

QUALITY

INTELLIGENT DESIGN
EXCELLENCE
PARTNERSHIP

INTEGRATED SOLUTIONS

MINING PRODUCTS



 **manuli**[®]
HYDRAULICS

Why Manuli?

Manuli Hydraulics is focused on achieving excellence in the design, manufacture and supply of fluid conveyance solutions, components and associated equipment for high pressure hydraulics, refrigeration and oil and marine applications.

Quality and sustainable development are the driving forces of all Manuli Hydraulics' activities, with an aim to guarantee worldwide availability of technical and commercial support for its products and services.



An integrated approach

Modern hydraulics applications require robust fluid connector solutions with guaranteed long lasting performance. To that end, Manuli Hydraulics offers a complete range of hoses, fittings and assembly equipment which are designed to work seamlessly together. This harmonised approach allows us to guarantee the quality and performance of hose assemblies in a way that our competitors simply cannot match.

From design to manufacture and assembly, our commitment to this unified philosophy makes us the global leader in providing integrated solutions for hydraulic connector applications.





Serving the Mining Industry for over 40 years

The Manuli Hydraulics brand is known throughout the hydraulics industry as the mark of quality, and our extensive mining range is no exception.

With dedicated families of hoses and fittings designed specifically to meet the specialised needs of the mining industry, Manuli Hydraulics complies with the requirements of many of the most demanding approvals bodies in the industry.

Manuli also offers many unique and innovative products designed to solve real world issues commonly encountered in mining applications. Our decades of knowledge and expertise, as well as our strong two-way communication link with our customers, also allows us to offer bespoke product design services. Our engineers work directly with the customers to ensure that our products meet every requirement that the application demands.

Hydraulic Hoses for Mining Applications

With several ranges of hose designed specifically to meet the needs of the mining industry, Manuli Hydraulics achieves compliance with the requirements of some of the most stringent and demanding approvals bodies in the industry, including:

- MSHA (USA)
- MA (China)
- GOST-R (Russian)
- LOBA (Germany)
- Polish Safety "B"
- FRAS (Australia)
- MDG41 (Australia)
- DGMS (India)

DIAMOND SPIR

Pressure Line (WP: 350 bar)
DiamondSpir™/35, DN 76

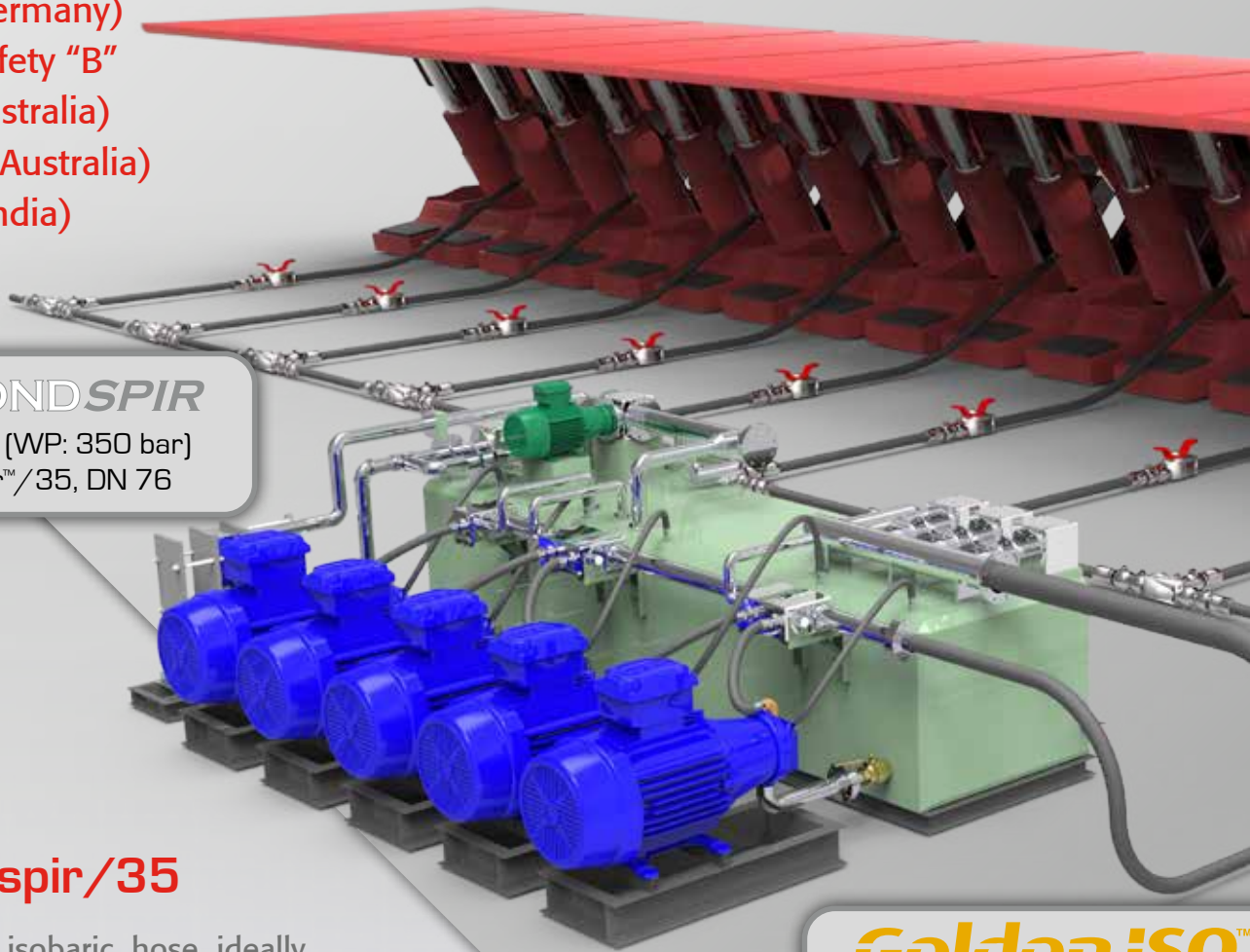
Diamondspir/35

A large bore, isobaric hose ideally suited to the demands of mining environments and dedicated to high-pressure hydraulic lines with high flow rates.

