ALUMINUM ELBOWS

ALUMINUM METAL JACKETING/CLADDING

SIZE & INSTALLATION GUIDE

DESCRIPTION

Johns Manville Aluminum Elbow Covers, Ell-Jacs Plus are made in two precision formed matching halves to cover and weatherproof insulated 45° and 90° pipe elbows.
See the JM datasheet on Ell-Jacs Plus, Aluminum Elbow Covers for details on these elbows and their properties and composition.

FIT

JM 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*

*JM 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 JM 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 JM 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, JM 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 JM 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 JM Aluminum Elbow Covers. To check for sheet squareness, compare the two distances between diagonally opposite corners.

BANDING COMPOSITION

Banding for aluminum jacketing and aluminum elbow covers can be aluminum or stainless steel. Due to the tensile strength characteristics, JM 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

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FIGURE 1: SECURING JM'S ALUMINUM ELBOW COVER IN HOT APPLICATIONS

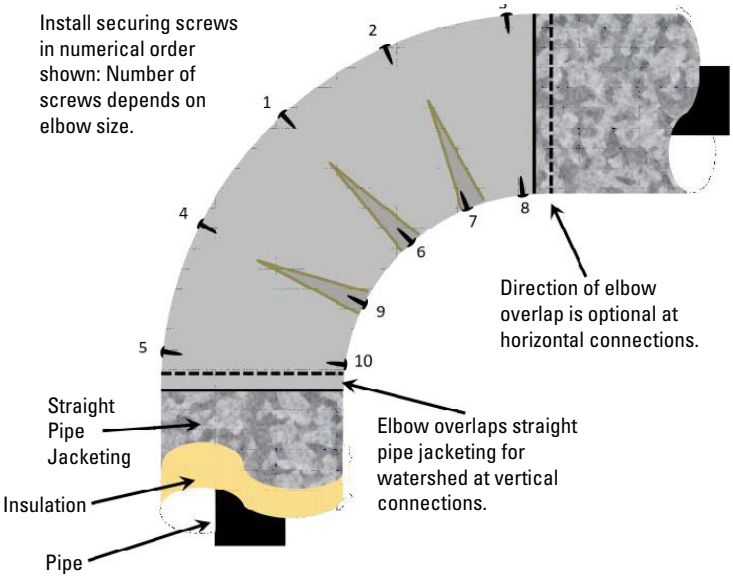
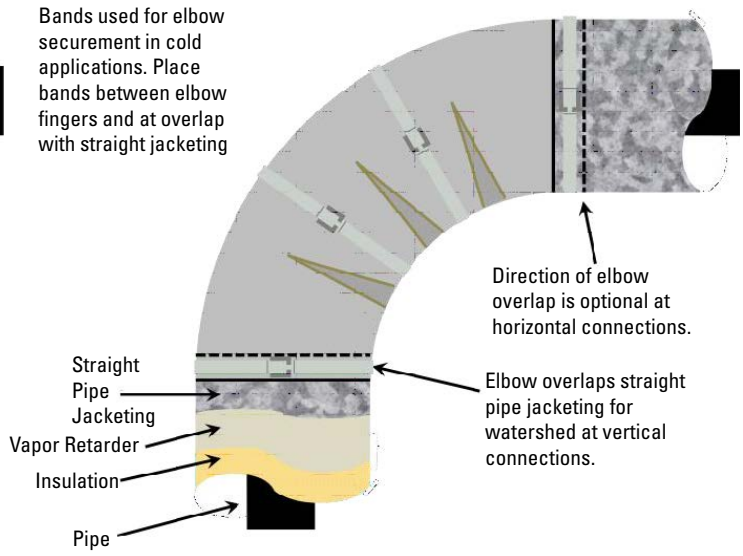


FIGURE 2: SECURING JM'S ALUMINUM ELBOW COVER IN COLD APPLICATIONS



FIT OF JM'S 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 JM 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[1]

NPS	Nominal Insulation Thickness (inches)						
	1	1½	2	2½	3	3½	4
½	3.1433	4.2574	5.2919	6.8835	7.9180	8.9127	9.9074
¾	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
1¼	3.7799	5.2919	5.8489	6.8835	7.9180	8.9127	9.9074
1½	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
2½	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
3½	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
4½	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				

NPS	Nominal Insulation Thickness (inches)						
	1	1½	2	2½	3	3½	4
½	9.875	13.375	16.625	21.625	24.875	28.000	31.125
¾	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
1¼	11.875	16.625	18.375	21.625	24.875	28.000	31.125
1½	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
2½	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
3½	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
4½	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				

1) 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 JM Aluminum Elbows fit over mitered elbows while maintaining the minimum allowable 5/16" overlap at the heel and throat joints.