



LOW PRESSURE CONNECTORS EUROPE

LF 3000® TRAINING MODULE

TABLE OF CONTENTS

Overview of LF 3000[®] push-in fittings

Technical Features

Product Advantages

Applications

Success Stories



LF 3000® RANGE OF PUSH-IN FITTINGS

LF 3000® Push-In Fittings Range

Standard Fittings									
Straights					Straights - Inch				
3175 ISPT/MPT Page 1.7	3101 ISPT/Metric Page 1.8	3181 Metric Page 1.8	3114 ISPT/Metric Page 1.9	3121 ISPT/MPT Page 1.9	3131 ISPT/Metric Page 1.10	3175 MPT/ISPT Page 1.10	3121 MPT Page 1.9		
Elbows					Elbows - Inch				
3109 ISPT/MPT Page 1.10	3199 ISPT/Metric Page 1.11	3192 ISPT Page 1.12	3129 ISPT Page 1.12	3169 ISPT/Metric Page 1.13	3113 ISPT Page 1.13	3133 ISPT/Metric Page 1.13	3109 MPT/ISPT Page 1.11		
Tees			Y		Cartridge		Cartridge - Inch		
3108 ISPT Page 1.14	3198 ISPT/Metric Page 1.14	3103 ISPT Page 1.14	3193 ISPT/Metric Page 1.15	3148 ISPT Page 1.15	3158 ISPT/Metric Page 1.15	3112 ISPT Page 1.16	3132 ISPT Page 1.16	3100 Cartridge Page 1.16	3100 Cartridge Page 1.16
Tube-to-Tube Fittings									
Straight	Straight - Inch	Elbow	Elbow - Inch	Tee	Tee - Inch	Y	Cross		
3106 Page 1.17	3106 Page 1.17	3102 Page 1.17	3102 Page 1.17	3104 Page 1.18	3104 Page 1.18	3140 Page 1.18	3107 Page 1.19		

2851 possibilities with 90 different shapes

LF 3000® Push-In Fittings Range

Plug-In Fittings and Accessories									
Elbows			Elbows - Inch			Tees		Y	
3182 Page 1.22	3184 Page 1.22	3190 Page 1.22	3182 Page 1.22			3183 Page 1.23	3188 Page 1.23	3142 Page 1.23	
Accessories					Accessories - Inch				
3120 Page 1.24	3166 Page 1.24	3168 Page 1.24	3126 Page 1.25	3122 Page 1.25	3151 Page 1.25	3166 Page 1.24	3168 Page 1.24		
Banjo Fittings									
Banjo Fittings									
3118 ISPT/Metric Page 1.27	3018 ISPT Page 1.27	3124 ISPT/Metric Page 1.27	3149 ISPT/Metric Page 1.27	3119 ISPT/Metric Page 1.27					
Modular Banjo Fittings									
3538 Single Body Page 1.28	3539 Double Body Page 1.28	3549 Y Body Page 1.28	3527 ISPT/Metric Page 1.29	3528 ISPT/Metric Page 1.29	3529 ISPT Page 1.29	3524 ISPT/Metric Page 1.29			

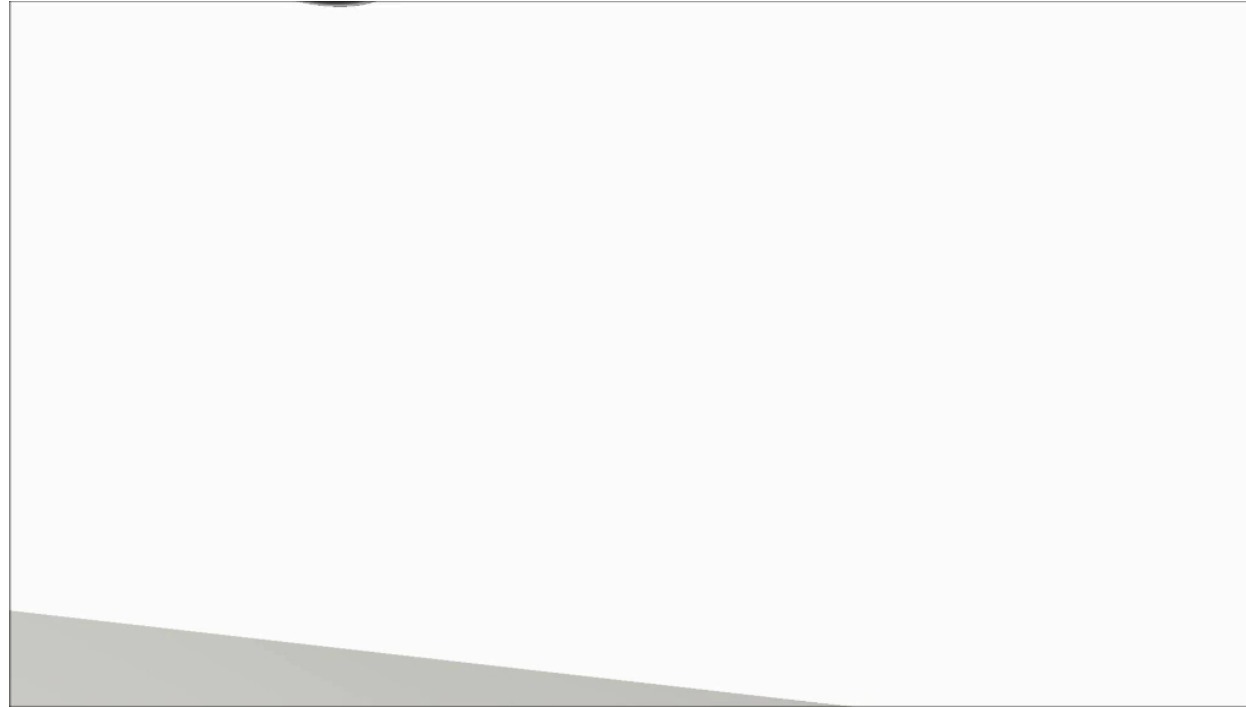
Can be used with many types of calibrated thermoplastic tubes

More than 580 standard items



LF 3000®

TECHNICAL FEATURES



- Push-in connection and disconnection
- Compact and lightweight
- Full bore for maximum flow
- Automatic sealing
- Swivel fittings

