

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches

BEND RADIUS

in pipe diameters

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 9.75

BEND RADIUS, CL 12

BEND RADIUS, outside arc 14.25

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	15 5/16	15 2/16	15	14 13/16	14 10/16	14 7/16	14 5/16	14 2/16	13 15/16	13 13/16	13 10/16
OUTSIDE ARC, arc length	22 6/16	22 2/16	21 14/16	21 10/16	21 6/16	21 2/16	20 14/16	20 10/16	20 6/16	20 2/16	19 14/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	13 10/16	13 7/16	13 4/16	13 2/16	12 15/16	12 12/16	12 9/16	12 7/16	12 4/16	12 1/16	11 15/16
OUTSIDE ARC, arc length	19 14/16	19 10/16	19 6/16	19 2/16	18 14/16	18 10/16	18 6/16	18 2/16	17 15/16	17 11/16	17 7/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	11 15/16	11 12/16	11 9/16	11 6/16	11 4/16	11 1/16	10 14/16	10 12/16	10 9/16	10 6/16	10 3/16
OUTSIDE ARC, arc length	17 7/16	17 3/16	16 15/16	16 11/16	16 7/16	16 3/16	15 15/16	15 11/16	15 7/16	15 3/16	14 15/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	10 3/16	10 1/16	9 14/16	9 11/16	9 8/16	9 6/16	9 3/16	9	8 14/16	8 11/16	8 8/16
OUTSIDE ARC, arc length	14 15/16	14 11/16	14 7/16	14 3/16	13 15/16	13 11/16	13 7/16	13 3/16	12 15/16	12 11/16	12 7/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	8 8/16	8 5/16	8 3/16	8	7 13/16	7 11/16	7 8/16	7 5/16	7 2/16	7	6 13/16
OUTSIDE ARC, arc length	12 7/16	12 3/16	11 15/16	11 11/16	11 7/16	11 3/16	10 15/16	10 11/16	10 7/16	10 3/16	9 15/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	6 13/16	6 10/16	6 7/16	6 5/16	6 2/16	5 15/16	5 13/16	5 10/16	5 7/16	5 4/16	5 2/16
OUTSIDE ARC, arc length	9 15/16	9 11/16	9 7/16	9 3/16	8 15/16	8 11/16	8 7/16	8 3/16	7 15/16	7 11/16	7 7/16
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	5 2/16	4 15/16	4 12/16	4 10/16	4 7/16	4 4/16	4 1/16	3 15/16	3 12/16	3 9/16	3 6/16
OUTSIDE ARC, arc length	7 7/16	7 3/16	6 15/16	6 11/16	6 7/16	6 3/16	6	5 12/16	5 8/16	5 4/16	5
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	3 6/16	3 4/16	3 1/16	2 14/16	2 12/16	2 9/16	2 6/16	2 3/16	2 1/16	1 14/16	1 11/16
OUTSIDE ARC, arc length	5	4 12/16	4 8/16	4 4/16	4	3 12/16	3 8/16	3 4/16	3	2 12/16	2 8/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	1 11/16	1 9/16	1 6/16	1 3/16	1	14/16	11/16	8/16	5/16	3/16	0
OUTSIDE ARC, arc length	2 8/16	2 4/16	2	1 12/16	1 8/16	1 4/16	1	12/16	8/16	4/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches

BEND RADIUS

in pipe diameters

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 14.6875

BEND RADIUS, CL 18

BEND RADIUS, outside arc 21.3125

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	23 1/16	22 13/16	22 9/16	22 5/16	22 1/16	21 13/16	21 9/16	21 4/16	21	20 12/16	20 8/16
OUTSIDE ARC, arc length	33 8/16	33 2/16	32 12/16	32 6/16	32	31 10/16	31 4/16	30 14/16	30 8/16	30 2/16	29 12/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	20 8/16	20 4/16	20	19 12/16	19 8/16	19 4/16	19	18 11/16	18 7/16	18 3/16	17 15/16
OUTSIDE ARC, arc length	29 12/16	29 6/16	29	28 10/16	28 4/16	27 14/16	27 8/16	27 2/16	26 13/16	26 7/16	26 1/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	17 15/16	17 11/16	17 7/16	17 3/16	16 15/16	16 11/16	16 6/16	16 2/16	15 14/16	15 10/16	15 6/16
OUTSIDE ARC, arc length	26 1/16	25 11/16	25 5/16	24 15/16	24 9/16	24 3/16	23 13/16	23 7/16	23 1/16	22 11/16	22 5/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	15 6/16	15 2/16	14 14/16	14 10/16	14 6/16	14 2/16	13 13/16	13 9/16	13 5/16	13 1/16	12 13/16
OUTSIDE ARC, arc length	22 5/16	21 15/16	21 9/16	21 3/16	20 13/16	20 7/16	20 1/16	19 11/16	19 5/16	19	18 10/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	12 13/16	12 9/16	12 5/16	12 1/16	11 13/16	11 9/16	11 4/16	11	10 12/16	10 8/16	10 4/16
OUTSIDE ARC, arc length	18 10/16	18 4/16	17 14/16	17 8/16	17 2/16	16 12/16	16 6/16	16	15 10/16	15 4/16	14 14/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	10 4/16	10	9 12/16	9 8/16	9 4/16	9	8 11/16	8 7/16	8 3/16	7 15/16	7 11/16
OUTSIDE ARC, arc length	14 14/16	14 8/16	14 2/16	13 12/16	13 6/16	13	12 10/16	12 4/16	11 14/16	11 8/16	11 3/16
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	7 11/16	7 7/16	7 3/16	6 15/16	6 11/16	6 7/16	6 2/16	5 14/16	5 10/16	5 6/16	5 2/16
OUTSIDE ARC, arc length	11 3/16	10 13/16	10 7/16	10 1/16	9 11/16	9 5/16	8 15/16	8 9/16	8 3/16	7 13/16	7 7/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	5 2/16	4 14/16	4 10/16	4 6/16	4 2/16	3 14/16	3 9/16	3 5/16	3 1/16	2 13/16	2 9/16
OUTSIDE ARC, arc length	7 7/16	7 1/16	6 11/16	6 5/16	5 15/16	5 9/16	5 3/16	4 13/16	4 7/16	4 1/16	3 12/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	2 9/16	2 5/16	2 1/16	1 13/16	1 9/16	1 5/16	1	12/16	8/16	4/16	0
OUTSIDE ARC, arc length	3 12/16	3 6/16	3	2 10/16	2 4/16	1 14/16	1 8/16	1 2/16	12/16	6/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches

