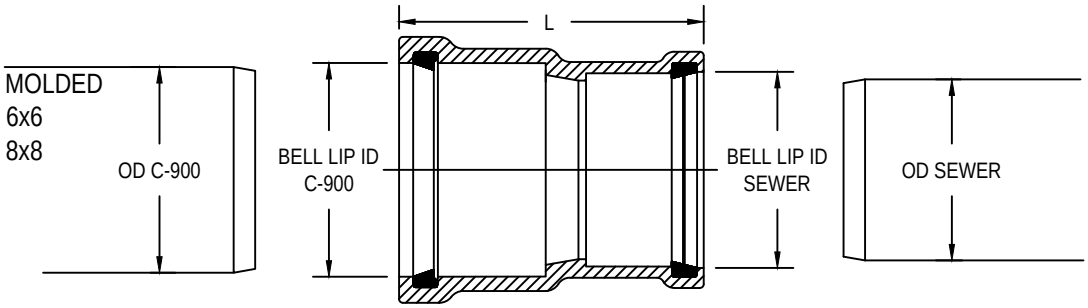
DRAWN BY: TLW	DETAILED BY: SBR	REV: **C**	EFFECTIVE DATE: **5/3/2018**	THE HARRINGTON CORPORATION
DWG DATE: 7/13/2012	REVIEWED BY: SBR		DRAWING NUMBER: C-900 Fitting to Pipe Restraint-(04030032)c.idw	
MATERIAL:		SCALE: **n/a**	SHEET: **1 of 1**	TITLE: **C-900 FITTING TO PIPE RESTRAINT**

C-900 x SDR-35
BxB Adapters



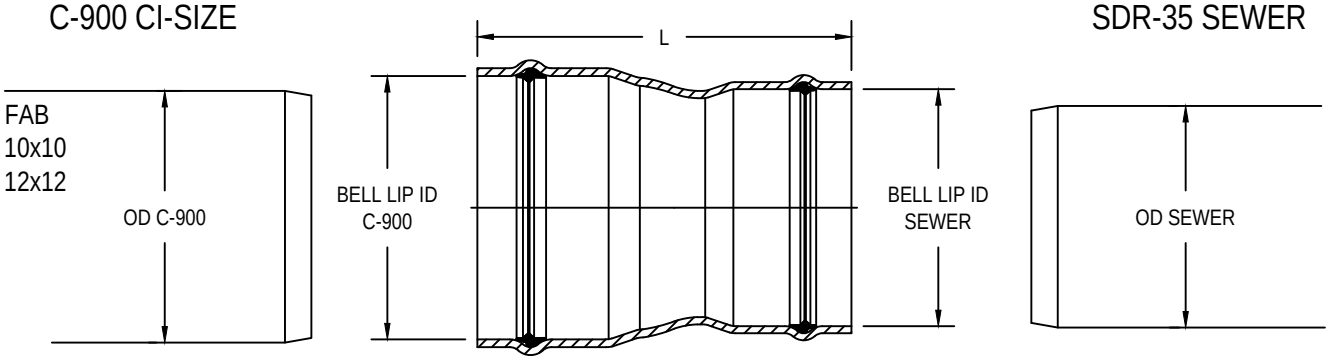
C-900 CI-SIZE

SDR-35 SEWER



C-900 CI-SIZE

SDR-35 SEWER



SIZE	PRODUCT NO.	OD C900	OD SEWER	BELL LIP ID C900	BELL LIP ID SEWER	L	A	CTN QTY.	CTN WT.	STYLE
4x4	18-39004	4.80	4.215	4.86	4.25	10.0	7.4	12	48	MOLDED
6x6	18-39006	6.90	6.275	6.96	6.32	11.1	7.6	6	48	MOLDED
8x8	18-39008	9.05	8.400	9.13	8.45	12.5	8.7	2	30	MOLDED
10x10	18-39010	11.10	10.500	11.20	10.60	19.5	12.0	1	12	FAB
12x12	18-39012	13.20	12.500	13.30	12.60	21.0	13.5	1	18	FAB

Note: Reducing sizes may be created by adding bell by spigot increasers on either end.

LISTING SPECIFICATIONS:

MATERIAL: ASTM D1784
GASKET JOINT: ASTM D3139
GASKET: ASTM F477
CLASS 150
WALL THICKNESS: SDR 18
* ALL DIMINSIONS IN INCHES

Rev: D	DWG. DATE: 2/26/96	REL. DATE:	DRAWING NUMBER 04030031
	DRAWN BY: SBR	SCALE NONE	
Effective Date: 1/2/18	MATERIAL n/a		

THE HARRINGTON CORP
LYNCHBURG , VIRGINIA

TITLE
C-900 x SDR-35 BxB

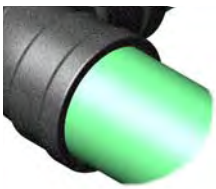
DUCTILE IRON FITTINGS

DUCTILE IRON SEWER FITTINGS

PVC Sewer Mains and Ductile Iron

SEWER

Mainline Sewer by PVC SDR35 and SDR26



Mainline Sewer by PVC - DWV

Mainline Sewer by Ductile Iron

Benefits:

- **Ten Times the Strength of PVC fittings = no failures**
- **Fits directly on ASTM 3034 PVC sewer pipe C-900**
- **Custom coatings options available to match your needs**
- **Protects your reputation by eliminating costly failures**
- **Put an end to costly dig-ups**
- **Worry free air testing**

Harco's Ductile Iron Sewer fittings are specifically designed to eliminate the risks of fitting failure in deep burial installations. With ten times the strength of typical PVC fittings, these ductile iron fittings will stand up to the most demanding conditions and give installers added peace of mind that repairs will not be required.

Fitting Failure: An All Too Common Experience

Deep burial of sewer mains often results in breakage of PVC sewer fittings when running risers to accommodate the depths of house laterals. Trench box installations often add to the problem, as it is difficult to install both the sewer and the riser before the box is moved. This causes extreme loads to be placed on the PVC sewer fittings as they are maneuvered into place from the surface after the trench box is removed.

Solution That Puts an End to Expensive Failures

Use Harco Ductile Iron Sewer Fittings to control the risks of fitting failures during installation and for years to come. Eliminate costly dig-ups and repairs during the testing phase, allowing projects to stay on schedule and on budget. These sewer fittings are designed with the same deep bells and robust gaskets that have made the Harco name synonymous with quality in the municipal marketplace for over 40 years.

HARCO

HARRINGTON CORPORATION • P.O. BOX 10335 • LYNCHBURG, VIRGINIA 24506

PHONE: 434-845-7094 • FAX: 434-845-8562 • E-MAIL: sales@harcofittings.com • www.harcofittings.com

Sewer Fittings for SDR 35 & SDR 26 PVC D3034 Sewer PVC Pipe

WYE
3034 Gasket x **3034** Gasket x **3034** Gasket

Size	Part Number	Weight
4 x 4	280122-0404	21
6 x 4	280122-0604	30
6 x 6	280122-0606	39
8 x 4	280122-0804	44
8 x 6	280122-0806	54

90° Bend
3034 Gasket x **3034** Gasket

Size	Part Number	Weight
4	282022-040	13
6	282022-060	23

TEE-WYE
3034 Gasket x **3034** Gasket x **3034** Gasket

Size	Part Number	Weight
6 x 4	280522-0604	28
8 x 4	280522-0804	41
8 x 6	280522-0806	49

TEE-WYE
3034 Gasket x **3034** Gasket x **DI-OD** Gasket

Size	Part Number	Weight
8 x 4	280523-0804	41
8 x 6	280523-0806	49

Concentric Increaser
3034 Gasket x **3034** Spigot

Size	Part Number	Weight
4 x 6	2816-0406	11

45° Bend
3034 Gasket x **3034** Spigot

Size	Part Number	Weight
4	282322-040	11
6	282322-060	20

45° Bend
3034 Gasket x **3034** Gasket

Size	Part Number	Weight
4	282222-040	11
6	282222-060	20

45° Bend
3034 Gasket x **DI-OD** Gasket

Size	Part Number	Weight
4	282223-040	11
6	282223-060	20

Adapter
3034 Spigot x **DWV** Gasket

Size	Part Number	Weight
4	2835-040	8
6	2835-060	15

Sewer Fittings for DWV (drain waste vent) PVC Pipe & IPS PVC Pipe

Adapter
DI-OD Spigot x **3034** Gasket

Size	Part Number	Weight
8	2834-080	26
10	2834-100	39
12	2834-120	54

90° Bend
DWV Gasket x **DWV** Gasket

Size	Part Number	Weight
4	80420	15
6	80620	27

45° Bend
DWV Gasket x **DWV** Spigot

Size	Part Number	Weight
4	282311-040	14

45° Bend
DWV Gasket x **DWV** Gasket

Size	Part Number	Weight
4	80422	13
6	80622	23

Sewer Fittings for DI-OD Ductile Iron Pipe & C900 PVC Pipe

WYE
DI-OD Gasket x **DI-OD** Gasket x **3034** Gasket

Size	Part Number	Weight
8 x 4	280132-0804	69
8 x 6	280132-0806	58

WYE
DI-OD Gasket x **DI-OD** Gasket x **DI-OD** Gasket

Size	Part Number	Weight
8 x 4	280133-0804	64
8 x 6	280133-0806	76

WYE
DI-OD Gasket x **DI-OD** Gasket x **DWV** Gasket

Size	Part Number	Weight
8 x 4	280131-0804	62
8 x 6	280131-0806	73

TEE-WYE
DI-OD Gasket x **DI-OD** Gasket x **3034** Gasket

Size	Part Number	Weight
8 x 4	280532-0804	74
8 x 6	280532-0806	63

**DIOD bell fits C900 PVC pipe and Ductile Iron pipe. Gasket is Tyton.*

TEE
DI-OD Gasket x **DI-OD** Gasket x **DI-OD** Gasket

Size	Part Number	Weight
8 x 4	281233-0804	93
8 x 6	281233-0806	103
8 x 8	281233-0808	109

45° Bend
DI-OD Gasket x **DI-OD** Gasket

Size	Part Number	Weight
4	282233-040	22
6	282233-060	38
8	282233-080	54

45° Bend
DI-OD Gasket x **DI-OD** Spigot

Size	Part Number	Weight
4	282333-040	15
6	282333-060	34
8	282333-080	48

Adapter
3034 Gasket x **DI-OD*** Gasket

Size	Part Number	Weight
6	2837-060	20
8	2837-080	32
10	2837-100	51
12	2837-120	67

Adapter
DI-OD Gasket x **3034** Spigot

Size	Part Number	Weight
4	2836-040	11
6	2836-060	18

90° Bend
DI-OD Gasket x **DI-OD** Gasket

Size	Part Number	Weight
4	282033-040	26
6	282033-060	44
8	282033-080	71

Product Information

Materials

Body:	Ductile Iron -	ASTM D536
Gaskets:	SBR Rubber -	ASTM F477
Coating:	Standard - Bituminus -	AWWA C53
Coating:	Optional -	See Below

Coatings	Specification	Suffix letter for Ordering
Bituminous	AWWA C153, Standard	(none)
Cement Lining	AWWA C153	C
Coal Tar Epoxy	AWWA C210	T
Fusion Bond Epoxy	AWWA C116	F
Protecto 401		P

Ordering Information

Standard coating is bituminous tar coating, per AWWA C153.
For different coating, add suffix from above to part number.

Example:
Ductile iron sewer 8” x 4” tee-wye (part number 280522-0804) with Protecto 401 would be part number 280522-0804**P**.

