IEJ-ISOTECH EXPANSION JOINT

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File No.: ISOIN-IEJ Date: 11/23/16

HOW TO SELECT AND SPECIFY AN ISOTECH EXPANSION JOINT

1. Determine from the piping system specifications
   a) Pipe sizes involved
   b) Maximum working pressure
   c) Maximum working temperature

2. Calculate axial traverse between anchor points. (Refer to thermal expansion table located in the application guide)

3. Select the proper type and quantity of ISOTECH expansion Joints or expansion joints to provide the amount of movement required within the rated working pressure and temperature .
   (See the pressure derating table for elevated temperatures.)

4. Select the appropriate end fittings and check the physical specifications for the overall length and other dimensional characteristics to assure fit within the piping system.

GUIDE SPECIFICATION-EXPANSION JOINTS

SCOPE:

1. All heating and/or cooling system piping shall contain expansion joints to compensate for expansion and/or contraction resulting from temperature variations. These lines shall have adequate guides and anchors as defined by the expansion joint manufacturers association (EJMA) standards.

CONSTRUCTION:

1. Bellows construction shall be multi-ply laminated corrugated bellows of type 300 stainless steel.

2. All joints shall have a square telescoping shroud to prevent torsional stress and/or external damage.

3. End fittings shall be (male pipe thread, female pipe thread, female copper tube, weld end, 150# flange) suitable for mating piping.

4. Expansion joints for heating system piping shall be designed for 2" total travel (1 1/2" compression, 1/2" extension) for single units, 4" total travel (3" compression, 1" extension) for dual units. Expansion joints for chilled water systems shall be designed for 1" extension and 1" compression (single units) and 2" extension and 2" compression (dual units) respectively.

5. Units shall be modeled "IEJ" as manufactured by "ISOTECH".

FEATURES

- Compact overall length and outside diameter
- Four-Sided shroud for Anti-Torque and protection
- Multi-Ply-T-300 stainless steel bellows
- Long cycle life
- Force to actuate usually less than 100 lbs.
- 2" Traverse (1-½" compression, 1/2" extension)for single units
- Chilled water systems: 1"extension and 1" compression
- 4" Traverse (3" compression, 1" extension) for dual units
- Brass case construction
- Variety of endings

  -Female thread ends
  -Copper sweat ends
  -Male thread ends
  -Steel weld ends

Ratings

The ISOTECH Expansion Pressure joints are designed for a maximum of 200 or 300 psi working at ambient (70oF) temperature depending on model. When operating at elevated temperatures it is necessary to derate the maximum pressure capability of the units. The table indicates the recommended maximum pressures for various temperature levels. Joints should not be subjected to line tests beyond their rated working pressure. If higher pressure is required, please consult the factory.

The maximum temperature of an ISOTECH Compensator is limited by the internal construction. The compensator is limited to a maximum of 600°F.

-150# Drilling flanges
-300# Drilling flanges (upon application)

DERATED PRESSURE FOR ELEVATED TEMPERATURES

DEGREES F	DEGREES C	PRESSURE	
70	21	200	300
150	66	195	290
200	93	190	285
250	121	185	275
300	149	175	260
350	177	170	255
400	204	165	245
450	232	160	240
500	260	155	230
600	316	145	215

ISOTECH INDUSTRIES

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THRUST FORCE DATA

EXPANSION JOINT NOMINAL PIPE SIZE	3/4"	1"	1¼"	1½"	2"	2½"	3"	4"
NOMINAL I.D. BELLOWS ELEMENT	1¼"	1¼"	1¼"	1½"	2"	2½"	3"	4"
EFFECTIVE AREA IN SQUARE INCHES	1.76	1.76	1.76	2.76	4.55	6.5	9.61	14.50
PRESSURE PSI	THRUST FORCE IN POUNDS @ SPECIFIED PRESSURE							
10	18	18	18	28	46	65	96	145
20	35	35	35	55	91	130	192	290
30	53	53	53	83	137	195	288	435
40	70	70	70	110	182	260	384	580
50	88	88	88	138	228	260	384	725
60	106	106	106	166	273	390	577	870
75	132	132	132	207	341	488	721	1088
100	176	176	176	276	455	650	961	1450
125	220	220	220	345	569	813	1201	1813
150	264	264	264	414	683	975	1442	2175
175	308	308	308	483	796	1138	1682	2538
200	352	352	352	552	910	1300	1922	2900

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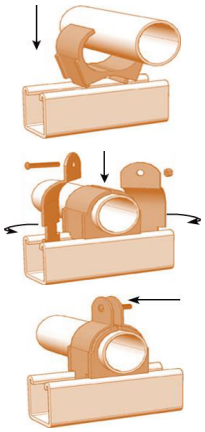
COPPER PIPE, ANCHOR AND GUIDES (CTA)



