

▲ Series 216C0 EX-TEND, 16 inch combination mechanical joint by flanged expansion joint. (DIP by PVC)  
▼ Series 216C0 EX-TEND, 16 inch combination mechanical joint by flanged expansion joint.



### Features and Applications:

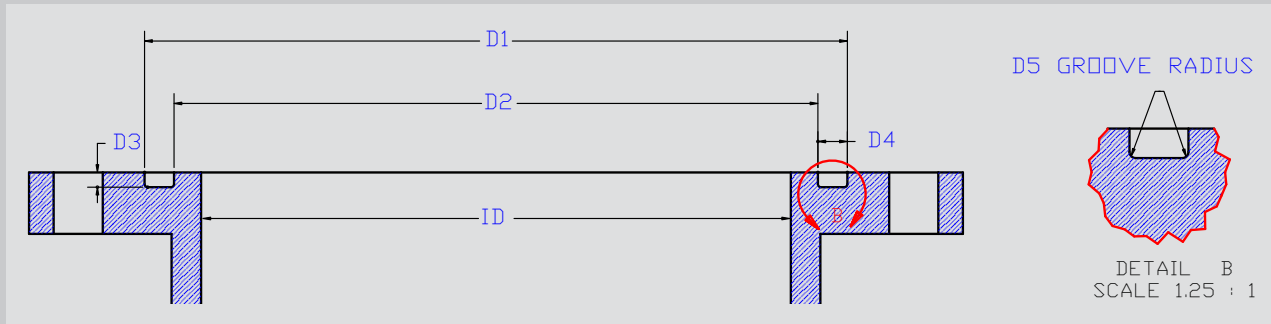
- Sizes 3 inch through 36 inch
- For Ductile Iron, Steel, PVC or HDPE pipe
- 3 inch through 20 inch rated at 350 PSI  
24 inch and greater rated at 250 PSI
- Constructed of ASTM A536 Ductile Iron
- No Periodic Maintenance is Required
- Each unit tested to rated working pressure prior to shipment
- Self restrained at full expansion without the use of external tie bars
- Due to the design of the seals, no periodic maintenance is required
- Seals conform to the applicable requirements of ANSI/AWWA C111/A21.11
- End connections:  
Flanged Joint; 3 inch through 36 inch  
Mechanical Joint; 3 inch through 24 inch  
Combination of the two Joints available
- Flange outlets conform to the dimensional requirements of ANSI/AWWA C110/A21.10 (class 150) with the addition of an O-ring gasket which is provided to ensure a watertight seal
- Mechanical Joint end connections conform to the dimensional requirements of either ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A21.53 depending on size
- All "wetted" parts are coated with a NSF61 approved fusion bonded epoxy
- Insertion of additional sleeves for increased expansion capacity can be done at the factory or in the field as the need occurs

### Sample Specification

Expansion joints shall be installed in the locations indicated on the drawings and shall be manufactured of ductile iron conforming to the material properties of ANSI/AWWA C153/A21.53. All expansion joints shall be capable of expanding or contracting to the amounts shown on the drawings, or indicated in the specifications, but in no case shall there be less than 4" total axial movement. Separation beyond the maximum extension of the expansion joint shall be prevented without the use of external tie rods. Each expansion joint shall be pressure tested against its own restraint to a minimum of 350 psi (250 psi 24 inch and greater). MEGALUG joint restraint shall be provided with each mechanical joint connection. All internal surfaces (wetted parts) shall be lined with a minimum of 15 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C213. Exterior surfaces shall be coated with a minimum of 6 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C116/A21.16. Sealing gaskets shall be constructed of EPDM. The coating shall meet ANSI/NSF-61. All expansion joints shall be EX-TEND 200, as manufactured by EBAA Iron, Inc., or approved equal.

For use on water or wastewater pipelines subject to hydrostatic pressure and tested in accordance with either AWWA C600, C605, or ASTM D2774.

## FLEX-TEND, EX-TEND, AND FLEX-900 O-ring Groove



Size	D1	D2	D3	D4	D5	O-ring Diameter	O-ring Part Number
3	4.885	4.185	0.175	0.350	0.0625	0.25	983003
4	5.900	4.700	0.300	0.600	0.0625	0.5	983004
6	8.00	6.800	0.300	0.600	0.0625	0.5	983006
8	10.100	8.900	0.300	0.600	0.0625	0.5	983008
10	12.200	11.000	0.300	0.600	0.0625	0.5	983010
12	14.300	13.100	0.300	0.600	0.0625	0.5	983012
14	16.200	15.00	0.300	0.600	0.0625	0.5	983014
16	18.500	16.900	0.400	0.800	0.1250	0.625	983016
18	20.700	19.100	0.400	0.800	0.1250	0.625	983018
20	23.000	21.400	0.400	0.800	0.1250	0.625	983020
24	27.200	25.600	0.400	0.800	0.1250	0.625	983024
30	33.500	31.700	0.400	0.900	0.1250	0.75	983030
36	40.000	38.300	0.400	0.850	0.1250	0.75	983036
42	46.580	44.080	0.650	1.250	0.1250	N/A	983042
48	52.720	50.220	0.650	1.250	0.1250	1	983048

