

DEFENDER™ RG Sealing Gasket

Topside or subsea, the Lamons DEFENDER™ RG can help overcome corrosion problems by sealing corroded and damaged flange faces.



LAMONS®

Sealing Global - Servicing Local

The DEFENDER™ RG sealing gasket has been designed to offer a positive high integrity sealing solution for use on flange faces that have been subjected to erosion, corrosion, chemical attack and/or abrasion without having to modify or rework the flange faces.

Features

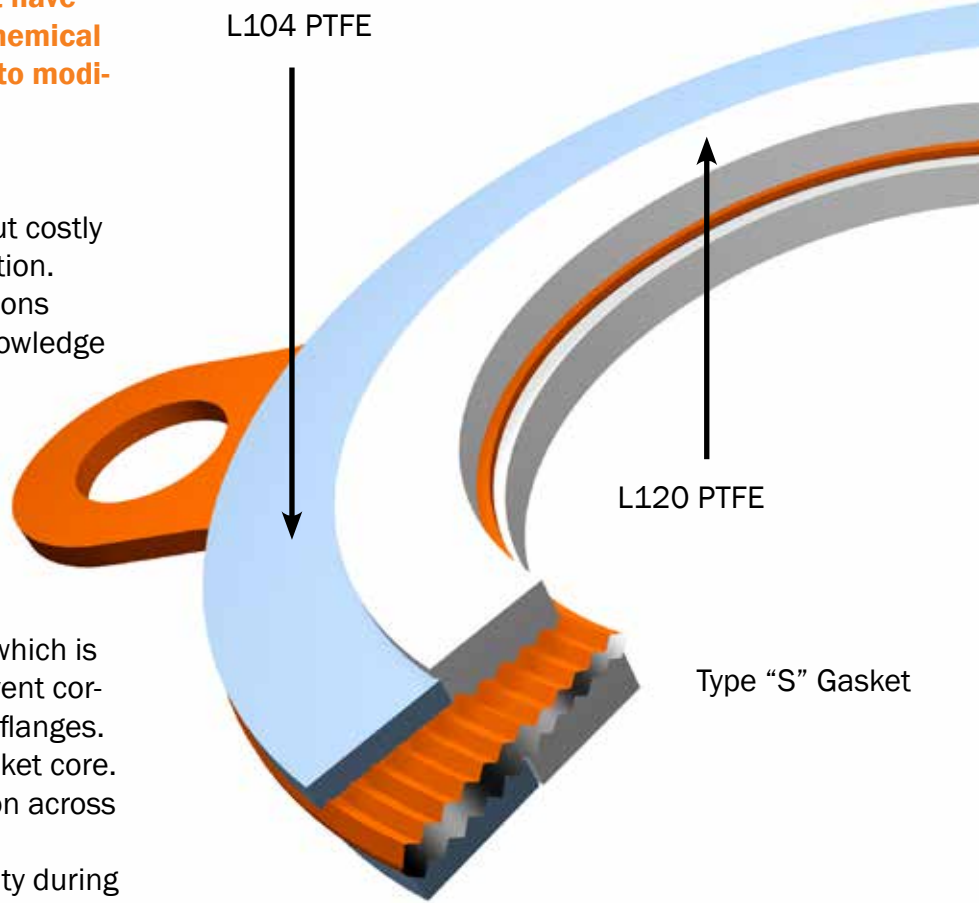
- Can seal corroded flange faces without costly and time consuming flange rehabilitation.
- Uses proven technology, years of Lamons sealing expertise, and applies this knowledge to solve a unique sealing problem.
- May be used in lieu of several more time consuming and costly solutions.
- No special tools or installation techniques required.
- Requires no additional bolt torque other than a standard piping gasket.
- Gasket core is in 316 stainless steel which is encapsulated in PTFE polymer to prevent corrosion and electrical contact with the flanges.
- Other metals are available for the gasket core.
- PTFE materials offer electrical isolation across the flange faces.
- Rigid Kampro inner ring adds stability during installation and compression.
- Kampro inner ring has PTFE facings which act as a primary seal to prevent media ingress and crevice corrosion.
- Machined serrations create “point contact” loading for high integrity sealing.

Applications

- For use on ASME B 16.5 flanges.
- May be used for above ground or sub-sea applications.
- May be used on high pressure flanges up to 2500#, API, 15K or PN420.
- For use as a flange isolation kit, contact factory.