- Unique 3" hose with WP 350 bar (also available in 2½") and safety factor 4:1
- Enhanced cold resistance approved to -46°C (-50°F)
- MSHA approved cover compound with high abrasion resistance
- Available as an integrated solution with superior quality, crimped fittings

Golden ISO™

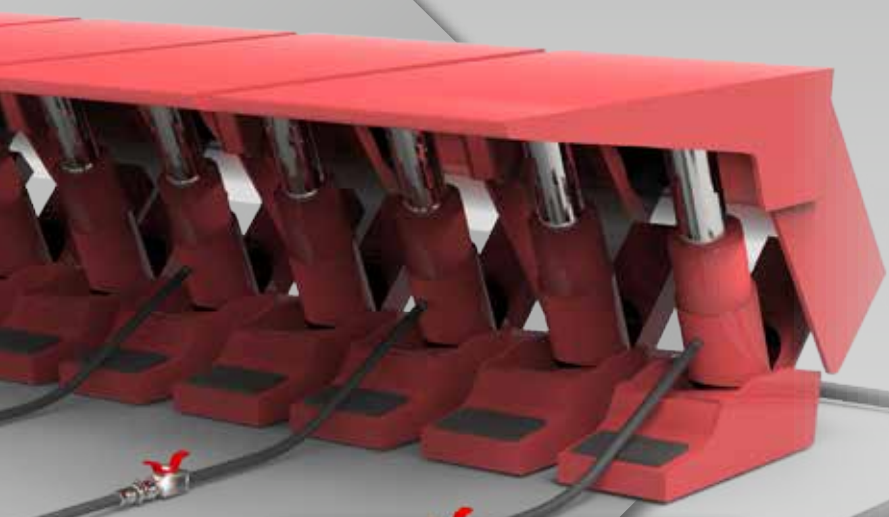
General Hydraulics (WP: 420 bar)
GoldenIso/42 XtraFlex, DN 10 - 3



Xtraflow/4WS

A large bore, medium-low pressure hose ideally suited to return lines for large mining equipment.

- Sizes from 2½" to 4" with WP up to 140 bar
- High robustness for tough applications
- Collapse and kink resistant
- MSHA and GOST-R approved, anti-static cover compound with high abrasion resistance
- Available as an integrated solution with no-skive crimped fittings



XTRAFLOW

Return Line (WP: 80 bar)
XtraFlow™/4WS, DN 89

ROCKMASTER™

Return Line (WP: 70 bar)
Rockmaster/2 Plus, DN 76

Rockmaster/2 Plus

A premium quality, multi-purpose hydraulic hose designed to be robust, flexible and reliable.

- Wide range of sizes (from ¼" upwards) and pressure ratings available - including a 3" (WP 70 bar) reference ideally suited to long wall roof support return-line applications
- Fire resistant, anti-static cover compound approved to most global fire safety standards for mining including MSHA and FRAS
- High resistance to abrasion and ozone

Goldeniso Xtraflex

A highly flexible, isobaric hose capable of meeting the requirements of the toughest applications.

- Available in most sizes from 3/8" to 2" with a WP of 210, 280, 350 and 420 bar
- Light, compact hose with superior flexibility and reduced minimum bend radius
- Enhanced cold resistance approved to -46°C (-50°F)
- MSHA and FRAS approved cover compound with high resistance to fatigue, abrasion, ozone and aging
- Wide range of fittings solutions both skive and no-skive

Hydraulic Fittings for General Mining Applications

Why invest in a high-quality hose if you don't back it up with a similarly high standard of fittings?

The Manuli Hydraulics range of fittings is designed to integrate seamlessly with our hoses to deliver robust, reliable and efficient service in both the laboratory and the field.

With an extensive product catalogue that allows us to cover almost all applications, Manuli Hydraulics provides both traditional and innovative fittings specifically designed for the toughest hydraulic applications.



Traditional Fittings

Manuli Hydraulics has an extensive range of both one- and two-piece traditional hydraulic fittings, each with a wide variety of different termination ends and fitting configurations.

In addition to typical hydraulic fittings which require the hose to be skived prior to crimping, Manuli also offers an extensive range of non-skive fitting solutions designed to facilitate after-market assembly and maintenance operations in the field.

The Manuli Hydraulics fittings range is manufactured with an eco-friendly zinc plating treatment which also provides high corrosion resistance. In addition our Interlock Plus family of fittings also includes some stainless steel references.



Fastfit

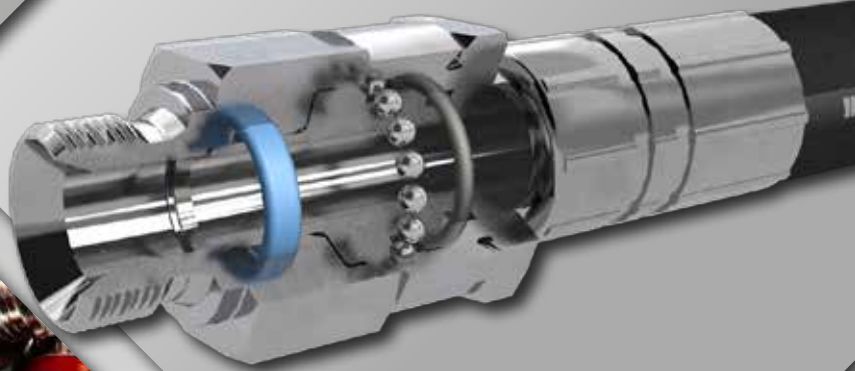
FastFit is a "one plug" connection system integrated onto the hose and then secured with a single plug. This system allows for easy and safe operation and allows easy installation in various configurations.

FastFit comes in a wide range of sizes with direct connection ports, including BSP and NPTF.

Rotofit

A well-known Manuli Hydraulics solution designed to eliminate hose twist under external torques, which can be a major contributor to premature hose failure. The additional advantage of Rotofit is that it is a "Direct-to-Hose" and "Direct-to-Port" solution. By eliminating the need for adaptors, the number of possible leak points is reduced.

The Rotofit family covers sizes from DN6 to DN31 (1/4" to 1 1/4") and is available with BS, SAE and DIN standard termination ends.



