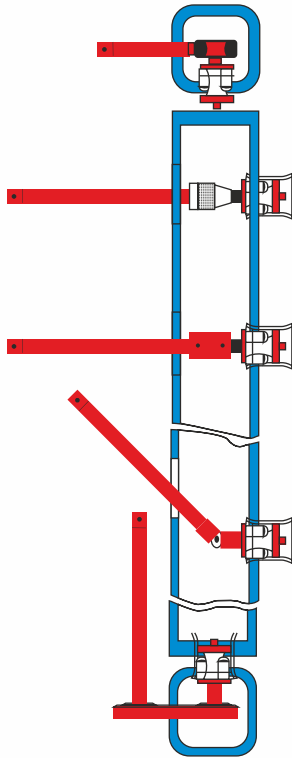


# Boiler Tube Expanders

## 'TAF3' Series (Flare) - 3 Plain Rollers & 3 Flare Rollers

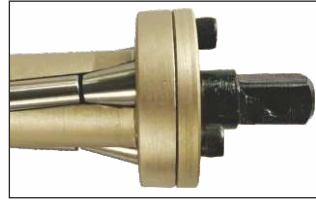
- Offset flare rolls eliminates ridges
- Rolls retained in cage when mandrel is removed

Tritorc offers solutions to overcome any installation problem

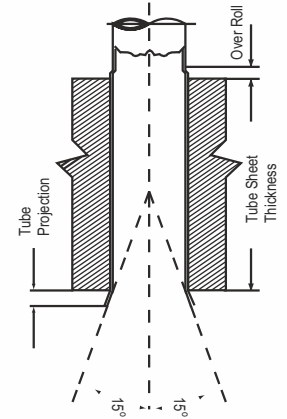


The various drive accessories developed are designed for optimum productivity and operator ease

