

RECOMMENDED EXPANSION OF TUBES FOR OPTIMUM JOINT STRENGTH IN HEAT EXCHANGERS AND CONDENSERS

Use expansion listed in tube expansion column plus clearance between tube O.D. and sheet hole I.D.

Recommended expansion may be plus or minus .001".

| O.D. Size | GA | Tube Expansion | O.D. Size | GA | Tube Expansion | O.D. Size | GA | Tube Expansion |
|-----------|----|----------------|-----------|----|----------------|-----------|----|----------------|
| 1/2" | 14 | .006" | 3/4" | 10 | .008" | 1-1/4" | 8 | .010" |
| 1/2" | 15 | .006" | 3/4" | 11 | .008" | 1-1/4" | 10 | .010" |
| 1/2" | 16 | .006" | 3/4" | 12 | .008" | 1-1/4" | 12 | .009" |
| 1/2" | 17 | .005" | 3/4" | 13 | .008" | 1-1/4" | 14 | .008" |
| 1/2" | 18 | .005" | 3/4" | 14 | .008" | 1-1/4" | 16 | .007" |
| 1/2" | 19 | .004" | 3/4" | 15 | .007" | 1-1/4" | 18 | .006" |
| 1/2" | 20 | .004" | 3/4" | 16 | .006" | | | |
| 1/2" | 21 | .004" | 3/4" | 17 | .005" | 1-1/2" | 8 | .012" |
| | | | 3/4" | 18 | .005" | 1-1/2" | 10 | .012" |
| 5/8" | 12 | .006" | 3/4" | 19 | .005" | 1-1/2" | 12 | .010" |
| 5/8" | 13 | .006" | 3/4" | 20 | .005" | 1-1/2" | 14 | .010" |
| 5/8" | 14 | .006" | 3/4" | 21 | .004" | 1-1/2" | 16 | .008" |
| 5/8" | 15 | .006" | | | | 1-1/2" | 18 | .008" |
| 5/8" | 16 | .006" | 1" | 8 | .009" | | | |
| 5/8" | 17 | .005" | 1" | 9 | .009" | 2" | 8 | .012" |
| 5/8" | 18 | .005" | 1" | 10 | .009" | 2" | 10 | .012" |
| 5/8" | 19 | .004" | 1" | 11 | .009" | 2" | 12 | .011" |
| 5/8" | 20 | .004" | 1" | 12 | .009" | 2" | 14 | .010" |
| 5/8" | 21 | .004" | 1" | 13 | .008" | 2" | 16 | .008" |
| | | | 1" | 14 | .008" | 2" | 18 | .008" |
| | | | 1" | 15 | .007" | | | |
| | | | 1" | 16 | .006" | | | |
| | | | 1" | 17 | .005" | | | |
| | | | 1" | 18 | .005" | | | |

ADDITIONAL SIZES

1/4" O.D. tube - expand all gauges .003" after contact with tube sheet hole
 3/8" O.D. tube - expand all gauges .004" after contact with tube sheet hole

EXAMPLE

3/4" O.D. x 14 gauge tubes

Recommended expansion..... .008"
 Tube sheet hole760"

Therefore, expand as follows:

Tube I.D. before expanding584"
 Recommended expansion..... .008"
 Clearance between tube & tube sheet hole010"
 FINISH I.D.602"

The above recommendation is based on our experience. However, this does not constitute a guarantee because of the great variety of materials, tubes and tube sheets used. Some conditions will require experimental rolling to be certain that the rolled joints will be satisfactory.