BEND RADIUS

in pipe diameters

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 19.6875

BEND RADIUS, CL 24

BEND RADIUS, outside arc 28.3125

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	30 15/16	30 9/16	30 4/16	29 14/16	29 9/16	29 3/16	28 14/16	28 8/16	28 3/16	27 13/16	27 8/16
OUTSIDE ARC, arc length	44 8/16	44	43 8/16	43	42 8/16	42	41 8/16	41	40 8/16	40	39 9/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	27 8/16	27 2/16	26 13/16	26 7/16	26 2/16	25 12/16	25 7/16	25 1/16	24 12/16	24 6/16	24 1/16
OUTSIDE ARC, arc length	39 9/16	39 1/16	38 9/16	38 1/16	37 9/16	37 1/16	36 9/16	36 1/16	35 9/16	35 1/16	34 9/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	24 1/16	23 11/16	23 6/16	23	22 11/16	22 5/16	22	21 10/16	21 5/16	20 15/16	20 10/16
OUTSIDE ARC, arc length	34 9/16	34 2/16	33 10/16	33 2/16	32 10/16	32 2/16	31 10/16	31 2/16	30 10/16	30 2/16	29 10/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	20 10/16	20 4/16	19 15/16	19 9/16	19 4/16	18 14/16	18 9/16	18 3/16	17 14/16	17 8/16	17 3/16
OUTSIDE ARC, arc length	29 10/16	29 2/16	28 11/16	28 3/16	27 11/16	27 3/16	26 11/16	26 3/16	25 11/16	25 3/16	24 11/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	17 3/16	16 13/16	16 8/16	16 2/16	15 13/16	15 7/16	15 2/16	14 12/16	14 7/16	14 1/16	13 12/16
OUTSIDE ARC, arc length	24 11/16	24 3/16	23 12/16	23 4/16	22 12/16	22 4/16	21 12/16	21 4/16	20 12/16	20 4/16	19 12/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	13 12/16	13 6/16	13 1/16	12 11/16	12 6/16	12	11 11/16	11 5/16	11	10 10/16	10 5/16
OUTSIDE ARC, arc length	19 12/16	19 4/16	18 12/16	18 5/16	17 13/16	17 5/16	16 13/16	16 5/16	15 13/16	15 5/16	14 13/16
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	10 5/16	9 15/16	9 10/16	9 4/16	8 15/16	8 9/16	8 4/16	7 14/16	7 9/16	7 3/16	6 14/16
OUTSIDE ARC, arc length	14 13/16	14 5/16	13 13/16	13 5/16	12 14/16	12 6/16	11 14/16	11 6/16	10 14/16	10 6/16	9 14/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	6 14/16	6 8/16	6 3/16	5 13/16	5 8/16	5 2/16	4 13/16	4 7/16	4 2/16	3 12/16	3 7/16
OUTSIDE ARC, arc length	9 14/16	9 6/16	8 14/16	8 6/16	7 15/16	7 7/16	6 15/16	6 7/16	5 15/16	5 7/16	4 15/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	3 7/16	3 1/16	2 12/16	2 6/16	2 1/16	1 11/16	1 6/16	1	11/16	5/16	0
OUTSIDE ARC, arc length	4 15/16	4 7/16	3 15/16	3 7/16	2 15/16	2 8/16	2	1 8/16	1	8/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches

