

PLAINTIFF'S EXHIBIT

FBW-17

*For
long,
dependable
leak-proof
performance*



Johns-Manville

GOETZE

METALLIC GASKETS

F. B. Wright Company

9999 Mercier Avenue

Dearborn, Michigan

TELEPHONE VI. 3-8250

FBW-247

The Johns-Manville Goetze Plant Produces a Complete Range of Metallic Gaskets Skillfully Designed to Seal Pipe Flanges and Equipment Closures



Higher temperatures, pressures and corrosives are placing ever greater burdens on the metallic gasket. This book is designed to aid you in making the right choice of these sealing elements, thus assuring you optimum efficiency and economy of service.

The superbly-equipped Johns-Manville Goetze Plant at N. Brunswick, N. J. is highly regarded throughout industry for the production of metallic and semi-metallic gaskets to almost any specification and of practically any metal.

Here you will find tool makers turning out templates, dies and fixtures in a completely equipped machine shop . . . a blacksmith shop with every up-to-the-minute facility...a "hand" department to fabricate prototypes and sample models; a hand-and-press pilot plant for short runs . . . a high production press section capable of manufacturing one hundred, or a hundred million units of any size or type with equal precision.

In these and other departments of the J-M plant, men and machines are teamed up to turn out metallic gaskets which we believe are the finest of their kind and will provide long, dependable service.

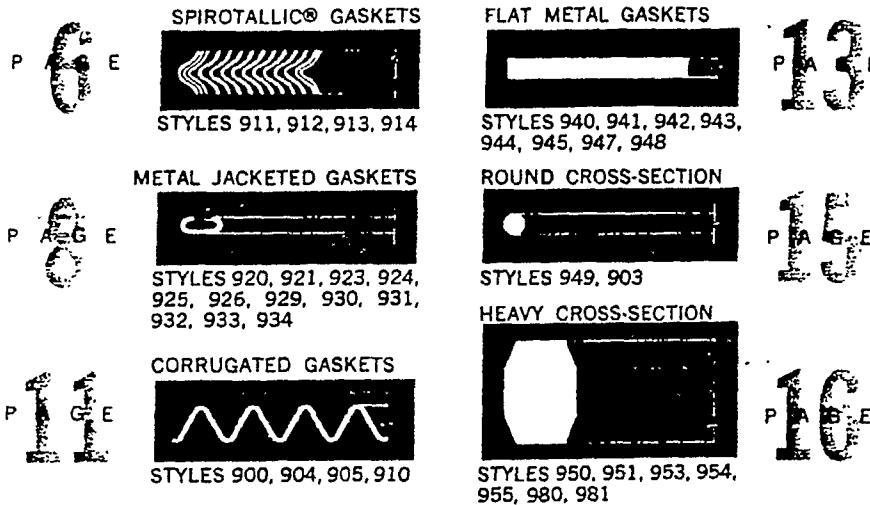
To choose a standard gasket for your needs, refer to the Simplified Selection Chart, presented here. You will find recommended J-M gasket styles listed by applications and service conditions. For additional information, consult your local Johns-Manville Distributor. Or, your J-M Representative will help you select the gaskets best suited for your applications.

PRODUCT WARRANTY

J-M Goetze Gaskets are warranted free from defects in workmanship and in raw materials of our own manufacture. These products are not guaranteed as to performance under any specific service condition nor for any specific period of time. Our liability for breach of this warranty is limited, at our option, to refund of the invoice value of defective material or in the replacement thereof.

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Many Efficient Sealing Elements Stem From These Six Basic Johns-Manville Gasket Designs



HEAT EXCHANGER GASKETS 19 STANDARD SIZE TABLES 20

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SIMPLIFIED SELECTION CHART			
APPLICATION	SERVICE CONDITION	RECOMMENDED J-M GASKET STYLE	
JOINT*	J-M RECOMMENDATION	Second Choice	Third Choice
Cast Iron (ASA B 16.1 & B 16.2) 125# & 250#	905	911	923 Soft Metals
Forged Steel Flanges (ASA B16.5)			
Raised Face and Large Male-Female			
150# & 300# 4-Bolt Flanges	912	926	900 Coated†
150# other than 4-Bolt	912	926	900 Coated†
300# (other than 4-Bolt), 400#, 600#, 900#, 1500#, 2500#	913	926	941
Tongue & Groove — All Pressures	911	941	923
A.P.I. Ring Type Joint — All Pressures (ASA B16.20)	951	950	
Metal-to-Metal	911		
EQUIPMENT APPLICATION			
Ammonia Fittings	911	940	900 Coated†
Autoclaves	954B, 954D	911	923
Dowtherm Equipment & Lines	Proper Spirotallic Style	900 Soft Iron Coated with Plastiseal	941 Soft Iron Coated with Plastiseal
Gas Mains	900 Lead	930, 923 (Lead)	
Handholes, Manholes (Boiler)	914	920, 923	
Heat Exchangers	923	940	
Metal-to-Metal	911		
Vacuum Lines & Pumps	949 or 903	930	940 Soft Metals
Valve Bonnets			
Screwed, less than 1/4" wide	930	941	920
Screwed, more than 1/4" wide	941	930, 920	900
Bolted, Round	911	941	930, 920
Bolted, Oval-Oblong	911	930, 920	900
Bolted, Rectangular	931	900	
Pressure Seal	954B		
Metal-to-Metal	911		

*Recommendations also apply to flanges of other materials dimensioned to these specifications

†Coated† means gasket should be coated with J-M Plastiseal or Aquaseal when installed

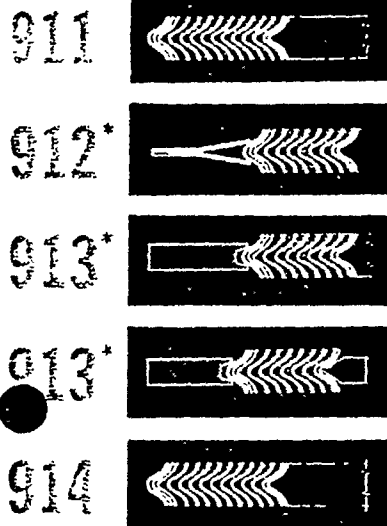
READY REFERENCE AND

Cross-Sections of J-M Metallic Gaskets

SPIROTALLIC®

General purpose, spiral-wound gaskets. Consist of preformed V-shaped strip of metal which is wound into a spiral. Metal layers are separated by an asbestos filler. Available with centering or compression limiting device.

Pages 6-7



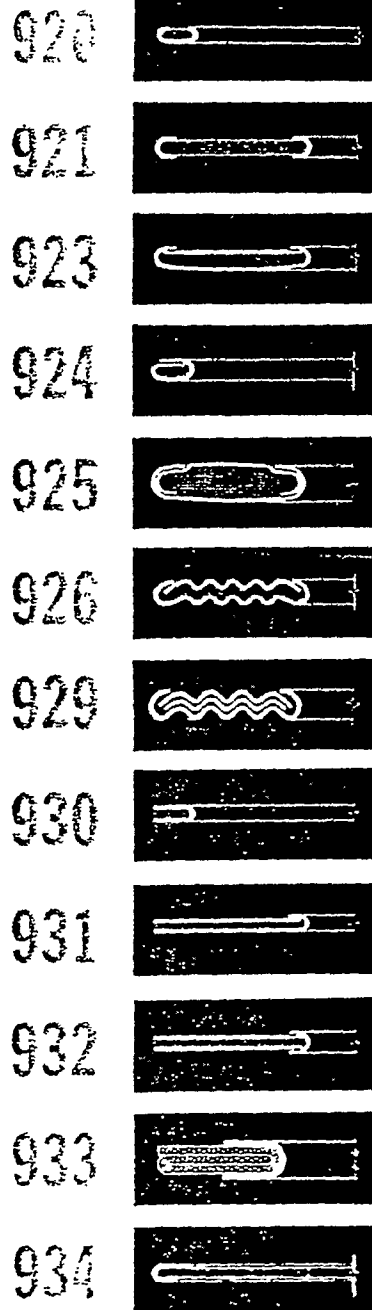
* COLOR CODING USED ON
J-M 912 and 913
SPIROTALLIC GASKETS

Aluminum	Silver
Carpenter 20	Pink
Copper	Brown
Hastelloy "C"	Gold
Inconel	Orange & Blue
Monel	Orange
Nickel	Orange & Green
Steel, Plain	Black
Steel, Zinc Coated	White
Titanium	Purple
Type 304 Stainless	Yellow
Type 304 ELC Stainless	Yellow & Black
Type 309 SC5 Stainless	Yellow & Green
Type 316 Stainless	Green
Type 316 ELC Stainless	Green & Black
Type 347 Stainless	Blue

METAL JACKETED

An early basic design. Offered today in many variations. Consist of soft compressible filler (asbestos, Teflon, etc.) partially or wholly enclosed in a metal jacket. Available in irregular or non-circular shapes.

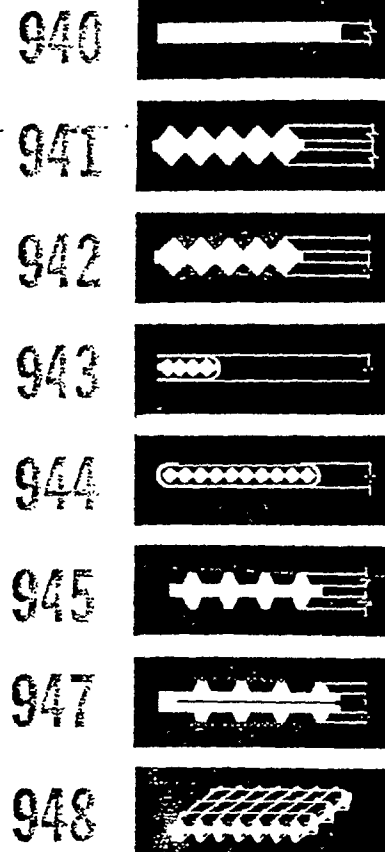
Pages 8-10



FLAT METAL

"Brute-force" seals. Gaskets made of flat metal, relatively thin in relation to their width. Used as cut from sheet metal, or with the surface area reduced by machining for greater sealability.

Pages 13-14



COMPARISON CHART

Described in this Catalog

CORRUGATED

Line contact seals. Consist of thin metal, corrugated or embossed concentric with I.D. Used plain, coated with sealing compound, with an asbestos cloth jacket, or with asbestos cord cemented into the corrugations.

Pages 11-12

900



904



905



910

ROUND CROSS-SECTION

Solid metal, line contact seal. Generally made from round wire of the desired diameter, cut to the length of the gasket mean circumference, then formed into a circle and welded.

Page 15

903
HALF



903
FULL



949

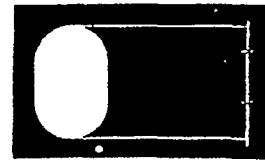


HEAVY CROSS-SECTION

Seal by line contact or wedging action. Usually rectangular or triangular shaped gaskets, machined in heavy cross-sections from solid metal for high-pressure, temperatureservice where operating conditions require special joint design.

Pages 16-18

950



951



953
LENS



954B
BRIDGEMAN



954D
DELTA



955



SELECTING THE RIGHT METAL IS IMPORTANT IN GASKET CONSTRUCTION

For any gasket application the choice of metal will depend upon the operating conditions, the mechanical features of the flanged assembly, and the design characteristics of the gasket.

On the following pages, reference is made to materials which are or are not used for certain gasket constructions. (Lead, for example, is not suitable in some designs because of its poor compression-recovery ratio.) Temperature plays a role. The tabulation right lists some of the typical metals used by Johns-Manville for metallic gaskets together with their generally accepted maximum temperature limitation for long duration exposure. Gasket style and size, and the severity of the corrosive conditions expected might increase or decrease these limits. Any non-metallic elements in the gasket also may possibly affect upper temperature limits.

MATERIAL	MAX. TEMP. (°F)
Lead	212
The Common Brasses	500
Copper	600
Aluminum	800
Stainless Steel, Type 304	1000
Stainless Steel, Type 316	1000
Soft Iron, Low Carbon Steel	1000
Titanium	1000
Stainless Steel, Type 502	1150
Stainless Steel, Type 410	1200
Silver	1200
Nickel	1400
Stainless Steel, Type 430	1400
Monel	1500
Stainless Steel, Type 309 SCb	1600
Stainless Steel, Type 321	1600
Stainless Steel, Type 347	1600
Inconel	2000
Hastelloy	2000

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WHERE recommended: J-M Spirotallic gaskets keep tight durable seals, despite difficult conditions, on standard or special flanges, valve bonnets, boiler tube caps, handholes and manholes. They are particularly suitable to extremes in joint relaxation, temperature or pressure cycling, shock or vibration.

Spirotallic Gaskets are recommended for any circular or moderately non-circular application where an approximate compressed thickness of either $\frac{3}{32}$ " or $\frac{1}{8}$ " can be accepted.

HOW they work: Spirotallic gaskets are made of spring-like metal strips, formed into a special vee shape, alternately spiral wound with an asbestos filler. Sealing action is the result of a complex combination of the yield and flow of the metal and soft filler plies, when the gasket is compressed to its predetermined thickness. Metal-to-metal plies making up the inner and outer edges must be under compression.

WHY suggested: Spirotallic gaskets offer greater resiliency than any other metal-asbestos type. Very strong mechanically, each gasket is uniformly dense in construction. Available in different densities to match bolting conditions and thus assure optimum performance. J-M produces a complete line engineered for ASA standard flanges (See pages 20-23). And for special flanges, J-M will design and produce gaskets with the precise characteristics desired.

WHAT constructions are available: This basic Spirotallic design (J-M 911) is intended for flanges engineered to accept them. They can be made circular or moderately non-circular in shape. The addition of centering devices, and compression limiting rings adapt Spirotallic gaskets to use on many other types of flanges and closures. These variations are described under individual styles.

Standard metals used to make Spirotallic Gaskets are zinc-plated low carbon steel, and type 304 stainless steel. Available to order metals include aluminum, copper, plain low carbon steel, nickel, monel, Inconel, Inconel "X", stainless steel types 309 SCb, 316, 321, 347, Hastelloy B and C, Carpenter 20, Silver and titanium. See page 5 for assistance in selecting the metal.

Color-coding is employed on J-M 912 and J-M 913 Spirotallics to indicate the metal employed, and to make it easier for storekeepers and installers. Each metal is assigned a distinctive color which is painted on the edge of the centering guide. See page 4, under Spirotallic.

Fillers: White Canadian Paper is standard. Blue African Asbestos Paper Fillers are also available. There are many satisfactory Spirotallic installations on record where line temperatures run as high as 1300°F for sustained periods, with asbestos fillers. Solid Teflon fillers are available and are suitable for -320°F to -500°F service. Teflon impregnated fillers are suitable to 600°F service.

GASKET THICKNESSES AVAILABLE

Nominal	Actual
$\frac{1}{8}$ "	.125" $\pm$.005"
$\frac{3}{16}$ "	.175" $\pm$.005"
$\frac{1}{4}$ "	.250" $\pm$.010"

FLANGE SURFACE FINISHES

Although Spirotallic gaskets can be used for general, noncritical service with almost any commercially produced flange surface finish, 125-200 rms is preferred.

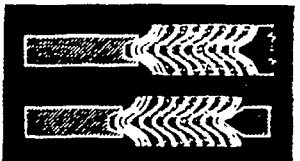
SPIROTALLIC® Gaskets

HIGHLY RESILIENT SPRING-ACTION DESIGN AFFORDS OUTSTANDING EFFICIENCY IN COUNTLESS APPLICATIONS. WITHSTANDS VIBRATION, VARYING STRESSES AND TEMPERATURES.



J-M 911 Spirotallic Gaskets

are widely used by equipment builders employing metal-to-metal joints in an ever growing list of applications. They are also suitable for standard tongue and groove, and male-female joints at all pressures (see page 20 for dimensions), for ammonia fittings, valve bonnets, and many other closures designed to accept this highly resilient gasket. They are particularly suited to applications where weight and space are critical factors in over-all design problems, as in aircraft or missile units. Standard gasket thickness is $\frac{3}{16}$ " nominal; $\frac{1}{4}$ " and $\frac{1}{2}$ " available for special applications.



J-M 913 Spirotallic Gaskets

are recommended for excellent service life on standard piping, and will withstand wide variations in pressure or temperature. They give equally good service in many other closures. Ordinarily furnished with a solid metal centering and compression limiting ring around the outer edge only. For extreme operating conditions, J-M 913 can be furnished with an inner as well as an outer compression ring. Such a ring fills space between flanges and helps to minimize turbulence or erosion of flange facings.

Standard Style 913 Gasket dimensions are based on API Standard 601 (see page 21 for standard flange sizes available). Gasket thickness is $\frac{3}{16}$ " nominal. The solid compression limiting rings are $\frac{1}{8}$ " thick and are intended to prevent damage from possible over-bolting or careless insertion.

For closures with non-circular outer perimeters the metal rings can be made to required configuration and drilled for bolt holes if necessary.

Style 913 also available in compliance with MIL-G-16265 and MIL-G-21032.



J-M 912 Spirotallic Gaskets

are well suited to general service on low pressure lines. They should be used on raised face flanges, lightly bolted assemblies, or where there is no possibility of over-compression of the gasket. J-M 912 are supplied with a lightweight metal device to center the gasket and control radial expansion under compression. Standard gasket thickness is $\frac{3}{16}$ " nominal.

See page 20 for ASA standard flange sizes.



J-M 914 Spirotallic Boiler Gaskets

because of their design, are highly recommended for manhole, handhole and tube cap applications. They are made to the same basic construction as spirally-wound J-M 911, but in suitable shapes for boiler applications. Rugged and highly resistant to effects of corrosion and temperature, they can make and maintain a tight seal even on badly pitted surfaces. Readily compressed with light bolting. Can be used as a long-lasting replacement for woven asbestos gaskets.

Available for nearly all existent handhole, tube cap and manhole covers for standard makes of boilers, economizers and superheaters. (See pages 20-22-23 for sizes.) Spirotallic Manhole Gaskets with inner centering guide can be furnished on request. Standard gasket thickness is $\frac{3}{16}$ " nominal; $\frac{1}{4}$ " and $\frac{1}{2}$ " available for special applications.

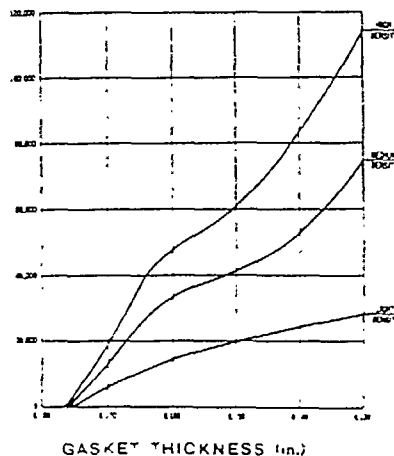
Also available in compliance with requirements of MIL-G-15342A.

When ordering, give name, actual shape, inside dimensions and over-all gasket width. For unclassified or manhole gaskets, the size, shape, width, thickness and metal should be specified. For all unclassified handhole shapes, and manhole shapes other than oval, a template or sample is requested. For unlisted sizes and shapes a template or cover is required to assure proper fit.

TYPICAL COMPRESSION CURVES FOR SPIROTALLIC GASKETS

The Spirotallic Gasket gives best performance when compressed to a predetermined specific thickness. Its compressibility can be accurately controlled for a specific bolt loading by varying the density, i.e., the number of metal-asbestos plies or wraps per unit of gasket width.

Filler thickness may be from 0.010 to 0.032 in. Two gasket thicknesses, $\frac{1}{8}$ and $\frac{3}{16}$ in., are standard and suitable for most applications. For $\frac{1}{8}$ -in. thick gaskets, compression to a thickness of 0.100 ± 0.005 in. is recommended. For the $\frac{3}{16}$ -in. thick gasket, a compression to 0.130 ± 0.005 in. is considered preferable.



J-M CHEMPAC® SPIROTALLIC GASKETS

J-M Spirotallic 911, 912, 913 designs are also available with Dupont Teflon suspensoid-treated asbestos fillers or pure Teflon fillers for chemical and process applications requiring high corrosion and solvent resistance. Complete details on the Chempac series of 911, 912 and 913 Spirotallic Gaskets, as well as many other Chempac Packings, Sheets, Gaskets, and Teflon components, are available in the J-M Chempac Catalog, PK-185A.

