



Pipe Restrainers series 1000

1000C Restrainers for use on IPEX Bionax® AWWA CI OD C909 PVC0 Pipe with MJ or Push-On Fittings



Series 1000C for CI OD PVC0 Pipe

INFORMATION

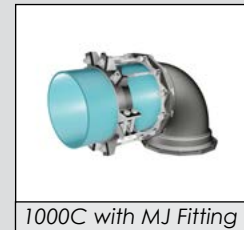
Restrainers for restraining mechanical joint or push-on fittings with PVC0 pipe. These restraints work in any type of soil for a guaranteed joint restraint with rated pressure as listed below.

Restrainers can be installed on new or existing systems, totally eliminating the use of thrust blocks. These restraints have internal serrations that lock onto the pipe and give 360° contact and support the pipe wall. Restraint devices may be used with any type of PVC0 piping system.

**For use with
14" to 18" IPEX Bionax® Pipe**

FEATURES & ADVANTAGES

- 360° contact, no pipe distortion or point loading and supports the wall of the pipe
- Made of Ductile Iron - ASTM Grade A536, Grade 65-45-12
- Restrainers work with Mechanical Joint or Push-On Fittings.
- All restraints are machined to exact tolerances.
- Rated pressures, as listed below, carry a 2:1 safety factor.
- Can be installed outside the trench, to ease installation
- Maintains full deflection on Mechanical Joint and Push-On Fittings
- Rods/Hex Nuts: low alloy steel per ANSI/AWWA C111/A21.11
- Clamping Bolts: SAE J429 Grade 5
- Standard color is Graphite Black (RAL 9011).



1000C with MJ Fitting

* Bionax® is a registered trademark of IPEX Branding, Inc.

MAXIMUM WORKING PRESSURE RATING WITH OCCASSIONAL & RECURRING SURGES	
NOM. SIZE (IN)	C909
	PC 235
14	235
16	200
18	200

SAMPLE SPECIFICATIONS

Restraint devices shall be manufactured of high strength ductile iron in accordance to ASTM A536 Grade 65-45-12 for all sizes. Internal serrations will be machined to provide exact tolerances to provide 360° contact and support of the pipe wall. Restraint devices shall have a safety factor of 2:1 over the pressure rating.



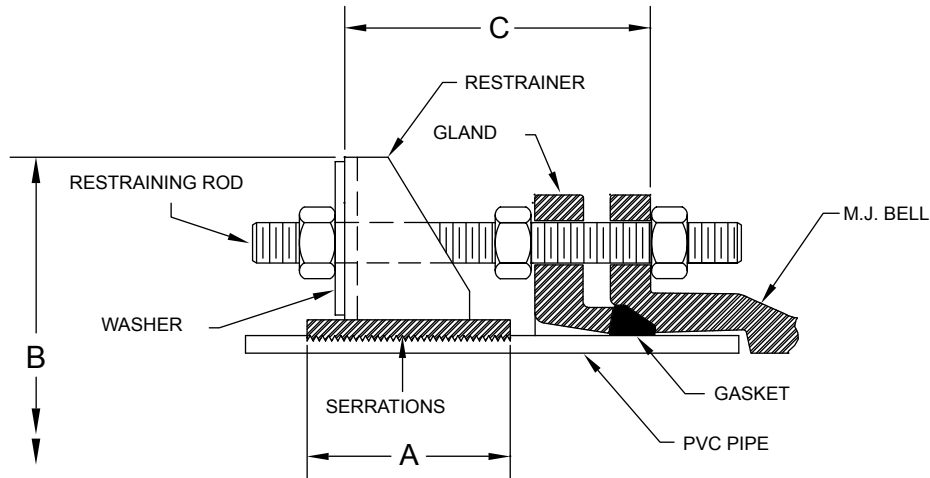
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Pipe Restrainers series 1000

1000C Restrainers for use on IPEX Bionax® AWWA CI OD C909 PVCO Pipe with MJ or Push-On Fittings

TECHNICAL INFORMATION



14" - 18" Sizes

PIPE RESTRAINERS 1000 SPECIFICATIONS*

NOM. SIZE	PVCO PIPE WITH DUCTILE IRON PIPE O.D. STYLE 1000C O.D.	A	B APPROX.	C MAX.	RESTRAINT BOLTS/RODS		CLAMPING BOLTS		APPROX WT. (LBS)
					QTY	SIZE	QTY	SIZE	
14	15.30	4.00	22.68	15.00	6	3/4 x 17	4	7/8 x 7	68
16	17.40	3.75	24.65	15.00	6	3/4 x 17	4	7/8 x 6 1/2	62
18	19.50	4.25	26.65	15.00	8	3/4 x 17	4	7/8 x 6 1/2	78

*All dimensions in inches except where indicated.