BEND RADIUS

in pipe diameters

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 24.625

BEND RADIUS, CL 30

BEND RADIUS, outside arc 35.375

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	38 11/16	38 4/16	37 13/16	37 6/16	36 15/16	36 9/16	36 2/16	35 11/16	35 4/16	34 13/16	34 6/16
OUTSIDE ARC, arc length	55 9/16	54 15/16	54 5/16	53 11/16	53 2/16	52 8/16	51 14/16	51 4/16	50 10/16	50	49 6/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	34 6/16	33 15/16	33 8/16	33 1/16	32 11/16	32 4/16	31 13/16	31 6/16	30 15/16	30 8/16	30 1/16
OUTSIDE ARC, arc length	49 6/16	48 12/16	48 3/16	47 9/16	46 15/16	46 5/16	45 11/16	45 1/16	44 7/16	43 13/16	43 3/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	30 1/16	29 10/16	29 4/16	28 13/16	28 6/16	27 15/16	27 8/16	27 1/16	26 10/16	26 3/16	25 13/16
OUTSIDE ARC, arc length	43 3/16	42 10/16	42	41 6/16	40 12/16	40 2/16	39 8/16	38 14/16	38 4/16	37 11/16	37 1/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	25 13/16	25 6/16	24 15/16	24 8/16	24 1/16	23 10/16	23 3/16	22 12/16	22 6/16	21 15/16	21 8/16
OUTSIDE ARC, arc length	37 1/16	36 7/16	35 13/16	35 3/16	34 9/16	33 15/16	33 5/16	32 12/16	32 2/16	31 8/16	30 14/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	21 8/16	21 1/16	20 10/16	20 3/16	19 12/16	19 5/16	18 15/16	18 8/16	18 1/16	17 10/16	17 3/16
OUTSIDE ARC, arc length	30 14/16	30 4/16	29 10/16	29	28 6/16	27 13/16	27 3/16	26 9/16	25 15/16	25 5/16	24 11/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	17 3/16	16 12/16	16 5/16	15 14/16	15 8/16	15 1/16	14 10/16	14 3/16	13 12/16	13 5/16	12 14/16
OUTSIDE ARC, arc length	24 11/16	24 1/16	23 7/16	22 14/16	22 4/16	21 10/16	21	20 6/16	19 12/16	19 2/16	18 8/16
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	12 14/16	12 7/16	12 1/16	11 10/16	11 3/16	10 12/16	10 5/16	9 14/16	9 7/16	9	8 10/16
OUTSIDE ARC, arc length	18 8/16	17 14/16	17 5/16	16 11/16	16 1/16	15 7/16	14 13/16	14 3/16	13 9/16	12 15/16	12 6/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	8 10/16	8 3/16	7 12/16	7 5/16	6 14/16	6 7/16	6	5 9/16	5 3/16	4 12/16	4 5/16
OUTSIDE ARC, arc length	12 6/16	11 12/16	11 2/16	10 8/16	9 14/16	9 4/16	8 10/16	8	7 7/16	6 13/16	6 3/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	4 5/16	3 14/16	3 7/16	3	2 9/16	2 2/16	1 12/16	1 5/16	14/16	7/16	0
OUTSIDE ARC, arc length	6 3/16	5 9/16	4 15/16	4 5/16	3 11/16	3 1/16	2 8/16	1 14/16	1 4/16	10/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches 12

BEND RADIUS

in pipe diameters 3

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 29.625

BEND RADIUS, CL 36

BEND RADIUS, outside arc 42.375

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	46 9/16	46	45 8/16	45	44 7/16	43 15/16	43 7/16	42 15/16	42 6/16	41 14/16	41 6/16
OUTSIDE ARC, arc length	66 9/16	65 13/16	65 1/16	64 5/16	63 10/16	62 14/16	62 2/16	61 6/16	60 10/16	59 14/16	59 3/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	41 6/16	40 14/16	40 5/16	39 13/16	39 5/16	38 12/16	38 4/16	37 12/16	37 4/16	36 11/16	36 3/16
OUTSIDE ARC, arc length	59 3/16	58 7/16	57 11/16	56 15/16	56 3/16	55 7/16	54 12/16	54	53 4/16	52 8/16	51 12/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	36 3/16	35 11/16	35 3/16	34 10/16	34 2/16	33 10/16	33 1/16	32 9/16	32 1/16	31 9/16	31
OUTSIDE ARC, arc length	51 12/16	51	50 5/16	49 9/16	48 13/16	48 1/16	47 5/16	46 9/16	45 14/16	45 2/16	44 6/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	31	30 8/16	30	29 8/16	28 15/16	28 7/16	27 15/16	27 6/16	26 14/16	26 6/16	25 14/16
OUTSIDE ARC, arc length	44 6/16	43 10/16	42 14/16	42 2/16	41 7/16	40 11/16	39 15/16	39 3/16	38 7/16	37 11/16	37
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	25 14/16	25 5/16	24 13/16	24 5/16	23 13/16	23 4/16	22 12/16	22 4/16	21 11/16	21 3/16	20 11/16
OUTSIDE ARC, arc length	37	36 4/16	35 8/16	34 12/16	34	33 4/16	32 9/16	31 13/16	31 1/16	30 5/16	29 9/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	20 11/16	20 3/16	19 10/16	19 2/16	18 10/16	18 2/16	17 9/16	17 1/16	16 9/16	16	15 8/16
OUTSIDE ARC, arc length	29 9/16	28 13/16	28 2/16	27 6/16	26 10/16	25 14/16	25 2/16	24 6/16	23 11/16	22 15/16	22 3/16
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	15 8/16	15	14 8/16	13 15/16	13 7/16	12 15/16	12 7/16	11 14/16	11 6/16	10 14/16	10 5/16
OUTSIDE ARC, arc length	22 3/16	21 7/16	20 11/16	19 15/16	19 4/16	18 8/16	17 12/16	17	16 4/16	15 8/16	14 13/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	10 5/16	9 13/16	9 5/16	8 13/16	8 4/16	7 12/16	7 4/16	6 12/16	6 3/16	5 11/16	5 3/16
OUTSIDE ARC, arc length	14 13/16	14 1/16	13 5/16	12 9/16	11 13/16	11 1/16	10 6/16	9 10/16	8 14/16	8 2/16	7 6/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	5 3/16	4 10/16	4 2/16	3 10/16	3 2/16	2 9/16	2 1/16	1 9/16	1 1/16	8/16	0
OUTSIDE ARC, arc length	7 6/16	6 10/16	5 15/16	5 3/16	4 7/16	3 11/16	2 15/16	2 3/16	1 8/16	12/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches 14