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WHERE recommended: J-M Metal Jacketed gaskets are ideally suited for smooth surface applications including heat exchangers, valve bonnets, gas mains, vacuum lines, cast iron flanges, autoclaves, boilers and glass-lined equipment. Used on circular and non-circular applications requiring assurance of 20 to 30 percent compressibility to compensate for flange misalignment, warpage, etc. Metal jacketed styles are designed for assemblies in which the elasticity of bolts or other factors can compensate for joint relaxation. For joints requiring close maintenance of the compressed thickness or which mechanically limit the compression (e.g. metal-to-metal), the metal jacketed design normally is not recommended.

HOW they work: J-M Metal Jacketed gaskets are made of a soft, conformable filler partially or wholly enclosed in a metal jacket. The primary seal against leakage is the inner metal lap where the gasket is thickest when compressed. This section flows, effecting the seal. Entire inner lap must be under compression. The outer lap, if any, when compressed between flange faces provides a secondary seal. For added resiliency and strength, some styles employ intermediate corrugations which act as labyrinth seals.

WHY suggested: J-M Metal Jacketed gaskets are more compressible than the corrugated group, and they offer compensation for flange irregularities or misalignments when high pressures are to be sealed. By selection of the proper style almost any size or configuration may be produced.

WHAT constructions are available: J-M metal jacketed gaskets are available in several cross sections each best suited for particular applications. These features are described under individual styles.

Standard metals used to make Metal Jacketed gaskets are lead, aluminum (grade 1100), copper, the brasses, soft steel, nickel, monel, inconel, and stainless steel types 405, 410, 302, 304, 316, 321, 347.

Fillers: Asbestos millboard and asbestos paper are standard. Normally limited to 850-900F, in non-critical service to 1200F. Teflon (virgin, reprocessed, or glass-filled) is often used to 500F, where extremely corrosive conditions exist.

Metallic fillers are used to replace the non-metallic fillers in J-M 924 and J-M 926 when service temperatures exceed 900F.



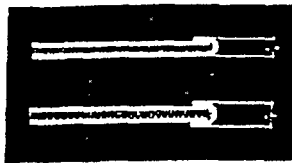
J-M 930 French Type (one-piece construction) gasket is ideally suited for narrow circular applications (i.e.

valve bonnets, sight glasses, vacuum seals) requiring a positive unbroken metal gasket face across the full width. French Type gaskets are made by flanging a metal jacket over the inner edge and both faces of a soft filler leaving the outer edge exposed. Maximum width is limited by metal, diameter and gasket thickness. Refer to table at right for sizes in copper. For available sizes in metals other than copper, see your J-M Representative.

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METAL-JACKETED Gaskets

THESE SEALS ARE THE PRACTICAL ANSWER TO THE PROBLEM OF IRREGULAR OR NON-CIRCULAR SHAPES



J-M 931 and J-M 932 French Types are modifications of J-M 930. The two-piece construction of J-M 931 and the three-piece construction of J-M 932 are recommended for wide or irregular shapes (cylinder heads, odd shaped valve bonnets) not requiring protection of filler material or additional flange support at outer edge. Tooling is less expensive than for the double-jacketed (J-M 923) type.



J-M 933 French Type is engineered specifically for glass-lined units or lightly bolted flanges. It is made of a thick woven asbestos filler with a one-piece metal jacket covering the inner edge and equal portions of both contact faces. J-M 933 also is available with an envelope of pure Teflon, either split or welded (for complete details, refer to PK-185A). For glass-lined equipment, the jacket material should be a softer metal, such as lead, aluminum, copper or silver. In dimensioning the J-M 933 gasket

for glass-lined flanges, it is important that the metal jacket be fully in contact with the flat portion of the flange faces. The I.D. must be located outside of the radiused area of the flange bore. This will assure a positive seal between the flange jacket and the glass parts, and the soft gasket filler will be fully protected. For metal flanges, soft iron or steel, monel, nickel and stainless steels have been successfully used.



J-M 934 Inside-Open Type is the reverse of the French type gasket. This construction may be required

for application where the outer edge of the gasket is exposed to the fluid pressure, or where a non-metallic gasket must be used but mechanical reinforcement is desirable around the outer edge. J-M 934 is made of a soft filler with a metal jacket over the outer edge and all or part of both faces.

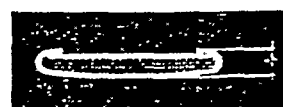


J-M 920 Single Jacketed gaskets are used for relatively narrow applications similar to French type.

Made by encasing a soft filler on one face and both edges with metal. This jacketed construction may be better suited for narrow faced closures because width-diameter limitations do not apply and J-M 920 is generally less costly to tool than French type. Non-circular as well as circular shapes can be furnished.

The available standard sizes of J-M 920 are shown on pages 24, 25 and 26. The chart lists the sizes produced most economically in copper, aluminum and soft iron. These sizes should be adapted whenever possible, in order to avoid delay in filling the order. For widths over 1/4", J-M 923 is suggested. Specifications HH-G-101A, AN-900, AN-123020-081 are available in some sizes. Information on request.

J-M 920 Boiler Gaskets are available in standard handhole and tube cap sizes, as shown in the table (see page 10). The light gauge metal jacket, together with the soft asbestos filler, provides a rugged yet resilient construction ideally suited for general use on relatively smooth surfaces in applications not subject to wide fluctuation in operating temperature and pressure.



J-M 923 Double Jacketed gasket is ideally used when complete protection of the filler material is required.

Also provides additional support of the flange at the outer edge by addition of lapped-over jacket.

J-M 923 is constructed of a soft filler com-

J-M 930 FRENCH TYPE COPPER ASBESTOS GASKETS (ONE PIECE CONSTRUCTION ONLY) DIMENSIONS - INCHES

I.D.	O.D.	THK.	I.D.	O.D.	THK.	I.D.	O.D.	THK.	I.D.	O.D.	THK.
$\frac{1}{8}$	$\frac{3}{4}$	$\frac{1}{8}$	$\frac{1}{4}$	$1\frac{1}{4}$	$\frac{1}{8}$	$1\frac{1}{8}$	$2\frac{1}{8}$	$\frac{1}{8}$	$2\frac{1}{8}$	$3\frac{3}{8}$	$\frac{1}{8}$
$\frac{1}{4}$	$\frac{7}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$1\frac{3}{4}$	$\frac{1}{8}$	$1\frac{3}{8}$	$2\frac{3}{8}$	$\frac{1}{8}$	$2\frac{3}{8}$	$3\frac{7}{8}$	$\frac{1}{8}$
$\frac{3}{8}$	$1\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{2}$	$2\frac{1}{8}$	$\frac{1}{8}$	$1\frac{1}{2}$	$2\frac{7}{8}$	$\frac{1}{8}$	$1\frac{1}{2}$	$3\frac{1}{4}$	$\frac{1}{8}$
$\frac{1}{2}$	$1\frac{5}{8}$	$\frac{1}{8}$	$\frac{5}{8}$	$2\frac{5}{8}$	$\frac{1}{8}$	$1\frac{5}{8}$	$3\frac{1}{8}$	$\frac{1}{8}$	$1\frac{5}{8}$	$3\frac{5}{8}$	$\frac{1}{8}$
$\frac{5}{8}$	$2\frac{1}{8}$	$\frac{1}{8}$	$\frac{7}{8}$	$3\frac{1}{8}$	$\frac{1}{8}$	$2\frac{1}{8}$	$3\frac{5}{8}$	$\frac{1}{8}$	$2\frac{1}{8}$	$4\frac{1}{8}$	$\frac{1}{8}$
1	$3\frac{3}{8}$	$\frac{1}{8}$	$1\frac{1}{8}$	$4\frac{1}{8}$	$\frac{1}{8}$	$3\frac{3}{8}$	$4\frac{5}{8}$	$\frac{1}{8}$	$3\frac{3}{8}$	$5\frac{1}{8}$	$\frac{1}{8}$
$1\frac{1}{8}$	$3\frac{7}{8}$	$\frac{1}{8}$	$1\frac{1}{4}$	$4\frac{5}{8}$	$\frac{1}{8}$	$3\frac{7}{8}$	$5\frac{1}{8}$	$\frac{1}{8}$	$3\frac{7}{8}$	$5\frac{5}{8}$	$\frac{1}{8}$
$1\frac{1}{4}$	$4\frac{1}{8}$	$\frac{1}{8}$	$1\frac{1}{2}$	$5\frac{1}{8}$	$\frac{1}{8}$	$4\frac{1}{8}$	$5\frac{5}{8}$	$\frac{1}{8}$	$4\frac{1}{8}$	$6\frac{1}{8}$	$\frac{1}{8}$
$1\frac{1}{2}$	$4\frac{5}{8}$	$\frac{1}{8}$	$1\frac{3}{4}$	$5\frac{5}{8}$	$\frac{1}{8}$	$4\frac{5}{8}$	$6\frac{1}{8}$	$\frac{1}{8}$	$4\frac{5}{8}$	$6\frac{5}{8}$	$\frac{1}{8}$
$1\frac{3}{4}$	$5\frac{1}{8}$	$\frac{1}{8}$	$1\frac{5}{8}$	$6\frac{1}{8}$	$\frac{1}{8}$	$5\frac{1}{8}$	$6\frac{5}{8}$	$\frac{1}{8}$	$5\frac{1}{8}$	$7\frac{1}{8}$	$\frac{1}{8}$
$1\frac{5}{8}$	$5\frac{5}{8}$	$\frac{1}{8}$	2	$6\frac{5}{8}$	$\frac{1}{8}$	$5\frac{5}{8}$	$7\frac{1}{8}$	$\frac{1}{8}$	$5\frac{5}{8}$	$7\frac{5}{8}$	$\frac{1}{8}$
2	$6\frac{1}{8}$	$\frac{1}{8}$	$2\frac{1}{8}$	$7\frac{1}{8}$	$\frac{1}{8}$	$6\frac{1}{8}$	$7\frac{5}{8}$	$\frac{1}{8}$	$6\frac{1}{8}$	$8\frac{1}{8}$	$\frac{1}{8}$
$2\frac{1}{8}$	$6\frac{5}{8}$	$\frac{1}{8}$	$2\frac{1}{4}$	$7\frac{5}{8}$	$\frac{1}{8}$	$6\frac{5}{8}$	$8\frac{1}{8}$	$\frac{1}{8}$	$6\frac{5}{8}$	$8\frac{5}{8}$	$\frac{1}{8}$
$2\frac{1}{4}$	$7\frac{1}{8}$	$\frac{1}{8}$	$2\frac{1}{2}$	$8\frac{1}{8}$	$\frac{1}{8}$	$7\frac{1}{8}$	$8\frac{5}{8}$	$\frac{1}{8}$	$7\frac{1}{8}$	$9\frac{1}{8}$	$\frac{1}{8}$
$2\frac{1}{2}$	$7\frac{5}{8}$	$\frac{1}{8}$	$2\frac{3}{4}$	$8\frac{5}{8}$	$\frac{1}{8}$	$7\frac{5}{8}$	$9\frac{1}{8}$	$\frac{1}{8}$	$7\frac{5}{8}$	$9\frac{5}{8}$	$\frac{1}{8}$
$2\frac{3}{4}$	$8\frac{1}{8}$	$\frac{1}{8}$	$2\frac{5}{8}$	$9\frac{1}{8}$	$\frac{1}{8}$	$8\frac{1}{8}$	$9\frac{5}{8}$	$\frac{1}{8}$	$8\frac{1}{8}$	$10\frac{1}{8}$	$\frac{1}{8}$
$2\frac{5}{8}$	$8\frac{5}{8}$	$\frac{1}{8}$	$2\frac{7}{8}$	$9\frac{5}{8}$	$\frac{1}{8}$	$8\frac{5}{8}$	$10\frac{1}{8}$	$\frac{1}{8}$	$8\frac{5}{8}$	$10\frac{5}{8}$	$\frac{1}{8}$
3	$9\frac{1}{8}$	$\frac{1}{8}$	3	$10\frac{1}{8}$	$\frac{1}{8}$	$9\frac{1}{8}$	$10\frac{5}{8}$	$\frac{1}{8}$	$9\frac{1}{8}$	$11\frac{1}{8}$	$\frac{1}{8}$
$3\frac{1}{8}$	$9\frac{5}{8}$	$\frac{1}{8}$	$3\frac{1}{4}$	$10\frac{5}{8}$	$\frac{1}{8}$	$9\frac{5}{8}$	$11\frac{1}{8}$	$\frac{1}{8}$	$9\frac{5}{8}$	$11\frac{5}{8}$	$\frac{1}{8}$
$3\frac{1}{4}$	$10\frac{1}{8}$	$\frac{1}{8}$	$3\frac{1}{2}$	$11\frac{1}{8}$	$\frac{1}{8}$	$10\frac{1}{8}$	$11\frac{5}{8}$	$\frac{1}{8}$	$10\frac{1}{8}$	$12\frac{1}{8}$	$\frac{1}{8}$
$3\frac{1}{2}$	$10\frac{5}{8}$	$\frac{1}{8}$	$3\frac{3}{4}$	$11\frac{5}{8}$	$\frac{1}{8}$	$10\frac{5}{8}$	$12\frac{1}{8}$	$\frac{1}{8}$	$10\frac{5}{8}$	$12\frac{5}{8}$	$\frac{1}{8}$
$3\frac{3}{4}$	$11\frac{1}{8}$	$\frac{1}{8}$	$3\frac{5}{8}$	$12\frac{1}{8}$	$\frac{1}{8}$	$11\frac{1}{8}$	$12\frac{5}{8}$	$\frac{1}{8}$	$11\frac{1}{8}$	$13\frac{1}{8}$	$\frac{1}{8}$
$3\frac{5}{8}$	$11\frac{5}{8}$	$\frac{1}{8}$	4	$12\frac{5}{8}$	$\frac{1}{8}$	$11\frac{5}{8}$	$13\frac{1}{8}$	$\frac{1}{8}$	$11\frac{5}{8}$	$13\frac{5}{8}$	$\frac{1}{8}$
4	$12\frac{1}{8}$	$\frac{1}{8}$	$4\frac{1}{8}$	$13\frac{1}{8}$	$\frac{1}{8}$	$12\frac{1}{8}$	$13\frac{5}{8}$	$\frac{1}{8}$	$12\frac{1}{8}$	$14\frac{1}{8}$	$\frac{1}{8}$
$4\frac{1}{8}$	$12\frac{5}{8}$	$\frac{1}{8}$	$4\frac{1}{4}$	$13\frac{5}{8}$	$\frac{1}{8}$	$12\frac{5}{8}$	$14\frac{1}{8}$	$\frac{1}{8}$	$12\frac{5}{8}$	$14\frac{5}{8}$	$\frac{1}{8}$
$4\frac{1}{4}$	$13\frac{1}{8}$	$\frac{1}{8}$	$4\frac{1}{2}$	$14\frac{1}{8}$	$\frac{1}{8}$	$13\frac{1}{8}$	$14\frac{5}{8}$	$\frac{1}{8}$	$13\frac{1}{8}$	$15\frac{1}{8}$	$\frac{1}{8}$
$4\frac{1}{2}$	$13\frac{5}{8}$	$\frac{1}{8}$	$4\frac{3}{4}$	$14\frac{5}{8}$	$\frac{1}{8}$	$13\frac{5}{8}$	$15\frac{1}{8}$	$\frac{1}{8}$	$13\frac{5}{8}$	$15\frac{5}{8}$	$\frac{1}{8}$
$4\frac{3}{4}$	$14\frac{1}{8}$	$\frac{1}{8}$	$4\frac{7}{8}$	$15\frac{1}{8}$	$\frac{1}{8}$	$14\frac{1}{8}$	$15\frac{5}{8}$	$\frac{1}{8}$	$14\frac{1}{8}$	$16\frac{1}{8}$	$\frac{1}{8}$
$4\frac{7}{8}$	$14\frac{5}{8}$	$\frac{1}{8}$	5	$15\frac{5}{8}$	$\frac{1}{8}$	$14\frac{5}{8}$	$16\frac{1}{8}$	$\frac{1}{8}$	$14\frac{5}{8}$	$16\frac{5}{8}$	$\frac{1}{8}$
5	$15\frac{1}{8}$	$\frac{1}{8}$	$5\frac{1}{8}$	$16\frac{1}{8}$	$\frac{1}{8}$	$15\frac{1}{8}$	$16\frac{5}{8}$	$\frac{1}{8}$	$15\frac{1}{8}$	$17\frac{1}{8}$	$\frac{1}{8}$
$5\frac{1}{8}$	$15\frac{5}{8}$	$\frac{1}{8}$	$5\frac{1}{4}$	$16\frac{5}{8}$	$\frac{1}{8}$	$15\frac{5}{8}$	$17\frac{1}{8}$	$\frac{1}{8}$	$15\frac{5}{8}$	$17\frac{5}{8}$	$\frac{1}{8}$
$5\frac{1}{4}$	$16\frac{1}{8}$	$\frac{1}{8}$	$5\frac{1}{2}$	$17\frac{1}{8}$	$\frac{1}{8}$	$16\frac{1}{8}$	$17\frac{5}{8}$	$\frac{1}{8}$	$16\frac{1}{8}$	$18\frac{1}{8}$	$\frac{1}{8}$
$5\frac{1}{2}$	$16\frac{5}{8}$	$\frac{1}{8}$	$5\frac{3}{4}$	$17\frac{5}{8}$	$\frac{1}{8}$	$16\frac{5}{8}$	$18\frac{1}{8}$	$\frac{1}{8}$	$16\frac{5}{8}$	$18\frac{5}{8}$	$\frac{1}{8}$
$5\frac{3}{4}$	$17\frac{1}{8}$	$\frac{1}{8}$	$5\frac{7}{8}$	$18\frac{1}{8}$	$\frac{1}{8}$	$17\frac{1}{8}$	$18\frac{5}{8}$	$\frac{1}{8}$	$17\frac{1}{8}$	$19\frac{1}{8}$	$\frac{1}{8}$
$5\frac{7}{8}$	$17\frac{5}{8}$	$\frac{1}{8}$	6	$18\frac{5}{8}$	$\frac{1}{8}$	$17\frac{5}{8}$	$19\frac{1}{8}$	$\frac{1}{8}$	$17\frac{5}{8}$	$19\frac{5}{8}$	$\frac{1}{8}$
6	$18\frac{1}{8}$	$\frac{1}{8}$	$6\frac{1}{8}$	$19\frac{1}{8}$	$\frac{1}{8}$	$18\frac{1}{8}$	$19\frac{5}{8}$	$\frac{1}{8}$	$18\frac{1}{8}$	$20\frac{1}{8}$	$\frac{1}{8}$
$6\frac{1}{8}$	$18\frac{5}{8}$	$\frac{1}{8}$	$6\frac{1}{4}$	$19\frac{5}{8}$	$\frac{1}{8}$	$18\frac{5}{8}$	$20\frac{1}{8}$	$\frac{1}{8}$	$18\frac{5}{8}$	$20\frac{5}{8}$	$\frac{1}{8}$
$6\frac{1}{4}$	$19\frac{1}{8}$	$\frac{1}{8}$	$6\frac{1}{2}$	$20\frac{1}{8}$	$\frac{1}{8}$	$19\frac{1}{8}$	$20\frac{5}{8}$	$\frac{1}{8}$	$19\frac{1}{8}$	$21\frac{1}{8}$	$\frac{1}{8}$
$6\frac{1}{2}$	$19\frac{5}{8}$	$\frac{1}{8}$	$6\frac{3}{4}$	$20\frac{5}{8}$	$\frac{1}{8}$	$19\frac{5}{8}$	$21\frac{1}{8}$	$\frac{1}{8}$	$19\frac{5}{8}$	$21\frac{5}{8}$	$\frac{1}{8}$
$6\frac{3}{4}$	$20\frac{1}{8}$	$\frac{1}{8}$	$6\frac{7}{8}$	$21\frac{1}{8}$	$\frac{1}{8}$	$20\frac{1}{8}$	$21\frac{5}{8}$	$\frac{1}{8}$	$20\frac{1}{8}$	$22\frac{1}{8}$	$\frac{1}{8}$
$6\frac{7}{8}$	$20\frac{5}{8}$	$\frac{1}{8}$	7	$21\frac{5}{8}$	$\frac{1}{8}$	$20\frac{5}{8}$	$22\frac{1}{8}$	$\frac{1}{8}$	$20\frac{5}{8}$	$22\frac{5}{8}$	$\frac{1}{8}$
7	$21\frac{1}{8}$	$\frac{1}{8}$	$7\frac{1}{8}$	$22\frac{1}{8}$	$\frac{1}{8}$	$21\frac{1}{8}$	$22\frac{5}{8}$	$\frac{1}{8}$	$21\frac{1}{8}$	$23\frac{1}{8}$	$\frac{1}{8}$
$7\frac{1}{8}$	$21\frac{5}{8}$	$\frac{1}{8}$	$7\frac{1}{4}$	$22\frac{5}{8}$	$\frac{1}{8}$	$21\frac{5}{8}$	$23\frac{1}{8}$	$\frac{1}{8}$	$21\frac{5}{8}$	$23\frac{5}{8}$	$\frac{1}{8}$
$7\frac{1}{4}$	$22\frac{1}{8}$	$\frac{1}{8}$	$7\frac{1}{2}$	$23\frac{1}{8}$	$\frac{1}{8}$	$22\frac{1}{8}$	$23\frac{5}{8}$	$\frac{1}{8}$	$22\frac{1}{8}$	$24\frac{1}{8}$	$\frac{1}{8}$
$7\frac{1}{2}$	$22\frac{5}{8}$	$\frac{1}{8}$	$7\frac{3}{4}$	$23\frac{5}{8}$	$\frac{1}{8}$	$22\frac{5}{8}$	$24\frac{1}{8}$	$\frac{1}{8}$	$22\frac{5}{8}$	$24\frac{5}{8}$	$\frac{1}{8}$
$7\frac{3}{4}$	$23\frac{1}{8}$	$\frac{1}{8}$	$7\frac{7}{8}$	$24\frac{1}{8}$	$\frac{1}{8}$	$23\frac{1}{8}$	$24\frac{5}{8}$	$\frac{1}{8}$	$23\frac{1}{8}$	$25\frac{1}{8}$	$\frac{1}{8}$
$7\frac{7}{8}$	$23\frac{5}{8}$	$\frac{1}{8}$	8	$24\frac{5}{8}$	$\frac{1}{8}$	$23\frac{5}{8}$	$25\frac{1}{8}$	$\frac{1}{8}$	$23\frac{5}{8}$	$25\frac{5}{8}$	$\frac{1}{8}$
8	$24\frac{1}{8}$	$\frac{1}{8}$	$8\frac{1}{8}$	$25\frac{1}{8}$	$\frac{1}{8}$	$24\frac{1}{8}$	$25\frac{5}{8}$	$\frac{1}{8}$	$24\frac{1}{8}$	$26\frac{1}{8}$	$\frac{1}{8}$
$8\frac{1}{8}$	$24\frac{5}{8}$	$\frac{1}{8}$	$8\frac{1}{4}$	$25\frac{5}{8}$	$\frac{1}{8}$	$24\frac{5}{8}$	$26\frac{1}{8}$	$\frac{1}{8}$	$24\frac{5}{8}$	$26\frac{5}{8}$	$\frac{1}{8}$
$8\frac{1}{4}$	$25\frac{1}{8}$	$\frac{1}{8}$	$8\frac{1}{2}$	$26\frac{1}{8}$	$\frac{1}{8}$	$25\frac{1}{8}$	$26\frac{5}{8}$	$\frac{1}{8}$	$25\frac{1}{8}$	$27\frac{1}{8}$	$\frac{1}{8}$
$8\frac{1}{2}$	$25\frac{5}{8}$	$\frac{1}{8}$	$8\frac{3}{4}$	$26\frac{5}{8}$	$\frac{1}{8}$	$25\frac{5}{8}$	$27\frac{1}{8}$	$\frac{1}{8}$	$25\frac{5}{8}$	$27\frac{5}{8}$	$\frac{1}{8}$
$8\frac{3}{4}$	$26\frac{1}{8}$	$\frac{1}{8}$	$8\frac{7}{8}$	$27\frac{1}{8}$	$\frac{1}{8}$	$26\frac{1}{8}$	$27\frac{5}{8}$	$\frac{1}{8}$	$26\frac{1}{8}$	$28\frac{1}{8}$	$\frac{1}{8}$
$8\frac{7}{8}$	$26\frac{5}{8}$	$\frac{1}{8}$	9	$27\frac{5}{8}$	$\frac{1}{8}$	$26\frac{5}{8}$	$28\frac{1}{8}$	$\frac{1}{8}$	$26\frac{5}{8}$	$28\frac{5}{8}$	$\frac{1}{8}$
9	$27\frac{1}{8}$	$\frac{1}{8}$	$9\frac{1}{8}$	$28\frac{1}{8}$	$\frac{1}{8}$	$27\frac{1}{8}$	$28\frac{5}{8}$	$\frac{1}{8}$	$27\frac{1}{8}$	$29\frac{1}{8}$	$\frac{1}{8}$
$9\frac{1}{8}$	$27\frac{5}{8}$	$\frac{1}{8}$	$9\frac{1}{4}$	$28\frac{5}{8}$	$\frac{1}{8}$	$27\frac{5}{8}$	$29\frac{1}{8}$	$\frac{1}{8}$	$27\frac{5}{8}$	$29\frac{5}{8}$	$\frac{1}{8}$
$9\frac{1}{4}$	$28\frac{1}{8}$	$\frac{1}{8}$	$9\frac{1}{2}$	$29\frac{1}{8}$	$\frac{1}{8}$	$28\frac{1}{8}$	$29\frac{5}{8}$	$\frac{1}{8}$	$28\frac{1}{8}$	$30\frac{1}{8}$	$\frac{1}{8}$
$9\frac{1}{2}$	$28\frac{5}{8}$	$\frac{1}{8}$	$9\frac{3}{4}$	$29\frac{5}{8}$	$\frac{1}{8}$	$28\frac{5}{8}$	$30\frac{1}{8}$	$\frac{1}{8}$	$28\frac{5}{8}$	$30\frac{5}{8}$	$\frac{1}{8}$
$9\frac{3}{4}$	$29\frac{1}{8}$	$\frac{1}{8}$	$9\frac{7}{8}$	$30\frac{1}{8}$	$\frac{1}{8}$	$29\frac{1}{8}$	$30\frac{5}{8}$	$\frac{1}{8}$	$29\frac{1}{8}$	$31\frac{1}{8}$	$\frac{1}{8}$
$9\frac{7}{8}$	$29\frac{5}{8}$	$\frac{1}{8}$	10	$30\frac{5}{8}$	$\frac{1}{8}$	$29\frac{5}{8}$	$31\frac{1}{8}$	$\frac{1}{8}$	$29\frac{5}{8}$	$31\frac{5}{8}$	$\frac{1}{8}$
10	$30\frac{1}{8}$	$\frac{1}{8}$	$10\frac{1}{8}$	$31\frac{1}{8}$	$\frac{1}{8}$	$30\frac{1}{8}$	$31\frac{5}{8}$	$\frac{1}{8}$	$30\frac{1}{8}$	$32\frac{1}{8}$	$\frac{1}{8}$
$10\frac{1}{8}$	$30\frac{5}{8}$	$\frac{1}{8}$	$10\frac{1}{4}$	$31\frac{5}{8}$	$\frac{1}{8}$	$30\frac{5}{8}$	$32\frac{1}{8}$	$\frac{1}{8}$	$30\frac{5}{8}$	$32\frac{5}{8}$	$\frac{1}{8}$
$10\frac{1}{4}$	$31\frac{1}{8}$	$\frac{1}{8}$	$10\frac{1}{2}$	$32\frac{1}{8}$	$\frac{1}{8}$	$31\frac{1}{8}$	$32\frac{5}{8}$	$\frac{1}{8}$	$31\frac{1}{8}$	$33\frac{1}{8}$	$\frac{1}{8}$
$10\frac{1}{2}$	$31\frac{5}{8}$	$\frac{1}{8}$	$10\frac{3}{4}$	$32\frac{5}{8}$	$\frac{1}{8}$	$31\frac{5}{8}$	$33\frac{1}{8}$	$\frac{1}{8}$	$31\frac{5}{8}$	$33\frac{5}{8}$	$\frac{1}{8}$
$10\frac{3}{4}$	$32\frac{1}{8}$	$\frac{1}{8}$	$10\frac{7}{8}$	$33\frac{1}{8}$	$\frac{1}{8}$	$32\frac{1}{8}$	$33\frac{5}{8}$	$\frac{1}{8}$	$32\frac{1}{8}$	$34\frac{1}{8}$	$\frac{1}{8}$
$10\frac{7}{8}$	$32\frac{5}{8}$	$\frac{1}{8}$	11	$33\frac{5}{8}$	$\frac{1}{8}$	$32\frac{5}{8}$	$34\frac{$				

