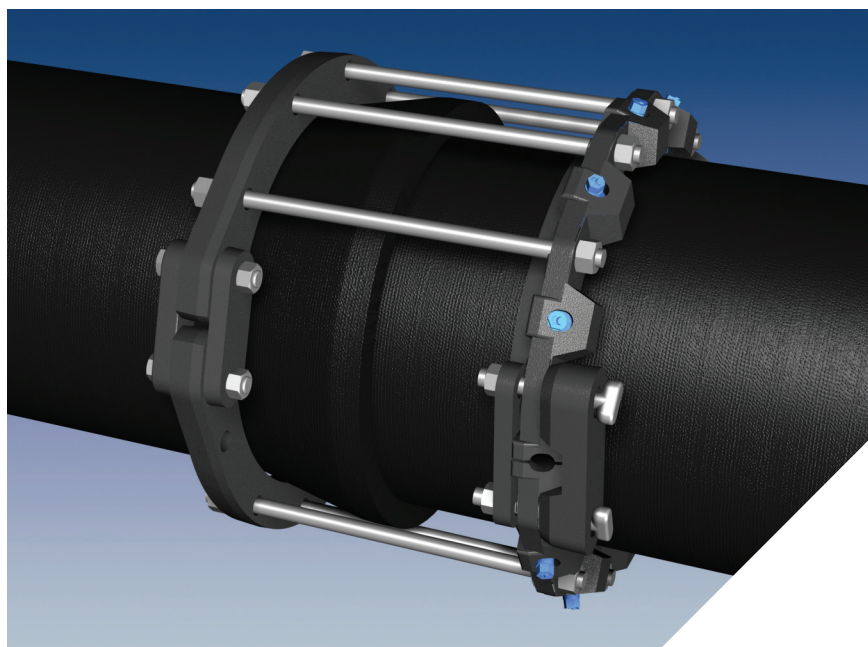




Series 1116HD on 16 inch Ductile Iron Pipe.

### Features and Applications:

- For use on Existing Ductile Iron Pipe at Pipe to Pipe Push On Joints
- MEGA-BOND® Restraint Coating System
- Minimum 2 to 1 Safety Factor
- Split Design for Ease of Installation
- Constructed of ASTM A536 Ductile Iron

For use on water or wastewater pipelines subject to hydrostatic pressure and tested in accordance with either AWWA C600 or ASTM D2774.

EBAA Iron products are not designed, intended, or approved for use with compressed air or any gas service. All entrapped air must be completely removed from the pipeline prior to pressurization, testing, or placing the line into service. Failure to eliminate air pockets may result in improper product performance or hazardous conditions.

Pressure Ratings Table

| Nominal Pipe Size | Series Number | Approximate Shipping Weight | Thrust Rods (Quantity - Size) | Pressure Rating (PSI) |
|-------------------|---------------|-----------------------------|-------------------------------|-----------------------|
| 3                 | 1103HD        | 9.50                        | 4 - 5/8 x 12                  | 350                   |
| 4                 | 1104HD        | 23.50                       | 4 - 3/4 x 13                  | 350                   |
| 6                 | 1106HD        | 33.00                       | 4 - 3/4 x 13                  | 350                   |
| 8                 | 1108HD        | 41.00                       | 4 - 3/4 x 13                  | 350                   |
| 10                | 1110HD        | 63.16                       | 4 - 3/4 x 18                  | 300                   |
| 12                | 1112HD        | 77.06                       | 4 - 3/4 x 18                  | 300                   |
| 14                | 1114HD        | 136.15                      | 6 - 3/4 x 18                  | 300                   |
| 16                | 1116HD        | 143.92                      | 8 - 3/4 x 18                  | 300                   |
| 18                | 1118HD        | 160.41                      | 8 - 3/4 x 18                  | 200                   |
| 20                | 1120HD        | 187.08                      | 10 - 3/4 x 18                 | 200                   |
| 24                | 1124HD        | 252.89                      | 12 - 3/4 x 18                 | 200                   |
| 30                | 1130HD        | 492.20                      | 16 - 1 x 18                   | 200                   |
| 36                | 1136HD        | 546.30                      | 20 - 1 x 18                   | 200                   |
| 42                | 1142HD        | 964.30                      | 24 - 1 1/4 x 28               | 175                   |
| 48                | 1148HD        | 1,270.90                    | 28 - 1 1/4 x 28               | 175                   |
| 54                | 1154HD        | 1,923.56                    | 32 - 1 1/4 x 32               | 250                   |
| 60                | 1160HD        | 2,800.75                    | 34 - 1 1/4 x 36               | 175                   |