## Determine your expansion requirements

### Expansion Coefficient Table

Material	Coefficient inch/inch/degree F
Ductile Iron	0.000062
PVC	0.000030
Cast Iron	0.000058
Steel	0.000065
HDPE	0.000080
Concrete	0.000055

The Change in length ( $\Delta L$ ) due to thermal contraction/expansion is given by:

$$\Delta L = L (\Delta T)(C)$$

Where: L = length of pipe (inches)  
 $\Delta T$  = change in Temperature (degrees F)  
 C = coefficient of thermal expansion

Example:

- Determine the Expansion Needed  
 1000 Foot Bridge; 6 inch Ductile Iron Pipe; 120° F Total Temperature Change  
 $(1000)(12\text{in}/\text{ft})(120^\circ \text{F})(0.000062\text{in}/\text{in}/^\circ\text{F}) = 8.93 \text{ in}$  (Nearly 9 inches)
- Select Proper Unit  
 Referring to the chart on the opposite page, we will require a Series 206M2 EX-TEND because of the ability to accommodate the nine inches of expansion needed, with it's 12 inches of maximum expansion.
- Determine the installation preset  
 Factory preset for the EX-TEND is at 50% Contraction 50% Expansion setting, but the preset can be changed in the field to accommodate the present installation Temperature .

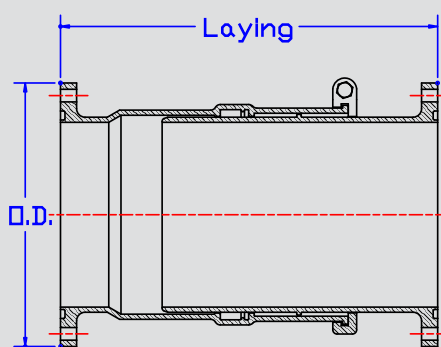
When working with continuous pipelines (i.e. fused HDPE, fused PVC, welded steel,...) be sure to consider the Poisson effect when determining expansion/contraction requirements.