METAL JACKETED

pletely enclosed by a metal shell and top washer. The enclosed edges and the added protection of the washer make J-M 923 gaskets more suitable than French type gaskets for certain non-circular applications. The additional thickness of the outer lap is helpful in preventing excessive distortion of light-weight flanges. Available in irregular, non-circular shapes, however, tooling of this gasket is more expensive than other types. For list of standard piping sizes, see page 27.

J-M 930 or J-M 920 is suggested when width is less than 1/4".



J-M 924 Jacketed (Overlapped)

gasket is used when a completely enclosed gasket is required in widths less than those available in the plain double jacketed style. Generally not available smaller than 1-inch I.D., J-M 924 is constructed of an asbestos filler completely enclosed by a single metal shell overlapping on one face. J-M 924 also is available with a filler made from meshed metal wire which imparts more resilience than the non-metallic filler. Specific details are available upon request.



J-M 925 Double Shell, Double Jacketed

gaskets are used when a gasket having greater strength and rigidity is required. It is made of a soft filler encased by two reversed and overlapping metal shells.

J-M 925 gaskets are available to order in the same metals and diameter range as J-M 923 for flange widths over 1/4".



J-M 926 Corrugated-Jacketed

gasket uses a corrugated jacket to increase its resilience. Used for circular and moderately non-circular (e.g. valve bonnet ovals) shapes in widths 3/8" and wider, J-M 926 employs an asbestos filler completely enclosed by a corrugated metal shell and top washer. If a slight leakage occurs across the inner edge, the concentric corrugations act as labyrinth seals. Sealability can be further improved by use of J-M Sealing Compound.

For standard sizes, refer to page 27.

J-M 920 STANDARD BOILER HANDHOLE AND TUBE CAP GASKETS

Classified by Make of Boiler

Make of Boiler and Gasket No. or Name	Actual Shape	Nominal Gasket Size, Inches	Actual Gasket Size, Inches	Width, Inches	Thick. Inches
BABCOCK & WILCOX					
24	Oval	4 1/2 x 5 1/2 I.D.	4 3/4 x 5 3/4 I.D.	1/4	3/8
28	Square	4 3/4 x 5 I.D.	4 3/4 x 5 I.D.	3/8	3/8
40 Oval	Diamond	3 3/4 x 3 3/4 I.D.	3 3/4 x 3 3/4 I.D.	1/4	3/8
41	Oblong	2 1/4 x 2 1/4 I.D.	2 1/4 x 2 1/4 I.D.	1/4	3/8
47	Round	2 I.D.	2 1/4 I.D. x 2 3/4 O.D.	3/8	3/8
48	Oval	3 3/4 x 4 3/4 I.D.	3 3/4 x 4 3/4 I.D.	3/8	3/8
79	Oblong	4 1/4 x 4 1/4 I.D.	4 1/4 x 4 1/4 I.D.	3/8	3/8
89	Round	3 3/4 I.D.	3 3/4 I.D. x 3 3/4 O.D.	3/8	3/8
92	Round	2 I.D.	2 I.D. x 2 3/4 O.D.	3/8	3/8
Foreign Square	Square	3 3/4 x 3 3/4 I.D.	3 3/4 x 3 3/4 I.D.	3/8	3/8
English Oval	Oval	3 3/4 x 3 3/4 I.D.	3 3/4 x 3 3/4 I.D.	3/8	3/8
English Oval	Oval	4 3/4 x 4 3/4 I.D.	4 3/4 x 4 3/4 I.D.	3/8	3/8
Nos. 62, 63, 66 Same as No. 24					
Nos. 45, 46 Same as No. 47					
Nos. 44, 50, 54, 56, 57, 58, 59,					
Nos. 53, 54, 56, 57, 58, 59,					
60, 76, 84, 85 Same as No. 40					
No. 48					
Nos. 43, 49 Same as No. 41					
Nos. 90, 95 Same as No. 89					
Nos. 4, 183 Same as No. 92					
Corrugated Steel, Oval					
5 1/2 x 6 1/2 O.D. with 1 1/4" Dia. Center Hole					
Corrugated Steel, Round					
2 1/2 O.D. with 1 1/4" Dia. Center Hole					
BADENHAUSEN — See Riley Stoker					
COMBUSTION ENGINEERING					
2	Round	2 I.D.	2 I.D. x 2 3/4 O.D.	3/8	3/8
6	Round	4 1/4 I.D.	4 1/4 I.D. x 4 3/4 O.D.	1/4	3/8
8	Oval	3 3/4 x 4 3/4 I.D.	3 3/4 x 4 3/4 I.D.	3/8	3/8
21	Oblong	2 1/4 x 2 1/4 I.D.	2.104 x 2.480 I.D.	1/4	3/8
22	Oval	2 1/4 x 2 3/4 I.D.	2.114 x 2.640 I.D.	3/8	3/8
51	Square	4 3/4 x 5 I.D.	4 3/4 x 5 I.D.	3/8	3/8
EDGEMOOR					
No. 2	Oval	4 1/4 x 5 1/4 I.D.	4 1/4 x 5 1/4 I.D.	3/8	3/8
Burlington	Oval	4 3/4 x 5 3/4 I.D.	4 3/4 x 5 3/4 I.D.	3/8	3/8
No. 4	Oval	4 3/4 x 5 3/4 I.D.	4 3/4 x 5 3/4 I.D.	3/8	3/8
ERIE CITY					
	Pear	3 3/4 x 4 1/4 I.D.	3 3/4 x 4 1/4 I.D.	3/8	3/8
FOSTER WHEELER					
2 1/4" Tube	Oblong	2 3/4 x 3 3/4 I.D.	2 3/4 x 3 3/4 I.D.	3/8	3/8
2 3/4" Tube	Oblong	2 3/4 x 3 3/4 I.D.	2 3/4 x 3 3/4 I.D.	3/8	3/8
3 3/4" Tube	Oblong	3 3/4 x 3 3/4 I.D.	3 3/4 x 3 3/4 I.D.	3/8	3/8
3 3/4" Tube	Oblong	3 3/4 x 3 3/4 I.D.	3 3/4 x 3 3/4 I.D.	3/8	3/8
	Square	— Same as B&W #28	— Same as B&W #28	3/8	3/8
FRANKLIN					
Oval	Oblong	3 3/4 x 4 3/4 I.D.	3 3/4 x 4 3/4 I.D.	3/8	1/4
HEINE					
	Round	3 3/4 I.D.	3 3/4 I.D. x 4 1/4 O.D.	3/8	1/4
	Oblong	3 3/4 x 4 3/4 I.D.	3 3/4 x 4 3/4 I.D.	3/8	1/4
KEELER					
	Round	4 3/4 I.D.	4 1/4 I.D. x 4 3/4 O.D.	3/8	1/4
MURRAY					
3 1/2" Tube	Oblong	3 3/4 x 4 3/4 I.D.	3 3/4 x 4 3/4 I.D.	3/8	1/4
RILEY STOKER					
WC-4	Oblong	3 3/4 x 5 3/4 I.D.	3 3/4 x 5 3/4 I.D.	1/4	1/4
WC-24	Oblong	3 3/4 x 5 3/4 I.D.	3 3/4 x 5 3/4 I.D.	1/4	1/4
UNION					
	Pear	4 3/4 x 5 1/4 I.D.	4 1/4 x 5 1/4 I.D.	3/8	3/8

† — Round Cross-Section ‡ — Flat Cross-Section



J-M 929* is the J-M 926 gasket with a corrugated metal filler rather than an asbestos filler.

This '3-Ply' design provides a more resilient construction that adapts to temperature cycling problems. Temperature usage is limited only by metal selected.

For standard sizes, refer to page 27.

*Patented

FBW-256

Johns-Manville CORRUGATED Gaskets



GASKETS THAT MAY BE THE LEAST EXPENSIVE APPROACH TO IRREGULAR OR NON-CIRCULAR SHAPES FOR LOW-PRESSURE APPLICATIONS.

WHERE recommended: J-M Corrugated Gasket applications include valve bonnet joints, fuel or combustion line connections for aircraft gas turbines, steam chests, high-temperature exhaust gas ducts, glass-lined equipment, etc. Variations of the basic construction, which is best suited for smooth-faced complex or non-circular shapes at low pressures (500 psi), are: *with J-M Joint Sealing Compound* for use on rougher finishes at pressures to 1000 psi; *with asbestos cord* cemented into the corrugations for light-weight cast iron or large, rough or warped flanges to 600 psi; *with an asbestos cloth jacket* desirable on rough or warped flanges.

HOW they work: J-M Corrugated Gaskets require relatively light bolt force to flow the gasket material at points of contact with the flange. Corrugations afford some degree of resilience, depending on their pitch and depth, and the type and thickness of metal. They also supply a labyrinth effect, and act as support for gasket compound, asbestos cloth jackets or cord inserts.

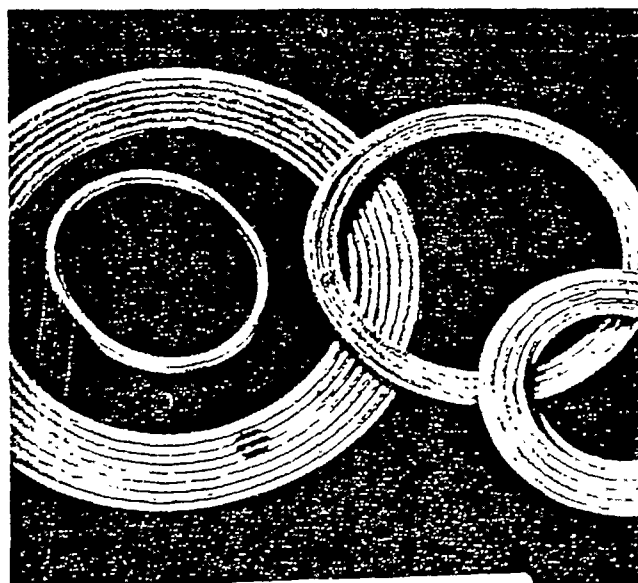
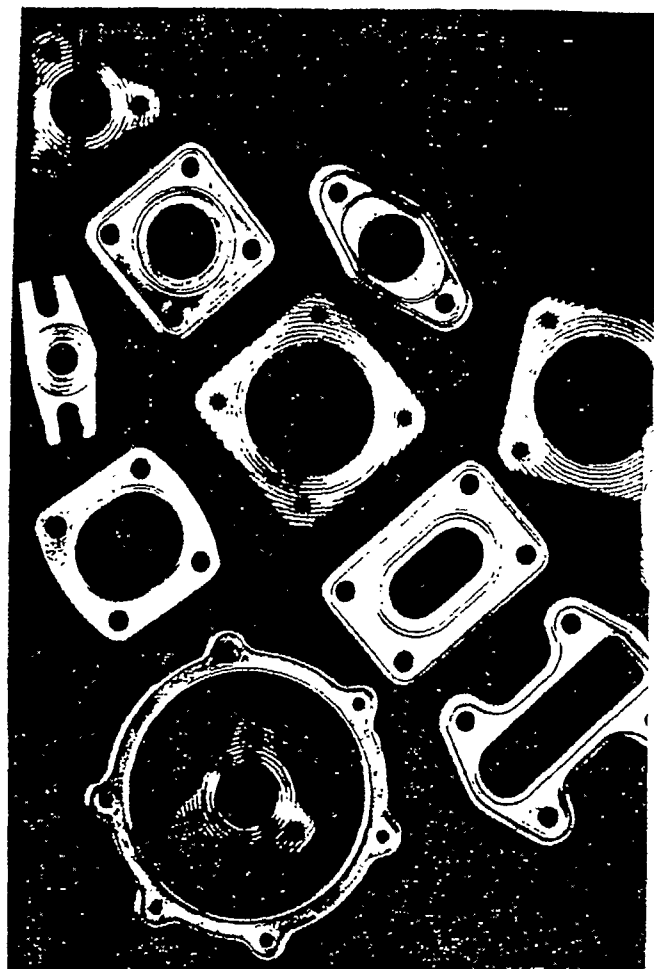
WHY suggested: J-M Corrugated Gaskets are relatively inexpensive to tool and produce in non-standard sizes or irregular shapes. By proper material selection, they can be used at almost any temperature.

WHAT constructions are available: J-M Corrugated Gaskets are made of thin metal, corrugated or embossed concentric with the I.D., and used plain, with a coating of sealing compound, with an asbestos cloth jacket, or with asbestos cord cemented into the corrugations. These variations are described under individual styles.