99% vacuum



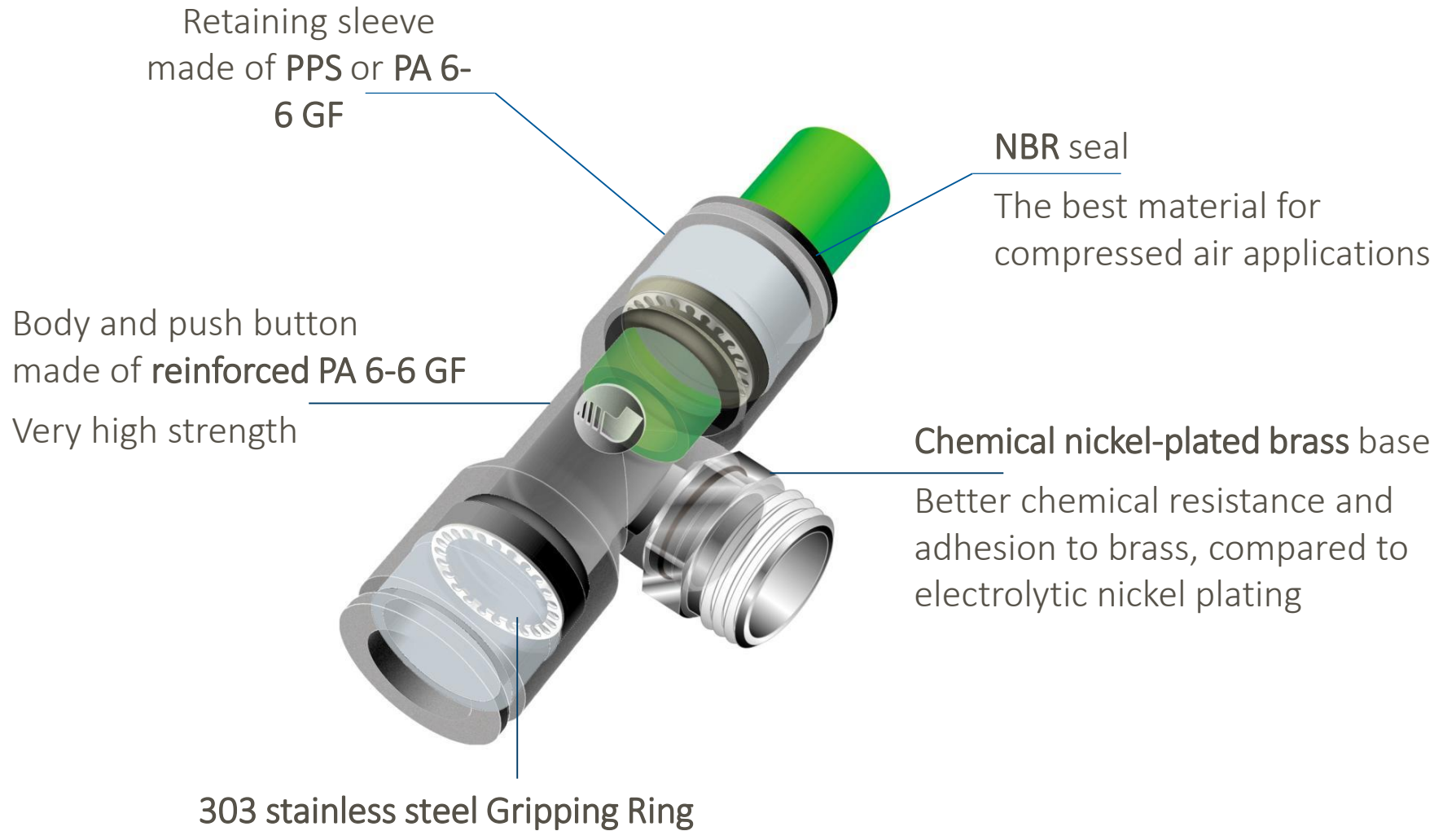
20 bar or
290 psi

-20°C to 80°C
or -4°F to 175°F

TECHNICAL FEATURES

Working Pressure	Vacuum (755 mmHg) to 20 bar
Working Temperature	-20°C to +80°C
Tube Ø	3 mm to 16 mm
Thread types	BSPP, BSPT, metric and NPT (from M3 to ½")