Sizes

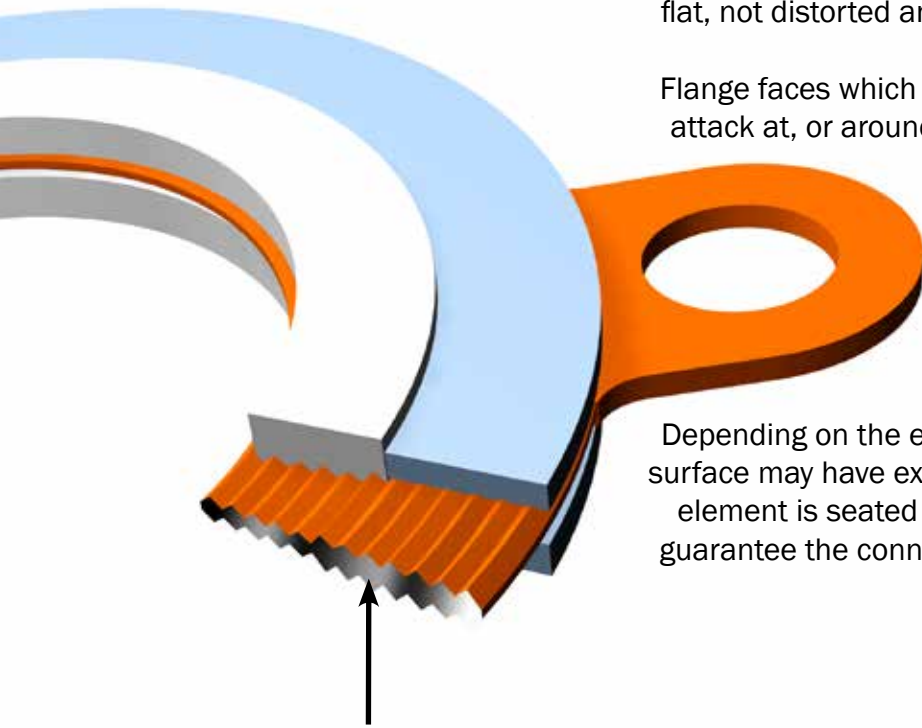
- 1/2” (12.7mm) through 24” (609.6mm) diameter.
- Available as Type “F” or Type “S”.



Type “S” Gasket

Patent Pending





Steel Core Encapsulated with PTFE Coating

All piping gaskets are designed to operate at their optimum on flange faces that are clean, free from scratches and indentations, flat, not distorted and have a gramophone surface finish between 125 μ .ins to 250 μ .ins. (3.2 μ .M to 6.3 μ .M). Flange faces which have been subjected to crevice type corrosion attack at, or around, the inner portion of the flange sealing faces can occur over a period of time. In many field applications, the flange surface condition cannot be assessed until the bolted connection has been decommissioned and an inspection has determined the suitability of the flanges to accept the same type of gasket that was initially installed.

Depending on the extent of the flange face damage, the corroded surface may have extended onto the surface where gasket sealing element is seated and simply installing another gasket offers no guarantee the connection will remain tight and leak-free once the flange is commissioned back into service.

Industries

- Oil and Gas
- Chemical
- LNG
- Petro-chemicals
- Refining
- Agro-chemicals
- Metals Refining
- Power

Gasket Material Specifications

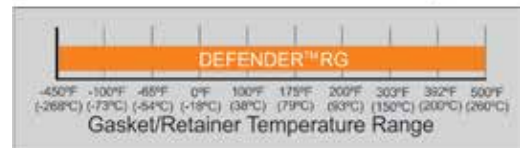
Retainer Material (Steel Encapsulated with PTFE Coating)

- 0.182" (4.623mm) total thickness.
- Steel core = 1/8" (0.125")