Standard metals used to make J-M Corrugated Gaskets are soft steel, copper, monel, and stainless steel type 304. Available to order metals include aluminum, nickel, stainless steel types 405, 410, 302, 316, 321, 347, and Hastelloy. See page 5 for data on metals.



J-M 900 all-metal plain corrugated gaskets are used for low pressure applications requiring a thin, line contact type seal because of space or weight limitations. For such applications, metal thicknesses are 0.010" to .031" depending on metal and corrugation



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pitch. Thicknesses less than .010" are likely to rupture when corrugated. Although a minimum of three concentric corrugations are desirable on each gasket face, many applications exist that use only one. A slight flat inside the inner corrugation and beyond the outside corrugation stiffen the gasket and are desirable if space is available. For best performance, corrugations should be on both gasket faces rather than embossed on one face only. Corrugation pitch for other J-M 900 applications can range from .045" to 1/4" and over-all gasket thickness will vary between 40% and 50% of the corrugation pitch. Temperature limits are determined by the metal used. Pressures to 500 psi.

See table below for dimensions for standard piping.



J-M 904 Flexeal gaskets, cloth covered J-M 900s, combine the conformability of a soft jacket and the line contact labyrinth, reinforcing characteristics of the corrugated metal filler. The jacket may be woven asbestos cloth — plain or rubberized. The metal filler may be furnished in any of the usual gasket metals.

J-M 904-T6, a new modification of J-M 904, is made of a six-ply DuPont Teflon impregnated woven asbestos jacket (similar to J-M 117 Chempac) over a stainless steel J-M 900 core. This gasket was specifically developed for service between glass-lined flanges against aggressive chemicals at 150 psi pres-

ures, where the conventional envelope-type gaskets are not suitable.



J-M 905 gaskets consist of a J-M Style 900 with asbestos cord cemented into the corrugations. The metal is generally .019" or .020" thick and the corrugation pitch 3/32", 1/16" or 1/4", depending on the gasket width or application. The over-all gasket thickness is approximately 65 to 70 percent of the pitch.

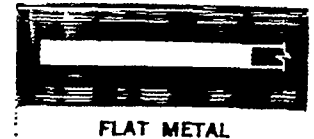
J-M 905 is particularly effective as a replacement for asbestos millboard gaskets on large diameter flanges, handling flue and combustion gases at temperatures to 1150F under light pressures. The use of J-M 905 eliminates the breakage problem often encountered in the handling of asbestos millboard gaskets.

J-M 905 is not suitable for hot oil or vacuum service. Pressures to 600 psi.

J-M 910 gaskets are the same construction as J-M 905 with the addition of a protective metallic coating which prevents sticking to flanges or damage to asbestos in handling. J-M 910 is designed for low-pressure standard piping and plumbing applications (For dimensions, see below). This gasket is made of .019" thick metal with corrugations of 1/4" pitch — 1/8" high. One eight-inch asbestos cord is used, and the over-all gasket thickness is approximately 3/32". J-M 910 is not suitable for hot oil or vacuum service. When temperatures exceed 600F, J-M 905 gaskets should be used.

J-M 900 — J-M 910 STANDARD SIZES							
Cast Iron Companion Flanges Gaskets to Fit Inside Bolt Holes			A. S. A. Steel Raised Face Flanges and Flanged Fittings Welding Neck and Lapped Joint Flanges Only				
Pipe Size Inches	Standard— 125-lb.	Extra-Heavy 250-lb.	Pipe Size Inches	150-lb.	300 lb.	400-lb.	600-lb.
	Gasket Dimensions Inches	Gasket Dimensions Inches		Gasket Dimensions Inches	Gasket Dimensions Inches	Gasket Dimensions Inches	Gasket Dimensions Inches
1	1 1/4 x 2 1/2	1 1/4 x 2 3/4	1 1/2	3/4 x 1 3/4	3/4 x 2	3/4 x 2	3/4 x 2
1 1/2	1 1/2 x 2 7/8	1 1/2 x 3 1/4	3/4	1 x 2 1/2	1 x 2 1/2	1 x 2 1/2	1 x 2 1/2
1 1/2	1 3/4 x 3 1/4	1 3/4 x 3 5/8	1	1 1/4 x 2 1/2	1 1/4 x 2 3/4	1 1/4 x 2 3/4	1 1/4 x 2 3/4
2	2 1/4 x 4	2 1/4 x 4 1/4	1 1/4	1 1/2 x 2 7/8	1 1/2 x 3 1/8	1 1/2 x 3 1/8	1 1/2 x 3 1/8
2 1/2	2 3/4 x 4 3/4	2 3/4 x 5	1 1/2	1 3/4 x 3 1/4	1 3/4 x 3 5/8	1 3/4 x 3 5/8	1 3/4 x 3 5/8
3	3 1/4 x 5 1/4	3 1/4 x 5 3/4	2	2 1/4 x 4	2 1/4 x 4 1/4	2 1/4 x 4 1/4	2 1/4 x 4 1/4
3 1/2	3 3/4 x 6 1/4	3 3/4 x 6 3/8	2 1/2	2 3/4 x 4 3/4	2 3/4 x 5	2 3/4 x 5	2 3/4 x 5
4	4 1/4 x 6 3/4	4 1/4 x 7	3	3 1/4 x 5 1/4	3 1/4 x 5 3/4	3 1/4 x 5 3/4	3 1/4 x 5 3/4
4 1/2	4 3/4 x 6 3/8	4 3/4 x 7 5/8	3 1/2	3 3/4 x 6 1/4	3 3/4 x 6 3/8	3 3/4 x 6 3/8	3 3/4 x 6 3/8
5	5 1/4 x 7 5/8	5 1/4 x 8 3/8	4	4 1/4 x 6 3/4	4 1/4 x 7	4 1/4 x 6 7/8	4 1/4 x 7 1/2
6	6 1/4 x 8 3/8	6 1/4 x 9 3/4	5	5 1/4 x 7 7/8	5 1/4 x 8 3/8	5 1/4 x 8 1/4	5 1/4 x 9 1/8
7	7 1/4 x 9 3/8	7 1/4 x 10 7/8	6	6 1/4 x 8 3/8	6 1/4 x 9 3/4	6 1/4 x 9 5/8	6 1/4 x 10 3/8
8	8 1/4 x 10 7/8	8 1/4 x 12	8	8 1/4 x 10 7/8	8 1/4 x 12	8 1/4 x 11 7/8	8 1/4 x 12 1/2
9	9 1/4 x 12 3/8	9 1/4 x 13	10	10 1/4 x 13 1/4	10 1/4 x 14 1/8	10 1/4 x 14	10 x 15 5/8
10	10 1/4 x 13 1/4	10 1/4 x 14 1/8	12	12 1/4 x 16	12 1/4 x 16 1/2	12 1/4 x 16 3/4	12 x 17 7/8
12	12 1/4 x 16	12 1/4 x 16 1/2	14	14 1/4 x 17 5/8	13 1/2 x 19	13 3/8 x 18 7/8	13 1/4 x 19 1/4
14	14 1/4 x 17 5/8	14 1/4 x 19	16	16 1/4 x 20 3/8	15 1/2 x 21 1/8	15 1/4 x 21	15 x 22 1/4
15	15 1/4 x 18 7/8	15 1/4 x 19 3/8	18	18 1/4 x 21 1/2	17 1/4 x 23 3/8	17 1/4 x 23 1/4	16 3/4 x 24
16	16 1/4 x 20 3/8	16 1/4 x 21 1/8	20	20 1/4 x 23 3/4	19 1/4 x 25 3/8	19 1/4 x 25 3/8	18 1/2 x 26 1/4
18	18 1/4 x 21 1/2	18 1/4 x 23 3/8	24	24 1/4 x 28 3/8	23 1/4 x 30 3/8	22 7/8 x 30 1/8	22 1/4 x 31
20	20 1/4 x 23 3/4	20 1/4 x 25 3/8					
22	22 1/4 x 25 3/8	22 1/4 x 27 1/2					
24	24 1/4 x 28 3/8	24 1/4 x 30 3/8					

Johns-Manville FLAT METAL Gaskets



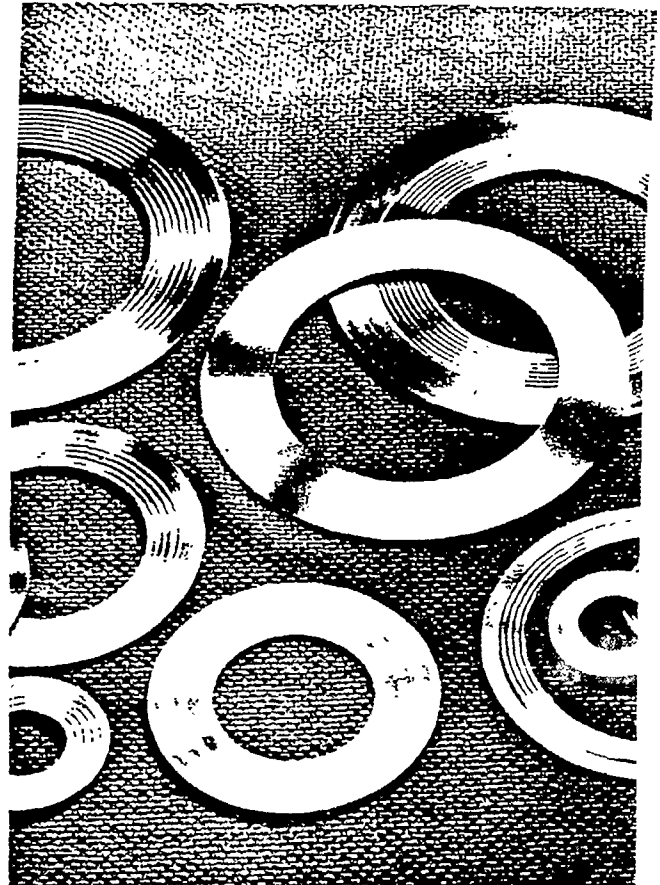
- THIN SEALING ELEMENTS CUT FROM SHEET METAL
- GIVE ECONOMICAL SERVICE, WHERE ADEQUATE BOLTING IS AVAILABLE.

WHERE recommended: Applications best-suited for J-M Flat Metal Gaskets include, for example, valve bonnets, ammonia fittings, heat exchangers, hydraulic presses, and tongue and groove joints. Plain solid gaskets give good service when compressibility is not required to compensate for flange surface finish, warpage or misalignment, and where sufficient clamping force is available for the gasket metal selected. Machined styles, with profiled cross-sections, are used when the bolting is not adequate to seat a flat gasket. Profiled gaskets with asbestos cord cemented into the concentric grooves are best suited for high-temperature and pressure service on uneven or rough surfaces.

HOW they work: J-M Flat Metal Gaskets seal by flow of the gasket surface caused by "brute force" compressive loads. Force on the actual gasket contact area must exceed the tensile strength of the gasket metal. Therefore, the surface finish of both flange and gasket must be carefully matched to assure the correct relationship.

WHY suggested: J-M Plain, Metal Gaskets are relatively inexpensive to produce and can perform satisfactorily in a variety of applications over a wide temperature range. The machined types, with reduced surface area, may be the only answer to high-pressure, high-temperature or highly corrosive applications in flanges where bolting forces are too light for the plain flat style.

WHAT constructions are available: J-M Flat Metal Gaskets are made of flat metal, relatively thin in relation to width. They can be used as cut from sheet metal, or with the surface area reduced by machining to improve sealability. These variations are described under individual styles. Standard metals used to make Flat Metal Gaskets include any metal that is available in thicknesses and hardness suitable as a gasket material and that can be punched or otherwise cut into desired shape by dies, hand or circle shears, machined, sawed, etc.



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FLAT METAL



J-M 940 plain solid gaskets can be fabricated in any desired configuration.

Where bolting is sufficient, it is efficient and economical, particularly on flanges with concentric serrations. J-M 940 has great mechanical strength, heat conductivity and good resistance to high temperatures, pressures and chemical attack. Unless the gasket is finished machined, the width should be at least metal thickness plus 50 percent. There are no limitations on the flat metal gasket dimensions; however, width of the metal sheet commercially available may limit size and require welding to obtain gaskets beyond certain sizes.



J-M 941 Profile Gasket combines the desirable qualities of plain solid metal gaskets with the added advantages of reduced area of contact provided by the V-shaped ribbed surface. It is used when a solid metal gasket (generally $\frac{3}{4}$ " or thicker) is required because of pressure (radial strength), temperature or the highly corrosive attack of the confined fluid and bolting is not sufficient to seal J-M 940. J-M 941 is also recommended in screwed (attrition) closures where the relatively small contact area keeps friction down to a level low enough to seal the joint. Standard dimensions for raised face flanges, for large tongue and groove flanges, for large male and female flanges are listed on page 28.



J-M 942 is the J-M 941 profile gasket with twisted and treated asbestos cord cemented into the concentric grooves on both faces. The additional sealing function of the asbestos makes J-M 942 suitable for high-temperature and high-pressure service on rough or uneven surfaces.

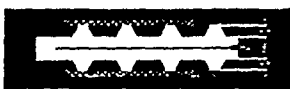


J-M 943 and 944 consist of the J-M 941 profile gasket with a metal jacket of either the French type (for narrow gaskets) or the single-jacket type (for wider gaskets). Construction employs the principle of reduced contact area with the characteristics of an all-metal gasket. The smooth surface prevents scoring of the flange faces.

Note: These gaskets should not be ordered without prior consultation with a J-M Representative.



J-M 945 Serrated Gasket, made of heavy solid metal machined with spaced concentric ribs, is excellent for installations requiring a wide all-metal gasket with reduced contact area. Particularly suitable for high pressures and temperatures in standard raised face flanges. J-M 945 is recommended for use only with smooth finished flange faces. Standard serrated gaskets are available for A.S.A. raised face flanges, and are provided with a guide (J-M 945A) for centering the gasket within the bolt circle. Dimensional details upon request.



J-M 947 Bellows Seal Gasket is essentially a self-sealing element which utilizes the pressure carried by the line to maintain tightness. It is so designed that the force created by the line pressure alone is sufficient to prevent leakage should the joint contact faces actually separate by an appreciable amount. J-M 947 is not intended as a substitute for an expansion joint. Made of two $\frac{3}{32}$ -inch metal discs, each serrated on one face and welded together around the inner rim. A ring of thin compressed asbestos sheet packing is placed on the serrations. This bellows construction gives the gasket sufficient flexibility to allow it to "breathe" with abnormal expansions and contractions of the pipe, flanges and bolts. J-M 947 is fabricated to order. Dimensional standards have been established for A.S.A. raised face flanges; however, special sizes are also available.



J-M 948 Multiseal Gasket is made of solid metal with raised cross-section ribs in a waffle-like pattern. The "multiseal" pattern results in a contact area of from 50 to 70 percent less than that of a plain solid J-M 940, depending upon the metal and coining pressure. Multiseal gaskets are available only in the softer metals, such as aluminum, copper and soft steel. The metal thickness is approximately $\frac{1}{16}$ " or $\frac{1}{8}$ " only, and the rib-spacing is $\frac{1}{16}$ -inch squares.

Note: This gasket should not be ordered without prior consultation with a J-M Representative.

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Johns-Manville

ROUND CROSS-SECTION SOLID METAL Gaskets

HERE ARE LINE CONTACT SEAL GASKETS THAT PROVIDE POSITIVE, GAS-TIGHT SEALS AT LOW PRESSURES.

WHERE recommended: J-M Round Cross-Section, Solid Metal Gaskets are used on valve bonnets, air or gas compressors, and the accessory connections in LPG storage vessels; however, they are essentially used on equipment designed specifically for them. Flanges are grooved or otherwise faced to accurately locate the gasket during the assembly, although there are some applications between flat faces. This group is especially useful in vacuum equipment where highly efficient gaskets are needed.

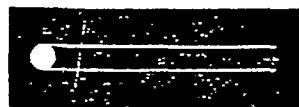
The three styles are the *plain round cross-section* for grooved flanges; the *jacketed round cross-section* for non-grooved flanges; and the *jacketed double, round cross-section* for full-faced applications where it helps minimize flange dishing.

HOW they work: J-M Round Cross-Section, Solid Metal Gaskets seal by line contact which provides initial high seating stress at low bolt loads. The contact faces increase in width as the gasket is compressed, effectively flowing into flange faces.

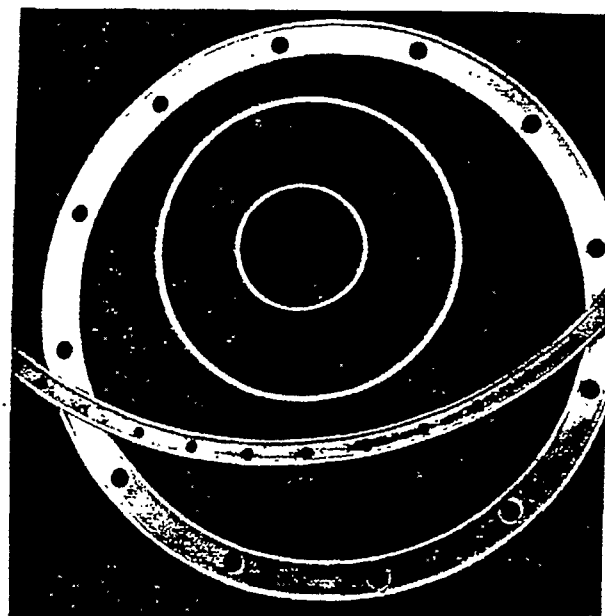
WHY suggested: J-M Round Cross-Section, Solid Metal Gaskets provide gas-tight seals for relatively low-pressure systems and with low initial bolt loading. Inexpensive.

WHAT constructions are available: J-M Round Cross-Section, Solid Metal Gaskets are generally made from wire formed to size and welded. The joint is polished to exact wire diameter. Available constructions are described under individual styles.

Standard metals (both wire and jackets) used to make J-M Round Cross-Section, Solid Metal Gaskets are aluminum, copper, soft iron or steel, monel, nickel, 300 series stainless steels, and copper coated steel (wire only). Wire diameters range from $\frac{1}{16}$ " to $\frac{3}{8}$ " and jacket thickness, .015" to .020"



J-M 949 is a round cross-section wire ring gasket. Flanges are usually grooved, tapered or otherwise faced to locate the gasket accurately during assembly, although some applications may be between flat faces. Although sometimes considered a gasket that should be only circular in shape, J-M 949 can be used in moderately non-circular shapes.



J-M 903 (*half-section*) is a J-M 949 gasket partially

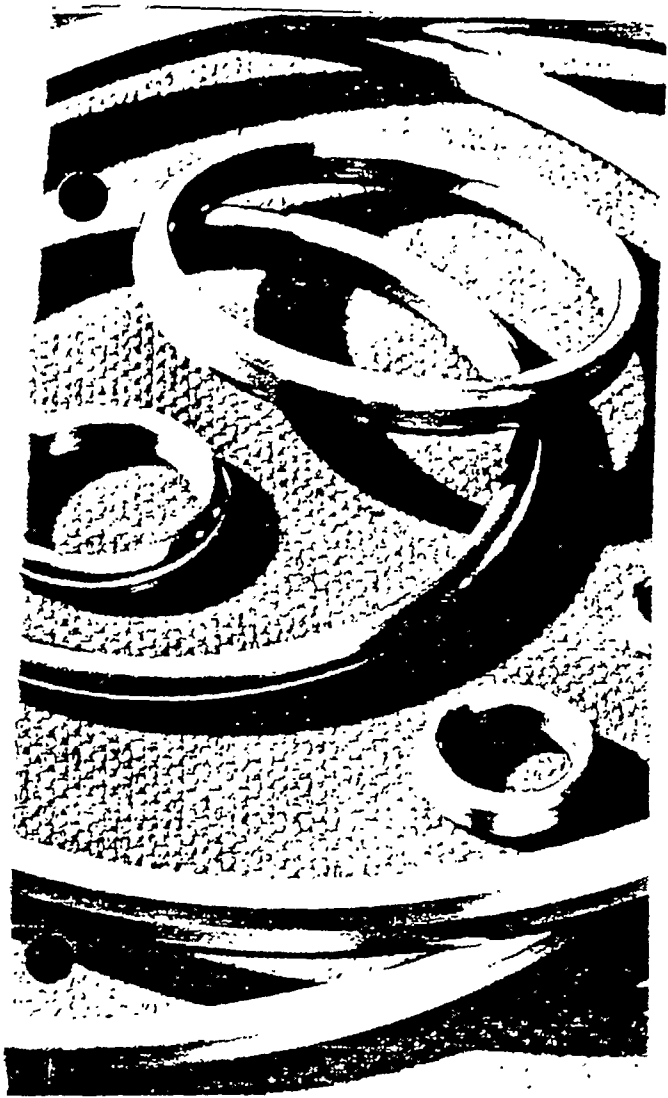
wrapped with a jacket of the same or softer metal for use between non-grooved flanges. The outer edge of the jacket provides means of centering on flange bolts. This construction also allows use of the soft metal jacket for sealability and the hard metal core for radial reinforcement.



