

**James Walker** Moorflex

## Total flange management



High Performance Sealing Technology



## Prevention is better than a cure



**Eliminating problems at source is the key to improving plant efficiency and safety whilst at the same time reducing maintenance costs.**

As a manufacturer and supplier of high-performance metallic gaskets for critical applications in the oil, gas and chemical industries, James Walker Moorflex recognises the importance of protecting these critical components under operational conditions.

### **Combat corrosion - reduce maintenance costs**

The annular gap around the outside diameter of a flange joint is highly vulnerable to the ingress of debris and moisture which will result in the degradation of the gasket and corrosion damage to the flange and seal. Excessive flange corrosion is hazardous and replacement could mean unscheduled downtime for machining or replacement of damaged flanges and gaskets.

To combat this problem and minimise the risk of damage to flange joints in operational conditions, James Walker Moorflex has developed a range of inexpensive and easy-to-fit flange protectors that provide total protection from the ingress of moisture and foreign materials without the need for splitting or separating the joint.



## Total management

Whilst the flange protector band protects the gasket, flange faces and internal section of the bolts or studs, the complete flange management package from James Walker Moorflex includes protection for the exposed heads of the fasteners with high-quality, bolt head protection caps.

In instances where there is contact between dissimilar metals at a joint or there is a need for electrical isolation or elimination of explosion risk, the James Walker Moorflex flange management package includes a comprehensive range of flange insulation kits. These offer protection in three key ways;

- Effective isolation at flange joints to ensure the efficient operation of cathodic protection systems on stainless steel pipelines.
- Minimise or eliminate risk of explosion by providing electrical insulation to prevent ignition sparks where volatile fluids are being transferred through a pipeline.
- Prevention of galvanic corrosion by eliminating direct contact between the opposing surfaces where dissimilar metals meet at a flange joint.

## Prevention saves money

Preventative maintenance is simple, best practice engineering and investing in preventative measures to combat corrosion is not only a major contribution towards maintaining critical joint integrity but provides additional cost, safety and production benefits;

- Uncorroded assemblies are quicker and easier to disassemble and rebuild
- Reduced wastage as bolts can be reused
- Gaskets last longer and flange joint integrity is maintained
- Reduced product loss through leakage
- Improved safety and production efficiency
- No costly machining or repair of flanges required

## Total flange management



### Step one – assured joint integrity

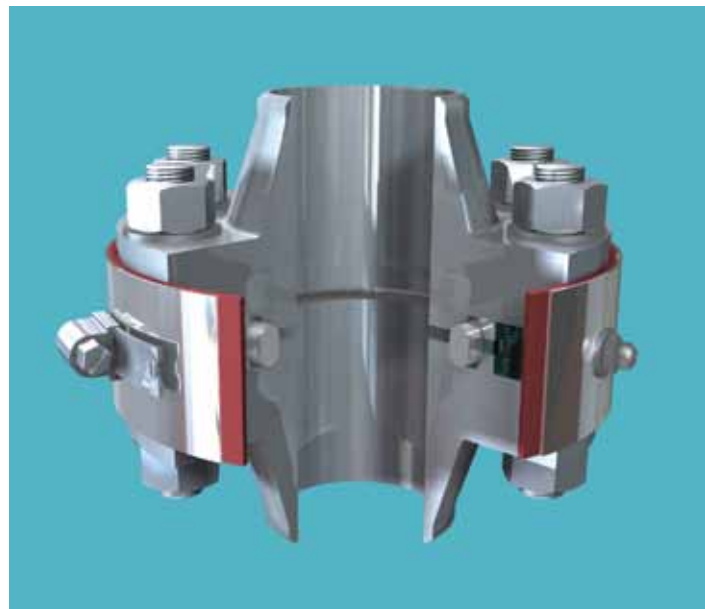
Leak-tight, reliable joints are a vital ingredient of every industrial installation. Not only will a leaking joint waste valuable product and energy, it can also create health & safety and environmental problems.

The best method of ensuring long-term joint integrity is through the fitting of James Walker RotaBolt® tension control fasteners (seen in the image above). The RotaBolt system applies the principal of accurately measured bolt tension at installation.

This is a far more accurate measure of the integrity of a bolted joint than traditional procedures and using the RotaBolt indicating bolts or studs it is very simple to carry out a visual or fingertip inspection at any time to check that all bolts are still at the correct tension.

