

2011 EDITION

30"–64"

HP LOK[®]

RESTRAINED JOINT



WATER & WASTEWATER

MORE
THAN
JUST
PIPE.



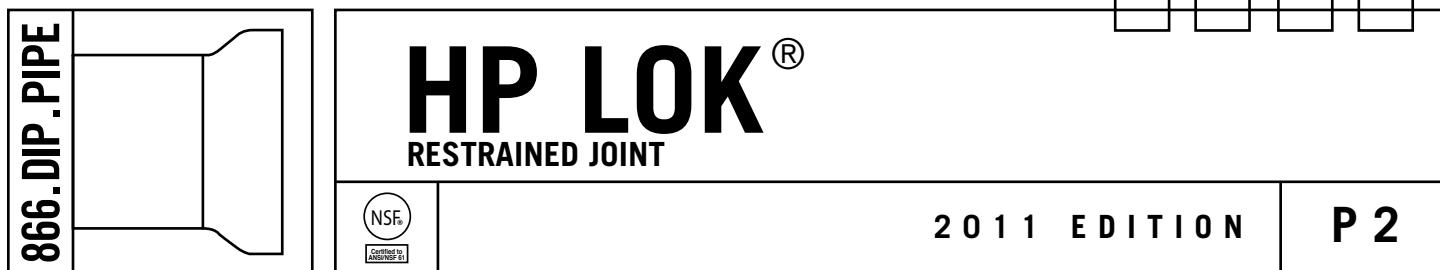
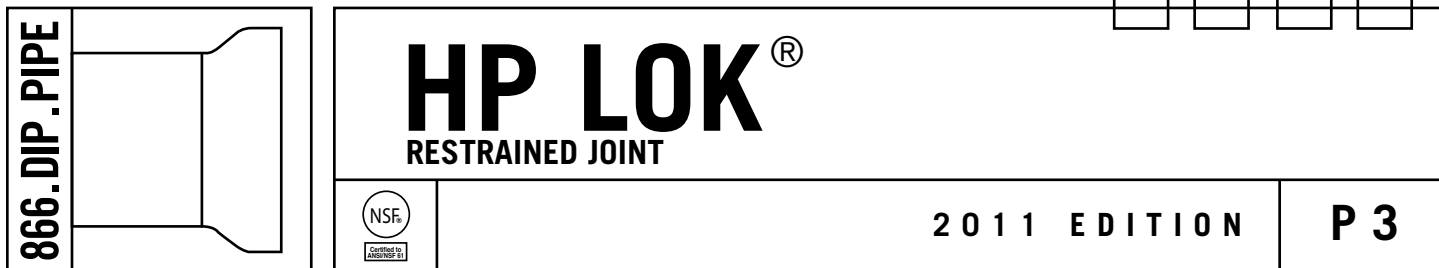


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HP LOK Restrained Joint Pipe and Fittings 30"–64"

HP LOK Restrained Joint Pipe and Fittings provide flexible push-on joints for 30"–64" pipe sizes. The HP LOK Restrained Joint has a working pressure equivalent to the working pressure rating of the parent pipe with a maximum working pressure rating of 350 psi.

30"–36" HP LOK spigot ends are compatible with 30"–36" TR FLEX® Pipe and Fittings. The rating will be 250 psi when used with TR FLEX Fittings.

42"–64" HP LOK Pipe is not compatible with 42"–64" TR FLEX Pipe and Fittings.

Pipe for wastewater service may be furnished in accordance with **ASTM 746 Standard Specification for Ductile Iron Gravity Sewer Pipe**. For certain wastewater applications, a ceramic quartz filled, amine cured, novalac epoxy lining is available — see *PROTECTO 401™ Ceramic Epoxy Lined Pipe and Fittings brochure*.

HP LOK Pipe and Fittings utilize the TYTON® Gasket.

An HP LOK Ring that is factory installed in the bell provides a positive axial lock between the bell interior surface and a retainer weldment on the spigot end of the pipe.

**For higher pressure ratings, consult your U.S. Pipe Sales Representative.*

For a suggested design procedure for the restraint of thrust forces in pressurized, buried Ductile Iron piping systems, the design engineer should refer to the current DIPRA publication "Thrust Restraint Design for Ductile Iron Pipe" or the U.S. Pipe brochure "The Use And Application of Restrained Joints for Ductile Iron Pipelines."

ANSI/AWWA Standards

ANSI/AWWA C151/A21.51 "Ductile-Iron Pipe, Centrifugally Cast, for Water."

Asphaltic outside coating and inside lining are in accordance with ANSI/AWWA C151/A21.51.

ANSI/AWWA C153/A21.53 "Ductile-Iron Compact Fittings For Water Service" or ANSI/AWWA C110/A21.10 "Ductile-Iron and Gray-Iron Fittings, For Water."

HP LOK® Fittings conform to applicable requirements of ANSI/AWWA C153/A21.53 or ANSI/AWWA C110/A21.10.

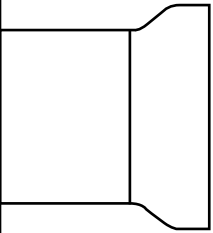
ANSI/AWWA C104/A21.4 "Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water."

Cement lining, in accordance with ANSI/AWWA C104/A21.4, or special linings and/or coatings can be furnished for specific conditions.

ASTM-A716-08 "Standard Specification for for Ductile Culvert Pipe."

ASTM A536 "Standard Specification for Ductile Iron Castings."

NOTE: *If specifiers or users believe that corrosive soils will be encountered where our products are to be installed, please refer to ANSI/AWWA C105/A21.5 "Polyethylene Encasement for Ductile Iron Pipe Systems" for proper external protection procedures. TYTON®, HP LOK® and TYTON JOINT® are Registered Trademarks of U.S. Pipe and Foundry Co., LLC.*

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Suggested Specifications for HP LOK Restrained Push-On Joint Pipe and Fittings

30" –64" restrained joints shall be HP LOK Pipe and Fittings or pre-approved equal. Restrained push-on joints for pipe and fittings shall be designed for a water working pressure of 350 in accordance with ANSI/AWWA C111/A21.51 Rubber-Gasket Joints for Ductile Iron Pipe and Fittings.

Restrained joint pipe shall be Ductile Iron manufactured in accordance with the requirements of **ANSI/AWWA C151/A21.51**. Push-on joints for such pipe shall be in accordance with **ANSI/AWWA C111/A21.11 "Rubber-Gasket Joints for Ductile-Iron Pipe and Fittings."** Pipe thickness shall be designed in accordance with **ANSI/AWWA C150/A21.50 "Thickness Design of Ductile-Iron Pressure Pipe,"** and shall be based on laying conditions and internal pressures as stated in the project plans and specifications. Fittings shall be manufactured of Ductile Iron per grade 70-50-05 as specified in AWWA C153 and C110.

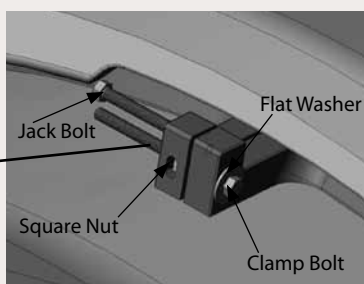
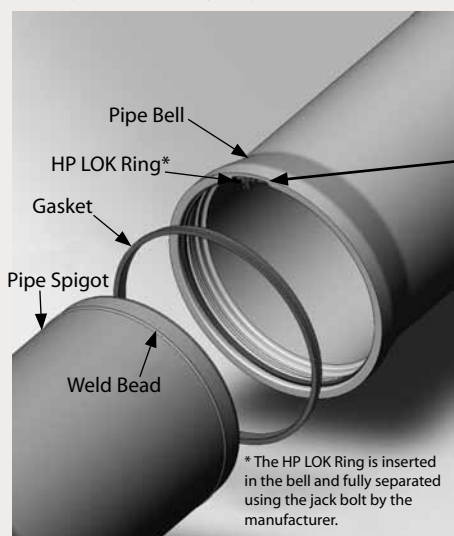
NOTE: Cement mortar lining and seal coating for pipe and fittings, where applicable, shall be in accordance with **ANSI/AWWA C104/A21.4**. Asphaltic outside coating shall be in accordance with **ANSI/AWWA C151/A21.51** for pipe and **ANSI/AWWA C110/A21.10** or **ANSI/AWWA C153/A21.53** for fittings.

Instructions for Assembling HP LOK Pipe and Fittings 30"–64"

1. The gasket seat must be clean and free of debris or any foreign matter.*
2. Install the gasket in the bell. Do not lubricate gasket prior to installing bell.*
3. Lubricate the gasket and spigot end of the mating pipe with TYTON JOINT® Lubricant.*
4. The spigot end of the mating pipe may now be inserted into the bell. The installer must make sure that the spigot end is fully homed in the bell and not deflected. The HP LOK® Ring can be slid back and forth when the spigot end is inserted correctly and not deflected.
5. The jack bolt should now be removed and discarded.
6. The clamp bolt can now be snugged down so that the HP LOK Ring contacts the pipe surface. Use only enough bolt torque to make sure the HP LOK Ring is in contact with the mating spigot end and to prevent the HP LOK Ring from spreading.
7. Inspect the full circumference of the HP LOK Ring to make sure it is in contact with the spigot end of the pipe and not resting on the weld bead. If the HP LOK Ring is sitting on the weld bead, the spigot end is not fully homed in the bell or the joint is excessively deflected for installation.
8. When it is certain that the HP LOK Ring is fully contacting the spigot end, extend the joint (remove slack in the joint) by pulling on the assembled pipe joints. Do not use excessive force. The spigot end should slide easily under the HP LOK Ring.
9. Tighten the clamp bolt to approximately 10 to 20 ft-lb of torque. Do not over tighten.
10. Deflect the joint as desired, not to exceed 1/2 degree.
11. The joint is now completely assembled.

Components required for each joint:

1 HP LOK® Ring (factory installed)
1 TYTON® Gasket
TYTON JOINT® Lubricant
1 jack bolt (factory installed)
1 clamp bolt (factory installed)



NOTE: HP LOK Ring shown in full closed position.

* Refer to page 6.

TYTON® Gasket Installation Instructions

Clean the gasket and the bell. Loop the gasket as shown in the illustrations. Place the gasket into the mating gasket seating area of the bell with the rounded bulb end of the gasket entering first. Seat the gasket heel firmly in the retainer seat of the bell.

It will be necessary to form equally spaced loops in the gasket for proper insertion. It is recommended to use two or three loops for 30" and 36" gaskets and four to six loops in 42"-64" gaskets.

Make sure the gasket is uniformly seated around the inside of the socket.

In colder weather, the gaskets should be kept at temperatures above 40°F to ensure the resiliency of the gasket during installation. In such conditions, the gaskets should be stored in a heated area or heated in drums of water prior to installation. If water is used, the gaskets should be dried before installation in the bell.