Easyfit

EasyFit is the Manuli "threadless" fittings solution for quick and easy installation of assemblies.

This innovative termination end is fitted with a simple push, allowing the hose to self-align and thus improve service life. Maintenance and repair time is also drastically reduced and installation / disconnection in restricted spaces is far easier. The "Direct-to-Port" concept removes the need for adaptors which minimises the possibility of oil leakage.

ection consisting of a male half
n inserted into a female cartridge. This
not require any tools for assembly
n restricted areas or in complex

wide range of cartridges
tion on most standard
BSP, SAE METRIC

Quick Couplings for General Mining Applications

Q.Safe is the Manuli Hydraulics offering for quick coupling applications. Composed of more than 1,200 references, accessories and spare parts, the Q.Safe brand has rapidly become an industry leader for quality and performance.



The entire Q.Safe product range is manufactured with an environment-friendly (trivalent chrome) surface coating, which offers excellent resistance, exceeding ISO 4520 requirements (salt spray resistance: 240 hours and 400 for red corrosion). Guaranteeing leak-free performance, the Q.Safe brand is suitable for a wide range of different applications and offers full interchangeability with other quick coupling products on the market.

All Q.Safe products are manufactured and assembled in our state-of-the-art class facility in Poland, where they are subjected to stringent quality controls including:

- 100% visual check
- 100% functional test
- 100% air sealing test

Screw Type Quick Coupling

Specifically designed for heavy-duty applications, the Manuli Hydraulics range of screw type quick couplings provide a safe and reliable solution for a wide range of mining applications.

With working pressures of up to 450 bar, these couplings have a high safety factor and the ability to be connected / disconnected with residual pressure in the line.

Flat-Face Quick Coupling

more than
industry byword

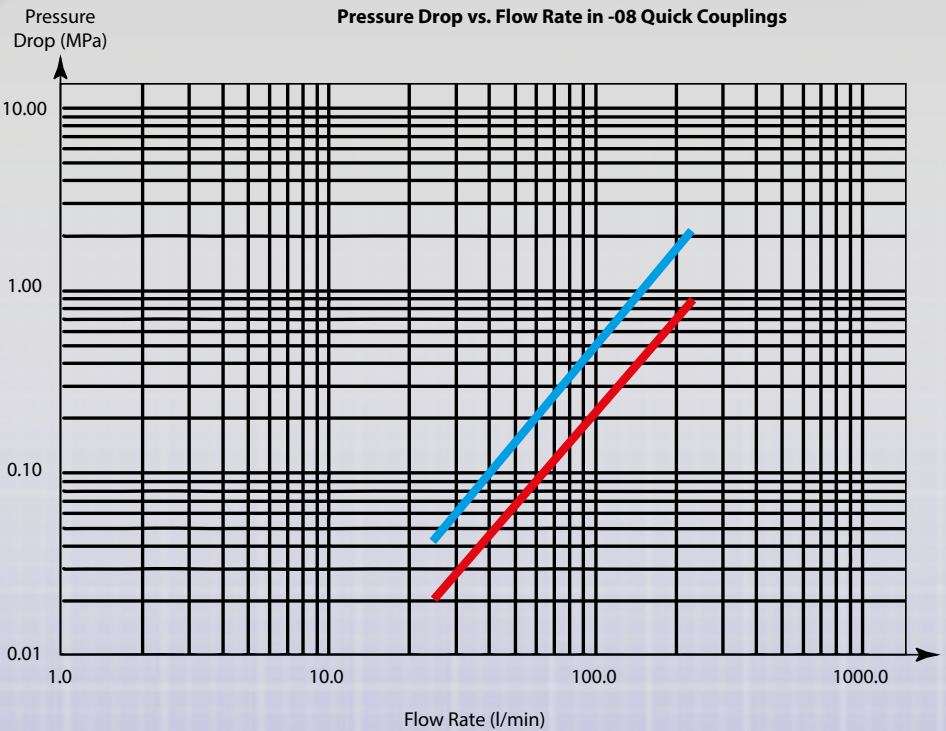
Manuli Hydraulics' range of flat-face quick couplings is widely acknowledged as best-in-class across the hydraulics industry.

Our high-pressure resistant couplings have a unique inner profile that has been specially designed to minimise pressure drop across the coupling. This, combined with a safety factor of 4:1, high-quality internal seals and a high corrosion resistance make these fittings superior to most other flat-face quick couplings on the market.



Environmentally friendly Cr3+
resistance to corrosion; far
superior for white corrosion
resistance, the Q.Safe
coupling assures total
market.

world-
gent



Q.Safe

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HYDRAULICS

Staple Lock Adaptors and Inserts

Staple lock connectors are a fundamental part of any hydraulic circuit used in underground mining operations. They have a proven track record of being the best option for connecting and disconnecting hydraulic lines in tough and challenging environments.



Manuli Hydraulics offer two distinct types of staple lock adaptor; the SA series for low and medium pressure applications, and the SH series for high pressure applications. We also have a range of direct-to-hose staple lock inserts compatible with both the SA and SH families.

SA Series

The SA Series is a traditional design of staple lock adaptor, available with both male and female staple ends as well as threaded options.

The SA adaptor range covers a wide variety of configurations and sizes from DN6 (1/4") to DN76 (3") and is suitable for low to medium pressure applications.

SH Series

The SH Series of adaptors has been developed to cope with the demands of high pressure mining applications; in particular, those which require large bore fluid conveyors.

The SH family of adaptors is available in various configurations and sizes from DN12 (1/2") to DN76 (3").

Our staple lock adaptors and inserts meet or exceed all required International Mining Standards, including DIN 20043, BS 6537, SAE J1467, MDG41 and NCB 638.