### Sample Specification

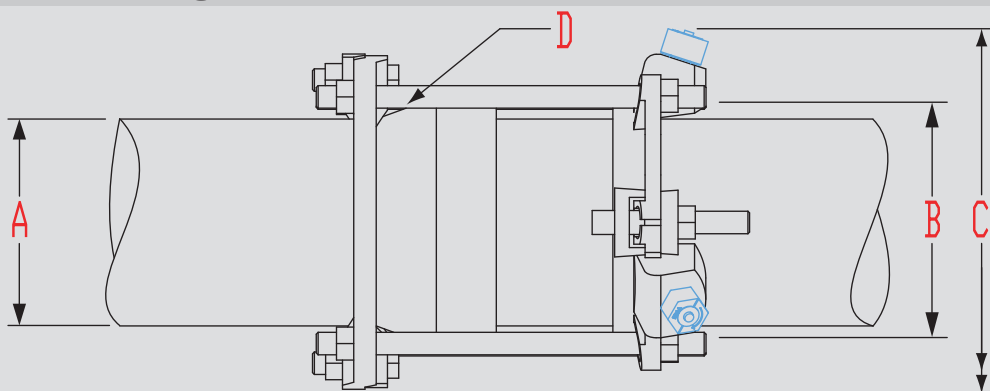
Restraint for existing bell joints found on ductile iron pipes shall consist of the following: The restraints shall be manufactured of ductile iron conforming to ASTM A536. The split restraint rings, incorporating a plurality of individually-actuating gripping surfaces, shall be used to grip the pipe on either side of the bell, and a sufficient number of rods shall be used to connect each restraint to one another. The restraint devices shall be coated using MEGA-BOND. (For complete specifications on MEGA-BOND visit [www.ebaa.com](http://www.ebaa.com).) The combination shall have a minimum working pressure rating as shown in the adjacent table. The restraint shall be the Series 1100HD, as manufactured by EBAA Iron, Inc., or approved equal.

All EBAA restraint products intended for installation on ductile iron pipe are designed for and limited to use on ductile iron pipes that comply with the requirements of ANSI/AWWA C151/A21.51 and have a Brinell Hardness or equivalent measurement value that does not exceed 230BHN. These requirements apply to the entire pipe wall profile at all restraining wedge engagement points and to the full penetration depth of each restraining wedge.

NOTE: For applications or pressures other than those shown, please contact EBAA for assistance.

# Submittal Reference Drawing

EBAA IRON

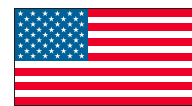
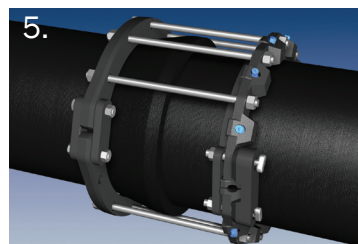
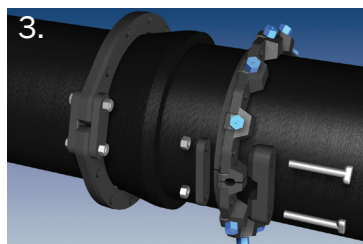
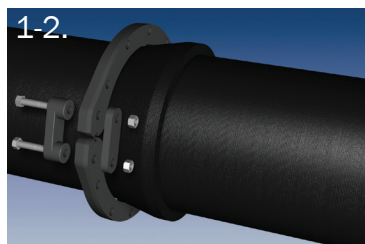