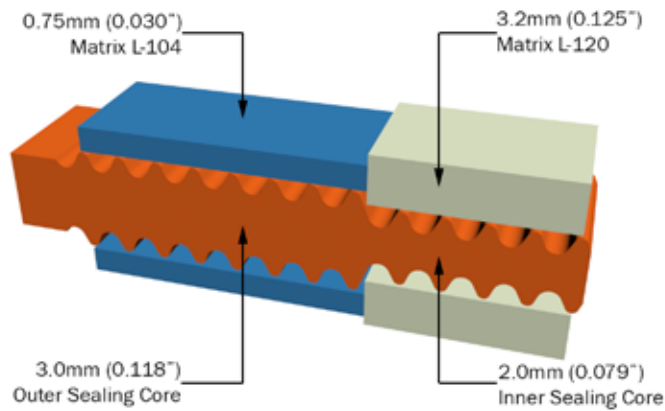
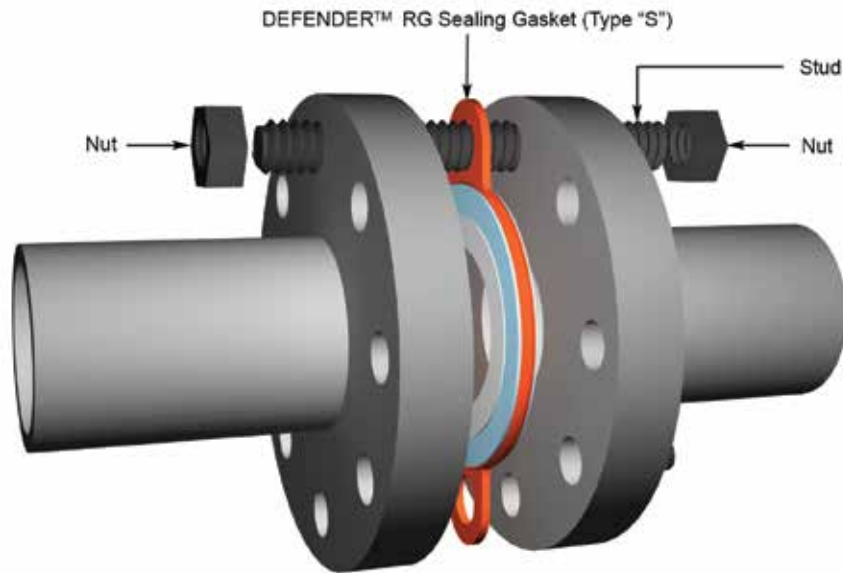
NOTE: Inconel, Duplex, Monel and Titanium cores are available.

Seal Element Material Specifications

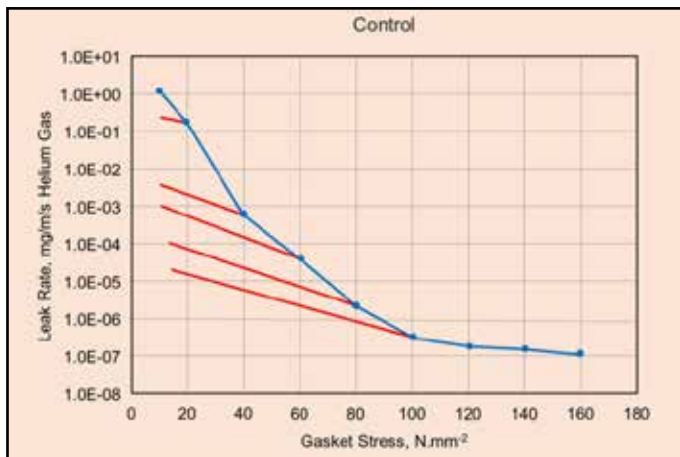
ASTM	TEST METHOD	L104	L120
F36	Compression	35%	55%
F36	Recovery	45%	15%
F152	Tensile Strength	1885 psi (13 MPa)	3190 psi (22 MPa)
F37	Liquid Leakage	<0.25 mL/hr	<0.1 mL/hr
F38	Creep Relaxation	31%	17%
	Density	87 lbs/ft ³ (1.4 g/cc)	59 lbs/ft ³ (0.95 g/cc)
	Gas Leakage - BS7531	<0.01 mL/min.	<0.03 mL/min
F149	Dielectric Strength	15 kV/mm	
	Temperature - Operating	-450°F (-268°C) to +500°F (+260°C)	-450°F (-268°C) to +500°F (+260°C)



NOTE: Consult factory for pressure class applications at 2500# and 15K.