MATERIALS AND COMPONENTS

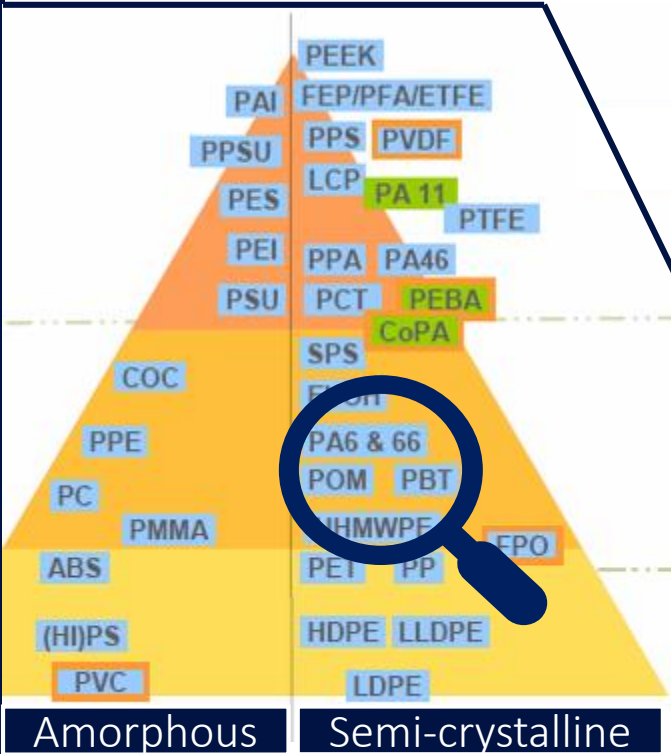


LF 3000®

MATERIALS AND COMPONENTS

LF 3000®

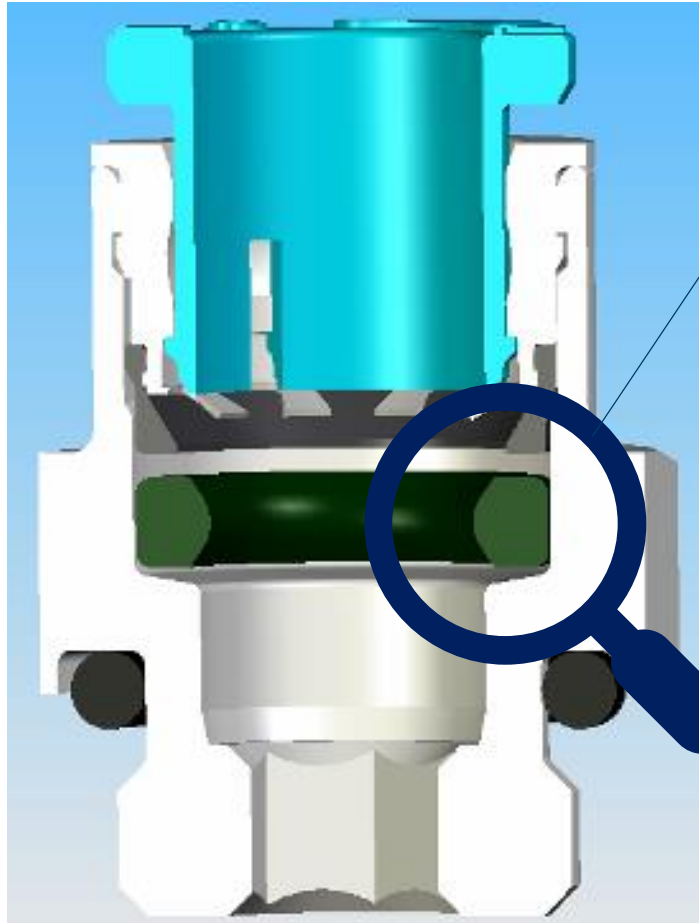
Performance / Price



	Advantages	Drawbacks
PARKER LEGRIS		
PA 6.6 <i>Reinforced with 20% glass fibre</i>	<ul style="list-style-type: none">- Good mechanical properties- Good abrasion resistance- Good temperature resistance- Good impact resistance	<ul style="list-style-type: none">- 4% moisture absorption- Difficult processes
COMPETITORS		
PBT	<ul style="list-style-type: none">- Good mechanical and electrical properties- Low moisture absorption rate	<ul style="list-style-type: none">- Very low chemical resistance at temperatures above +60°C, especially with hot water- Very low resistance to automotive fluids- Low impact resistance
POM	<ul style="list-style-type: none">- Good mechanical properties- High modulus of elasticity- Good chemical stability with oil	<ul style="list-style-type: none">- Very sensitive to UV rays (protection required)- Very low resistance to acids and bases (Alkali)- Extraction of harmful molecules at higher temperatures

SEALING TECHNOLOGY

LF 3000®



A unique and patented technological seal

- The best material for pneumatic applications
- 99% vacuum level
- A special "D" ring and excellent tube guidance
 - Perfect static and dynamic seal (0.05 NI/h)
 - 99 % vacuum
 - Smallest diameter fittings on the market (1.5 to 4 mm smaller than our competitors)

SEALING TECHNOLOGY

Static and dynamic seal

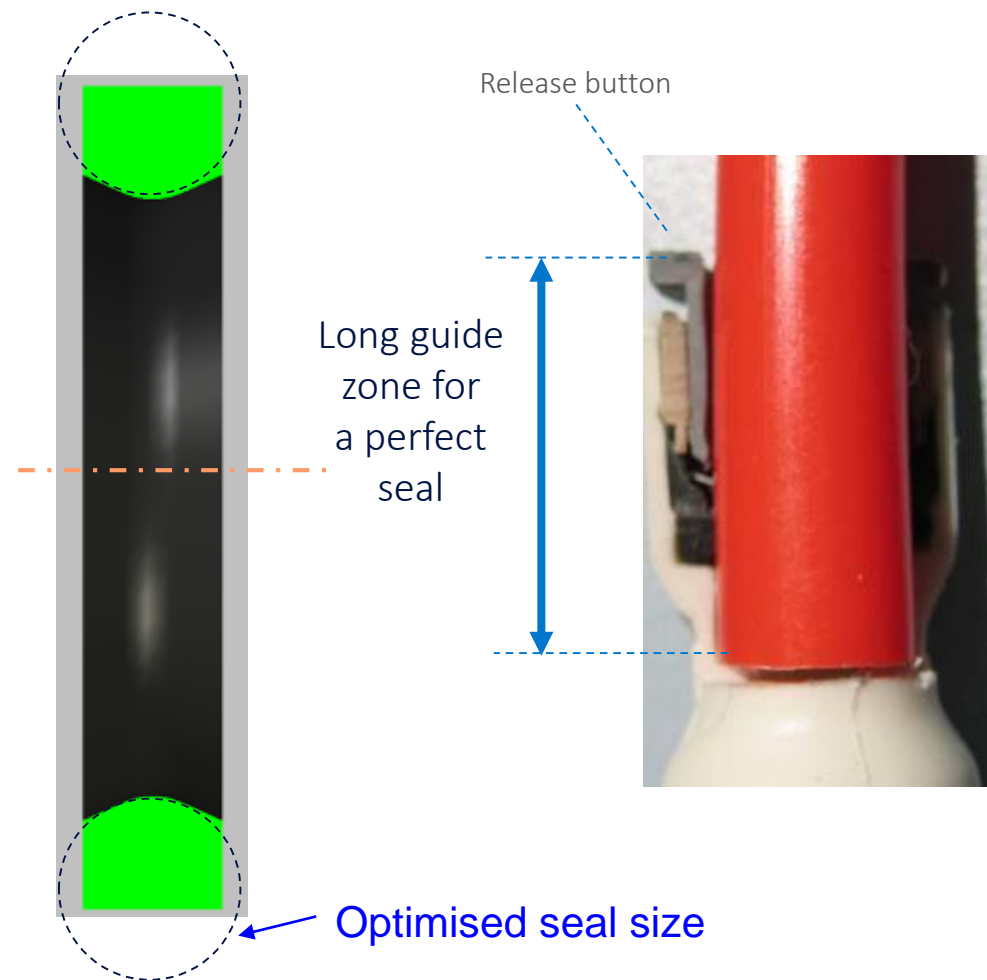
- Special "D" ring (patented)
- Perfect tube guidance

The shape reduces the force required to insert the tube.



