

James Walker[®]

Lionpak[®] range of compression packings

Issue 1.1



- Comprehensive new range of compression packings from James Walker
- Offering exceptional performance & value on valves, pumps & static sealing duties
- Based on PTFE, graphite, aramid & special fibres

High Performance Sealing Technology



Introduction to Lionpak®



Lionpak® is James Walker's new comprehensive range of compression packing products that offers exceptional performance and value.

Containing over 30 products, this range includes certified fugitive emission control packings, as well as grades for general use and specific applications on valves, rotary and reciprocating pumps, and for static sealing duties such as furnace doors.

Our Lionpak® range complements the original James Walker range to meet more specifically the technical and commercial expectations in different industrial and geographical markets.

These products have been designed and developed using the latest technology – yarns, lubricants, inhibitors and impregnation materials. They are manufactured to the highest quality standards in the same production plant as James Walker's original range of compression packings. This plant is third-party certified to ISO 9001 and ISO 14001.

Lionpak® range

PTFE-based compression packings

- Lionpak® 2101 – pure dry PTFE
- Lionpak® 2201 – duplex braided PTFE with extra lubrication
- Lionpak® 2301 – special PTFE/graphite grade
- Lionpak® 2302 – PTFE/graphite plus MoS₂
- Lionpak® 2501 – PTFE and aramid over PTFE core
- Lionpak® 2502 – PTFE/graphite & aramid over PTFE core
- Lionpak® 2503 – PTFE/graphite & aramid over elastomer core
- Lionpak® 2504 – PTFE/graphite & fluoropolymer
- Lionpak® 2505 – PTFE over carbon core

Aramid-based compression packings

- Lionpak® 3201 – aramid with PTFE dispersion
- Lionpak® 3202 – aramid with PTFE dispersion; elastomer core
- Lionpak® 3301 – aramid over fluoropolymer core

Graphite/carbon-based compression packings

- Lionpak® 5101 – graphite with non-metallic reinforcement
- Lionpak® 5102 – special graphite sets for soot blowers
- Lionpak® 5103 – special graphite sets for bowl mill worm shafts
- Lionpak® 5201 – graphite fibre reinforced with Inconel® wire
- Lionpak® 5202 – expanded graphite reinforced with Inconel® wire
- Lionpak® 5203 – graphite fibre reinforced with Inconel® wire
- Lionpak® 5301 – carbon fibre with corrosion inhibitor
- Lionpak® 5302 – expanded graphite & carbon fibre
- Lionpak® 5303 – carbon fibre with graphite dispersion
- Lionpak® 5304 – carbon fibre with PTFE coating
- Lionpak® 5401 – pure graphite for fugitive emission control
- Lionpak® 5402 – graphite & carbon fibre for control valves
- Lionpak® 5404 – carbon fibre for fugitive emission control

Special fibre-based compression packings

- Lionpak® 9101 – acrylic fibre with PTFE dispersion
- Lionpak® 9102 – acrylic fibre with graphite dispersion
- Lionpak® 9501 – flax fibre with PTFE dispersion
- Lionpak® 9601 – mineral-based for static duties up to 1000°C
- Lionpak® 9602 – mineral-based for high temperature static duties
- Lionpak® 9603 – mineral-based for high temperature static duties
- Lionpak® 9604 – mineral-based for high temperature static duties

Lionpak® fitting guides

- Fugitive emission control packings for valves
- General duties: valves plus rotary & reciprocating pumps

Lionpak[®] capabilities

The Service Capabilities stated below are not an indication that these values can be applied simultaneously