Suggested Specifications

Ductile iron sewer fittings shall be deep bell, gasketed joint, and air test rated. Gasket grooves shall be machined. Material shall be ductile iron to ASTM A536, Grade 65-45-12 and ASTM F1336. Wall thickness shall meet the requirements of AWWA C153. Gaskets shall have a minimum cross sectional area of .20 sq. in. and conform to ASTM F477. Fittings shall be manufactured by the Harrington Corporation of Lynchburg, Virginia.

HARCO

Ductile Iron Fittings for IPS-Size PVC Pipe

For Golf Course Irrigation Systems, Commercial Turf Irrigation, and Rural Water Systems

Fittings Designed for Ductility and Reliability

Harco's DI push-on joint fittings are designed to offer the best possible balance of strength, ductility, impact, and corrosion resistance. Fittings are manufactured for ASTM A536, Grade 65-45-12 ductile iron with a tensile strength of 65,000 psi. These fittings are designed for use on IPS PVC pipe and steel pipe in underground water mains, irrigation systems, and sewer force mains.

Harco Offers a Full Line of Top Quality Fittings

Ductile Iron fittings provide greater strength for underground PVC piping systems than either PVC or epoxy-coated steel fittings. Harco's DI fittings come in 2" through 12" diameters, and are available in tees, bends, reducers, plugs, service tees, flange adapters, wyes, and male thread by bell adapters. Our 28 different SEB (Small End Bell) reducers combine with 77 basic patterns to create over 800 possible configurations. Deep bell push-on joints allow quick and easy installation. They also provide extra room in the bells to allow for pipe movement always present in underground systems.

All the Strength You Need... and Then Some

Ductile iron is produced by adding magnesium allow to molten iron. The magnesium causes the flake-form graphite to assume a spheroidal shape. This change in the carbon structure results in a far stronger, tougher ductile material than cast iron while retaining superior corrosion properties.

Harco fittings are pressure rated at 350 psi. They are cast of ductile iron with 65,000 psi tensile strength and a wall thickness of 0.31". The following chart illustrates how these fittings stack up against steel and PVC fittings. A Harco 6" x 6" tee withstood a pressure test of 3,000 psi without failure. This high strength capacity is vital in withstanding the critical cyclical surges and high mechanical stresses present in golf course irrigation systems. This high strength is especially important on systems utilizing the new computer controllers which can create additional surge pressures.

STRENGTH COMPARISON TABLE FOR 6" FITTINGS

MATERIAL	TENSILE STRENGTH	WALL THICKNESS	RELATIVE STRENGTH
PVC	7,000 psi	.36"	1
Epoxy-Coated Steel	49,000 psi	.08"	7
Ductile Iron	65,000 psi	.31"	9

Superior Corrosion Resistance Makes Ductile Cast Iron and Cast Iron Last and Last

Ductile cast iron is the standard underground material in the waterworks industry. In fact, one cast iron system has been in continuous use in a water supply line for over 345 years! Back in 1664, King Louis XIV of France ordered the construction of a cast iron pipe main extending fifteen mile from a pumping station at Marly-on-Seine to Versailles to supply water for the fountains and the town. That cast iron pipe is still functioning after more than 345 years of continuous service.

In ductile and cast iron, this corrosion resistance is created from a layer of insoluble graphite that is formed from initial corrosion that becomes a protective barrier against additional corrosion attack. This phenomenon is the reason that ductile iron and cast iron has such longevity in direct bury application in the majority of soils.

(Caution, The presence of highly corrosive soils or aggressive carried waters may require the use of protective measures, such as polyethylene encasement and/or epoxy coating. For those areas, Harco offers fusion bonded epoxy coatings and/or Ductile Iron Pipe Research Association (DIPRA) recommended polyethylene encasement.)

Harco's Patented Restraint Lug System Keeps Fittings Together (Patent No. 5,183,298)

Harco developed a special patented system of lugs and restraint rings. Restraint lugs designed to withstand over 10,000 pounds pull per lug are cast on the bells on the horizontal centerline of all fittings. The system provides positive restraint of Small End Bell (SEB) reducers, flange adapters and plugs to other fittings, and prevents separation of the assembled fittings.

The restraint rings are also designed to carry the extreme full load of a restrained plug at 350 psi pressure. Lugs allow fittings to be tied to valves and hydrants with the use of Harco restraint rods. Lugs on the bends provide pinch bar points for quick and easy push-on assembly.

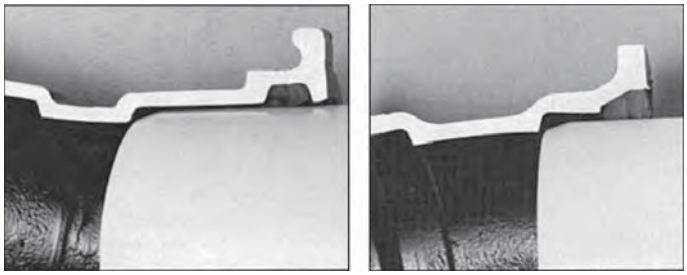
Spigot end of reducers insert into the bells of all other Harco fittings. Restraint rings "lock" reducers to main fitting.

Deep Bells with Gasketed Joints Simplify Installation and Eliminate Problems

Harco's push-on joint design provides for a deep socket bell to accommodate the expansion and contraction of a PVC piping system. The design incorporates a massive gasket in a square groove to prevent roll out and fish mouths. All fittings are designed to work directly on IPS size pipes — without the problems of using transition gaskets.

The push-on joint allows easy, all-weather installation for bottle-type joints every time. The joint assembles exactly like the pipe joints, eliminating all the potential errors that solvent cement voids, incorrect procedures, and inclement weather can cause.

The deep bell was designed in 1969 specifically for PVC pipe, with bell depths equal to pipe joint bell depths. The Harco joint is 2 to 4 times deeper behind the gasket than mechanical joints. The standard MJ joint was designed in 1930 specifically for iron pipe. It wasn't designed to handle the greater expansion and contraction of modern PVC pipe.



Harco Deep Bell vs. Mechanical Joint

The Harco joint is 2-4 times deeper than conventional mechanical joints to accommodate expansion and contraction and to prevent roll out and fish mouths.

Gaskets Are Made by Us to Meet Our Own High Standards

Harco manufactures its own gaskets to assure the highest quality and compatible tolerances for gaskets and bells. The gaskets are molded from SBR rubber and are the Chemidus "Z" style of gasket. These gaskets have been used trouble-free in hundreds of thousands of pipe and fitting joints since the mid-60's.

Modular Configurations Make Repairs Easier and Less Costly

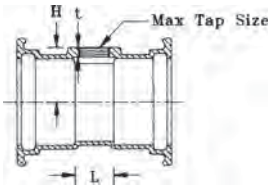
Harco's patented system of 28 different SEB (Small End Bell) reducers combines with 77 basic patterns to create over 800 possible configurations for golf course irrigation systems. Restraint lugs on all fittings allow reducers to be positively attached to the basic fittings, so separation is never a concern. All configurations can either be assembled in the factory or in the field by contractors using standard fittings. This means your job won't be delayed waiting for special order fittings to be manufactured and shipped.

If a particular configuration doesn't get used, no problem. It can be disassembled into standard fittings for use elsewhere. This flexibility is a real plus for designers, contractors and suppliers because changes in the field become easier than ever. You can also reduce the stock you need on hand as well as long lead times for special order.

Shown is an assembled 3 x 2 x 3 tee. The 3 x 2 reducer is installed and restraint rings have been latched over the lugs to create an assembled fitting.

Install Services Easily with Harco Service Tees

Ductile iron service tees are the ideal solution for attaching services or irrigation swing joints onto the main. The gasketed joints of service tees provide added freedom for the service and protect the main line from service line or sprinkler head shocks. Harco service tees eliminate the variety of problems associated with incorrectly installed saddles and incorrect drilling procedures. Iron threads also provide large safety factors for installation — no more cracked PVC threaded fittings from overtorquing and improper assembly. By using a service tee, the main line pipe wall structural integrity is maintained, eliminating the combined stresses formed when a hole is drilled into the pipe.



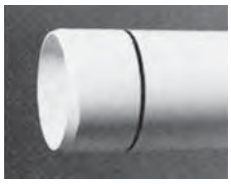
Service Tee - Gasket Joints on each end provide added degrees of freedom.

All Harco tapped tee outlets come furnished with female NPT threads in sizes you require.

Phone: (434) 845-7094 • Fax: (434) 845-8562 • E-mail: sales@harcofittings.com

Installation Instructions

1. Cut the pipe squarely and bevel the plain end of the pipe. Bevel should be approximately 15 degrees and ¾" long. Remove any burrs and ridges on pipe. Measure the bell depth and mark the pipe for reference. In cold weather, allow ½" Clearance between end of pipe and bell stop, to allow for later pipe expansion. (See illustration.)



Length from reference mark to end of pipe equal to "A" from Standard Bell Dimensions, less ½" to allow for expansion.

2. Clean all debris from the bell areas of the fitting. Check the position of the gasket so it's completely seated in the groove with no raised areas.
3. Lubricate the gasket and the plain end of the pipe with the lubricant supplied by the pipe manufacturer.
4. Align the pipe with the fitting and push together by hand or with pry bars on the end of the fitting with two pry bars using the lugs on the fitting. Insert until the reference line mark is even with the edge of the fitting bell.

Thrust Blocking

1. Provide poured concrete thrust blocks at all changes in size or direction. Bends, reducers, plugs, and the opposite side of tee branches all require thrust blocks.
2. The size of the thrust block is determined by the working pressure, the size and type of fitting, and the soil conditions at the job site. To calculate the area of contact with the soil, follow these steps:
3. Calculate the total thrust by selecting thrust/100 by size and type of fitting from Table 1 and multiplying thrust/100 by system pressure divided by 100.
4. Divide the total thrust by the bearing capacity of the soil in excavation (from Table 2) to determine the area (in square feet) of thrust block required to be in contact with the undisturbed soil.

TABLE 1 - THRUST/100 TABLE (POUNDS PER 100 PSI)

SIZE	TEES, PLUGS	90° BENDS	45° BENDS	22½° BENDS
1½	284	401	217	111
2	363	513	278	141
2½	531	751	407	207
3	788	1,114	603	307
4	1,302	1,841	997	508
5	1,989	2,814	1,523	776
6	2,822	3,990	2,159	1,101
8	4,783	6,763	3,662	1,865
10	7,430	10,506	5,689	2,898
12	10,452	14,778	8,002	4,076

For reducers, subtract small opening plug thrust from large opening thrust to calculate thrust/100.

TABLE 2 - SOIL BEARING CAPACITY

SOIL TYPE	SAFE BEARING LOAD LBS PER SQ FT*
Soft Clay	1,000
Sand	2,000
Sand and Gravel	3,000
Sand and Gravel Cemented with Clay	4,000
Hard Pan	10,000

**Harco assumes no responsibility for the above load data. The engineer is responsible for determining safe bearing loads and when doubt exists, soil bearing tests should be specified. The bearing loads given are for horizontal thrusts when depth of cover exceeds 2 ft.*

Suggested Specification

Fittings shall be manufactured of ductile iron, Grade 65-45-12 in accordance with ASTM A536. Fittings shall have deep bell push-on joints with gaskets meeting ASTM F477. Fittings shall be HARCO DEEP BELL by The Harrington Corporation (HARCO Fittings) of Lynchburg, VA. Transition gaskets are not allowed.