Lubrication

After the gasket has been installed into the bell, a thin film of TYTON JOINT® Lubricant should be applied to the inside surface of the gasket which will come in contact with the beveled end of the pipe. In warm, dry weather conditions, the lubricant can dry out, especially when applied to warm or hot pipe, it will be necessary to add a small amount of water to hydrate the lubricant. Only TYTON JOINT Lubricant should be used.

CAUTION: *The use of spray-on lubricant is not recommended. Experience has determined that spray-on lubricant may not have sufficient lubricity to allow joint assembly without gasket displacement.*

Clean the spigot end of the pipe back to the assembly stripes. Apply TYTON JOINT Lubricant to the cleaned spigot end. Do not allow the lubricated surface to touch the ground or trench sides prior to installation.



Pipeline Expansion

HP LOK[®] Pipe and Fittings Socket Pull Out

(Linear Expansion Within The Assembled Socket)

In HP LOK Pipe and Fitting sockets, there is a small amount of slack or pullout available at each joint. This pullout, or expansion capability, is the result of clearance inside the socket required for joint assembly. The expansion can be minimized by extending the joint after assembly and prior to setting the joint deflection.

The expansion of the joint in both pipe and fitting sockets must be considered, especially in the following cases:

- When HP LOK Pipe are used above ground (bridge crossings, on piers, etc.),
- When HP LOK Pipe are used in poor soil conditions (swamps, marshes, etc.),
- When long lengths of HP LOK Pipe are required for restraint due to high operating pressures and/or unfavorable soil parameters,
- Where HP LOK Pipe are used inside casing pipe.
- Where HP LOK Pipe and Fittings are in vertical applications. If HP LOK joints are used in vertical installations, provisions must be made to keep the joint extended. Failure to keep vertical joints extended can result in movement of pipeline components.

When HP LOK Pipe are used inside a casing pipe, it is recommended that the assembled pipe be pulled through the casing.

Please note that if the joint is not extended during assembly, the expansion per joint during line pressurization will increase the length of a 1000 foot long installation up to 3 feet, depending upon the pipe size. (Refer to Table 1 for the Pullout at each joint.)

Minimum Laying Lengths For HP LOK Pipe

The following drawings and Table 1 define the minimum lengths for HP LOK Pipe when furnished in either Plain End x Plain End, or Bell x Plain End. The minimum laying lengths are determined on the basis of the socket depth and the minimum space required in front of the pipe bell face to clear the HP LOK[®] Ring and provide access to the jack and clamp bolts. These minimum laying lengths must be considered when ordering factory cut lengths or field cutting HP LOK Pipe.

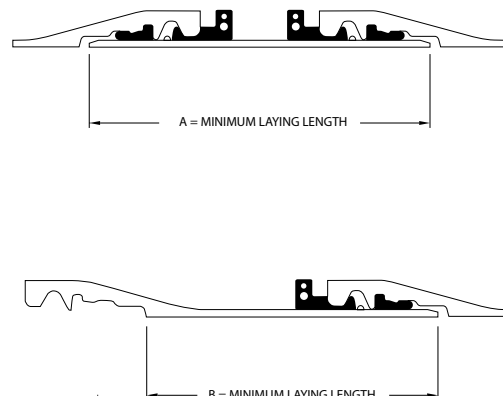


Table 1. Minimum Laying Lengths & Average Pullout For Each HP LOK Pipe or Fittings Socket

SIZE Inches	DIMENSIONS Inches		PULLOUT Feet
	A	B	
30	24.00	18.00	.05
36	24.00	18.00	.04
42	27.00	20.00	.04
48	29.00	23.00	.05
54	29.00	23.00	.05
60	29.00	23.00	.05
64	29.00	23.00	.05

HP LOK Field Cut Pipe Instructions

Making a Field Cut

Before making the field cut, measure the pipe diameter or circumference at the location to be cut. The diameter or circumference should fall within the range shown below in **Table 2**. If the measurement is not within the prescribed range, another pipe should be selected and checked before cutting.

The pipe must be cut as square as is practical. A field cut end that is not square may leak, especially if the joint is fully deflected. Measure from the factory manufactured spigot end to the desired cut location. Mark the measured distance around the circumference of the pipe at sufficient intervals to determine a square cut-line (a line perpendicular to the axis of the pipe). Scribe the square cut-line around the outside surface of the pipe.

Cut the pipe. (Abrasives saws are commonly used.) Bevel the field cut end (a disk grinder can be used). Refer to a shop manufactured bevel as a guide for proper shape. Additional grinding may be required to further bevel the pipe if difficulty in assembly of the joint is encountered.

When Ductile Iron pipe 14" and larger is to be cut in the field, the material should be ordered as "GAUGED PIPE." A *Gauged Pipe* is a pipe whose barrel outside diameter is within the spigot diameter dimensional specifications as determined by diameter tape measurements over the pipe's length to within approximately two feet of the bell chime. Pipe that is "gauged" is specially marked to avoid confusion. **ANSI/AWWA C151/A21.51** Standard for Ductile Iron pipe requires factory gauging of the spigot end. Accordingly, pipe selected for field cutting should also be field gauged in the location of the cut and verified to be within the tolerances shown below in the table. In the field a mechanical joint gland can be used as a gauging device.

Table 2.

NOM. PIPE SIZE Inches	CIRCUMFERENCE		DIAMETER	
	MAXIMUM Inches	MINIMUM Inches	MAXIMUM Inches	MINIMUM Inches
30	100-25/32	100-11/32	32.08	31.94
36	120-9/16	120-1/8	38.38	38.24
42	140-1/16	139-5/8	44.58	44.44
48	159-27/32	159-13/32	50.88	50.74
54	180-31/32	180-1/2	57.60	57.46
60	193-11/16	193-1/4	61.65	61.51
64	206-7/16	206	65.71	65.57

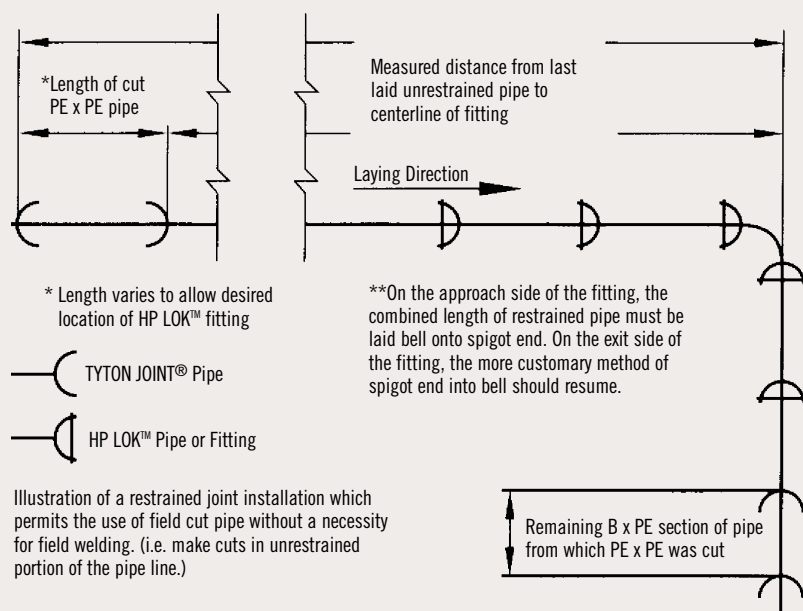
HP LOK Field Cut Pipe Instructions (cont.)

Unrestrained Field Cut Pipe Installation Method

The following schematic illustrates the use of a field cut pipe in the unrestrained portions of the line, to eliminate the requirement for a field weldment.

Thrust Restraint Design For Ductile Iron Pipe

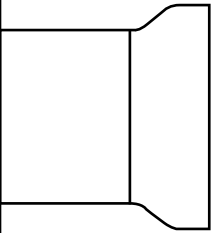
Published by the Ductile Iron Pipe Research Association (DIPRA).



Pipe installations may require field cutting, particularly where fittings are used. By planning ahead, many field cuts can be made in the portion of the line involving standard TYTON JOINT® Pipe thus eliminating the need to weld HP LOK® Pipe.

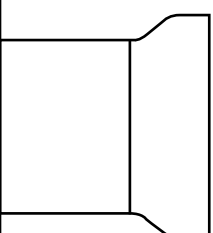
30-36" TR FLEX® fittings can be used with 30-36" HP LOK® Pipe however, the pressure rating is reduced to 250 psi with the use of PC 350, 30-36" HP LOK® Pipe. TR FLEX GRIPPER® Rings can only be used in TR FLEX® Fittings. If a pressure class pipe lower than PC350 is used with TR FLEX® Fittings, contact a U.S. Pipe Sales Representative for a Working Pressure rating. Refer to the TR FLEX GRIPPER® Ring brochure for use and application notes.

In the event field cuts are required in the restrained section of the line, please refer to the HP LOK® Field Weld brochure where the procedure describes how to weld a round steel bar to the plain end of field cut HP LOK® Pipe. The procedure has been qualified in conformance with the American National Standards Institute/American Society Standard ANSI/AWS D11.2-89, Section 8.

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Notes Regarding the Use of Restrained Joint Pipe

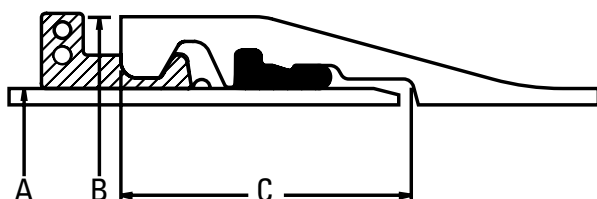
1. Large unbalanced thrust forces can be produced at dead ends, bends, tees or size changes of high pressure and/or large diameter piping systems.
2. Concrete thrust blocks or restrained joint pipe and fittings can normally be used to resist the unbalanced thrust forces.
3. In underground piping systems, an unbalanced thrust force can normally be resisted by providing a designed length of restraint at a change in direction or diameter where thrust forces are anticipated. Restrained joint pipe normally must transfer the thrust forces to the soil surrounding the pipeline.
4. The ***Thrust Restraint Design For Ductile Iron Pipe*** published by the Ductile Iron Pipe Research Association (DIPRA) is one method used to calculate the required length of restraint at a change in direction. This publication is available through your U.S. Pipe Sales Representative.
5. Most restrained joints allow for joint take-up after installation. The amount of take-up or slack can vary considerably with the type of joint and installation conditions. Thrust forces produced by internal pressures can result in removal of this joint take-up thereby increasing the length of the restrained section of the line. In any situation or configuration where increases in the line segment length could be detrimental to the pipeline or surrounding structures, the restrained joints should be fully extended during installation.
6. An increase in line segment length can also result in additional joint deflection. If an increase in length or other line movement are anticipated, the deflection of the restrained joints should be limited to only a portion of the joint design deflection during the installation of the pipe.
7. In fully extended, totally restrained piping systems, the thrust forces are carried by the piping system, and the resistance to the thrust is not dependent upon the surrounding soil. In situations where there is insufficient space to provide the designed restrained length, or where there are poor soil conditions, the entire section of line should be restrained or other external means of restraint provided.
8. If restrained joint pipe is used in a casing and is subjected to thrust, the joints should be fully extended to take up the joint slack prior to making end connections. The length of restraint in the casing should not be considered as part of the designed length of restraint required to provide the soil resistance to the thrust forces.