| TUBE SIZE   |            |              |            | Min<br>I.D.<br>Tool<br>Enters | Max<br>Expansion<br>of<br>Tool | TUBE EXPANDER MODEL        |                      |                        |                        |                        |           |           |
|-------------|------------|--------------|------------|-------------------------------|--------------------------------|----------------------------|----------------------|------------------------|------------------------|------------------------|-----------|-----------|
| O.D<br>inch | THK<br>bwg | O.D.<br>inch | THK<br>bwg |                               |                                | Tube Sheet Thickness Range |                      |                        |                        |                        |           |           |
|             |            |              |            |                               |                                | 1/2"<br>to<br>7/8"         | 3/4"<br>to<br>1.1/8" | 1.1/8"<br>to<br>1.5/8" | 1.5/8"<br>to<br>2.1/8" | 2.1/8"<br>to<br>2.5/8" |           |           |
|             |            |              |            | Tube Sheet Thickness Codes>   |                                | 2                          | 3                    | 4                      | 5                      | 6                      |           |           |
| 7/8         | 15         | 1            | 10         | 18.1                          | 0.712                          | 20.4                       | 0.803                | TAF3-31/2              | TAF3-31/3              |                        |           |           |
|             | 16         |              |            | 18.4                          | 0.724                          | 20.7                       | 0.814                | TAF3-32/2              | TAF3-32/3              |                        |           |           |
|             | 17         | 1            | 11         | 18.8                          | 0.740                          | 21.1                       | 0.830                | TAF3-33/2              | TAF3-33/3              |                        |           |           |
|             | 18         | 1            | 12         | 19.4                          | 0.763                          | 21.6                       | 0.850                | TAF3-34/2              | TAF3-34/3              |                        |           |           |
|             | 19 - 20    | 1.1/8        | 8          | 19.7                          | 0.775                          | 22.3                       | 0.877                | TAF3-35/2              | TAF3-35/3              |                        |           |           |
| 1           | 13         |              |            | 20.1                          | 0.791                          | 22.4                       | 0.881                | TAF3-36/2              | TAF3-36/3              |                        |           |           |
|             | 14         | 1.1/8        | 9          | 20.6                          | 0.811                          | 23.1                       | 0.909                | TAF3-37/2              | TAF3-37/3              | TAF3-37/4              |           |           |
|             | 15 - 16    | 1.1/8        | 10         | 21.3                          | 0.838                          | 23.8                       | 0.937                | TAF3-38/2              | TAF3-38/3              | TAF3-38/4              |           |           |
|             | 17 - 18    | 1.1/8        | 11         | 22.0                          | 0.866                          | 24.5                       | 0.964                | TAF3-39/2              | TAF3-39/3              | TAF3-39/4              |           |           |
|             | 19 - 20    | 1.1/8        | 12         | 22.4                          | 0.881                          | 25.0                       | 0.984                | TAF3-40/2              | TAF3-40/3              | TAF3-40/4              |           |           |
| 1.1/4       | 8          | 1.1/8        | 13         | 23.3                          | 0.917                          | 25.9                       | 1.019                | TAF3-41/2              | TAF3-41/3              | TAF3-41/4              |           |           |
|             | 9          | 1.1/8        | 14         | 23.8                          | 0.937                          | 26.5                       | 1.043                | TAF3-42/2              | TAF3-42/3              | TAF3-42/4              |           |           |
|             | 10         | 1.1/8        | 15 - 16    | 24.4                          | 0.960                          | 27.2                       | 1.070                | TAF3-43/2              | TAF3-43/3              | TAF3-43/4              |           |           |
|             | 11         |              |            | 25.2                          | 0.992                          | 28.0                       | 1.102                | TAF3-44/2              | TAF3-44/3              | TAF3-44/4              |           |           |
|             | 12         |              |            | 25.7                          | 1.011                          | 28.5                       | 1.122                | TAF3-45/2              | TAF3-45/3              | TAF3-45/4              |           |           |
|             | 13         | 1.3/8        | 8          | 26.1                          | 1.027                          | 28.8                       | 1.133                | TAF3-46/2              | TAF3-46/3              | TAF3-46/4              |           |           |
|             | 14         |              |            | 26.4                          | 1.039                          | 29.2                       | 1.149                | TAF3-47/2              | TAF3-47/3              | TAF3-47/4              |           |           |
|             | 15         | 1.3/8        | 9          | 26.9                          | 1.059                          | 29.7                       | 1.169                | TAF3-48/2              | TAF3-48/3              | TAF3-48/4              |           |           |
|             | 16         | 1.3/8        | 10         | 27.6                          | 1.086                          | 30.4                       | 1.196                | TAF3-49/2              | TAF3-49/3              | TAF3-49/4              | TAF3-49/5 | TAF3-49/6 |
| 1.1/2       | 7          | 1.3/8        | 11         | 28.3                          | 1.114                          | 31.2                       | 1.228                | TAF3-50/2              | TAF3-50/3              | TAF3-50/4              | TAF3-50/5 | TAF3-50/6 |
|             | 8          | 1.3/8        | 12         | 28.8                          | 1.133                          | 31.7                       | 1.248                | TAF3-51/2              | TAF3-51/3              | TAF3-51/4              | TAF3-51/5 | TAF3-51/6 |
|             | 9          | 1.3/8        | 13 - 14    | 29.5                          | 1.161                          | 33.4                       | 1.134                | TAF3-52/2              | TAF3-52/3              | TAF3-52/4              | TAF3-52/5 | TAF3-52/6 |
|             | 10         | 1.3/8        | 15 - 16    | 30.0                          | 1.181                          | 34.1                       | 1.342                | TAF3-53/2              | TAF3-53/3              | TAF3-53/4              | TAF3-53/5 | TAF3-53/6 |
|             | 11 - 12    |              |            | 30.6                          | 1.204                          | 34.8                       | 1.370                | TAF3-54/2              | TAF3-54/3              | TAF3-54/4              | TAF3-54/5 | TAF3-54/6 |



