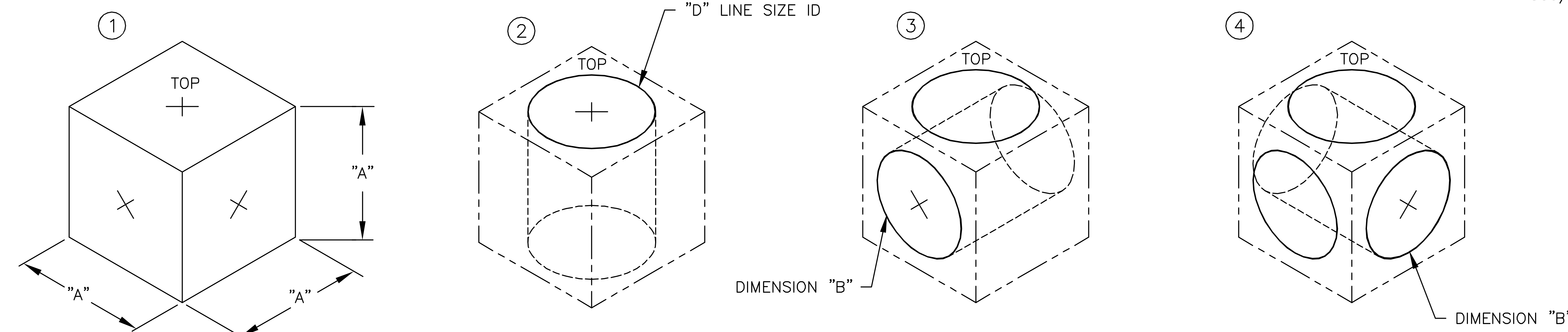
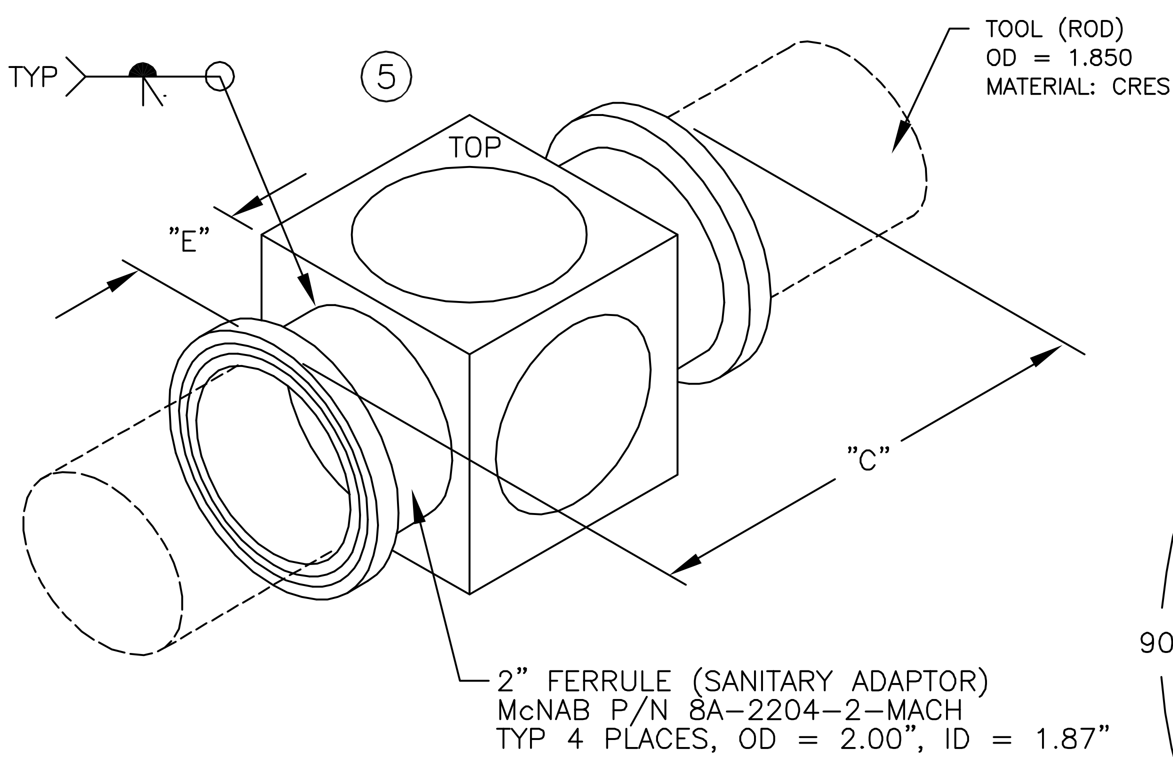
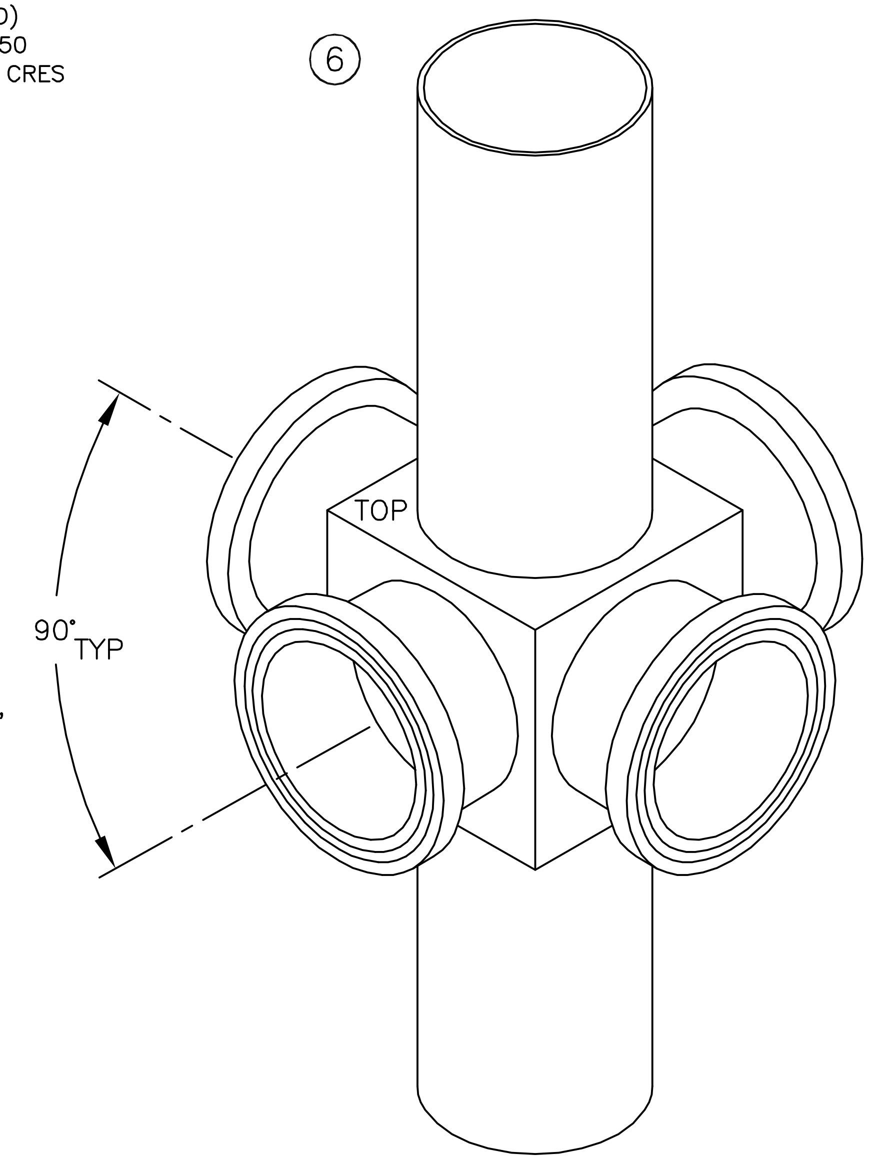




