Rugged solutions for the toughest applications

Modern hydraulic systems are required to deal with ever more challenging applications, environments and system specifications. The Manuli Extreme range has been specifically designed to provide the most robust solutions to the toughest hydraulic applications.

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 others 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.

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.
Modern hydraulic systems are required to deal with ever more challenging applications, environments and specifications. The Manuli Extreme range has been specifically designed to provide the most robust solutions to the toughest hydraulic applications.
Manuli vibration products

It is fair to say that most hydraulic systems need to incorporate a certain degree of system vibration into their design, especially when it comes to the interconnecting assets such as hoses and fittings. However, whilst many applications simply produce minor levels of system vibration as a by-product of normal operation, there are some applications where extreme vibration is the desired end result.

Applications such as road-compactors, hydraulic hammers and drilling equipment require high levels of vibration to adequately perform their functions. These extreme operational conditions can often lead to certain failures in hydraulic connectors that are rarely seen in other less severe applications, with one of the main causes of failure coming from fittings and couplings literally being shaken apart.

Manuli Hydraulics has solved this, and other high-vibration related issues by the introduction of their Vibration Products range of hoses and fittings.

Specifically designed to resist the combination of excessive internal component wear, high untightening torques and frequent high-pressure impulses, the Manuli Vibration Products range provides long-lasting, reliable connections in situations where other connectors will fail.
High-torque KR fittings

The Manuli KR style fittings range is specifically designed to minimise the risk of fittings coming loose even under the most severe vibrational conditions. Made from high-tensile steel with an especially robust design, the Manuli KR fittings range is "designed for abuse" in over-torque situations. With a cracking torque to tightening torque ratio of 3:1, and an over torque ratio of 2:1, the KR range of fittings minimises the risk of accidental damage to the fittings in uncontrolled tightening situations.

In addition, the KR range of fittings have a de-torque value of 70% of the tightening torque - as opposed to the standard 50% de-torquing value. This means that the KR fittings are significantly less likely to come unfastened accidentally, even in high-vibration situations.

The extensive range of KR fittings includes JIC, BSP, ORFS and JIS termination ends, as well as straight, 45°, 90° and long-drop configurations in a range of small- and medium-hose bore sizes.

This robustness and versatility has led to the KR range becoming the "fittings-of-choice" for several major OEM manufacturers on their heavy duty equipment.

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**Double thrust-wire fittings**

Available with either JIC (6,000 psi) and BSP (8,000 psi) termination ends, these specially developed thrust-wire fittings are ideal for use in high-pressure, high-vibration equipment.

Made from high-grade carbon steel and with localised induction hardening on the torque-stressed surface, these fittings are some of the most robust and reliable on the market. Designed specifically to resist higher tightening torques and internal wear, the double thrust wire also provides a backup connection between the nut and the fitting.

One of the most common failure modes for thrust-wire fittings is the ejection of the thrust wire due to over-torquing during assembly. To prevent this type of failure the hole through which the thrust-wire was inserted is deformed after insertion, making it almost impossible for the wire to be ejected.

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**Thrust-wire protruding from termination end**

**Thrust-wire hole deformed to prevent wire from ejecting**
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<table>
<thead>
<tr>
<th></th>
<th>Standard Termination Ends</th>
<th>KR Termination Ends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tightening Torque (TT)</td>
<td>According to or exceeding specs.</td>
<td>TT</td>
</tr>
<tr>
<td>Repair / Remedial Torque</td>
<td>1.1 - 1.5 TT</td>
<td>1.1 - 1.5 TT</td>
</tr>
<tr>
<td>Over Torque</td>
<td>1.5 - 2.0 TT</td>
<td>2.0 - 2.5 TT</td>
</tr>
<tr>
<td>Cracking Torque</td>
<td>2.0 - 2.5 TT</td>
<td>3.0 - 4.0 TT</td>
</tr>
<tr>
<td>De-Torque</td>
<td>50% TT</td>
<td>70% TT</td>
</tr>
</tbody>
</table>

This robustness and versatility has led to the KR range becoming the “fittings-of-choice” for several major OEM manufacturers on their heavy duty equipment.
Xtraflange/61 & Xtraflange/62

The Code 61 and Code 62 flange connections are globally accepted as a reliably leak-free solution, especially well-suited to large bore systems.