The Harrington Corporation

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HARCO FITTINGS

Product Sheet

KNUCKLE JOINT RESTRAINT

1½", 2", 2½", 3" and 4"

DUCTILE IRON

Easy to Install

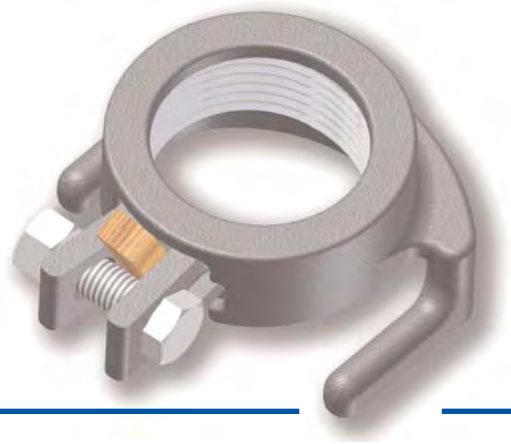
Handled as One Unit

One-Bolt Actuation

Machined Grip ring Serrations

Economical

For HARCO Push-On Ductile Iron Fittings for IPS-PVC Pipe



The Knuckle Joint Restraint by HARCO provides an easy to use, economical option for thrust restraint of HARCO small diameter push-on ductile iron fittings for IPS-PVC pipe.

The unique, two-piece design handles as one piece and permits a one-bolt actuation. The restraint is mounted on the fittings so that the bolt is accessed from the top, making for ease of installation and inspection. Mechanical serrations in the grip ring assure proper gripping of the pipe. No restraint rods or bolts are required.

Once the Knuckle Restraint is mounted, simply push home the beveled PVC pipe, having applied pipe lube to the gasket and pipe spigot. Tighten the bolt that clamps the grip ring onto the pipe and the joint is securely restrained.

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PF128-080610

Knuckle Joint Restraint

for 1½", 2", 2½", 3" and 4"
HARCO Push-On Ductile Iron Fittings

Product Sheet

Product Information

KNUCKLE JOINT RESTRAINT		
SIZE	**PART NUMBER**	**WEIGHT**
1½	60-100-01	2.4
2	60-100-02	2.6
2½	60-100-25	3.4
3	60-100-03	4.3
4	60-100-04	5.7

Material

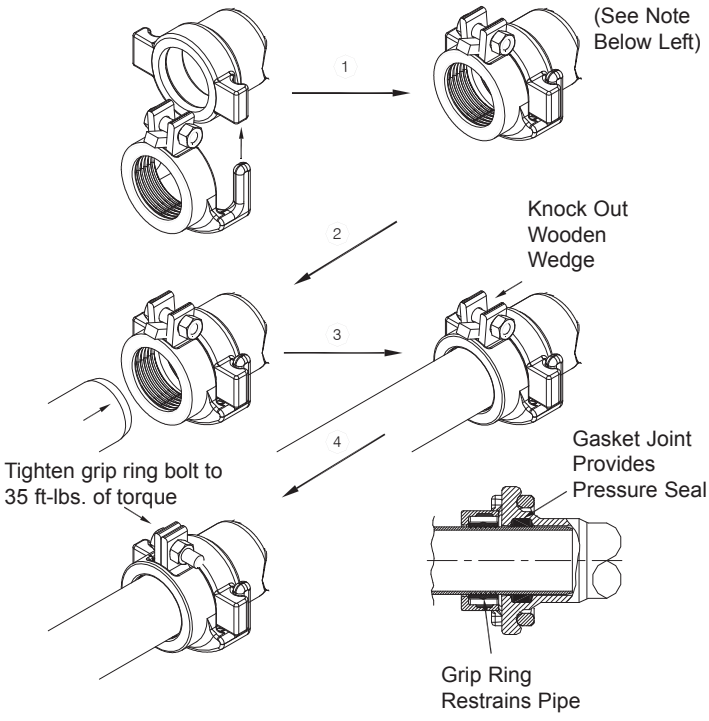
Housing – Ductile Iron, ASTM A536
Grip ring – Ductile Iron, ASTM A536
Bolt and nut – Type 304 Stainless Steel

Suggested Specifications

Joint Restraint shall be knuckle type as manufactured by HARCO (Harrington Corporation) of Lynchburg, Virginia. The grip ring shall be one piece residing within a ductile iron housing having machined serrations and shall be activated by one bolt. Housing and grip ring shall be of ductile iron to ASTM A536. Bolt and nut shall be Type 304 stainless steel.

***NOTE** (May 2004): Earlier versions of ears on HARCO bells varied slightly in thickness. If fingers on knuckle do not easily slide over ears, back of ears can be ground to provide clearance.*

Installation



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HARCO FITTINGS

Product Sheet

DUCTILE IRON NIPPLES

DUCTILE IRON

Product Description

1½", 2", 2½" and 3" iron pipe size (IPS) size ductile iron nipples, TBE (Threaded Both Ends), lengths from 2" to 36" in 2" increments. Nipples can be furnished Threaded, Plain End, and Groove End.

Application

HARCO ductile iron nipples are designed to be used wherever brass, galvanized, black iron or PVC nipples are used in irrigation, industrial, and waterworks applications. Nipples used in conjunction with ductile iron couplings allow HARCO Lateral 90's to be raised 2" to 36" in 2" increments.

Features & Benefits

- ASTM A-536 ductile iron material with tensile strength of 65,000 psi is much stronger than brass, steel or PVC. Eliminates breakage of PVC nipples caused by high torque, external loads and ground movement.
- Ductile Iron is corrosion resistant.
- Different coatings are available.
- Ductile Iron thread fittings also available.
- Available in IPS size diameters 1½" (1.900"), 2" (2.375"), 2½" (2.875"), and 3" (3.500").

Suggested Specification

1½" through 3" nipples shall be made of ductile iron meeting ASTM A-536, Grade 65-45-12, with minimum wall thickness equal to 0.25" and diameters equal to IPS size pipe. Threads shall be NPT per ANSI B.120-1-1983. Nipples shall be manufactured by the Harrington Corporation of Lynchburg, Virginia.

Tensile Strength of 65,000 psi

Made of Corrosion-Resistant Ductile Iron

Available in 1½", 2" 2½" and 3" Diameters

A Variety of Lengths up to 36"

Ductile Iron Threaded Fittings Also Available

HARRINGTON CORPORATION • P.O. BOX 10335 • LYNCHBURG, VIRGINIA 24506
PHONE: 434-845-7094 • FAX: 434-845-8562 • E-MAIL: sales@harcofittings.com • WEB: www.harcofittings.com

DUCTILE IRON NIPPLES — Product Sheet

Product Information

How to Order:

Product # = 870 + Size + Length

Size	
1½"	= 15
2"	= 20
2½"	= 25
3"	= 30

Length	
2"	= 02
4"	= 04
6"	= 06
8"	= 08
10"	= 10
12"	= 12
14"	= 14
16"	= 16
18"	= 18
20"	= 20
24"	= 24
30"	= 30
36"	= 36

Example: 2" x 6" = 87020-06

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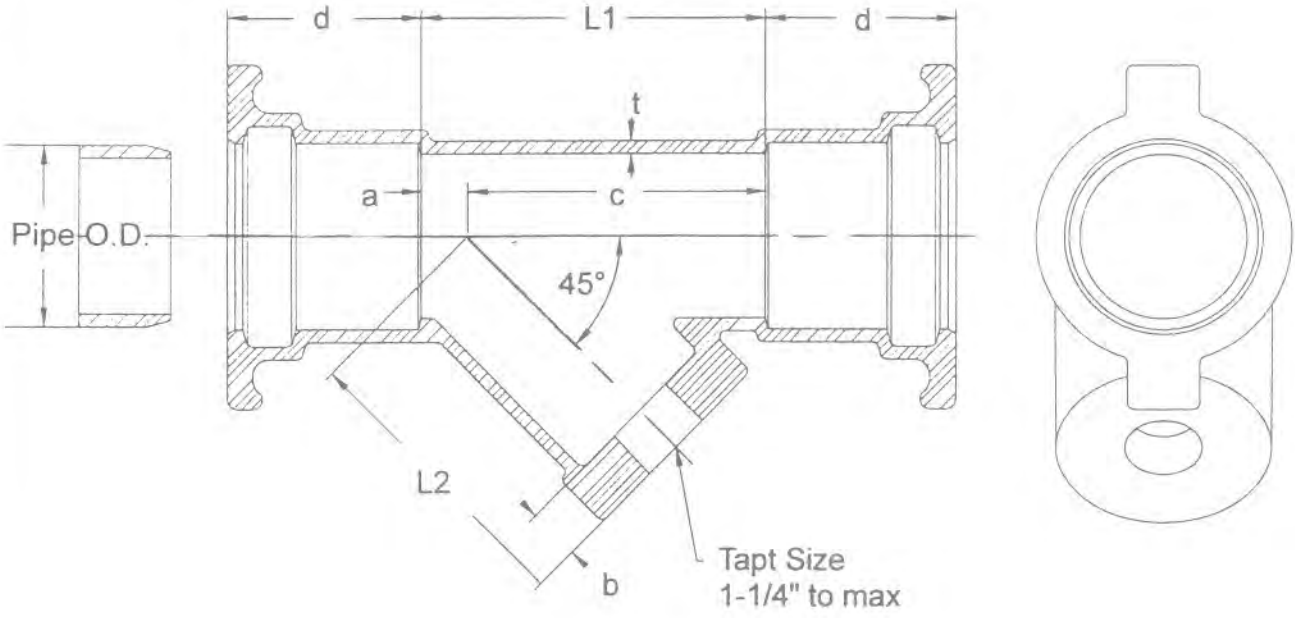
HARCO DUCTILE IRON
PUSH ON WYES



Part No.	Size	a	b	c	d	L1	L2	t	Max Tapt	Pipe O.D.
80010	1-½"	0.61	0.75	3.00	3.28	3.61	3.74	0.25	1-½	1.900
80110	2"	0.70	0.75	3.06	3.48	3.76	4.06	0.25	2	2.375
80210	2-½"	0.79	1.00	4.42	3.48	5.21	4.63	0.25	2-½	2.875
80310	3"	0.91	1.00	5.79	3.75	6.70	5.73	0.25	3	3.500

Note: All dimensions in inches.

Material Specifications:
Fittings - Ductile Iron, meets or exceeds ASTM A536
Gaskets - SBR (Styrene Butadiene Rubber), meets or exceeds ASTM F477
Tapt Outlet - NPT Threads meeting ANSI/ASME B1.20.1-1983

2-23-96

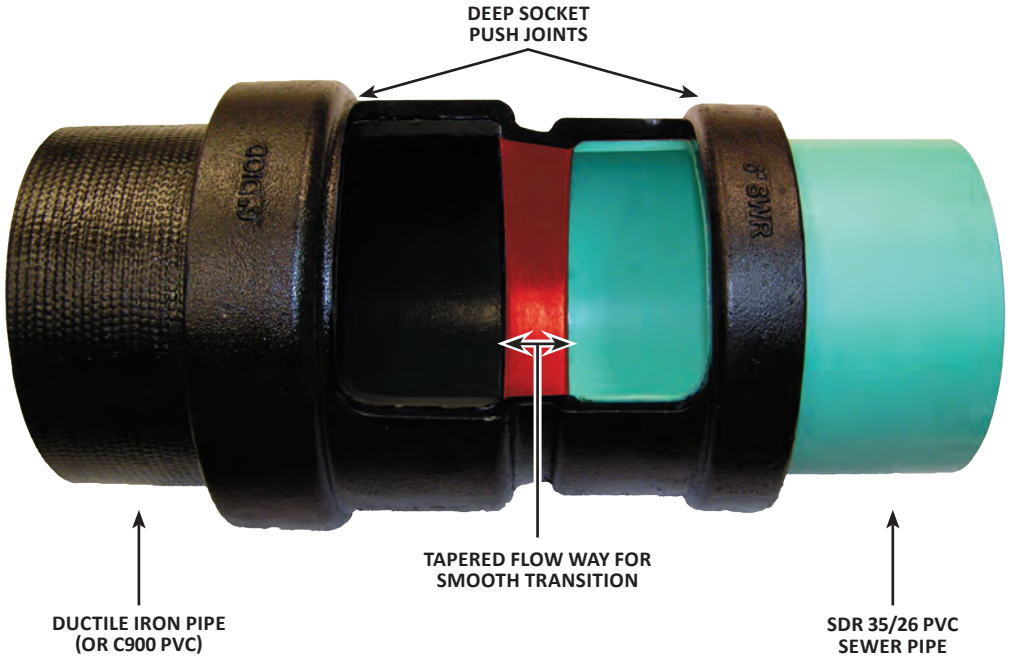
THE HARRINGTON CORPORATION P.O BOX 10335 LYNCHBURG, VA 24506
PHONE 434-845-7094 FAX 434-845-8562

HARCO
FITTINGS

PRODUCT SHEET

DUCTILE IRON TRANSITION ADAPTERS

For ASTM D3034 to DI-OD



FEATURES

- Deep push joint gasketed bells
- Ductile Iron body
- Machined gasket grooves
- Tapered flow way
- Variety of coatings available

BENEFITS

- Easy to install
- Reliable air testing
- No bolts or nuts
- High strength & rigidity
- Reduced “pull out” risk
- Will not obstruct flow or inspection

SIZES

4” to 12” depending on configuration

CONFIGURATIONS

DI x Sewer

- Gasket x Gasket
- Gasket x Spigot
- Spigot x Gasket

What Do You Use To Transition Pipes Between Manholes in Gravity Sewer Lines?