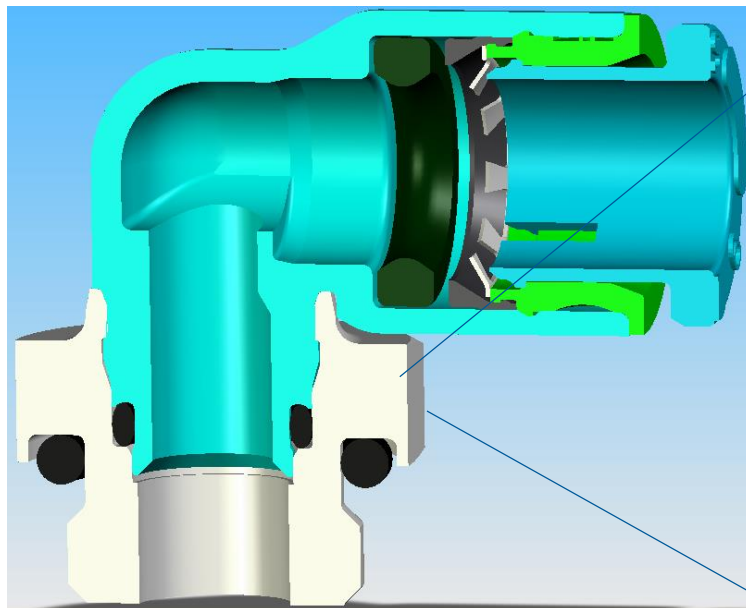
A large contact area with the tube.

Anti-twist shape



LF 3000®

MATERIALS AND COMPONENTS



Brass base (Cu Zn Pb3):

- * High strength
(max. tightening torque)
- * Compact
- * Lightweight

Chemical nickel plating

- * Better chemical resistance and better adhesion to brass than electrolytic nickel plating
- * More durable under extreme conditions of use

LF 3000®

GRIPPING TECHNOLOGY



The gripping technology provided by a stainless steel washer (303) is a perfect compromise between:

- Easy insertion
- Good grip on all plastic pipes (minimum 48 shD)
- High durability (10 million pressure cycles)

For metal tubes, LF 3600 and LF 3800 fittings are recommended.

Accrochage par rondelle

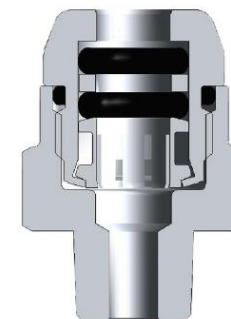
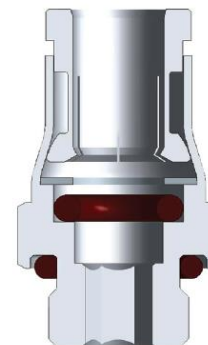
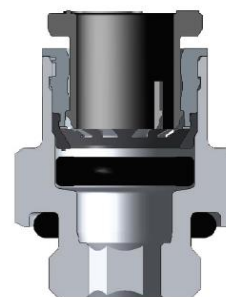
- Idéal pour tubes polymères, y compris de faible dureté
- Excellent guidage du tube
- Pas de recul du tube à la mise sous pression
- Solution très compacte

Accrochage par pince

- Pour tubes polymères et métalliques rainurés (plans de rainurage sur demande)
- Résiste aux fortes pressions ; très bonne endurance
- Solution très robuste pour les ambiances difficiles

Accrochage par pince inversée

- Pour tubes polymères rigides et métalliques rainurés
- Résiste aux très fortes pressions
- Excellente endurance
- Etanchéité maximale



LF 3000®

MATERIALS AND COMPONENTS: THREADS

BSPP: cylindrical, marked "G"
BSPT: conical (tapered), marked "R"

BSPP: these threads fit in the same cylindrical threading. Sealing is provided by a ring gasket or a combined sealing washer. A flat surface is required to receive the seal.

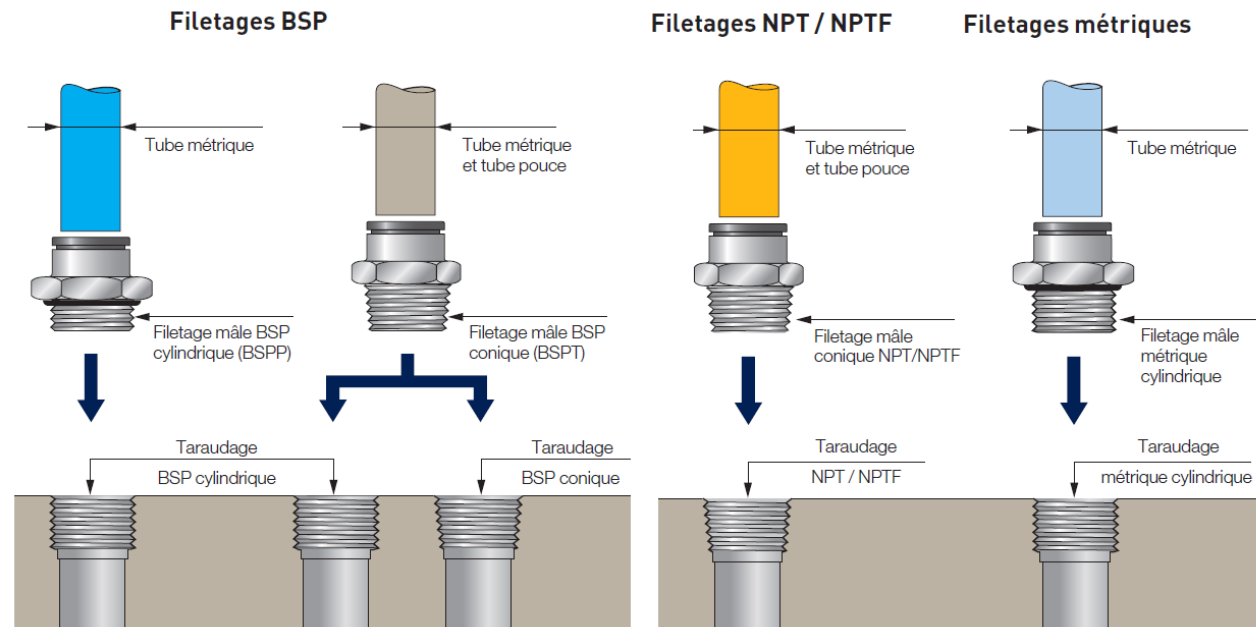
BSPT: these threads fit in the same cylindrical or conical thread. Sealing is provided by a pre-coating in the thread.

Metric

These ISO-profile threads are cylindrical and are fitted within the same cylindrical thread. Sealing is provided by a ring gasket or a combined sealing washer.

NPT & NPTF

This is a standard American conical thread which fits into the same type of thread. For NPT thread, sealing is provided by a pre-coating in the thread. For NPTF thread, sealing is achieved by the shape of the thread, without pre-coating.