J-M 903 (*full section*) gasket is constructed of two concentric

metal cores enclosed and spaced by a jacket of the same or softer metal. The inner core wire cross-section is normally about 0.020" heavier than the outer core wire. This construction assures full initial seating load at the gasket I.D., but the outer bulb restricts the amount of flange bending. Bolt holes are in the connecting web of the jacket. J-M 903 gaskets are available in non-circular as well as circular configurations.

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Johns-Manville **HEAVY CRC**

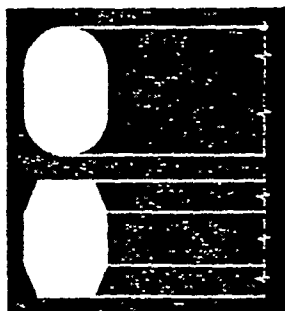
WHERE recommended: J-M Heavy Cross-Section Gaskets have almost universal acceptance in the petroleum and processing industries. This gasket group is designed for use in closures which are specially faced to accept them. Styles are machined to specialized cross-sections including Oval, Octagonal, Lens or Flare, Bridgemen and Delta. Uses include high-pressure oil field drilling and production equipment, pressure vessels, valve bonnets and piping systems.

HOW they work: J-M Heavy Cross-Section Gaskets generally seal by initial line contact or wedging action which causes surface flow of the gasket metal. Some of the styles are pressure-actuated (i.e. the higher the contained pressure rises, the tighter the seal).

WHY suggested: J-M Heavy Cross-Section Gaskets may be the only solution for high-pressure and high-temperature services. Provide an excellent mechanical joint.

WHAT constructions are available: J-M Heavy Cross-Section Gaskets are essentially rectangular or triangular shaped, machined from solid metal. Available constructions for specific applications are described under individual styles.

Standard metals used to make J-M Heavy Cross-Section Gaskets include any wrought or forged material that is suitable as a gasket. (Cast metals should not be considered.) Metals requiring heat treatment after final machining should not be considered.



J-M 950 and 951 V-Tite Gaskets are designed for API type ring joint flanges. Each of the two cross-sections — J-M 950 (Oval) and J-M 951 (Octagonal) — match standard and special grooves for applications almost entirely in the oil and petroleum industries,

and liquid oxygen (LOX) service. The basic shapes are used at pressures to 10,000 psi. Most dimensions are standardized, but many specials are made to order for use in specially grooved flanges in piping, valve bonnets or any assemblies for higher pressures. V-Tite Gaskets are interchangeable in flanges of the newest flat bottom groove design; however, only the oval cross-section can be used in the old type, round-bottom groove. Of the two cross-section, J-M 951 should be used wherever possible because of its higher sealing efficiency. Every step in the manufacture of V-Tite Gaskets is meticulously controlled. Close tolerances are rigidly maintained for matching of rings with the flange grooves. By carefully con-

trolled heat treatment the hardness of the finished gasket is kept below maximum allowable to assure proper flow and sealing without damaging the flange surfaces. The contact surfaces are smoothly finished to a high order of smoothness, free from objectionable ridges, tool or chatter marks that cause joint leakage. For standard sizes, see page 29.

Complies with A.S.A. B16:20 and API 6 A. J-M 950 and J-M 951 are fabricated in accordance with standards listed on next page.

Johns-Manville produces a wide selection of custom-designed as well as standard gaskets, in any material, dimension or cross-section, including the pressure-actuated "BX" and "RX" modifications of the octagonal cross-section (J-M 951).

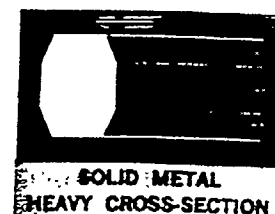
"BX" and "RX" Ring Gaskets are designed for extreme pressure service (to 15,000 psi) required in today's oil field drilling and production.

Standard metals for these Ring Gaskets are low carbon steel and type 304 stainless steel. Also available in soft iron and type 316 stainless steel.

BX Ring Gaskets to Specification API 6 A: This gasket differs from the standard Oval or Octagonal

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SS-SECTION, SOLID METAL Gaskets



MACHINED FROM SOLID METAL FOR HIGH-PRESSURE, HIGH-TEMPERATURE SERVICE, WHERE OPERATING CONDITIONS REQUIRE A SPECIAL JOINT DESIGN.

shape in that it is square in cross-section with tapers on each corner. Can be used only in API 6 BX flanges.

For standard API BX Ring Gasket sizes, see page 30.

RX Ring Gaskets to Specification API 6 A: Although these RX gaskets are similar to the standard Octagonal shape, their cross-section is designed to take advantage of the contained fluid pressure in effecting a seal. Interchangeable with standard Octagonal rings for oil field drilling and production applications in API 6 B flanges.

For standard RX Ring sizes, see page 30.

Note: All J-M V-Tite Gaskets complying with API 6 A carry the API monogram.



J-M 955 V-Tite Transition Rings are used for sealing ring type joints in which the mating flanges have different ring groove

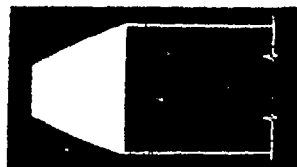
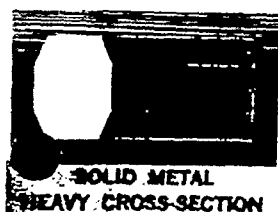
diameters. J-M 955 can be made in any standard ring joint gasket metal. Popular Transition combinations of J-M 955 are R23/R24, R26/R27, R45/R46, R49/R50, and R65/R66. Other sizes available on order. Made with oval or octagonal facings. When ordering, please specify which cross-section is preferred.

STANDARD SPECIFICATIONS FOR V-TITE GASKET METALS

In accordance with ASA B16.20 (Where applicable)

Metal	Maximum Hardness		Max. Service Temp.	Identification
	Brinell 3000 Kg	Rockwell "B"		
Soft Iron	90†	50	1000°F	D
Low-Carbon Steel	120	68	1000°F	S
Type 502 Alloy (4-6% Chrome, ½% Moly)	130	72	1200°F	F 5
Type 410 Alloy (11-13% Chrome)	170	86	1300°F	S 410
Type 304 Alloy (18% Chrome, 8% Nickel)	160	83	Depends upon the Service Conditions	S 304
Type 316 Alloy (18% Chrome, 12% Nickel)	160	83		S 316
Type 347 Alloy (18% Chrome, 10% Nickel)	160	83		S 347
Monel	125	70		M
Nickel	120	68		N
Copper	**	**		CU

†Hardness as agreed upon. *500 Kg load.



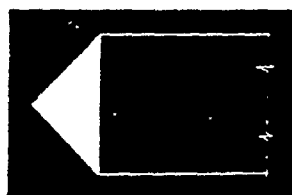
J-M 953 Lens Gasket is a line contact seal for high-pressure piping systems, with some application in pressure-vessel heads. The lens cross-section also is available in "bellows" construction which is pressure actuated in some applications depending on size and pressure. When ordering, drawings and complete material specifications must be supplied.



J-M 954 Bridgeman Gasket is pressure actuated for use as pressure-vessel head and valve bonnet gaskets for pressures 1500 psi and up. Also has been adapted

to piping joints subject to extreme temperature shock conditions.

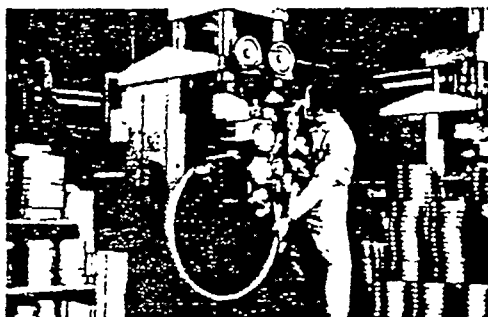
When ordering, drawings and complete material specifications must be supplied.



J-M 954 Delta Gasket is pressure actuated. The Delta cross-section is essentially a pressure vessel or valve bonnet gasket, useful in pressure range 5000 psi and up.

When ordering, drawings and complete material specifications must be supplied.

THE JOHNS-MANVILLE GOETZE PLANT IS SUPERBLY EQUIPPED...OFFERS OUTSTANDING SERVICE ON GASKETS AND OTHER METAL PARTS



- New metal working service, now in operation, provides fast precision production of metal parts or components.
- Machined, stamped or rolled metal components can be produced efficiently, economically.
- Equipment and operators who can form, cut, pierce or shape thick or thin metals . . . hold tight tolerances . . . turn large thin sections . . . weld or join almost any known metal.
- Complete research and engineering facilities and technicians.

Your inquiries are invited on metal parts whether for gasketing or other applications.

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Johns-Manville HEAT EXCHANGER Gaskets

HEAT EXCHANGER

GASKETS

J-M HEAT EXCHANGER GASKETS CAN BE PRODUCED TO YOUR EXACT REQUIREMENTS . . . TAILOR-MADE FROM THE MATERIALS YOU NEED . . . ACCURATELY MADE TO SIZE AND SHAPE TO SEAL EFFECTIVELY.

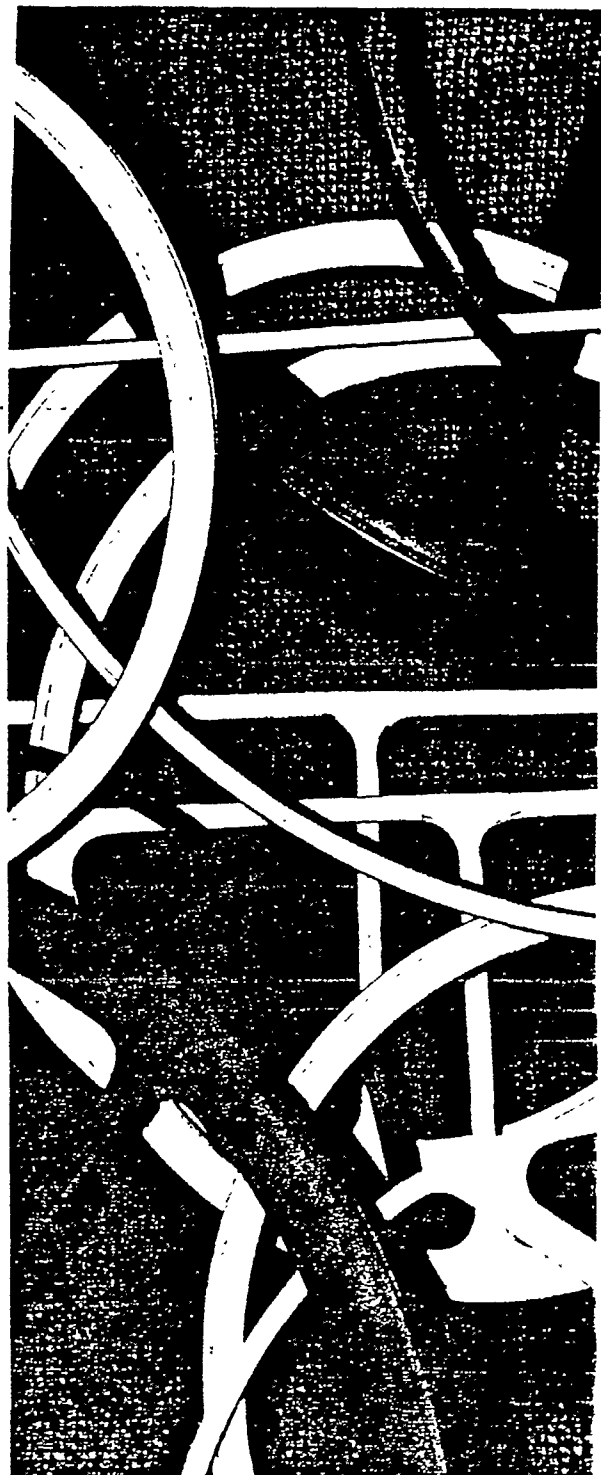
The double-jacketed construction (J-M 923) is generally employed; however, Heat Exchanger Gaskets also can be furnished in plain solid metal (J-M 940). Each is fabricated with meticulous care in every detail. Take the double-jacketed style as an example . . . there are no wrinkles on the outside corners, no cracks on the inside corners, lap widths are ample, rib widths are uniform. Above all, it is accurately made to close tolerances, can be depended on to fit and seal efficiently, and will stay on the job indefinitely without leaks or blowouts.

Attention to such important details is typical of the kind of care that goes into the forming of the custom-made gaskets. It is the secret of their dependable service, and the reason they pay off in terms of less down time.

For most efficient service, Johns-Manville recommends that the double-jacketed style be so designed and dimensioned as to allow at least $\frac{3}{8}$ " radius at all intersections to maintain a continuous metal lap at these points. Smaller radii or square corners will result in splitting of the metal.

A durable coating of red paint is applied (unless otherwise specified) on every soft iron gasket to resist rusting in storage or on the job awaiting installation.

Estimates and recommendations concerning Johns-Manville Heat Exchanger Gaskets will be furnished promptly upon receipt of detailed information, including blueprints.



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J-M SPIROALIC® GASKETS

J-M STYLE 911 STANDARD SIZES						Cast Iron Companion Flanges GASKETS TO FIT INSIDE BOLT HOLES		
Large and Small Tongue & Groove Flanges				Large Male and Female Flanges and Flanged Fittings		Pipe Size Inches	Standard 125-lb. Gasket Dimensions Inches	Extra Heavy 250-lb. Gasket Dimensions Inches
150, 300, 400, 600, 900, 1500, 2500-lb				150, 300-lb. 400, 600, 900, 1500, 2500-lb				
LARGE		SMALL		Pipe Size Inches	Gasket Dimensions Inches	Gasket Dimensions Inches		
Pipe Size Inches	Gasket Dimensions Inches	Pipe Size Inches	Gasket Dimensions Inches					
1/2	1 x 1 3/8	1/2	1 x 1 3/8	1/2	1 x 1 3/8	1 x 1 3/8	1	1 7/8 x 2 1/2
3/4	1 1/8 x 1 1/2	3/4	1 1/8 x 1 1/2	3/4	1 1/8 x 1 1/2	1 1/8 x 1 1/2	1 1/4	2 1/4 x 2 7/8
1	1 1/2 x 2	1	1 1/2 x 2	1	1 1/2 x 2	1 1/2 x 2	1 1/2	2 1/2 x 3 1/4
1 1/4	1 7/8 x 2 1/2	1 1/4	1 7/8 x 2 1/2	1 1/4	1 7/8 x 2 1/2	1 7/8 x 2 1/2	2	3 1/4 x 4
1 1/2	2 x 2 3/4	1 1/2	2 x 2 3/4	1 1/2	2 x 2 3/4	2 x 2 3/4	2 1/2	3 3/4 x 4 3/4
2	2 1/2 x 3 1/4	2	2 1/2 x 3 1/4	2	2 1/2 x 3 1/4	2 1/2 x 3 1/4	3	4 1/4 x 5 1/4
2 1/2	3 1/8 x 4 1/8	2 1/2	3 1/8 x 4 1/8	2 1/2	3 1/8 x 4 1/8	3 x 4 1/8	3 1/2	5 1/4 x 6 1/4
3	4 1/4 x 5	3	4 1/4 x 5	3	4 1/4 x 5	3 3/4 x 5	4	5 3/4 x 6 3/4
3 1/2	4 3/4 x 5 1/2	3 1/2	4 3/4 x 5 1/2	3 1/2	4 3/4 x 5 1/2	4 1/4 x 5 1/2	4 1/2	5 3/4 x 6 3/4
4	5 1/8 x 5 3/4	4	5 1/8 x 5 3/4	4	5 1/8 x 6 1/8	4 3/4 x 6 1/8	5	6 1/2 x 7 1/2
5	6 1/8 x 7 1/8	5	6 1/8 x 6 3/8	5	6 1/8 x 7 1/8	5 1/4 x 7 1/8	6	7 1/2 x 8 1/2
6	7 1/2 x 8 1/2	6	7 1/2 x 8	6	7 1/2 x 8 1/2	6 3/4 x 8 1/2	7	8 3/4 x 9 3/4
8	9 3/8 x 10 3/8	8	9 3/8 x 10	8	9 3/8 x 10 3/8	8 3/4 x 10 3/8	8	9 3/4 x 10 3/4
10	11 1/4 x 12 3/4	10	11 1/4 x 12	10	11 1/4 x 12 3/4	10 3/4 x 12 3/4	9	10 3/4 x 11 3/4
12	13 1/2 x 15	12	13 1/2 x 14 1/4	12	13 1/2 x 15	12 3/4 x 15	10	11 3/4 x 13 1/4
14	14 3/4 x 16 1/4	14	14 3/4 x 15 1/2	14	14 3/4 x 16 1/4	14 3/4 x 16 1/4	12	14 3/4 x 16 1/2
16	16 3/4 x 18 1/2	16	16 3/4 x 17 1/2	16	16 3/4 x 18 1/2	16 3/4 x 18 1/2	14	15 3/4 x 17 1/4
18	19 1/4 x 21	18	19 1/4 x 20 1/4	18	19 1/4 x 21	18 3/4 x 21	15	17 1/4 x 19 1/4
20	21 x 23	20	21 x 22	20	21 1/8 x 23	20 3/4 x 23	16	18 3/4 x 20 3/4
24	25 1/4 x 27 1/4	24	25 1/4 x 26 1/4	24	25 1/4 x 27 1/4	25 1/4 x 27 1/4	18	19 3/4 x 21 3/4
							20	21 3/4 x 23 3/4
							22	24 x 25 3/4
							24	26 1/2 x 28 1/2

J-M STYLE 912 STANDARD SIZES ASA RAISED FACE FLANGES AND FLANGED FITTINGS FOR WELDING NECK AND LAPPED JOINT ONLY					
Pipe Size Inches	Gasket Dimensions Inches	150-lb. Guide O.D.	300-lb. Guide O.D.	400-lb. Guide O.D.	600-lb. Guide O.D.
1/4	3/8 x 7/8	1 1/4	1 1/4	1 1/4	1 1/4
1/2	7/8 x 1 1/4	1 3/4	2 1/8	2 1/8	2 1/8
3/4	1 1/8 x 1 5/8	2 1/4	2 3/8	2 3/8	2 3/8
1	1 3/8 x 1 7/8	2 3/4	2 7/8	2 7/8	2 7/8
1 1/4	1 7/8 x 2 1/2	2 3/4	3 1/4	3 1/4	3 1/4
1 1/2	2 x 2 3/4	3 1/4	3 3/4	3 3/4	3 3/4
2	2 1/2 x 3 1/4	4 1/4	4 3/8	4 3/8	4 3/8
2 1/2	3 1/8 x 3 5/8	4 3/4	5 1/8	5 1/8	5 1/8
3	3 3/4 x 4 1/4	5 1/4	5 3/4	5 3/4	5 3/4
3 1/2	4 1/4 x 5	5 3/4	6 1/8	6 1/8	6 1/8
4	4 3/4 x 5 3/4	6 1/4	7 1/8	7 1/8	7 1/8
4 1/2	5 1/8 x 6 1/8	6 3/4	7 3/4	7 3/4	7 3/4
5	5 3/4 x 6 3/4	7 1/4	8 1/4	8 1/4	8 1/4
5 1/2	6 1/4 x 7 1/4	7 3/4	8 3/4	8 3/4	8 3/4
6	6 3/4 x 7 3/4	8 1/4	9 1/4	9 1/4	9 1/4
6 1/2	7 1/4 x 8 1/4	8 3/4	9 3/4	9 3/4	9 3/4
7	7 3/4 x 8 3/4	9 1/4	10 1/4	10 1/4	10 1/4
7 1/2	8 1/4 x 9 1/4	9 3/4	10 3/4	10 3/4	10 3/4
8	8 3/4 x 9 3/4	10 1/4	11 1/4	11 1/4	11 1/4
8 1/2	9 1/4 x 10 1/4	10 3/4	11 3/4	11 3/4	11 3/4
9	9 3/4 x 10 3/4	11 1/4	12 1/4	12 1/4	12 1/4
9 1/2	10 1/4 x 11 1/4	11 3/4	12 3/4	12 3/4	12 3/4
10	10 3/4 x 11 3/4	12 1/4	13 1/4	13 1/4	13 1/4
10 1/2	11 1/4 x 12 1/4	12 3/4	13 3/4	13 3/4	13 3/4
11	11 3/4 x 12 3/4	13 1/4	14 1/4	14 1/4	14 1/4
11 1/2	12 1/4 x 13 1/4	13 3/4	14 3/4	14 3/4	14 3/4
12	12 3/4 x 13 3/4	14 1/4	15 1/4	15 1/4	15 1/4
12 1/2	13 1/4 x 14 1/4	14 3/4	15 3/4	15 3/4	15 3/4
13	13 3/4 x 14 3/4	15 1/4	16 1/4	16 1/4	16 1/4
13 1/2	14 1/4 x 15 1/4	15 3/4	16 3/4	16 3/4	16 3/4
14	14 3/4 x 15 3/4	16 1/4	17 1/4	17 1/4	17 1/4
14 1/2	15 1/4 x 16 1/4	16 3/4	17 3/4	17 3/4	17 3/4
15	15 3/4 x 16 3/4	17 1/4	18 1/4	18 1/4	18 1/4
15 1/2	16 1/4 x 17 1/4	17 3/4	18 3/4	18 3/4	18 3/4
16	16 3/4 x 17 3/4	18 1/4	19 1/4	19 1/4	19 1/4
16 1/2	17 1/4 x 18 1/4	18 3/4	19 3/4	19 3/4	19 3/4
17	17 3/4 x 18 3/4	19 1/4	20 1/4	20 1/4	20 1/4
17 1/2	18 1/4 x 19 1/4	19 3/4	20 3/4	20 3/4	20 3/4
18	18 3/4 x 19 3/4	20 1/4	21 1/4	21 1/4	21 1/4
18 1/2	19 1/4 x 20 1/4	20 3/4	21 3/4	21 3/4	21 3/4
19	19 3/4 x 20 3/4	21 1/4	22 1/4	22 1/4	22 1/4
19 1/2	20 1/4 x 21 1/4	21 3/4	22 3/4	22 3/4	22 3/4
20	20 3/4 x 21 3/4	22 1/4	23 1/4	23 1/4	23 1/4
20 1/2	21 1/4 x 22 1/4	22 3/4	23 3/4	23 3/4	23 3/4
21	21 3/4 x 22 3/4	23 1/4	24 1/4	24 1/4	24 1/4
21 1/2	22 1/4 x 23 1/4	23 3/4	24 3/4	24 3/4	24 3/4
22	22 3/4 x 23 3/4	24 1/4	25 1/4	25 1/4	25 1/4
22 1/2	23 1/4 x 24 1/4	24 3/4	25 3/4	25 3/4	25 3/4
23	23 3/4 x 24 3/4	25 1/4	26 1/4	26 1/4	26 1/4
23 1/2	24 1/4 x 25 1/4	25 3/4	26 3/4	26 3/4	26 3/4
24	24 3/4 x 25 3/4	26 1/4	27 1/4	27 1/4	27 1/4

THICKNESS. Style 912 gaskets are 1/4 nominal.

