

About James Walker...

Introduction

This brief guide is a reference for designers, engineers, purchasing specialists and managers responsible for the safe and efficient operation of oil and gas production wellheads. It provides helpful information on the materials and sealing products used for containment of produced fluids in wellhead applications.

The oil & gas industry

James Walker has long been committed to the provision of sealing solutions for the exploration and production of oil and gas.

As the technology employed to exploit hydrocarbon resources has developed, the materials and products used have likewise had to evolve to cater for more arduous conditions, longer life expectations and improved reliability.

These demands present many challenges to our seal designers and material technologists, including:

- High temperature
- Low temperature
- Temperature cycling
- Naturally occurring or introduced chemical cocktails
- Gas or multiphase environments and blow downs (ED)
- Broad tolerances and/or poor surface finishes
- High pressure

The correct selection and specification of sealing materials and products is a prerequisite to the safe and effective operation of plant and the prevention of expensive downtime.

Please see James Walker's *Sealing Guide for the Oil & Gas Industry* for a comprehensive description of the company's wide range of sealing materials and products.

To get your copy, see the contact details on the rear cover, or visit our website www.jameswalker.biz.



Technology & innovation

James Walker constantly works at the forefront of materials science and fluid seal technology to bring its customers engineered solutions to sealing problems.

We have numerous research and development programmes that are carefully targeted to anticipate and satisfy the industry's future requirements for effective, reliable and long-life products.

Problem solving is a major facet of James Walker's capability. Our research teams have worked closely with the oil and gas business for over 20 years, developing world-leading explosive decompression (ED) resistant elastomers and other extremely high-performance products that are now vital to the industry's success.

We are often engaged in confidential research projects for clients – when our in-depth materials knowledge and fluid seal design expertise are needed to turn an innovative idea into production reality.

Manufacturing excellence

We possess a multitude of elastomer compounding skills, plus precision production facilities for moulded seals, spiral wound gaskets, API ring joints, and braided compression packings. These facilities are backed by one of the strictest QA regimes in the business, to ensure that our customers get the service and products they need – when they need them.

We formulate each of our elastomer grades to possess the physical and chemical properties needed to perform a specific fluid-sealing task. None of our elastomers is doped with processing aids or bulk fillers, as these can adversely affect integrity.

Our major manufacturing plants for sealing products are located in the UK and the USA. In addition, we have other production facilities sited across the world. As a result, James Walker is able to provide a truly global service in offering top quality engineered solutions to fluid sealing problems.

We also have some of the largest presses of their types in the world for precision moulding endless elastomeric rings up to 2.2 metres (87 inches) diameter.

For metallic gaskets we use only the best forged metals – no welded rings – which undergo a stringent machining process to ensure that close tolerances and smooth contact surfaces are rigidly maintained.

Quality

Strict quality controls are applied to our choice and purchase of materials. Every batch is rigorously tested in our own laboratories before it is released for processing and production.

A stringent quality regime is followed through all stages of production, to final 'critical' inspection, packaging and delivery. This highly systematic approach ensures that customers can be certain of the quality of every product we supply.

James Walker's quality systems are third-party registered to ISO 9001:2000. We are also regularly assessed and quality approved by a wide range of industry bodies and individual customers including multinational corporations, utilities and government organisations.

In addition, we hold test equipment for all relevant ANSI, API, ASA, ASTM, BS, DIN, DTD, ISO and NATO standards. Certificates of conformity are supplied on request. Packaging and labelling is available to individual specifications.

Customer service

James Walker's ability to meet customer demands is second to none. We carry extensive industry specific inventory at both our UK and Houston facilities and local stock at any number of other James Walker locations according to customer requirements.

Information in this publication and otherwise supplied to users is based on our general experience and is given in good faith, but because of factors which are outside our knowledge and control and affect the use of products, no warranty is given or is to be implied with respect to such information. Specifications are subject to change without notice. Statements of operating limits quoted in this publication are not an indication that these values can be applied simultaneously. Material Safety Data Sheets (MSDS) are available on request.