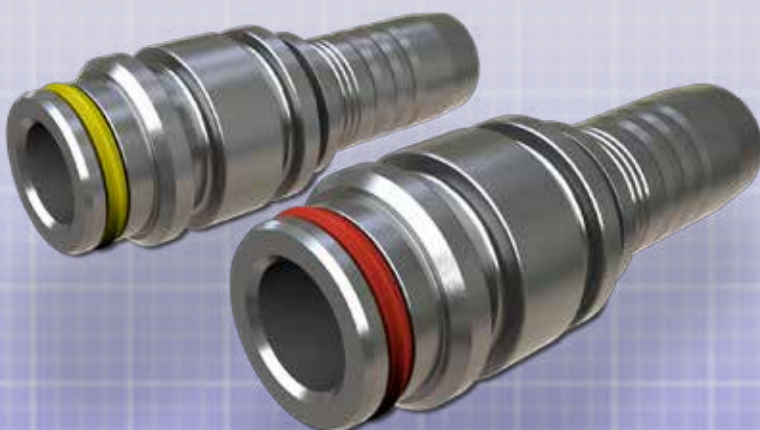


Hose Inserts

Suitable for use with either wire braid or multi-spiral hydraulic hose, our range of inserts extends from DN6 (1/4") to DN89 (3 1/2").

Inserts are manufactured from either carbon steel or stainless steel and are fully compatible with the Manuli Multifit, Interlock Plus, Interlock Super, Spiralfit or Xtralock fittings ranges.

Manuli staple lock adaptors and direct-to-hose inserts undergo a special surface treatment to produce a highly corrosion resistant surface, which is capable of meeting the demands of a tough working environment. In order to handle extreme conditions, many adaptors and inserts are also available in stainless steel.



The Manuli Advantage

Manuli Hydraulics has never been willing to take a back seat and follow the lead of others. Over the course of our decades of experience serving the Mining industry we have introduced some major innovations, improving upon the traditional staple lock assembly concept and allowing a higher level of performance and safety.

NEW!

Sliderlo

The new Sliderlo
with a brand new
incorporating both th
the staple is retained e



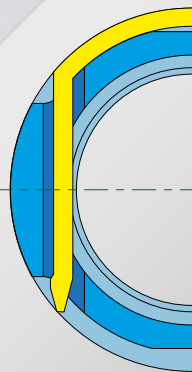
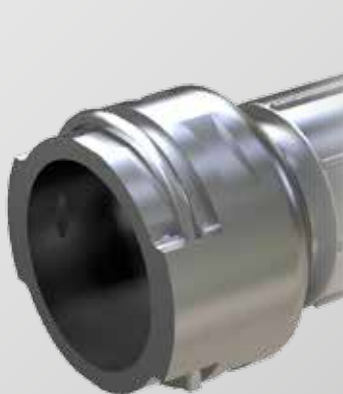
Flushfit

Designed specifically for the underground mining industry, Flushfit is a new concept based on the industry standard staple-lock fitting, but with additional benefits.

As its name suggests, Flushfit staple-lock fittings are designed so that the fitted staple does not extend past the outside diameter of the fitting.

The advantage this provides over traditional staple-lock fittings is to allow hoses to be installed side-by-side for a more compact arrangement.

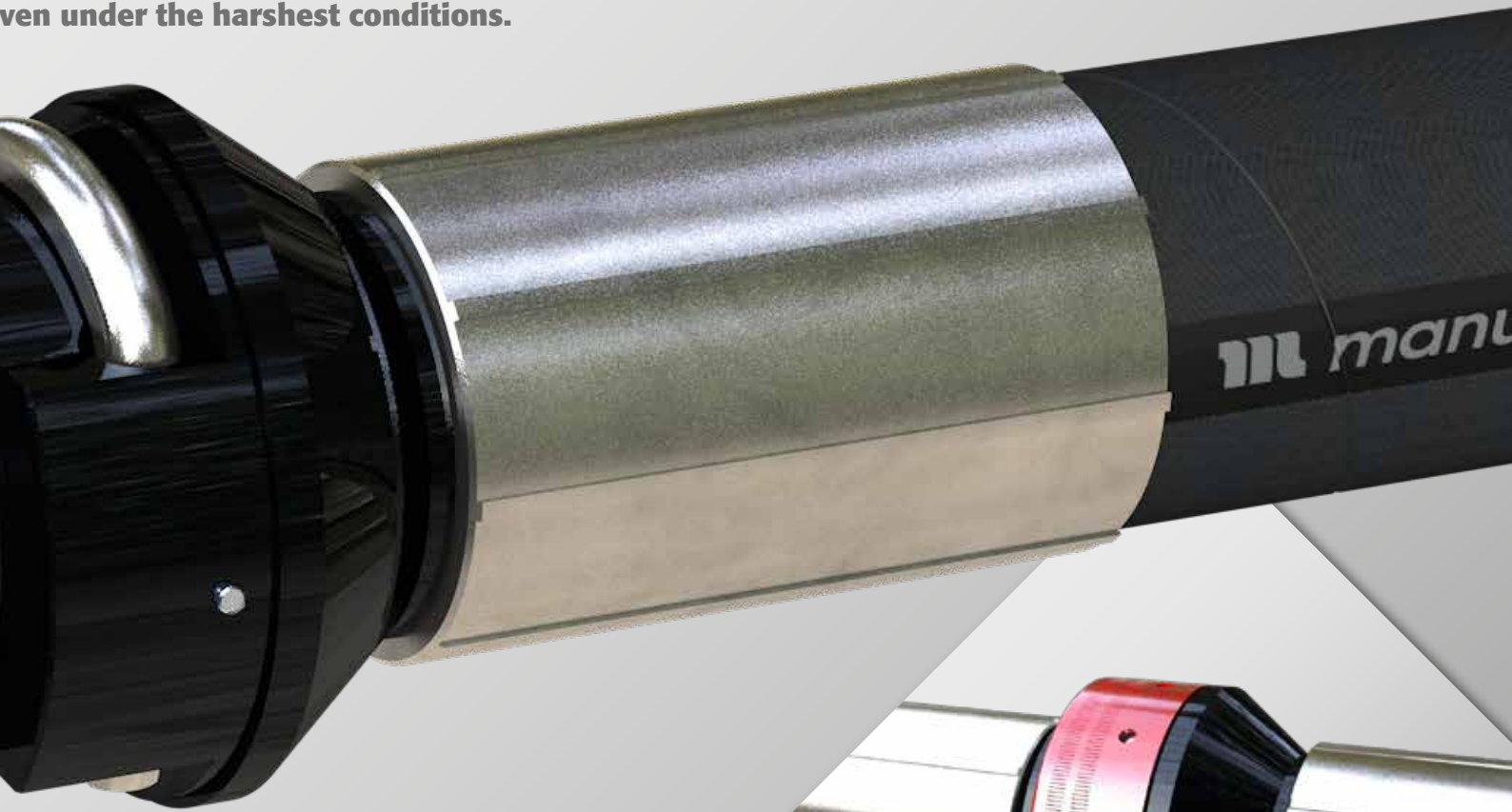
In addition, as the staple remains within the space envelope created by the fitting, it minimises the risk of hose damage due to abrasion from the staple.