Recognising conical threads:



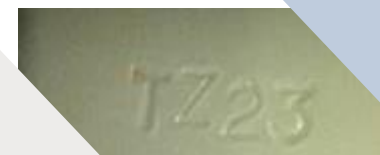
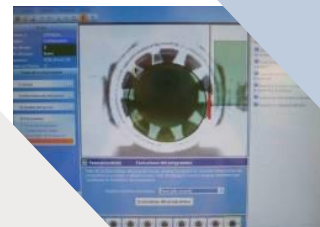
CUSTOMER BENEFITS: PREMIUM QUALITY

To guarantee Premium Quality, from design to delivery, the products are monitored using rigorous methods and processes:

- **FMEA** (Failure Mode and Effects Analysis)
- **PDCA** (Plan - Do - Check - Act)

To guarantee **Premium Quality**:

- The products are **date coded** for production traceability
- Presence of internal components are controlled through **vision systems**
- The products are **100% leak tested** to guarantee a leak rate of no more than 0.05 NI/h



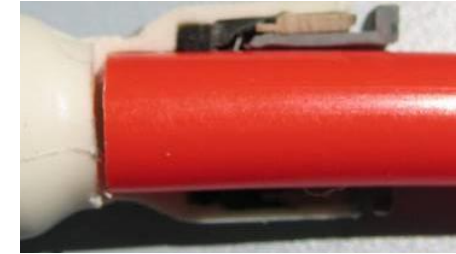
ISO 14743

Specifies the requirements and test methods for the design and performance of push-in connectors for use with thermoplastic tubes.

SUMMARY: SELLING POINTS

D ring technology: No micro pumping effect, large tube contact area and excellent tube guidance → very good static and dynamic seal, under pressure or vacuum. Less bulky than a standard O-ring allowing for a more compact fitting

Shaped to reduce the force required to insert the tube.

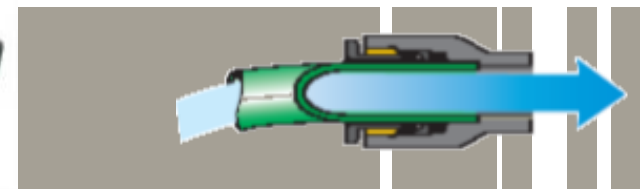
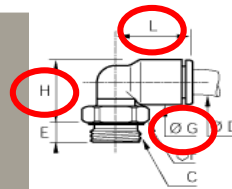


Long guide zone for a perfect seal even with a tube under stress (bending)

Large Range: 90 shapes, 580 products

Quality

- Camera control at every critical stage of production
- 100% leak-tested. Parker/Legris written guarantee for a leak rate of no more than 0.05 NI/h
- Laser marking for complete traceability



CUSTOM PRODUCTS

More than **40 years of experience** designing push-in fittings and producing **customised solutions** for our customers.

Our engineers and technicians are dedicated, experienced and skilled in using the most advanced design tools:

numerical calculation and simulation, CAD, rheology (plastic injection modelling), rapid prototyping and laboratory performance measurement

Fittings

LF 3000®



LIQUIfit®



LF 3000®



LF 3000®



Cartridges

Low Temperature Carstick®



Cartridge



Quick Fitting



Filter Fitting



Multi-Connectors and Manifolds

Multi-Connector



Multi-Connector



Multi-Connector



Bulkhead Manifold



Bulkhead Manifold



Bulkhead Manifold



Manifold



LF 3000®

ASSOCIATED PRODUCTS

You recommended the LF 3000® range of polymer fittings



Recommend a **Tube** to go with the fitting selected by your customer



Does your customer use cylinders? Recommend a **Function Fitting** to go with the fitting + tube solution

- Polyamide PA tube, most widely used in the industry
- Polyurethane PU tube, more flexible
- FEP tube, for aggressive applications
- Polyethylene PE tube, effective and cost-efficient solution
- PFA tube, for more extreme applications

- Flow control regulator
- Blocking fittings
- Non-return valves
- Soft start fittings
- Pneumatic sensor fittings
- Pressure regulators and pressure reducers
- Valves
- Silencers



See “Tubes” training module



See “Function Fittings” training module

LF 3000®

FIELDS OF APPLICATION

ROBOTICS

PNEUMATIC EQUIPMENT

AUTOMOTIVE PROCESSES

TEXTILE MACHINERY

SEMI-CONDUCTOR EQUIPMENT

PNEUMATICS

VACUUM

PACKAGING

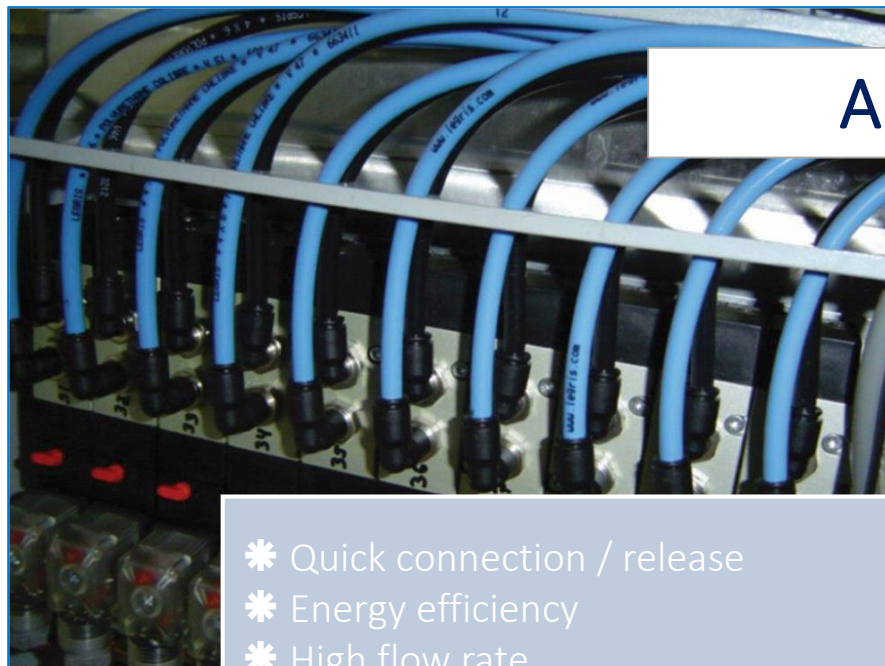
SPECIAL MACHINERY (ASSEMBLY)