J-M STYLE 914 HANDHOLE AND MANHOLE STANDARD SIZES					
GASKET DIMENSIONS — INCHES					
Handhole					
OVAL			ORLONG		
I.D.	Width	I.D.	Width	I.D.	Width
2 1/2 x 3 1/2	3 1/2	4 x 5	1/2	2 1/2 x 3 1/2	3 1/2
2 1/2 x 3 1/2	3 1/2	4 x 6	3/4	2 1/2 x 3 1/2	1/2
2 1/2 x 3 1/2	1/2	4 x 6	1/2	3 x 4	3/4
3 x 4	3/4	4 x 6	3/4	3 x 4	3/4
3 x 4	3/4	4 1/8 x 5 1/8	3/4	3 x 4 1/2	5/8
3 x 4	1/2	4 1/8 x 5 1/8	1/2	3 1/2 x 4 1/2	3/4
3 1/2 x 4 1/2	3/4	4 1/4 x 5 1/4	3/4	4 x 5	3/4
3 1/2 x 4 1/2	3/4	4 1/4 x 5 1/4	1/2	4 x 5	1/2
4 x 5	3/4	6 x 8	1/2	4 1/2 x 6	1/2
Manhole (OVAL)					
I.D.	Width	I.D.	Width	I.D.	Width
9 x 12	3/4	11 x 14	1 1/4		
9 x 14	3/4	11 x 15	1 1/2		
10 x 14	1	11 x 15	3/4		
10 x 14	1 1/4	11 x 15	1		
10 x 15	1	11 x 15	1 1/4		
10 x 15	1 1/4	12 x 15	1 1/2		
10 x 15	1	12 x 15	3/4		
10 x 16	1 1/4	12 x 16	7/8		
11 x 14	3/4	12 x 16	1		
11 x 14	1	12 x 16	1 1/4		

NOTE: Style 914 Standard Handhole and Tube
Cap Sizes, classified by make of boiler,
are listed on pages 22-23.

J-M SPIROALIC GASKETS

J-M STYLE 913 STANDARD SIZES
ASA RAISED FACE FLANGES and FLANGED FITTINGS (see NOTE 3)
(Dimensions based on API STANDARD 601, see NOTES 1 and 2)

Pipe Size Inches	150, 300-lb		150-lb Guide		300-lb Guide		400, 600-lb		400-lb Guide		600-lb Guide		900-lb		900-lb Guide		1500, 2500-lb		1500-lb Guide		2500-lb Guide	
	I.D.	O.D.	O.D.	O.D.	O.D.	O.D.	I.D.	O.D.	O.D.	O.D.	O.D.	O.D.	I.D.	O.D.	O.D.	O.D.	I.D.	O.D.	O.D.	O.D.	O.D.	O.D.
1/4	1 1/4	7/8	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	7/8	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	2 1/2	1 1/4	1 1/4	1 1/4	2 1/2	2 1/2	2 1/2	2 1/2
1/2	1 1/2	1 1/4	1 1/4	1 1/4	2 1/4	2 1/4	1 1/4	1 1/4	2 1/4	2 1/4	2 1/4	2 1/4	1 1/4	1 1/4	2 1/2	2 1/2	1 1/4	1 1/4	2 1/2	2 1/2	2 1/2	2 1/2
3/4	1 3/4	1 1/2	1 1/2	2 1/4	2 1/4	2 1/4	1 1/4	1 1/4	2 1/4	2 1/4	2 1/4	2 1/4	1 1/4	1 1/4	2 1/2	2 1/2	1 1/4	1 1/4	2 1/2	2 1/2	2 1/2	2 1/2
1	1 1/2	1 1/2	1 1/2	2 1/4	2 1/4	2 1/4	1 1/4	1 1/4	2 1/4	2 1/4	2 1/4	2 1/4	1 1/4	1 1/4	2 1/2	2 1/2	1 1/4	1 1/4	2 1/2	2 1/2	2 1/2	2 1/2
1 1/4	1 3/4	2 1/4	3	3 1/4	3 1/4	3 1/4	1 3/4	2 1/4	3 1/4	3 1/4	3 1/4	3 1/4	1 3/4	2 1/4	3 1/2	3 1/2	1 3/4	2 1/4	3 1/2	3 1/2	4 1/8	4 1/8
1 1/2	1 3/4	2 1/4	3 1/4	3 1/4	3 1/4	3 1/4	1 3/4	2 1/4	3 1/4	3 1/4	3 1/4	3 1/4	1 3/4	2 1/4	3 1/2	3 1/2	1 3/4	2 1/4	3 1/2	3 1/2	4 1/8	4 1/8
2	2 1/4	3 1/4	4 1/4	4 1/4	4 1/4	4 1/4	2 1/4	3 1/4	4 1/4	4 1/4	4 1/4	4 1/4	2 1/4	3 1/4	5 1/2	5 1/2	2 1/4	3 1/4	5 1/2	5 1/2	5 1/2	5 1/2
2 1/2	2 3/4	3 3/4	4 3/4	4 3/4	5 1/4	5 1/4	3 1/4	3 3/4	5 1/4	5 1/4	5 1/4	5 1/4	2 3/4	3 3/4	6 1/2	6 1/2	2 3/4	3 3/4	6 1/2	6 1/2	6 1/2	6 1/2
3	4	4 3/4	5 3/4	5 3/4	5 3/4	5 3/4	4	4 3/4	5 3/4	5 3/4	5 3/4	5 3/4	3 3/4	4 3/4	6 3/4	6 3/4	3 3/4	4 3/4	6 3/4	6 3/4	7 3/4	7 3/4
3 1/2	4 1/2	5 1/4	6 1/4	6 1/4	6 1/4	6 1/4	4 1/4	5 1/4	6 1/4	6 1/4	6 1/4	6 1/4	4 1/4	5 1/4	7 1/4	7 1/4	4 1/4	5 1/4	7 1/4	7 1/4	7 3/4	7 3/4
4	5	5 3/4	6 3/4	6 3/4	7 1/4	7 1/4	4 3/4	5 3/4	7	7	7 3/4	7 3/4	4 3/4	5 3/4	8 1/4	8 1/4	4 3/4	5 3/4	8 1/4	8 1/4	9 1/4	9 1/4
4 1/2	5 1/2	6 1/2	7	7 3/4	7 3/4	7 3/4	5 3/4	6 1/2	7 3/4	7 3/4	8 1/4	8 1/4	5 3/4	6 1/2	9 1/4	9 1/4	5 3/4	6 1/2	9 1/4	9 1/4	9 1/4	9 1/4
5	6 1/4	7	7 3/4	8 1/4	8 1/4	8 1/4	5 1/4	7	8 1/4	9 1/4	9 1/4	9 1/4	5 1/4	7	9 1/4	9 1/4	5 1/4	7	10	10	11	11
6	7 3/4	8 3/4	8 3/4	9 1/4	9 1/4	9 1/4	6 3/4	8 1/4	9 1/4	10 1/4	10 1/4	10 1/4	6 3/4	8 1/4	11 1/4	11 1/4	6 3/4	8 1/4	11 1/4	11 1/4	12 1/4	12 1/4
8	9 3/4	10 3/4	11	12 1/4	12 1/4	12 1/4	8 3/4	10 3/4	12	12 1/4	12 1/4	12 1/4	8 3/4	10 3/4	14 1/4	14 1/4	8 3/4	10 3/4	13 3/4	13 3/4	15 1/4	15 1/4
10	11 3/4	12 1/2	13 3/4	14 1/4	14 1/4	14 1/4	10 3/4	12 1/2	14 1/4	15 1/4	15 1/4	15 1/4	10 3/4	12 1/2	17 1/4	17 1/4	10 3/4	12 1/2	17 1/4	17 1/4	18 3/4	18 3/4
12	13 3/4	14 3/4	16 1/4	16 3/4	16 3/4	16 3/4	12 3/4	14 3/4	16 1/2	18	18	18	12 3/4	14 3/4	19 3/4	19 3/4	12 3/4	14 3/4	20 1/2	20 1/2	21 3/4	21 3/4
14	14 3/4	16	17 1/4	19 1/4	19 1/4	19 1/4	14 3/4	16	19	19 3/4	19 3/4	19 3/4	14 3/4	16	20 1/2	20 1/2	14 3/4	16	22 1/4	22 1/4	23 1/4	23 1/4
16	16 3/4	18 1/4	20 1/4	21 1/4	21 1/4	21 1/4	16 3/4	18 1/4	21 1/4	22 1/4	22 1/4	22 1/4	16 3/4	18 1/4	22 1/4	22 1/4	16 3/4	18 1/4	25 1/4	25 1/4	26 1/4	26 1/4
18	18 1/4	20 1/4	21 3/4	23 1/4	23 1/4	23 1/4	18 1/4	20 1/4	23 1/4	24 1/4	24 1/4	24 1/4	18 1/4	20 1/4	25 1/4	25 1/4	18 1/4	20 1/4	27 1/4	27 1/4	28 1/4	28 1/4
20	20 1/4	22 1/4	23 3/4	25 1/4	25 1/4	25 1/4	20 1/4	22 1/4	25 1/4	26 1/4	26 1/4	26 1/4	20 1/4	22 1/4	27 1/4	27 1/4	20 1/4	22 1/4	29 1/4	29 1/4	30 1/4	30 1/4
24	24 1/4	27	28 3/4	30 3/4	30 3/4	30 3/4	24 1/4	27	30 3/4	31 1/4	31 1/4	31 1/4	24 1/4	27	33	33	24 1/4	27	35 1/4	35 1/4	36 1/4	36 1/4

THICKNESS: Style 913 gaskets are 3/16" nominal. Guide Rings are 1/4".

NOTE 1 - API Standard 601 does not include dimensions for 1/4", 1/2", 3/4", 3 1/2", 4 1/2" or 5" Pipe Sizes.

NOTE 2 - Gasket O.D. Dimensions are "overall"; therefore, are 1/8" larger than those shown in API Standard 601.

NOTE 3 - To determine suitability of dimensions for the particular flange type or bore, use the following table. It shows maximum bore of flange for which gasket dimensions are recommended.

PIPE SIZE (inches)							
FLANGE TYPE	150-lb	300-lb	400-lb	600-lb	900-lb	1500-lb	2500-lb
WN-STDW*	1/4-24	1/4-24	1/4-24	1/4-24	1/2-24	1/2-24	1/2-12
Nozzles**	1-24	1-24	1-12	1-12	1-12	1-12	1-12
WN 10-10S	3-24	3-24	4-24	4-24	3-24	N.S.	N.S.
Slip-On	3-24	3-24	3 & 24 only	3 & 24 only	N.S.	N.S.	N.S.

*Sizes 2 1/2" and smaller must be installed concentric with flange bore standard weight pipe to avoid possible protrusion of gasket into bore.

**Sizes 1" through 1 1/2" require same care in installation as described in footnote (*).
 Sizes 14" and larger, 400# and up, not recommended for use with nozzles.

Symbols used in table are:

WN-STDW — Welding Neck Flange bored for standard weight or heavier pipe.

Nozzle — A manufacturer's standard "Welding Neck." Bore equals nominal size (inches).

WN 10-10S — Welding Neck Flange bored for schedule 10-S pipe through 12"; bore for schedule 10 pipe over 12".

Slip-On — Slip-On or "Screw-On" Flange (Bore is essentially O.D. of Pipe).

N.S. — Not suitable for this flange rating.

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J-M STYLE 914 STANDARD HANDHOLE AND TUBE CAP SIZES
(classified by Make of Boiler)

[illegible]

J-M SPIROSTATIC BOILER GASKETS (Continued)

J-M STYLE 914 STANDARD HANDHOLE AND TUBE CAP SIZES
(classified by Make of Boiler)

Make of Boiler and Gasket No. or Name	Actual Shape	Nominal Gasket Size, Inches	Actual Gasket Size, Inches	Width Inches	Make of Boiler and Gasket No. or Name	Actual Shape	Nominal Gasket Size, Inches	Actual Gasket Size, Inches	Width Inches
FRANKLIN	Round Oblong	3 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₂ I.D.	3 ³ / ₁₆ I.D. x 4 ³ / ₁₆ O.D. 3 ³ / ₁₆ x 4 ³ / ₁₆ I.D.	3/4	PAGE	Oval Oval	2 ¹ / ₄ x 3 ¹ / ₄ I.D. 2 ¹ / ₄ x 3 ¹ / ₄ I.D.	2 ¹ / ₄ x 3 ³ / ₁₆ I.D. 2 ¹ / ₄ x 3 ³ / ₁₆ I.D.	3/4 3/4
GEARY 3 ¹ / ₂ " Tube 3 ¹ / ₂ " Tube 4" Tube 4" Tube	Oblong Oblong Oblong Oblong	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 x 5 I.D. 4 x 5 I.D.	3 ³ / ₁₆ x 4 ³ / ₁₆ I.D. 3 ³ / ₁₆ x 4 ³ / ₁₆ I.D. 4 ³ / ₁₆ x 5 ³ / ₁₆ I.D. 4 ³ / ₁₆ x 5 ³ / ₁₆ I.D.	1/2 3/4 3/4 1 ¹ / ₂	RILEY W-C4 W-C4 W-C7 W-C10 W-C14 W-C18 W-C22 W-C25	Oblong Oblong Round Square Square Square Round Oval Oblong	3 ¹ / ₄ x 5 ¹ / ₄ I.D. 3 ¹ / ₄ x 5 ¹ / ₄ I.D. 3 ¹ / ₂ I.D. 4 x 4 I.D. 5 ¹ / ₄ x 5 ¹ / ₄ I.D. 5 ¹ / ₄ x 5 ¹ / ₄ I.D. 2 I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₄ x 5 ¹ / ₄ I.D.	3 ³ / ₁₆ x 5 ³ / ₁₆ I.D. 3 ³ / ₁₆ x 5 ³ / ₁₆ I.D. 3 ³ / ₁₆ I.D. x 3 ³ / ₁₆ O.D. 4 x 4 I.D. 5 ¹ / ₄ x 5 ¹ / ₄ I.D. 5 ¹ / ₄ x 5 ¹ / ₄ I.D. 2 I.D. x 2 ³ / ₄ O.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ³ / ₁₆ x 5 ³ / ₁₆ I.D.	1 ¹ / ₄ 1 ¹ / ₄ 1 ¹ / ₄ 1 ¹ / ₄ 1 ¹ / ₄ 1 ¹ / ₄ 1 ¹ / ₄ 1 ¹ / ₄
HEDGES-WALSH-WEIDNER (See also Combustion Engineering)	Oblong Diamond	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D.	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D.	3/4 1/4	SEABOARD Water Screen Water Screen Water Screen	Round Oblong Oblong	3 ¹ / ₂ I.D. 4 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 ¹ / ₄ x 4 ¹ / ₄ I.D.	3 ¹ / ₂ I.D. x 3 ¹ / ₄ O.D. 4 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 ¹ / ₄ x 4 ¹ / ₄ I.D.	3/4 3/4 1/2
HEINE	Round Oval Oblong Diamond	3 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D.	3 ¹ / ₄ I.D. x 4 ¹ / ₄ O.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D.	1/4 3/4 3/4 3/4	SPRINGFIELD	Oval Square Square Square Square Square	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 5 ¹ / ₂ x 5 ¹ / ₂ I.D. 5 ¹ / ₂ x 5 ¹ / ₂ I.D. 5 ¹ / ₂ x 5 ¹ / ₂ I.D. 7 ¹ / ₂ x 7 ¹ / ₂ I.D. 7 ¹ / ₂ x 7 ¹ / ₂ I.D.	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 5 ¹ / ₂ x 5 ¹ / ₂ I.D. 5 ¹ / ₂ x 5 ¹ / ₂ I.D. 5 ¹ / ₂ x 5 ¹ / ₂ I.D. 7 ¹ / ₂ x 7 ¹ / ₂ I.D. 7 ¹ / ₂ x 7 ¹ / ₂ I.D.	3/4 1 ¹ / ₂ 1 ¹ / ₂ 1 ¹ / ₂ 1 ¹ / ₂ 1 ¹ / ₂
INTERNATIONAL	Oval Oval Oblong Oblong Pear	2 ¹ / ₄ x 3 ¹ / ₄ I.D. 3 x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 x 6 I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D.	2 ¹ / ₄ x 3 ¹ / ₄ I.D. 2 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 x 6 I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D.	1 ¹ / ₂ 3/4 3/4 3/4 3/4	SUPERHEATER (See also Combustion Engineering)	Oblong	3 ¹ / ₄ x 3 ¹ / ₄ I.D.	3 ¹ / ₄ x 3 ¹ / ₄ I.D.	3/4
KEELER	Round Diamond Diamond Pear	4 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	4 ¹ / ₄ I.D. x 4 ³ / ₁₆ O.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	3/4 3/4 3/4 3/4	UNION	Oval Pear Pear Pear Pear Pear	3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	1/4 3/4 3/4 3/4 3/4 3/4
MURRAY 3 ¹ / ₂ " Tube 4" Tube	Oblong Oblong Oblong Oblong Oblong Oval	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 x 5 I.D. 2 ¹ / ₄ x 4 I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 x 6 I.D.	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 2 ¹ / ₄ x 4 I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 x 6 I.D.	3/4 3/4 3/4 3/4 3/4 3/4	VOGT	Round Round Oval Oval Oval Oval	3 ¹ / ₄ I.D. 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 5 I.D. 4 ¹ / ₄ x 5 I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	3 ¹ / ₄ I.D. x 4 ¹ / ₄ O.D. 4 ¹ / ₄ I.D. x 4 ¹ / ₄ O.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 5 I.D. 4 ¹ / ₄ x 5 I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	3/4 3/4 3/4 3/4 3/4 3/4
OIL CITY 3 ¹ / ₂ " Tube 4" Tube 4" Tube	Oblong Oblong Oblong	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 x 5 I.D. 4 x 5 I.D.	3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	3/4 3/4 1 ¹ / ₂	WARD (See also Combustion Engineering)	Square Square Square	4 ¹ / ₄ x 5 ¹ / ₄ I.D. 4 ¹ / ₄ x 4 ¹ / ₄ I.D. 5 x 5 ¹ / ₄ I.D.	4 ¹ / ₄ x 5 ¹ / ₄ I.D. 4 ¹ / ₄ x 4 ¹ / ₄ I.D. 5 x 5 ¹ / ₄ I.D.	3/4 3/4 3/4
OIL WELL SUPPLY	Oblong Oblong Oblong Oblong Oblong	2 ¹ / ₄ x 3 ¹ / ₄ I.D. 3 x 4 I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	2 ¹ / ₄ x 3 ¹ / ₄ I.D. 3 x 4 I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 3 ¹ / ₄ x 4 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D.	3/4 3/4 3/4 3/4 3/4	WICKES	Round Pear Oval	4 ¹ / ₄ I.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D.	4 ¹ / ₄ I.D. x 4 ¹ / ₄ O.D. 4 ¹ / ₄ x 5 ¹ / ₄ I.D. 3 ¹ / ₂ x 4 ¹ / ₂ I.D.	3/4 3/4 3/4
PACIFIC	Oblong	3 x 4 I.D.	3 x 4 I.D.	3/4					

J-M STYLE 920 SINGLE-JACKETED STANDARD SIZES
(Standard Sizes in Inches)
COPPER, ALUMINUM AND SOFT IRON

*Denotes sizes produced most economically. These sizes should be adopted wherever practical.