Manuli Hydraulics offers a wide range of standard Code 61 and Code 62 flange fittings for standard applications. However, for more severe applications, Manuli offer the Xtraflange series.

Fully compatible with Code 61 and Code 62 connection specifications, the Xtraflange series offers a reduced connection footprint as well as an improved pressure rating, from 3,000 psi to 6,000 psi, on the Xtraflange/61 series.

However, the major difference between the Xtraflange series and standard Code 61 and Code 62 flange connections is the unique toroidal clamping surface profile.
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### The Manuli Advantage

The primary weakness of standard Code 61 and Code 62 connections is the huge amount of stress that the clamp imparts on the flange shoulder of the fitting.

Under normal usage conditions this is not generally a major problem; however, under severe vibrational conditions the uni-directional clamping force can cause the flange to crack. The corner of the flange shoulder is already a point of high stress concentration, and the additional shear forces caused by vibrations are often enough to cause catastrophic failure of the fitting.

The Manuli Xtraflange series has a unique toroidal clamping profile which allows the clamping stresses to be more evenly distributed over the material of the fitting, rather than being concentrated in a single area. This provides a far more robust clamping action which is ideally suited to situations where severe vibration is inherent in the design.

An additional related benefit of the Xtraflange clamping profile, is the improved support that it provides against lateral loading on the upper part of the fitting. By fully contacting the Xtraflange shoulder the clamp and flange essentially become a single solid block, offering a huge improvement in resistance to bending forces. To ensure that they can also handle the stresses, the Xtraflange clamps are made from a high tensile steel, allowing them to have a reduced footprint without sacrificing strength.
MQS-SH - Ultra high-pressure quick coupling

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 byword for quality and performance.

Ruggedly built and designed for maximum pressure resistance, the Q. Safe MQS-SH ultra high-pressure quick coupling provides long lasting reliability in even the harshest vibration applications conditions.

Designed especially for applications that would cause lesser products to quickly fail, the MQS-SH quick coupling is unique in the hydraulics field. With a heavy-duty screw-to-connect sleeve, the MQS-SH quick coupling can be connected and disconnected with both male and female parts pressurised up to 30 MPa.

The addition of a hexagon on the sleeve allows the coupling to be mechanically tightened for an even more secure connection and resistance to decoupling in even the most severe vibrational conditions.

- Three-part poppet valve allows connection when pressurised up to 30 MPa
- WP up to 70 MPa in both connected and disconnected conditions
- Hardened poppet valve bodies and moulded shaped seal
- Screw coupling with hexagonal sleeve for minimal connection effort even when system is pressurised
- Mechanical backstop prevents partial closure of valves due to pressure peaks and reverse flow
- Extremely robust construction making it suitable for the toughest applications
## 700 bar

**Extreme Pressure Rating**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>WORKING PRESSURE (Dynamic)</th>
<th>RATED FLOW at 0.2 MPa of pressure drop</th>
<th>OIL SPILLAGE Connection/Disconnection</th>
<th>MINIMUM BURST PRESSURE</th>
<th>CONNECTION/DISCONNECTION UNDER PRESSURE</th>
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</thead>
<tbody>
<tr>
<td>mm</td>
<td>inch</td>
<td>dash</td>
<td>MPa</td>
<td>PSI</td>
<td>l/min</td>
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<td>¼</td>
<td>04</td>
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<td>10150</td>
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<tr>
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<td>⅛</td>
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<td>50</td>
<td>7250</td>
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<td>1¼</td>
<td>20</td>
<td>40</td>
<td>5800</td>
<td>325</td>
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<tr>
<td>38</td>
<td>1½</td>
<td>24</td>
<td>32</td>
<td>4640</td>
<td>464</td>
</tr>
</tbody>
</table>
Vibration Testing

In order to allow full validation and testing of the Vibration Products range, the Manuli Hydraulics Innovation Centre (MHIC), has invested in a dedicated vibration & impulse testing rig. This rig lets Manuli engineers closely study the effects of vibration on hose assemblies, allowing them to continually improve the Manuli product range.