SERVICE CAPABILITIES									
Range	Valve	Rotary		Reciprocating		Static (doors)	Temperatures		pH range
	Pressure (MPa)	Shaft speed (m/s)	Pressure (MPa)	Rod speed (m/s)	Pressure (MPa)	Pressure (MPa)	Minimum (°C)	Maximum (°C)	
PTFE-based									
Lionpak [®] 2101	25	4	1	0.5	5	n/a	-100	+250	0-14
Lionpak [®] 2201	15	10	2.5	1	10	n/a	-100	+250	0-14
Lionpak [®] 2301	8	22	1	1	8	n/a	-100	+280	0-14
Lionpak [®] 2302	8	22	1	1	8	n/a	-100	+250	0-14
Lionpak [®] 2501	25	20	2	2	10	n/a	-50	+250	1-13
Lionpak [®] 2502	25	20	2	2	10	n/a	-50	+250	1-13
Lionpak [®] 2503	25	20	2	2	10	n/a	-50	+250	1-13
Lionpak [®] 2504	25	20	2	2	10	n/a	-100	+250	3-14
Lionpak [®] 2505	30	n/a	n/a	n/a	n/a	n/a	-200	+250	0-14
Aramid-based									
Lionpak [®] 3201	15	20	2.5	1.5	15	n/a	-50	+250	1-13
Lionpak [®] 3202	15	20	2.5	1.5	15	n/a	-50	+250	2-12
Lionpak [®] 3301	15	20	2.5	1.5	15	n/a	-50	+250	1-13
Graphite/carbon-based									
Lionpak [®] 5101	25	20	3.5	n/a	n/a	n/a	-200	+450/550*	1-14
Lionpak [®] 5102	30	n/a	n/a	n/a	n/a	n/a	-200	+450/550*	0-14
Lionpak [®] 5103	25	n/a	n/a	n/a	n/a	n/a	-200	+450/550*	0-14
Lionpak [®] 5201	30	n/a	n/a	n/a	n/a	n/a	-200	+450/550*	1-14
Lionpak [®] 5202	30	n/a	n/a	n/a	n/a	n/a	-200	+450/550*	0-14
Lionpak [®] 5203	25	n/a	n/a	n/a	n/a	n/a	-200	+450/550*	1-14
Lionpak [®] 5301	15	n/a	n/a	n/a	n/a	n/a	-50	+450	0-14
Lionpak [®] 5302	25	20	2	2	10	n/a	-50	+450	0-14
Lionpak [®] 5303	20	10	2	2	20	n/a	-50	+450	0-14
Lionpak [®] 5304	12	17.5	2	2	8	n/a	-100	+260	0-14
Lionpak [®] 5401 ■	25	n/a	n/a	n/a	n/a	n/a	-100	+450/550*	1-14
Lionpak [®] 5402	25	n/a	n/a	n/a	n/a	n/a	-100	+250	0-14
Lionpak [®] 5404 ■	25	n/a	n/a	n/a	n/a	n/a	-200	+450	0-14
Special fibre-based									
Lionpak [®] 9101	n/a	n/a	n/a	n/a	n/a	Consult	-50	+180	2-12
Lionpak [®] 9102	n/a	n/a	n/a	n/a	n/a	Consult	-50	+180	2-12
Lionpak [®] 9501	10	3	1	1	10	n/a	-40	+100	5-10
Lionpak [®] 9601	n/a	n/a	n/a	n/a	n/a	Consult	-50	+1000/1100**	6-10
Lionpak [®] 9602	n/a	n/a	n/a	n/a	n/a	Consult	-50	+550	0-14
Lionpak [®] 9603	n/a	n/a	n/a	n/a	n/a	Consult	-50	+550	0-13
Lionpak [®] 9604	n/a	n/a	n/a	n/a	n/a	Consult	-50	+550	0-14

■ Certified for fugitive emission control in valves

* +450°C oxidising conditions, +550°C steam

** +1000°C constant, +1100°C intermittent

Consult = dependent on application; consult James Walker

n/a = not applicable

Lionpak® — the full range

PTFE-based packings

– for aggressive chemicals and slurries



Lionpak® 2101

An interlocked braided packing made of pure dry PTFE fibre yarn. It is non-toxic, and contains no lubricants or additives.



Lionpak® 2201

A duplex braided packing of pure PTFE fibre yarns. It contains our proprietary break-in lubricant and a PTFE dispersion.



Lionpak® 2301

Inter-braided in PTFE/graphite fibre from WL Gore & Associates. It incorporates entrapped graphite in an expanded PTFE matrix, which provides excellent lubrication and resistance to hardening.



Lionpak® 2302

An improved duplex braided packing of expanded PTFE with high quality graphite intimately entrapped in the porous structure of the PTFE resin. It is further lubricated with MoS₂.



Lionpak® 2501

Dense braided packing with aramid yarn at corners, PTFE yarn at faces, and core of extruded PTFE cord. Contains fluoropolymer dispersion, break-in lubricant, and high-temperature resistant lubricant.



Lionpak® 2502

Aramid yarn at corners, PTFE/graphite yarn at faces, and core of high density extruded PTFE cord. Aramid yarn is impregnated with fluoropolymer dispersion and a break-in lubricant.



Lionpak® 2503

Aramid yarn at corners, PTFE/graphite yarn at faces, and a solid core of extruded elastomeric cord. Aramid yarn is impregnated with fluoropolymer dispersion and a break-in lubricant.