| SPARE ROLLER SET MODEL |                      |                        |                        |                        | SPARE MANDREL MODEL |                |                           |      |
|------------------------|----------------------|------------------------|------------------------|------------------------|---------------------|----------------|---------------------------|------|
| 1/2"<br>to<br>7/8"     | 3/4"<br>to<br>1.1/8" | 1.1/8"<br>to<br>1.5/8" | 1.5/8"<br>to<br>2.1/8" | 2.1/8"<br>to<br>2.5/8" | Drum<br>Type        | Header<br>Type | Short<br>Series<br>5.1/8" | SQ   |
| 2                      | 3                    | 4                      | 5                      | 6                      |                     |                |                           |      |
| 152-F3                 | 153-F3               |                        |                        |                        | TDM-11              |                |                           | 3/8" |
| 152-F3                 | 153-F3               |                        |                        |                        | TDM-12              |                |                           |      |
| 162-F3                 | 163-F3               |                        |                        |                        |                     |                |                           |      |
| 202-F3                 | 203-F3               |                        |                        |                        |                     |                |                           |      |
| 172-F3                 | 173-F3               |                        |                        |                        | TDM-13              |                |                           |      |
| 182-F3                 | 183-F3               |                        |                        |                        | TDM-12              |                |                           |      |
| 182-F3                 | 183-F3               | 184-F3                 |                        |                        | TDM-13              | THM-13         | TSM-13                    | 3/8" |
| 192-F3                 | 193-F3               | 194-F3                 |                        |                        |                     |                |                           |      |
| 212-F3                 | 213-F3               | 214-F3                 |                        |                        |                     |                |                           |      |
| 212-F3                 | 213-F3               | 214-F3                 |                        |                        | TDM-14              | THM-14         | TSM-14                    |      |
| 222-F3                 | 223-F3               | 224-F3                 |                        |                        |                     |                |                           |      |
| 232-F3                 | 233-F3               | 234-F3                 |                        |                        | TDM-15              | THM-15         | TSM-15                    |      |
| 242-F3                 | 243-F3               | 244-F3                 |                        |                        |                     |                |                           |      |
| 262-F3                 | 263-F3               | 264-F3                 |                        |                        |                     |                |                           |      |
| 272-F3                 | 273-F3               | 274-F3                 |                        |                        | TDM-16              | THM-16         | TSM-16                    |      |
| 312-F3                 | 313-F3               | 314-F3                 |                        |                        |                     |                |                           |      |
| 282-F3                 | 283-F3               | 284-F3                 |                        |                        | TDM-17              | THM-17         | TSM-17                    |      |
| 292-F3                 | 293-F3               | 294-F3                 |                        |                        |                     |                |                           |      |
| 302-F3                 | 303-F3               | 304-F3                 | 305-F3                 | 306-F3                 |                     |                |                           |      |
| 302-F3                 | 303-F3               | 304-F3                 | 305-F3                 | 306-F3                 | TDM-18              | THM-18         | TSM-18                    |      |
| 322-F3                 | 323-F3               | 324-F3                 | 325-F3                 | 326-F3                 |                     |                |                           |      |
| 282-F3                 | 283-F3               | 284-F3                 | 285-F3                 | 286-F3                 | TDM-20              | THM-20         | TSM-20                    |      |
| 292-F3                 | 293-F3               | 294-F3                 | 295-F3                 | 296-F3                 |                     |                |                           |      |
| 302-F3                 | 303-F3               | 304-F3                 | 305-F3                 | 306-F3                 |                     |                |                           |      |



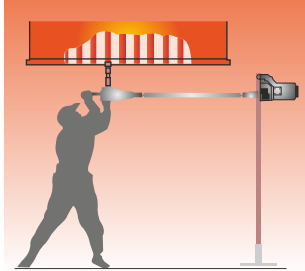
Can be supplied with  
1 flare & 2 plane rollers

# Boiler Tube Expanders

## 'TAF3' Series (Flare) - 3 Plain Rollers & 3 Flare Rollers

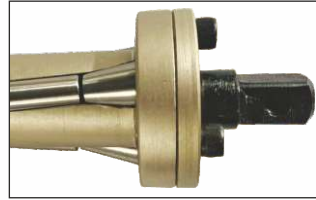
- Offset flare rolls eliminates ridges
- Rolls retained in cage when mandrel is removed

Tritorc offers solutions to overcome any installation problem

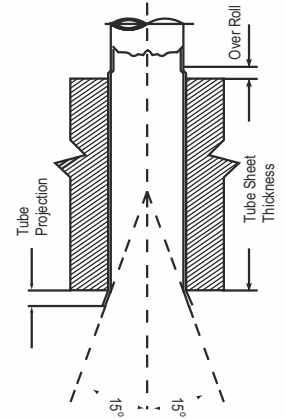


- Drive in conjunction with telescopic shaft coupled to a right angled gear drive makes tube installations easier.

