specification for a rectangular expanding nozzle
c.geddes 4/10/02
based on valve 08; symmetric nozzle 02r

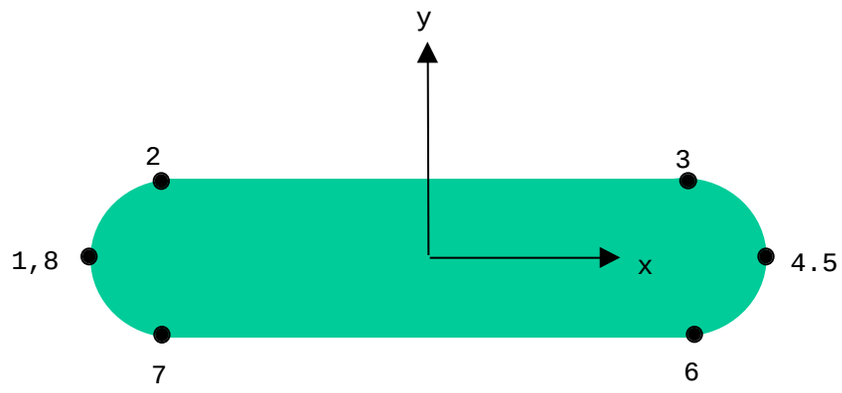
nozzle has a cicularly symmetric contracting section and throat, followed by a rectangular expansion section
**********output parameters**********
Throat data: At=0.195833, Zt=1.59983
Outflow data: Ae/A*=4.12650 Ae=0.808107, Re=0.507185, Me=3.48001, RhoErho0=0.0872196
Output trajectory data

xsec	z0	x0	theta0x	lx	Rx	z0	y0	theta0y	ly	Ry
0.000	-0.498	4.300	0.000	0.500	0.000	-0.498	4.300	0.000	0.500	0.000
1.000	0.001	4.299	-1.571	3.400	0.000	0.001	4.299	-0.698	3.400	0.000
2.000	0.002	0.899	-0.698	0.400	0.000	0.002	0.899	-0.698	0.400	0.000
3.000	0.308	0.642	-0.698	1.257	1.800	0.308	0.642	-0.696	1.257	1.800
4.000	1.466	0.222	0.000	0.020	0.000	1.466	0.222	0.000	0.020	0.000
5.000	1.486	0.222	0.000	0.873	5.000	1.486	0.222	-0.021	0.868	0.000
6.000	2.354	0.298	0.175	0.873	5.000	2.354	0.204	-0.021	0.843	0.000
7.000	3.197	0.524	0.349	1.000	0.000	3.196	0.186	-0.021	0.940	0.000
8.000	4.136	0.866	0.349	3.200	0.000	4.136	0.166	-0.021	3.008	0.000
9.000	7.144	1.960	0.000	0.0	0.000	7.144	0.103	0.000	0.0	0.000

output xsection data;
sections are rounded rectangles of length xmax-xmin, width ymax-ymin, rounded at the corners with radius ymax
each section specified as the end points of the rect section and the end of the radiused section

xsec	z0	x1	y1	x2	y2	x3	y3	x4	y4	x5	y5	x6	y6	x7	y7	x8	y8
0.000	-0.498	-4.300	0.000	0.000	4.300	0.000	4.300	4.300	0.000	4.300	0.000	0.000	-4.300	0.000	-4.300	-4.300	0.000
1.000	0.001	-4.299	0.000	0.000	4.299	0.000	4.299	4.299	0.000	4.299	0.000	0.000	-4.299	0.000	-4.299	-4.299	0.000
2.000	0.002	-0.899	0.000	-0.003	0.897	0.003	0.897	0.899	0.000	0.899	0.000	0.003	-0.897	-0.003	-0.897	-0.899	0.000
3.000	0.308	-0.642	0.000	-0.002	0.640	0.002	0.640	0.642	0.000	0.642	0.000	0.002	-0.640	-0.002	-0.640	-0.642	0.000
4.000	1.466	-0.222	0.000	0.000	0.222	0.000	0.222	0.222	0.000	0.222	0.000	0.000	-0.222	0.000	-0.222	-0.222	0.000
5.000	1.486	-0.222	0.000	-0.000	0.222	0.000	0.222	0.222	0.000	0.222	0.000	0.000	-0.222	-0.000	-0.222	-0.222	0.000
6.000	2.354	-0.298	0.000	-0.094	0.204	0.094	0.204	0.298	0.000	0.298	0.000	0.094	-0.204	-0.094	-0.204	-0.298	0.000
7.000	3.197	-0.524	0.000	-0.338	0.186	0.338	0.186	0.524	0.000	0.524	0.000	0.338	-0.186	-0.338	-0.186	-0.524	0.000
8.000	4.136	-0.866	0.000	-0.700	0.166	0.700	0.166	0.866	0.000	0.866	0.000	0.700	-0.166	-0.700	-0.166	-0.866	0.000
9.000	7.144	-1.960	0.000	-1.856	0.103	1.856	0.103	1.960	0.000	1.960	0.000	1.856	-0.103	-1.856	-0.103	-1.960	0.000