(24)

J-M SINGLE-BACKETED BASKETS (Continued)

J-M STYLE 920 SINGLE-JACKETED STANDARD SIZES

(Standard Sizes in Inches)

COPPER, ALUMINUM AND SOFT IRON

[illegible]

*Smaller sizes produced most economically. These sizes should be stocked wherever practical.

[illegible]

FBW-272

J-M STYLES 923, 926 and 929 STANDARD SIZES

J-M 923 ONLY

Cast Iron Companion Flanges Gaskets to Fit Inside Bolt Holes Copper or Aluminum Gaskets Only			Large and Small Tongue and Groove Flanges		
Pipe Size Inches	Standard — 125-lb.	Extra Heavy — 250-lb.	Pipe Size Inches	150, 300, 400, 600, 900, 1500 and 2500 lbs.	
	Gasket Dimensions Inches	Gasket Dimensions Inches		Large	Small
				Gasket Dimensions Inches	Gasket Dimensions Inches
1	1 1/4 x 2 1/2	2 x 2 3/4	1/2	1 x 1 3/4	1 x 1 3/4
1 1/4	2 x 2 3/4	2 1/4 x 3 1/4	3/4	1 1/4 x 1 1/4	1 1/4 x 1 1/4
1 1/2	2 1/4 x 3 1/4	2 3/4 x 3 3/4	1	1 1/2 x 2	1 1/2 x 1 7/8
2	3 x 4	3 1/4 x 4 1/4	1 1/4	1 3/4 x 2 1/2	1 3/4 x 2 1/4
2 1/2	3 1/4 x 4 3/4	3 3/4 x 5	1 1/2	2 1/4 x 2 7/8	2 1/4 x 2 1/2
3	4 1/4 x 5 1/4	4 3/4 x 5 3/4	2	2 3/4 x 3 3/4	2 3/4 x 3 3/4
3 1/2	5 1/4 x 6 1/4	5 1/4 x 6 3/4	2 1/2	3 3/4 x 4 1/4	3 3/4 x 3 3/4
4	5 3/4 x 6 3/4	5 1/2 x 7	3	4 1/4 x 5	4 1/4 x 4 3/4
4 1/2	5 1/2 x 6 3/4	6 1/4 x 7 3/4	3 1/2	4 3/4 x 5 1/2	4 3/4 x 5 1/4
5	6 1/4 x 7 3/4	6 3/4 x 8 3/4	4	5 1/4 x 6 1/4	5 1/4 x 5 1/4
6	7 x 8 3/4	8 1/4 x 9 3/4	5	6 1/4 x 7 1/4	6 1/4 x 6 1/4
7	8 1/4 x 9 3/4	9 1/4 x 10 3/4	6	7 1/4 x 8 1/4	7 1/4 x 8
8	9 1/4 x 10 3/4	10 x 12	8	9 1/4 x 10 3/4	9 1/4 x 10
9	10 3/4 x 12 3/4	11 x 13	10	11 1/4 x 12 3/4	11 1/4 x 12
10	11 x 13 1/4	11 3/4 x 14 1/4	12	13 1/2 x 15	13 1/2 x 14 1/4
12	13 3/4 x 16	14 x 16 1/2	14	14 3/4 x 16 1/4	14 3/4 x 15 1/2
14	15 3/4 x 17 3/4	16 1/4 x 19	16	16 3/4 x 18 1/2	16 3/4 x 17 3/4
15	16 1/2 x 18 3/4	17 1/4 x 19 3/4	18	19 1/4 x 21	19 1/4 x 20 1/4
16	17 3/4 x 20 1/4	18 1/2 x 21 1/4	20	21 x 23	21 x 22
18	18 3/4 x 21 1/2	20 1/2 x 23 3/4	24	25 1/4 x 27 1/4	25 1/4 x 26 1/4
20	20 3/4 x 23 3/4	22 1/2 x 25 3/4			
22	22 3/4 x 25 3/4	24 1/2 x 27 1/2			
24	25 1/4 x 28 1/4	27 x 30 3/4			

J-M STYLES 923, 926 and 929 STANDARD SIZES (Gasket Thickness: 923 approx. 1/8", 926 approx. 9/64", 929 approx. 3/32")											Large Male- Female Flanges		
Gasket Dimensions, Inches											Pipe Size Inches	Gasket Dimen- Inches	
150 lbs.		300 lbs.		400 lbs.		600 lbs.		800 lbs.		1500 lbs.			
Pipe Size Inches	Slip-on Screw-on Flange	Welding Neck Lap Joint Flange	Slip-on Screw-on Flange	Welding Neck Lap Joint Flange	Slip-on Screw-on Flange	Welding Neck Lap Joint Flange	Slip-on Screw-on Flange	Welding Neck Lap Joint Flange	Slip-on Screw-on Flange	Welding Neck Lap Joint Flange			
1/2	3/4 x 1 1/4	3/4 x 1 3/4	3/4 x 2 1/4	3/4 x 2	3/4 x 2 1/4	3/4 x 2	3/4 x 2 1/4	3/4 x 2			1/2	3/4 x 1 3/4	
3/4	1 1/4 x 2 1/4	1 x 2 3/4	1 1/4 x 2 1/4	1 x 2 1/2	1 1/4 x 2 1/4	1 x 2 1/2	1 1/4 x 2 1/4	1 x 2 1/2			3/4	1 1/4 x 1 1/4	
1	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 x 3	1 x 3	1	1 1/4 x 2	
1 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 2 1/4	1 1/4 x 3 1/4	1 1/4 x 3 1/4	1 1/4	1 1/4 x 2 1/4	
1 1/2	2 1/4 x 3 1/4	1 3/4 x 3 1/4	2 1/4 x 3 1/4	1 3/4 x 3 1/4	2 1/4 x 3 1/4	1 3/4 x 3 1/4	2 1/4 x 3 1/4	1 3/4 x 3 1/4	1 3/4 x 3 1/4	1 3/4 x 3 1/4	1 1/2	2 1/4 x 2 1/4	
2	2 1/4 x 4 1/4	2 1/4 x 4	2 1/4 x 4 1/4	2 1/4 x 4 1/4	2 1/4 x 4 1/4	2 1/4 x 4 1/4	2 1/4 x 4 1/4	2 1/4 x 4 1/4	2 1/4 x 5 1/2	2 1/4 x 5 1/2	2	2 1/4 x 3 1/4	
2 1/2	3 1/4 x 4 1/4	2 3/4 x 4 1/4	3 1/4 x 5	2 3/4 x 5	3 1/4 x 5	2 3/4 x 5	3 1/4 x 5	2 3/4 x 5	2 1/2 x 6 3/4	2 1/2 x 6 3/4	2 1/2	3 1/4 x 4 1/4	
3	3 1/4 x 5 1/4	3 1/4 x 5 1/4	3 1/4 x 5 1/4	3 1/4 x 5 1/4	3 1/4 x 5 1/4	3 1/4 x 5 1/4	3 1/4 x 5 1/4	3 1/4 x 5 1/4	3 1/4 x 5 1/4	3 x 6 3/4	3	4 x 5	
3 1/2	4 1/4 x 6 1/4	3 3/4 x 6 1/4	4 1/4 x 6 1/4	3 3/4 x 6 1/4	4 1/4 x 6 1/4	3 3/4 x 6 1/4	4 1/4 x 6 1/4	3 3/4 x 6 1/4	3 3/4 x 7 3/4	3 3/4 x 7 3/4	3 1/2	4 1/4 x 5 1/4	
4	4 1/4 x 6 1/4	4 1/4 x 6 1/4	4 1/4 x 7	4 1/4 x 7	4 1/4 x 7	4 1/4 x 7	4 1/4 x 7	4 1/4 x 7	4 1/4 x 8	3 3/4 x 8 1/4	4	5 1/4 x 6 1/4	
5	5 1/4 x 7 3/4	5 1/4 x 7 3/4	5 1/4 x 8 3/4	5 1/4 x 8 3/4	5 1/4 x 8 3/4	5 1/4 x 8 3/4	5 1/4 x 8 3/4	5 1/4 x 8 3/4	5 x 9 3/4	4 3/4 x 9 3/4	5	6 1/4 x 7 1/4	
6	7 x 8 3/4	6 1/4 x 8 3/4	7 x 9 3/4	6 1/4 x 9 3/4	7 x 9 3/4	6 1/4 x 9 3/4	7 x 9 3/4	6 1/4 x 9 3/4	6 x 11 1/4	5 3/4 x 11	6	7 1/2 x 8 1/4	
8	9 1/4 x 10 3/4	8 3/4 x 10 3/4	9 1/4 x 12	8 3/4 x 12	9 1/4 x 12	8 3/4 x 12	9 1/4 x 12	8 3/4 x 12	7 3/4 x 14	7 1/4 x 13 3/4	8	9 3/4 x 10 3/4	
10	11 1/4 x 13 1/4	10 3/4 x 13 1/4	11 1/4 x 14 1/4	10 3/4 x 14 1/4	11 1/4 x 14 1/4	10 3/4 x 14 1/4	11 1/4 x 14 1/4	10 3/4 x 14 1/4	10 x 15 3/4	9 3/4 x 17	10	11 x 12 3/4	
12	13 1/4 x 16	12 3/4 x 16	13 1/4 x 16 1/2	12 3/4 x 16 1/2	13 1/4 x 16 1/2	12 3/4 x 16 1/2	13 1/4 x 16 1/2	12 3/4 x 16 1/2	12 1/2 x 17 3/4	11 3/4 x 19 1/2	12	13 1/4 x 15	
14	14 3/4 x 17 3/4	14 1/4 x 17 3/4	14 3/4 x 19	13 3/4 x 19	14 3/4 x 19	13 3/4 x 19	14 3/4 x 19	13 3/4 x 19	13 3/4 x 19 1/4	12 3/4 x 20 3/4	14	14 1/4 x 16 1/4	
16	16 1/4 x 20 1/4	16 1/4 x 20 1/4	16 1/4 x 21 1/4	15 1/4 x 21 1/4	16 1/4 x 21 1/4	15 1/4 x 21 1/4	16 1/4 x 21 1/4	15 1/4 x 21 1/4	15 x 22 3/4	14 1/4 x 22 1/2	16	16 1/4 x 18 1/4	
18	18 1/4 x 21 1/2	18 1/4 x 21 1/2	18 1/4 x 23 1/4	17 1/4 x 23 1/4	18 1/4 x 23 1/4	17 1/4 x 23 1/4	18 1/4 x 23 1/4	17 1/4 x 23 1/4	16 3/4 x 24	16 x 25	18	18 1/2 x 21	
20	20 1/4 x 23 1/4	20 1/4 x 23 1/4	20 1/4 x 25 3/4	19 1/4 x 25 3/4	20 1/4 x 25 3/4	19 1/4 x 25 3/4	20 1/4 x 25 3/4	19 1/4 x 25 3/4	18 1/2 x 26 1/4	17 3/4 x 27 3/4	20	20 1/4 x 23	
24	24 1/4 x 28 1/4	24 1/4 x 28 1/4	24 1/4 x 30 3/4	24 1/4 x 30 3/4	24 1/4 x 30 3/4	24 1/4 x 30 3/4	24 1/4 x 30 3/4	24 1/4 x 30 3/4	22 1/4 x 31	21 1/4 x 32 3/4	24	24 1/4 x 27 1/4	

*Also available in 3 1/2 x 5 1/2.

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J-M STYLE 941 STANDARD SIZES

J-M 941 PROFILE METAL STANDARD SIZES

For Large Tongue & Groove Flanges			For Large Male and Female Flanges									
Pipe Size Inches	150, 300, 400, 600, 900, 1500 & 2500 lbs.		150-lb.		300-lb.		400-lb.		600-lb.		900, 1500, 2500-lb.	
			Slip-On, Lapped Joint Screw-On, Welding Neck		Slip-On, Lapped Joint Screw-On, Welding Neck		Slip-On, Lapped Joint Screw-On, Welding Neck		Lapped Joint Welding Neck		Lapped Joint Welding Neck	
	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.
1/2	1	1 1/4	7/8	1 1/8	7/8	1 1/8	7/8	1 1/8	3/4	1 1/4	3/4	1 1/4
3/4	1 1/4	1 3/4	1 1/8	1 3/8	1 1/8	1 3/8	1 1/8	1 3/8	1 1/8	1 3/4	1 1/8	1 3/4
1	1 1/2	2	1 1/4	2	1 1/4	2	1 1/4	2	1 1/4	2	1 1/4	2
1 1/4	1 3/4	2 1/2	1 3/8	2 1/8	1 3/8	2 1/8	1 3/8	2 1/8	1 3/8	2 1/4	1 3/8	2 1/4
1 1/2	2	2 3/4	2 1/8	2 3/8	2 1/8	2 3/8	2 1/8	2 3/8	1 3/4	2 3/4	1 3/4	2 3/4
2	2 1/2	3 1/4	2 3/8	3 1/8	2 1/4	3 1/8	2 1/4	3 1/8	2 1/2	3 1/4	2 1/2	3 1/4
2 1/2	3 1/4	4 1/4	3 1/8	4 1/8	3 1/4	4 1/8	3 1/4	4 1/8	2 3/4	4 1/4	2 3/4	4 1/4
3	4 1/4	5	4 1/8	5	3 3/4	5	3 3/4	5	3 3/4	5	3 3/4	5
3 1/2	4 3/4	5 1/2	4 3/8	5 1/8	4 1/2	5 1/8	4 1/2	5 1/8	3 1/2	5 1/2	3 1/2	5 1/2
4	5 1/4	6 1/4	5 1/8	6 1/8	4 3/4	6 1/8	4 3/4	6 1/8	4 1/4	6 1/4	4 1/4	6 1/4
5	6 1/4	7 1/4	6 1/8	7 1/8	6 1/4	7 1/8	5 3/4	7 1/8	5 1/4	7 1/4	5 1/4	7 1/4
6	7 1/4	8 1/4	7 1/8	8 1/8	7 1/4	8 1/8	6 3/4	8 1/8	6 1/4	8 1/4	6 1/4	8 1/4
8	9 1/4	10 1/4	9 1/8	10 1/8	9 1/4	10 1/8	8 3/4	10 1/8	8 1/4	10 1/4	8 1/4	10 1/4
10	11 1/4	12 1/4	11 1/8	12 1/8	11	12 1/8	11	12 1/8	10	12 1/4	10	12 1/4
12	13 1/4	15	13 1/8	15	13	15	13	15	12	15	12	15
14	14 3/4	16 1/4	14 3/8	16 1/8	14 1/4	16 1/8	14 1/4	16 1/8	13 1/4	16 1/4	13 1/4	16 1/4
16	16 1/4	18 1/4	16 1/8	18 1/8	16 1/4	18 1/8	16 1/4	18 1/8	15 1/4	18 1/4	15 1/4	18 1/4
18	18 1/4	21	18 1/8	21	18 1/4	21	18 1/4	21	17 1/4	21	17 1/4	21
20	21	23	21	23	20 1/4	23	20 1/4	23	19 1/4	23	19 1/4	23
24	25 1/4	27 1/4	25	27 1/4	24 1/4	27 1/4	24 1/4	27 1/4	23 1/4	27 1/4	23 1/4	27 1/4

900 and 1500 lb. only.

J-M 941 PROFILE METAL GASKETS
For Raised Face, Forged Steel Flanges

Pipe Size	150 lb.		300 lb.		400 lb.		600 lb.		900 lb.		1500 lb.		2500 lb.	
	Slip on, Lapped joint Screw on, Welding Neck		Slip on, Lapped joint Screw on, Welding Neck		Slip on, Lapped joint Screw on, Welding Neck		Lapped joint Welding Neck*		Lapped joint Welding Neck		Lapped joint Welding Neck		Lapped joint Welding Neck	
	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.	I.D.	O.D.
1/2	7/8	1 1/8	7/8	2 1/8	7/8	2 1/8	3/4	2 1/8	3/4	2 1/8	3/4	2 1/8	3/4	2 1/8
3/4	1 1/8	2 1/8	1 1/8	2 1/4	1 1/8	2 1/4	1 1/8	2 1/4	1 1/8	2 1/4	1 1/8	2 1/4	1 1/8	2 1/4
1	1 1/4	2 1/4	1 1/4	2 1/2	1 1/4	2 1/2	1 1/4	2 1/2	1 1/4	2 1/2	1 1/4	2 1/2	1 1/4	2 1/2
1 1/4	1 3/8	3 1/8	1 3/8	3 1/4	1 3/8	3 1/4	1 3/8	3 1/4	1 3/8	3 1/4	1 3/8	3 1/4	1 3/8	3 1/4
1 1/2	2 1/8	3 1/4	2 1/8	3 1/2	2 1/8	3 1/2	1 3/4	3 1/2	1 3/4	3 1/2	1 3/4	3 1/2	1 3/4	3 1/2
2	2 3/8	4 1/8	2 3/8	4 1/4	2 3/8	4 1/4	2 3/8	4 1/4	2 3/8	4 1/4	2 3/8	4 1/4	2 3/8	4 1/4
2 1/2	3 1/8	4 3/8	3 1/8	5 1/8	3 1/8	5 1/8	2 3/4	5 1/8	2 3/4	5 1/8	2 3/4	5 1/8	2 3/4	5 1/8
3	4 1/8	5 1/8	4 1/8	5 3/8	4 1/8	5 3/8	3 1/4	5 3/8	3 1/4	5 3/8	3 1/4	5 3/8	3 1/4	5 3/8
3 1/2	4 3/8	6 1/8	4 3/8	6 3/8	4 3/8	6 3/8	3 1/2	6 3/8	3 1/2	6 3/8	3 1/2	6 3/8	3 1/2	6 3/8
4	5 1/8	6 3/8	5 1/8	7 1/8	5 1/8	7 1/8	4 1/4	7 1/8	4 1/4	7 1/8	4 1/4	7 1/8	4 1/4	7 1/8
5	6 1/8	7 3/8	6 1/8	8 1/8	6 1/8	8 1/8	5 1/4	8 1/8	5 1/4	8 1/8	5 1/4	8 1/8	5 1/4	8 1/8
6	7 1/8	8 3/8	7 1/8	9 1/8	7 1/8	9 1/8	6 1/4	9 1/8	6 1/4	9 1/8	6 1/4	9 1/8	6 1/4	9 1/8
8	9 1/8	11	9 1/8	12 1/8	9 1/8	12 1/8	8 1/4	12 1/8	8 1/4	12 1/8	8 1/4	12 1/8	8 1/4	12 1/8
10	11 1/8	13 1/8	11 1/8	14 1/8	11 1/8	14 1/8	10	15 1/8	10	15 1/8	10	15 1/8	10	15 1/8
12	13 1/8	16 1/8	13 1/8	16 3/8	13 1/8	16 3/8	12	18	12	19 1/8	12	20 1/8	12	21 1/8
14	14 3/8	17 3/8	14 3/8	19 1/8	14 3/8	19 1/8	13 1/4	19 1/8	13 1/4	20 3/8	13 1/4	22 3/8	13 1/4	24 3/8
16	17	20 1/4	16 3/4	21 1/4	16 3/4	21 1/4	15 1/4	22 1/4	15 1/4	23 1/4	15 1/4	25 1/4	15 1/4	27 1/4
18	19 1/4	21 3/4	18 3/4	23 1/4	18 3/4	23 1/4	17 1/4	24 1/4	17 1/4	25 1/4	17 1/4	27 1/4	17 1/4	29 1/4
20	21	23 3/4	20 3/4	25 1/4	20 3/4	25 1/4	19 1/4	26 1/4	19 1/4	27 1/4	19 1/4	29 1/4	19 1/4	31 1/4
24	25	28 1/4	24 1/4	30 1/4	24 1/4	30 1/4	23 1/4	31 1/4	23 1/4	33	23 1/4	35 1/4	23 1/4	37 1/4

*Gasket dimensions listed for 1/2" through 3 1/2" — 400-lb. flanges may be used in the corresponding sizes of 600-lb. flanges if gaskets are required for 600-lb. slip-on or screw-on flanges in these pipe sizes.

