

SPIRAL-WOUND GASKETS

DESCRIPTION

The FNW figure SWG spiral-wound gaskets are made of a preformed metallic V-shaped strip and a soft filler material wound together under pressure, with an outer guide ring.

CONSTRUCTION

The winding is manufactured in the form of a spiral with filler material between the windings. The filler materials fill the irregularities of the flanges. The external guide ring has the function of centering the gasket in the flanges and gives the sealing elements additional resistance against line pressure and excessive bolt torque.

APPLICATION/SERVICE

FNW spiral-wound gaskets are made for applications with high temperature variations (thermal cycling), and/ or pressure variations, and/or flange rotation problems etc., and where gaskets with adequate residual stress (stress retention) and flexibility are needed.

FEATURES

- Manufactured according to ASME B16.20
- Designed for use in ASME B16.5 flanges
- Fire-resistant
- Stainless steel windings (AISI 304 or AISI 316)
- Flexible graphite filler GRAFLEX®
- Carbon steel outer guide ring (with zinc dichromate coating)
- Maximum temperature: 842°F (450°C)
- Maximum pressure: per ASME B16.5
- 1/2"-3" 300# gaskets are multi-rated and stamped "3/600#"



FIGURE NUMBER MATRIX

| FNW SWG | Class | Winding | Filler | | Size | | Color Codes |
|------------|----------|-----------|-----------------------|------------|----------|----------|-----------------------------------|
| | 1 = 150# | 4 = 304SS | F = Flexible graphite | D = 1/2" | M = 3" | 14 = 14" | Continuous color on guide ring |
| | 3 = 300# | 6 = 316SS | | F = 3/4" | P = 4" | 16 = 16" | edge denotes winding material. |
| | | | | G = 1" | S = 5" | 18 = 18" | Yellow = 304SS |
| | | | | H = 1-1/4" | U = 6" | 20 = 20" | Green = 316SS |
| | | | | J = 1-1/2" | X = 8" | 24 = 24" | |
| | | | | K = 2" | 10 = 10" | | Intermittent stripe on guide ring |
| | | | | L = 2-1/2" | 12 = 12" | | edge denotes filler material. |
| | | | | | | | Gray = Flexible graphite |



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DIMENSIONS (INCHES)

| | | Gasket | Guide Ring | | | |
|-------|--------------------|------------|------------|------------|------------|--|
| Size | OD ID | | | OD | | |
| 5120 | Cls 150 and 300 | Cls 150 | Cls 300 | Cls 150 | Cls 300 | |
| 1/2 | 1.25 | 0.75 | 0.75 | 1.88 | 2.13 | |
| 3/4 | 1.56 | 1.00 | 1.00 | 2.25 | 2.63 | |
| 1 | 1.88 | 1.25 | 1.25 | 2.63 | 2.88 | |
| 1-1/4 | 2.38 | 1.88 | 1.88 | 3.00 | 3.25 | |
| 1-1/2 | 2.75 | 2.13 | 2.13 | 3.38 | 3.75 | |
| 2 | 3.38 | 2.75 | 2.75 | 4.13 | 4.38 | |
| 2-1/2 | 3.88 | 3.25 | 3.25 | 4.88 | 5.13 | |
| 3 | 4.75 | 4.00 | 4.00 | 5.38 | 5.88 | |
| 4 | 5.88 | 5.00 | 5.00 | 6.88 | 7.13 | |
| 5 | 7.00 | 6.13 | 6.13 | 7.75 | 8.50 | |
| 6 | 8.25 | 7.19 | 7.19 | 8.75 | 9.88 | |
| 8 | 10.38 | 9.19 | 9.19 | 11.00 | 12.13 | |
| 10 | 12.50 | 11.31 | 11.31 | 13.38 | 14.25 | |
| 12 | 14.75 | 13.38 | 13.38 | 16.13 | 16.63 | |
| 14 | 16.00 | 14.63 | 14.63 | 17.75 | 19.13 | |
| 16 | 18.25 | 16.63 | 16.63 | 20.25 | 21.25 | |
| 18 | 20.75 | 18.69 | 18.69 | 21.63 | 23.50 | |
| 20 | 22.75 | 20.69 | 20.69 | 23.88 | 25.75 | |
| 24 | 27.00 | 24.75 | 24.75 | 28.25 | 30.50 | |

SUGGESTED TORQUE VALUES (FT.-LBS.)**

Based on ASTM A193 B7 bolting or equal yield strength bolt material.

| Class 150 | | | | | |
|-----------|--------|------|--------|------|--------|
| Size | Torque | Size | Torque | Size | Torque |
| 1/2 | 50 | 3 | 160 | 14 | 500 |
| 3/4 | 60 | 4 | 120 | 16 | 500 |
| 1 | 60 | 5 | 200 | 18 | 710 |
| 1-1/4 | 60 | 6 | 200 | 20 | 710 |
| 1-1/2 | 60 | 8 | 260 | 24 | 1000 |
| 2 | 120 | 10 | 320 | | |
| 2-1/2 | 120 | 12 | 320 | | |

| Class 300 | | | | | |
|-----------|--------|------|--------|------|--------|
| Size | Torque | Size | Torque | Size | Torque |
| 1/2 | 50 | 3 | 175 | 14 | 620 |
| 3/4 | 90 | 4 | 200 | 16 | 875 |
| 1 | 105 | 5 | 200 | 18 | 1000 |
| 1-1/4 | 120 | 6 | 200 | 20 | 1000 |
| 1-1/2 | 200 | 8 | 320 | 24 | 1400 |
| 2 | 105 | 10 | 500 | | |
| 2-1/2 | 140 | 12 | 710 | | |



FLANGE SEALING SURFACE

Although most commercial flange finishes can be used, the following are considered most appropriate for FNW spiral-wound gaskets.

| Madia | Flange Sealing Surface Finish (Ra) | | | |
|-----------------------------|------------------------------------|------|--|--|
| Media | μm | μ in | | |
| General Use | 6.3 | 250 | | |
| Dangerous Service and Gases | 3.2 | 125 | | |

Note: The sealing surface of flanges cannot have scratches or radial tool marks going from the inside to the outside diameter. These irregularities make the sealing very difficult for any style of gasket and especially for spiral-wound gaskets. A smooth and polished surface can permit the gasket to inward buckle and should be avoided.

BOLTING CALCULATION

For ASME Code calculations

| Gasket Factor (m value) | 3.00 |
|---|------------|
| Minimum Design Seating Stress (y value) | 10,000 PSI |
| Maximum Seating Stress* | 30,000 PSI |

* Note: Per Division 2 Section VIII of the ASME Pressure Vessel and Boiler Code, the Maximum Gasket Stress or Sg_(max) value should not exceed the Maximum Seating Stress.

** Note: Use new, correct size, bolts/studs, nuts, and washers (tourques NOT for PTFE coated bolting). Not suitable for flange materials with elongation at failure less than 20%. Use antiseize or graphite oil on bolt threads and nut faces. Listed torques are for the final pass. After hand tightening, torquing must follow the cross bolting sequence (star pattern) and there shall be 3 complete passes at 30%, 60%, and 100% of final torque. Once final torque is achieved, there should be a minimum of 2 clockwise passes until there is no further nut rotation. As recognized by ASME, spiral-wound gaskets without an inner ring may buckle under ANY load due to the nature of materials used.