Hose solutions for vibration

Although the primary focus for vibration resistant hydraulic connectors is fittings and quick couplings, these specialist products would be of little-to-no use without suitable associated hose solutions.

High vibration can significantly increase the damaging effect of impulse cycles in a hydraulic hose. The most effective solution to this is to upgrade the pressure rating of the hose, therefore effectively increasing the safety factor.

Manuli Hydraulics generally recommends allowing an additional safety margin of around 500 to 1,000 psi when specifying the hose pressure required. To simplify the process we can use the standard isobaric hose pressure levels as a guide. So, if the calculated working pressure for a particular system is 280 bar, we would specify a 350 bar hose for use in a high vibration application. Similarly, we would upgrade a 350 bar hose to a 380 bar or 420 bar hose; and a 420 bar hose to a 450 bar or 560 bar hose for the most extreme applications.

<table>
<thead>
<tr>
<th>DN</th>
<th>280 bar Applications</th>
<th>350 bar Applications</th>
<th>420 bar Applications</th>
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</thead>
<tbody>
<tr>
<td>19</td>
<td>GoldenISO/35 XF (350 bar); GoldenISO/38 LL (380 bar)</td>
<td>DiamondSpir (560 bar); GoldenISO/45 LL (460 bar)</td>
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<tr>
<td>25</td>
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<td>DiamondSpir (525 bar); GoldenISO/45 LL (450 bar)</td>
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<tr>
<td>31</td>
<td>GoldenISO/35 XF (350 bar)</td>
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Interlock Plus and skive fittings recommended
Hose solutions for vibration equipment

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The table below illustrates this solution with reference to recommended alternatives to the standard hose solutions. Of course, as the world’s leading supplier of integrated connector solutions, each of our suggested alternatives has an appropriately robust fitting solution available.

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>350 bar Applications</th>
<th>420 bar Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>280</td>
<td>GoldenISO/35 XF (350 bar)</td>
<td>GoldenISO/38 LL (380 bar)</td>
</tr>
<tr>
<td>315</td>
<td>GoldenISO/35 XF (350 bar); GoldenISO/38 LL (380 bar)</td>
<td>DiamondSpir (525 bar); GoldenISO/45 LL (450 bar)</td>
</tr>
<tr>
<td>350</td>
<td>GoldenISO/35 XF (350 bar); GoldenISO/38 LL (380 bar)</td>
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</tr>
<tr>
<td>380</td>
<td>GoldenISO/35 XF (350 bar); GoldenISO/38 LL (380 bar)</td>
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</tr>
<tr>
<td>420</td>
<td>GoldenISO/38 LL (380 bar)</td>
<td>DiamondSpir (560 bar); GoldenISO/45 LL (460 bar)</td>
</tr>
<tr>
<td>450</td>
<td>GoldenISO/42 XF (420 bar); GoldenISO/38 LL (380 bar)</td>
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<tr>
<td>525</td>
<td>GoldenISO/35 XF (350 bar); GoldenISO/38 LL (380 bar)</td>
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<tr>
<td>625</td>
<td>GoldenISO/35 XF (350 bar); GoldenISO/38 LL (380 bar)</td>
<td>DiamondSpir (525 bar); GoldenISO/45 LL (450 bar)</td>
</tr>
</tbody>
</table>

*Interlock Plus and skive fittings recommended*
Hose assembly equipment

As the global leader in providing integrated solutions for hydraulic connector applications, no dedicated product range from Manuli would be complete without an overview of some of the equipment available to create the final hose assemblies.