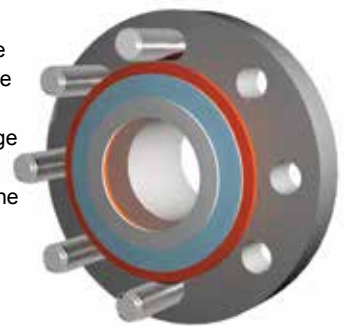
The DEFENDER™ RG has relatively early compression of the expanded PTFE up to 2.0mm followed by a stiffening as the secondary L-104 biaxially orientated PTFE begins to become compressed. The DEFENDER™ RG gasket can withstand a maximum gasket stress of 400 N. mm² at ambient temperature.



The DEFENDER™ RG exhibits excellent sealing properties on flange faces with minimal corrosion damage.

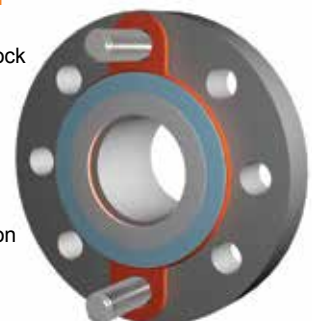
Type "F" Gasket

Fits within the bolt hole circle of the flange and extends to the I.D. of the bolt circle. Seals damaged and corroded flange faces and provides excellent protection against shorting out of the corrosion mitigation hardware.



Type "S" Gasket (Integrated Alignment Holes-Subsea)

Fits over Bolt Holes at 12 and 6 O'Clock to assist installation for subsea applications, as only having the two integrated plugs makes it easier to automatically center gasket for installation. Seals damaged and corroded flange faces and provides excellent protection against shorting out of the corrosion mitigation hardware.



An assessment as to the suitability of the flange surfaces has to be made in real-time with several options available.

DEFENDER™ RG Engineered Gaskets Eliminate the Need for the Following Techniques:

Weld repair and re-machine existing flanges.

- Call supervision for decision.
- Possible restricted access (both flange faces).
- Hot work permit issues.
- Welder (possibly not available immediately).
- NDT Inspection.
- On-site machining (People and time).
- Expensive and timely.

Remove old flanges and install new gasket

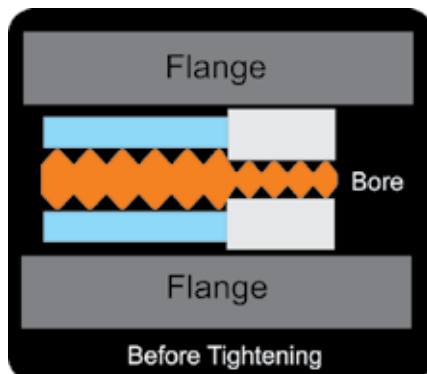
- Call supervision for decision.
- Possible restricted access (both flange faces).
- Hot work permit issues.
- Welder (possibly not available immediately).
- NDT Inspection.
- Expensive and timely.

Treat the damaged surfaces with Belzona

- Call supervision for decision.
- Possible restricted access (both flange faces).
- Temperature limitations.
- Chemical compatibility.
- Not a permanent solution.
- Questions about what gasket type is compatible.

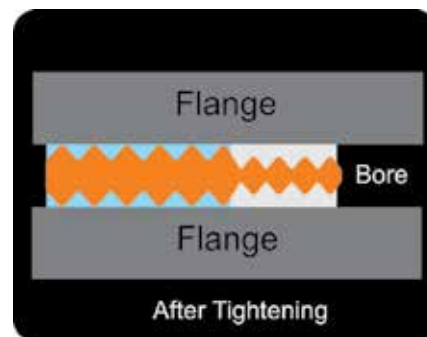
Install a new standard gasket using the same flanges

- Quick and easy fix.
- Will the gasket seal damaged flanges?
- If it passes test, for how long will it work?



