



7Q SERIES

QUADRA-SIDE® High Pressure Expansion Compensators



For the Control of
Pipe Expansion &
Contraction in Water &
Steam Systems

The heavy duty **Keflex™ 7Q Expansion Compensators** are specifically designed for high pressure service, available in sizes ¾" to 4", in both single and dual units. The single type is capable of absorbing 2" total movement, 1 ½" in compression and ½" in extension from the factory predetermined setting. The dual type will absorb 3" of pipe extension and 1" pipe compression for a full rated traverse of 4".

The heart of the **Keflex™ 7Q Expansion Compensator** is the multi-ply type 316L corrosion resistant stainless steel bellows. These bellows are internally pressurized and operate primarily in compression where they have the greatest hoop strength capability.

The **Quadra-Side™** square telescoping shrouds encompass the bellows to provide protection against torsion, squirm, misalignment, and external damage, as well as preventing over compression of the bellows. Additionally, the unique design provides visual evidence that the traverse of the unit has not been exceeded. The integral guiding feature of the **Quadra-Side™** prevents offset to assure the pipe movement is directed axially into the bellows, a requirement for optimum performance.

The square telescopic shroud does not serve as a chamber to contain liquid or gas as do the covers on some other high pressure "compensators". Therefore, the outside diameter of the **Quadra-Side™** type compensator is considerably smaller, permitting it to be installed in walls, under floors or behind radiator covers without expensive modifications at the point of installation.

BENEFITS:

Multi-ply stainless steel corrosion resistant bellows for lower force to actuate and longer cycle life
Internally pressurized
Anti-reservoir to prevent stagnant media build-up
Removable set pin for installation at optimum positioning for intended movement during operation.

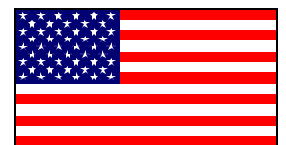
Variety of end fittings:
•Male Pipe Threads
•Weld Ends—Sch 40 (Sch 80 Available)
•Female Pipe Threads
•Copper Sweat Ends
•150# or 300# Drilling Flanges
•Grooved Ends
Visual maintenance safety check

Features:

- Anti-Torque
- Anti-Over Compression
- Noise Dampening
- Compact Design
- Custom Lengths & Movements Available
- Variety of Standard End Fittings

Models:

- 7Q & 7QD
- 7QT & 7QTD
- 7QFL & 7QFLD
- 7QMPT & 7QMPTD
- 7QVG & 7QVGD
- 7QWT & 7QWTD



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Quadra-Side® 7Q SERIES



7Q & 7QD
Brass Case
Female Brass Thread
Ends

Nominal I.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	2"	6 ½"	2 ¼
1"	2"	6 ½"	2 ¼
1 ¼"	2"	6 ½"	2 ½
1 ½"	2 ½"	6 ½"	4
2"	3"	6 ½"	5 ¾
2 ½"	3 ½"	7"	7 ¾
3"	4 ½"	7 ¾"	11
4"	5 ½"	8"	12

Nominal I.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	2"	11 ½"	3 ¾
1"	2"	11 ½"	3 ¾
1 ¼"	2"	11 ½"	3 ¾
1 ½"	2 ½"	11 ½"	6 ¼
2"	3"	11 ½"	8 ¾
2 ½"	3 ½"	12"	11 ¾
3"	4 ½"	12 ¾"	15 ½
4"	5 ½"	13"	16



7QT & 7QTD
Brass Case
Female Copper Tube
Ends

Nominal I.D.	Fit Tube O.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	7/8"	2"	6 ½"	1 ½
1"	1 1/8"	2"	6 ½"	1 ½
1 ¼"	1 3/8"	2"	6 ½"	1 ¾
1 ½"	1 5/8"	2 ½"	6 ½"	2 ¾
2"	2 1/8"	3"	10	3 ½
2 ½"	2 5/8"	3 ½"	10 ¾"	5
3"	3 1/8"	4 ½"	11 ½"	6 ¼
4"	4 1/8"	5 ½"	13 ½"	7

Nominal I.D.	Fit Tube O.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	7/8"	2"	11 ½"	2 ½
1"	1 1/8"	2"	11 ½"	2 ½
1 ¼"	1 3/8"	2"	11 ½"	3
1 ½"	1 5/8"	2 ½"	11 ½"	4 ½
2"	2 1/8"	3"	15	6
2 ½"	2 5/8"	3 ½"	15 ¾"	10
3"	3 1/8"	4 ½"	16 ½"	12
4"	4 1/8"	5 ½"	18 ½"	13