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Pipe Restrainers series 1000

1000C Restrainers for use on IPEX Bionax® AWWA CI OD C909 PVCO Pipe with MJ or Push-On Fittings

INSTALLATION INSTRUCTIONS (SERIES 1000 14"- 18")



STEP 1

Insert pipe into the MJ fitting bell. Then insert one of the provided long T-bolts/ restraint rods through one of the flange holes to mark a line about 1" away from the end of the bolt and towards the MJ socket as shown.



STEP 2

Assemble the MJ joint using the gland, gasket and T-bolts to AWWA standards. Assemble the restrainer on the pipe so that it is even with the marked line on the pipe while making sure restrainer ears line up with the bolt holes of the MJ gland. Evenly tighten the restrainer clamping bolts to recommended torque (see Table B).



STEP 3

Insert one of the long rods provided, installing one nut each between the gland and the restrainer as shown. Follow the same procedure for remaining long T-bolts/rods. Tighten nuts against MJ Gland to AWWA standards (see table A). T-bolts should be tightened alternately on opposite sides (Star Pattern).



STEP 4

Snug tighten the second nut on each rod against the restrainer as shown.

Caution: Do not over-tighten the restrainer nuts. Turn nut to hand tight plus half turn.

(TABLE A) T-HEAD BOLT & NUT DETAILS		
PIPE SIZE (IN)	BOLT SIZE (IN)	RANGE ¹ OF TORQUE (FT-LBS)
14-18	3/4	75-90

¹These torque ranges are requirements of AWWA C600

(TABLE B) CLAMPING BOLTS RECOMMENDED TORQUE	
PIPE SIZE (IN)	RANGE OF TORQUE (FT-LBS)
14-18	130

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Pipe Restrainers series 1100

1100C Bell Restrainers for use on IPEX Bionax® AWWA CI OD C909 PVC0 Pipe Joints



Series 1100C for CI OD PVC0 Pipe

INFORMATION

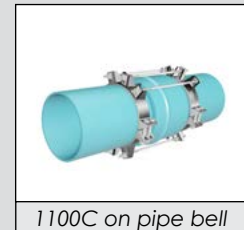
Restrainers for restraining PVC0 pipe bell joints. These restraints work in any type of soil for a guaranteed joint restraint with rated pressure as listed below.

Restrainers can be installed on new or existing systems, totally eliminating the use of thrust blocks. These restraints have internal serrations that lock onto the pipe and give 360° contact and support the pipe wall. Restraint devices may be used with any type of PVC0 piping system.

For use with 14" to 18" IPEX Bionax® Pipe

FEATURES & ADVANTAGES

- 360° contact, no pipe distortion or point loading
- Made of Ductile Iron - ASTM Grade 536, Grade 65-45-12
- Restrainers work with Push-On Pipe Bells.
- All restraints are machined to exact tolerances.
- Rated pressures, as listed below, carry a 2:1 safety factor.
- Can be installed outside the trench, to ease installation
- Rods/Hex Nuts: low alloy steel per ANSI/AWWA C111/A21.11
- Clamping Bolts: SAE J429 Grade 5
- Standard color is Graphite Black (RAL 9011).



1100C on pipe bell

* Bionax® is a registered trademark of IPEX Branding, Inc.

MAXIMUM WORKING PRESSURE RATING WITH OCCASSIONAL & RECURRING SURGES	
NOM. SIZE (IN)	C909
14	235
16	200
18	200

SAMPLE SPECIFICATIONS

Restraint devices shall be manufactured of high strength ductile iron in accordance to ASTM A536 Grade 65-45-12 for all sizes. Internal serrations will be machined to provide exact tolerances to provide 360° contact and support of the pipe wall. Restraint devices shall have a safety factor of 2:1 over the pressure rating.