Manuli Hydraulics offers a wide range of hose assembly equipment aimed at various different sized assembly operations. As vibration products tend toward the larger end of the hose assembly spectrum, we have identified a few items of assembly equipment which are appropriate for mid- to high-volume assembly operations.

GoldenCrimp 420 - Heavy duty hose crimping solution

With a crimping force of 420 tonnes the GoldenCrimp 420 offers a maximum hose crimping diameter of 3”.

Available with one of three different interfaces, including Manuli’s proprietary Safe Crimp System (SCS), the level of automation and sophistication of the GoldenCrimp 420 software can be tailored to suit your precise needs.

Key features

- Robust design for transport and operation in harsh environments
- High crimping force of 420 tonnes
- Large opening suitable for large bore hoses
- Extensive range of dies to suit crimping of both industrial and hydraulic hoses
- Easy die setup with ergonomically designed quick-change gun
M205 SKY
Ideal for high-volume assemblers, OEM production units and special application operations.

With optional speed control and hose clamping system, the M205 SKY is capable of both internal and external skiving of hoses up to 3”/ DN48.

Key features
- Plug ‘n skive system
- Large dust collector
- Robust and easily adjustable knife for quick and simple changeover
- 2-way rotation with optional speed control
- Optional hose clamping system for hoses up to 2”/ DN51

M55 CUT
Designed for cutting hoses up to 2”/ DN51 (6WS), the M55 CUT is a versatile addition to any assembly operation.

Often found in full service workshops and aftermarket service operations, the M55 CUT is also suitable for small / medium OEM production units where it’s pneumatic hose bending option and slotted blade allows a high quality, smoke-free cut.

Key features
- Smoke-free, high performance cutting
- Ergonomic, functional design with double foot-pedal system
- Safety cover and feed guides for easy, safe and quick cutting operation
- Digital counter and digital maintenance assistance
KEY FEATURES

- Very high pressure resistance
- Validated for high fatigue resistance
- Superior abrasion resistance
- High ozone and weather resistance
- Flame resistance to a wide range of specs.
- Antistatic and antitoxic cover
- BIO Biological and mineral oils compatibility

APPLICATIONS & FLUIDS

- Hydraulics: heavy duty power lines, hydrostatic transmissions, in severe environmental conditions, specific installations with tough abrasion conditions, off-shore applications, underground and open pit mining
- Mineral oils, vegetable oils and synthetic ester based oils (up to 100°C/212°F), glycols and polyglycols, mineral oils in aqueous emulsion, water

TECHNICAL DATA

<table>
<thead>
<tr>
<th>PART. REF.</th>
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<th>R.O.D.</th>
<th>O.D.</th>
<th>MAX W.P.</th>
<th>BURST</th>
<th>MIN. BEND</th>
<th>WEIGHT</th>
<th>FITTINGS</th>
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<td>1/4&quot;</td>
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<td>2.83</td>
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</table>

CONTINUOUS SERVICE TEMPERATURE RANGE
-40 °F / 250 °F
-40 °C / 121 °C

MAX OPERATING TEMPERATURE PEAKS
125 °C, 257 °F

TUBE
Oil resistant synthetic rubber

REINFORCEMENT
Six high tensile steel spirals (DN 25÷76). Four high tensile steel spirals (DN 19)

COVER
Synthetic rubber with high abrasion, ozone, weather and heat resistance

APPLICABLE SPECS
MANULI® Design; Exceed ISO 3862 R15

TYPE APPROVALS
ABS; FRAS; CU-TR; MSHA; MA
GOLDENISO/45 LONGLIFE

HIGH FATIGUE RESISTANCE

KEY FEATURES

- Designed for original equipment
- Long-term mission profile in severe applications
- Over standard pressure rating
- High impulse resistance exceeding the ISO 18752 requirements
- Superior abrasion resistance
- High ozone and weather resistance
- Flame retardant and antistatic properties of the cover
- Wide compatibility with hydraulic fluids, mineral and biodegradable oils
- Low bend radius, better than the standard requirements
- Interlock-Plus easy mounting system for a very high-level robustness
- Isobaric pressure rating for easy selection and product management