7QFL & 7QFLD
Brass Case
Steel Plate Flanges
(150 lb. Drilling)

Nominal I.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	3 7/8"	11"	5 ¾
1"	4 ¼"	11"	5 ¾
1 ¼"	4 5/8"	11"	8 ¼
1 ½"	5"	11"	8 ¾
2"	6"	11"	10 ¾
2 ½"	7"	11"	16
3"	7 ½"	11"	19
4"	9"	11"	20

Nominal I.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	3 7/8"	16"	8
1"	4 ¼"	16"	8 ¼
1 ¼"	4 5/8"	16"	10 ½
1 ½"	5"	16"	12
2"	6"	16"	16 ¼
2 ½"	7"	16"	21
3"	7 ½"	16"	26 ¼
4"	9"	16"	27



7QMPT & 7QMPTD
Brass Case
Male Carbon Steel
Pipe Thread Ends

Nominal I.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	2"	9 ½"	2 ½
1"	2"	9 ½"	2 ¾
1 ¼"	2"	9 ½"	3 ¼
1 ½"	2 ½"	9 ½"	4
2"	3"	9 ½"	5 ¼
2 ½"	3 ½"	9 ½"	7 ½
3"	4 ½"	9 ½"	9 ½
4"	5 ½"	9 ½"	10 ½

Nominal I.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	2"	14 ½"	4
1"	2"	14 ½"	4 ¼
1 ¼"	2"	14 ½"	4 ½
1 ½"	2 ½"	14 ½"	6
2"	3"	14 ½"	8 ¼
2 ½"	3 ½"	14 ½"	11 ¾
3"	4 ½"	14 ½"	15 ¼
4"	5 ½"	14 ½"	16



Quadra-Side® 7Q SERIES



7QWT & 7QWTD
Brass Case
Sch 40 Carbon Steel
Weld Ends

Nominal I.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	2"	10 ½"	2 ½
1"	2"	10 ½"	2 ¾
1 ¼"	2"	10 ½"	3 ¼
1 ½"	2 ½"	10 ½"	4
2"	3"	10 ½"	5 ¼
2 ½"	3 ½"	10 ½"	7 ½
3"	4 ½"	10 ½"	9 ½
4"	5 ½"	10 ½"	10 ½

Nominal I.D.	Maximum O.D.	Overall Length	Approx. Wt. (Lbs.)
¾"	2"	15 ½"	4
1"	2"	15 ½"	4 ¼
1 ¼"	2"	15 ½"	4 ½
1 ½"	2 ½"	15 ½"	6
2"	3"	15 ½"	8 ¼
2 ½"	3 ½"	15 ½"	11 ¾
3"	4 ½"	15 ½"	15 ¼
4"	5 ½"	15 ½"	16



QAB
Dual Compensator Anchor Bracket
(2 Hole Attachment)

Nominal Size (Inches)	¾" – 2" Bronze			2 ½" – 4" Steel		
	¾"	1"	1 ¼"	2 ½"	3"	4"
C/L to Base	1-9/32	1-5/8	1-7/8	2-1/32	2-15/32	3-1/32
H – Total depth or Height	3-3/8	4-1/8	4-5/8	5-17/32	6-17/32	7-17/32
L – Base Length	4	4-7/8	5-3/8	6	7	9
W – Base Width	2	2	2	1 ½	1 ½	1 ½

The QAB Anchor Bracket is provided with each Dual compensator and is necessary for proper compensator functionality.



CTA ANCHORS
Copper Tube
Anchor & Bracket

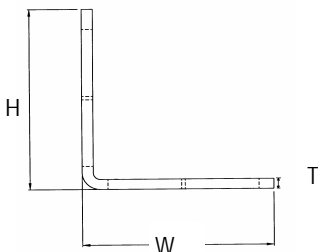
Nominal Pipe Size	Part Number	Bracket
¾"	006CTA33	7/8"
	006CTA45	
1"	010CTA33	1-1/8"
	010CTA45	
1 ¼"	012CTA33	1-3/8"
	012CTA45	



CTG GUIDES & BRACKETS
Nylon Guide with
Steel Bracket

Pipe Size	Part Number	Leg Length	Nylon Hole Diameter
¾"	006CTG33	2"	15/16"
1"	010CTG33	2 ¼"	1-3/16"
1 ¼"	012CTG33	2 ½"	1-7/16"

Guides provided with CT Bracket



Bracket Part Number	W	H	T
33	3 ¼	3-3/8	3/16
45	4 ¼	5-1/8	3/16

Bracket Notes:

Use CTA Brackets with CTG Guides & CTA Anchors.