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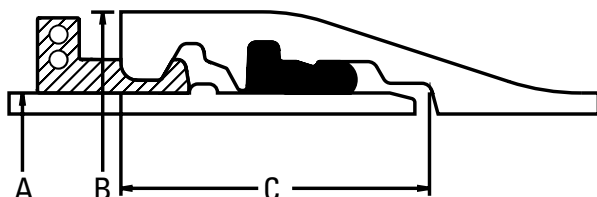
Notes Regarding the Use of Restrained Joint Pipe (cont.)

9. Above ground lines subject to thrust forces should be fully restrained and extended to remove any slack from the joint. The joint can be extended by pulling out on the pipe after the restrained joint assembly is made. The thrust forces can cause an unexpected increase in length of an above ground line if the slack is not first removed from the joint. When restrained joint pipe are used for bridge crossings or other above ground installations, each length of pipe must be supported in a manner to restrict both vertical and horizontal movement.
10. It is the responsibility of the Purchaser or Consulting Engineer to ensure that proper trench preparation, compaction and pipe installation procedures are followed and that adequate restrained lengths or thrust block designs are provided to resist the unbalanced thrust loads generated by the installed piping systems.
11. In general, restrained joints are more electrically conductive than conventional push-on joints used for Ductile Iron pipe. This increased conductivity can make a restrained section of the line more susceptible to stray current corrosion caused by direct currents from sources such as electrical transit systems or cathodically protected steel structures (steel pipe, underground storage tanks, etc.). If exposure to stray current is anticipated, contact your U.S. Pipe Sales Representative for the recommended method of protection.
12. If HP LOK joints are used in vertical installations, provisions must be made to keep the joint extended. Failure to keep vertical joints extended can result in movement of pipeline components.

HP LOK Restrained Joint Pipe and Fittings Basic Dimensions



30" - 36" HP LOK Assembly Cross Section

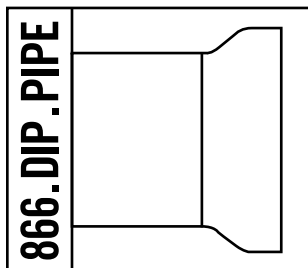


42" - 64" HP LOK Assembly Cross Section

SIZE	WORKING PRESSURE*	A	B PIPE	B FITTINGS	C PIPE	C FITTINGS	PULLOUT
Inches	psi	Inches	Inches	Inches	Inches	Inches	Feet
30	350	32.00	36.38	37.83	8.70	8.70	.05
36	350	38.30	42.68	44.73	8.70	8.70	.04
42	350	44.50	49.36	50.54	9.25	9.24	.04
48	350	50.80	56.25	58.05	10.06	9.91	.05
54	350	57.56	63.39	65.39	10.06	9.91	.05
60	350	61.61	67.95	69.65	10.06	9.91	.05
64	350	65.67	71.70	73.90	10.06	9.91	.05

Actual B and C Dimensions may be up to 0.50" greater than dimensions shown in this table.
The maximum deflection for HP LOK joints is 0.5 degree.

*The HP LOK Restrained Joint has a working pressure equivalent to the working pressure rating of the parent pipe with a maximum working pressure rating of 350 psi. For higher pressure ratings, contact your U.S. Pipe Sales Representative.





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Pressure Class – Thickness, Dimensions and Weight

SIZE Inches	PRESSURE CLASS psi	THICKNESS Inches	OUTSIDE DIAMETER* Inches	18-FOOT LAYING LENGTH		20-FOOT LAYING LENGTH	
				WEIGHT PER LENGTH† Pounds	AVG. WEIGHT PER FOOT†† Pounds	WEIGHT PER LENGTH† Pounds	AVG. WEIGHT PER FOOT†† Pounds
30	150	0.34	32.00	2160	120.0	—	—
30	200	0.38	32.00	2375	131.9	—	—
30	250	0.42	32.00	2590	143.9	—	—
30	300	0.45	32.00	2755	155.1	—	—
30	350	0.49	32.00	2970	165.0	—	—
36	150	0.38	38.30	2935	163.1	—	—
36	200	0.42	38.30	3195	177.5	—	—
36	250	0.47	38.30	3520	195.6	—	—
36	300	0.51	38.30	3780	210.0	—	—
36	350	0.56	38.30	4100	227.8	—	—
42	150	0.41	44.50	3635	201.9	—	—
42	200	0.47	44.50	4090	227.2	—	—
42	250	0.52	44.50	4465	248.1	—	—
42	300	0.57	44.50	4840	268.9	—	—
42	350	0.63	44.50	5290	293.9	—	—
48	150	0.46	50.80	—	—	4915	245.8
48	200	0.52	50.80	—	—	5490	274.5
48	250	0.58	50.80	—	—	6060	303.0
48	300	0.64	50.80	—	—	6635	331.8
48	350	0.70	50.80	—	—	7205	360.3
54	150	0.51	57.56	—	—	6380	319.0
54	200	0.58	57.56	—	—	7140	357.0
54	250	0.65	57.56	—	—	7900	395.0
54	300	0.72	57.56	—	—	8655	432.8
54	350	0.79	57.56	—	—	9410	470.5

NOTE: Thicknesses and dimensions of 30" through 64" Ductile Iron pipe conform to ANSI/AWWA C151/A21.51.
Weights may vary from the standard because of differences in bell weights.

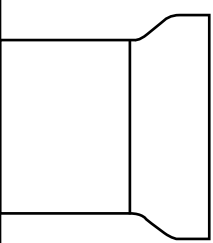
*Tolerance of O.D. of spigot end: 30-48 in., +0.08 in., -0.06 in.; 54-64 in., +0.04 in., -0.10 in.

† Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

†† Including bell; average weight, per foot, based on calculated weight of pipe before rounding.

Table continued on next page.

866.DIP.Pipe



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Pressure Class – Thicknesses, Dimensions and Weight (cont.)

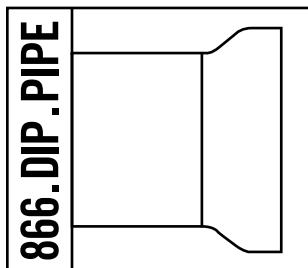
SIZE Inches	PRESSURE CLASS psi	THICKNESS Inches	OUTSIDE DIAMETER* Inches	18-FOOT LAYING LENGTH		20-FOOT LAYING LENGTH	
				WEIGHT PER LENGTH† Pounds	AVG. WEIGHT PER FOOT†† Pounds	WEIGHT PER LENGTH† Pounds	AVG. WEIGHT PER FOOT†† Pounds
60	150	0.54	61.61	—	—	7235	361.8
60	200	0.61	61.61	—	—	8050	402.5
60	250	0.68	61.61	—	—	8860	443.0
60	300	0.76	61.61	—	—	9785	489.3
60	350	0.83	61.61	—	—	10,595	529.8
64	150	0.56	65.67	—	—	8045	402.3
64	200	0.64	65.67	—	—	9035	451.8
64	250	0.72	65.67	—	—	10,025	501.3
64	300	0.80	65.67	—	—	11,010	550.5
64	350	0.87	65.67	—	—	11,870	593.5

NOTE: Thicknesses and dimensions of 30" through 64" Ductile Iron pipe conform to ANSI/AWWA C151/A21.51.
Weights may vary from the standard because of differences in bell weights.

*Tolerance of O.D. of spigot end: 30-48 in., +0.08 in., -0.06 in.; 54-64 in., +0.04 in., -0.10 in.

† Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

†† Including bell; average weight, per foot, based on calculated weight of pipe before rounding.



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Thickness Class - Thicknesses, Dimensions and Weight

Size Inches	Thickness Class	Thickness Inches	Outside Diameter*	18-Foot Laying Length		20-Foot Laying Length	
				Avg. Weight Length† Pounds	Weight Per Foot†† Pounds	Avg. Weight Length† Pounds	Weight Per Foot†† Pounds
30	50	0.39	32	2466	137	—	—
30	51	0.43	32	2682	149	—	—
30	52	0.47	32	2897	161	—	—
30	53	0.51	32	3112	173	—	—
30	54	0.55	32	3326	185	—	—
30	55	0.59	32	3540	197	—	—
30	56	0.63	32	3753	209	—	—
36	50	0.43	38.3	3331	185	—	—
36	51	0.48	38.3	3654	203	—	—
36	52	0.53	38.3	3977	221	—	—
36	53	0.58	38.3	4299	239	—	—
36	54	0.63	38.3	4620	257	—	—
36	55	0.68	38.3	4940	274	—	—
36	56	0.73	38.3	5259	292	—	—
42	50	0.47	44.5	4113	229	—	—
42	51	0.53	44.5	4565	254	—	—
42	52	0.59	44.5	5015	279	—	—
42	53	0.65	44.5	5464	304	—	—
42	54	0.71	44.5	5912	328	—	—
42	55	0.77	44.5	6359	353	—	—
42	56	0.83	44.5	6804	378	—	—

NOTE: Thicknesses and dimensions of 30" through 64" Ductile Iron Pipe conform to ANSI/AWWA C151/A21.51.

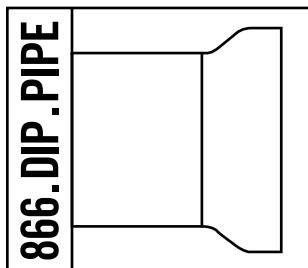
Weights may vary from the standard because of differences in bell weights.

60" and 64" classified as pressure class only.

*Tolerance of O.D. of spigot end: 30" - 48", +0.08", -0.06 in., 54"-64", +0.04, -0.10".

†Including bell; calculated weight of pipe rounded off to nearest 5 lbs.

††Including bell; average weight, per foot, based on calculated weight of pipe before rounding.



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Thickness Class - Thicknesses, Dimensions and Weight (cont.)

Size Inches	Thickness Class	Thickness Inches	Outside Diameter*	18-Foot Laying Length		20-Foot Laying Length	
				Avg. Weight Length Pounds	Weight Per Foot† Pounds	Avg. Weight Length Pounds	Weight Per Foot† Pounds
48	50	0.51	50.8	—	—	5703	285
48	51	0.58	50.8	—	—	6372	319
48	52	0.65	50.8	—	—	7039	352
48	53	0.72	50.8	—	—	7705	385
48	54	0.79	50.8	—	—	8368	418
48	55	0.86	50.8	—	—	9029	451
48	56	0.93	50.8	—	—	9689	484
54	50	0.57	57.56	—	—	7275	364
54	51	0.65	57.56	—	—	8141	407
54	52	0.73	57.56	—	—	9005	450
54	53	0.81	57.56	—	—	9867	493
54	54	0.89	57.56	—	—	10726	536
54	55	0.97	57.56	—	—	11583	579
54	56	1.05	57.56	—	—	12437	622

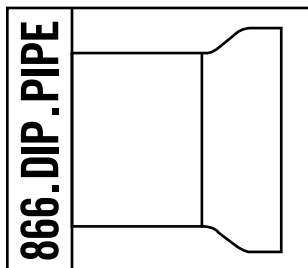
NOTE: Thicknesses and dimensions of 30" through 64" Ductile Iron Pipe conform to ANSI/AWWA C151/A21.51.