Before Tightening

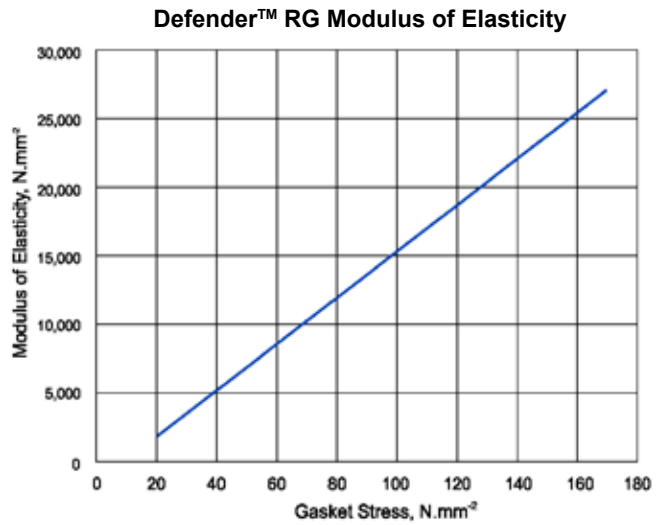
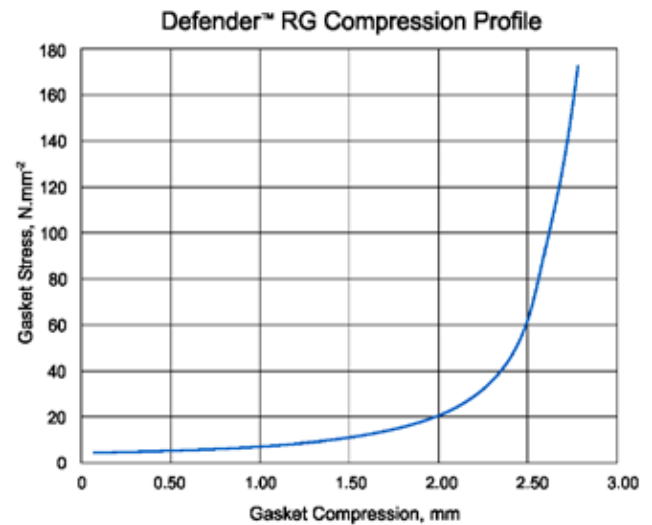
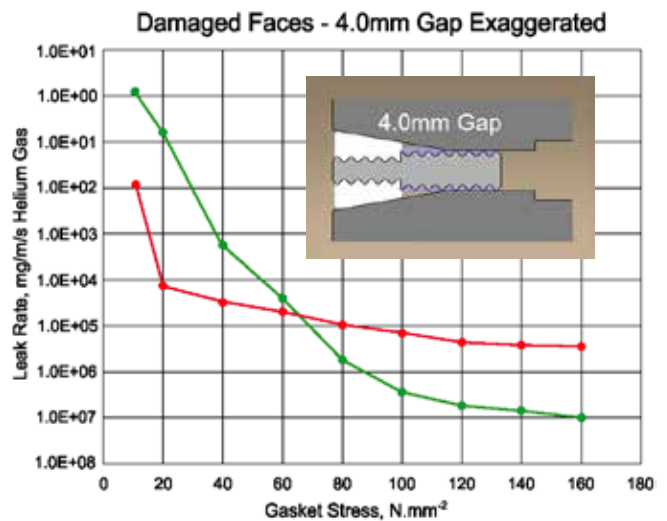
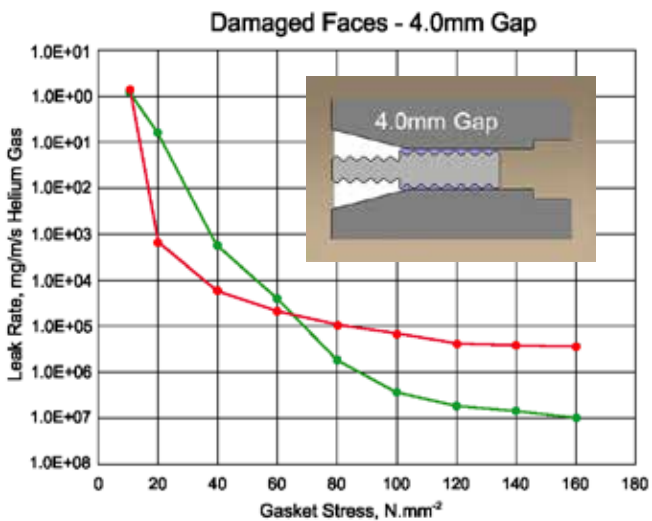
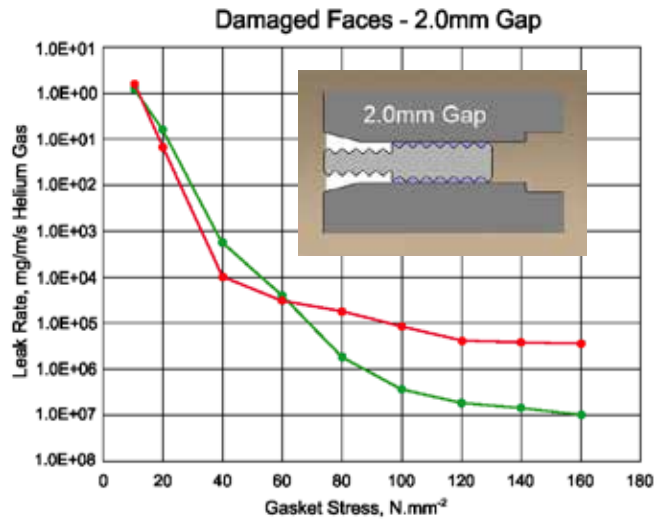
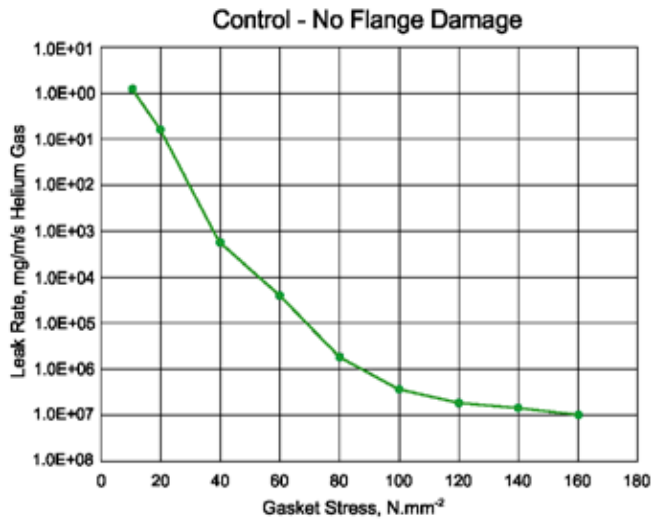
The flange face makes initial contact with the sealing elements which protrude above the gasket steel core.