Guide or Anchor can be mounted to either leg to meet field installation needs.



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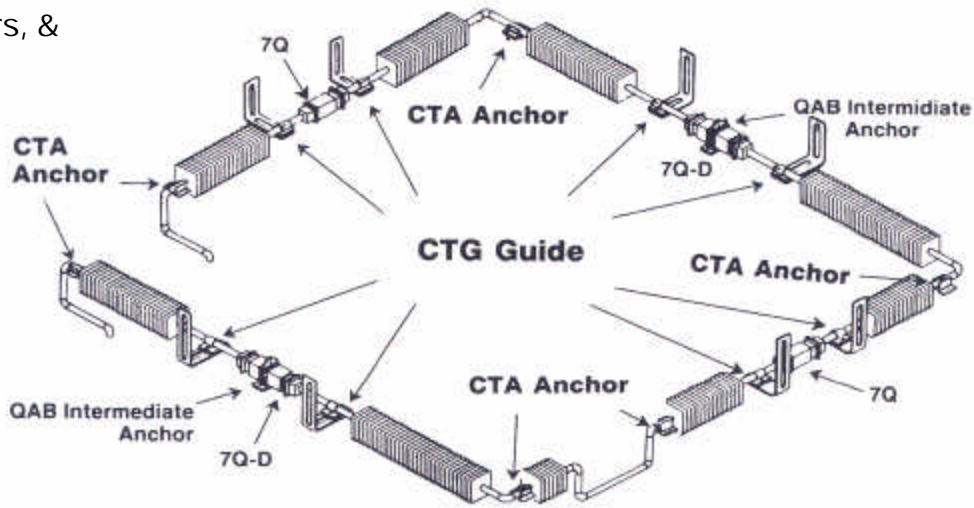
Anchoring and Guiding KEFLEX™ Compensators

Compensators used in risers and radiation lines require adequate anchoring and guiding. Main anchors are necessary at the end of each pipe run, with guides installed to prevent the line from bowing, buckling, or becoming misaligned because of thermal expansion or internal pressures. Pipe hangers and rollers are not considered to be adequate as guides. The main anchors must restrain the ends of the pipe so that all expansion is directed into the compensator. The main anchors must also withstand the end thrust force of the internal pressure. This force is shown in the Thrust Force Data Table.

Compensators should not be subjected to hydrostatic pressure tests beyond their rated working pressures. If a higher pressure test is required, the factory should be advised. The inside of all piping must be clean before installing and testing compensators. Before the pipe lines are hydrostatically tested, all anchors and pipe guides must be secured.

The contractor installing sweat end type compensators is advised to use a soft solder. Excessive heat used to make the solder joint may have a detrimental effect on the compensator. Soldered joints should be washed thoroughly so as to neutralize or remove acids used in solder fluxes.

Recommended Positioning of Guides, Anchors, & Compensators



Expansion compensators must be both correctly selected and properly installed for effective performance in service. The reactions created by pressure and movement within the piping system should be carefully considered and the following precautions taken at installation:

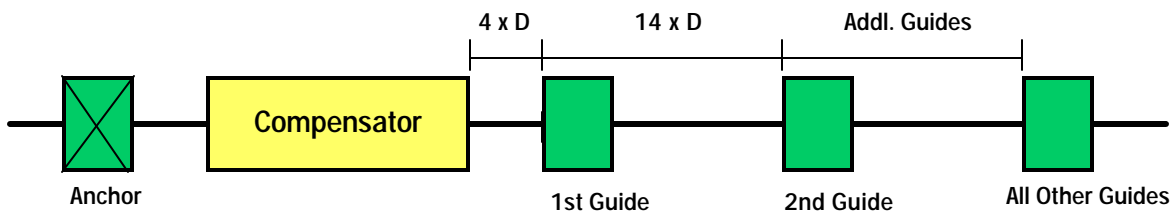
System design must not create torque on expansion compensators. See diagram below for typical installation practices.

Piping centerlines should be precisely aligned.

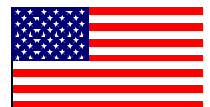
All set pins must be removed after installation.

Anchors must be of sufficient strength to withstand the thrust pressure of the pipe section.

Typical Pipe Guide Installation



D = Pipe O.D.



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