If you don’t allow for transitions of pipe to be made between gravity sewer manholes it is probably due to not having a reliable product. Harco now offers a rigid ductile iron coupling that makes a smooth transition and passes air tests. No more Rubber Couplings that could shear. No more MJ Sleeves that allow gaps between the pipe ends which can catch inspection cameras and debris. Harco Ductile Iron Transition couplings allow for lower material costs by not having to run manhole to manhole with ductile iron pipe. Installation is able to move faster from installing PVC Pipe instead of heavy ductile iron pipe.

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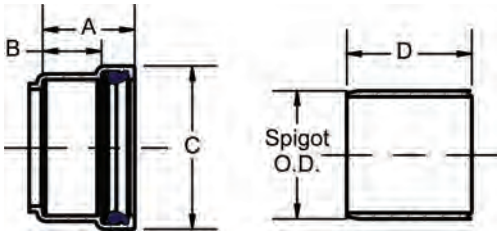
DUCTILE IRON SEWER ADAPTERS

PRODUCT SHEET

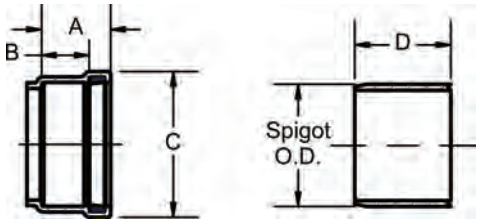
For ASTM 3034 to DI-OD

BELL & SPIGOT DIOD SPECIFICATION



SIZE	A	B	C	D	SPIGOT OD
4	3.9	2.1	6.3	-	4.8
6	4.8	3.1	8.5	-	6.9
8	5.6	3.4	10.7	5.8	9.0
10	5.8	3.5	13.1	6.0	11.1
12	6.1	3.7	15.2	6.3	13.2

BELL & SPIGOT SEWER SPECIFICATION

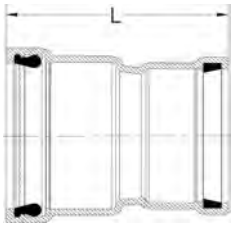


SIZE	A	B	C	D	SPIGOT OD
4	3.0	1.9	5.5	-	4.2
6	3.6	2.5	7.6	-	6.3
8	4.1	3.0	9.7	-	8.4
10	4.8	3.3	12.0	-	10.5
12	5.3	3.7	14.1	-	12.5

SUGGESTED SPECIFICATION:

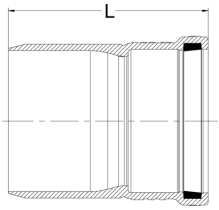
Transition Couplings used to join Ductile Iron or C900 Pipe and D3034 PVC sewer pipe shall be Ductile Iron, deep bell, push on joint, and air test rated. Ductile Iron material shall comply with ASTM A536, Grade 65-45-12 or 80-55-06. Bell depths shall meet the minimum socket depth requirements of ASTM F1336. Gasket grooves shall be machined. Gaskets shall be of SBR rubber and comply with ASTM F477. No transition gaskets are permitted. All couplings shall have pipe stops and a flow way tapered to allow a smooth transition between the pipes. Fittings shall be manufactured by the Harrington Corporation of Lynchburg, VA.

DI-OD GASKET x 3034 GASKET



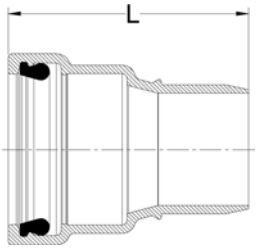
SIZE	PART #	L	WT. (APPROX.)
6	2837-060	9.7	20.0
8	2837-080	11.0	31.5
10	2837-100	12.1	51.1
12	2837-120	12.9	67.3

DI-OD SPIGOT x 3034 GASKET



SIZE	PART #	L	WT. (APPROX.)
8	2834-080	10.5	26.2
10	2834-100	11.5	39.2
12	2834-120	12.3	54.2

DI-OD GASKET x 3034 SPIGOT



SIZE	PART #	L	WT. (APPROX.)
4	2836-040		11
6	2836-060		18

MATERIALS OF CONSTRUCTION

- **Body:** Ductile Iron (ASTM A536)
- **Gaskets:** SBR Rubber (ASTM F477)

COATINGS AVAILABLE

- Bituminus (AWWA C153)
- Fusion Bond Epoxy (AWWA C116)
- Coal Tar Epoxy (AWWA C210)
- Protecto 401
- Others on request

HARCO

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PVC DRAIN BASINS

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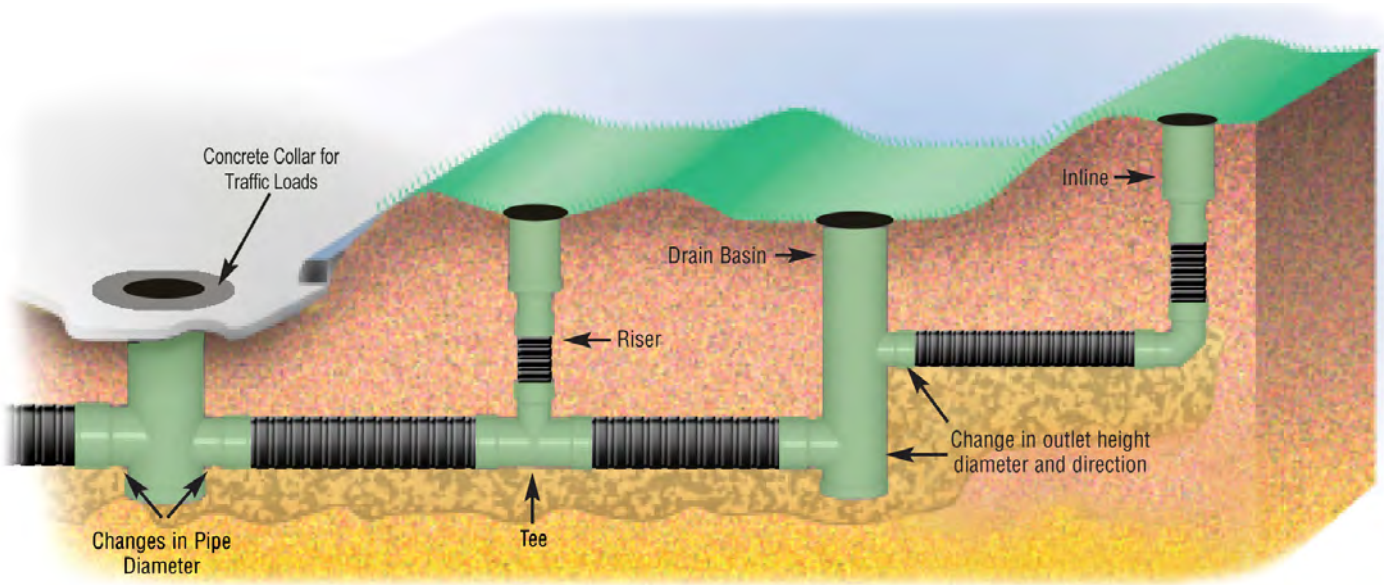
HARCO

Fabricated Drainage Products

Complete Drainage System



Inline Drains are used...

- At the beginning of a drain line
- To add a new water inlet to an existing drain line using a riser pipe and tee
- As a cleanout access / inspection port for drainage system

Drain Basins are used...

- As a junction box when drainage system inlets / outlets change diameter, change pipe type, change elevation, change direction, and allows for multiple inlets or outlets in one structure
- For a water inlet and sediment collection point entering a drainage system

HARCO Surface Drainage Structures are the perfect choice for:

- Commercial Developments
- Schools and Sports Complexes
- Roadways and Highways
- Parking lots
- Government Installations
- Parks and Recreation Areas
- Industrial Parks
- Golf Courses
- Residential Developments

Economical and Durable

HARCO surface drainage structures, including drain basins and inline drains, are manufactured from PVC pipe stock utilizing a thermo-molding process to ensure consistent watertight seal throughout the structure body and the outlet stubs. The raw material used to manufacture this PVC pipe stock shall conform to ASTM D1784 cell class 12454. These heavy-duty PVC structures are abrasion resistant and virtually immune to most types of corrosion.

Inlet / Outlet Adapters

The outlet stubs for HARCO surface drainage structures are manufactured from PVC pipe stock utilizing a thermo-molding process to ensure a tight pipe-to-structure fit that can meet or exceed the pressure requirements of the ASTM D3212 standard for connections joining drainage pipes utilizing flexible elastomeric seals conforming to ASTM F477.

HARCO can provide connections to most corrugated and smooth-wall plastic pipe types/brands.

Made to Order

Every drainage system is different. Whether small or large, your drainage system may require adapting to multiple pipe types and diameters, changes in direction and elevation.

HARCO Drain Basins are custom-built in a timely manner for each project, ensuring you can meet the design and timeline requirements for your project.

HARCO plastic drainage structures should be installed following ASTM D2321 installation guidelines accepted for backfill, compaction and installation of plastic drainage pipes.

Special Use Structures/Field Tap

Snout Drainage Structure

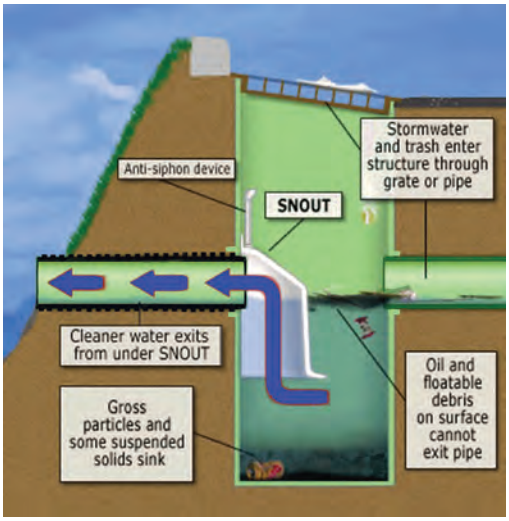
The HARCO Snout-equipped Drainage Structure is a custom drain basin with a plastic composite hood attached to the wall of the drain basin covering the outlet.