Lionpak® 2504

A combination, duplex braided packing of red fluoropolymer-based yarn and expanded PTFE intimately bonded with graphite yarn. It incorporates a break-in lubricant.



Lionpak® 2505

High strength carbon yarn core, fluoropolymer dispersion lubricated and treated with inorganic passive corrosion inhibitor. Pure PTFE outer lubricated with a PTFE suspensoid.

Aramid-based packings

– for highly abrasive media and environments



Lionpak® 3201

Comprises tough aramid filament yarn, impregnated with our proprietary PTFE-based dispersion. Further impregnated with a break-in lubricant and surface run-in lubricant.



Lionpak® 3202

Comprises tough aramid filament yarn over a hollow elastomeric core, and impregnated with our proprietary PTFE-based dispersion. Further treated with a break-in lubricant and surface lubricant.



Lionpak® 3301

Comprises aramid filament yarn over a core of red fluoropolymer-based yarn. Aramid is impregnated with our PTFE-based dispersion. Further treated with a break-in lubricant and surface lubricant.

Graphite/carbon-based packings

– for petrochemical, thermal power and metallurgical plant



Lionpak® 5101

Braided packing of expanded graphite (minimum purity 99%), reinforced with a non-metallic filament, and impregnated with our high temperature graphite-based dispersion to enhance sealability.



Lionpak® 5102

A combination set designed for soot blowers. Comprises end rings of expanded pure graphite reinforced with stainless steel wire, and intermediate rings of die moulded expanded graphite.



Lionpak® 5103

A combination set designed for bowl mill worm shafts. Typically comprises four braided rings of expanded pure graphite and five separator rings of flexible pure graphite sheet.



Lionpak® 5201

Premium grade packing of expanded graphite fibre with Inconel® wires in each strand. Fibres are impregnated with our graphite-based dispersion. Packing is treated with inorganic corrosion inhibitor.



Lionpak® 5202

Braided from expanded graphite yarn of 98% minimum carbon content. It is reinforced with Inconel® wire, and impregnated with our graphite-based dispersion and a corrosion inhibitor.

Graphite/carbon-based packings

– continued



Lionpak® 5203

Comprises expanded graphite yarn reinforced with Inconel® wire, braided over a core of graphited aluminium silicate yarns. Contains graphite-based dispersion and a corrosion inhibitor.



Lionpak® 5301

This packing is inter-braided from graphite fibre yarn. It is impregnated with our graphite-based dispersion and a molybdenum based corrosion inhibitor.



Lionpak® 5302

Combines the advantages of soft expanded pure graphite yarn with the toughness of carbon fibre yarn at its corners. Contains our graphite-based dispersion and a corrosion inhibitor.



Lionpak® 5303

A tough, carbon fibre packing. It is impregnated with our suspension that contains graphite, high temperature lubricant and corrosion inhibitors.



Lionpak® 5304

High grade packing of interlock-braided carbon fibre coated with PTFE. It is impregnated with our suspension that contains graphite, high temperature lubricant and corrosion inhibitors.



Lionpak® 5401

Graphite-based fugitive emission control packing of braided expanded graphite yarns reinforced with Inconel® wire and jacketed with Inconel® mesh. Contains corrosion inhibitor and special lubricants.



Lionpak® 5402

Combination packing for control valves. Braided in low friction carbon yarn, over core of expanded graphite with Inconel® wire reinforcement and mesh jacketing. Treated with graphite-based dispersion.



Lionpak® 5404

Certified for fugitive emission control. Comprises interlock-braided graphite fibre yarn coated with PTFE. Contains suspension of high temperature lubricant with graphite and corrosion inhibitors.

Special fibre-based packings

– for tank lids and containers, marine duties, and static high temperature applications.



Lionpak® 9101

An economical packing braided from strong acrylic fibre. It is impregnated with our PTFE-based dispersion.



Lionpak® 9102

An economical packing braided from strong acrylic fibre. It is impregnated with our graphite-based dispersion.



Lionpak® 9501

An interlock-braided packing of tough flax fibre. Each yarn is impregnated with our PTFE dispersion, and the packing is additionally treated with the PTFE dispersion and oil.



Lionpak® 9601

Comprises fibrous form, inorganic refractory oxides with no metallic or ceramic content. It is impregnated with high-temperature resistant additives and contains our graphite-based dispersion.