Weights may vary from the standard because of differences in bell weights.

60" and 64" classified as pressure class only.

*Tolerance of O.D. of spigot end: 30" - 48", +0.08", -0.06 in., 54"-64", +0.04, -0.10".

†Including bell; average weight, per foot, based on calculated weight of pipe before rounding.

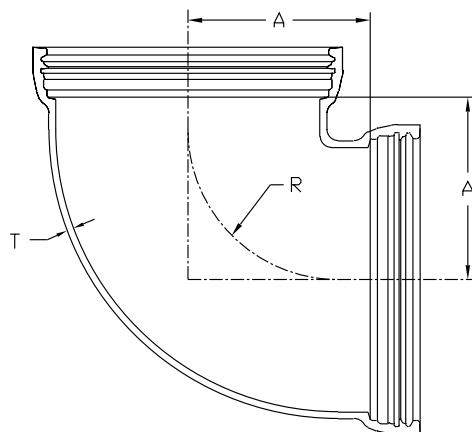


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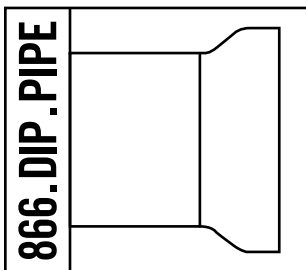


HP LOK 90° Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
Inches	psi	T	A	R	Pounds
30	350	1.03	23.00	21.00	1770
36	350	1.15	26.00	24.00	2565
42	350	1.28	27.50	24.50	3526
48	350	1.42	31.00	28.00	4952
54/1400	350	1.55	39.00	35.28	7138
60/1500	350	1.50	41.00	33.34	7846
64/1600	350	1.50	45.50	35.29	9063

HP LOK 90° Compact Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
Inches	psi	T	A	R	Pounds
30	350	0.66	21.5	19.0	1437
36	350	0.74	24.5	22.0	1905
42	-	-	-	-	-
48	-	-	-	-	-
54/1400	-	-	-	-	-
60/1500	-	-	-	-	-
64/1600	-	-	-	-	-



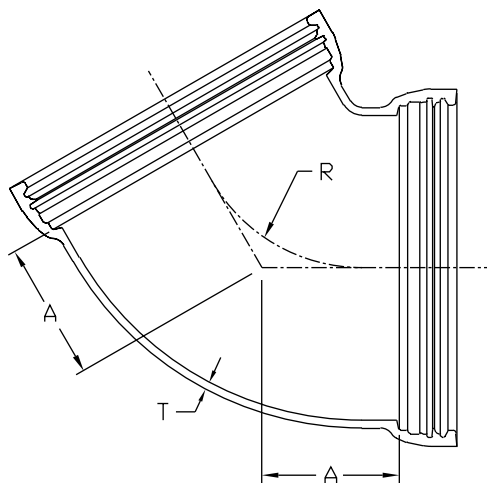
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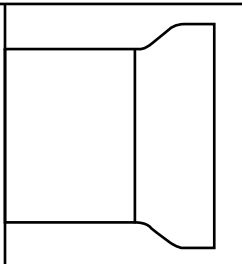


HP LOK 60° Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
		T	A	R	
Inches	psi				Pounds
30	350	1.03	15.00	20.19	1545
36	350	1.15	17.00	23.38	2216
42	350	1.28	19.00	25.98	3112
48	350	1.42	21.00	29.44	4327
54/1400	350	1.55	24.00	34.50	5831

HP LOK 60° Compact Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
		T	A	R	
Inches	psi				Pounds
30	-	-	-	-	-
36	-	-	-	-	-
42	-	-	-	-	-
48	-	-	-	-	-
54/1400	-	-	-	-	-



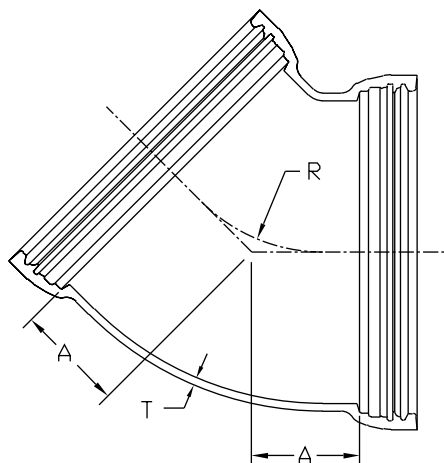
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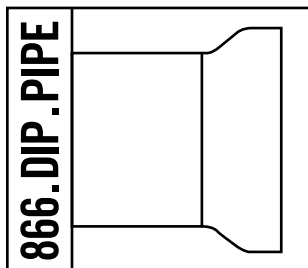


HP LOK 45° Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
Inches	psi	T	A	R	Pounds
30	350	1.03	10.50	20.52	1352
36	350	1.15	8.50	19.92	1692
42	350	1.28	14.00	26.56	2743
48	350	1.42	15.00	28.97	3761
54/1400	350	1.55	20.50	41.05	5474
60/1500	350	1.50	21.50	45.48	5898
64/1600	350	1.50	22.50	47.78	6501

HP LOK 45° Compact Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
Inches	psi	T	A	R	Pounds
30	350	0.66	9.5	18.50	1160
36	350	0.74	11.0	21.24	1502
42	-	-	-	-	-
48	-	-	-	-	-
54/1400	-	-	-	-	-
60/1500	-	-	-	-	-
64/1600	-	-	-	-	-

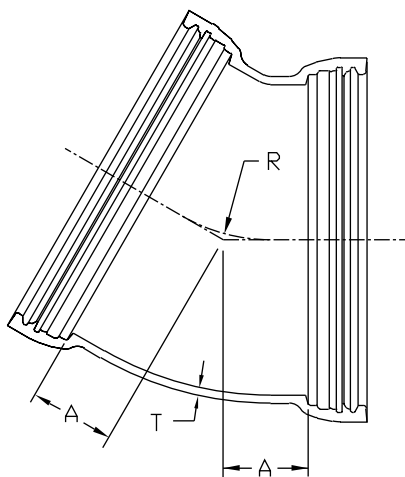


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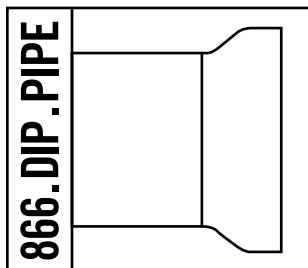


HP LOK 30° Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
		T	A	R	
Inches	psi				Pounds
30	350	1.03	9.50	22.97	1319
36	350	1.15	11.00	27.99	1880
42	350	1.28	12.00	29.86	2600
48	350	1.42	14.00	37.32	3693
54/1400	350	1.55	16.00	44.50	4925
60/1500	350	1.50	19.00	55.38	5626
64/1600	350	1.50	18.50	58.93	5982

HP LOK 30° Compact Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
		T	A	R	
Inches	psi				Pounds
30	-	-	-	-	-
36	-	-	-	-	-
42	-	-	-	-	-
48	-	-	-	-	-
54/1400	-	-	-	-	-
60/1500	-	-	-	-	-
64/1600	-	-	-	-	-

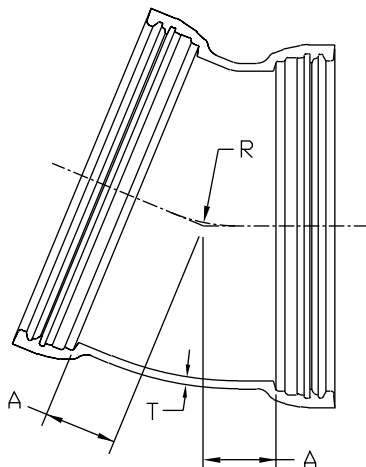


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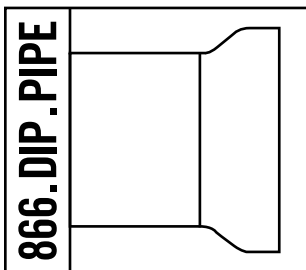


HP LOK 22.5° Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
Inches	psi	T	A	R	Pounds
30	350	1.03	7.00	25.14	1197
36	350	1.15	8.00	30.16	1681
42	350	1.28	9.00	30.16	2344
48	350	1.42	10.00	35.19	3260
54/1400	350	1.55	14.00	34.24	4670
60/1500	350	1.50	12.00	39.41	4637
64/1600	350	1.50	11.00	41.68	4854

HP LOK 22.5° Compact Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
Inches	psi	T	A	R	Pounds
30	350	0.66	6.0	18.50	1056
36	350	0.74	7.0	21.24	1345
42	-	-	-	-	-
48	-	-	-	-	-
54/1400	-	-	-	-	-
60/1500	-	-	-	-	-
64/1600	-	-	-	-	-

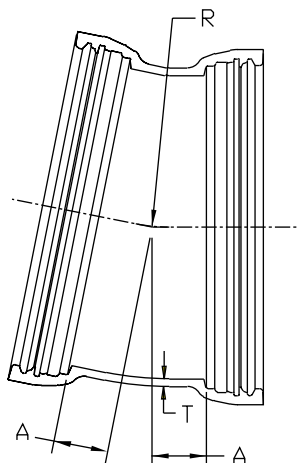


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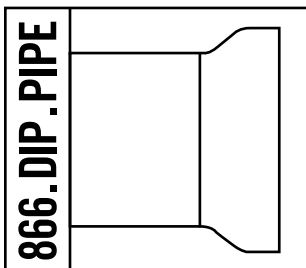


HP LOK 11.25° Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
		T	A	R	
Inches	psi				Pounds
30	350	1.03	7.00	50.77	1199
36	350	1.15	8.00	60.92	1685
42	350	1.28	9.00	60.92	2349
48	350	1.42	10.00	71.07	3267
54/1400	350	1.55	5.10	30.81	3424
60/1500	350	1.50	8.50	44.07	4138
64/1600	350	1.50	7.00	43.56	4245

HP LOK 11.25° Compact Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
		T	A	R	
Inches	psi				Pounds
30	350	0.66	4.5	18.50	1008
36	350	0.74	5.0	21.24	1260
42	-	-	-	-	-
48	-	-	-	-	-
54/1400	-	-	-	-	-
60/1500	-	-	-	-	-
64/1600	-	-	-	-	-



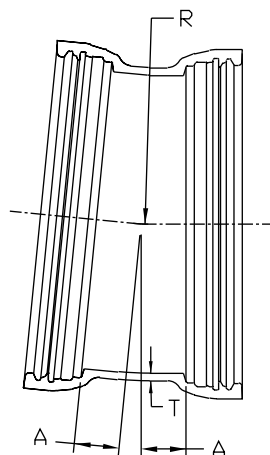
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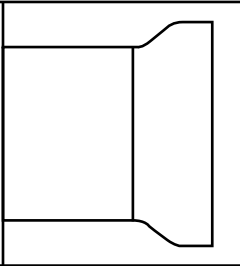


