

# Installation Instructions FLEX-TEND®

## Family of Pipeline Protection Products

### Including

- Standard FLEX-TEND® and Force Balance FLEX-TEND® Double Ball Flexible Expansion Joints (FT and FBFT)
- FLEX-TEND® and Force Balance FLEX-TEND® Single Ball Flexible Expansion Joints (SBFT and SFBFT)
- EX-TEND® and Force Balanced EX-TEND® (ET and FBET)
- FLEX-900® ball joint

These products are intended to provide protection of pipelines or pipeline connections from differential movement

- Between structures
- Between structure and soil
- Within the soil

These products can be used above or below ground. They can be installed at any angle from horizontal to vertical.

### General Installation Notes

#### Thrust Force

Like any expansion joint, the standard FLEX-TEND and standard Ex-Tend products will generate a thrust force when pressurized. It is important that this thrust force be accommodated in some manner. In underground installations, pipe to soil friction will often absorb this thrust force unless there is a fitting in close proximity to the FT/ET units. In above ground installations, there must be some means of accommodating this thrust force. Refer to EBAA Iron Connections Bulletin FT-05 and the product literature for more information about this. The force balanced units do not impart this thrust force.

#### Pipeline Restraint

The connecting pipeline must be restrained. The FLEX-TEND family of products is intended to protect pipelines and pipeline connections from damage due to differential movement. In order for the products to do their job any movement of the connecting pipeline must be transferred to the FLEX-TEND products. This transfer is not possible if a pipe joint separates because it is unrestrained. It is possible to transition to unrestrained piping outside of the area of any differential motion.

### **FLEX-TEND Connections**

Mechanical joint connections on the FLEX-TEND family of products are provided with Series 1100 MEGALUG® restraint for ductile iron pipe and/or Series 2000PV MEGALUG® restraint for PVC pipe. Verify that the proper restraint is used on the connecting pipe.

Flange connections on the FLEX-TEND family of products are, unless special ordered otherwise, standard ANSI/AWWA C110/A21.10 (Class 150) flanges with the addition of O-ring grooves and gaskets. It is imperative that the O-rings mate against a flat surface. Proper sealing will not develop if the O-rings are mated to

- Another gasket
- a surface with screws (typically found on appurtenances such as butterfly valves or the like)
- the interface between pipe and cement lining or similar transition area
- HDPE stub flanges

If a proper mating surface is not available a filler flange can be used to transition between the FT product flange and the connecting flange.

### **Proper Applications**

FT, SBFT, ET, and Flex-900 products can be used on

- Water Distribution and Transmission Pipelines
- Force Main Pipelines
- Gravity Sewer (DWV) Pipelines
- Storm Drain Pipelines

FBFT, SBFBFT, and FBET products are

- For use on water distribution and transmission pipelines
- For use on non-potable water distribution and transmission pipelines
- **NOT** for use on any pipeline carrying solids, debris, or suspended particles

Can be used with many different types of pipe

- Ductile Iron Pipe
- PVC Pipe (DR18 or equivalent stiffness minimum)
- Carbon Steel Pipe (SCH 40 minimum)
- HDPE (minimum SDR13.5 or stiffer with a fused-on, stub flange and filler flange)
- Other pipe with a flange connection may be used if the pipe can handle the movement forces.

Adjacent piping and joints must be restrained and strong enough to transfer loading to the FLEX-TEND unit. This includes the transfer of both expansion and deflection forces. For this reason, FT products **CANNOT** be used with

- ASTM D3034 and F679 pipe
- No-hub cast iron sewer pipe
- Clay pipe
- Concrete pipe

## Installation

Note: In many applications it may be desirable to leave the unit on the shipping skid during the assembly procedure. This ensures that the unit remains in straight alignment during assembly. If the skid is removed the ball joints can deflect and the expansion setting can change during the installation process. If coating is damaged, touch up may be required. Touch up kits are available.

### Below Ground Installation

1. Unbolt and remove protective end covers.
2. Remove polyethylene sleeve, gasket materials and other packing materials from the inside of unit.
3. Inspect the interior of the unit and remove any dirt and or foreign material.
4. Inspect each end connection and remove any dirt and or foreign material.
5. For buried applications, with the skid still intact, place the polyethylene sleeve in an accordion pattern over one end of the connecting piping.
6. Assemble End Connections
  - a. Assembly of flanged joint connections:
    - i. Place flange O-ring in groove of the flange.
    - ii. Position the unit's flange against the connecting pipe flange.
    - iii. Inspect the O-ring for proper position.
    - iv. Install and tighten the flange bolts.
  - b. Assembly of mechanical joint connections using the EBAA Iron, Inc. MEGALUG® Mechanical Joint Restraint suitable for the adjacent pipe material:
    - i. Series 1100 MEGALUG for restraining Ductile Iron Pipe.
    - ii. Series 2000PV MEGALUG for restraining AWWA C900 or C905 PVC Pipe.
    - iii. FLEX-900s may have a restrained plain-end, install mechanical joint gasket provided and insert the restrained plain-end into mechanical joint connection and torque bolts in accordance to AWWA C600.
    - iv. Please reference the installation instructions for the appropriate EBAA Iron mechanical joint restraint.
7. Remove the shipping skid if still attached.
8. Once the pipe end connections are made and the shipping skid is removed, slide the polyethylene sleeve over the unit and finish installing the polyethylene sleeve per ANSI/AWWA C105/A231.5. Bedding recommendations include: installation of polyethylene sleeve, use of cohesion-less granular backfill (like pea gravel or sand), slope sided trenches and shallow bury.

### Above Ground Installation

1. Unbolt and remove protective end covers.
2. Remove polyethylene sleeve, gasket materials and other packing materials from the inside of unit.
3. Inspect the interior of the unit and remove any dirt and or foreign material.
4. Inspect each end connection and remove any dirt and or foreign material.
5. For above ground applications the polyethylene sleeve is optional.
6. Assemble End Connections
  - a. Assembly of flanged joint connections:
    - i. Place flange O-ring in groove of the flange.

- ii. Position the unit's flange against the connecting pipe flange.
  - iii. Inspect the O-ring for proper position.
  - iv. Install and tighten the flange bolts.
- b. Assembly of mechanical joint connections using the EBAA Iron, Inc. MEGALUG® Mechanical Joint Restraint suitable for the adjacent pipe material:
- i. Series 1100 MEGALUG for restraining Ductile Iron Pipe.
  - ii. Series 2000PV MEGALUG for restraining AWWA C900 or C905 PVC Pipe.
  - iii. FLEX-900s may have a restrained plain-end, install mechanical joint gasket provided and insert the restrained plain-end into mechanical joint connection and torque bolts in accordance to AWWA C600.
  - iv. Please reference the installation instructions for the appropriate EBAA Iron mechanical joint restraint.
7. Remove the shipping skid if still attached.
8. Above ground use of the polyethylene sleeve is optional. If the polyethylene sleeve is utilized, finish installing the polyethylene sleeve per ANSI/AWWA C105/A231.5.

**Additional Information** may be found at [www.ebaa.com](http://www.ebaa.com).



Series 1100 MEGALUG  
Installation Instructions



Series 2000PV MEGALUG  
Installation Instructions