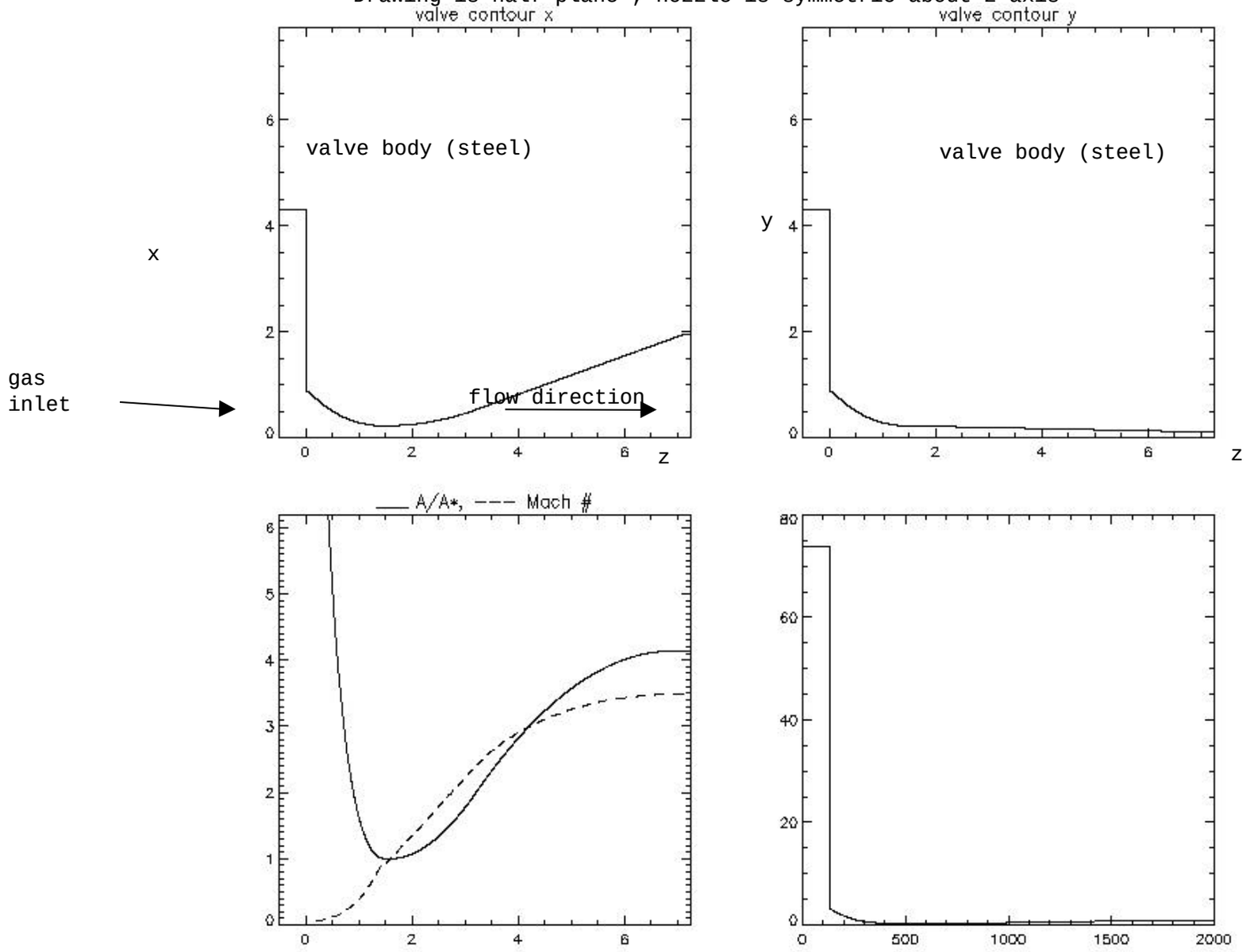
flow direction +z is out of page
center of all xsections are x,y =0,0