Cross-section
fitting with st

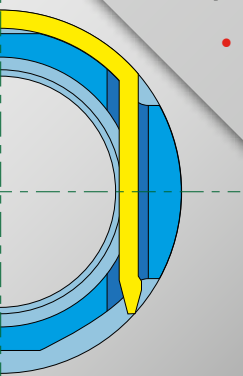
lock

lock hose assembly combines three of Manuli's most successful innovations and is enhanced further by the concept for ensuring hose connection integrity. Built around Manuli's *Flushfit* style fitting, and the "D" profile staple and *Supa Seal one-piece seals*, Sliderlock adds a safety cover to ensure that the connection remains secure even under the harshest conditions.

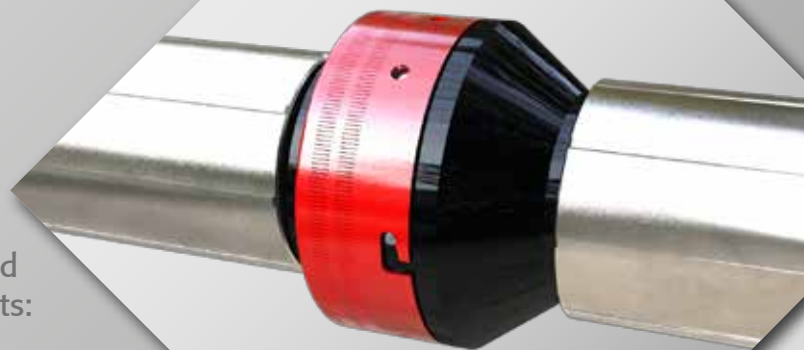


In addition to all the benefits provided by our established innovations, Sliderlock also delivers the following benefits:

- Cover minimises dirt build-up around the staple
- Holes in the cover allow for visual confirmation that the staple is inserted
- User-friendly, spring loaded cover that actively resists the untightening effect of vibrations
- Impulse tested to 1 million cycles at 120% of working pressure
- Colour-coded red to indicate "high pressure"



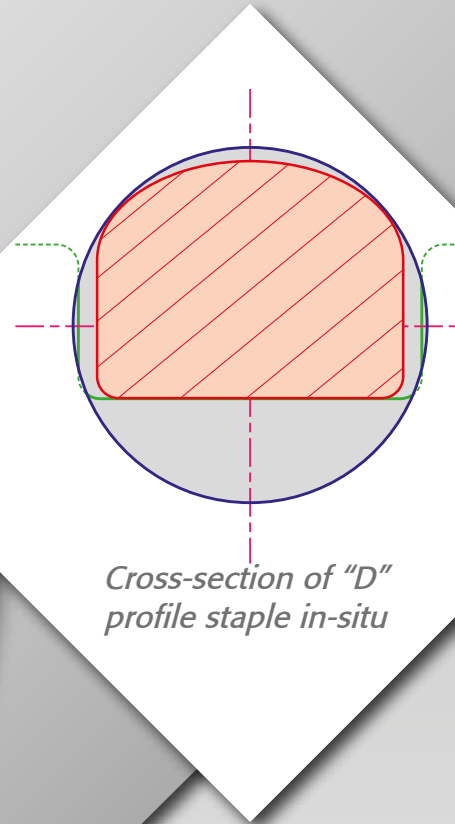
of a Flushfit staple in-situ



Sliderlock assembly with protective cover closed

“D” Profile Staple

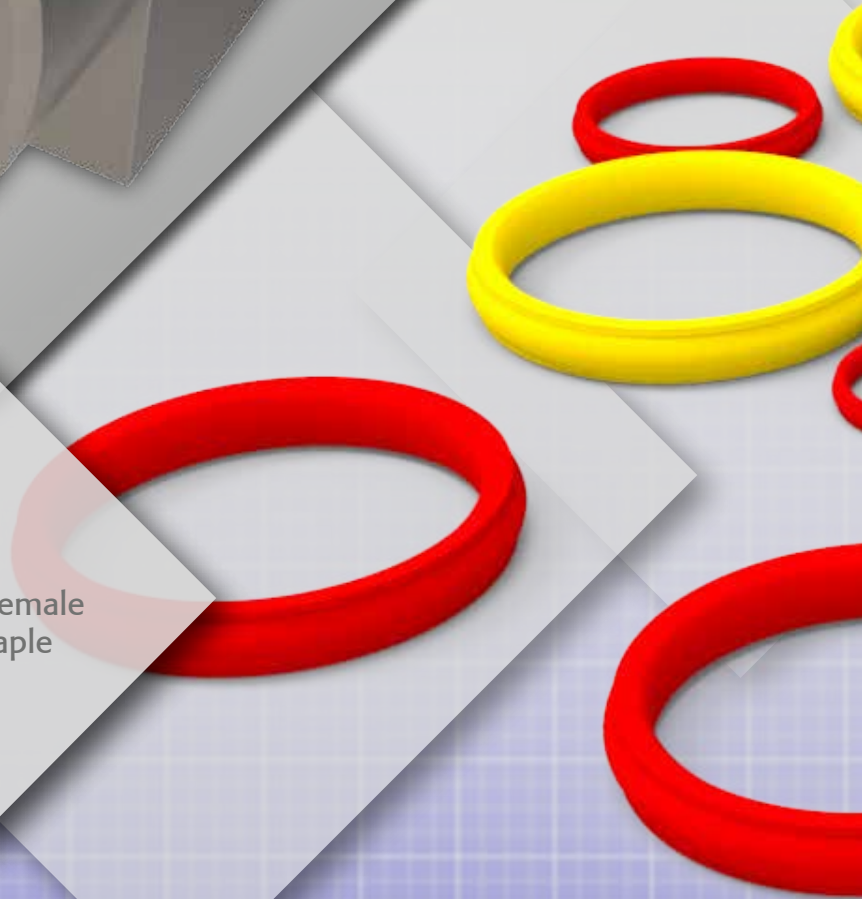
Available for both Flushfit and traditional staple-lock fittings, the “D” Profile staple from Manuli Hydraulics is a simple and cost effective way to improve the performance and safety of your hydraulic systems.