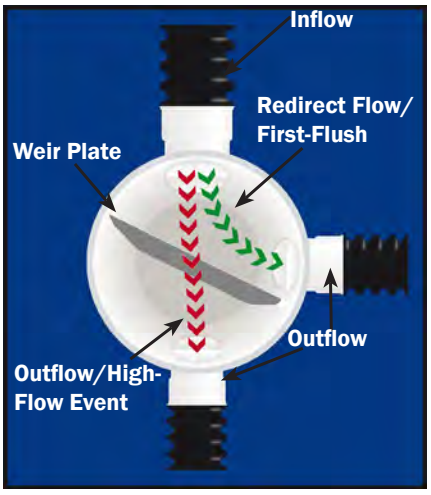
This simple yet effective cover prevents floating debris, oils, and sediment from exiting the basin where it remains trapped and can easily be removed.

The placement of the Snout cover over the basin outlet forces water to exit the basin outlet from the clear zone of water below the floating debris or oils, and creates environment conducive for many contaminants and debris to settle to the bottom of the basin as well.

The HARCO Snout Drainage Structure represents a cost-effective method for capture and retention of storm water pollutants.

Snouts are factory-installed and available for 18", 24", and 30" diameter HARCO drain basins.





Weir Drainage Structure

The HARCO Weir-equipped Drainage Structure is a custom drain basin with a stainless steel weir installed at the factory by HARCO, made to customer specifications.

Weir Drainage Structures are perfect for diverting water to preferred outlet within a HARCO drain basin, and also to restrict the flow of water.

These weir-equipped HARCO drain basins are widely utilized at the entrance and / or the exit of an underground storm water treatment system or an underground storm water retention / detention system.

These custom stainless steel weirs are available for 24", 30", and 36" diameter HARCO drain basins.

The customer is responsible for determining weir orientation, weir height, and orifice details for each custom weir drainage structure.

HARCO Field Tap

The HARCO Field Tap allows you the flexibility to add an inlet or outlet to your HARCO drain basin in-the-field when that unexpected additional line is identified, or if the exact location of that line was not able to be determined prior to basin installation.

HARCO Field Taps are available in 4" through 18" diameters. For installation, a drain basin 2 sizes larger than the HARCO Field Tap outlet is required.

Examples:

8" HARCO Field Tap requires a 12" basin
12" HARCO Field Tap requires a 18" basin
18" HARCO Field Tap requires a 30" basin

Kit Includes:

- An adhesive-backed cutting template
- Hole Gasket
- Bell x spigot adaptor (made to fit pipe you are connecting to)

Equipment Needed:

- Standard drill / bits
- Jigsaw
- Pipe lubricant

HARCO Grates and Covers

HARCO grates and covers are designed specifically to fit HARCO surface drainage structures. These castings are manufactured from metal conforming to ASTM A536 grade 80-55-06 for ductile iron.

HARCO provides a wide selection of ductile iron castings including:

- Light duty drop-in grates for non-traffic / turf applications – designed primarily to fit 6" – 30" corrugated plastic pipes
- Light duty domed / beehive grates fits 6" – 30" structures (6”,8” and 10” domed grates are one -piece, 12”-30” are grate and frame sets)
- Round H10 load rated grate and frame assemblies for parking lots, pedestrian, and medium duty loads (.5 inch vane spacing conforms to ADA requirements) fits 8" – 30" structures (8" and 10" are 1-piece grates that are light duty only)
- Round H25 load rated grate and frame assemblies for traffic or heavy duty applications fits 12" – 36" structures
- Round H25 load rated solid cover and frame assemblies for maintenance access or heavy duty applications – fits 12” – 36” structures
- Square hinged H10 and H25 load rated grates and frames and solid covers and frames fit 12" and 15" structures
- H25 load rated 2'x2' square Traffic grate and frame assemblies, and 2’ x 2’ Curb Inlet grate, frame, and hood assemblies fits 12" – 30" structures
- H25 load rated 2'x3' rectangular Traffic grate and frame assemblies, and 2’x3’ Curb Inlet grate, frame, and hood assemblies fits 18" – 36" structures

Light Duty Drop-In Grate

Light Duty Domed/Beehive Grate

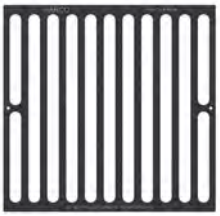
Round H25 Load Rated Grate

Round H10 Load Rated Grate

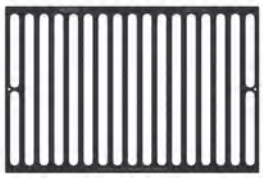
Round H25 Load Rated Solid Cover

Square-Hinged Grates/Covers

2’ x 2’ Square Traffic Grate



2’ x 3’ Rectangular Traffic Grate



Curb Inlet Grate Assembly

THE HARRINGTON CORPORATION
P.O. Box 10335 ◆ Lynchburg, VA 24506-0335
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PP COMPRESSION FITTINGS

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UNIVERSAL TRANSITION COUPLING

The Universal Connection

HARCO

Engineered for Durability

Distributor in the United States for

Philmac®

The connection you can trust.

INTRODUCTION

HARCO Fittings is a distributor of Philmac Universal Transition Coupling (UTC®) fittings for the United States. Philmac is a global leader in the design and manufacture of plastic compression fittings that provide the ultimate in pipe connection flexibility. Australia-based Philmac was founded in 1929 and became part of the Aliaxis Group in Belgium in 2003.

The UTC® products are especially designed for connecting pipes that are made from a variety of different materials, such as polyethylene, galvanized steel, PVC, copper, ABS, lead, and stainless steel.

In addition to winning an Australian Design Award in 1999 for innovation in product development, the UTC® has been embraced by water utilities in Australia, the UK, Europe, and North America.

The entire range of UTC® fittings is fully approved for potable water, meeting NSF and CSA standards.

HARCO Fittings was founded in 1966 and is based in Lynchburg, Virgina with company warehouses in Winter Haven, Florida,; Dallas, Texas; and Phoenix, Arizona. HARCO has developed next generation fittings including the first compact DI MJ fittings and the first injection molded gasketed PVC fittings in the USA for IPS size PVC water pipe, SDR 35 PVC sewer pipe, and C900 PVC water pipe. HARCO has developed numerous pipe fitting and valve innovations for the irrigation industry including swivel connection systems, knuckle restraints, clamshell restraints, and a line of DI isolation valves.

BENEFITS

Complete Flexibility

Universal Design: The Philmac UTC® is designed to accommodate a range of different diameters on most pipe material (including copper, PE, PVC, lead, steel, galvanized steel, ABS, and stainless steel).

Large Seal: The large seal in the Philmac UTC® is particularly suited to out-of-round and pitted pipes.

Fast and Easy Installation

Slide & Tighten™ technology: The Philmac UTC® incorporates all the benefits of Philmac's Slide & Tighten™ technology.

Simply witness mark the pipe against the flange on the fitting, and then insert the pipe to the correct depth. The nut can then be tightened using a wrench. The UTC® is fully installed when the nut can no longer be tightened with reasonable force.

No special tools are required and the Philmac UTC® is supplied ready to use.

Easy Disassembly: The design of the UTC® allows the pipe to be removed easily from the fitting once the nut is backed off.

Complete Coverage

The Philmac UTC® range is comprehensive: Configurations include "No Stop" Repair Couplings and Reducer Couplings. Inquire for other configurations.

Complete Security

Dynamic Sealing Method: Tightening the nut compresses the seal into position. During assembly, the pipe does not have to engage the seal, so there is no risk of seal damage or roll outs.

** Pipes at the top end of the fitting tolerance may incur minimum resistance.*

No Loose Components: The Philmac UTC® is fully contained with no loose components. There is no need to disassemble and separately handle a loose split ring, seal ring, or nut. All that is required is the insertion of the pipe and tightening of the nut.

Approvals: The Philmac UTC® holds a number of potable water approvals including NSF in the USA. The fittings are manufactured to the highest standards in accordance with the company's ISO 9001:2000 Quality Endorsed status.

High Performance Materials

Made from advanced thermoplastic materials: The Philmac UTC® is manufactured from lightweight, high performance polypropylene and acetal with outstanding impact, UV, chemical, and corrosion resistance. The UTC® split ring contains hard stainless steel grippers which provide superior end load resistance. Seals are nitrile rubber.

High Performance Materials

Rated to 200 PSI: The Philmac UTC® is pressure rated 200 psi at 73°F and 150 psi at 100°F to meet the needs of high pressure systems.

Suggested Specification

Fittings shall be Polypropylene Compression Fittings that without disassembly or modification will fit a range of pipes including polyethylene, PEX, PVC, copper, steel, stainless steel, ABS, and lead. Fittings shall be long term rated for 200 psi at 73°F and 150 psi at 100°F per ISO 14236 and shall be rated as "High Pressure" per AWWA C800. Fittings shall comply with NSF 61 and shall be "listed" by NSF. "Bodies" and "Spacers" shall be Polypropylene. Fitting "Compression Nuts" shall be Acetal or Polypropylene. "Split Ring" shall be of Acetal with Stainless Steel grippers. Joint seal activation shall be accomplished solely by actuation of the Compression Nut. Joint "Seals" shall not "interfere" with pipe insertion. No beveling or lubrication of pipe shall be required. Fitting components shall not require disassembly prior to assembly on to pipe. Fittings shall be "UTC" with "Slide & Tighten" capability as manufactured by Philmac Pty Ltd. and as sold by The Harrington Corporation (Harco) of Lynchburg, VA (434) 845-7094.

CAUTION: Philmac does not recommend or warrant the use of UTC® Compression Fittings "inside the building" or for "hot water" applications.

INSTALLATION INSTRUCTIONS

1. Cut pipe to length
Cut pipe square and to length using the flange on the central body as a guide. Ensure end of connecting pipe is undamaged and clean.

2. Prepare fitting
To ensure adequate insertion depth, witness mark the pipe to the back of the flange. A marker pen can be used or use of a thumb is suitable.

3. Pipe Insertion
Ensure the nut is backed off and 3 threads are showing. (Pipes at the top end of the fitting tolerance may require 5 threads showing.) Insert pipe to the correct depth.

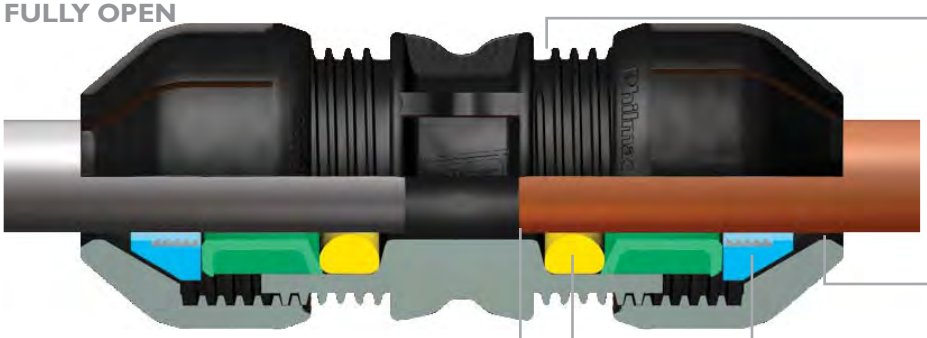
4. Nut tightening
Tighten the nut firmly with a wrench. The nut will not butt against the body flange when the pipe size is at the top end of the fitting tolerance.

5. Fully Installed
The fitting is fully installed when the nut cannot be tightened any further with reasonable force.

HOW IT WORKS

PRINCIPLES OF OPERATION – UTC® COMPRESSION FITTINGS

FULLY OPEN



Fitting is pre-assembled in the ready-to-use open position with 3 threads showing.