Lionpak® 9602

Comprises fibrous form, inorganic refractory oxides with no metallic or ceramic content. It is impregnated with graphite flake and our graphite-based dispersion, plus a corrosion inhibitor.



Lionpak® 9603

A cover-on-cover braided packing of fibrous form, inorganic refractory oxides with no metallic or ceramic content.



Lionpak® 9604

An interlocked-braid of fibrous form, inorganic refractory oxides with no metallic or ceramic content. It also contains high purity graphite, special lubricants and a corrosion inhibitor.

Lionpak® applications

RANGE	TYPICAL FLUID MEDIA	TYPICAL INDUSTRY SECTORS
PTFE-based		
Lionpak® 2101	Acids, alkalis	Chemical, compressed air plant
Lionpak® 2201	Acids, alkalis, chemicals	Chemical
Lionpak® 2301	Acids, alkalis, solvents	Chemical
Lionpak® 2302	Acids, alkalis, solvents	Chemical
Lionpak® 2501	Wide range of chemicals	Power generation, refinery, fertiliser (including dosing pumps)
Lionpak® 2502	Chemical slurries, ammonia, paper pulp, molasses	Chemical, fertiliser, sugar mills, brewing, pulp & paper
Lionpak® 2503	Chemical slurries, ammonia, paper pulp, black & green liquor	Chemical, fertiliser, sugar mills, brewing, pulp & paper
Lionpak® 2504	Cooling water, condensate, paints	Industrial water systems, thermal & hydro power, chemical, refinery, fertiliser
Lionpak® 2505	Hydrocarbons, organic / inorganic chemicals, acids and alkalis	Petrochemical, chemical, refinery (for frequently operated control valves)
Aramid-based		
Lionpak® 3201	Abrasive media, turbid water	Chemical, mining, power generation
Lionpak® 3202	Abrasive slurries, fly ash, coal dust	Power generation (clinker grinding)
Lionpak® 3301	Slurries, paper pulp, turbid water	Mining, thermal power generation, iron & steel, pulp & paper
Graphite/carbon-based		
Lionpak® 5101	Steam, hydrocarbons, thermic fluid	Thermal power, fertiliser, refinery
Lionpak® 5102	Soot, hot dry ash, coal dust	Thermal power generation (for soot blowers)
Lionpak® 5103	Coal dust, hot dry ash, flue gas	Thermal power generation (for bowl mill worm shafts)
Lionpak® 5201	Steam, hydrocarbons, hot gases	Thermal power generation, pulp & paper, many other industries
Lionpak® 5202	Steam, hydrocarbons, chemicals	All sectors (for valves, autoclaves, etc)
Lionpak® 5203	Steam, hydrocarbons, chemicals	All sectors (for valves, driers, autoclaves)
Lionpak® 5301	Steam, acids, alkalis, solvents	Chemical
Lionpak® 5302	High temperature; abrasive/corrosive	Refinery, thermal power generation
Lionpak® 5303	Steam, corrosive chemicals	Chemical
Lionpak® 5304	Steam, acids, alkalis, dry powders	Metallurgical plant, general industry
Lionpak® 5401 ■	Hydrocarbons: fugitive emissions	Petrochemical, refinery (for valves)
Lionpak® 5402	Hydrocarbons, steam, chemicals	Refinery, thermal power, fertiliser, chemical (for control valves)
Lionpak® 5404 ■	Hydrocarbons; fugitive emissions	Petrochemical, refinery (for valves)
Special fibre-based		
Lionpak® 9101	Water, many chemicals, foodstuffs	Tank containers, road and rail tankers
Lionpak® 9102	Water, many chemicals	Tank containers, road and rail tankers
Lionpak® 9501	Sea, river & waste water, sewage	Power generation, iron & steel; marine (stern glands, rudder posts)
Lionpak® 9601	Steam, slurries, dry gases	Thermal power ash handling, furnace doors
Lionpak® 9602	Steam, chemicals, dyes, gases	All sectors (general high temperature static duties)
Lionpak® 9603	Hot gases, steam	Metallurgical (static duties; furnace, oven & kiln doors; steam exhausts)
Lionpak® 9604	Steam, chemicals, dyes, gases	All sectors (general high temperature static duties)

■ Certified for fugitive emission control in valves



Which compression packings do you need?

Our versatile Lionpak® range contains packings for virtually all industrial applications.

