

LAMONS SPIRASEAL®

PRODUCT FAMILY

Spiral wound gaskets have become extremely popular due to the wide variety of available styles and sizes. Spiral wound gaskets can be fabricated of any metal which is available in thin strip and which can be welded; therefore, they can be used against virtually any corrosive medium dependent upon the choice of the metal and filler. They can be used over the complete temperature range from cryogenic to approximately 2000°F (1093°C). This type of gasket can be used in all pressures from vacuum to the standard 2500 pressure class flange ratings. Spiral wound gaskets can also be manufactured with variable densities, i.e. relatively low density gaskets for vacuum service up to extremely high density gaskets having a seating stress of approximately 30,000 psi (207 MPa). The softer gaskets would require a seating stress in the range of 5,000 psi (34 MPa).



VARIABLE DENSITY

Spiral wound gaskets are manufactured by alternately winding strips of metal and soft fillers on the outer edge of winding mandrels that determine the inside dimensions of the wound component. In the winding process, the alternating plies are maintained under pressure. Varying the pressure during the winding operation and/or the thickness of the soft filler, the density of the gasket can be controlled over a wide range. As a general rule, low winding pressure and thick soft fillers are used for low pressure applications. Thin fillers and high pressure loads are used for high pressure applications. This, of course, would account for the higher bolt loads that have to be applied to the gasket in high pressure applications. In addition to all these advantages of the spiral wound gasket, they are relatively low cost.

AVAILABLE SIZES AND THICKNESSES

Lamons spiral wound gaskets are available in thicknesses of 0.0625" (1.5 mm), 0.100" (2.5 mm), 0.125" (3 mm), 0.175" (4 mm), 0.250" (6.4 mm), and 0.285" (7 mm). The chart on page 47 indicates the size range that can normally be fabricated in the various thicknesses along with the recommended compressed thickness of each and the maximum flange width.

FLANGE SURFACE FINISH

Use of spiral wound gaskets gives the designer and the user a wider tolerance for flange surface finishes than other metallic gaskets. While they can be used against most commercially available flange surface finishes, experience has indicated that the appropriate flange surface finishes used with spiral wound gaskets are as follows:

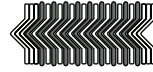
- 125 to 250 AARH optimum
- 500 AARH maximum

AVAILABLE SPIRASEAL® STYLES

Lamons spiral wound gaskets are available in a variety of styles to suit the particular flange facing being utilized on the flanges.

LAMONS STYLE W

Style W gaskets are SpiraSeal® windings only. No inner or outer ring is utilized. Used in a variety of different applications, they may be furnished in many different sizes and thicknesses.

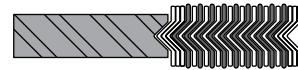


Style W gaskets are made in standard sizes to fit:

- A. Large tongue and groove joints, 1/2 to 24 NPS, standard pressures;
- B. Small tongue and groove joints, 1/2 to 24 NPS, standard pressures; and,
- C. Large male and female joints 1/4 to 24 NPS, standard pressures,

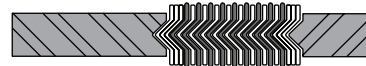
LAMONS STYLE WR

Style WR gaskets consist of a spiral wound sealing component with a solid metal outer guide ring. The outer guide ring serves to center the gasket properly in the flange joint, acts as an anti-blowout device, provides radial support for the spiral wound component, and acts as a compression gauge to prevent the spiral wound component from being over crushed. Normally the outer guide rings are furnished in mild steel, but can be supplied in other metals when required by operating conditions.



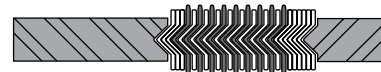
LAMONS STYLE WRI

Style WRI is identical to style WR, with the addition of an inner ring. The inner ring also serves several functions. Primarily, it provides radial support for the gasket on the ID to help prevent the occurrences of buckling or imploding. The inner ring also serves as an additional compression limiter. Its ID is normally sized slightly larger than the ID of the flange bore, minimizing turbulence in process flow. The inner rings are normally supplied in the same material as the spiral wound component. Lamons normally manufactures standard Style WR and WRI spiral wound gaskets to ASME B16.20, designed to suit ASME B16.5 and ASME B16.47 flanges.



LAMONS STYLE WRI-LE

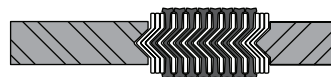
Style WRI-LE design is the optimum choice when gasket high density and low emissions are a must. The improved spiral wound design incorporates the typical essentials such as a carbon steel guide ring, along with a stainless steel inner ring.



Manufacturing procedures for the low emissions gasket precisely regulate the amount of metal wire wraps per inch; this higher number of wraps helps create a more robust and dense gasket, which in turn reduce emissions. Machinery settings are carefully regulated and set to higher pressure settings which generate higher tension on the winding to densify and extrude the filler to a minimum of 0.008" (0.2032 mm) above the winding metal surface. This extruded material creates a thin barrier between the winding surface and flange sealing surface to help fill minor flange surface blemishes and inconsistencies. Flanges in the 150 to 2500 pressure class range will benefit from this leading edge design.