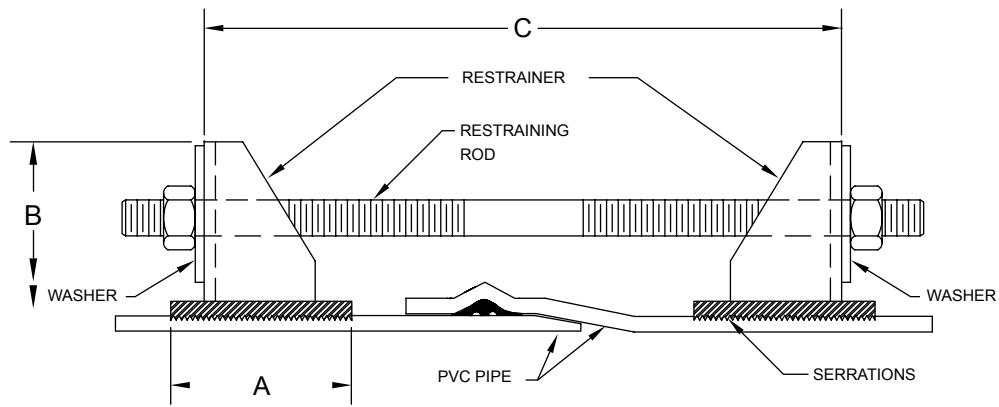
STAR® PIPE PRODUCTS



Pipe Restrainers series 1100

1100C Bell Restrainers for use on IPEX Bionax® AWWA CI OD C909 PVC Pipe Joints

TECHNICAL INFORMATION



14" - 18" Sizes

PIPE RESTRAINERS 1100 SPECIFICATIONS*

NOM. SIZE	PVC PIPE WITH DUCTILE IRON PIPE O.D. STYLE 1100C	A	B APPROX.	C MAX.	RESTRAINT BOLTS/RODS		CLAMPING BOLTS		APPROX WT. (LBS)
					QTY	SIZE	QTY	SIZE	
14	15.30	4.00	22.68	24.00	6	3/4 x 30	8	7/8 x 7	150
16	17.40	3.75	24.65	28.00	6	3/4 x 30	8	7/8 x 6 1/2	117
18	19.50	4.25	26.65	28.00	8	3/4 x 30	8	7/8 x 6 1/2	147

*All dimensions in inches except where indicated.



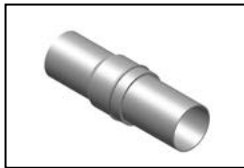
STAR® PIPE PRODUCTS



Pipe Restrainers series 1100

1100C Bell Restrainers for use on IPEX Bionax® AWWA CI OD C909 PVCO Pipe Joints

INSTALLATION INSTRUCTIONS (SERIES 1100 14"- 18")



STEP 1

Assemble the spigot end of first pipe into the pipe bell using standard procedure per pipe manufacturer.



STEP 2

Assemble one restrainer behind the bell of pipe and evenly tighten the restrainer clamping bolts to the recommended torque (see Table B). Then insert one of the provided restraint rods through one of the restrainer holes. Mark a line about 1" away from the end of the rod and towards the end of the spigot as shown. Assemble the second restrainer even with the mark on the spigot end of pipe. Use one of the provided restraining rods as a guide to align restraint holes. Tighten restrainer clamping bolts to the recommended torque on the second restrainer after it is aligned with the first one.



STEP 3

Assemble the second restrainer even with the mark on the spigot end of pipe. Use one of the provided restraining rods as a guide to align restraint holes. Tighten clamping bolts to the recommended torque (see Table B) on the second restrainer after it is aligned with the first one.



STEP 4

Insert the restraining rods through the restrainers as shown. Snug tighten the remaining nuts behind each restraint so that the spigot end is secured into the bell end.

Caution: Do not over-tighten the restrainer nuts. Turn nut to hand tight plus half turn.

(TABLE B) CLAMPING BOLTS RECOMMENDED TORQUE	
PIPE SIZE (IN)	RANGE OF TORQUE (FT-LBS)
14-18	130

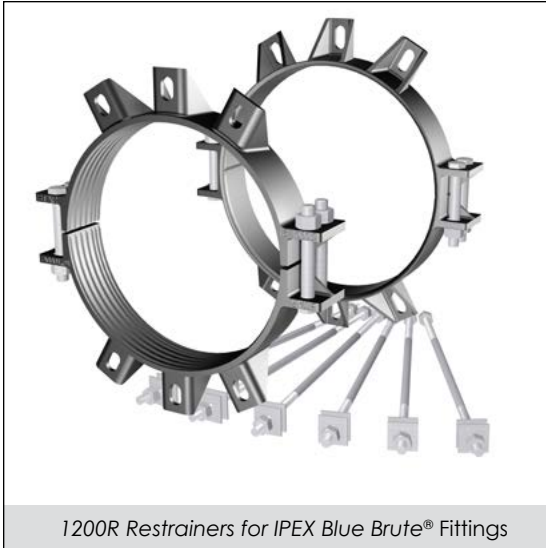
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Pipe Restrainers series 1200R