| TUBE SIZE |         |           |         | Min I.D. Tool Enters         |       | Max Expansion of Tool |       | TUBE EXPANDER MODEL        |                |                  |                  |                  |
|-----------|---------|-----------|---------|------------------------------|-------|-----------------------|-------|----------------------------|----------------|------------------|------------------|------------------|
|           |         |           |         |                              |       |                       |       | Tube Sheet Thickness Range |                |                  |                  |                  |
| O.D. inch | THK bwg | O.D. inch | THK bwg | mm                           | inch  | mm                    | inch  | 1/2" to 7/8"               | 3/4" to 1.1/8" | 1.1/8" to 1.5/8" | 1.5/8" to 2.1/8" | 2.1/8" to 2.5/8" |
|           |         |           |         | Tube Sheet Thickness Codes > |       |                       |       | 2                          | 3              | 4                | 5                | 6                |
| 1.1/2     | 13      | 1.3/4     | 5       | 31.4                         | 1.236 | 35.6                  | 1.401 | TAF3-55/2                  | TAF3-55/3      | TAF3-55/4        | TAF3-55/5        | TAF3-55/6        |
|           | 14 - 15 | 1.3/4     | 6       | 32.6                         | 1.283 | 36.8                  | 1.448 | TAF3-56/2                  | TAF3-56/3      | TAF3-56/4        | TAF3-56/5        | TAF3-56/6        |
|           |         | 1.3/4     | 7       | 33.4                         | 1.314 | 38.1                  | 1.500 | TAF3-57/2                  | TAF3-57/3      | TAF3-57/4        | TAF3-57/5        | TAF3-57/6        |
|           |         | 1.3/4     | 8       | 34.2                         | 1.346 | 38.7                  | 1.523 | TAF3-58/2                  | TAF3-58/3      | TAF3-58/4        | TAF3-58/5        | TAF3-58/6        |
| 2         | 3       | 1.3/4     | 9 - 10  | 35.0                         | 1.377 | 40.6                  | 1.598 | TAF3-59/2                  | TAF3-59/3      | TAF3-59/4        | TAF3-59/5        | TAF3-59/6        |
|           | 4       | 1.3/4     | 11 - 12 | 36.6                         | 1.440 | 42.2                  | 1.661 | TAF3-60/2                  | TAF3-60/3      | TAF3-60/4        | TAF3-60/5        | TAF3-60/6        |
|           | 5 - 6   | 1.3/4     | 13 - 14 | 38.2                         | 1.503 | 43.8                  | 1.712 | TAF3-61/2                  | TAF3-61/3      | TAF3-61/4        | TAF3-61/5        | TAF3-61/6        |
|           | 7 - 8   | 1.3/4     | 15 - 16 | 39.8                         | 1.566 | 45.4                  | 1.787 | TAF3-62/2                  | TAF3-62/3      | TAF3-62/4        | TAF3-62/5        | TAF3-62/6        |
|           | 9 - 10  | 2.1/4     | 3       | 41.4                         | 1.629 | 47.0                  | 1.850 | TAF3-63/2                  | TAF3-63/3      | TAF3-63/4        | TAF3-63/5        | TAF3-63/6        |
|           | 11 - 13 | 2.1/4     | 4       | 42.9                         | 1.688 | 49.5                  | 1.948 | TAF3-64/2                  | TAF3-64/3      | TAF3-64/4        | TAF3-64/5        | TAF3-64/6        |
|           | 14 - 16 | 2.1/4     | 6 - 7   | 44.5                         | 1.751 | 51.1                  | 2.011 | TAF3-65/2                  | TAF3-65/3      | TAF3-65/4        | TAF3-65/5        | TAF3-65/6        |
|           | 17 - 18 | 2.1/4     | 8 - 9   | 46.1                         | 1.814 | 52.7                  | 2.074 | TAF3-66/2                  | TAF3-66/3      | TAF3-66/4        | TAF3-66/5        | TAF3-66/6        |
| 2.1/2     | 3       | 2.1/4     | 10 - 11 | 47.7                         | 1.877 | 54.3                  | 2.137 | TAF3-67/2                  | TAF3-67/3      | TAF3-67/4        | TAF3-67/5        | TAF3-67/6        |
|           | 4 - 5   | 2.1/4     | 12 - 13 | 49.3                         | 1.940 | 55.9                  | 2.200 | TAF3-68/2                  | TAF3-68/3      | TAF3-68/4        | TAF3-68/5        | TAF3-68/6        |
|           | 6 - 7   | 2.1/4     | 14 - 16 | 50.8                         | 2.200 | 57.8                  | 2.275 | TAF3-69/2                  | TAF3-69/3      | TAF3-69/4        | TAF3-69/5        | TAF3-69/6        |
|           | 8 - 9   | 2.3/4     | 3       | 52.4                         | 2.062 | 59.4                  | 2.338 | TAF3-70/2                  | TAF3-70/3      | TAF3-70/4        | TAF3-70/5        | TAF3-70/6        |
|           | 10 - 11 | 2.3/4     | 4       | 54.0                         | 2.125 | 61.0                  | 2.401 | TAF3-71/2                  | TAF3-71/3      | TAF3-71/4        | TAF3-71/5        | TAF3-71/6        |
|           | 12 - 14 | 2.3/4     | 5 - 6   | 55.6                         | 2.188 | 64.0                  | 2.519 | TAF3-72/2                  | TAF3-72/3      | TAF3-72/4        | TAF3-72/5        | TAF3-72/6        |
|           | 15 - 16 | 2.3/4     | 7 - 8   | 57.2                         | 2.251 | 65.6                  | 2.582 | TAF3-73/2                  | TAF3-73/3      | TAF3-73/4        | TAF3-73/5        | TAF3-73/6        |
| 3         | 3       | 2.3/4     | 9 - 10  | 58.6                         | 2.307 | 67.0                  | 2.637 | TAF3-74/2                  | TAF3-74/3      | TAF3-74/4        | TAF3-74/5        | TAF3-74/6        |
|           | 4       | 2.3/4     | 11 - 13 | 60.4                         | 2.377 | 68.8                  | 2.708 | TAF3-75/2                  | TAF3-75/3      | TAF3-75/4        | TAF3-75/5        | TAF3-75/6        |
|           | 5 - 6   | 2.3/4     | 14 - 16 | 62.2                         | 2.448 | 70.4                  | 2.771 | TAF3-76/2                  | TAF3-76/3      | TAF3-76/4        | TAF3-76/5        | TAF3-76/6        |
|           | 7 - 8   |           |         | 63.6                         | 2.503 | 72.0                  | 2.834 | TAF3-77/2                  | TAF3-77/3      | TAF3-77/4        | TAF3-77/5        | TAF3-77/6        |
|           | 9 - 10  | 3.1/4     | 3       | 65.0                         | 2.559 | 73.4                  | 2.889 | TAF3-78/2                  | TAF3-78/3      | TAF3-78/4        | TAF3-78/5        | TAF3-78/6        |