APPLICATIONS



MAIN APPLICATIONS

AUTOMATION



- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability

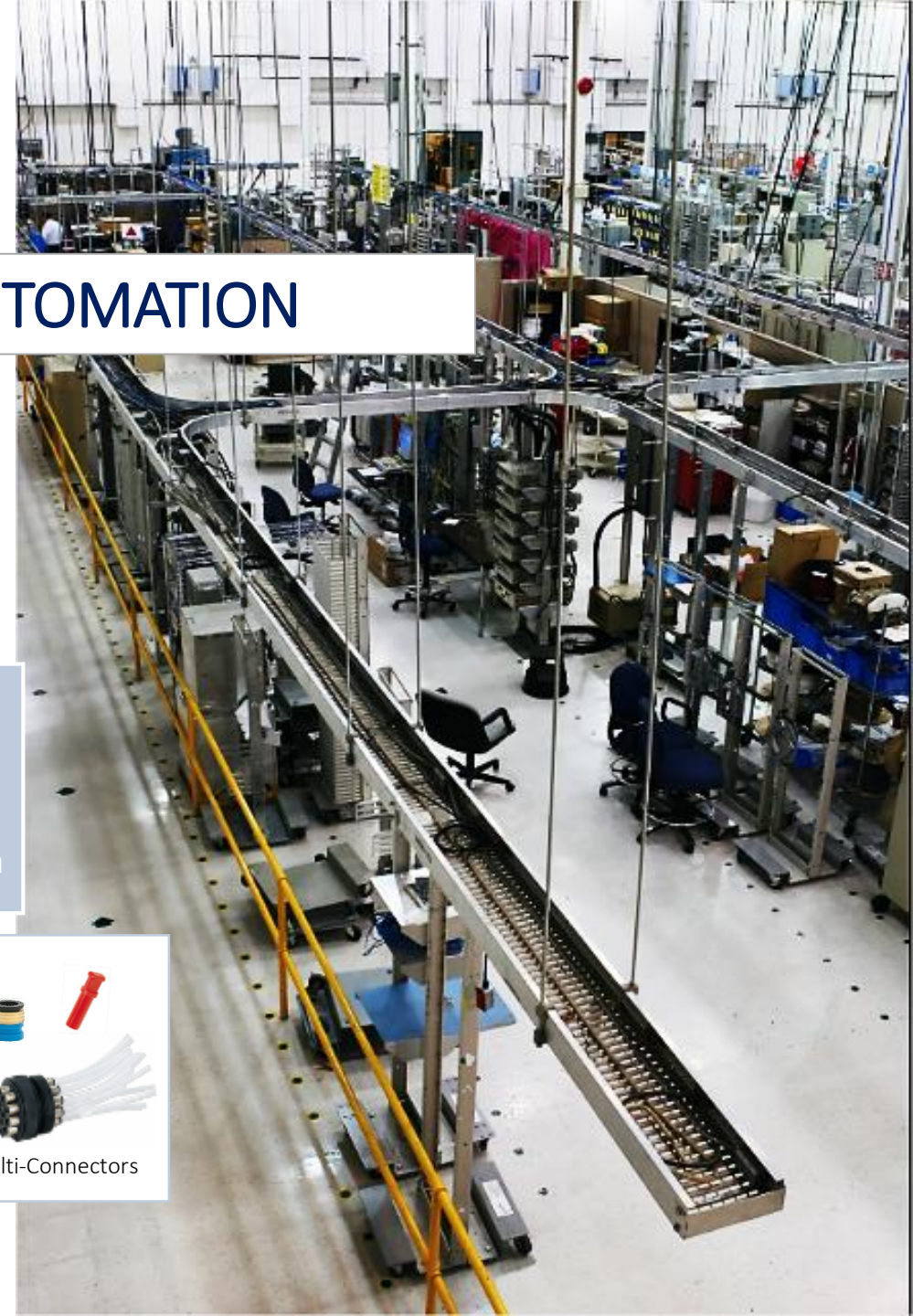


LF 3000® polymer push-in fittings



Multi-Connectors

Co-development of custom products on request



LF 3000®

MAIN APPLICATIONS



Paint workshops

- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



LF 3000® polymer push-in fittings



Multi-Connectors



Welding



Assembly workshops

Co-development of custom products on request

LF 3000®

MAIN APPLICATIONS

HANDLING AND PACKAGING



- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



LF 3000® polymer
push-in fittings

Multi-Connectors

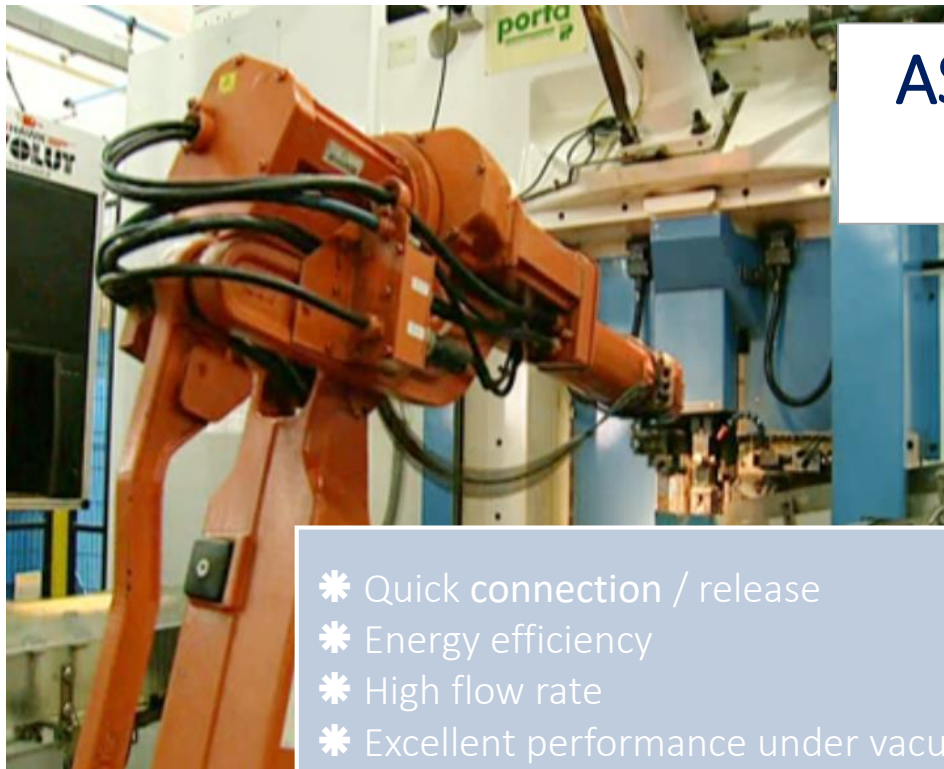
Co-development of custom products on request