HP LOK 5.625° Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
Inches	psi	T	A	R	Pounds
30	350	1.03	7.00	74.38	1202
36	350	1.15	8.00	91.60	1686
42	350	1.28	9.00	101.78	2350
48	350	1.42	10.00	122.13	3269
54/1400	350	1.55	11.00	161.29	4256
60/1500	350	1.50	8.50	88.34	4140
64/1600	350	1.50	7.00	87.33	4247

HP LOK 5.625° Compact Bend Bell x Bell

SIZE	PRESSURE RATING	DIMENSIONS Inches			WEIGHT
Inches	psi	T	A	R	Pounds
30	350	0.66	4.0	18.50	991
36	350	0.74	4.5	21.24	1239
42	-	-	-	-	-
48	-	-	-	-	-
54/1400	-	-	-	-	-
60/1500	-	-	-	-	-
64/1600	-	-	-	-	-



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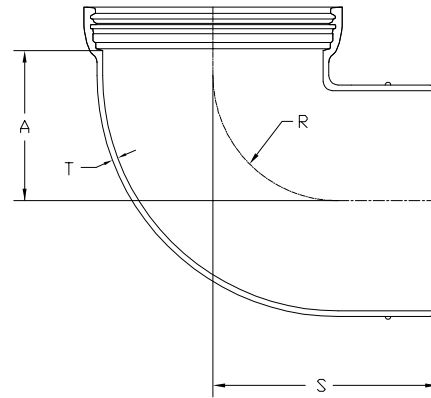


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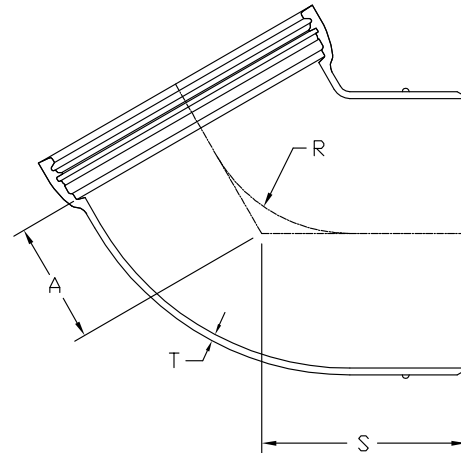
HP LOK 90° Compact Bend Bell x PE

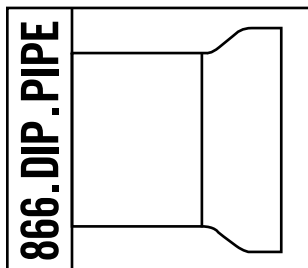
SIZE Inches	PRESSURE RATING psi	DIMENSIONS Inches			R	WEIGHT Pounds
		T	A	S		
30	350	0.66	21.5	31.5	19.00	1184
36	350	0.74	24.5	34.5	22.00	1616
42	350	0.82	28.0	38.0	25.75	2330
48	350	0.90	31.5	41.5	28.90	3206
54/1400	350	1.05	37.0	47.0	32.70	4804
60/1500	350	1.10	39.5	49.5	34.70	5594
64/1600	350	-	-	-	-	-



HP LOK 60° Compact Bend Bell x PE

SIZE Inches	PRESSURE RATING psi	DIMENSIONS Inches			R	WEIGHT Pounds
		T	A	S		
30	350	-	-	-	-	-
36	350	-	-	-	-	-
42	350	-	-	-	-	-
48	350	-	-	-	-	-
54/1400	350	-	-	-	-	-





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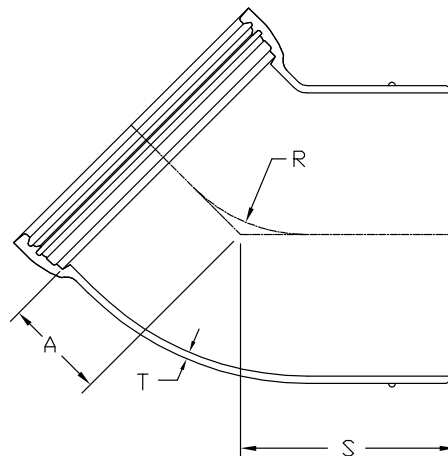
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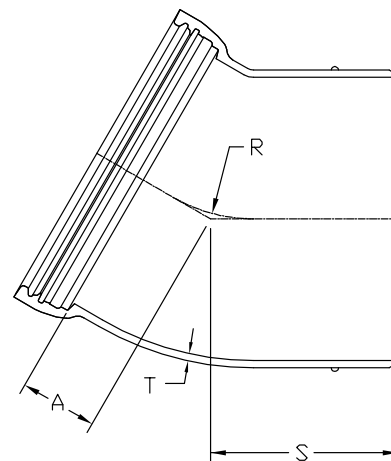
HP LOK 45° Compact Bend Bell x PE

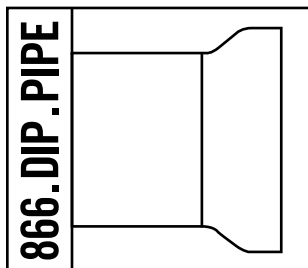
SIZE Inches	PRESSURE RATING psi	DIMENSIONS Inches			R	WEIGHT Pounds
		T	A	S		
30	350	0.66	9.5	19.5	18.50	897
36	350	0.74	11.0	21.0	21.25	1205
42	350	0.82	13.0	23.0	25.25	1736
48	350	0.90	14.5	24.5	28.40	2363
54/1400	350	1.05	20.5	30.5	35.75	3792
60/1500	350	1.10	21.5	31.5	39.70	4336
64/1600	350	-	-	-	-	-



HP LOK 30° Compact Bend Bell x PE

SIZE Inches	PRESSURE RATING psi	DIMENSIONS Inches			R	WEIGHT Pounds
		T	A	S		
30	350	0.66	8.0	18.0	18.50	857
36	350	0.74	9.0	19.0	21.25	1132
42	350	0.82	10.0	20.0	25.25	1586
48	350	0.90	11.0	21.0	28.40	2143
54/1400	350	1.05	16.0	26.0	35.75	3417
60/1500	350	1.10	19.0	29.0	39.70	4134
64/1600	350	-	-	-	-	-





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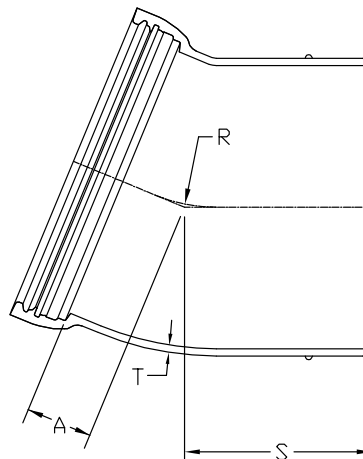
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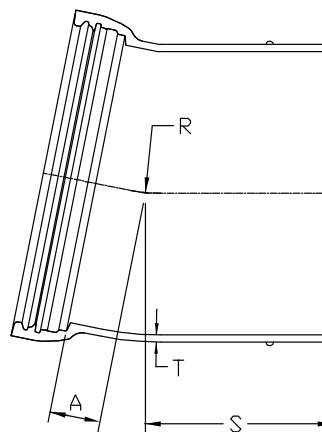
HP LOK 22.5° Compact Bend Bell x PE

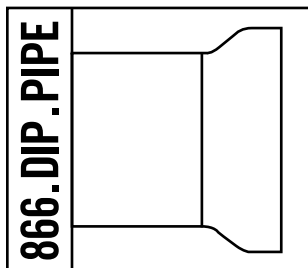
SIZE	PRESSURE RATING	DIMENSIONS Inches				WEIGHT
Inches	psi	T	A	S	R	Pounds
30	350	0.66	6.0	16.0	18.50	793
36	350	0.74	7.0	17.0	21.25	1048
42	350	0.82	8.0	18.0	25.25	1477
48	350	0.90	9.0	19.0	28.40	2006
54/1400	350	1.05	12.0	22.0	35.75	3049
60/1500	350	1.10	12.0	22.0	39.70	3404
64/1600	350	-	-	-	-	-



HP LOK 11.25° Compact Bend Bell x PE

SIZE	PRESSURE RATING	DIMENSIONS Inches				WEIGHT
Inches	psi	T	A	S	R	Pounds
30	350	0.66	4.5	14.5	18.50	745
36	350	0.74	5.0	15.0	21.25	963
42	350	0.82	5.8	15.8	25.25	1351
48	350	0.90	6.5	16.5	28.40	1831
54/1400	350	1.05	10.0	20.0	35.75	2866
60/1500	350	1.10	8.5	18.5	39.70	3040
64/1600	350	-	-	-	-	-





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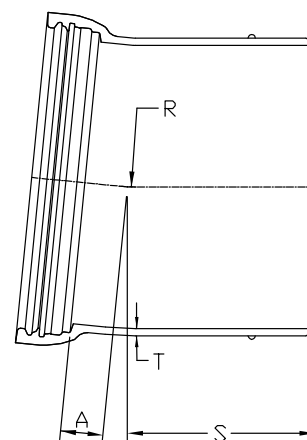


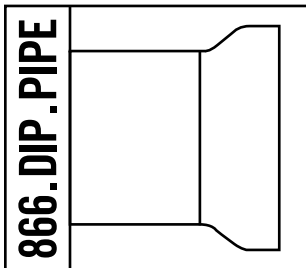
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HP LOK 5.625° Compact Bend Bell x PE

SIZE	PRESSURE RATING	DIMENSIONS Inches				WEIGHT
Inches	psi	T	A	S	R	Pounds
30	350	0.66	4.0	14.0	18.50	728
36	350	0.74	4.5	14.5	21.25	942
42	350	0.82	5.0	15.0	25.25	1276
48	350	0.90	5.25	15.25	28.40	1742
54/1400	350	1.05	8.0	18.0	35.75	2678
60/1500	350	1.10	8.5	18.5	39.70	3041
64/1600	350	-	-	-	-	-





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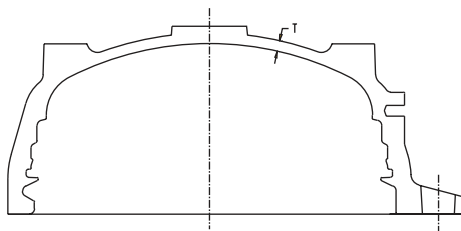


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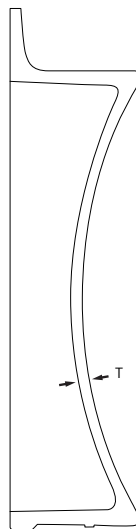
HP LOK® Caps

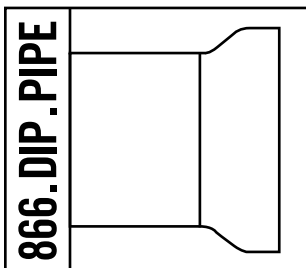
SIZE Inches	T	WEIGHT Pounds
30	1.00	960
36	1.00	1288
42	1.00	1700
48	1.30	2051
54/1400	1.50	2804
60/1500	1.60	3334
64/1600	1.70	3889



