

## Engineered Products: Headers and Manifolds

Headers offer the means of connecting several tubes together without the use of tees – outlets of these tubes are extruded or intruded, adding to the strength of the joint. Our complete tool range allows production of headers in many tube sizes. Inlet and outlet openings may be formed in a single row or double rows with parallel or staggered holes. Headers eliminate joints, save space and reduce costs. In the production of headers, the savings in tooling costs made possible by our large inventory of tools is passed on to our customers. Refer to the chart of opening and end arrangements and further design factors. Note the wide selection of tooling listed. A manifold is a form of header with one or more outlets extruded or intruded and the ends closed. We use our header process for extruding or intruding the outlet for strength and close the ends by our spinning and rolling process to eliminate capping and joints.

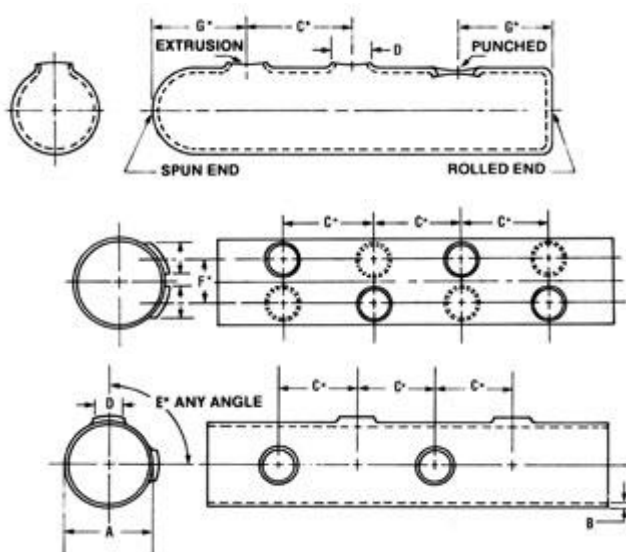
### Design Factors

Headers and Manifolds are produced in these metals: Copper, Brass, Aluminum, Curpo-Nickel and Stainless Steel.

1. Length of header or manifold may be up to 10 feet long.
2. Normal center distance of outlet -2 x diameter of outlet opening.
3. F & G dimensions to be specified by customer.
4. Height of extrusion or intrusion  $\frac{3}{8}$  to  $\frac{3}{4}$  OD =  $\frac{1}{8}$  max.
5. Ends may be open, spun or rolled shut, or capped.
6. Customer to specify spun or rolled ends to be brazed for airtight seal.
7. Outlets may be in single or double rows.
8. Outlets may be in line or staggered.
9. Extrusions or intrusions may be put into some tubes that require bends on them.
10. Headers may be made with punched holes or with punched and extruded/intruded holes.

\*Any deviations from listings, customer specifies dimensions.

\*\*Custom Tooling Required



Tube Size			
O.D. A	Wall B	PUNCHED D	EXTRUDED D
.625	.035	.105	**
	.035	.125	.254
	.035	.129	**
	.035	.220	.319
	.035	.281	.318
	.035	.281	.380
	.035	.317	**
	.045	.317	**
	.049	.379	**
	.035	.380	**
	.040	.380	**
	.035	.390	**
	.028	.398	**
	.035	.398	**
	.035	.405	.505
	.035	.406	**



.750	.035	.229	**
	.042	.266	.379
	.035	.281	.382
	.042	.317	**
	.049	.317	**
	.035	.363	.500
	.042	.375	.504
	.035	.390	**
	.042	.390	**
	.049	.390	**
	.035	.406	.505
	.049	.504	**
.875	.032	.094	**
	.045	.125	.316
	.090	.125	.255
	.032	.188	**
	.049	.254	**
	.045	.255	**
	.045	.268	**
	.035	.310	**
	.045	.317	**
	.045	.320	**
	.045	.328	.515
	.049	.331	.505
	.045	.343	**
	.045	.378	.655
	.049	.380	**
	.045	.383	**
	.045	.389	**
	.035	.390	.578



	.045	.392	**
	.035	.398	**
	.045	.437	**
	.049	.440	.506
	.045	.463	.655
	.049	.502	.630
	.045	.504	**
	.049	.505	.630
	.045	.516	**
	.045	.562	**
	.035	.630	**
1.000	.065	.378	**
	.065	.390	**
	.045	.630	**
1.125	.050	.130	**
	.050	.156	.380
	.050	.260	**
	.050	.279	.476
	.050	.312	.506
	.050	.328	.515
	.065	.328	.515
	.050	.345	.631
	.035	.380	.630
	.065	.380	.655
	.035	.390	.879
	.050	.390	**
	.050	.436	**
	.050	.437	**
	.050	.437	**
	.065	.440	**



	.050	.504	**
	.065	.504	**
	.035	.507	**
	.050	.507	**
	.035	.509	**
	.050	.509	**
	.050	.562	.879
	.050	.625	**
	.050	.630	**
	.035	.631	**
	.050	.642	**
	.050	.784	**
	.050	.880	**
1.187	.032	.378	**
	.032	.501	**
1.250	.060	.312	.470
	.020	.375	.567
	.049	.437	**
	.060	.437	**
	.065	.500	**
	.032	.501	**
	.065	.531	**
	.049	.630	**
	.049	.830	**
	.065	.880	**
	.032	.937	**
1.375	.055	.255	**
	.055	.260	.397
	.055	.266	**
	.055	.312	**



	.055	.328	.517
	.042	.378	**
	.055	.380	**
	.055	.382	**
	.055	.438	**
	.055	.453	.640
	.055	.468	.658
	.049	.469	.658
	.065	.471	.631
	.055	.490	**
	.055	.507	**
	.055	.534	**
	.055	.630	**
	.055	.656	**
	.055	.694	.881
	.055	.809	**
	.065	.809	1.128
	.065	.880	**
	.049	.937	1.128
1.625	.060	.312	.504
	.060	.319	.505
	.060	.328	.516
	.083	.374	.631
	.049	.406	**
	.072	.437	.625
	.060	.468	.655
	.072	.694	.881
	.075	.694	.883
	.072	.809	1.128
	.072	.937	1.125



2.000	.095	.560	.882
2.125	.070	.312	**
	.070	.317	.504
	.058	.406	**
	.070	.505	**
	.070	.562	.754
	.058	.630	**
	.090	.687	.875
	.083	.694	.881
	.083	.809	1.128
	.083	1.009	**
2.625	.080	.312	
	.080	.437	.629
	.080	.505	.656
	.065	.531	
	.080	.562	
	.080	.615	
	.065	.650	
	..095	.937	1.129
3.125	.090	.437	.629
	.090	.504	.650
	.090	.630	**
3.625	.100	.440	.625
	.100	.630	.790
	.093	.686	.880
4.125	.110	.440	.625