"DIMENSIONS ARE TYPICAL FOR OTHER AXIS"



METRIC TUBES (in mm) Tol: ±0.25mm

LINE SIZE (PER DIN 11850)	A	B	D	E	C	REFERENCE ONLY		
						OD	ID	WALL
50	64.7	1.870	49	22.65	110	52	49	1.5
65	82.7	1.870	66	22.65	128	70	66	2
80	97.7	1.870	81	22.65	143	85	81	2
100	116.7	1.870	100	22.65	162	104	100	2

INCH TUBES (in inches) Tol: ±.010"

LINE SIZE PER ASTM A270	A	B	D	E	C	REFERENCE ONLY		
						OD	ID	WALL
2"	2.5	1.870	1.87	.84	4.18	2	1.87	.065
2.5"	3	1.870	2.37	.84	4.68	2.5	2.37	.065
3"	3.5	1.870	2.87	.84	5.18	3.0	2.87	.065
4"	4.5	1.870	3.83	.84	6.18	4.0	3.83	.083

NOTES:

1. ALL PARTS BY OTHERS UNLESS OTHER WISE SPECIFIED.
2. DIMENSIONS ARE PER McNAB'S LIGHT PATH PROGRAM.
3. PORTS MUST BE PERPENDICULAR TO RUN AND CONCENTRIC TO OPPOSITE PORT.

FABRICATION PROCESS:

1. DETERMINE LINE SIZE, PER CHART. CUT CUBE TO DIMENSION "A". MARK CENTERS ON EACH FACE. ROUND OFF ALL CORNERS AND SHARP EDGES.
2. DRILL/BORE OUT LINE SIZE ID, DIMENSION "D".
3. DRILL/BORE FERRULE ID THRU CUBE ON ONE AXIS, DIMENSION "B".
4. DRILL/BORE FERRULE ID THRU CUBE ON OTHER AXIS, DIMENSION "B".
5. INSERT TOOL TO ENSURE PERPENDICULARITY AND CONCENTRICITY. CUT FERRULE LENGTHS TO ACHIEVE DIMENSIONS E AND C. WELD FERRULES IN PLACE. REPEAT PROCESS FOR OTHER AXIS.
6. WELD LINE SIZE TUBE. LENGTH TO SUIT.
7. GRIND AND SMOOTH ALL WELDS. HYDRO TEST TO SUIT.

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FABRICATION, FLOW CELL UNIT

	20 NOV 2000		REV. A
SCALE:	DWG\MAN\AP-VIE\FIG11	SHEET 1 OF 1	

FIG. 11