| SPARE ROLLER SET MODEL     |                |                  |                  |                  | SPARE MANDREL MODEL |             |                     |      |
|----------------------------|----------------|------------------|------------------|------------------|---------------------|-------------|---------------------|------|
| Tube Sheet Thickness Range |                |                  |                  |                  | Drum Type           | Header Type | Short Series 5.1/8" | SQ   |
| 1/2" to 7/8"               | 3/4" to 1.1/8" | 1.1/8" to 1.5/8" | 1.5/8" to 2.1/8" | 2.1/8" to 2.5/8" |                     |             |                     |      |
| 2                          | 3              | 4                | 5                | 6                |                     |             |                     |      |
| 332-F3                     | 332-F3         | 334-F3           | 335-F3           | 336-F3           | TDM-20              | THM-20      | TSM-20              |      |
| 342-F3                     | 343-F3         | 344-F3           | 345-F3           | 346-F3           | TDM-21              | THM-21      | TSM-21              | 1/2" |
| 362-F3                     | 363-F3         | 364-F3           | 365-F3           | 366-F3           |                     |             |                     |      |
| 372-F3                     | 373-F3         | 374-F3           | 375-F3           | 376-F3           |                     |             |                     |      |
| 332-F3                     | 333-F3         | 334-F3           | 335-F3           | 336-F3           | TDM-22              | THM-22      | TSM-22              |      |
| 372-F3                     | 373-F3         | 374-F3           | 375-F3           | 376-F3           |                     |             |                     |      |
| 382-F3                     | 383-F3         | 384-F3           | 385-F3           | 386-F3           |                     |             |                     |      |
| 392-F3                     | 393-F3         | 394-F3           | 395-F3           | 396-F3           |                     |             |                     |      |
| 402-F3                     | 403-F3         | 404-F3           | 405-F3           | 406-F3           |                     |             |                     |      |
| 402-F3                     | 403-F3         | 404-F3           | 405-F3           | 406-F3           | TDM-23              | THM-23      | TSM-23              | 3/4" |
| 412-F3                     | 413-F3         | 414-F3           | 415-F3           | 416-F3           |                     |             |                     |      |
| 422-F3                     | 423-F3         | 424-F3           | 425-F3           | 426-F3           |                     |             |                     |      |
| 432-F3                     | 433-F3         | 434-F3           | 435-F3           | 436-F3           |                     |             |                     |      |
| 442-F3                     | 443-F3         | 444-F3           | 445-F3           | 446-F3           | TDM-24              | THM-24      | TSM-24              |      |
| 432-F3                     | 433-F3         | 434-F3           | 435-F3           | 436-F3           |                     |             |                     |      |
| 442-F3                     | 443-F3         | 444-F3           | 445-F3           | 446-F3           |                     |             |                     |      |
| 452-F3                     | 453-F3         | 454-F3           | 455-F3           | 456-F3           |                     |             |                     |      |
| 472-F3                     | 473-F3         | 474-F3           | 475-F3           | 476-F3           |                     |             |                     |      |
| 462-F3                     | 463-F3         | 464-F3           | 465-F3           | 466-F3           | TDM-25              | THM-25      | TSM-25              | 1"   |
| 472-F3                     | 473-F3         | 474-F3           | 475-F3           | 476-F3           |                     |             |                     |      |
| 482-F3                     | 483-F3         | 484-F3           | 485-F3           | 486-F3           |                     |             |                     |      |
| 492-F3                     | 493-F3         | 494-F3           | 495-F3           | 496-F3           |                     |             |                     |      |
| 502-F3                     | 503-F3         | 504-F3           | 505-F3           | 506-F3           |                     |             |                     |      |
| 512-F3                     | 513-F3         | 514-F3           | 515-F3           | 516-F3           |                     |             |                     |      |