APPLICATIONS & FLUIDS

- Heavy duty pressure lines, hydrostatic transmissions, heavy duty earth moving equipment, hydraulic presses, drilling applications, injection moulding machines, specific installations with severe abrasion conditions and/or harsh environmental conditions, marine applications, underground and open pit mining
- Mineral oils, vegetable oils and synthetic ester based oils (up to 100°C/212°F), glycols and polyglycols, mineral oils in aqueous emulsion, water

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</tbody>
</table>

CONTINUOUS SERVICE TEMPERATURE RANGE

-40 °F / 250 °F

MAX OPERATING TEMPERATURE PEAKS

125 °C, 257 °F

APPLICABLE SPECS

Manuli special design exceeds SAE J517 type100R15; ISO 3862 R15; ISO 18752-D extension

TYPE APPROVALS

CU-TR; MSHA; FRAS

TUBE

Oil resistant synthetic rubber

REINFORCEMENT

Four high tensile steel wire spirals (DN 16-25).
Six high tensile steel wire spirals (DN 31)

COVER

Synthetic rubber with high ozone, abrasion and weather resistance
GOLDENISO/38 LONGLIFE
HIGH FATIGUE RESISTANCE

KEY FEATURES
- Designed for original equipment
- Long-term mission profile in severe applications
- Over standard pressure rating
- High impulse resistance exceeding the ISO 18752 requirements
- Superior abrasion resistance
- High ozone and weather resistance
- Flame retardant and antistatic properties of the cover
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<td>1&quot;</td>
<td>34,8</td>
<td>1,37</td>
<td>38,1</td>
<td>1,50</td>
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<td>5510</td>
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<td>H10098031*</td>
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</table>

CONTINUOUS SERVICE TEMPERATURE RANGE
-40 °F / 250 °F
-40 °C / 121 °C

MAX OPERATING TEMPERATURE PEAKS
125 °C, 257 °F

TUBE
Oil resistant synthetic rubber

REINFORCEMENT
Two high tensile steel wire braids (DN 6 to 12),
Four high tensile steel wire spirals (DN 19 & 25),
Six high tensile steel wire spirals (DN 31)

COVER
Synthetic rubber with high ozone, abrasion and weather resistance

APPLICABLE SPECS
Manuli special design: DN 6 to 12: exceed ISO 18752-C extension, DN 19 to 31 exceed SAE J517 type100R13; ISO 3862 R13; ISO 18752-C/D extension

TYPE APPROVALS
CU-TR; MSHA; FRAS
GOLDENISO/42 XTRAFLEX
COMPACTNESS AND FLEXIBILITY

KEY FEATURES
- Bend radius which exceed the standard requirements by - 30% to -50%
- Good flexibility in the whole temperature range
- Easy mounting in any installation
- High impulse resistance according to ISO 18752 requirements
- Weight saving of 20% vs traditional R15 hose construction
- No-skive fitting solution is available
- Isobaric pressure rating for easy selection and product management

APPLICATIONS & FLUIDS
- High pressure power lines for general hydraulics
- Heavy duty power lines
- Applications with installation constraints (short assemblies, compact spaces, low bend radii, etc.)
- Mineral oils, vegetable oils and synthetic ester based oils (up to 100°C/212°F), glycols and polyglycols, mineral oils in aqueous emulsion, water