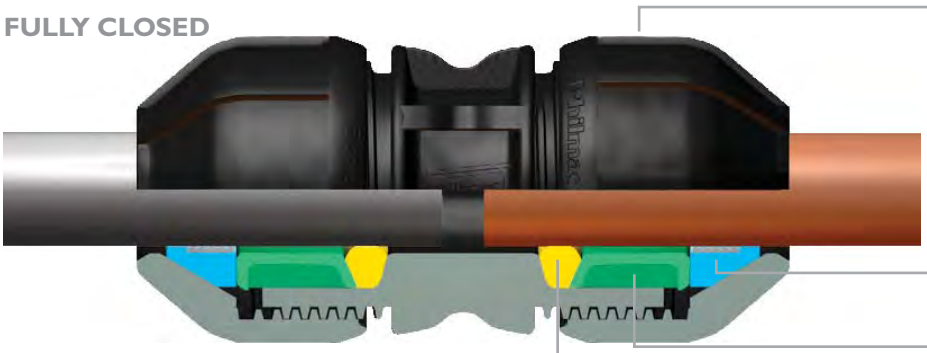
Clearance between the pipe and fitting allows for easy insertion of the pipe.

Split ring is in a relaxed position.

Seal is in a relaxed position.

Pipe is inserted up to the flange on the fitting.

FULLY CLOSED

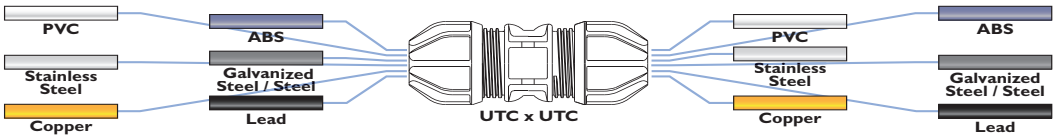


Nut is tightened with a wrench firmly to ensure proper installation. Some threads may be exposed, depending on the size of pipe inserted into the fitting.

Split ring with the stainless grippers bites into the pipe, providing end load resistance.

Thrust sleeve transfers pressure to the seal ring.

Seal ring compression is achieved by exploiting the mechanical advantage of the thread.



UTC® SIZING CHART

The following chart provides a convenient means of identifying the appropriate UTC® fitting. UTC® fittings are available in sizes B, C, D, E, F, and G. Product may best be identified by the millimeter markings on the nuts.

- Recommendations are based on the variation in average diameter permitted by standard. Out of roundness effects are not considered. Call for pipes not listed.
- The UTC® is pressure rated 200psi at 73°F and 150psi at 100°F.
- CAUTION: Philmac does not recommend or warrant the use of UTC® Compression Fittings "inside the building" or for "hot water" applications.

UTC® SELECTION RECOMMENDATIONS

		Nominal Pipe Size						
Pipe Materials [d]	Standards	½"	⅝"	¾"	1"	1 ¼"	1 ½"	2"
Copper (Type K, L, & M)	ASTM B88	na	na	B	C	D	E	na
CTS PE or PEX	ASTM D2737 / F876	na	na	B	C	D	E	na
PVC (IPS-OD)	ASTM D2241 / D1785	B	na	B[a] & C	C[a] & D	E	F	G
ABS (IPS-OD)	ASTM D1527/ D2661/ F628	B	na	B[a] & C	C[a] & D	E	F	G
Galvanized Steel/Steel (IPS-OD)	ASTM A53	B	na	B[a] & C	C[a] & D	E	F	G
Stainless Steel [c]	ASTM A312 / A358 / A376	B	na	B[a] & C	C[a] & D	E	F	G
PE IPS-OD (SDR)	ASTM D3035 / D2447	B	na	B[a] & C	C[a] & D	E	F	G
PE SIDR 7 (IPS-ID)	ASTM D2239	na	na	C	D	na	na	na
PE SIDR 9 (IPS-ID)	ASTM D2239	na	na	B	C	na	na	na
PE SIDR 11.5 (IPS-ID)	ASTM D2239	na	na	B	C	E	F[a]	na
PE SIDR 15 (IPS-ID)	ASTM D2239	na	na	B	C	E	na	G
Lead Strong		na	B	C	D	E	na	na
Extra Strong		B	C	C	D	na	na	na
Double Extra Strong [b]		B	C	C[b] & D[b]	E	F	na	na

a. There may be occasions when the pipe is slightly too large for this UTC® size, in which case the coupling can be loaded on pipe disassembled.
b. If the OD of the ¾" "Double Extra Strong" lead pipe is larger than 1.34", use a Size D UTC® fitting or shave the pipe to fit a Size C UTC® fitting.
c. Recommendations assume pipe is standard IPS diameter. Some pipe manufacturers may make pipe to other outside diameter dimensions.
d. UTC is not recommended for PE-AL-PE and PEX-AL-PEX composite pipes.
na: **not available** - A UTC® fitting for this size pipe is not available.

UTC® FITTINGS AVAILABLE: *see price sheet or call for other configurations.*

UTC® Repair Couplings

Size	Pipe OD Range		Part No.
	Inches	Millimeters	
Size B	0.83 - 1.06"	21 - 27 mm	75-608BB
Size C	1.06 - 1.34"	27 - 34 mm	75-608CC
Size D	1.34 - 1.54"	34 - 39 mm	75-608DD
Size E	1.54 - 1.69"	39 - 43 mm	75-608EE
Size F	1.85 - 1.93"	47 - 49 mm	75-608FF
Size G	2.32 - 2.40"	59 - 61 mm	75-608GG

UTC® Reducer Couplings

Sizes	Pipe OD Range, Large End	Pipe OD Range, Small End	Part No.
Size C to Size B	1.06 - 1.34" 27 - 34 mm	0.83 - 1.06" 21 - 27 mm	75-617CB
Size D to Size C	1.34 - 1.54" 34 - 39 mm	1.06 - 1.34" 27 - 34 mm	75-617DC
Size E to Size C	1.54 - 1.69" 39 - 43 mm	1.06 - 1.34" 27 - 34 mm	75-617EC
Size F to Size E	1.85 - 1.93" 47 - 49 mm	1.54 - 1.69" 39 - 43 mm	75-617FE

Direct all sales inquiries to:

HARCO
www.harcofittings.com
PF151-092413

HARCO Fittings
P.O. Box 10335
Lynchburg, VA 24506-0335
Phone: (434) 845-7094
Fax: (434) 845-8562

Harco Warehouses in:
Winter Haven, FL
Dallas, TX
Phoenix, AZ

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an Aliaxis company
www.philmac.com.au

Connect with the Next Generation.

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Engineered for Durability

Distributor in the United States for

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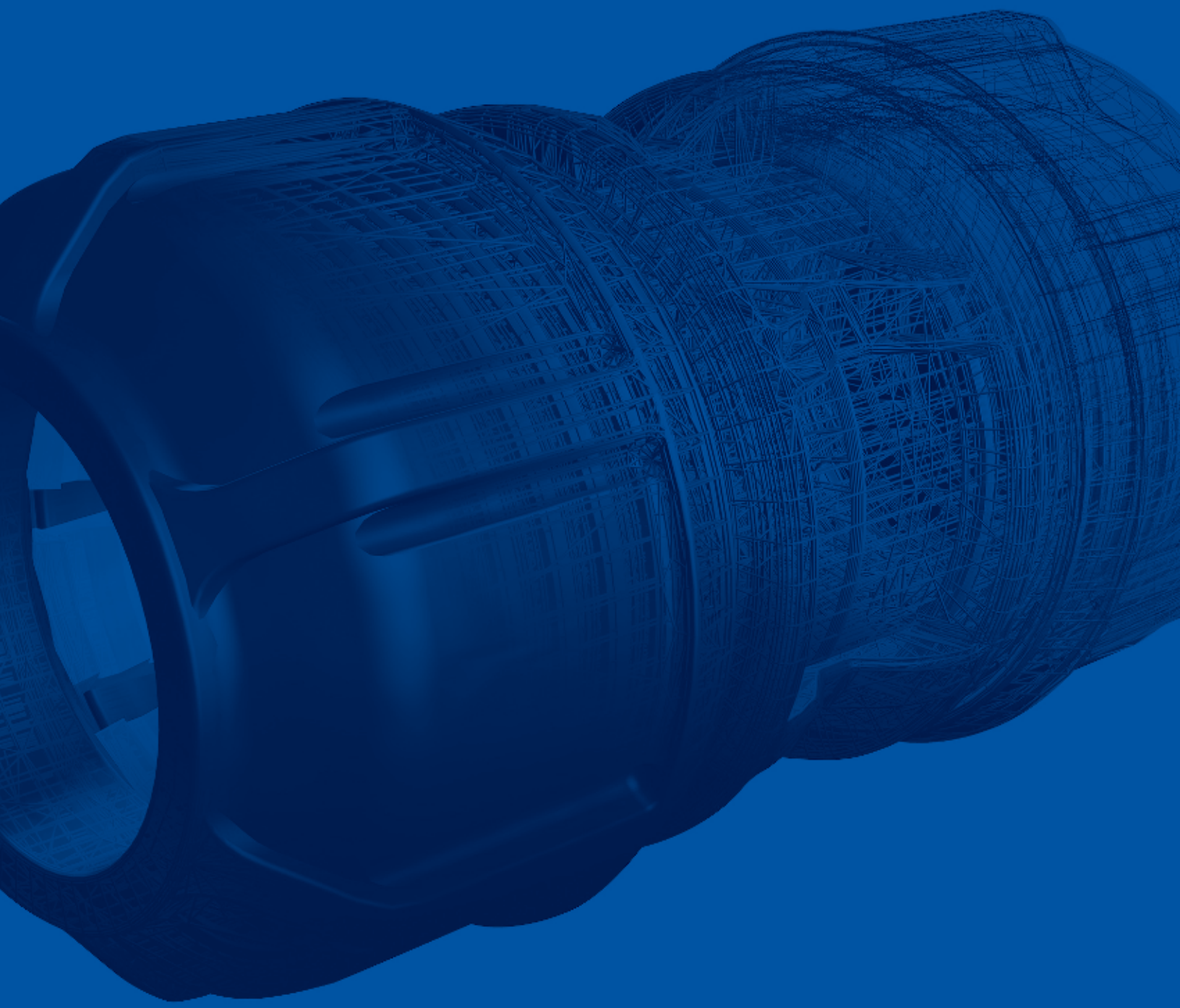
The connection you can trust.



Quality System™
Quality Endorsed Company
ISO 9001-2000
License No. 2658
SAI Global

NATA
NATA Accredited Laboratory Number:14673

Philmac is well renowned for quality products and services. Philmac manufactures pipe fittings and valves under a Quality Assurance System assessed and approved to ISO 9001. Philmac has a NATA accredited laboratory and tests fittings and valves to international and national standards. Third party accreditation is carried out by SAI Global.

INTRODUCING THE 3G™ RANGE OF COMPRESSION FITTINGS.

HARCO Fittings is a distributor of Philmac 3G™ fittings for the United States. Philmac is a global leader in the design and manufacture of plastic compression fittings that provide the ultimate in pipe connection flexibility. Australia-based Philmac was founded in 1929 and became part of the Aliaxis Group in Belgium in 2003.

3G™ is not just the new generation of PE pipe fittings – it is the next generation. The culmination of years of exhaustive research and development, utilization of cutting–edge manufacturing technology, and stringent testing, this new range of premium products represents Philmac's most exciting generation of plastic compression fittings.

Incorporating cutting edge technology, Philmac 3G™ fittings are easy to use and provide 230psi rated performance across the range. Importantly, all Philmac 3G™ fittings have been manufactured from high performance, advanced thermoplastic materials so they are resistant to corrosion and have the strength and durability to provide a 50+ year service life.