1200R Restrainer for use on IPEX Bionax® AWWA CI OD C909 PVCO Pipe with IPEX Blue Brute® PVC Pressure Fittings



1200R Restrainers for IPEX Blue Brute® Fittings

INFORMATION

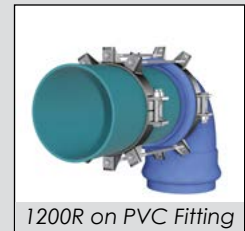
1200R Restrainers are for restraining IPEX Blue Brute® PVC Pressure Fittings to C909 PVCO Pressure Pipe. These restraints work in any type of soil for a guaranteed joint restraint pressure rating of 235 PSI.

Restrainers can be installed on new or existing systems, totally eliminating the use of thrust blocks. These restrainers have internal serrations that lock onto the pipe and give 360° contact and support the pipe wall.

For use with 14" to 18" IPEX Bionax Pipe

FEATURES & ADVANTAGES

- 360° contact, no pipe distortion or point loading and supports the pipe
- Made of Ductile Iron - ASTM A 536, Grade 65-45-12
- Restrainers work with IPEX Blue Brute® PVC Pressure Fittings and IPEX Bionax® C909 PVCO Pressure Pipe.
- All restrainers are machined to exact tolerances.
- Rated at 235 psi, equal to full pressure rating of IPEX PVC pipe fitting and IPEX PVCO pipe with a 2:1 Safety Factor
- Can be installed outside the trench, to ease installation
- Rods/Hex Nuts: Low Alloy Steel Per ANSI/AWWA C111/A21.11
- Clamping Bolts: SAE J429 Grade5
- Standard gland color is Graphite Black (RAL 9011).



1200R on PVC Fitting

* Blue Brute® and Bionax® are trademarks of IPEX Branding, Inc.

SAMPLE SPECIFICATIONS

Restraint devices shall be manufactured of high strength ductile iron in accordance to ASTM A536 Grade 65-45-12 for all sizes. Internal serrations will be machined to provide exact tolerances to provide 360° contact and support of the pipe wall. Restraint devices shall possess a pressure rating equal that of the fitting on which it is used with a 2:1 safety factor.



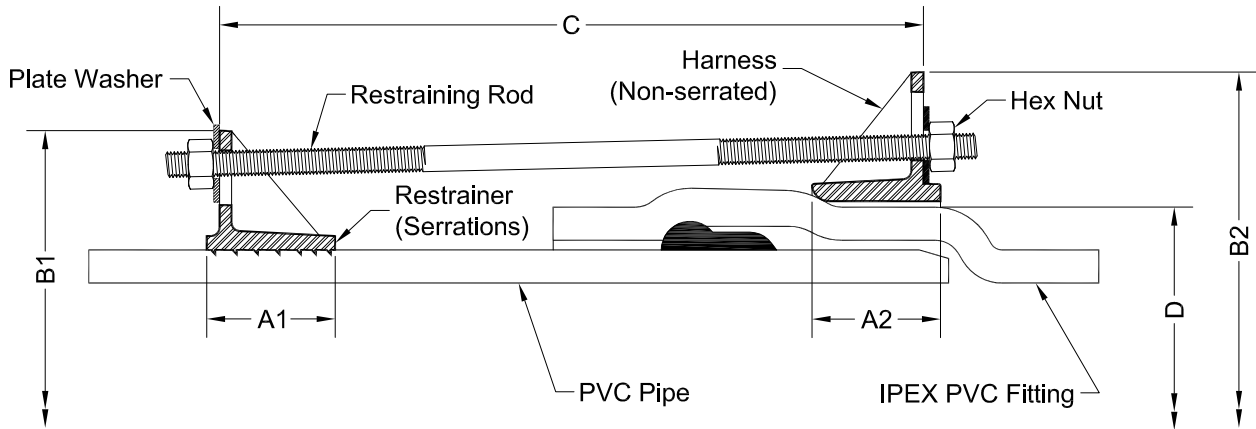
STAR® PIPE PRODUCTS



Pipe Restrainers series 1200R

1200R Restrainer for use on IPEX Bionax® AWWA CI OD C909 PVCO Pipe with IPEX Blue Brute® PVC Pressure Fittings