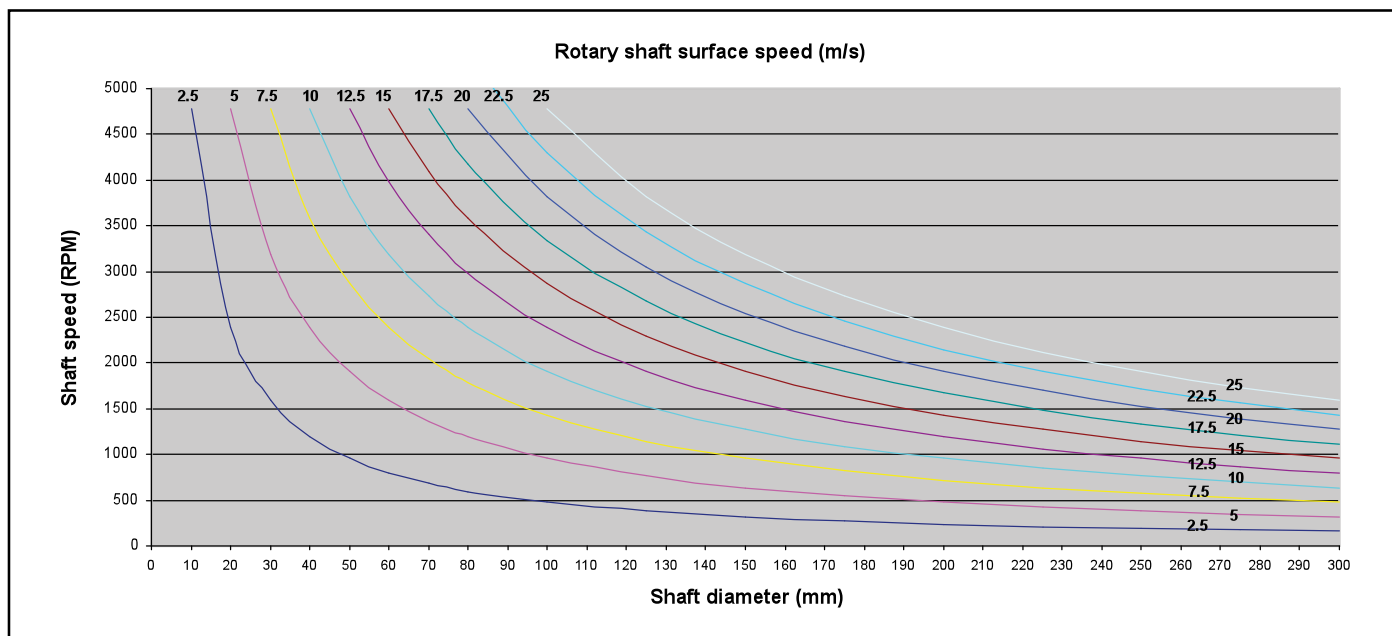
Whether it's for clinker grinders or marine stern glands, aggressive chemical solutions, or fugitive emission control in valves handling volatile organic compounds – we have the right products to suit your needs. And you have the choice of length-form packings or moulded rings.

Lionpak packings are precision braided in a range of materials including PTFE, graphite/carbon fibre, aramid, fluoropolymer, acrylic, flax, and mineral-based fibres. Please ask us for details of compression packings that will suit your plant operating criteria and its maintenance regimes.

To get further information on Lionpak products and our original range of packings, or to place an order, please call your local James Walker contact or visit www.jameswalker.biz and complete an enquiry form.

Shaft surface speeds

This useful graph presents a range of rotary shaft surface speeds for given shaft diameters and RPM. It is for guidance only.



Trademark acknowledgment

James Walker acknowledges the following trademark as mentioned in this document. All other names bearing the ® symbol are registered trademarks of James Walker.

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Information

Health warning: If PTFE products are heated to elevated temperatures, fumes will be produced which may give unpleasant effects, if inhaled. Whilst some fumes are emitted 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 PTFE dispersion, which may remain on hands or clothing. Safety Data Sheets (SDS) are available on request.

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. Unless governed by type approval or contract, 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.

To ensure you are working with the very latest product specifications, please consult the relevant section of the James Walker website: www.jameswalker.biz.

Environmental statement: This document is manufactured using advanced environmentally friendly technologies and follows the strict environmental standard BS EN ISO 14001. Made from chlorine-free pulp (ECF) with post-consumer recycled fibre obtained from sustainable wood forests, and printed using vegetable based inks, by Binfield Printers Ltd. For those who wish to reduce further their impact on the environment, this publication is also available as a PDF from: www.jameswalker.biz.