After Tightening

The sealing elements are compressed into the serrations of the stainless steel core.

The graphs below show leakage and compression results of DEFENDER™ RG. Leakage testing was performed with Helium gas @ 40 bar pressure.



Torque Values for DEFENDER™ RG Gasket

Suitable for ASTM A193 B7, B16, B7M, ASTM A320 L43, L7, L7M(®) Bolts													
Data based on ASME B16.5 RF ASTM A 182 F304 Flanges													
NPS	Gasket Type	Class 150#		Class 300#		Class 600#		Class 900#		Class 1500#		Class 2500#	
		ft.lbs	Nm	ft.lbs	Nm	ft.lbs	Nm	ft.lbs	Nm	ft.lbs	Nm	ft.lbs	Nm
1/2"	DRG	36	48	36	48	36	48	128	174	128	174		
3/4"	DRG	36	48	72	97	72	97	128	174	128	174		
1.0"	DRG	36	48	72	97	72	97	208	282	208	282		
1-1/4"	DRG	36	48	72	97	72	97	208	282	208	282		
1-1/2"	DRG	36	48	128	174	128	174	312	423	312	423		
2.0"	DRG	72	97	72	97	72	97	208	282	208	282		
2-1/2"	DRG	72	97	128	174	128	174	312	423	312	423		
3.0"	DRG	72	97	128	174	128	174	208	282	464	629		
4.0"	DRG	72	97	128	174	208	282	464	629	658	892		
5.0"	DRG	128	174	128	174	312	423	658	892	1,194	1,619		
6.0"	DRG	128	174	128	174	312	423	464	629	900	1,220		
8.0"	DRG	128	174	208	282	464	629	900	1,220	1,547	2,098		
10.0"	DRG	208	282	312	423	658	892	900	1,220	2,447	3,318		
12.0"	DRG	208	282	464	629	658	892	900	1,220	3,006	4,076		
14.0"	DRG	312	423	464	629	900	1,220	1,194	1,619	4,364	5,918		
16.0"	DRG	312	423	658	892	1,194	1,619	1,547	2,098	6,080	8,245		
18.0"	DRG	464	629	658	892	1,547	2,098	2,447	3,318	8,195	11,113		
20.0"	DRG	464	629	658	892	1,547	2,098	3,006	4,076	10,751	14,578		
24.0"	DRG	658	892	1,194	1,619	2,447	3,318	6,080	8,245	17,356	23,535		

Contact Lamons Engineering



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