With the 3G™ range, the Philmac fitting line serves a common platform of fittings for all PE pipe applications in the North American market.

And the entire range of 3G™ fittings is fully approved for potable water, meeting NSF and CSA standards.

HARCO Fittings was founded in 1966 and is based in Lynchburg, Virgina with company warehouses in Winter Haven, Florida; Dallas, Texas; and Phoenix, Arizona. HARCO has developed next generation fittings including first compact DI MJ fittings, and the first injection molded gasketed PVC fittings in the USA for IPS size PVC water pipe, SDR 35 PVC sewer pipe, and C900 PVC water pipe. HARCO has developed numerous pipe fitting and valve innovations for the irrigation industry including swivel connection systems, knuckle restraints, clamshell restraints, and a line of DI isolation valves.

HARCO

www.harcofittings.com

THE 3G RANGE OF PRODUCTS

High performance

- **Made from advanced thermoplastic materials:** 3G™ ID Series compression fittings are manufactured from lightweight high performance thermoplastic materials which, unlike metal fittings, resist corrosion, therefore significantly minimizing maintenance, repairs, and long-term costs. The materials are non-toxic and taint-free and also offer outstanding impact, UV, and chemical resistance.
- **Rated to 230psi:** 3G™ compression fittings are pressure rated to 230psi to meet the needs of high pressure systems.
- **50 year+ design life:** Built to withstand the toughest conditions to ensure longevity and durability, 3G™ compression fittings have a 50 year+ design life.

Complete coverage

- **Wide range:** The new 3G™ compression fitting range is comprehensive and includes straight and reducing joiners, tees, elbows, male and female adaptors and caps ranging from ½" to 2".

APPROVALS

The Philmac 3G™ range of compression fittings is CSA and NSF approved for potable water use.

Certificate of Compliance

Certificate: 1616428
Project: 1616428
Issued to: Philmac Pty. Limited
53 Deeds Rd
North Plympton
South Australia, South Australia 5037
Australia
Attention: Mr. Leigh Bunting

Master Contract: 152989
Date Issued: 2005/06/21

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C', 'US' and ▲

C US
Drinking Water
NSF/ANSI 61

Issued by: Franco DiFolco, B.Sc.,C.Chem

Authorized by: Nick Alfano, Operations Manager

PRODUCTS
CLASS 6861 04 – PIPES AND RELATED PRODUCTS – ANSI/NSF 61 SECTION 4 - Certified to ANSI/NSF 61

3G Fittings – (Material evaluated for use in contact with drinking water only)

3G Fitting Model Numbers:

End Cap Assemblies: 99312200, 99412200, 99313300, 99413300, 99314400, 99414400, 99315500, 99415500, 99316600, 99416600, and 99417700

CAUTION: Philmac does not recommend or warrant the use of 3G™ Compression Fittings "inside the building" or for "hot water" applications.

HARCO

www.harcofittings.com

DIVERSE APPLICATIONS

Philmac products are used in diverse applications, from rural well systems, cottage pumps, municipal water applications, irrigation water supply, and plumbing.

CTS & IPS OD

3G™ compression fittings are not just the new generation of pipe fittings for CTS, IPS OD PE and PEX Pipes – they are the next generation. The culmination of years of exhaustive research and development, utilisation of cutting–edge manufacturing technology and stringent testing, this new range of premium products represents Philmac's most exciting generation of plastic compression fittings.

Featuring Philmac's unique Slide & Tighten™ technology, 3G™ compression fittings for CTS and IPS OD PE Pipes makes installation easy – no insert is required and no force is needed to push the pipe in. And a visual stop reduces the risk of overtightening.

The 3G™ range of plastic compression fittings are the product of Philmac's unrelenting commitment to continuous improvement and a culture based on innovation and ingenuity.

3G™ BENEFITS

Fast and easy installation

- **Slide & Tighten™ technology:** 3G™ compression fittings incorporate all the benefits of Philmac's unique Slide & Tighten™ technology. No pipe preparation is needed and no force is required to push the pipe past the seal, so installation couldn't be faster or easier. Simply insert the pipe into the fitting until the first point of resistance is felt, and then tighten the nut. Assembly is so easy you can even do it under live conditions. Also, there is no need to disassemble the fitting before use because 3G™ compression fittings are supplied pre–assembled and ready to use.
- **Compact design:** The size of the new Philmac 3G™ compression fitting has been kept to a minimum, making the fitting ideal to use in confined areas. In addition to making connections with minimal turns of the nut, the design and size of the fittings means that in installations taking place between two fixed points, the manipulation of the pipe into the fitting becomes easy.
- **Easy disassembly:** The fitting has been designed so the split collet is released as soon as the nut is backed off, making disassembly easy.

Complete security

- **Visual stop:** The flange on the body of the 3G™ compression fitting provides a visual stop to indicate when the nut is fully tightened. This removes any uncertainty from the installation process and eliminates the risk of over–tightening.
- **No loose components:** If the nut is removed there is no danger of losing components, as the collet and seal ring are retained in the body of the fitting. Losing components in the trench becomes a thing of the past.
- **Dynamic sealing method:** The mechanical advantage of the nut thread compresses the seal into position, eliminating resistance when inserting the pipe into the fitting so there is no risk of seal distortion or displacement.
- **Designed to minimize pipe twist:** The fitting has been designed to minimize pipe twist as the nut is tightened. Maximum pipe twist is approximately a quarter turn compared to one and a half turns with many other fittings. Pipe twist can impact on not only the connection you have just made but also on the connection at the other end of the line.

Complete coverage

- **Wide range:** The new 3G™ compression fittings range is comprehensive: straight and reducing joiners, tees, elbows, male and female adaptors and caps ranging from 3/4" to 2".
- **Copper connection kits:** Philmac's all new carborundum gripper design has been introduced into the 3G™ copper connection kit. With no steel components in the gripping mechanism, there is absolutely no risk of electrolysis.

CAUTION: Philmac does not recommend or warrant the use of 3G™ Compression Fittings "inside the building" or for "hot water" applications.

HOW IT WORKS

FULLY OPEN

Fitting is pre–assembled ready to use in the open position with 2 threads showing.

Clearance between the pipe and fitting allows for easy insertion of the pipe.

Split collet, which is in relaxed position.

Seal, which is in relaxed position.

The pipe sits against the tapered wedges which minimizes pipe rotation.

FULLY CLOSED

Split collet bites into the pipe providing end load resistance.

Positive internal stop when nut meets flange of the body.

Nut and then split collet has fully compressed the seal. Seal ring compression is achieved by exploiting the mechanical advantage of the nut thread.

KITEC XPA

3G™ Kitec XPA compression fittings are not just the new generation of PE pipe fittings for Kitec XPA pipes – they are the next generation.

Featuring Philmac's unique Slide & Tighten™ technology, 3G™ Kitec XPA compression fittings make installation easy – no insert is required and no force is needed to push the pipe in. And with an internal seal cap, the fitting provides complete security and protection against corrosion of the Kitec XPA pipe.

The 3G™ Kitec XPA range of plastic compression fittings are the product of Philmac's unrelenting commitment to continuous improvement and a culture based on innovation and ingenuity.

3G™ BENEFITS

Fast and easy installation

- **Slide & Tighten™ technology:** 3G™ Kitec XPA compression fittings incorporate all the benefits of Philmac's unique Slide & Tighten™ technology. No force is required to push the pipe into the seal, so installation couldn't be faster or easier. Simply re–round the pipe, insert it into the fitting until the first point of resistance is felt, and then tighten the nut. Assembly is so easy you can even do it under live conditions. Also there is no need to disassemble the fitting before use because the 3G™ Kitec XPA compression fittings are supplied pre–assembled and ready to use.
- **Compact design:** The size of the new Philmac 3G™ Kitec XPA compression fitting has been kept to a minimum, making the fitting ideal to use in confined areas. In addition to making connections with minimal turns of the nut, the design and size of the fitting means that in installations taking place between two fixed points, the manipulation of the pipe into the fitting becomes easy.
- **Easy disassembly:** The fitting has been designed so the split collet is released as soon as the nut is backed off, making disassembly easy.

Complete security

- Internal seal cap: Philmac 3G™ Kitec XPA compression fittings come with a unique internal seal cap. This acts to not only provide superior sealing performance, but also to protect the cut end of the Kitec XPA pipe from exposure to water and therefore corrosion.
- **Visual stop:** The flange on the body of the 3G™ Kitec XPA compression fitting provides a visual stop to indicate when the nut is fully tightened. This removes any uncertainty from the installation process and eliminates the risk of over–tightening.
- **No loose components:** If the nut is removed there is no danger of losing components, as the collet and seal ring are retained in the body of the fitting. Losing components in the trench becomes a thing of the past.
- **Designed to minimize pipe twist:** The fitting has been designed to minimize pipe twist as the nut is tightened. Maximum pipe twist is approximately a half turn compared to one and a half turns with many other fittings. Pipe twist can impact on not only the connection you have just made but also on the connection at the other end of the line.

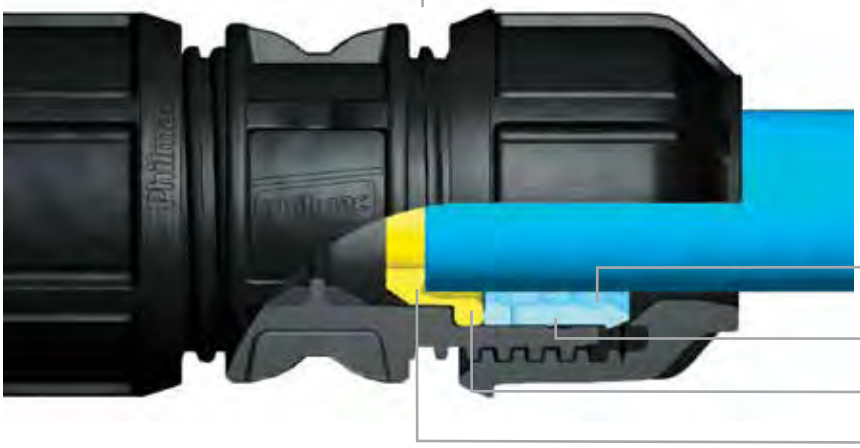
Complete coverage

- **Wide range:** The new 3G™ Kitec XPA compression fittings range is comprehensive: straight and reducing joiners, elbows and male and female adaptors ranging from ½" to 1".

CAUTION: Philmac does not recommend or warrant the use of 3G™ Compression Fittings "inside the building" or for "hot water" applications.

HOW IT WORKS

FULLY OPEN



Fitting is pre–assembled ready to use in the open position with 2 threads showing.

Clearance between the pipe and fitting allows for easy insertion of the pipe.

Split collet, which is in relaxed position.

Seal, which is in relaxed position.

The pipe sits within the internal seal.

FULLY CLOSED

Split collet bites into the pipe providing end load resistance.

Positive internal stop when nut meets flange of the body.

Nut and then split collet has fully compressed the seal. Seal ring compression is achieved by exploiting the mechanical advantage of the nut thread.

Seal ring is compressed against pipe surface and inside of fitting to provide an effective seal and prevent corrosion.

ID SERIES

3G™ ID Series compression fittings represent the next generation of Philmac fittings for ID Series pipe.

Offering complete flexibility, this one fitting connects to all types of ID Series pipe, thereby eliminating the need to carry dedicated fittings.

Installation is easy with a simple to use insert assembly, and the fitting allows for straightforward disconnection and reconnection.

The 3G™ ID Series plastic compression fitting is the product of Philmac's unrelenting commitment to continuous improvement and a culture based on innovation and ingenuity.