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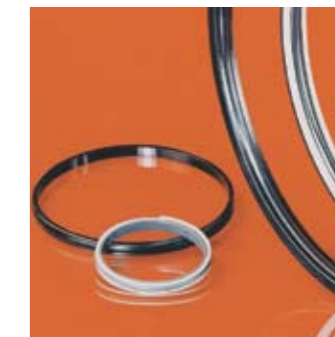


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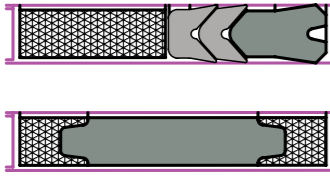
Wellhead Sealing Guide

- **Sealing solutions for the oil & gas production industry**
- **High integrity for safety, environmental and revenue protection**
- **High quality, performance and reliability**



Tie-down & lock-down screw packings

- Seals for bolts used to fasten and retain tubing & casing hangers
- Customised design to meet specific requirements
- Available in compressed expanded graphite, PTFE or moulded elastomers
- See *JW Sealing Guide for the Oil & Gas Industry* (p9)



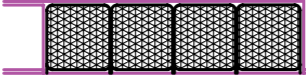
'O' rings

- Versatile sealing devices for wide range of static and dynamic duties
- Precision-moulded, high-integrity end-use rings
- Materials include NBR, HNBR or FKM elastomers
- Available in thousands of imperial and metric sizes
- SAE AS568, BS 1806/4518
- See *JW Sealing Guide for the Oil & Gas Industry* (p21-31)
- See *JW 'O' Rings Guide*



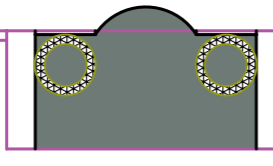
Compression packings

- Extensive range of packing products for pump, valve, lid and gland sealing duties
- Four key classes: Graphite-based PTFE-based Economical 'XA' non-asbestos range Flex/cotton/ramie
- See *JW Compression Packings Guide*



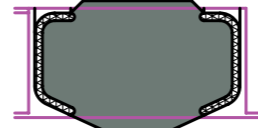
Springsele®

- Extrusion-resistant double-acting seal for arduous static sealing duties available for internal or external groove applications
- Materials: tough HNBR or FKM elastomers
- Stainless steel anti-extrusion toroidal springs
- Wide range of sizes to fit standard SAE housings
- Validated to API 6A
- See *JW Sealing Guide for the Oil & Gas Industry* (p32-38)



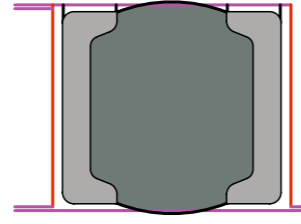
Metal end cap seals

- Hybrid metal/elastomer extrusion-resistant seals for high-pressure casing and tubing applications
- Makes intimate metal-to-metal seal with housing
- Energised by bonded high-performance elastomer
- Stainless steel or inconel for corrosion resistance
- Range of sections and sizes



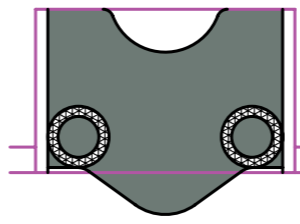
Casing & tubing hanger packing

- For axial sealing against tubing or casing pipe
- Various designs available depending on application and service conditions
- Rectangular section of elastomer, with or without anti-extrusion elements
- See *JW Sealing Guide for the Oil & Gas Industry* (p9)



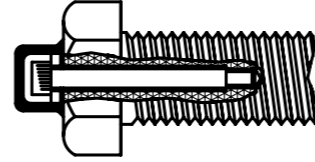
FS casing & tubing seal

- Casing and tubing hanger seals on wellheads
- Tough Elast-O-Lon® hydrogenated nitrile
- Stainless steel anti-extrusion toroidal springs
- Standard API diameters from 4 to 30 inch
- Tested to API 6A
- See *JW Sealing Guide for the Oil & Gas Industry* (p37-38)



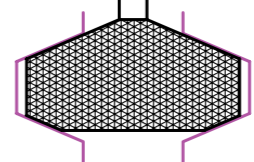
RotaBolt®

- Bolts and stud tension control indicators
- For applications requiring precise tensioning of bolts
- Finger-heel registering device loosens if tension drops below specified level
- Range of materials to ensure compatibility and corrosion resistance
- Wide range of sizes
- See *JW Sealing Guide for the Oil & Gas Industry* (p10)



Moorflex® API ring joints

- Metal seals for wide range of high-pressure oilfield applications
- Materials: soft iron, low carbon steel, alloys and stainless steels
- API and ASME standards
- Range of standard sections and diameters
- See *JW Sealing Guide for the Oil & Gas Industry* (p9)



Metaflex® spiral wound gaskets

- For pipe and vessel flanges in arduous temperature, flow or vibration conditions
- V-section stainless steel or alloy strip, combined with graphite or PTFE filler
- ASME, BS, DIN standards
- TA-Luft emission control certified
- Diameters: 10mm to 3.5m
- See *JW Sealing Guide for the Oil & Gas Industry* (p10)

