

## **DESCRIPTION**

ITW Insulation Systems Aluminum Elbow Covers are made in two precision formed matching halves to cover and weatherproof insulated 45° and 90° pipe elbows.

See the ITW datasheet on Aluminum Elbow Covers for details on these elbows and their properties and composition.

## **FIT**

ITW Aluminum Elbow Covers are available to fit:

- 45° and 90° pipe elbows
- Long or short radius pipe elbows
- Butt weld, socket weld, and screwed elbows
- Insulated pipe from ½" to 12" NPS\*

\*ITW Aluminum Elbow Covers are available for some insulation thicknesses at NPS > 12". Not all combinations of NPS, insulation thickness, radius, and elbow angle are available. See your ITW sales representative for details.

When ordering Aluminum Elbow Covers, angle, radius type, pipe size (NPS) and insulation thickness must all be specified. As an alternative to the NPS and insulation thickness, the elbow identifier number can be specified.

## **SIZING CHARTS**

Aluminum elbow covers used in the pipe insulation industry are numbered to correspond with the various sizes available to fit on certain combinations of pipe size (NPS) and insulation thickness. See the ITW Fitting Selection Guide to determine the numeric identifier associated with each elbow size.

## **SEALING OF JOINTS**

The use of sealant on metal jacketing joints including the joints on Aluminum Elbow Covers is a controversial and unsettled aspect of system design. Use of sealant is a decision that should be made by the specifier/designer of each insulation system. For best insulation system performance and resistance to water infiltration, ITW recommends that all metal jacketing joints including those on Aluminum Elbow Covers and the overlap between these covers and the neighboring straight pipe metal jacketing be sealed with an appropriate joint sealant. This should be applied between the overlapping pieces of metal in the joint and not as a caulking bead on the exterior lip of the joint.

## **SECUREMENT OF ELBOW COVERS**

The two mating halves of ITW Aluminum Elbow Covers are secured together and to the neighboring straight pipe metal jacketing using screws or rivets for hot applications and banding for cold applications. Screws and rivets are not used in cold applications as these will likely pierce the critically important vapor retarder that is on the surface of the insulation and directly under the metal jacketing.

In hot applications, the screws or rivets used to secure the elbows are spaced about three inches apart so the total number of screws will vary with the size of the elbow. The first screw is installed at the center of the elbow cover heel with subsequent screws installed working outwards from this point toward the ends of the elbow cover. The same process is used to apply the screws to the throat of the elbow cover. Screws or strapping to secure the overlap of the elbow cover and the neighboring straight pipe metal jacketing should be used if needed.

In cold applications, the banding used to secure the elbow covers is applied between the raised "fingers", tightened, and secured using a wing seal. Bands to secure the overlap of the elbow cover and the neighboring straight pipe metal jacketing should be used if needed.

See figures 1 and 2 for details on the application and securement of ITW Aluminum Elbow Covers.

## **BANDING COMPOSITION**

Banding for aluminum jacketing and aluminum elbow covers can be aluminum or stainless steel. Due to the tensile strength characteristics, ITW recommends stainless steel banding in most applications. Aluminum banding should only be used where all of the following apply:

- The thickness of the jacketing does not exceed that of the banding
- The banding will not be subjected to excessive forces due to wind load, expansion/contraction of the insulation system, or other factors
- The environment is not particularly corrosive
- The insulation outer diameter is ≤8" NPS
- A non-rigid insulation material is used

Figure 1

Securement of ITW Aluminum Elbow Covers in Hot Applications

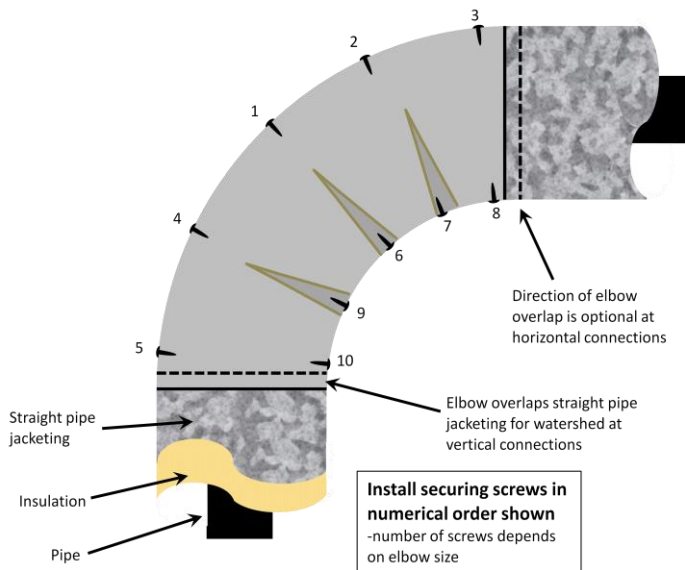
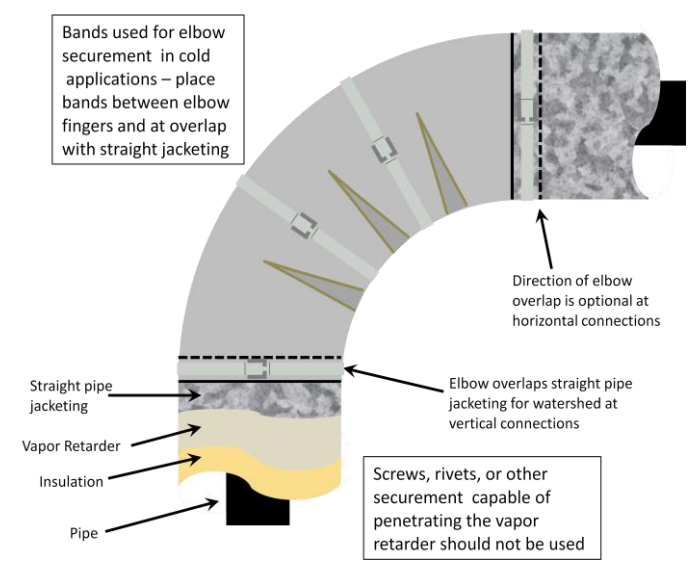