MADE IN USA

|                   |               | A         | B                         | C                             | D                             |
|-------------------|---------------|-----------|---------------------------|-------------------------------|-------------------------------|
| Nominal Pipe Size | Series Number | Pipe O.D. | Maximum Bell O.D. Cleared | Casing Clearance (w/Nuts Off) | Thrust Rods (Quantity - Size) |
| 3                 | 1103HD        | 3.95      | 5.40                      | 9.06                          | 4 - 5/8 x 12                  |
| 4                 | 1104HD        | 4.81      | 6.60                      | 9.90                          | 4 - 3/4 x 13                  |
| 6                 | 1106HD        | 6.90      | 8.60                      | 12.00                         | 4 - 3/4 x 13                  |
| 8                 | 1108HD        | 9.05      | 10.90                     | 14.15                         | 4 - 3/4 x 13                  |
| 10                | 1110HD        | 11.10     | 13.10                     | 16.20                         | 4 - 3/4 x 18                  |
| 12                | 1112HD        | 13.20     | 15.40                     | 18.30                         | 4 - 3/4 x 18                  |
| 14                | 1114HD        | 15.30     | 17.90                     | 21.88                         | 6 - 3/4 x 18                  |
| 16                | 1116HD        | 17.40     | 20.10                     | 24.13                         | 8 - 3/4 x 18                  |
| 18                | 1118HD        | 19.50     | 22.40                     | 26.50                         | 8 - 3/4 x 18                  |
| 20                | 1120HD        | 21.60     | 24.60                     | 28.50                         | 10 - 3/4 x 18                 |
| 24                | 1124HD        | 25.80     | 29.10                     | 33.38                         | 12 - 3/4 x 18                 |
| 30                | 1130HD        | 32.00     | 35.80                     | 40.25                         | 16 - 1 x 18                   |
| 36                | 1136HD        | 38.30     | 42.60                     | 46.75                         | 20 - 1 x 18                   |
| 42                | 1142HD        | 44.50     | 49.20                     | 55.57                         | 24 - 1 1/4 x 28               |
| 48                | 1148HD        | 50.80     | 56.00                     | 61.87                         | 28 - 1 1/4 x 28               |
| 54                | 1154HD        | 57.56     | 64.51                     | 72.50                         | 32 - 1 1/4 x 32               |
| 60                | 1160HD        | 61.61     | 68.75                     | 77.00                         | 34 - 1 1/4 x 36               |

NOTE: Dimensions are in inches and are subject to change without notice.

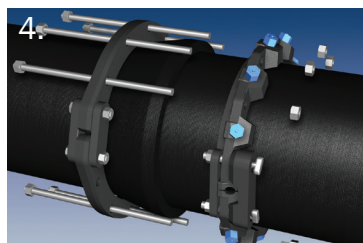
## Installation Instructions



1. The Series 1100HD is designed for restraining existing ductile iron pipe, conforming to ANSI/AWWA C151/A21.51 (all thickness classes), push on pipe bells. It has a split restraint ring on the spigot and a split ring behind the bell.

2. Install the split ring behind the bell in the direction indicated on the casting. Tighten the clamp bolts to 90 ft-lbs.

3. Disassemble the split restraint ring then reassemble restraint on the spigot such that the bolt holes are in alignment and the distance between the rings is suitable for the tie bolt length with the lip of the restraint facing toward the bell. Allow enough room on the tie bolt to fully engage the nut with several threads showing.



4. Install the tie bolts in each available bolt hole for maximum distribution of operating forces. Place nuts on the end of the tie bolts. Allow enough room on the tie bolt to fully engage the nut with several threads showing. Pull the restraint ring away from the joint until the slack is removed from the tie bolts.

5. Tighten the torque limiting twist off nuts in a clockwise direction (direction indicated by arrow on top of nut) until all wedges are in firm contact with the pipe surface. Continue tightening in an alternate manner until all of the nuts have been twisted off. Tighten the tie bolt nuts until the ring behind the bell is in firm contact with the back of the bell.

6. If removal is necessary; use the 5/8" (1142HD through 1154HD, and 1 1/8" for 1160HD) hex heads provided. If reassembly is required, assemble the product in the same manner as indicated in the previous steps and tighten the wedge bolts to 90 ft-lbs (135 ft-lbs for 1124HD through 1154HD, and 165 ft-lbs for 1160HD).



**EBAA IRON Sales, Inc.**

P.O. Box 857, Eastland, TX 76448

Tel: (254) 629-1731

Fax: (254) 629-8931

(800) 433-1716 within US and Canada

contact@ebaa.com

www.ebaa.com