RotaBolts are setting new safety standards in a wide variety of sectors where any degree of unreliability will have a cost, health & safety or environmental impact.

- Reduce leaks and maximise plant uptime
- Keep expensive product loss to a minimum
- Reduces installation times by a factor of six
- Reduces all aspects of bolted joint maintenance



### Flange protectors

Flange protectors are designed to protect studs and gaskets on raised face and ring type joint flanges from atmospheric corrosion encountered in chemical plants, refineries, gas plants, offshore platforms, onshore oil fields, ships, paper mills and underground pipelines.

James Walker Moorflex flange protectors are made from stainless steel with a bonded, closed-cell neoprene sponge liner, and stainless grease fittings. Packed with Corrosion Inhibitor Grease these bands protect against build-ups from corrosive and salt environments and flanges remain safe from hazardous, unsightly corrosion that can cause leakage, failure, or even shutdown of equipment.

- Cost-effective
- Reduces corrosion
- Fits in minutes without splitting the flange
- Re-usable
- Available for all flange sizes
- Standard materials suitable for up to 120°C

Standard stainless flange protectors are a stock item available for immediate dispatch.

The product can also be manufactured to order in a wider range of alternative materials to suit specific application requirements.





## Bolt protection

Easy to fit, tough, durable and cost effective; these precision-manufactured caps for bolts, bolt ends, nuts and screws have been specially developed to provide almost total protection against corrosion, humidity and operational damage.

Used extensively across a broad cross-section of industrial sectors - particularly offshore, wind energy, processing, transport and manufacturing - bolt head caps reduce maintenance costs and downtime.

James Walker Moorflex can provide caps from stock to suit almost every bolted joint application.

- Protect bolts and fasteners
- Increase product life
- Reduce maintenance costs and bolt wastage
- Enhance safety

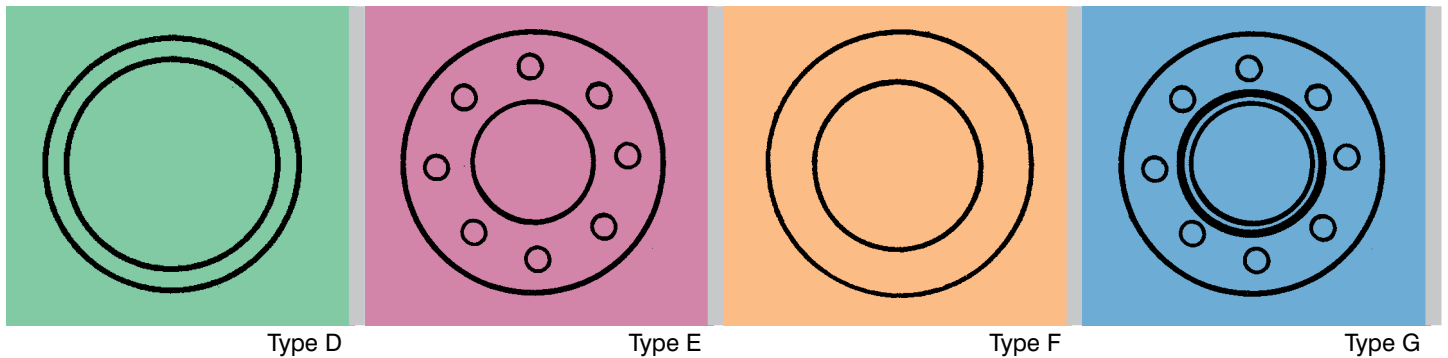


## Flange insulation

The transfer of volatile fluids through pipeline systems can create explosive conditions, which could be ignited by stray electrical currents, either from cathodic protection systems or the phenomenon known as 'eddy currents'. This potentially disastrous situation can be minimised or eliminated through the installation of appropriate flange insulation sets at strategic points.

Even when there is no risk of explosion, contact between dissimilar metals at a flange joint will result in accelerated corrosion of the weaker material due to galvanic corrosion. Such contact can be eliminated by adopting the James Walker Moorflex total flange management approach including the installation of the correct flange insulation set.

## Flange insulation sets



In order to achieve optimum results it is essential that flange insulation sets follow certain key design criteria:

- The electrical resistance properties of the components are balanced for the purpose and location in the insulation system.
- The components are manufactured from insulating materials with high compressive strength and good stability. Under no circumstances should materials which express cold flow properties be used, as relaxation may occur after bolt tightening is completed. This will result in a reduction in the load applied to the gasket and leakage will take place.