LF 3000®

MAIN APPLICATIONS

LF 3000®

ASSEMBLY MACHINERY



- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

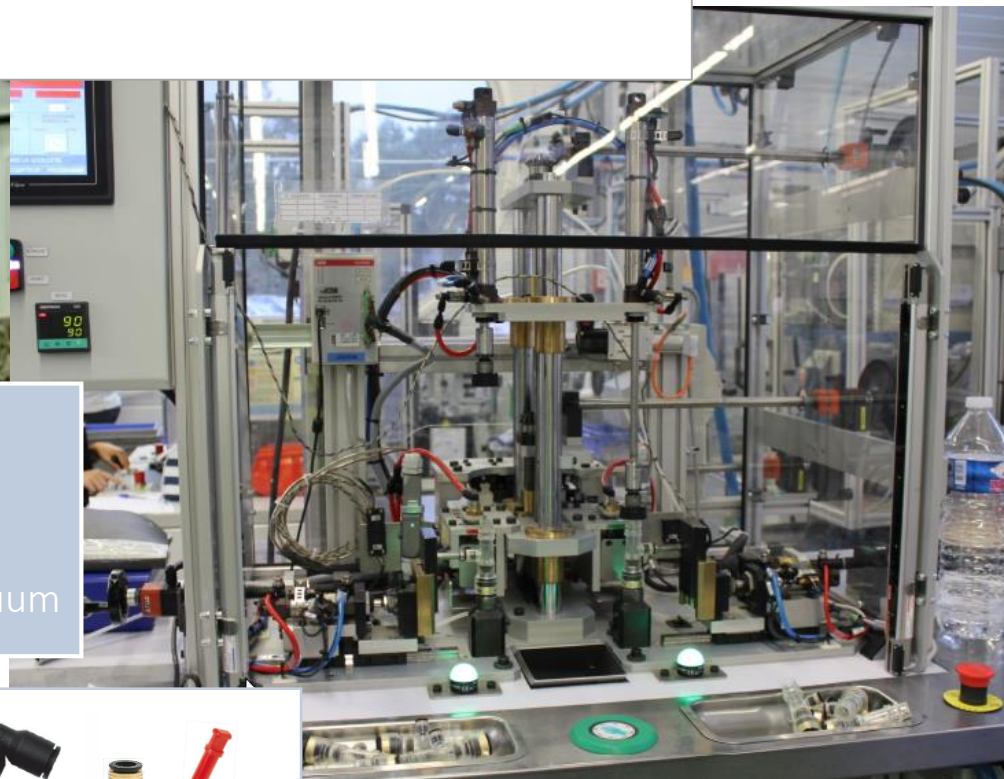
QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



LF 3000® polymer push-in fittings

Multi-Connectors



Co-development of custom products on request

MAIN APPLICATIONS

MACHINE TOOLS



- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



LF 3000® polymer push-in fittings

Multi-Connectors

Co-development of custom products on request

LF 3000®

MAIN APPLICATIONS

LF 3000®



PRINTING



- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



LF 3000® polymer push-in fittings

Multi-Connectors

Co-development of custom products on request

MAIN APPLICATIONS

TEXTILE



- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



LF 3000® polymer push-in fittings

Multi-Connectors

LF 3000®

Co-development of custom products on request

MAIN APPLICATIONS

LF 3000®



FOOD PROCESSING



- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



LF 3000® polymer
push-in fittings

Multi-Connectors

Co-development of custom products on request

LF 3000®

- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



Co-development of custom products
on request

MAIN APPLICATIONS

SEMI-CONDUCTORS



- * Quick connection / release
- * Energy efficiency
- * High flow rate
- * Excellent performance under vacuum

QUALITY:

- * Camera control
- * 100% leak-tested in production
- * Date coding for traceability



LF 3000® polymer
push-in fittings

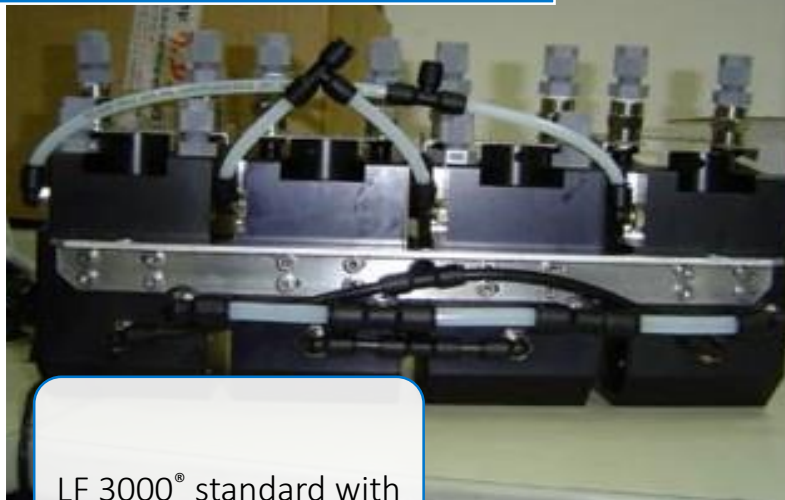
Multi-Connectors

Co-development of custom products on
request

LF 3000®

SPECIAL APPLICATIONS

For printing systems

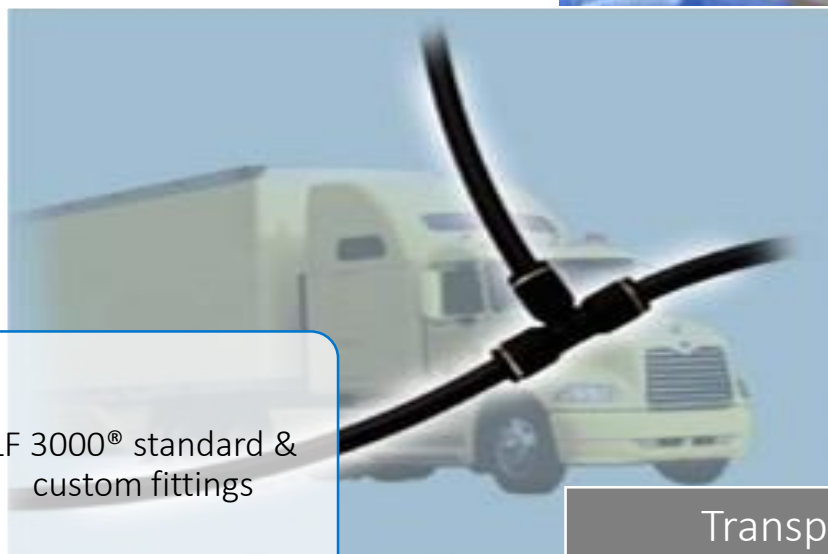


LF 3000® standard with EPDM seals

Medical, Clean rooms



LF 3000® with EPDM seal and special oxygen compatible grease. Assembly in clean rooms