LAMONS STYLE WRI-LC

Style WRI-LC gaskets provide a seal at relatively lower seating stress. This means that our design requires less bolt load to seat, yet still has the recovery like a standard spiral wound. The WRI-LC gasket is typical to Class 150 and 300 flanges, where users have a concern with insufficient potential of pre-load. But, the density of the WRI-LC gasket can be varied to meet virtually any requirement. Electronic controls on Lamons' SpiraSeal machines assure high quality precision welding with equal spacing, the correct number of metal plies on the gasket inside periphery, proper ratio of metal to filler, proper number of metal plies on the outside and spot welds on the OD.



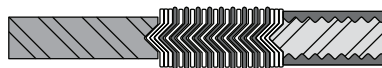
LAMONS STYLE WRI-HTG

Style WRI-HTG gaskets combine the corrosion and oxidation resistance of mica with the "sealability" of flexible graphite. The mica material, in conjunction with the metal spirals serves as a barrier between oxidizing process conditions and/or external air and the graphite. While Inconel® X-750 is commonly selected as the winding metal, any alloy can be selected. The overall effective rating of the HTG configuration can be utilized in temperatures of up to 1500°F (815°C). Higher temperatures can be realized given further consultation with Lamons Engineering Department.



LAMONS STYLE WRI-LP

Designed for highly corrosive environments, Style WRI-LP is a Spiral wound gasket with a conventional outer guide ring and a "Kammpro" style LPI inner ring. This dual sealing design engages the raised face completely from the OD to the bore. The winding can be constructed with the required metal and soft filler specified by the user. The "Kammpro" inner ring metal can be ordered in any alloy, such as Monel®, or in carbon steel. A carbon steel inner ring can be given a protective PTFE coating for increased chemical resistance. The Kammpro inner ring is faced typically with either 0.020" (0.5 mm) thick EPTFE or graphite. The WRI-LP has seen wide-spread approvals for Hydrofluoric Acid (HF) service, although this design has much further potential. Its main advantages are: no metal contact with the media; chemical resistance; fire safe design; sizing to meet ASME B16.5; available in large diameter and for special flanges.



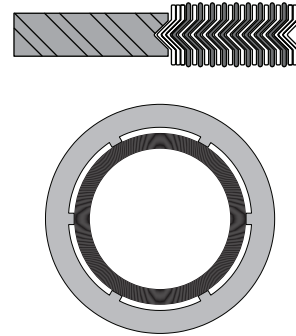
LAMONS INHIBITOR

Lamons Inhibitor gasket provides corrosion resistance in the most extreme conditions. It combines a HTG filler configuration with highest purity graphite, and a Kammpro inner ring laminated with soft PTFE material. The design of the Inhibitor gasket utilizes the Kammpro inner ring to provide the primary sealing interface. The inner ring material and its covering layer are inert in terms of corrosion through contact with dissimilar materials. This fire safe design incorporates the sealing integrity of highest purity graphite in conjunction with mica on the ID and OD, preventing the entrance of further corrosive conditions to the media.



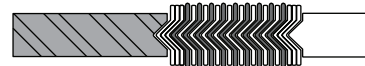
LAMONS STYLE WR-AB

Inward buckling of spiral wound gaskets is sometimes a concern in industry today. Work is ongoing through various industry committees to improve the standard in this regard. Some end users do not want to use inner rings due to cost or bore intrusion - to address this stance, Lamons offers Style WR-AB. By creating a space for expansion between the OD of the winding and the outer ring, the buckling along the inside could be reduced. This feature, combined with a reinforced inside circumference, help to further reduce the likelihood of inward buckling after installation.



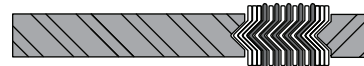
LAMONS STYLE WRI-HF

This gasket was developed for Hydrofluoric (HF) acid applications. It consists of a Monel® and PTFE winding with a carbon steel centering ring and a PTFE inner ring. The carbon steel outer ring can be coated with special HF acid detecting paint if desired. The PTFE inner ring reduces corrosion to the flanges between the bore of the pipe and the ID of the spiral wound sealing element.



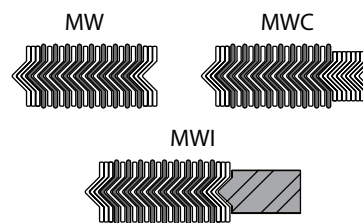
LAMONS STYLE WRI-RJ

The style WRI-RJ gasket is identical to a Style WRI in construction features but is specially sized to be used as a replacement gasket for flanges machined to accept oval or octagonal ring joint gaskets. The sealing component is located between the ID of the groove machined in the flange and the flange bore. These are intended to be used as replacement parts and are considered a maintenance item. In new construction, where spiral wound gaskets are intended to be used, raised face flanges should be utilized.



