



Tubesheet and Bundle Measuring Guide

The following instructions are guidelines only. Tube bundles should be removed from the shell, whenever possible, to provide confirmation of all dimensions.

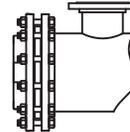
To obtain the diameter of a tubesheet that is inside the flange bolt circle, follow the instructions. (See sketch "A" below).

Step 1 - **Find the circumference of the shell flange;** Simply measure around the shell flange with a flexible measuring tape.

Step 2 - **Find the diameter of the shell flange;** Refer to the conversion table or use the formula provided on the reverse side.

Step 3 - **Find the difference between the O.D. of the shell flange and the O.D. of the tubesheet;** Measure the distance from the O.D. of the shell flange down to the O.D. of the tubesheet preferably with a depth gauge, measure at 3 - 6 - 9 and 12 o'clock positions. Average these measurements, and double that number. Which will be the difference between the two diameters.

Step 4 - **Find the tubesheet diameter;** Simply subtract the calculations (found in Step 3) from the shell flange O.D. (found in Step 2), this will give you the tubesheet diameter.



Sketch "A"

To obtain the on center diameter of the bolt circle on heat exchangers with full diameter tubesheets (See sketch "B" below).

Step 1 - **Find the circumference of the shell flange;** Simply measure around the outside of the shell flange with a flexible measuring tape.

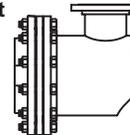
Step 2 - **Find the O.D. of the shell flange;** Refer to the conversion table, or use the formula provided on the reverse side.

Step 3 - **Find the O.D. of the bolt circle;** Measure the distance from the O.D. of the shell flange down to the O.D. of the bolt circle, preferably with a depth gauge. Measure at 3 - 6 - 9 and 12 o'clock positions, and average those dimensions, then multiply by 2, then subtract that answer from the O.D. of the shell flange (found in Step 2). This will give you the O.D. of the bolt circle.

Step 4 - **Find the on center diameter of the bolt circle;** Measure the diameter of a flange bolt and subtract this amount from the O.D. of the bolt circle (found in Step 3) and you'll have the on center diameter of the bolt circle.

Note: **Also measure the distance between bolt centers, and count the number of bolts in the circle, and provide this info when ordering your tube bundle along with the calculated length of the tube bundle. (See sketch "C" on the reverse side). Also note any special baffle requirements.**

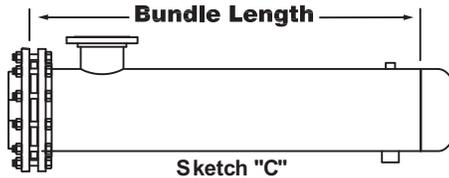
Tubesheet Measurement Worksheets are available on our website at www.thrushco.com



Sketch "B"

Measuring the Shell to Estimate the Bundle Length

Measure the distance from the tubeside gasket to the cap weld.



Circumference to Diameter Conversion

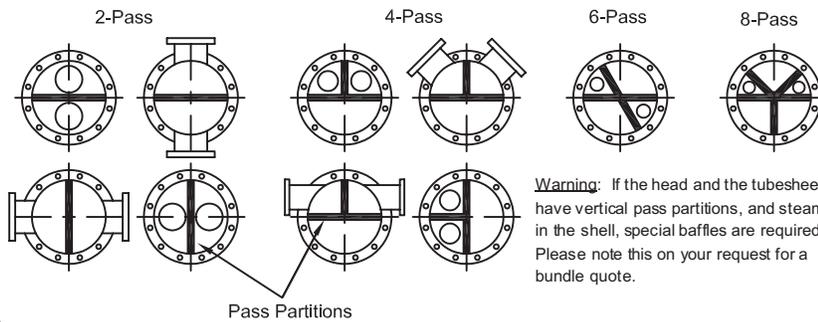
Circum.	Dia.	Circum.	Dia.	Circum.	Dia.	Circum.	Dia.
15 - 11/16	5	40 - 1/16	12 - 3/4	66	21	97 - 3/16	30 - 15/16
17 - 1/4	5 - 1/2	42 - 7/16	13 - 1/2	68 - 3/8	21 - 3/4	97 - 3/8	31
18 - 7/8	6	44	14	69 - 1/8	22	98 - 3/16	31 - 1/4
19 - 7/16	6 - 3/16	45 - 3/16	14 - 3/8	72 - 1/4	23	98 - 15/16	31 - 1/2
22	7	45 - 15/16	14 - 5/8	73 - 13/16	23 - 1/2	100 - 1/2	32
22 - 3/4	7 - 1/4	47 - 1/8	15	75	23 - 7/8	102 - 1/2	32 - 5/8
23	7 - 5/16	49 - 1/16	15 - 5/8	75 - 1/2	24	103 - 1/2	32 - 15/16
23 - 9/16	7 - 1/2	50 - 1/4	16	78 - 9/16	25	103 - 11/16	33
25 - 1/8	8	51 - 1/16	16 - 1/4	81 - 1/8	25 - 1/2	106	33 - 3/4
25 - 15/16	8 - 1/4	52 - 1/4	16 - 5/8	81 - 11/16	26	106 - 13/16	34
26 - 5/16	8 - 3/8	53 - 7/16	17	82 - 1/16	26 - 1/8	107 - 5/8	34 - 1/4
26 - 11/16	8 - 1/2	55	17 - 1/2	84 - 13/16	27	108 - 3/4	34 - 5/8
28 - 1/4	9	55 - 3/8	17 - 5/8	85 - 1/2	27 - 1/4	109 - 3/4	34 - 15/16
31 - 7/16	10	56 - 3/16	17 - 7/8	87 - 15/16	28	109 - 15/16	35
32 - 9/16	10 - 3/8	56 - 9/16	18	88 - 1/4	28 - 1/8	113	36
33	10 - 1/2	58 - 1/8	18 - 1/2	91	29	114 - 11/16	36 - 1/2
33 - 3/8	10 - 5/8	59 - 11/16	19	91 - 7/8	29 - 1/4	119 - 3/8	38
34 - 9/16	11	62 - 1/16	19 - 3/4	92 - 11/16	29 - 1/2	121 - 3/4	38 - 3/4
37 - 11/16	12	62 - 7/16	19 - 7/8	94 - 1/4	30	125 - 11/16	40
38 - 7/8	12 - 3/8	62 - 13/16	20	95 - 13/16	30 - 1/2	128 - 13/16	41
39 - 1/4	12 - 1/2	64 - 1/2	20 - 1/2	96 - 3/16	30 - 5/8	131 - 15/16	42

Formulas:

Circumference = Diameter x π (3.14)

Diameter = Circumference ÷ π (3.14)

Tube Passes for Common Head Styles



Warning: If the head and the tubesheet have vertical pass partitions, and steam in the shell, special baffles are required. Please note this on your request for a bundle quote.