BEND RADIUS

in pipe diameters 3

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 35

BEND RADIUS, CL 42

BEND RADIUS, outside arc 49

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	55	54 6/16	53 12/16	53 2/16	52 9/16	51 15/16	51 5/16	50 11/16	50 1/16	49 8/16	48 14/16
OUTSIDE ARC, arc length	77	76 2/16	75 4/16	74 6/16	73 9/16	72 11/16	71 13/16	71	70 2/16	69 4/16	68 7/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	48 14/16	48 4/16	47 10/16	47 1/16	46 7/16	45 13/16	45 3/16	44 9/16	44	43 6/16	42 12/16
OUTSIDE ARC, arc length	68 7/16	67 9/16	66 11/16	65 14/16	65	64 2/16	63 5/16	62 7/16	61 9/16	60 12/16	59 14/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	42 12/16	42 2/16	41 9/16	40 15/16	40 5/16	39 11/16	39 2/16	38 8/16	37 14/16	37 4/16	36 10/16
OUTSIDE ARC, arc length	59 14/16	59	58 2/16	57 5/16	56 7/16	55 9/16	54 12/16	53 14/16	53	52 3/16	51 5/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	36 10/16	36 1/16	35 7/16	34 13/16	34 3/16	33 10/16	33	32 6/16	31 12/16	31 2/16	30 9/16
OUTSIDE ARC, arc length	51 5/16	50 7/16	49 10/16	48 12/16	47 14/16	47 1/16	46 3/16	45 5/16	44 8/16	43 10/16	42 12/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	30 9/16	29 15/16	29 5/16	28 11/16	28 2/16	27 8/16	26 14/16	26 4/16	25 11/16	25 1/16	24 7/16
OUTSIDE ARC, arc length	42 12/16	41 14/16	41 1/16	40 3/16	39 5/16	38 8/16	37 10/16	36 12/16	35 15/16	35 1/16	34 3/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	24 7/16	23 13/16	23 3/16	22 10/16	22	21 6/16	20 12/16	20 3/16	19 9/16	18 15/16	18 5/16
OUTSIDE ARC, arc length	34 3/16	33 6/16	32 8/16	31 10/16	30 13/16	29 15/16	29 1/16	28 4/16	27 6/16	26 8/16	25 11/16
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	18 5/16	17 11/16	17 2/16	16 8/16	15 14/16	15 4/16	14 11/16	14 1/16	13 7/16	12 13/16	12 3/16
OUTSIDE ARC, arc length	25 11/16	24 13/16	23 15/16	23 1/16	22 4/16	21 6/16	20 8/16	19 11/16	18 13/16	17 15/16	17 2/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	12 3/16	11 10/16	11	10 6/16	9 12/16	9 3/16	8 9/16	7 15/16	7 5/16	6 12/16	6 2/16
OUTSIDE ARC, arc length	17 2/16	16 4/16	15 6/16	14 9/16	13 11/16	12 13/16	12	11 2/16	10 4/16	9 7/16	8 9/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	6 2/16	5 8/16	4 14/16	4 4/16	3 11/16	3 1/16	2 7/16	1 13/16	1 4/16	10/16	0
OUTSIDE ARC, arc length	8 9/16	7 11/16	6 13/16	6	5 2/16	4 4/16	3 7/16	2 9/16	1 11/16	14/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches

BEND RADIUS

in pipe diameters

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 40

BEND RADIUS, CL 48

BEND RADIUS, outside arc 56

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	62 13/16	62 2/16	61 7/16	60 12/16	60 1/16	59 5/16	58 10/16	57 15/16	57 4/16	56 9/16	55 14/16
OUTSIDE ARC, arc length	87 15/16	87	86	85 1/16	84 1/16	83 1/16	82 2/16	81 2/16	80 2/16	79 3/16	78 3/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	55 14/16	55 2/16	54 7/16	53 12/16	53 1/16	52 6/16	51 11/16	50 15/16	50 4/16	49 9/16	48 14/16
OUTSIDE ARC, arc length	78 3/16	77 3/16	76 4/16	75 4/16	74 4/16	73 5/16	72 5/16	71 6/16	70 6/16	69 6/16	68 7/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	48 14/16	48 3/16	47 8/16	46 12/16	46 1/16	45 6/16	44 11/16	44	43 5/16	42 9/16	41 14/16
OUTSIDE ARC, arc length	68 7/16	67 7/16	66 7/16	65 8/16	64 8/16	63 8/16	62 9/16	61 9/16	60 10/16	59 10/16	58 10/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	41 14/16	41 3/16	40 8/16	39 13/16	39 2/16	38 6/16	37 11/16	37	36 5/16	35 10/16	34 15/16
OUTSIDE ARC, arc length	58 10/16	57 11/16	56 11/16	55 11/16	54 12/16	53 12/16	52 12/16	51 13/16	50 13/16	49 14/16	48 14/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	34 15/16	34 3/16	33 8/16	32 13/16	32 2/16	31 7/16	30 11/16	30	29 5/16	28 10/16	27 15/16
OUTSIDE ARC, arc length	48 14/16	47 14/16	46 15/16	45 15/16	44 15/16	44	43	42	41 1/16	40 1/16	39 2/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	27 15/16	27 4/16	26 8/16	25 13/16	25 2/16	24 7/16	23 12/16	23 1/16	22 5/16	21 10/16	20 15/16
OUTSIDE ARC, arc length	39 2/16	38 2/16	37 2/16	36 3/16	35 3/16	34 3/16	33 4/16	32 4/16	31 4/16	30 5/16	29 5/16
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	20 15/16	20 4/16	19 9/16	18 14/16	18 2/16	17 7/16	16 12/16	16 1/16	15 6/16	14 11/16	13 15/16
OUTSIDE ARC, arc length	29 5/16	28 6/16	27 6/16	26 6/16	25 7/16	24 7/16	23 7/16	22 8/16	21 8/16	20 8/16	19 9/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	13 15/16	13 4/16	12 9/16	11 14/16	11 3/16	10 8/16	9 12/16	9 1/16	8 6/16	7 11/16	7
OUTSIDE ARC, arc length	19 9/16	18 9/16	17 9/16	16 10/16	15 10/16	14 11/16	13 11/16	12 11/16	11 12/16	10 12/16	9 12/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	7	6 5/16	5 9/16	4 14/16	4 3/16	3 8/16	2 13/16	2 2/16	1 6/16	11/16	0
OUTSIDE ARC, arc length	9 12/16	8 13/16	7 13/16	6 13/16	5 14/16	4 14/16	3 15/16	2 15/16	1 15/16	1	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches 18

BEND RADIUS

in pipe diameters 3

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 45

BEND RADIUS, CL 54

BEND RADIUS, outside arc 63

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	70 11/16	69 14/16	69 2/16	68 5/16	67 9/16	66 12/16	66	65 3/16	64 6/16	63 10/16	62 13/16
OUTSIDE ARC, arc length	98 15/16	97 14/16	96 12/16	95 11/16	94 9/16	93 7/16	92 6/16	91 4/16	90 3/16	89 1/16	87 15/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	62 13/16	62 1/16	61 4/16	60 8/16	59 11/16	58 14/16	58 2/16	57 5/16	56 9/16	55 12/16	55
OUTSIDE ARC, arc length	87 15/16	86 14/16	85 12/16	84 11/16	83 9/16	82 7/16	81 6/16	80 4/16	79 3/16	78 1/16	77
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	55	54 3/16	53 7/16	52 10/16	51 13/16	51 1/16	50 4/16	49 8/16	48 11/16	47 15/16	47 2/16
OUTSIDE ARC, arc length	77	75 14/16	74 12/16	73 11/16	72 9/16	71 8/16	70 6/16	69 4/16	68 3/16	67 1/16	66
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	47 2/16	46 5/16	45 9/16	44 12/16	44	43 3/16	42 7/16	41 10/16	40 13/16	40 1/16	39 4/16
OUTSIDE ARC, arc length	66	64 14/16	63 12/16	62 11/16	61 9/16	60 8/16	59 6/16	58 4/16	57 3/16	56 1/16	55
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	39 4/16	38 8/16	37 11/16	36 15/16	36 2/16	35 5/16	34 9/16	33 12/16	33	32 3/16	31 7/16
OUTSIDE ARC, arc length	55	53 14/16	52 12/16	51 11/16	50 9/16	49 8/16	48 6/16	47 4/16	46 3/16	45 1/16	44
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	31 7/16	30 10/16	29 14/16	29 1/16	28 4/16	27 8/16	26 11/16	25 15/16	25 2/16	24 6/16	23 9/16
OUTSIDE ARC, arc length	44	42 14/16	41 13/16	40 11/16	39 9/16	38 8/16	37 6/16	36 5/16	35 3/16	34 1/16	33
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	23 9/16	22 12/16	22	21 3/16	20 7/16	19 10/16	18 14/16	18 1/16	17 4/16	16 8/16	15 11/16
OUTSIDE ARC, arc length	33	31 14/16	30 13/16	29 11/16	28 9/16	27 8/16	26 6/16	25 5/16	24 3/16	23 1/16	22
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	15 11/16	14 15/16	14 2/16	13 6/16	12 9/16	11 12/16	11	10 3/16	9 7/16	8 10/16	7 14/16
OUTSIDE ARC, arc length	22	20 14/16	19 13/16	18 11/16	17 9/16	16 8/16	15 6/16	14 5/16	13 3/16	12 2/16	11
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	7 14/16	7 1/16	6 5/16	5 8/16	4 11/16	3 15/16	3 2/16	2 6/16	1 9/16	13/16	0
OUTSIDE ARC, arc length	11	9 14/16	8 13/16	7 11/16	6 10/16	5 8/16	4 6/16	3 5/16	2 3/16	1 2/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches

BEND RADIUS

in pipe diameters

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 50

BEND RADIUS, CL 60

BEND RADIUS, outside arc 70

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	78 9/16	77 11/16	76 13/16	75 15/16	75 1/16	74 3/16	73 5/16	72 7/16	71 9/16	70 11/16	69 13/16
OUTSIDE ARC, arc length	109 15/16	108 12/16	107 8/16	106 5/16	105 1/16	103 14/16	102 10/16	101 6/16	100 3/16	98 15/16	97 12/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	69 13/16	68 15/16	68 1/16	67 3/16	66 5/16	65 7/16	64 9/16	63 11/16	62 13/16	61 15/16	61 1/16
OUTSIDE ARC, arc length	97 12/16	96 8/16	95 5/16	94 1/16	92 14/16	91 10/16	90 7/16	89 3/16	87 15/16	86 12/16	85 8/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	61 1/16	60 3/16	59 5/16	58 7/16	57 10/16	56 12/16	55 14/16	55	54 2/16	53 4/16	52 6/16
OUTSIDE ARC, arc length	85 8/16	84 5/16	83 1/16	81 14/16	80 10/16	79 7/16	78 3/16	77	75 12/16	74 8/16	73 5/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	52 6/16	51 8/16	50 10/16	49 12/16	48 14/16	48	47 2/16	46 4/16	45 6/16	44 8/16	43 10/16
OUTSIDE ARC, arc length	73 5/16	72 1/16	70 14/16	69 10/16	68 7/16	67 3/16	66	64 12/16	63 8/16	62 5/16	61 1/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	43 10/16	42 12/16	41 14/16	41	40 2/16	39 4/16	38 6/16	37 8/16	36 10/16	35 12/16	34 15/16
OUTSIDE ARC, arc length	61 1/16	59 14/16	58 10/16	57 7/16	56 3/16	55	53 12/16	52 9/16	51 5/16	50 1/16	48 14/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	34 15/16	34 1/16	33 3/16	32 5/16	31 7/16	30 9/16	29 11/16	28 13/16	27 15/16	27 1/16	26 3/16
OUTSIDE ARC, arc length	48 14/16	47 10/16	46 7/16	45 3/16	44	42 12/16	41 9/16	40 5/16	39 2/16	37 14/16	36 10/16
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	26 3/16	25 5/16	24 7/16	23 9/16	22 11/16	21 13/16	20 15/16	20 1/16	19 3/16	18 5/16	17 7/16
OUTSIDE ARC, arc length	36 10/16	35 7/16	34 3/16	33	31 12/16	30 9/16	29 5/16	28 2/16	26 14/16	25 11/16	24 7/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	17 7/16	16 9/16	15 11/16	14 13/16	13 15/16	13 1/16	12 3/16	11 6/16	10 8/16	9 10/16	8 12/16
OUTSIDE ARC, arc length	24 7/16	23 3/16	22	20 12/16	19 9/16	18 5/16	17 2/16	15 14/16	14 11/16	13 7/16	12 3/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	8 12/16	7 14/16	7	6 2/16	5 4/16	4 6/16	3 8/16	2 10/16	1 12/16	14/16	0
OUTSIDE ARC, arc length	12 3/16	11	9 12/16	8 9/16	7 5/16	6 2/16	4 14/16	3 11/16	2 7/16	1 4/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches 24