HP LOK® Plugs

SIZE Inches	T	WEIGHT Pounds
30	1.03	838
36	1.15	1172
42	1.28	1439
48	1.42	1941
54	1.54	2522
60	1.75	2785
64	1.75	3125





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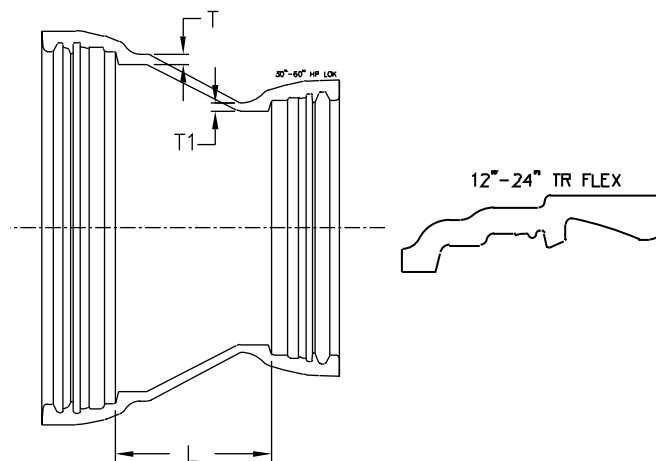


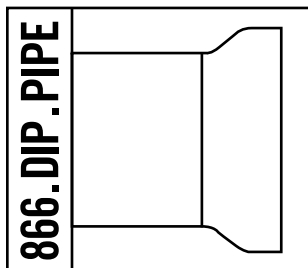
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P 29

HP LOK® Reducer

SIZE Inches		L	T	T1	WEIGHT Pounds
LEB	SEB				
30	12 TR FLEX®	30.00	1.03	0.44	996
30	14 TR FLEX	30.00	1.03	0.66	1045
30	16 TR FLEX	30.00	1.03	0.70	1100
30	18 TR FLEX	30.00	1.03	0.75	1155
30	20 TR FLEX	24.00	1.03	0.80	1099
30	24 TR FLEX	24.00	1.03	0.89	1230
36	18 TR FLEX	36.00	1.15	0.75	1569
36	20 TR FLEX	36.00	1.15	0.80	1647
36	24 TR FLEX	22.00	1.15	0.89	1414
36	30 HP LOK	22.00	1.15	1.03	1633
42	20 TR FLEX	42.00	1.28	0.80	2192
42	24 TR FLEX	42.00	1.28	0.89	2371
42	30 HP LOK	20.00	1.28	1.03	1887
42	36 HP LOK	20.00	1.28	1.15	2130
48	24 TR FLEX	48.00	1.42	0.89	3080
48	30 HP LOK	48.00	1.42	1.03	3404
48	36 HP LOK	36.00	1.42	1.15	3258
48	42 HP LOK	36.00	1.42	1.28	3655
54	24 TR FLEX	38.00	1.55	0.89	3176
54	30 HP LOK	32.00	1.55	1.03	3218
54	36 HP LOK	28.00	1.55	1.15	3314
54	42 HP LOK	25.00	1.55	1.28	3489
54	48 HP LOK	18.00	1.55	1.42	3540
60	30 HP LOK	35.40	1.50	1.03	3470
60	36 HP LOK	30.00	1.50	1.15	3539
60	42 HP LOK	24.00	1.50	1.28	3589
60	48 HP LOK	18.00	1.50	1.42	3669
60	54 HP LOK	13.00	1.50	1.55	3731
64	36 HP LOK	32.50	1.50	1.15	3866
64	42 HP LOK	27.50	1.50	1.28	3980
64	48 HP LOK	22.50	1.50	1.42	4128
64	54 HP LOK	15.50	1.50	1.55	4073
64	60 HP LOK	12.50	1.50	1.50	3965





HP LOK®

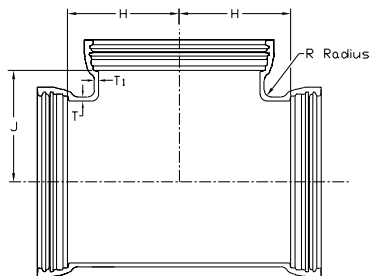
RESTRAINED JOINT



2011 EDITION

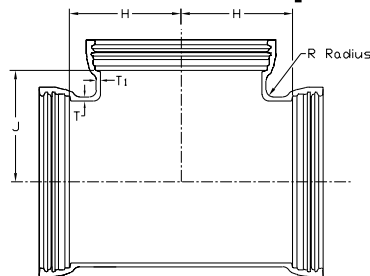
P 30

HP LOK® Tee

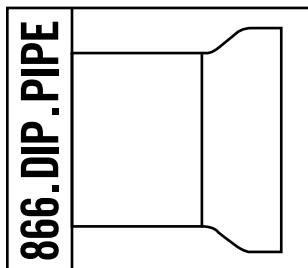


SIZE Inches		DIMENSIONS Inches			WEIGHT Pounds
RUN	BRANCH	H	J	R	
30	6 TR FLEX®	11.00	23.00	1.50	1434
30	8 TR FLEX	11.00	23.00	1.50	1456
30	10 TR FLEX	11.00	23.00	1.50	1476
30	12 TR FLEX	11.00	23.00	1.50	1504
30	14 TR FLEX	13.50	23.00	2.00	1671
30	16 TR FLEX	13.50	23.00	2.00	1702
30	18 TR FLEX	18.00	23.00	2.00	1957
30	20 TR FLEX	18.00	23.00	2.00	2002
30	24 TR FLEX	21.00	25.00	2.00	2286
30	30 HP LOK	21.00	25.00	2.00	2553
36	6 TR FLEX	17.50	26.00	2.00	2372
36	8 TR FLEX	17.50	26.00	2.00	2393
36	10 TR FLEX	17.50	26.00	2.00	2412
36	12 TR FLEX	17.50	26.00	2.00	2437
36	14 TR FLEX	17.50	26.00	2.00	2478
36	16 TR FLEX	17.50	26.00	2.00	2507
36	18 TR FLEX	17.50	26.00	2.00	2535
36	20 TR FLEX	17.50	26.00	2.00	2575
36	24 TR FLEX	17.50	26.00	2.00	2660
36	30 HP LOK	20.00	26.00	2.00	2995
36	36 HP LOK	20.00	26.00	2.00	3331
42	12 TR FLEX	20.00	30.00	3.00	3427
42	14 TR FLEX	20.00	30.00	3.00	3467
42	16 TR FLEX	20.00	30.00	3.00	3495
42	18 TR FLEX	20.00	30.00	3.00	3522
42	20 TR FLEX	20.00	30.00	3.00	3561
42	24 TR FLEX	20.00	30.00	3.00	3641
42	30 HP LOK	31.00	31.00	4.00	4786
42	36 HP LOK	31.00	31.00	4.00	5011
42	42 HP LOK	31.00	31.00	4.00	5491

HP LOK® Compact Tee



SIZE Inches		DIMENSIONS Inches			WEIGHT Pounds
RUN	BRANCH	H	J	R	
30	6 TR FLEX®	-	-	-	-
30	8 TR FLEX	-	-	-	-
30	10 TR FLEX	-	-	-	-
30	12 TR FLEX	-	-	-	-
30	14 TR FLEX	-	-	-	-
30	16 TR FLEX	-	-	-	-
30	18 TR FLEX	-	-	-	-
30	20 TR FLEX	-	-	-	-
30	24 TR FLEX	-	-	-	-
30	30 HP LOK	21.00	21.00	3.00	2002
36	6 TR FLEX	-	-	-	-
36	8 TR FLEX	-	-	-	-
36	10 TR FLEX	-	-	-	-
36	12 TR FLEX	-	-	-	-
36	14 TR FLEX	-	-	-	-
36	16 TR FLEX	-	-	-	-
36	18 TR FLEX	-	-	-	-
36	20 TR FLEX	-	-	-	-
36	24 TR FLEX	-	-	-	-
36	30 HP LOK	-	-	-	-
36	36 HP LOK	24.00	24.00	2.5	2623
42	12 TR FLEX	-	-	-	-
42	14 TR FLEX	-	-	-	-
42	16 TR FLEX	-	-	-	-
42	18 TR FLEX	-	-	-	-
42	20 TR FLEX	-	-	-	-
42	24 TR FLEX	-	-	-	-
42	30 HP LOK	-	-	-	-
42	36 HP LOK	-	-	-	-
42	42 HP LOK	28.5	28.5	4.00	3863



HP LOK®

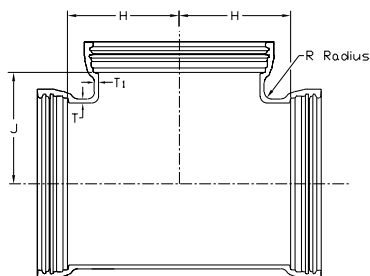
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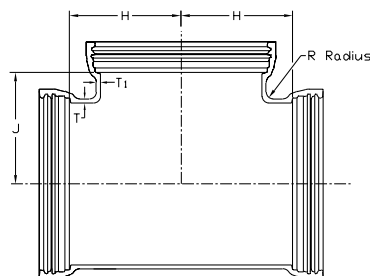
2011 EDITION

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HP LOK® Tee

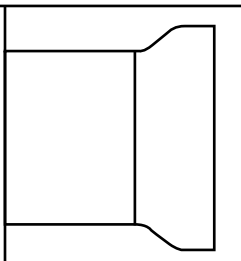


HP LOK® Compact Tee



SIZE Inches		DIMENSIONS Inches			WEIGHT Pounds
RUN	BRANCH	H	J	R	
48	12 TR FLEX	26.00	34.00	4.00	5170
48	14 TR FLEX	26.00	34.00	4.00	5208
48	16 TR FLEX	26.00	34.00	4.00	5235
48	18 TR FLEX	26.00	34.00	4.00	5261
48	20 TR FLEX	26.00	34.00	4.00	5299
48	24 TR FLEX	26.00	34.00	4.00	5375
48	30 HP LOK	26.00	34.00	4.00	5510
48	36 HP LOK	34.00	34.00	4.00	6596
48	42 HP LOK	34.00	34.00	4.00	6897
48	48 HP LOK	34.00	34.00	4.00	7559
54	30 HP LOK	31.00	37.00	2.50	7469
54	36 HP LOK	31.00	37.00	2.50	7623
54	42 HP LOK	31.00	39.00	2.50	7954
54	48 HP LOK	31.00	39.00	2.50	8380
54	54 HP LOK	35.80	35.80	2.50	9615
60	30 HP LOK	31.00	42.00	2.50	7899
60	36 HP LOK	31.00	42.00	2.50	8080
60	42 HP LOK	41.00	43.00	2.50	9854
60	48 HP LOK	41.00	43.00	2.50	10284
60	54 HP LOK	41.00	43.00	2.50	10849
60	60 HP LOK	41.00	41.00	2.50	11112
64	36 HP LOK	29.50	44.00	2.50	8394
64	42 HP LOK	45.50	45.00	2.50	11205
64	48 HP LOK	45.50	45.00	2.50	11601
64	54 HP LOK	45.50	46.00	2.50	12172
64	60 HP LOK	45.50	44.00	2.50	12198
64	64 HP LOK	45.50	48.00	2.50	12840