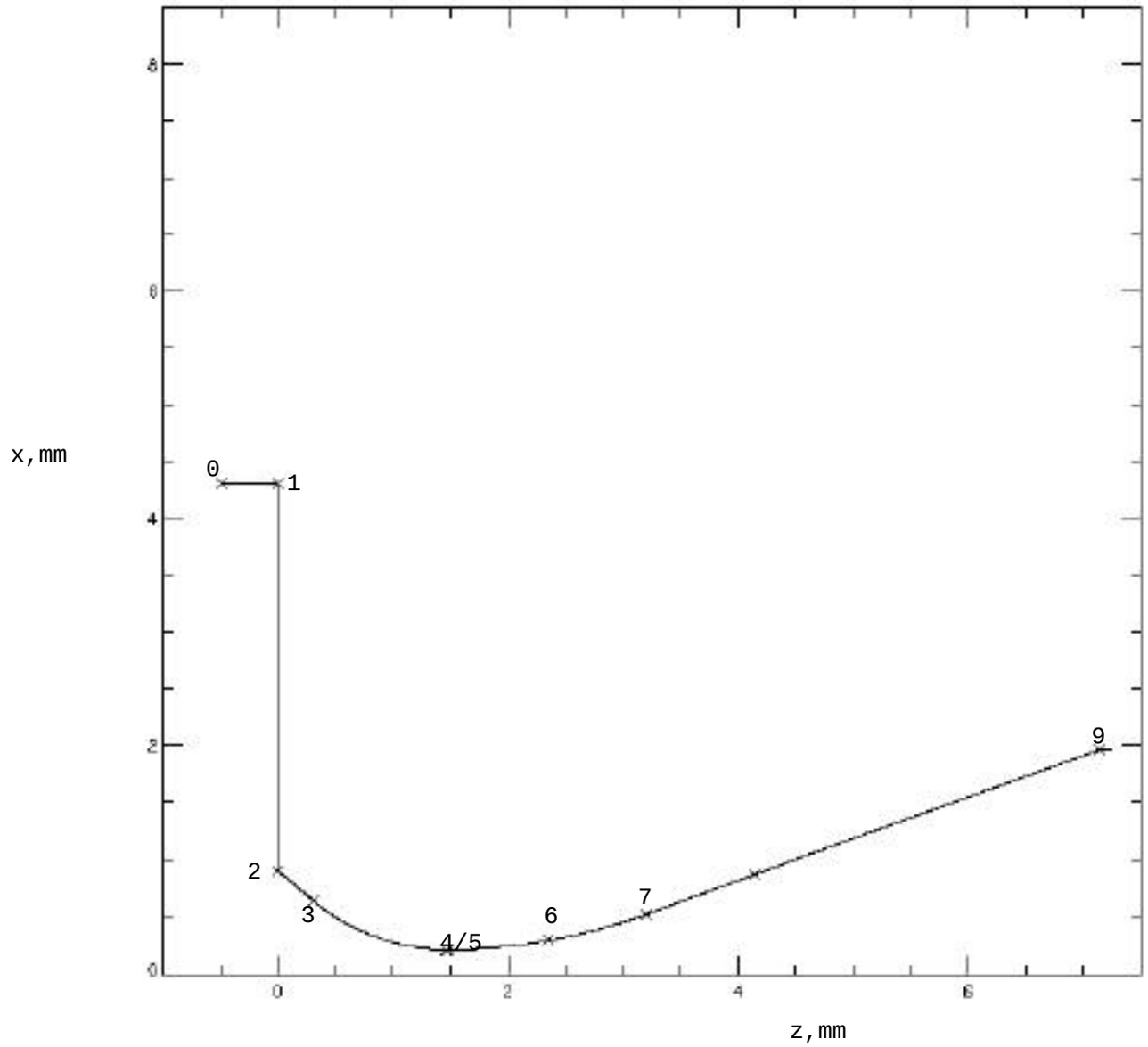
x trajectory def describes points 4,5
-x trajectory def describes points 1,8
y trajectory def describes y of points 2,3
-y trajectory def describes y of points 2,3