3G™ BENEFITS

Flexibility

- **Universal fitting:** The 3G™ ID Series compression fitting connects to IPS, ID controlled pipe of SIDR's 7.9, and 11.5. There is no need for dedicated fittings for different pipe so you can be sure you will always have the right fitting for the job.

Fast and easy installation

- **Insert assembly:** Installation involving double–ended products is made easy with 3G™ ID Series compression fittings, as the installer can simply hammer the insert in separately to each end of the pipe. This is far easier than other fittings which involve difficult manipulation of the barb assembly at one end of the connection.
- **Easy disassembly:** The 3G™ ID Series compression fitting enables the joint to be easily disconnected and reconnected. Simply by loosening the nut and taking the insert out of the body of the fitting, the pipe can be freed. This is a real advantage when the pipe is connected to a pump or other piece of equipment which may require relocation or disconnection.

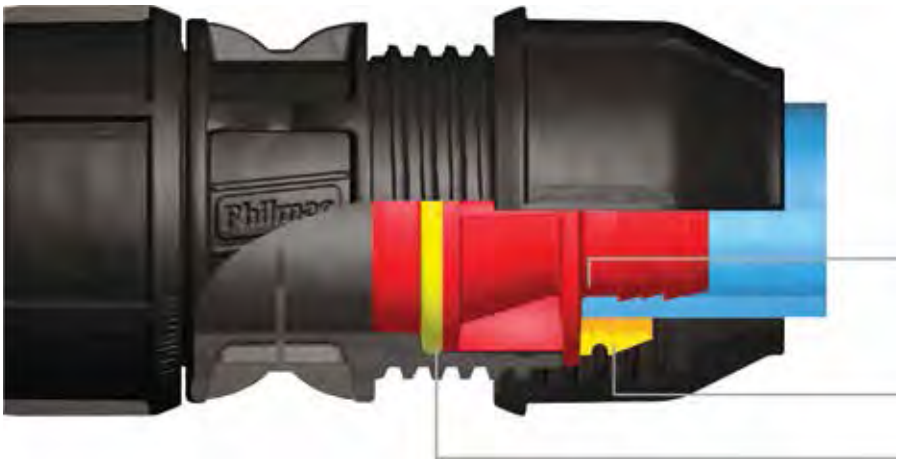
Complete coverage

- **Wide range:** The new 3G™ compression fitting range is comprehensive and includes straight and reducing joiners, tees, elbows, male and female adaptors and caps ranging from ½" to 2".

CAUTION: Philmac does not recommend or warrant the use of 3G™ Compression Fittings "inside the building" or for "hot water" applications.

HOW IT WORKS

FULLY OPEN



Insert fully installed into the pipe up to the shoulder of the insert.

Split collet is in the relaxed position

Insert with seal ring attached has been pushed back into the fitting body.

FULLY CLOSED

Split collet bites into the pipe providing end load resistance

Seal ring is compressed against the inside face of the fitting to provide a seal.

SUGGESTED SPECIFICATION

Fittings shall be Polypropylene Compression Fittings suitable for use on HDPE pipe. Fittings shall be long term rated for 230 psi complying with ISO 14236 and meet the dimensional and performance requirements of AWWA C800. Fittings shall comply with NSF 61 and shall be "listed" by NSF. Fitting "Bodies" shall be Polypropylene. Fitting "Compression Nuts" shall be Acetal. Joint seal activation shall be accomplished solely by the Compression Nut. Joint "Seals" shall not "interfere" with pipe insertion. No bevelling or lubrication of pipe shall be required. Fitting components shall not require dismantling prior to assembly on to pipe. Fittings shall be "3G" or "UTC" with "Slide & Tighten capability as manufactured by Philmac Pty Ltd. and represented by The Harrington Corporation (Harco) of Lynchburg, VA (434) 845-7094.

CAUTION: Philmac does not recommend or warrant the use of 3G™ Compression Fittings "inside the building" or for "hot water" applications.

INSTALLATION INSTRUCTIONS FOR 3G CTS & IPS OD FITTINGS

1. Cut Pipe Square
Cut the pipe square. There is no need to prepare the pipe end. Chamfering or lubrication is not required.

2. Ready to Use Position
The fitting is pre-assembled and ready to use, however always ensure the nut is fully relaxed and 2 threads are showing before inserting the pipe.

3. Pipe Insertion
Insert the pipe until the first point of resistance is felt.

4. Nut Tightening
The nut should be tightened by hand and then firmly with a wrench. Tighten the nut all the way to the flange on the body of the fitting.

5. Fully Installed
Fitting is now fully installed.

6. Disassembly
To disassemble the fitting simply loosen the nut using a wrench until 2 threads are showing. Pipe will be released and can simply be pulled out of the fitting.

Note: Philmac recommends the use of PTFE tape on NPT threads to ensure a positive seal.

INSTALLATION INSTRUCTIONS FOR KITEC XPA 3G FITTINGS

1. Cut Pipe Square

2. Re-round Pipe

To ensure that the pipe sits easily in the internal seal, re-round the pipe using the tool supplied. This must be done on the inside and the outside of the pipe.

3. Pipe Insertion

Insert the pipe until the first point of resistance is felt.

4. Nut Tightening

The nut should be tightened by hand and then firmly with a wrench. Tighten the nut all the way to the flange on the body of the fitting.

5. Fully Installed

Fitting is now fully installed and ready to use.

6. Disassembly

To dis-assemble the fitting simply loosen the nut using a wrench until 2 threads are showing. Pipe will be released and can simply be pulled out of the fitting.

Note: Philmac recommends the use of PTFE tape on NPT threads to ensure a positive seal.

INSTALLATION INSTRUCTIONS FOR ID SERIES 3G FITTINGS

1. Cut Pipe Square
Cut the pipe square. There is no need to prepare the pipe end. Chamfering or lubrication is not required.

2. Remove Nut Components
Take nut off body of fitting and remove collet.

3. Place Nut Components on Pipe
Place nut and then collet on the pipe. Ensure the collet is placed with taper facing towards the nut.

4. Place Insert in Pipe
Remove the insert from the fitting and then place in end of pipe.

5. Insert Fully Installed
Tap insert fully (up to the shoulder of the insert) into the pipe using a flat object.

6. Push Insert into Body of Fitting
Push pipe with insert and seal ring assembly into the end of the central fitting. Ensure the seal ring is correctly positioned on the insert.

7. Position Collet and Nut
Slide collet up to insert shoulder and then engage nut on body of fitting and tighten by hand.

8. Tighten Nut with a Wrench
The nut must then be tightened with a wrench.

9. Fully Installed
The fitting is fully installed when the nut cannot be tightened further with reasonable force.

HARCO Fittings

Direct all sales inquiries to:

Main Office
P.O. Box 10335
Lynchburg, VA 24506-0335
Phone: (434) 845-7094
Fax: (434) 845-8562

Harco Warehouses in:
Winter Haven, FL
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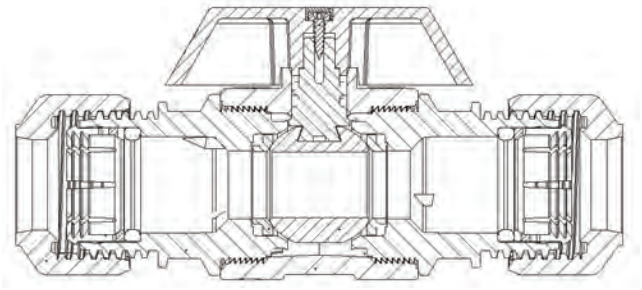
PHILMAC BALL VALVES



About Philmac Ball Valves

Philmac ball valves manufactured of advanced thermoplastic materials with self-restraining 3G compression ends featuring “slide and tighten” design are now available from Harco. Available for PE pipes to all standards in sizes up to 2” they can be used with appropriate grip rings on IPS PVC pipe. Threaded ends are also available.

Irrigation systems using PE pipe can be installed without fusion equipment or adapters for conventional valves. This speeds installation, eliminates reliance on specially trained personnel, eliminates the inherent workmanship risk of fusion joints, and eliminates investment in fusion equipment.

SIZES

•¾” to 2”

CONFIGURATIONS

- Compression ends
- FNPT ends
- Tee handle
- Curb Stop handle
- Others available

COMPRESSION END OPTIONS

- IPS OD controlled PE
- IPS PVC ***with appropriate grip ring***
- IPS SIDR PE
- CTS PE
- Universal Transition ***limited sizes***

FEATURES

- 200 psi rating
- 2-way flow
- Install in any orientation
- Positive stop open-close
- Visual indication open-close
- Corrosion resistant
- Impact resistant
- UV resistant

MATERIALS

- Ball - Talc filled polypropylene
- Seal Ring - polypropylene
- Body - Glass filled nylon
- Tee Handle- Glass filled nylon
- Curb Stop Handle - Acetal
- Cap - Noryl GTX/GF Nylon
- Stem- Noryl GTX
- Stem screw- 316 SS
- O-rings- Nitrile

CALL FOR OTHER FEATURES AVAILABLE

- MNPT ends
- Locking handles
- Color coded handles
- Other sizes

HARCO
THE HARRINGTON CORPORATION
P.O. Box 10335 ◆ Lynchburg, VA 24506-0335
Phone: (434) 845-7094 Fax: (434) 845-8562
sales@harcofittings.com
www.harcofittings.com

HDPE FITTINGS

THE HARRINGTON CORPORATION
P.O. Box 10335 ◆ Lynchburg, VA 24506-0335
Phone: (434) 845-7094 Fax: (434) 845-8562
sales@harcofittings.com
www.harcofittings.com

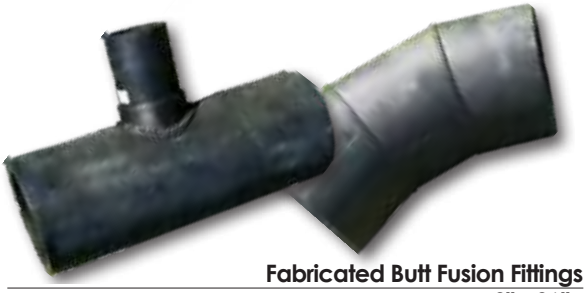
HDPE Fittings from HARCO

HARCO offers fittings for HDPE pipe starting at ½" through 36"+. Both IPS and DIPS available as well as FM fittings. HARCO has developed a set of sources with long and proven experience in the manufacture of pipe fittings for HDPE pipe. We offer special fittings for irrigation applications utilizing our Swivel and Lateral Isolation Valve Products.

THE HARRINGTON CORPORATION
P.O. Box 10335 • Lynchburg, VA 24506-0335
Phone: (434) 845-7094 Fax: (434) 845-8562
sales@harcofittings.com
www.harcofittings.com

CALL FOR OTHER CONFIGURATIONS

Philmac Universal
Transition Couplings
¾" - 2"



Fabricated Butt Fusion Fittings
3" - 36"+

Philmac Polypropylene
Compression Fittings
¾" - 2"

Transition Fittings
½" - 6"+

Molded Butt Fusion Fittings
½" - 12"

Flange Adapters,
Back Up Rings, and Accesories
2" - 36"+

Electrofusion Saddles
and Couplings
¾" - 32"

Stainless Steel Stiffeners
1½" - 20"+

Molded Socket
Fusion Fittings
½" - 4"

Polyethylene
Ball Valves
½" - 12"

MJ Adapters,
MJ Bell Adapters,
Accessories, and Restraints
3" - 24"+

THE HARRINGTON CORPORATION
P.O. Box 10335 • Lynchburg, VA 24506-0335
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sales@harcofittings.com
www.harcofittings.com