SIZE Inches		DIMENSIONS Inches			WEIGHT Pounds
RUN	BRANCH	H	J	R	
48	12 TR FLEX	-	-	-	-
48	14 TR FLEX	-	-	-	-
48	16 TR FLEX	-	-	-	-
48	18 TR FLEX	-	-	-	-
48	20 TR FLEX	-	-	-	-
48	24 TR FLEX	-	-	-	-
48	30 HP LOK	-	-	-	-
48	36 HP LOK	-	-	-	-
48	42 HP LOK	-	-	-	-
48	48 HP LOK	32.00	32.00	4.00	5312
54	30 HP LOK	-	-	-	-
54	36 HP LOK	-	-	-	-
54	42 HP LOK	-	-	-	-
54	48 HP LOK	-	-	-	-
54	54 HP LOK	-	-	-	-
60	30 HP LOK	-	-	-	-
60	36 HP LOK	-	-	-	-
60	42 HP LOK	-	-	-	-
60	48 HP LOK	-	-	-	-
60	54 HP LOK	-	-	-	-
60	60 HP LOK	-	-	-	-
64	36 HP LOK	-	-	-	-
64	42 HP LOK	-	-	-	-
64	48 HP LOK	-	-	-	-
64	54 HP LOK	-	-	-	-
64	60 HP LOK	-	-	-	-
64	64 HP LOK	-	-	-	-



HP LOK®

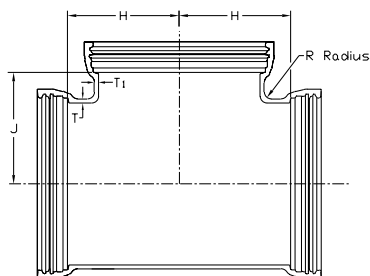
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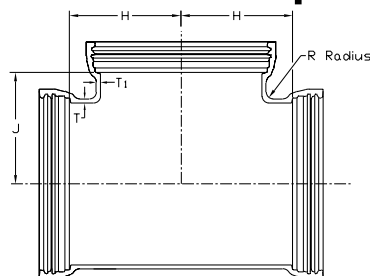
2011 EDITION

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HP LOK® Tee



HP LOK® Compact Tee

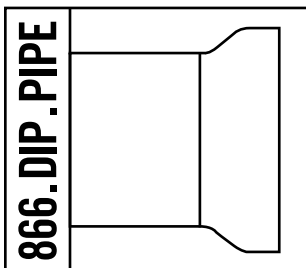


BELL SIZE/TYPE	T OR T1
6" TR FLEX	0.36
8" TR FLEX	0.39
10" TR FLEX	0.41
12" TR FLEX	0.44
14" TR FLEX	0.66
16" TR FLEX	0.70
18" TR FLEX	0.75
20" TR FLEX	0.80

BELL SIZE/TYPE	T OR T1
24" TR FLEX	0.89
30" HP LOK	1.03
36" HP LOK	1.15
42" HP LOK	1.28
48" HP LOK	1.42
54" HP LOK	1.55
60" HP LOK	1.50
64" HP LOK	1.50

BELL SIZE/TYPE	T OR T1
6" TR FLEX	0.36
8" TR FLEX	0.38
10" TR FLEX	0.40
12" TR FLEX	0.42
14" TR FLEX	0.47
16" TR FLEX	0.50
18" TR FLEX	0.54
20" TR FLEX	0.57

BELL SIZE/TYPE	T OR T1
24" TR FLEX	0.61
30" HP LOK	0.66
36" HP LOK	0.74
42" HP LOK	0.82
48" HP LOK	0.90
54" HP LOK	0.90
60" HP LOK	0.94
64" HP LOK	0.99



HP LOK®

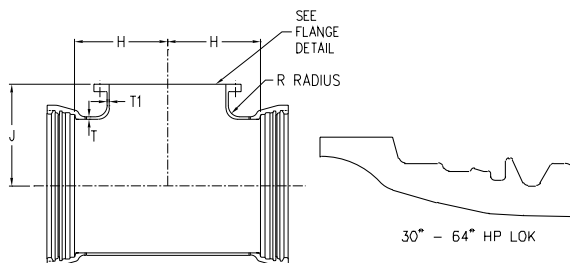
RESTRAINED JOINT



2011 EDITION

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HP LOK® x Flange Tee

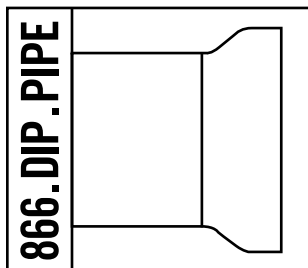


SIZE Inches		DIMENSIONS Inches			WEIGHT Pounds
RUN	BRANCH	H	J	R	
30	6" FLANGE	11.00	23.00	1.50	1427
30	8" FLANGE	11.00	23.00	1.50	1441
30	10" FLANGE	11.00	23.00	1.50	1454
30	12" FLANGE	11.00	23.00	1.50	1479
30	14" FLANGE	13.50	23.00	2.00	1608
30	16" FLANGE	13.50	23.00	2.00	1628
30	18" FLANGE	18.00	23.00	2.00	1862
30	20" FLANGE	18.00	23.00	2.00	1893
30	24" FLANGE	21.00	25.00	2.00	2143
30	30" FLANGE	21.00	25.00	2.00	2353
36	6" FLANGE	17.50	26.00	2.00	2365
36	8" FLANGE	17.50	26.00	2.00	2378
36	10" FLANGE	17.50	26.00	2.00	2390
36	12" FLANGE	17.50	26.00	2.00	2412
36	14" FLANGE	17.50	26.00	2.00	2415
36	16" FLANGE	17.50	26.00	2.00	2433
36	18" FLANGE	17.50	26.00	2.00	2440
36	20" FLANGE	17.50	26.00	2.00	2466
36	24" FLANGE	17.50	26.00	2.00	2517
36	30" FLANGE	28.00	28.00	2.00	3392
36	36" FLANGE	28.00	28.00	2.00	3718
42	12" FLANGE	20.00	30.00	3.00	3402
42	14" FLANGE	20.00	30.00	3.00	3404
42	16" FLANGE	20.00	30.00	3.00	3421
42	18" FLANGE	20.00	30.00	3.00	3427
42	20" FLANGE	20.00	30.00	3.00	3452
42	24" FLANGE	20.00	30.00	3.00	3498
42	30" FLANGE	31.00	31.00	4.00	4586
42	36" FLANGE	31.00	31.00	4.00	4784
42	42" FLANGE	31.00	31.00	4.00	5190

SIZE Inches		DIMENSIONS Inches			WEIGHT Pounds
RUN	BRANCH	H	J	R	
48	12" FLANGE	26.00	34.00	4.00	5145
48	14" FLANGE	26.00	34.00	4.00	5145
48	16" FLANGE	26.00	34.00	4.00	5161
48	18" FLANGE	26.00	34.00	4.00	5166
48	20" FLANGE	26.00	34.00	4.00	5190
48	24" FLANGE	26.00	34.00	4.00	5232
48	30" FLANGE	26.00	34.00	4.00	5310
48	36" FLANGE	34.00	34.00	4.00	6368
48	42" FLANGE	34.00	34.00	4.00	6596
48	48" FLANGE	34.00	34.00	4.00	7061
54	30" FLANGE	31.00	37.00	2.50	7261
54	36" FLANGE	31.00	37.00	2.50	7383
54	42" FLANGE	31.00	39.00	2.50	7634
54	48" FLANGE	31.00	39.00	2.50	7856
54	54" FLANGE	35.80	39.00	2.50	9092
60	30" FLANGE	31.00	42.00	2.50	7691
60	36" FLANGE	31.00	43.00	2.50	7874
60	42" FLANGE	41.00	43.00	2.50	9534
60	48" FLANGE	41.00	43.00	2.50	9760
60	54" FLANGE	41.00	43.00	2.50	10096
60	60" FLANGE	41.00	43.00	2.50	10749
64	36" FLANGE	29.50	44.00	2.50	8154
64	42" FLANGE	45.50	45.00	2.50	10885
64	48" FLANGE	45.50	45.00	2.50	11077
64	54" FLANGE	45.50	46.00	2.50	11419
64	60" FLANGE	45.50	46.00	2.50	11835
64	64" FLANGE	45.50	48.50	2.50	12875

BELL SIZE/TYPE	T OR T1
6" FLANGE	0.36
8" FLANGE	0.39
10" FLANGE	0.41
12" FLANGE	0.44
14" FLANGE	0.66
16" FLANGE	0.70
18" FLANGE	0.75
20" FLANGE	0.80

BELL SIZE/TYPE	T OR T1
24" FLANGE	0.89
30" HP LOK/FLG.	1.03
36" HP LOK/FLG.	1.15
42" HP LOK/FLG.	1.28
48" HP LOK/FLG.	1.42
54" HP LOK/FLG.	1.55
60" HP LOK/FLG.	1.50
64" HP LOK/FLG.	1.50



☐ ☐ ☐ ☐

HP LOK[®]

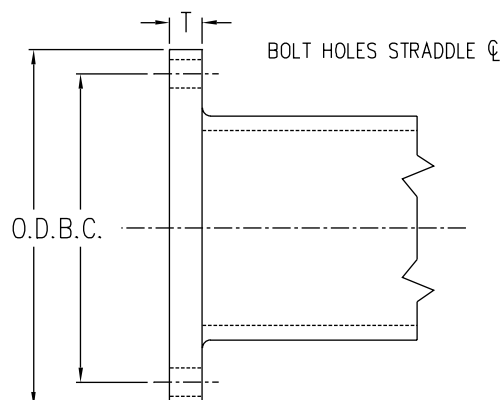
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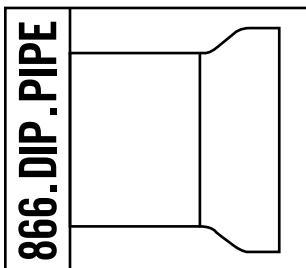
2011 EDITION

P 34

FLANGE DETAIL

SIZE Inches	DIMENSIONS Inches				NO. OF BOLTS
	OD	BC	T	BOLT HOLE Dia.	
6	11.00	9.50	1.00	7/8	8
8	13.50	11.75	1.12	7/8	8
10	16.00	14.25	1.19	1	12
12	19.00	17.00	1.25	1	12
14	21.00	18.75	1.38	1-1/8	12
16	23.50	21.25	1.44	1-1/8	16
18	25.00	22.75	1.56	1-1/4	16
20	27.50	25.00	1.69	1-1/4	20
24	32.00	29.50	1.88	1-3/8	20
30	38.75	36.00	2.12	1-3/8	28
36	46.00	42.75	2.38	1-5/8	32
42	53.00	49.50	2.62	1-5/8	36
48	59.50	56.00	2.75	1-5/8	44
54	66.25	62.75	3.00	2	44
60	73.00	69.25	3.12	2	52
64	80.00	76.00	3.38	2	52