1. Anchors should be located per the Expansion Joint Manufacturers Association (EJMA) standards:

   A. At a change in direction of flow.

   B. Between two expansion joints of different sizes.

   C. At the entrance of a side branch into a main line.

   D. Where a valve is installed in a pipe run between two expansion joints.

   E. At the blind end of a pipe.

2. The anchor bracket must be mounted and secured to a solid and non-moving surface.

3. The copper anchor should be soldered to the copper tube for best results.

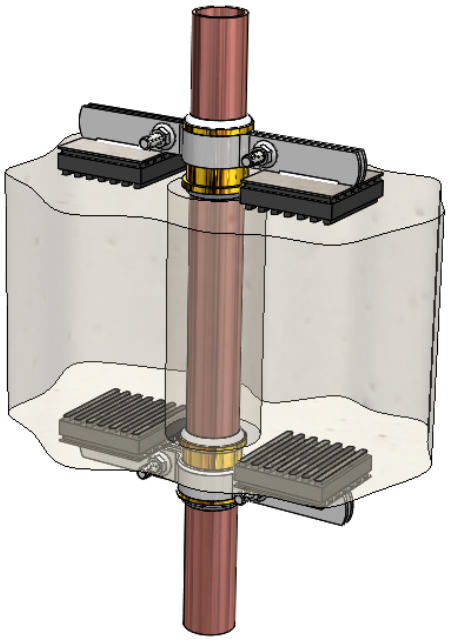
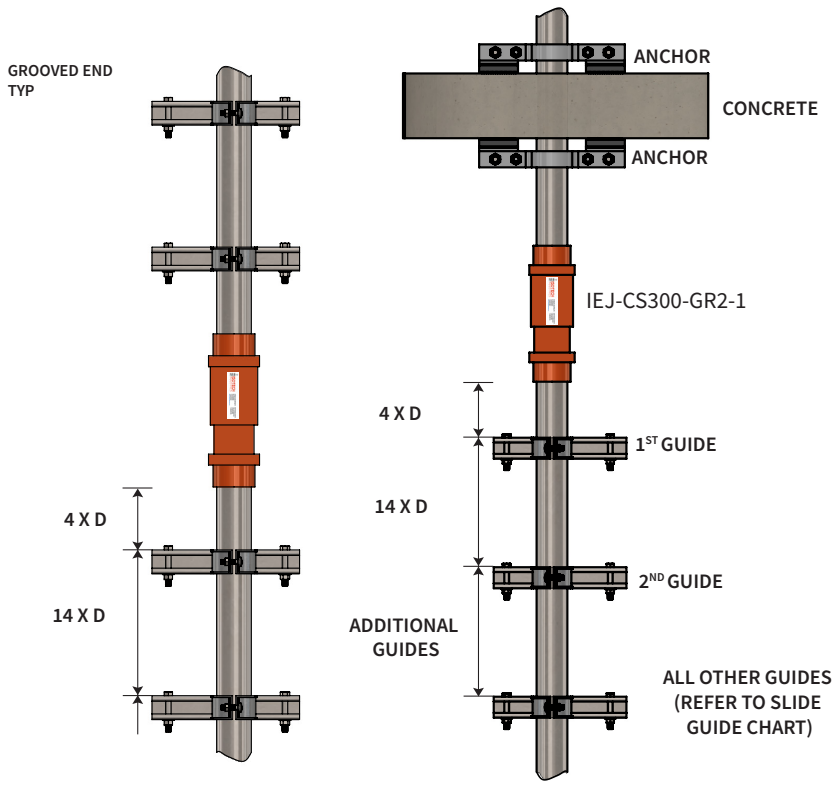


ILLUSTRATION SHOWS ANCHORS IN USE WITH COPPER PIPES

Notes:

- System design must not create torque on expansion joints. See diagram below for typical installation practices.
- Piping centerlines should be precisely aligned.
- All set pins must be removed after installation.



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ISOTECH EXPANSION JOINT

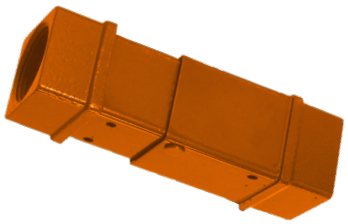
The industry standard in Expansion Compensator's for the control of Pipe Expansion & Contraction in water/stream systems.

ISOTECH is one of the few manufacturers utilizing this superior square design that eliminates issues that can occur with round joints.