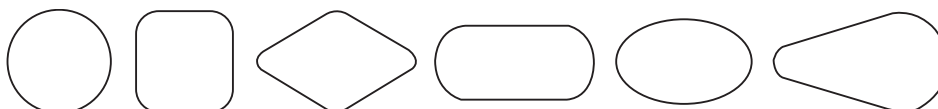
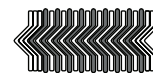
LAMONS STYLE MW, MWC & MWI

These gaskets are available in round, obround, and oval shapes and are used for standard manhole cover plates. When spiral wound manhole gaskets with a straight side are required, it is necessary that some curvature be allowable, given to the fact that spiral wound gaskets are wrapped under tension and therefore tend to buckle inward when the gaskets are removed from the winding mandrel. As a rule of thumb, the ratio of the long ID to the short ID should not exceed three to one.



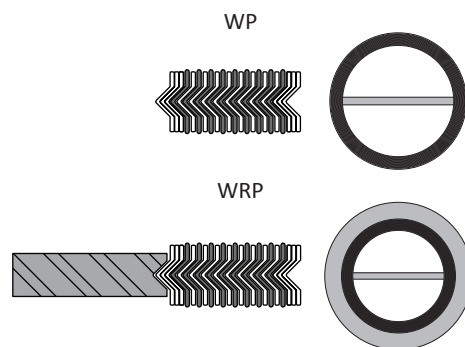
LAMONS STYLE H

Style H gaskets are for use on boiler hand hole and tubecap assemblies. They are available in round, square, rectangular, diamond, obround, oval and pear shapes. Lamons has tooling available for manufacturing most of the standard handhold and tubecap sizes of the various boiler manufacturers. However, these are also available in special sizes and shapes. (To order special gaskets, dimensional drawings or sample cover plates should be provided in order to assure proper fit.)



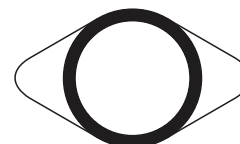
LAMONS STYLE WP & WRP

These gaskets are similar to Style W and Style WR, with the addition of pass partitions for use with shell and tube heat exchangers. Partitions are normally supplied as double-jacketed construction, made of the same material as the spiral wound component. The partition strips can be soft soldered, tack welded or silver soldered to the spiral wound component. The double-jacketed partition strips are normally slightly thinner than the spiral wound component in order to minimize the bolt loading required to properly seat the gasket.



LAMONS STYLE L

The spiral wound components of Style L are identical to those of Style W and in addition have a wire loop welded to the outer periphery of the gasket, sized so as to fit over diametrically opposite bolts, for proper centering of the spiral wound component on the gasket seating surface. Whenever possible, it is recommended that a Style WR gasket be used in lieu of a Style L gasket because of the obvious advantages of the outer solid metal guide ring. The Style L is considerably more difficult to produce than the Style WR and therefore more expensive.



SPIRAL WOUND GASKET DIMENSIONS FOR PIPE FLANGES

Spiral wound gaskets must be sized to ensure the winding component is seated properly between flat surfaces. If it protrudes beyond a raised face or into a flange bore, mechanical damage and leakage may occur.

Style W typically is applied in confined groove type flanges, and it is sized by the following formulas:

Gasket is confined on the Inside Diameter (ID) and Outside Diameter (OD):

$$\text{Gasket Inside Diameter (ID)} = \text{Groove Inside Diameter (ID)} + 1/16'' (1.5 \text{ mm})$$

$$\text{Gasket Outside Diameter (OD)} = \text{Groove Outside Diameter (OD)} - 1/16'' (1.5 \text{ mm})$$

Gasket is confined on the Outside Diameter (OD):

$$\text{Gasket Inside Diameter (ID)} = \text{Bore} + \text{Minimum } 1/4'' (6.4 \text{ mm})$$

$$\text{Gasket Outside Diameter (OD)} = \text{Recess Outside Diameter (OD)} - 1/16'' (1.5 \text{ mm})$$

LIMITATIONS OF SIZE & THICKNESS

Gasket Thickness		Maximum Inside Diameter (ID)*		Maximum Flange Width*		Recommended Compressed Thickness	
Inches	mm	Inches	mm	Inches	mm	Inches	mm
0.063	1.59	9	229	0.375	9.53	0.050/0.055	1.27/1.39
0.100	2.54	12	305	0.500	12.70	0.075/0.080	1.91/2.03
0.125	3.18	40	1016	0.750	19.05	0.090/0.100	2.29/2.54
0.175	4.45	75	1905	1.000	25.40	0.125/0.135	3.18/3.43
0.250	6.35	160	4064	1.250	31.75	0.180/0.200	4.57/5.08
0.285	7.24	160	4064	1.250	31.75	0.200/0.220	5.08/5.59

*These limitations are intended as a general guide only. Materials of construction and flange width of gasket can affect the limitations listed.