LF 3000® standard & custom fittings

Transportation

LF 3000®

SUCCESS STORY: TRANSPORTATION

“We chose the LF 3000® push-in fittings for an application on the adjustable front spoiler”



Raccords instantanés LF 3000®



Tube Polyuréthane



SOLUTION

LF 3000® range of push-in fittings
Polyurethane tube



TECHNICAL DATA

Temperature: -20°C to +80°C
Pressure: 20 bar
Fluids: compressed air



CUSTOMER VALUE

The compact LF 3000® and the flexible polyurethane tube meet customer requirements perfectly



KEY FACTORS FOR SUCCESS

- Understand the requirements and present the potential options before arriving at the ideal solution
- The most compact product: the only one that can be used in the small space available
- We can work on the project across different countries and help promote their solution through technology presentations and meetings

SUCCESS STORY: BATHROOM EQUIPMENT

“The world leader in bathroom equipment chose LF 3000® push-in fittings and Advanced PE tubing”



3199 00 01 52 & 3199 06 55



1015Y06F04 & 1030Y06F04



SOLUTION

LF 3000® fittings
combined with LIQUIfit®
tubing



TECHNICAL DATA

Temperature: +23°C
Pressure: 2 bar
Fluids: water and air



CUSTOMER VALUE

More compact
Better seal
Better resistance to conditions of use
Ability to simplify assembly and identify circuits



KEY FACTORS FOR SUCCESS

Compact solution
Excellent pressure resistance and sealing
Only solution capable of meeting all requirements
CAD available to facilitate design at customer's business

LF 3000®

SUCCESS STORY: AUTOMOTIVE EQUIPMENT

“We chose the LF 3000® push-in fittings to equip our vehicles with fragrance dispensers”



SOLUTION

LF 3000® straight fitting
LF 3000® elbow
LF 3000® Tee, 10 mm diameter



CUSTOMER VALUE

Extremely reliable
100% seal
Easy to use



KEY FACTORS FOR SUCCESS

Parker Legris reacted with agility to meet customer demand in an extremely short time, compared to our competitors
100% seal
ISO TS 16949 certified
Straightforward push-in fitting, easy to use

LF 3000®

SUCCESS STORY: TRANSPORTATION

LF 3000®



SOLUTION

LF 3000 push-in fittings® and PA tubing



CUSTOMER VALUE

Ability to export products anywhere in the world
No maintenance costs



KEY FACTORS FOR SUCCESS

Suppliers with global standards
High quality

SUCCESS STORY: TRANSPORTATION / BUS DOORS



SOLUTION

LF 3000 push-in fittings® and function fittings
Clients of two competing suppliers
Push-in fittings for 4 years



CUSTOMER VALUE

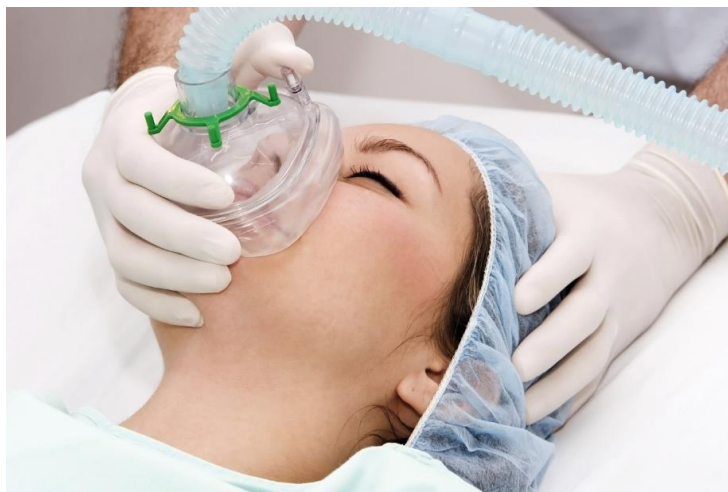
Product quality
Packaging
Labour savings
Availability
Sales Company Support



KEY FACTORS FOR SUCCESS

LF 3000® and the specification and quality of function fittings
Packaging in bulk quantities
ISO 14743 certified

SUCCESS STORY: MEDICAL



SOLUTION

Custom LF 3000® with oxygen compatible grease
Re-export market



CUSTOMER VALUE

Product quality
Local support
Parker team
Specialisation of the Western world and quality



KEY FACTORS FOR SUCCESS

The features and quality of LF 3000® fittings
"Clean room" assembly

SUCCESS STORY: FOOD INDUSTRY/PACKAGING



SOLUTION

LF 3000®
Function Fittings
Adapters
PU Tubes



CUSTOMER VALUE

Better product quality



KEY FACTORS FOR SUCCESS

Reference on the beverage carton packaging market

SUCCESS STORY: OEM ELECTRONICS IN CHINA



SOLUTION

Mainly the LF 3000® range of push-in fittings



CUSTOMER VALUE

Product quality

Support from the Division and the Sales Companies



KEY FACTORS FOR SUCCESS

LF 3000® replaces competing products due to proven reliability (quality problem with other fittings)

Parker China sales team works closely with customers

Political relations between China and Japan

LF 3000®

SUCCESS STORY: MEDICAL / LABORATORY EQUIPMENT



SOLUTION

LF 3000 push-in fittings
PU and FEP flexible tubes
LF 3600 push-in fittings



CUSTOMER VALUE

Product quality
Support from the Division and the Sales Companies



KEY FACTORS FOR SUCCESS

A brand selected by a customer in Sweden
Reliable quality
A premium brand image
Stock on certain items
A strong brand in medical equipment

SUCCESS STORY: WIPER SYSTEMS FOR TRUCKS



SOLUTION

Equal and unequal LF 3000®

Products already installed in cars

Installed for the first time in trucks (Renault VI, Volvo)



CUSTOMER VALUE

Production started in July 2013

Production now ramped up



KEY FACTORS FOR SUCCESS

Co-development with the manufacturer

Credibility of Parker Legris on the market in terms of quality

SUCCESS STORY: TRANSPORTATION / CABS



SOLUTION

Special manifold to operate seat adjustments, warning devices, cab equipment



CUSTOMER VALUE

Reduce assembly operations
Reduce the risk of leaks



KEY FACTORS FOR SUCCESS

Compact solution
Design capability
Technical performance



Nicolas Maupille: nicolas.maupille@parker.com