HP LOK®

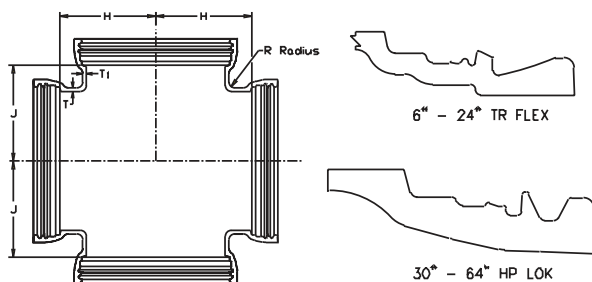
RESTRAINED JOINT



2011 EDITION

P 35

HP LOK® Crosses



SIZE Inches		H	J	R	WEIGHT Pounds
RUN	BRANCH				
30	6 TR FLEX®	11.00	23.00	1.50	1472
30	8 TR FLEX	11.00	23.00	1.50	1516
30	10 TR FLEX	11.00	23.00	1.50	1557
30	12 TR FLEX	11.00	23.00	1.50	1611
30	14 TR FLEX	18.00	23.00	2.00	2045
30	16 TR FLEX	18.00	23.00	2.00	2107
30	18 TR FLEX	18.00	23.00	2.00	2171
30	20 TR FLEX	18.00	23.00	2.00	2261
30	24 TR FLEX	25.00	25.00	2.00	2878
30	30 HP LOK	25.00	25.00	2.00	3412
36	6 TR FLEX	20.00	26.00	2.00	2579
36	8 TR FLEX	20.00	26.00	2.00	2621
36	10 TR FLEX	20.00	26.00	2.00	2659
36	12 TR FLEX	20.00	26.00	2.00	2709
36	14 TR FLEX	20.00	26.00	2.00	2791
36	16 TR FLEX	20.00	26.00	2.00	2848
36	18 TR FLEX	20.00	26.00	2.00	2904
36	20 TR FLEX	20.00	26.00	2.00	2985
36	24 TR FLEX	20.00	26.00	2.00	3156
36	30 HP LOK	28.00	28.00	2.00	4130
36	36 HP LOK	28.00	28.00	2.00	4838
42	12 TR FLEX	23.00	30.00	3.00	3796
42	14 TR FLEX	23.00	30.00	3.00	3875
42	16 TR FLEX	23.00	30.00	3.00	3931
42	18 TR FLEX	23.00	30.00	3.00	3985
42	20 TR FLEX	23.00	30.00	3.00	4063
42	24 TR FLEX	23.00	30.00	3.00	4224
42	30 HP LOK	31.00	31.00	4.00	5275
42	36 HP LOK	31.00	31.00	4.00	5725
42	42 HP LOK	31.00	31.00	4.00	6683

SIZE Inches		H	J	R	WEIGHT Pounds
RUN	BRANCH				
48	12 TR FLEX	26.00	34.00	4.00	5275
48	14 TR FLEX	26.00	34.00	4.00	5351
48	16 TR FLEX	26.00	34.00	4.00	5405
48	18 TR FLEX	26.00	34.00	4.00	5457
48	20 TR FLEX	26.00	34.00	4.00	5532
48	24 TR FLEX	26.00	34.00	4.00	5685
48	30 HP LOK	26.00	34.00	4.00	5955
48	36 HP LOK	34.00	34.00	4.00	7229
48	42 HP LOK	34.00	34.00	4.00	7830
48	48 HP LOK	34.00	34.00	4.00	9156
54	30 HP LOK	31.00	37.00	4.00	7857
54	36 HP LOK	31.00	37.00	4.00	8164
54	42 HP LOK	31.00	39.00	4.00	8827
54	48 HP LOK	31.00	39.00	4.00	9579
54	54 HP LOK	35.80	35.80	3.75	11479
60	30 HP LOK	31.00	42.00	4.00	8367
60	36 HP LOK	31.00	42.00	4.00	8730
60	42 HP LOK	41.00	43.00	4.00	10815
60	48 HP LOK	41.00	43.00	4.00	11676
60	54 HP LOK	41.00	43.00	4.00	12805
60	60 HP LOK	41.00	41.00	4.00	13331
64	36 HP LOK	29.50	44.00	--	8994
64	42 HP LOK	45.50	45.00	--	12157
64	48 HP LOK	45.50	45.00	--	12960
64	54 HP LOK	45.50	46.00	--	14100
64	60 HP LOK	45.50	44.00	--	14153
64	64 HP LOK	45.50	45.50	--	15436

BELL SIZE/TYPE	T OR T1
6" TR FLEX	0.55
8" TR FLEX	0.60
10" TR FLEX	0.68
12" TR FLEX	0.75
14" TR FLEX	0.66
16" TR FLEX	0.70
18" TR FLEX	0.75
20" TR FLEX	0.80

BELL SIZE/TYPE	T OR T1
24" TR FLEX	0.89
30" HP LOK	1.03
36" HP LOK	1.15
42" HP LOK	1.28
48" HP LOK	1.42
54" HP LOK	1.55
60" HP LOK	1.50
64" HP LOK	1.50

866.DIP.PIPE

HP LOK®

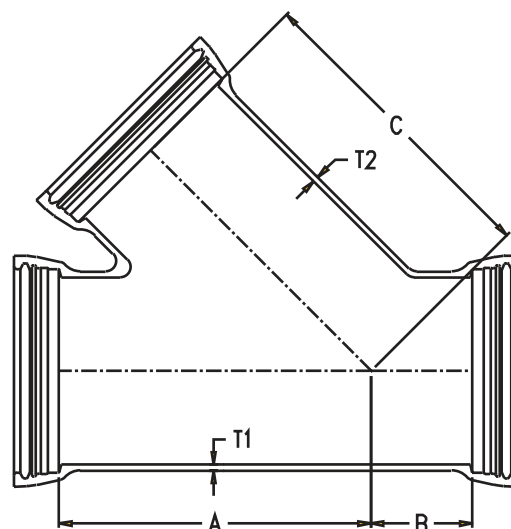
RESTRAINED JOINT

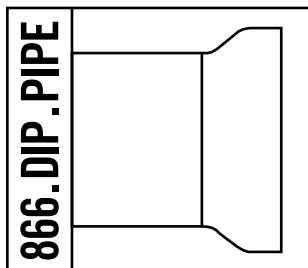
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HP LOK® Wye

Run	SIZE Branch	A	B	C	T1	T2	WEIGHT Pounds
30	16" TR FLEX®	49.00	10.00	49.00	1.37	0.89	3311
30	18" TR FLEX	49.00	10.00	49.00	1.37	0.96	3389
30	20" TR FLEX	49.00	10.00	49.00	1.37	1.03	3483
30	24" TR FLEX	49.00	10.00	49.00	1.37	1.16	3678
30	30" HP LOK	49.00	10.00	49.00	1.37	1.37	4022
36	16" TR FLEX	58.00	21.50	58.00	1.58	0.89	5393
36	18" TR FLEX	59.00	20.50	59.00	1.58	0.96	5494
36	20" TR FLEX	60.00	19.50	60.00	1.58	1.03	5617
36	24" TR FLEX	60.00	19.50	60.00	1.58	1.16	5843
36	30" HP LOK	60.00	19.50	60.00	1.58	1.37	6244
36	36" HP LOK	60.00	19.50	60.00	1.58	1.58	6710
42	24" TR FLEX	69.00	19.50	69.00	1.78	1.16	8075
42	30" HP LOK	69.00	19.50	69.00	1.78	1.37	8512
42	36" HP LOK	69.00	19.50	69.00	1.78	1.58	9020
42	42" HP LOK	69.00	19.50	69.00	1.78	1.78	9628
48	24" TR FLEX	77.50	21.50	77.50	1.96	1.16	10985
48	30" HP LOK	77.50	21.50	77.50	1.96	1.37	11453
48	36" HP LOK	77.50	21.50	77.50	1.96	1.58	11998
48	42" HP LOK	77.50	21.50	77.50	1.96	1.78	12647
48	48" HP LOK	77.50	21.50	77.50	1.96	1.96	13407





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HP LOK[®]

RESTRAINED JOINT

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Products for Water, Wastewater and Fire Protection

Ductile Iron Pipe	SIZE RANGE
TYTON JOINT [®] Pipe	4"-64" Ductile Iron
Mechanical Joint Pipe	4"-12" Ductile Iron
TR FLEX [®] Pipe	4"-36" Ductile Iron
HP LOK [®] Pipe	30"-64" Ductile Iron
Flanged Pipe	3"-64" Ductile Iron
Grooved Pipe	4"-36" Ductile Iron
USIFLEX [®] Boltless Ball Joint Pipe For Subaqueous Installations	4"-48" Ductile Iron
Restrained Joints	
TR FLEX [®] Restrained Joint	4"-36" Ductile Iron
HP LOK [®] Restrained Joint	30"-64" Ductile Iron
MJ FIELD LOK [®] Gaskets	4"-24"
FIELD LOK 350 [®] Gaskets	4"-24"
FIELD LOK [®] Gasket	30" & 36"
TR FLEX GRIPPER [®] Rings	4"-36" Ductile Iron
TR TELE FLEX [®] Assemblies	4"-24" Ductile Iron
Fittings	
TYTON [®] Fittings	14"-24" Ductile Iron
TRIM TYTON [®] Fittings	4"-12" Ductile Iron
TR FLEX [®] Fittings and TR FLEX [®] Telescoping Sleeves	4"-36" Ductile Iron
HP LOK [®] Fittings and HP LOK [®] Telescoping Sleeves	30"-64" Ductile Iron
Mechanical Joint Fittings	30"-48" Ductile Iron
Flanged Fittings	30"-64" Ductile Iron
XTRA FLEX [®] Couplings	4"-24" Ductile Iron
Miscellaneous Products	
PROTECTO 401 [™] Lined Ductile Iron Pipe for Domestic Sewage and Industrial Wastes	4"-64" Ductile Iron
GLASS Lined Ductile Iron Pipe for Wastewater Treatment Plants	4"-30" Ductile Iron
RING FLANGE-TYTE [®] Gaskets	4"-36"
FULL FACE FLANGE-TYTE [®] Gaskets	4"-64"
MJ Harness-Lok	4"-48" Ductile Iron
Saddle Outlets	Various Ductile Iron
Welded Outlets	Various Ductile Iron
Polyethylene Encasement	4"-64"

Our products are manufactured in conformance with National Standards so that our customers may be assured of getting the performance and longevity they expect. Use of accessories or other appurtenances that do not comply with recognized standards may jeopardize the performance and longevity of the project.

*All U.S. Pipe brochures and/or products are
subject to change without further notice.*

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