James Walker Moorflex flange insulation sets comprise the following components to ensure that full electrical isolation is achieved.

- 1 - Central insulating gasket which is fitted between the flanges.
- 1 - Insulating sleeve per flange bolt.
- 2 - Insulating washers per flange bolt.
- 2 - Metal backup washers per flange bolt.

### Materials

- Gaskets: Neoprene-faced phenolic.
- Washers: reinforced phenolic or plated mild steel.
- Sleeves: polyester or DuPont Mylar®.

James Walker Moorflex offers four different set designs catering for many different flange sizes, specifications and arrangements - including those with 'O' ring grooves or handling very high pressures.

### Type D

Utilising an oval section gasket manufactured from a suitable insulating material, Type D sets fit into a standard RTJ flange ring groove.

### Type E

This style is suitable for raised face and flat flanges. The use of a full face gasket reduces the risk of electrical bridging and the ingress of foreign matter between the flanges.

### Type F

These sets are suitable for raised face flanges, and use a central gasket which locates inside the bolt circle of the flange. Whilst not being as efficient as Type E sets, they have the advantage of allowing fitting without complete separation of the flange, and may be regarded as “drop in” gaskets.

### Type G

This style is available in both full face and inside bolt circle versions and incorporates an elastomeric sealing ring in the gasket faces. Appropriate selection of insulating and sealing materials provides a versatile set with higher chemical and temperature resistance.

	Type E Set	Type F Set	Type D Set	Type G Set	Max Temp °C	Dielectric strength volts/mil	Water absorption %	Compressive strength N/mm <sup>2</sup>
<b>CENTRAL GASKET</b>								
NEOPRENE FACED PAPER REINFORCED PHENOLIC	•	•			100	500	0.6	168
PLAIN COTTON REINFORCED PHENOLIC	•	•	•		115	200	0.5	300
HIGH DIELECTRIC STRENGTH CNAF	•	•			400	350	5	-
COTTON REINFORCED PHENOLIC WITH NITRILE SEALS				•	115	200	0.6	300
GLASS REINFORCED EPOXY WITH VITON SEALS				•	155	500	0.1	400
PLASTIC COATED SOFT IRON			•		-	-	-	-
<b>INSULATION SLEEVES</b>								
REINFORCED PHENOLIC	•	•	•	•	80	200	0.6	N/A
SPIRALLY WOUND POLYESTER MYLAR	•	•	•	•	120	700	0.5	N/A
SPIRALLY WOUND NOMEX	•	•	•	•	220	-	-	N/A
<b>INSULATION WASHERS</b>								
COTTON REINFORCED PHENOLIC	•	•	•	•	115	200	0.5	300
GLASS REINFORCED PHENOLIC	•	•	•	•	140	175	0.4	400
GLASS REINFORCED EPOXY	•	•	•	•	155	500	0.1	400
<b>STEEL BACK UP WASHERS</b>								
CARBON STEEL ZINC PLATED	•	•	•	•	N/A	N/A	N/A	N/A
STAINLESS STEEL AISI 316	•	•	•	•	N/A	N/A	N/A	N/A

# James Walker Moorflex

These technical guides give details on many of the sealing products and services supplied by James Walker. Please ask for your copies, or visit our website [www.jameswalker.biz](http://www.jameswalker.biz) where they can be downloaded in pdf format.



Joint Integrity Programme



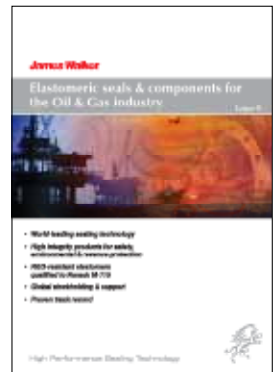
Gasket Technology Guide



Gasket Range Manual



Metal Seals & Components for the Oil & Gas Industry



Elastomer products guide for the Oil & Gas Industry

**Health warning:** If PTFE or fluoroelastomer (eg, FKM, FFKM, FEPM) products are heated to elevated temperatures, fumes will be produced which may give unpleasant effects, if inhaled. Whilst some fumes are emitted below 250°C from fluoroelastomers or below 300°C from PTFE, the effect at these temperatures is negligible. Care should be taken to avoid contaminating tobacco with particles of PTFE or fluoroelastomer, or with PTFE dispersion, which may remain on hands or clothing. Material Safety Data Sheets (MSDS) are available on request.

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