KEY SPECIFICATIONS:

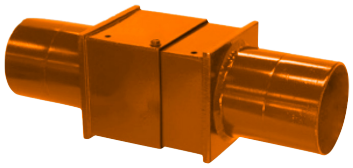
- Sizes-3/4" To 4"
- Single bellows-316L SS
  2" Total Movement
  1½" Compression
  ½" Extension
- Pressure-200 or 300 psig
- Temperature-600°F

MODELS & END FITTINGS	
SINGLE	END FITTING
IEJ-CP300-FTH	FEMALE PIPE THREAD
IEJ-CP200-SW	COPPER SWEAT ENDS
IEJ-CP300-MTH	MALE PIPE THREADS
IEJ-CS300-GR	VICTAULIC GROOVED ENDS
IEJ-CS300-W	CARBON STEEL WELD ENDS



IEJ-CP300-FTH

- Brass Case
- Female Brass Thread Ends



IEJ-CP200-SW

- Brass Case
- Female Copper Tube Ends

MAX. WORKING PRESSURE 300 PSIG @ 70°F			
NOMINAL I.D.	MAX. O.D.	OAL	Wt. (Lbs)
3/4"	2"	6 ½"	2.25
1"	2"	6 ½"	2.25
1¼"	2"	6 ½"	2.50
1½"	2 ½"	6 ½"	4.00
2"	3"	6 ½"	5.75
2 ½"	3 ½"	7"	7.75
3"	4 ½"	7 ¾"	11.00
4"	5 ½"	8"	12.00

MAX. WORKING PRESSURE 200 PSIG @ 70°F				
NOMINAL I.D.	FIT TUBE O.D.	MAX. O.D.	OAL	Wt. (Lbs)
3/4"	⅞"	2"	6 ½"	1.50
1"	1 ⅛"	2"	6 ½"	1.50
1¼"	1 ⅜"	2"	6 ½"	1.75
1½"	1 ⅝"	2 ½"	6 ½"	2.75
2"	2 ⅛"	3"	10"	3.50
2 ½"	2 ⅝"	3 ½"	10 ¾"	5.00
3"	3 ⅜"	4 ½"	11 ½"	6.25
4"	4 ⅛"	5 ½"	13 ½"	7.00

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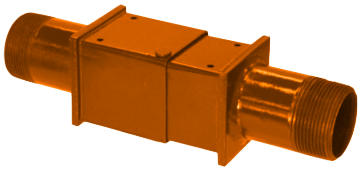
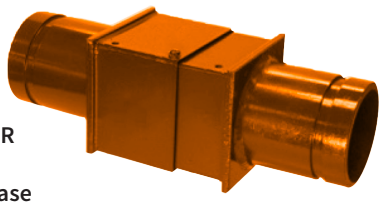


IEJ-CP300-SW

- Brass Case
- Female Copper Tube Ends

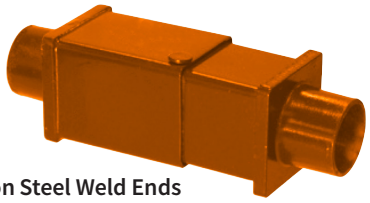
MAX. WORKING PRESSURE 300 PSIG @ 70°F			
NOMINAL I.D.	MAX. O.D.	OAL	Wt. (Lbs)
3/4”	2”	9 ½”	2.25
1”	2”	9 ½”	2.25
1¼”	2”	9 ½”	2.50
1½”	2 ½”	9 ½”	4.00
2”	3”	9 ½”	5.75
2 ½”	3 ½”	9 ½”	5.75
3”	4 ½”	9 ½”	11.00
4”	5 ½”	9 ½”	12.00



IEJ-CS300-GR

- Brass Case
- Sch 40 Carbon Steel Victaulic Groove Ends

MAX. WORKING PRESSURE 300 PSIG @ 70°F			
NOMINAL I.D.	MAX. O.D.	OAL	Wt. (Lbs)
3/4”	2”	10 ½”	2.50
1”	2”	10 ½”	2.75
1¼”	2”	10 ½”	3.25
1½”	2 ½”	10 ½”	4.00
2”	3”	10 ½”	5.25
2 ½”	3 ½”	10 ½”	7.50
3”	4 ½”	10 ½”	9.50
4”	5 ½”	10 ½”	10.50



IEJ-CS300-W

- Brass Case
- Sch 40 Carbon Steel Weld Ends

MAX. WORKING PRESSURE 300 PSIG @ 70°F			
NOMINAL I.D.	MAX. O.D.	OAL	Wt. (Lbs)
3/4”	2”	10 ½”	2.50
1”	2”	10 ½”	2.75
1¼”	2”	10 ½”	3.25
1½”	2 ½”	10 ½”	4.00
2”	3”	10 ½”	5.25
2 ½”	3 ½”	10 ½”	7.50
3”	4 ½”	10 ½”	9.50
4”	5 ½”	10 ½”	10.50