BEND RADIUS

in pipe diameters 3

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 60

BEND RADIUS, CL 72

BEND RADIUS, outside arc 84

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	94 4/16	93 3/16	92 2/16	91 2/16	90 1/16	89	87 15/16	86 15/16	85 14/16	84 13/16	83 12/16
OUTSIDE ARC, arc length	131 15/16	130 8/16	129	127 9/16	126 1/16	124 10/16	123 2/16	121 11/16	120 3/16	118 12/16	117 5/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	83 12/16	82 12/16	81 11/16	80 10/16	79 9/16	78 9/16	77 8/16	76 7/16	75 6/16	74 6/16	73 5/16
OUTSIDE ARC, arc length	117 5/16	115 13/16	114 6/16	112 14/16	111 7/16	109 15/16	108 8/16	107	105 9/16	104 1/16	102 10/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	73 5/16	72 4/16	71 3/16	70 3/16	69 2/16	68 1/16	67	66	64 15/16	63 14/16	62 13/16
OUTSIDE ARC, arc length	102 10/16	101 3/16	99 11/16	98 4/16	96 12/16	95 5/16	93 13/16	92 6/16	90 14/16	89 7/16	87 15/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	62 13/16	61 13/16	60 12/16	59 11/16	58 10/16	57 10/16	56 9/16	55 8/16	54 7/16	53 7/16	52 6/16
OUTSIDE ARC, arc length	87 15/16	86 8/16	85 1/16	83 9/16	82 2/16	80 10/16	79 3/16	77 11/16	76 4/16	74 12/16	73 5/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	52 6/16	51 5/16	50 4/16	49 3/16	48 3/16	47 2/16	46 1/16	45	44	42 15/16	41 14/16
OUTSIDE ARC, arc length	73 5/16	71 13/16	70 6/16	68 14/16	67 7/16	66	64 8/16	63 1/16	61 9/16	60 2/16	58 10/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	41 14/16	40 13/16	39 13/16	38 12/16	37 11/16	36 10/16	35 10/16	34 9/16	33 8/16	32 7/16	31 7/16
OUTSIDE ARC, arc length	58 10/16	57 3/16	55 11/16	54 4/16	52 12/16	51 5/16	49 14/16	48 6/16	46 15/16	45 7/16	44
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	31 7/16	30 6/16	29 5/16	28 4/16	27 4/16	26 3/16	25 2/16	24 1/16	23 1/16	22	20 15/16
OUTSIDE ARC, arc length	44	42 8/16	41 1/16	39 9/16	38 2/16	36 10/16	35 3/16	33 12/16	32 4/16	30 13/16	29 5/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	20 15/16	19 14/16	18 14/16	17 13/16	16 12/16	15 11/16	14 11/16	13 10/16	12 9/16	11 8/16	10 8/16
OUTSIDE ARC, arc length	29 5/16	27 14/16	26 6/16	24 15/16	23 7/16	22	20 8/16	19 1/16	17 9/16	16 2/16	14 11/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	10 8/16	9 7/16	8 6/16	7 5/16	6 5/16	5 4/16	4 3/16	3 2/16	2 2/16	1 1/16	0
OUTSIDE ARC, arc length	14 11/16	13 3/16	11 12/16	10 4/16	8 13/16	7 5/16	5 14/16	4 6/16	2 15/16	1 7/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches

BEND RADIUS

in pipe diameters

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 75

BEND RADIUS, CL 90

BEND RADIUS, outside arc 105

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	117 13/16	116 8/16	115 3/16	113 14/16	112 9/16	111 4/16	109 15/16	108 10/16	107 5/16	106	104 12/16
OUTSIDE ARC, arc length	164 15/16	163 2/16	161 4/16	159 7/16	157 10/16	155 12/16	153 15/16	152 2/16	150 4/16	148 7/16	146 10/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	104 12/16	103 7/16	102 2/16	100 13/16	99 8/16	98 3/16	96 14/16	95 9/16	94 4/16	92 15/16	91 10/16
OUTSIDE ARC, arc length	146 10/16	144 12/16	142 15/16	141 2/16	139 4/16	137 7/16	135 10/16	133 12/16	131 15/16	130 2/16	128 5/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	91 10/16	90 5/16	89	87 11/16	86 6/16	85 1/16	83 12/16	82 7/16	81 3/16	79 14/16	78 9/16
OUTSIDE ARC, arc length	128 5/16	126 7/16	124 10/16	122 13/16	120 15/16	119 2/16	117 5/16	115 7/16	113 10/16	111 13/16	109 15/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	78 9/16	77 4/16	75 15/16	74 10/16	73 5/16	72	70 11/16	69 6/16	68 1/16	66 12/16	65 7/16
OUTSIDE ARC, arc length	109 15/16	108 2/16	106 5/16	104 7/16	102 10/16	100 13/16	98 15/16	97 2/16	95 5/16	93 7/16	91 10/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	65 7/16	64 2/16	62 13/16	61 8/16	60 3/16	58 14/16	57 10/16	56 5/16	55	53 11/16	52 6/16
OUTSIDE ARC, arc length	91 10/16	89 13/16	87 15/16	86 2/16	84 5/16	82 7/16	80 10/16	78 13/16	77	75 2/16	73 5/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	52 6/16	51 1/16	49 12/16	48 7/16	47 2/16	45 13/16	44 8/16	43 3/16	41 14/16	40 9/16	39 4/16
OUTSIDE ARC, arc length	73 5/16	71 8/16	69 10/16	67 13/16	66	64 2/16	62 5/16	60 8/16	58 10/16	56 13/16	55
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	39 4/16	37 15/16	36 10/16	35 5/16	34 1/16	32 12/16	31 7/16	30 2/16	28 13/16	27 8/16	26 3/16
OUTSIDE ARC, arc length	55	53 2/16	51 5/16	49 8/16	47 10/16	45 13/16	44	42 2/16	40 5/16	38 8/16	36 10/16
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	26 3/16	24 14/16	23 9/16	22 4/16	20 15/16	19 10/16	18 5/16	17	15 11/16	14 6/16	13 1/16
OUTSIDE ARC, arc length	36 10/16	34 13/16	33	31 2/16	29 5/16	27 8/16	25 11/16	23 13/16	22	20 3/16	18 5/16
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	13 1/16	11 12/16	10 8/16	9 3/16	7 14/16	6 9/16	5 4/16	3 15/16	2 10/16	1 5/16	0
OUTSIDE ARC, arc length	18 5/16	16 8/16	14 11/16	12 13/16	11	9 3/16	7 5/16	5 8/16	3 11/16	1 13/16	0