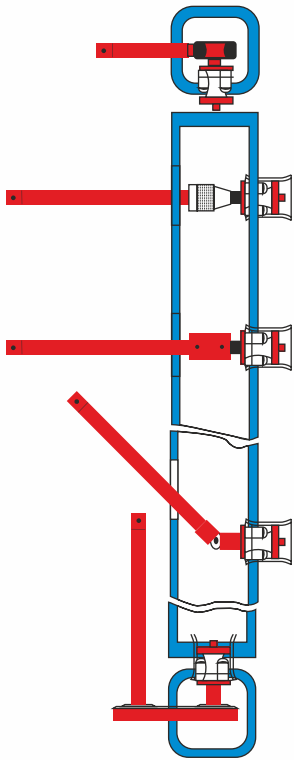


# Boiler Tube Expanders

## 'TAF3' Series (Flare) - 3 Plain Rollers & 3 Flare Rollers

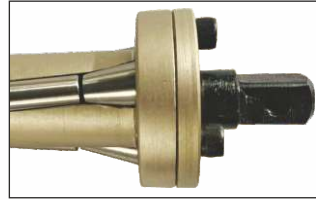
- Offset flare rolls eliminates ridges
- Rolls retained in cage when mandrel is removed

Tritorc offers solutions to overcome any installation problem



The various drive accessories developed are designed for optimum productivity and operator ease