TECHNICAL INFORMATION



PIPE RESTRAINERS 1200R SPECIFICATIONS*

NOM. SIZE ¹	PVCO PIPE WITH DUCTILE IRON PIPE O.D. STYLE 1200R	PVC FITTING BELL OD "D"		A1	A2	B1 APPROX.	B2 APPROX.	C MAX.	RESTRAINT BOLTS/RODS		CLAMPING BOLTS		APPROX. WT. (LBS)
		MIN.	MAX.						QTY	SIZE	QTY	SIZE	
14	15.30	17.28	17.73	4.00	3.75	22.68	25.27	21	6	3/4 x 24	8	7/8 x 7**	130
16	17.40	19.64	20.17	3.75	3.75	24.65	27.71	27	6	3/4 x 30	8	7/8 x 6 1/2	123
18	19.50	22.25	22.50	4.25	4.00	26.65	30.04	27	8	3/4 x 30	8	7/8 x 6 1/2	150

*All dimensions in inches except where indicated.

** Clamping bolt size for harness is 7/8 x 6 1/2

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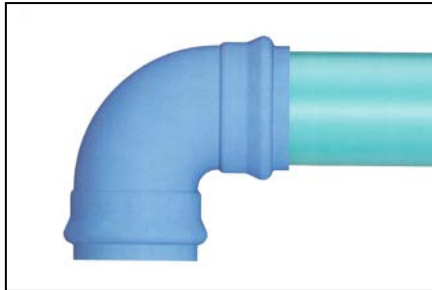




Pipe Restrainers series 1200R

1200R Restrainer for use on IPEX Bionax® AWWA CI OD C909 PVCO Pipe with IPEX Blue Brute® PVC Pressure Fittings

INSTALLATION INSTRUCTIONS (SERIES 1200R 14" - 18")



STEP 1

Insert the pipe into fitting bell according to standard procedure.



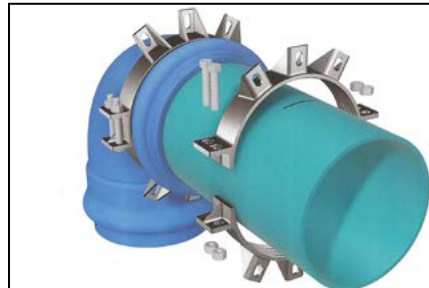
STEP 2

Assemble harness on the body of the fitting bell behind the hump of the gasket raceway using hex head clamping bolts and nuts. It must be oriented as shown above. The flat side of the restraint ears must face away from the assembled joint. Evenly tighten to recommended torque (Table A).



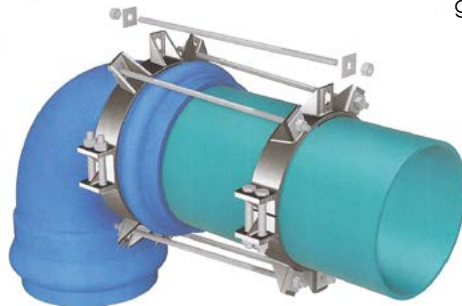
STEP 3

Use one of the rods (provided) as an alignment guide to position serrated restrainer on pipe, leave sufficient threads on the rod ends to fully engage nuts (provided).



STEP 4

Assemble the restraint on the pipe as shown above. The flat side of the restraint ears must face away from the assembled joint. Make sure that the entire length of all the serrations are in contact with the pipe before installing the clamping bolts. Tighten serrated restrainer clamping bolts evenly to recommended torque (Table A) making sure the gap between bolt pads on both sides remain same.



STEP 5

Insert the restraining rods (provided) through restrainers as shown. Place a washer (provided) on each end of rod behind the restrainer ears. Snug tighten the nuts so that the spigot end is secured into the bell end.

CAUTION: Do not over-tighten restraining nuts. Turn nut to hand tight plus one full.

(TABLE A) CLAMPING BOLTS RECOMMENDED TORQUE

PIPE SIZE (IN)	MINIMUM TORQUE (FT-LBS)
14 - 18	130

STAR® PIPE PRODUCTS