PIPE BEND DIMENSIONS

VARIABLES

PIPE SIZE

nominal, in inches 36

BEND RADIUS

in pipe diameters 3

CALCULATED BEND RADIUS VALUES (NOT ACTUAL INSIDE OR OUTSIDE ARC LENGTHS)

BEND RADIUS, inside arc 90

BEND RADIUS, CL 108

BEND RADIUS, outside arc 126

BEND ANGLE	90	89	88	87	86	85	84	83	82	81	80
INSIDE ARC, arc length	141 6/16	139 13/16	138 4/16	136 11/16	135 1/16	133 8/16	131 15/16	130 6/16	128 13/16	127 4/16	125 11/16
OUTSIDE ARC, arc length	197 15/16	195 12/16	193 8/16	191 5/16	189 2/16	186 15/16	184 12/16	182 8/16	180 5/16	178 2/16	175 15/16
BEND ANGLE	80	79	78	77	76	75	74	73	72	71	70
INSIDE ARC, arc length	125 11/16	124 1/16	122 8/16	120 15/16	119 6/16	117 13/16	116 4/16	114 11/16	113 2/16	111 8/16	109 15/16
OUTSIDE ARC, arc length	175 15/16	173 12/16	171 8/16	169 5/16	167 2/16	164 15/16	162 12/16	160 9/16	158 5/16	156 2/16	153 15/16
BEND ANGLE	70	69	68	67	66	65	64	63	62	61	60
INSIDE ARC, arc length	109 15/16	108 6/16	106 13/16	105 4/16	103 11/16	102 2/16	100 8/16	98 15/16	97 6/16	95 13/16	94 4/16
OUTSIDE ARC, arc length	153 15/16	151 12/16	149 9/16	147 5/16	145 2/16	142 15/16	140 12/16	138 9/16	136 6/16	134 2/16	131 15/16
BEND ANGLE	60	59	58	57	56	55	54	53	52	51	50
INSIDE ARC, arc length	94 4/16	92 11/16	91 2/16	89 9/16	87 15/16	86 6/16	84 13/16	83 4/16	81 11/16	80 2/16	78 9/16
OUTSIDE ARC, arc length	131 15/16	129 12/16	127 9/16	125 6/16	123 2/16	120 15/16	118 12/16	116 9/16	114 6/16	112 2/16	109 15/16
BEND ANGLE	50	49	48	47	46	45	44	43	42	41	40
INSIDE ARC, arc length	78 9/16	77	75 6/16	73 13/16	72 4/16	70 11/16	69 2/16	67 9/16	66	64 6/16	62 13/16
OUTSIDE ARC, arc length	109 15/16	107 12/16	105 9/16	103 6/16	101 3/16	98 15/16	96 12/16	94 9/16	92 6/16	90 3/16	87 15/16
BEND ANGLE	40	39	38	37	36	35	34	33	32	31	30
INSIDE ARC, arc length	62 13/16	61 4/16	59 11/16	58 2/16	56 9/16	55	53 7/16	51 13/16	50 4/16	48 11/16	47 2/16
OUTSIDE ARC, arc length	87 15/16	85 12/16	83 9/16	81 6/16	79 3/16	77	74 12/16	72 9/16	70 6/16	68 3/16	66
BEND ANGLE	30	29	28	27	26	25	24	23	22	21	20
INSIDE ARC, arc length	47 2/16	45 9/16	44	42 7/16	40 13/16	39 4/16	37 11/16	36 2/16	34 9/16	33	31 7/16
OUTSIDE ARC, arc length	66	63 12/16	61 9/16	59 6/16	57 3/16	55	52 12/16	50 9/16	48 6/16	46 3/16	44
BEND ANGLE	20	19	18	17	16	15	14	13	12	11	10
INSIDE ARC, arc length	31 7/16	29 14/16	28 4/16	26 11/16	25 2/16	23 9/16	22	20 7/16	18 14/16	17 4/16	15 11/16
OUTSIDE ARC, arc length	44	41 13/16	39 9/16	37 6/16	35 3/16	33	30 13/16	28 9/16	26 6/16	24 3/16	22
BEND ANGLE	10	9	8	7	6	5	4	3	2	1	0
INSIDE ARC, arc length	15 11/16	14 2/16	12 9/16	11	9 7/16	7 14/16	6 5/16	4 11/16	3 2/16	1 9/16	0
OUTSIDE ARC, arc length	22	19 13/16	17 9/16	15 6/16	13 3/16	11	8 13/16	6 10/16	4 6/16	2 3/16	0