| TUBE SIZE                    |            |              |            | Min<br>I.D.<br>Tool<br>Enters | Max<br>Expansion<br>of<br>Tool | TUBE EXPANDER MODEL        |            |                    |                      |                        |                        |                        |
|------------------------------|------------|--------------|------------|-------------------------------|--------------------------------|----------------------------|------------|--------------------|----------------------|------------------------|------------------------|------------------------|
|                              |            |              |            |                               |                                | Tube Sheet Thickness Range |            |                    |                      |                        |                        |                        |
| O.D<br>inch                  | THK<br>bwg | O.D.<br>inch | THK<br>bwg | mm                            | inch                           | mm                         | inch       | 1/2"<br>to<br>7/8" | 3/4"<br>to<br>1.1/8" | 1.1/8"<br>to<br>1.5/8" | 1.5/8"<br>to<br>2.1/8" | 2.1/8"<br>to<br>2.5/8" |
| Tube Sheet Thickness Codes > |            |              |            |                               |                                |                            |            | 2                  | 3                    | 4                      | 5                      | 6                      |
| 3                            | 11 - 13    | 3.1/4        | 4          | 66.6                          | 2.622                          | 75.0                       | 2.952      | TAF3-79/2          | TAF3-79/3            | TAF3-79/4              | TAF3-79/5              | TAF3-79/6              |
|                              | 14 - 16    | 3.1/4        | 5 - 6      | 68.3                          | 2.688                          | 76.9                       | 3.027      | TAF3-80/2          | TAF3-80/3            | TAF3-80/4              | TAF3-80/5              | TAF3-80/6              |
|                              | 3.1/2      | 2 3.1/4      | 7 - 8      | 69.9                          | 2.751                          | 78.5                       | 3.090      | TAF3-81/2          | TAF3-81/3            | TAF3-81/4              | TAF3-81/5              | TAF3-81/6              |
|                              | 3          | 3.1/4        | 9 - 10     | 71.5                          | 2.814                          | 80.1                       | 3.153      | TAF3-82/2          | TAF3-82/3            | TAF3-82/4              | TAF3-82/5              | TAF3-82/6              |
|                              | 4          | 3.1/4        | 11 - 13    | 73.1                          | 2.877                          | 81.7                       | 3.216      | TAF3-83/2          | TAF3-83/3            | TAF3-83/4              | TAF3-83/5              | TAF3-83/6              |
|                              | 5 - 6      | 3.1/4        | 14 - 16    | 74.6                          | 2.937                          | 84.2                       | 3.314      | TAF3-84/2          | TAF3-84/3            | TAF3-84/4              | TAF3-84/5              | TAF3-84/6              |
|                              | 7 - 8      | 3.3/4        | 2          | 76.2                          | 3.000                          | 85.5                       | 3.366      | TAF3-85/2          | TAF3-85/3            | TAF3-85/4              | TAF3-85/5              | TAF3-85/6              |
|                              | 9 - 11     | 3.3/4        | 3          | 77.8                          | 3.062                          | 87.4                       | 3.440      | TAF3-86/2          | TAF3-86/3            | TAF3-86/4              | TAF3-86/5              | TAF3-86/6              |
|                              | 12 - 16    | 3.3/4        | 4          | 79.4                          | 3.125                          | 89.0                       | 3.503      | TAF3-87/2          | TAF3-87/3            | TAF3-87/4              | TAF3-87/5              | TAF3-87/6              |
|                              |            | 3.3/4        | 5 - 6      | 81.0                          | 3.188                          | 90.6                       | 3.566      | TAF3-88/2          | TAF3-88/3            | TAF3-88/4              | TAF3-88/5              | TAF3-88/6              |
| 4                            | 2          | 3.3/4        | 7 - 8      | 82.6                          | 3.251                          | 92.2                       | 3.629      | TAF3-89/2          | TAF3-89/3            | TAF3-89/4              | TAF3-89/5              | TAF3-89/6              |
|                              | 3          | 3.3/4        | 9 - 10     | 84.2                          | 3.314                          | 93.8                       | 3.692      | TAF3-90/2          | TAF3-90/3            | TAF3-90/4              | TAF3-90/5              | TA-F390/6              |
|                              | 4          | 3.3/4        | 11 - 13    | 85.8                          | 3.377                          | 96.2                       | 3.787      | TAF3-91/2          | TAF3-91/3            | TAF3-91/4              | TAF3-91/5              | TAF3-91/6              |
|                              | 5 - 6      | 3.3/4        | 14 - 16    | 87.4                          | 3.440                          | 97.8                       | 3.850      | TAF3-92/2          | TAF3-92/3            | TAF3-92/4              | TAF3-92/5              | TAF3-92/6              |
|                              | 7 - 8      | 4.1/4        | 2          | 89.0                          | 3.503                          | 99.4                       | 3.913      | TAF3-93/2          | TAF3-93/3            | TAF3-93/4              | TAF3-93/5              | TAF3-93/6              |
|                              | 9 - 11     | 4.1/4        | 3          | 90.4                          | 3.559                          | 100.8                      | 3.968      | TAF3-94/2          | TAF3-94/3            | TAF3-94/4              | TAF3-94/5              | TAF3-94/6              |
|                              | 12 - 16    | 4.1/4        | 4          | 92.0                          | 3.622                          | 102.4                      | 4.031      | TAF3-95/2          | TAF3-95/3            | TAF3-95/4              | TAF3-96/5              | TAF3-95/6              |
| 4.1/2                        |            | 4.1/4        | 5 - 6      | 93.4                          | 3.677                          | 103.8                      | 4.086      | TAF3-96/2          | TAF3-96/3            | TAF3-96/4              | TAF3-96/5              | TAF3-96/6              |
|                              | 2          | 4.1/4        | 7 - 8      | 95.0                          | 3.740                          | 105.4                      | 4.149      | TAF3-97/2          | TAF3-97/3            | TAF3-97/4              | TAF3-97/5              | TAF3-97/6              |
|                              | 3          | 4.1/4        | 9 - 11     | 96.6                          | 3.803                          | 107.0                      | 4.212      | TAF3-98/2          | TAF3-98/3            | TAF3-98/4              | TAF3-98/5              | TAF3-98/6              |
|                              | 4 - 5      | 4.1/4        | 11 - 13    | 98.2                          | 3.866                          | 108.6                      | 4.275      | TAF3-99/2          | TAF3-99/3            | TAF3-99/4              | TAF3-99/5              | TAF3-99/6              |
|                              | 6 - 7      |              |            | 101.2                         | 3.984                          | 110.0                      | 4.330      | TAF3-100/2         | TAF3-100/3           | TAF3-110/4             | TAF3-100/5             | TAF3-100/6             |
|                              | 8 - 9      |              |            | 102.8                         | 4.047                          | 111.6                      | 4.393      | TAF3-101/2         | TAF3-101/3           | TAF3-101/4             | TAF3-101/5             | TAF3101/6              |
|                              |            |              | 104.4      | 4.110                         | 113.2                          | 4.456                      | TAF3-102/2 | TAF3-102/3         | TAF3-102/4           | TAF3-102/5             | TAF3-102/6             |                        |