*Cross-section of “D”
profile staple in-situ*

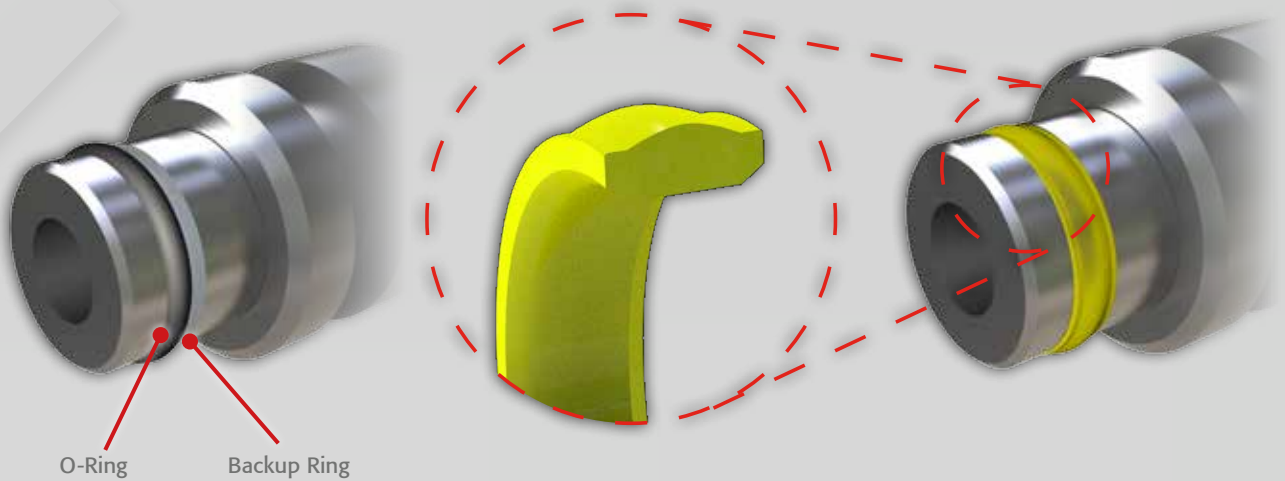
The unique shape of the “D” Profile staple has several distinct advantages over the traditional staple profile:

- Improved safety and performance
- Significant increase in impulse life compared to existing staple design
- Greater support for the male and female ends improving separation of the staple connection
- Batch coded for full traceability



Supa Seal One-Piece Seal

Supa Seal one piece polyurethane seals are the Manuli Hydraulics answer to the need for superior performance and extended service life in staple lock fitting seals. Moulded to tight tolerances and designed to withstand extreme conditions, the Supa Seal range offers multiple advantages over the traditional O-ring and backup ring arrangement.



Traditional Staple Lock Sealing Arrangement

Staple Lock Sealing Arrangement with Supa Seal

The Supa Seal range is divided into two types, one for medium working pressures (yellow) and one for high (red). Both types are available for standard and Flushfit staple lock fittings in a wide range of sizes.

Easy to fit and maintain, Supa Seal is fully interchangeable with all conventional two-piece sealing solutions and has no tendency to twist.

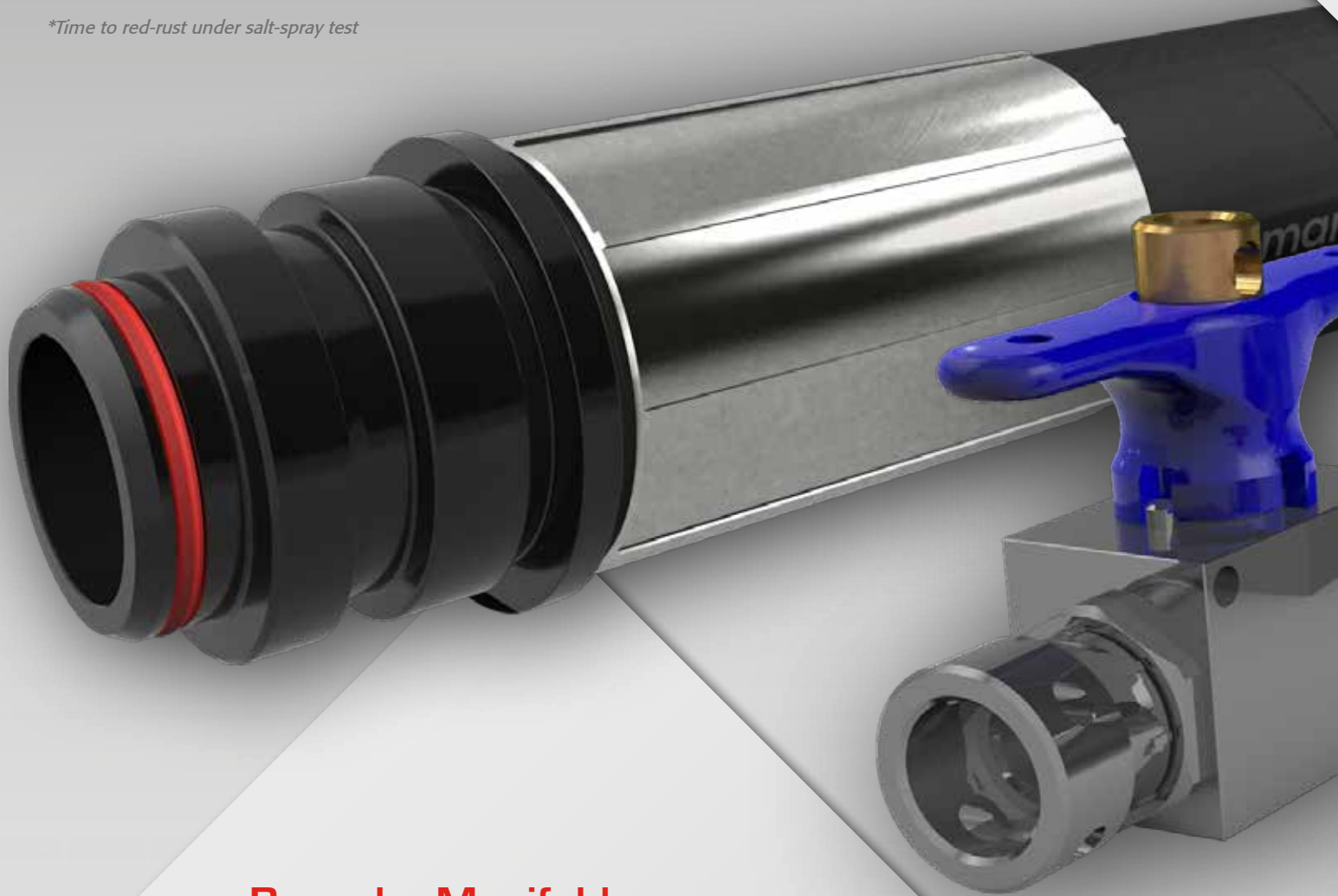
Supa Seal also offers excellent resistance to abrasion, wear and contamination, whilst being insensitive to pressure peaks and exceptional resistance to shock loads.