# Series 200 EX-TEND® Submittal Reference Drawing

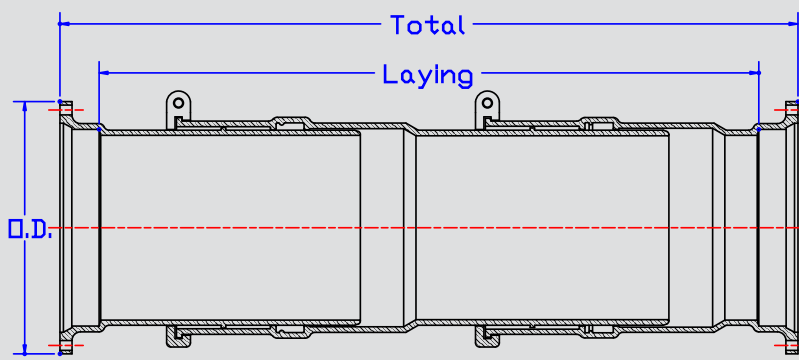
FLANGE BY FLANGE

MECHANICAL JOINT BY MECHANICAL JOINT

EBAA IRON



STANDARD UNIT



UNIT WITH ONE ADDITIONAL SLEEVE

MADE IN USA

Nominal Pipe Size	Expansion (Linear)	Series Number	Flange by Flange			Mechanical Joint by Mechanical Joint				Weight (Approx)
			Maximum O.D.	Laying*	Weight (Approx)	Series Number	Maximum O.D.	Laying*	Total*	
3	4	203F0	‡	‡	‡	203M0	‡	‡	‡	‡
	8	203F1	‡	‡	‡	203M1	‡	‡	‡	‡
	12	203F2	‡	‡	‡	203M2	‡	‡	‡	‡
4	4	204F0	11.0	18.2	69	204M0	11.0	15.6	20.6	74
	8	204F1	11.0	33.5	113	204M1	11.0	30.9	35.9	118
	12	204F2	11.0	48.8	157	204M2	11.0	46.2	51.2	162
6	4	206F0	12.4	19.5	95	206M0	12.4	15.4	20.4	96
	8	206F1	12.4	33.8	160	206M1	12.4	29.7	34.7	161
	12	206F2	12.4	48.1	225	206M2	12.4	44.0	49.0	226
8	4	208F0	14.8	20.7	143	208M0	14.8	16.4	21.4	139
	8	208F1	14.8	37.8	235	208M1	14.8	33.5	38.5	231
	12	208F2	14.8	54.9	327	208M2	14.8	50.6	55.6	323
10	4	210F0	17.0	21.0	196	210M0	17.0	16.5	21.5	192
	8	210F1	17.0	36.8	333	210M1	17.0	30.5	35.5	329
	12	210F2	17.0	52.6	470	210M2	17.0	44.5	49.5	466
12	4	212F0	19.3	21.5	245	212M0	19.3	19.2	24.2	244
	8	212F1	19.3	37.5	396	212M1	19.3	35.2	40.2	395
	12	212F2	19.3	53.5	547	212M2	19.3	51.2	56.2	546
14	8	214F0	22.3	32.4	389	214M0	22.3	27.0	34.0	432
	16	214F1	22.3	58.8	677	214M1	22.3	53.3	60.0	677
	24	214F2	22.3	85.3	922	214M2	22.3	79.6	87.0	921
16	8	216F0	24.5	33.9	621	216M0	24.5	31.3	38.8	621
	16	216F1	24.5	61.8	959	216M1	24.5	59.2	66.2	959
	24	216F2	24.5	89.7	1297	216M2	24.5	87.1	94.1	1297
18	8	218F0	27.1	33.7	661	218M0	27.1	27.6	34.6	652
	16	218F1	27.1	60.8	1041	218M1	27.1	54.7	61.7	1032
	24	218F2	27.1	87.9	1421	218M2	27.1	81.8	88.8	1412
20	8	220F0	27.5	32.7	701	220M0	27.5	27.5	34.5	683
	16	220F1	27.5	60.0	1123	220M1	27.5	54.8	61.8	1105
	24	220F2	27.5	87.3	1545	220M2	27.5	82.1	89.1	1527
24	8	224F0	34.9	33.5	908	224M0	34.9	29.0	36.0	882
	16	224F1	34.9	60.8	1610	224M1	34.9	56.3	63.3	1584
	24	224F2	34.9	88.1	2312	224M2	34.9	83.6	90.6	2286
30		230F0	‡	‡	‡	~	~	~	~	~
	10	230F1	‡	‡	‡	~	~	~	~	~
		230F2	‡	‡	‡	~	~	~	~	~
36	10	236F0	49.2	46.8	2347	~	~	~	~	~

NOTE: Dimensions are in inches ± 1% and are subject to change without notice. Contact EBAA for availability of sizes not shown or listed.

\* Laying Lengths and Total Lengths reflect unit set at midpoint of expansion capacity.

‡ Contact EBAA for sizes not listed.

## Installation Instructions for EX-TEND® 200

1. Remove protective end covers.
2. Remove polyethylene sleeve and other material.
3. Check interior, remove dirt and foreign material from interior and end connections.
4. For buried applications install polyethylene sleeve per ANSI/AWWA C105/A21.5 recommendations.
5. Assembly of flange joint:
  - a. Place flange o-ring in groove.
  - b. Place EX-TEND flange against adjoining flange, install and hand tighten bolts.
  - c. Tighten flange bolts.
6. Install mechanical joint EX-TEND end connections using the EBAA IRON MEGALUG® Joint Restraint suitable for adjacent pipe material.

MEGALUG 1100 should be used on ductile iron pipe.

MEGALUG 2000PV should be used on AWWA PVC pipe.

Assembly instructions for each of these products are included with restraint device.

7. Assembly of restrained plain end:
  - a. Lubricate and install EBAA-Seal® gasket provided over plain end per ANSI/AWWA C600.
  - b. Insert plain end into adjacent mechanical joint bell.
  - c. Install and hand tighten t-bolts.
  - d. Tighten t-bolts per AWWA recommendations.
8. Remove shipping skid.
9. Touch up exterior coating as necessary. Use coal tar epoxy following

## Important Notes

Due to hydrostatic forces that cause the EX-TEND 200 to expand, some applications may require blocking to isolate the areas of anticipated movement and to prevent this expansion from affecting adjacent piping.

In order for the EX-TEND 200 to protect pipeline connections, any load must be transferred to the unit by the restrained joints. Depending on the piping arrangement and the anticipated movement of the pipelines, adjacent piping must be restrained to adequately transfer the loads to the unit. Joint restraint is provided with each mechanical joint end connection.

The flanged outlets have dimensions according to ANSI/AWWA C110/A21.10 with each flange to ensure a proven water tight seal to a maximum of 350 PSI pressure.

Mechanical joint connections conform to the dimensional requirements of either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53 depending on the size.

## EBAA IRON Sales, Inc.

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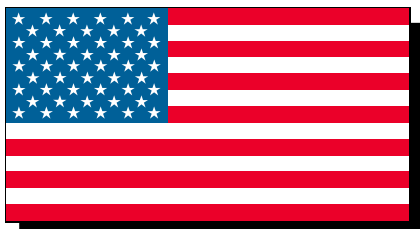
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