for round sections 2/3 and 6/7 are on top of one another

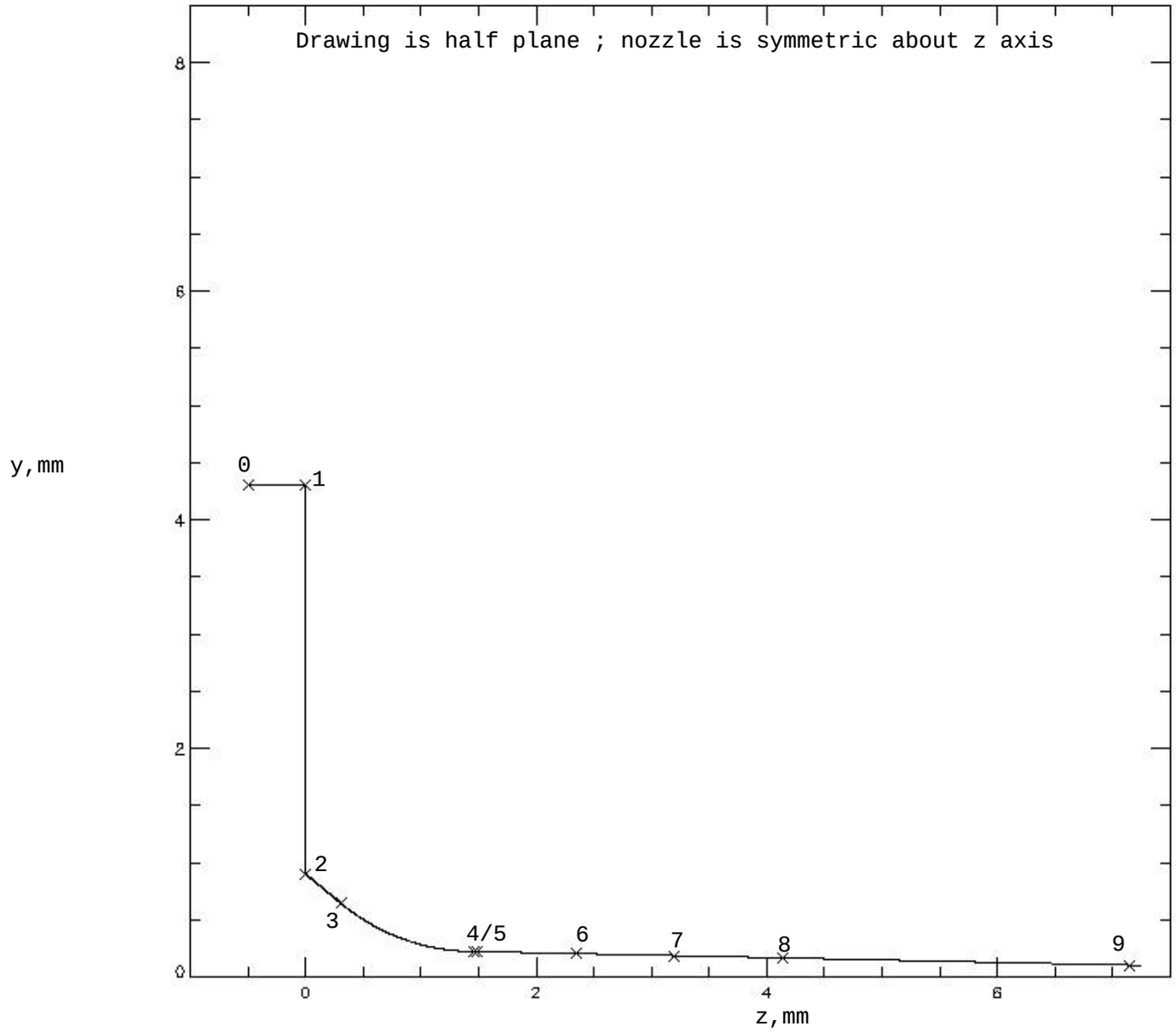
Drawing is half plane ; nozzle is symmetric about z axis



Drawing is half plane ; nozzle is symmetric about z axis



08& 02r-slit nozzle specification
detail drawing - yz plane



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comment='02r & 08b-asym straight rect nozzle w/ throat'     ;must be 25 char or less
;input segment parameters for nozzle body x
;every array must have an equal # of elements and each element specifies a segment
;radiused segments must not be 1st or last
zo1=        [0,         0,          0.001,      0.00,       0.0,        0,          0,          0,          0.0,        0]              ;
xo1=        [0,         0.,         0.9,        0.0,        0,          0,          0,          0,          0,          0]              ;
yo1=        [0,         0.,         0.9,        0.0,        0,          0,          0,          0,          0,          0]              ;
R1x=        [0,         0.,         0.0,        1.8,        0,          5.,         5.,         0,          0.,         0.]
R1y=        [0,         0.,         0.0,        1.8,        0,          0,          .0,         0.,         0,          0]
l1x=        [.5,        3.4,        .4,         .02,        0.02,       .881,       .856,       1.,         3.2,        .1]            ;l
theta1x=[0, -90,        -40,        0,          0,          10,         10,         20,         20,         0]/57.3     ;angle of segment
theta1y=[0, -90,        -40,        0,          0,          -1.2,       -1.2,       -1.2,       -1.2,       0]/57.3;unless 2 radiused seg
l1y=        l1x * cos(theta1x)/cos(theta1y)

type = 'sym'            ;asym, or sym
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