TECHNICAL DATA

<table>
<thead>
<tr>
<th>PART. REF.</th>
<th>HOSE SIZE</th>
<th>R.O.D.</th>
<th>O.D.</th>
<th>MAX W.P.</th>
<th>BURST</th>
<th>MIN.BEND</th>
<th>WEIGHT</th>
<th>FITTINGS</th>
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CONTINUOUS SERVICE TEMPERATURE RANGE
-50 °F / 250 °F
-46 °C / 121 °C

MAX OPERATING TEMPERATURE PEAKS
125 °C, 257 °F

TUBE
Oil resistant synthetic rubber

REINFORCEMENT
Two high tensile steel wire braids (DN 6). Four high tensile steel spirals (DN 10÷25). Six high tensile steel spirals (DN 31÷51)

COVER
Synthetic rubber with high abrasion, ozone, weather and heat resistance

APPLICABLE SPECS
ISO 18752-C (Grade C “Plus” approved 1 Mil impulse cycles with Interlock fittings)

TYPE APPROVALS
CU-TR; MSHA; FRAS; B, RINA

APPLICABLE SPECS
ISO 18752-C (Grade C “Plus” approved 1 Mil impulse cycles with Interlock fittings)

TYPE APPROVALS
CU-TR; MSHA; FRAS; B, RINA
## KEY FEATURES
- Bend radius which exceed the standard requirements by - 30% to -50%
- Good flexibility in the whole temperature range
- Easy mounting in any installation
- High impulse resistance according to ISO 18752 requirements
- Weight saving of 20% vs traditional R13 hose construction
- No-skive fitting solution is available
- Isobaric pressure rating for easy selection and product management

## APPLICATIONS & FLUIDS
- High pressure power lines for general hydraulics
- Applications with installation constraints (short assemblies, compact spaces, low bend radii, etc.)
- Mineral oils, vegetable oils and synthetic ester based oils (up to 100°C/212°F), glycols and polyglycols, mineral oils in aqueous emulsion, water

## TECHNICAL DATA

<table>
<thead>
<tr>
<th>PART. REF.</th>
<th>HOSE SIZE</th>
<th>R.O.D.</th>
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<th>MAX W.P.</th>
<th>BURST</th>
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<tr>
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<td>Std1</td>
<td>Std2</td>
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</table>

### CONTINUOUS SERVICE TEMPERATURE RANGE
-50 °F / 250 °F

### MAX OPERATING TEMPERATURE PEAKS
125 °C, 257 °F

### TUBE
- Oil resistant synthetic rubber

### REINFORCEMENT
- Four high tensile steel spirals (DN 6÷31). Six high tensile steel spirals (DN 38÷51).

### COVER
- Synthetic rubber with high abrasion, ozone, weather and heat resistance

### APPLICABLE SPECS
- ISO 18752-C/D, JIS K6349-3

### TYPE APPROVALS
- DNV-GL; CU-TR; MSHA; FRAS; B
### INTERLOCK PLUS TYPE

**SAE STANDARD CONNECTIONS**

**M42714**

JIC FEMALE 37° CONE SEAT - W.P. 6000 psi - SAE J516 / ISO 12151-5 (DOUBLE THRUST-WIRE NUT)

<table>
<thead>
<tr>
<th>PART. REF.</th>
<th>HOSE BORE</th>
<th>Thread</th>
<th>DIMENSIONS mm</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>DN Dash</td>
<td>T</td>
<td>B</td>
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<tr>
<td>M42714-12-12</td>
<td>19 - 12</td>
<td>3/4&quot;</td>
<td>1.1/16&quot; - 12</td>
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<td>1&quot;</td>
<td>1.5/16&quot; - 12</td>
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<td>1.1/4&quot;</td>
<td>1.5/8&quot; - 12</td>
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<tr>
<td>M42714-24-24</td>
<td>38 - 24</td>
<td>1.1/2&quot;</td>
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<tr>
<td>M42714-32-32</td>
<td>51 - 32</td>
<td>2&quot;</td>
<td>2.1/2&quot; - 12</td>
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### BS STANDARD CONNECTIONS