| SPARE ROLLER SET MODEL     |                |                  |                  |                  | SPARE MANDREL MODEL |             |                     |    |
|----------------------------|----------------|------------------|------------------|------------------|---------------------|-------------|---------------------|----|
| Tube Sheet Thickness Range |                |                  |                  |                  | Drum Type           | Header Type | Short Series 5.1/8" | SQ |
| 1/2" to 7/8"               | 3/4" to 1.1/8" | 1.1/8" to 1.5/8" | 1.5/8" to 2.1/8" | 2.1/8" to 2.5/8" |                     |             |                     |    |
| 2                          | 3              | 4                | 5                | 6                |                     |             |                     |    |
| 522-F3                     | 523-F3         | 524-F3           | 525-F3           | 526-F3           | TDM-25              | THM-25      | TSM-25              | 1" |
| 512-F3                     | 513-F3         | 514-F3           | 515-F3           | 516-F3           |                     |             |                     |    |
| 522-F3                     | 523-F3         | 524-F3           | 525-F3           | 526-F3           | TDM-26              | THM-26      | TSM-26              |    |
| 532-F3                     | 533-F3         | 534-F3           | 535-F3           | 536-F3           |                     |             |                     |    |
| 542-F3                     | 543-F3         | 544-F3           | 545-F3           | 546-F3           |                     |             |                     |    |
| 542-F3                     | 543-F3         | 544-F3           | 545-F3           | 546-F3           | TDM-27              | THM-27      | TSM-27              |    |
| 552-F3                     | 553-F3         | 554-F3           | 555-F3           | 556-F3           |                     |             |                     |    |
| 562-F3                     | 563-F3         | 564-F3           | 565-F3           | 566-F3           |                     |             |                     |    |
| 572-F3                     | 573-F3         | 574-F3           | 575-F3           | 576-F3           |                     |             |                     |    |
| 582-F3                     | 583-F3         | 584-F3           | 585-F3           | 586-F3           |                     |             |                     |    |
| 592-F3                     | 593-F3         | 594-F3           | 595-F3           | 596-F3           |                     |             |                     |    |
| 602-F3                     | 603-F3         | 604-F3           | 605-F3           | 606-F3           | TDM-28              | THM-28      | TSM-28              |    |
| 592-F3                     | 593-F3         | 594-F3           | 595-F3           | 596-F3           |                     |             |                     |    |
| 602-F3                     | 603-F3         | 604-F3           | 605-F3           | 606-F3           |                     |             |                     |    |
| 612-F3                     | 613-F3         | 614-F3           | 615-F3           | 616-F3           |                     |             |                     |    |
| 622-F3                     | 623-F3         | 624-F3           | 625-F3           | 626-F3           | TDM-29              | THM-29      | TSM-29              |    |
| 632-F3                     | 633-F3         | 634-F3           | 635-F3           | 636-F3           |                     |             |                     |    |
| 642-F3                     | 643-F3         | 644-F3           | 645-F3           | 646-F3           |                     |             |                     |    |
| 632-F3                     | 633-F3         | 634-F3           | 635-F3           | 636-F3           | TDM-30              | THM-30      | TSM-30              |    |
| 642-F3                     | 643-F3         | 644-F3           | 645-F3           | 646-F3           |                     |             |                     |    |
| 652-F3                     | 653-F3         | 654-F3           | 655-F3           | 656-F3           |                     |             |                     |    |
| 662-F3                     | 663-F3         | 664-F3           | 665-F3           | 666-F3           |                     |             |                     |    |