J-M V-TITE GASKETS

J-M STYLES 950 and 951 STANDARD API and ASA (B16.20) RING SIZES
HEAVY CROSS SECTION SOLID METAL V-TITE GASKETS

A.S.A. and A.P.I. Ring Number	Gasket Dimensions, Inches						Size of Flange, Inches						Gasket Weights, Lbs.	
	Center to Center	Inside Diameter	Outside Diameter	Width of Ring	Height of Ring	Oval to Oval	General Use					Oil Field Use	Oval Rings	Octag- onal Rings
							150 lbs.	300 to 600 lbs.	900 lbs.	1500 lbs.	2500 lbs.	720, 960, 2000, 3000 lbs.		
R11	1 1/4	1 1/2	1 3/4	1/4	1/8	3/4		1/2					.111	.104
R12	1 1/2	1 3/4	1 7/8	1/4	1/8	1/2		1/2	1/2				.216	.200
R13	1 3/4	1 7/8	2	1/4	1/8	1/2		3/4		1/2			.234	.216
R14	1 3/4	1 7/8	2 1/8	1/4	1/8	1/2			3/4	3/4			.242	.224
R15	1 7/8	1 7/8	2 1/4	1/4	1/8	1/2	1						.260	.240
R16	2	1 7/8	2 1/2	1/4	1/8	1/2	1	1	1	3/4	1	1	.278	.256
R17	2 1/4	1 7/8	2 3/4	1/4	1/8	1/2	1 1/4						.311	.288
R18	2 3/8	2 1/8	2 7/8	1/4	1/8	1/2	1 1/4	1 1/4	1 1/4	1	1 1/4	1 1/4	.328	.304
R19	2 3/8	2 1/4	2 7/8	1/4	1/8	1/2	1 1/2						.354	.328
R20	2 1/2	2 3/8	3	1/4	1/8	1/2	1 1/2	1 1/2	1 1/2		1 1/2	1 1/2	.372	.344
R21	2 5/8	2 1/2	3 1/8	1/4	1/8	1/2				1 1/4			.660	.643
R22	3 1/4	2 5/8	3 3/8	1/4	1/8	1/2	2						.450	.415
R23	3 1/4	2 5/8	3 3/8	1/4	1/8	1/2		2		1 1/2	2		.755	.734
R24	3 3/4	3 1/8	4 1/8	1/4	1/8	1/2		2	2			2	.870	.846
R25	4	3 1/8	4 1/8	1/4	1/8	1/2	2 1/2						.553	.510
R26	4	3 1/8	4 1/8	1/4	1/8	1/2	2 1/2			2	2 1/2		.930	.904
R27	4 1/4	3 3/8	4 1/2	1/4	1/8	1/2		2 1/2	2 1/2			2 1/2	1.050	.960
R28	4 3/8	3 3/8	4 3/8	1/4	1/8	1/2				2 1/2			1.255	1.230
R29	4 1/2	4 1/8	4 1/2	1/4	1/8	1/2	3						.622	.575
R30	4 3/8	4 1/8	5 1/8	1/4	1/8	1/2	3						1.075	1.047
R31	4 7/8	4 1/8	5 1/8	1/4	1/8	1/2	3	3			3		1.130	1.100
R32	5	4 1/2	5 1/2	1/4	1/8	1/2				3			1.435	1.405
R33	5 1/8	4 3/8	5 3/8	1/4	1/8	1/2	3 1/2						.718	.664
R34	5 1/8	4 3/8	5 3/8	1/4	1/8	1/2	3 1/2	3 1/2			3 1/2		1.200	1.170
R35	5 3/8	4 3/8	5 3/8	1/4	1/8	1/2			3			3	1.250	1.210
R36	5 3/8	5 1/8	6 1/8	1/4	1/8	1/2	4						.813	.735
R37	5 7/8	5 1/8	6 1/8	1/4	1/8	1/2	4	4			4	3 1/2	1.360	1.330
R38	6 1/8	5 1/8	6 1/8	1/4	1/8	1/2				4			2.56	2.52
R39	6 3/8	5 3/8	6 3/8	1/4	1/8	1/2			4			4	1.480	1.440
R40	6 7/8	6 1/8	7 1/8	1/4	1/8	1/2	5						.935	.865
R41	7 1/8	6 3/8	7 3/8	1/4	1/8	1/2	5	5			5		1.66	1.61
R42	7 1/8	6 3/8	7 3/8	1/4	1/8	1/2				5			4.21	4.16
R43	7 3/8	7 1/8	7 3/8	1/4	1/8	1/2	6						1.055	.975
R44	7 3/8	7 1/8	7 3/8	1/4	1/8	1/2			5			5	1.77	1.73
R45	8 1/8	7 3/8	8 3/8	1/4	1/8	1/2	6	6			6		1.93	1.88
R46	8 3/8	7 3/8	8 3/8	1/4	1/8	1/2			6			6	2.39	2.33
R47	9	8 1/8	9 1/8	1/4	1/8	1/2				6			5.06	4.99
R48	9 3/8	9 1/8	10 1/8	1/4	1/8	1/2	8						1.350	1.240
R49	10 3/8	10 1/8	11 1/8	1/4	1/8	1/2	8	8			8		2.47	2.40
R50	10 3/8	10 1/8	11 1/8	1/4	1/8	1/2			8			8	4.40	4.32
R51	11	10 3/8	11 3/8	1/4	1/8	1/2				8			8.05	8.17
R52	12	11 3/8	12 3/8	1/4	1/8	1/2							1.66	1.53
R53	12 3/8	12 1/8	13 1/8	1/4	1/8	1/2		10	10			10	3.00	2.88
R54	12 3/8	12 1/8	13 1/8	1/4	1/8	1/2				10		10	5.25	5.18
R55	13 3/8	12 3/8	14 3/8	1/4	1/8	1/2					10		16.23	17.04
R56	15	14 3/8	15 3/8	1/4	1/8	1/2							2.67	1.92
R57	15	14 3/8	15 3/8	1/4	1/8	1/2		12	12			12	3.48	3.38
R58	15	14 1/4	15 1/4	1/4	1/8	1/2								
R59	15 3/8	15 1/4	16 1/4	1/4	1/8	1/2	14						2.16	2.00
R60	16	14 3/4	17 1/4	1 1/4	1 1/8	1 1/2						12	23.10	23.50
R61	16 1/2	16 1/8	16 1/2	1 1/4	1 1/8	1 1/2						14	3.83	3.73
R62	16 1/2	15 3/4	17 1/4	1 1/4	1 1/8	1 1/2						14	6.84	6.71
R63	16 1/2	15 1/2	17 1/2	1 1/4	1 1/8	1 1/2						14	16.20	16.67
R64	17 1/8	17 1/8	18 1/8	1 1/4	1 1/8	1 1/2	16						2.47	2.29
R65	18 1/8	18 1/8	18 1/8	1 1/4	1 1/8	1 1/2		16				16	4.30	4.18
R66	18 1/8	17 3/8	19 1/8	1 1/4	1 1/8	1 1/2						16	7.67	7.53
R67	18 1/8	17 3/8	19 1/8	1 1/4	1 1/8	1 1/2						16	22.30	23.40
R68	20 3/8	20 3/8	20 3/8	1 1/4	1 1/8	1 1/2	18						2.82	2.7
R69	21	20 3/8	21 3/8	1 1/4	1 1/8	1 1/2		18				18	4.87	4.74
R70	21	20 1/4	21 1/4	1 1/4	1 1/8	1 1/2						18	11.80	11.64
R71	21	19 3/8	22 3/8	1 1/4	1 1/8	1 1/2						18	25.20	26.50
R72	22	21 1/8	22 1/8	1 1/4	1 1/8	1 1/2						20	3.04	2.81
R73	23	22 1/2	23 1/2	1 1/4	1 1/8	1 1/2						20	6.60	6.47
R74	23	22 1/4	23 1/4	1 1/4	1 1/8	1 1/2						20	12.95	12.75
R75	23	21 3/8	24 3/8	1 1/4	1 1/8	1 1/2						20	33.30	35.30
R76	26 1/8	26 1/8	26 1/8	1 1/4	1 1/8	1 1/2	24						3.66	3.38
R77	27 1/4	26 3/8	27 3/8	1 1/4	1 1/8	1 1/2		24					11.30	11.10
R78	27 1/4	26 1/4	28 1/4	1 1/4	1 1/8	1 1/2						24	27.10	27.58
R79	27 1/4	25 3/8	28 3/8	1 1/4	1 1/8	1 1/2						24	48.70	49.75
R80	24 1/4	23 1/8	24 1/8	1 1/4	1 1/8	1 1/2						22		3.11
R81	25	24 1/8	25 1/8	1 1/4	1 1/8	1 1/2						22		8.55
R82	2 1/4	1 1/8	2 1/8	1/4	1/8	1/2						1		.508
R83														
R84	2 1/2	2 1/8	2 1/8	1/4	1/8	1/2						1 1/2		.564
R85	3 1/8	2 3/8	3 3/8	1/4	1/8	1/2						2		.978
R86	3 3/8	2 1/8	4 1/8	1/4	1/8	1/2						2 1/2		1.447
R87	3 1/2	3 3/8	4 3/8	1/4	1/8	1/2						3		1.597
R88	4 3/8	4 1/8	5 3/8	1/4	1/8	1/2						4		2.735
R89	4 1/2	3 3/4	5 1/4	1/4	1/8	1/2						3 1/2		2.528
R90	6 1/8	5 3/4	7	1/4	1/8	1/2						5		4.55
R91	10 1/4	9	11 1/4	1 1/4	1 1/8	1 1/2						10		15.05
R92	9	8 3/8	9 3/8	1 1/4	1 1/8	1 1/2							2.07	2.02
R93	29 1/2	28 3/8	30 3/8	1 1/4	1 1/8	1 1/2						26		16.33
R94	31 1/2	30 3/8	32 3/8	1 1/4	1 1/8	1 1/2						28		17.44
R95	33 3/4	33	34 3/4	1 1/4	1 1/8	1 1/2						30		18.69
R96	36	35 3/8	36 3/8	1 1/4	1 1/8	1 1/2						32		26.65
R97	38	37 3/8	38 3/8	1 1/4	1 1/8	1 1/2						34		28.13
R98	40 3/4	39 3/8	41 3/8	1 1/4	1 1/8	1 1/2						36		29.79
R99	9 1/4	8 1/4	9 1/4	1/4	1/8	1/2								2.08
R100														

R100 through R105, Information on Request.

Pipe Line Flanges to MSS SP-44.
 * 10,000 lb. Oil Field Use. (Also RX Gaskets, page 30.)
 * B-30 for Leaked Joint Only.

FBW-275

BX and RX RING SIZES FOR API 6BX and 6B FLANGES

BX GASKETS FOR API 6BX FLANGES				
API Ring Number	Nominal Flange Bore (in.)			Gasket Weight lbs.
	5,000 psi	10,000 psi	15,000 psi	
BX-150		1 1/4	1 1/4	0.295
BX-151		1 3/8	1 3/8	0.337
BX-152		2 1/8	2 1/8	0.425
BX-153		2 3/8	2 3/8	0.632
BX-154		3 1/8	3 1/8	0.875
BX-155		4 1/8		1.22
BX-156		7 1/8	7 1/8	4.14
BX-157		9		6.55
BX-158		11		9.60
BX-159		13 3/8		14.41
BX-160	13 3/8			6.75



**J-M 951
BX RING**



**J-M 951
RX RING**

RX GASKETS FOR API 6B FLANGES						
API Ring Number	API Groove Number	Size of Flange, Inches				Gasket Weight lbs.
		720-960 2000 lbs.	2900 lbs.	3000 lbs.	5000 lbs.	
RX 20	R-20	1 1/2		1 1/2	1 1/2	0.527
RX 23	R-23	2				1.15
RX 24	R-24			2	2	1.33
RX 26	R-26	2 1/2				1.42
RX 27	R-27			2 1/2	2 1/2	1.50
RX 31	R-31	3		3		1.73
RX 35	R-35				3	1.91
RX 37	R-37	4		4		2.09
RX 39	R-39				4	2.27
RX 41	R-41	5		5		2.54
RX 44	R-44				5	2.72
RX 45	R-45	6		6		2.96
RX 46	R-46				6	3.66
RX 47	R-47				8*	8.56
RX 49	R-49	8		8		3.79
RX 50	R-50				8	5.36
RX 53	R-53	10		10		4.56
RX 54	R-54				10	6.45
RX 57	R-57	12		12		5.36
RX 63	R-63				14	25.40
RX 65	R-65	16				6.53
RX 66	R-66			16		9.39
RX 69	R-69	18				7.52
RX 70	R-70			18		20.14
RX 73	R-73	20				11.63
RX 74	R-74			20		22.10
RX 82	R-82		1			0.790
RX 84	R-84		1 1/2			0.880
RX 85	R-85		2			0.880
RX 86	R-86		2 1/2			1.79
RX 87	R-87		3			1.98
RX 88	R-88		4			3.22
RX 89	R-89		3 1/2			2.98
RX 90	R-90		5			6.82
RX 91	R-91		10			17.10
RX 99	R-99	8*		8*		3.31

* Crossover flange connection

**STANDARD SPECIFICATIONS FOR BX
and RX GASKET METALS**

STANDARD SPECIFICATIONS			
In accordance with API 6A.			
Maximum Working Temperature — 250°F.			
METAL	Brinell Hardness Number ¹ Max.	Rockwell "B" Scale ² Max.	Identification
Soft Iron ³	90	50	D
Low-carbon Steel ³	120	68	S
Type 304 Stainless Steel	150	83	S304
Type 316 Stainless Steel	160	83	S316

¹ Brinell hardness measured with 3,000-KG load except soft iron, which is measured with 500-KG load

² Rockwell "B" measured with 100-KG and 1/16" diameter ball

³ Soft iron and steel gaskets to be cadmium plated 0.0002" to 0.0005" maximum



ENGINEERING QUESTIONNAIRE

JOHNS-MANVILLE

PLEASE FILL OUT VERY CAREFULLY

Johns-Manville District Date:

Customer: Address:

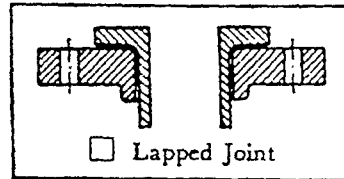
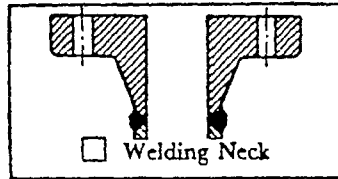
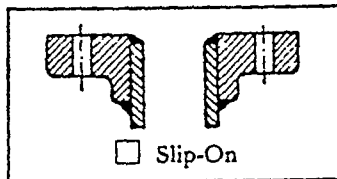
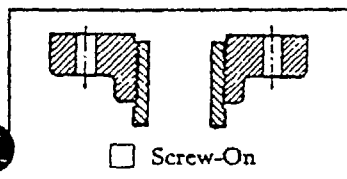
1. Substance to be sealed:
(If a chemical or other corrosive substance, the concentration should be stated)

2. Pressure to be sealed—Operating: lbs. Test: lbs.

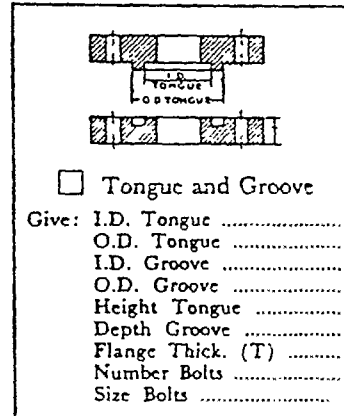
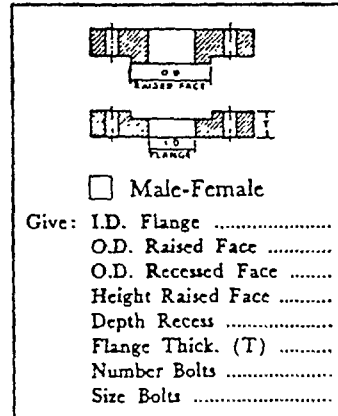
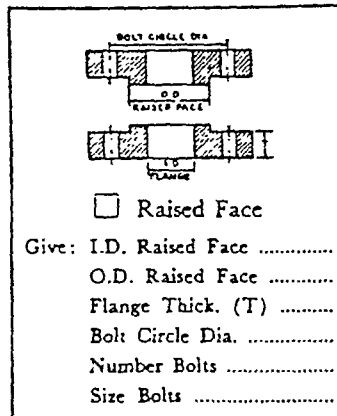
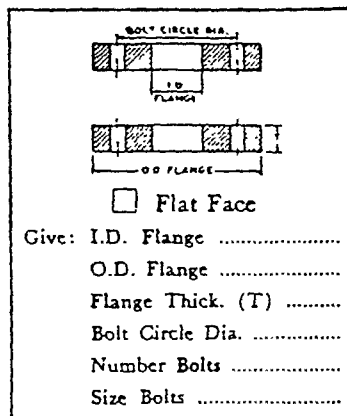
3. Operating temperature range: Cycle time:

4. Flange Data: (a) Nominal Size (b) Nominal Pressure Rating:

(c) Flange Type (Check One):



(d) Flange Facing: If flanges are to American standards, just check representative facing below; otherwise fill in all dimensional and bolting data requested.



(e) Materials of which flanges are made: (f) Materials of which bolts are made:

(g) Contact surface finish: (h) Condition of contact surface:
(i.e., smooth, serrated, phonograph, etc.) (i.e., new, good, poor, etc.)

NOTE: For flanges of special shape or facing an accurately dimensioned sketch must be furnished and all bolting data included.

5. Limitations on gasket thickness: 6. How often must joint be opened:

7. What gasket design and material was previously used and with what result:

8. Number of gaskets required for each size:

9. Miscellaneous data:

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Joint Sealing Compounds

SPECIAL J-M COMPOUNDS FOR SEALING THREADED, FLANGED, AND GASKETED JOINTS.
(They are not Cements or Adhesives)

Plastiseal Expanding Joint Compound is recommended for coating pipe threads and gasketed joints on lines handling high-pressure steam, oil, gasoline, kerosene, alcohol, tar, creosote, ammonia, brine, acids, air and gas.

Soluble only in water (which may be used as thinner) and chemically inert, Plastiseal will not shrink or become brittle. It expands under heat to form a permanently tight joint.

Plastiseal is recognized throughout the country as the standard thread and gasket compound for Dowtherm heaters and lines.

Plastiseal "F", made by adding asbestos fiber, is recommended for critical service requiring a compound with more bulk reinforcement. Proven more satisfactory for gas turbine applications at temperatures in excess of 1600F.

Aquaseal Waterproof Joint Compound is recommended for coating pipe threads and gasketed joints on lines handling water, especially drinking water, natural or manufactured gas, air and low-pressure steam (300°-350°F).

Insoluble in water, Aquaseal is putty-like, non-corrosive, non-injurious and non-contaminating. The lubricating and rust-preventing qualities simplify the breaking and reassembling of joints.

PACKAGING PLASTISEAL and AQUASEAL		
CANS	BUCKETS	DRUMS
1 lb.*	10 lb.	350 lb.
5 lb.*	30 lb.	500 lb.
	60 lb.	

*Plastiseal "F" available only in this form.

JOINT SEALING
COMPOUNDS



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Johns-Manville

22 East 40th Street • New York, N. Y. 10016

CANADIAN JOHNS-MANVILLE CO., LIMITED • 565 LAKESHORE ROAD EAST, PORT CREDIT, ONTARIO

JOHNS-MANVILLE INTERNATIONAL CORP., 22 EAST 40th ST., NEW YORK, N. Y. • CABLE: JOHNMANVIL



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