**M40514**

BSP FEMALE 60° CONE - BS5200 / ISO 12151-6

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<td>DN Dash</td>
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<td>1&quot; - 11</td>
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<td>1.1/4&quot;</td>
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<td>M40514-24-24</td>
<td>38 - 24</td>
<td>1.1/2&quot;</td>
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# MQS-SH
## SCREW HEAVY DUTY

<table>
<thead>
<tr>
<th>SIZE</th>
<th>WORKING PRESSURE (Dynamic)</th>
<th>RATED FLOW at 0.2 MPa of pressure drop</th>
<th>OIL SPILLAGE Connection/Disconnection</th>
<th>MINIMUM BURST PRESSURE</th>
<th>CONNECTION/ DISCONNECTION UNDER PRESSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>inch</td>
<td>dash</td>
<td>MPa</td>
<td>PSI</td>
<td>l/min</td>
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<tr>
<td>6</td>
<td>¼</td>
<td>04</td>
<td>70</td>
<td>10150</td>
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<tr>
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<td>½</td>
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<td>60</td>
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<td>12.5</td>
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<td>08</td>
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<td>7250</td>
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<td>⅝</td>
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<td>50</td>
<td>7250</td>
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<td>38</td>
<td>1¼</td>
<td>24</td>
<td>50</td>
<td>7250</td>
<td>494</td>
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</table>

**Material**: Couplings in steel with some stressed area hardened. Carbonitrided valve, springs in C98 steel, seals in NBR and back-up ring in PTFE.

**Working Temperature**: -22°F up to +230°F (-30°C up to +110°C)

**Safety Factor**: 4:1 for dynamic pressures

**Impulse Pressures**: 500,000 cycles (connected and disconnected conditions) at 120% of the rated one (freq. 1Hz)

**Test Specifications**: ISO 7241-2
### BSP TERMINATION ENDS TO DIN 3852 X TYPE

<table>
<thead>
<tr>
<th>SIZE</th>
<th>PART NUMBER</th>
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<td>A</td>
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<tr>
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<td>10</td>
<td>3/8&quot;</td>
<td>Q05411041A-06-06</td>
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<tr>
<td>12.5</td>
<td>1/2&quot;</td>
<td>Q05411041A-08-08</td>
<td>1/2&quot;</td>
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<td>20</td>
<td>3/4&quot;</td>
<td>Q05411041A-12-12</td>
<td>3/4&quot;</td>
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<tr>
<td>25</td>
<td>1&quot;</td>
<td>Q05411041A-16-16</td>
<td>1&quot;</td>
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<tr>
<td>31.5</td>
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<td>Q05411041A-20-20</td>
<td>1.1/4&quot;</td>
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<td>11/2&quot;</td>
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### NPTF TERMINATION END TO ANSI B 1.20.3

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<th>DIMENSIONS mm</th>
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<td>A</td>
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<td>6.3</td>
<td>1/4&quot;</td>
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<td>1/4&quot; NPTF</td>
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<td>10</td>
<td>3/8&quot;</td>
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<td>3/8&quot; NPTF</td>
</tr>
<tr>
<td>12.5</td>
<td>1/2&quot;</td>
<td>Q05411341A-08-08</td>
<td>1/2&quot; NPTF</td>
</tr>
<tr>
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<td>3/4&quot;</td>
<td>Q05411341A-12-12</td>
<td>3/4&quot; NPTF</td>
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<tr>
<td>25</td>
<td>1&quot;</td>
<td>Q05411341A-16-16</td>
<td>1&quot; NPTF</td>
</tr>
<tr>
<td>31.5</td>
<td>1.1/4&quot;</td>
<td>Q05411341A-20-20</td>
<td>1.1/4&quot; NPTF</td>
</tr>
<tr>
<td>38</td>
<td>11/2&quot;</td>
<td>Q05411341A-24-24</td>
<td>1.1/2&quot; NPTF</td>
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