Supa Seal components are impulse tested and proven to a minimum of 1 million cycles at 120% of working pressure. They also offer up to three times the service life of the traditional sealing arrangement

Supa Black Coating

Supa Black is a unique coating developed by Manuli Hydraulics which provides exceptional environmental protection to the fittings. The 2,000 hour Supa Black coating extends the service life of the fittings by as much as **300%***, providing significant maintenance and cost savings over traditional plating.

**Time to red-rust under salt-spray test*



Bespoke Manifolds

The strong two-way link that the Manuli Hydraulics Mining Division has with our mining customers allows us to design and produce bespoke solutions for mining equipment. Manifolds allow multiple hydraulic connections to be made to a common source of hydraulic power.

Every unit is assembled and assessed in our test facilities according to the design specification, and a test certificate issued with each build. This allows our customers to have the complete peace of mind, knowing that every manifold has passed our stringent quality tests and meets their own specific requirements.

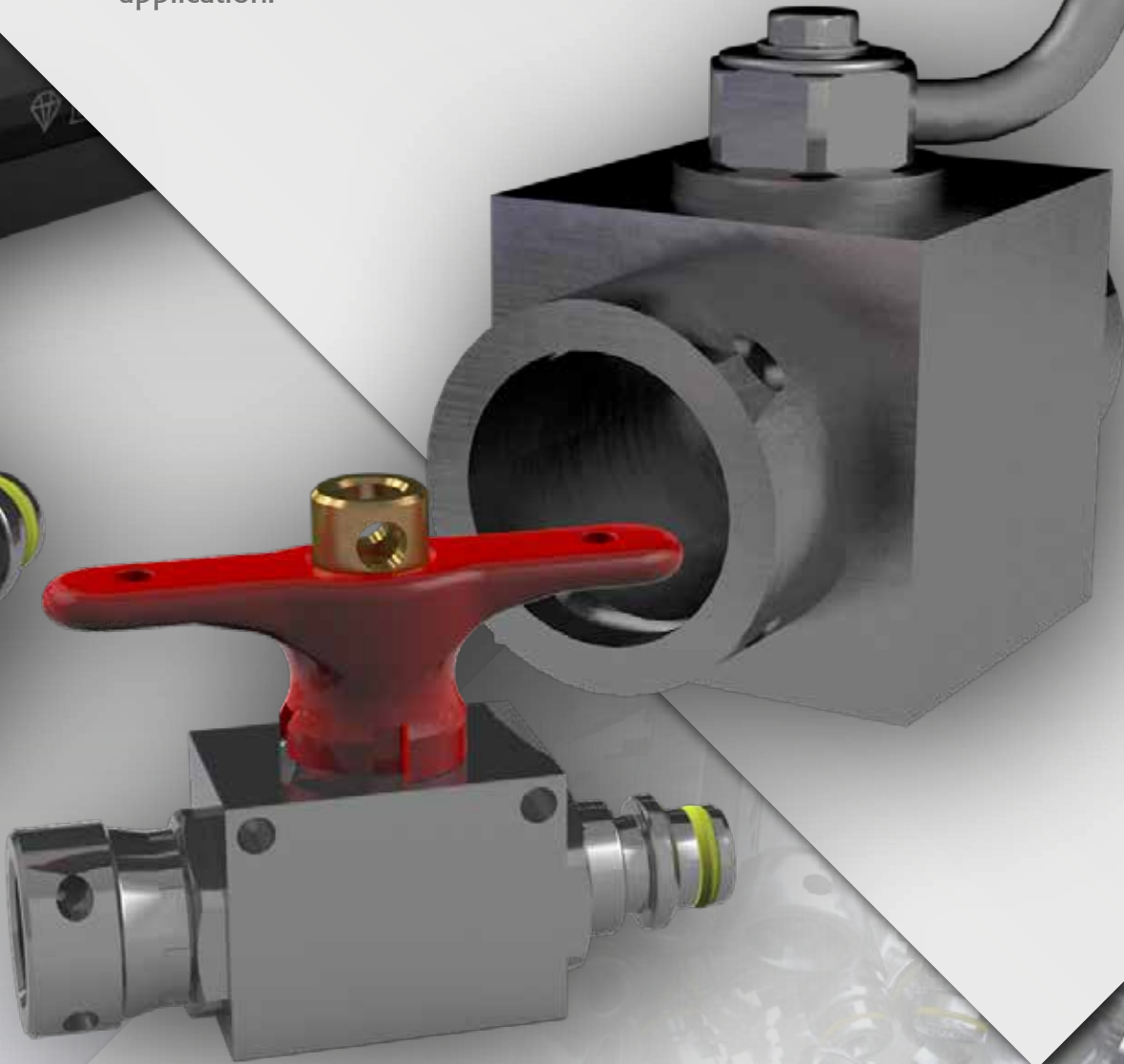


Ball Valves

Manuli Hydraulics offers a comprehensive range of ball valves to meet a wide variety of mining requirements, from isolating sections of pipeline to flow control.