Figure 2

Securement of ITW Aluminum Elbow Covers in Cold Applications



## Fit of ITW Aluminum Two-Piece Elbows Over Insulation

The overlap of aluminum elbow covers is specified by ASTM C1729 to be a minimum of 5/8" at both the heel and throat joints when placed over insulation which meets the outer diameter specified in ASTM C585-10, Table 3. The largest insulation system outer diameter and circumference that can be accommodated by ITW two-piece aluminum ells while maintaining our minimum allowable overlap of 5/16" at both the heel and throat joints are shown in the tables below.

Maximum Insulation Outer Diameter Accommodated<sup>1</sup>

NPS	Nominal Insulation Thickness (inches)						
	1	1-1/2	2	2-1/2	3	3-1/2	4
1/2	3.1433	4.2574	5.2919	6.8835	7.9180	8.9127	9.9074
3/4	3.1433	4.2574	5.2919	6.8835	7.9180	8.9127	9.9074
1	3.7799	4.7746	5.8489	6.8835	7.9180	8.9127	9.9074
1-1/4	3.7799	5.2919	5.8489	6.8835	7.9180	8.9127	9.9074
1-1/2	4.2574	5.2919	6.8835	7.9180	8.9127	9.9074	11.0215
2	4.7746	5.8489	6.8835	7.9180	8.9127	9.9074	11.0215
2-1/2	5.2919	6.8835	7.9180	8.9127	9.9074	11.0215	12.0162
3	5.8489	6.8835	7.9180	8.9127	9.9074	11.0215	12.0162
3-1/2	6.8835	7.9180	8.9127	9.9074	11.0215	12.0162	13.0109
4	6.8835	7.9180	8.9127	9.9074	11.0215	12.0162	13.0109
4-1/2	7.9180	8.9127	9.9074	11.0215	12.0162	13.0109	14.2842
5	7.9180	8.9127	9.9074	11.0215	12.0162	13.0109	14.2842
6	8.9127	9.9074	11.0215	12.0162	13.0109	14.2842	15.2789
7	9.9074	11.0215	12.0162	13.0109	14.2842	15.2789	16.2736
8	11.0215	12.0162	13.0109	14.2842	15.2789	16.2736	17.2683
9	12.0162	13.0109	14.2842	15.2789	16.2736	17.2683	
10	13.0109	14.2842	15.2789	16.2736	17.2683	18.2630	
11	14.2842	15.2789	16.2736	17.2683	18.2630	19.2975	
12	15.2789	16.2736	17.2683	18.2630	19.2975	20.2923	
14			18.2630	19.2975	20.2923	21.2870	
15		18.2630	19.2975	20.2923	21.2870	22.2817	
16			20.2923	21.2870	22.2817		
17		20.2923	21.2870	22.2817			
18			22.2817				

Maximum Insulation Outer Circumference Accommodated<sup>1</sup>

NPS	Nominal Insulation Thickness (inches)						
	1	1-1/2	2	2-1/2	3	3-1/2	4
1/2	9.875	13.375	16.625	21.625	24.875	28.000	31.125
3/4	9.875	13.375	16.625	21.625	24.875	28.000	31.125
1	11.875	15.000	18.375	21.625	24.875	28.000	31.125
1-1/4	11.875	16.625	18.375	21.625	24.875	28.000	31.125
1-1/2	13.375	16.625	21.625	24.875	28.000	31.125	34.625
2	15.000	18.375	21.625	24.875	28.000	31.125	34.625
2-1/2	16.625	21.625	24.875	28.000	31.125	34.625	37.750
3	18.375	21.625	24.875	28.000	31.125	34.625	37.750
3-1/2	21.625	24.875	28.000	31.125	34.625	37.750	40.875
4	21.625	24.875	28.000	31.125	34.625	37.750	40.875
4-1/2	24.875	28.000	31.125	34.625	37.750	40.875	44.875
5	24.875	28.000	31.125	34.625	37.750	40.875	44.875
6	28.000	31.125	34.625	37.750	40.875	44.875	48.000
7	31.125	34.625	37.750	40.875	44.875	48.000	51.125
8	34.625	37.750	40.875	44.875	48.000	51.125	54.250
9	37.750	40.875	44.875	48.000	51.125	54.250	
10	40.875	44.875	48.000	51.125	54.250	57.375	
11	44.875	48.000	51.125	54.250	57.375	60.625	
12	48.000	51.125	54.250	57.375	60.625	63.750	
14		0.000	57.375	60.625	63.750	66.875	
15		57.375	60.625	63.750	66.875	70.000	
16		0.000	63.750	66.875	70.000		
17		63.750	66.875	70.000			
18			70.000				

<sup>1</sup>Note that the outer diameter and circumference of mitered insulation sections may exceed the values specified in ASTM C585. Care must be taken to assure that ITW Aluminum Elbows fit over mitered elbows while maintaining the minimum allowable 5/16" overlap at the heel and throat joints.