Whilst the design concept of the ball valve remains constant, the materials used can be changed to suit the environmental, medium or pressure requirements of the application.

Available in a wide range of sizes, configurations and connection types, Manuli Hydraulics have the ball valve for you, whatever your application.



Stainless Steel Adaptors

Building on the success of our extensive range of mining adaptors, Manuli Hydraulics has also developed a range of adaptors in 303/304 stainless steel.

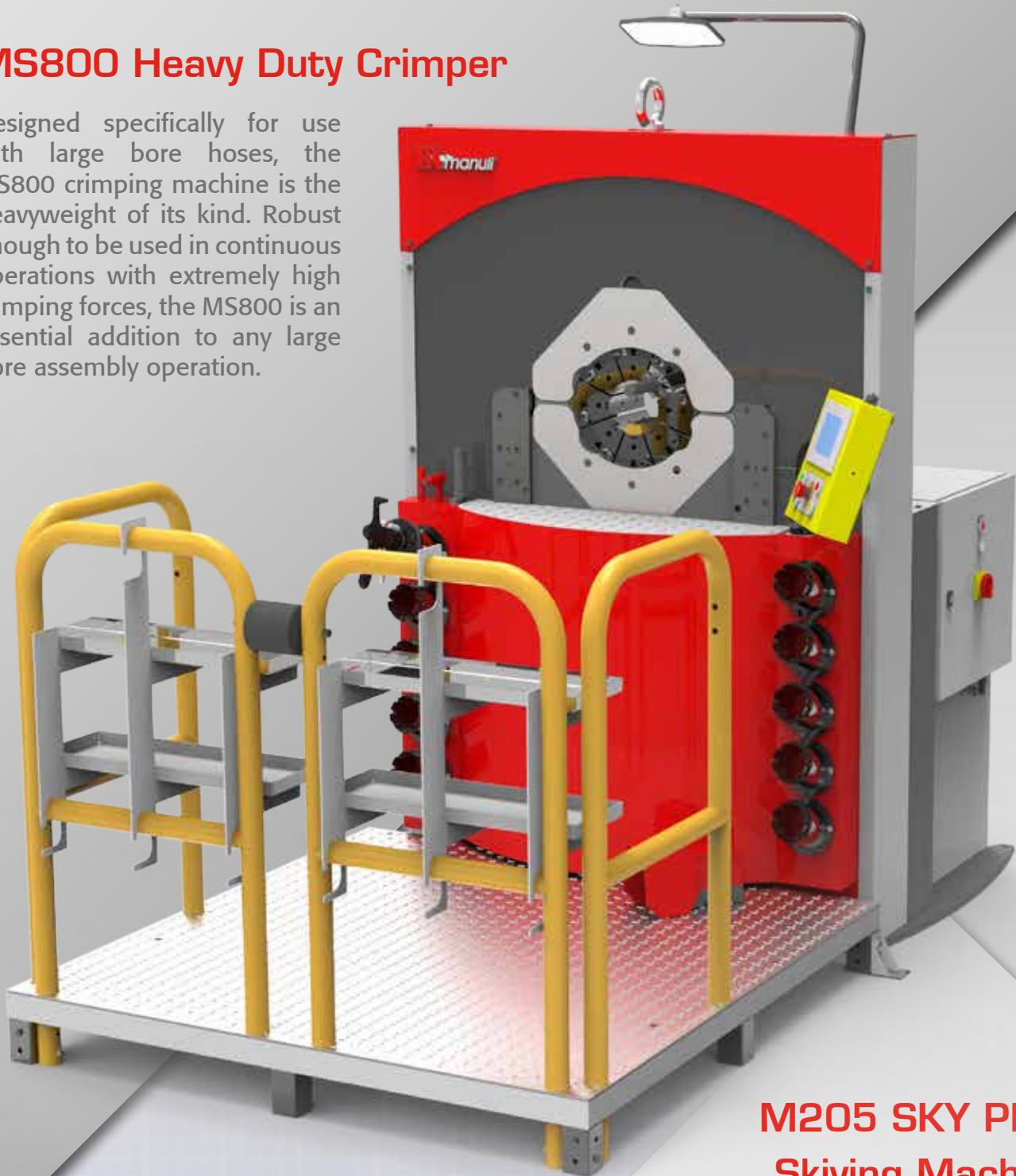
Ideally suited for use in water lines and other highly corrosive environments, the extended service life of our stainless steel components makes them a cost effective alternative to plated steel parts.

Assembly Machines

As one of the world's leading integrated suppliers of hydraulic connector solutions, Manuli Hydraulics offer a wide range of assembly equipment suitable for the smallest to the largest of assembly operations.

MS800 Heavy Duty Crimper

Designed specifically for use with large bore hoses, the MS800 crimping machine is the heavyweight of its kind. Robust enough to be used in continuous operations with extremely high crimping forces, the MS800 is an essential addition to any large bore assembly operation.



M205 SKY PLUS Skiving Machine

Suitable for both internal and external skiving of hose diameters up to 2" as standard, the M205 SKY PLUS can also be upgraded to cope with larger bore hoses. The large viewing window in the safety guard ensures visibility during operation, whilst the integrated footswitch allows the operator to have two-handed control of the hose at all times. Designed with the needs of a commercial production operation, this is a machine that promises years of reliable service.

GOLDENCRIMP/450 Crimping Machine

Providing reliability and versatility in harsh environments, the GoldenCrimp/450 is the perfect addition to any field repair workshop. With a wide range of features designed to facilitate operation, location and maintenance, the GoldenCrimp/450 sets the standard for field repair and assembly equipment.

With a wide opening and a crimping force of 450 tons, the GoldenCrimp/450 is ideally suited to those large bore crimping operations that many other crimping machines just can't cope with. Designed with the open-pit and underground mining industry in mind, the GoldenCrimp/450 can handle just about every field repair crimping operation you can imagine, including 3" pressure lines (6 wire spiral hose) and even 4" return lines (2 wire braid hose).



ing of
KY PLUS
es up to 3".
clear visibility
s the assembler
signed to cope
s is a robust





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