

QUALITY

INTELLIGENT DESIGN

EXCELLENCE

PARTNERSHIP

INTEGRATED SOLUTIONS

GOLDENISO

ISOBARIC HOSE RANGE



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.

Golden ISO™



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.

GoldenISO

Isobaric products for compact and efficient hydraulics

For use in:

- General hydraulics in mobile applications
- Hydraulic pressure lines with installation constraints
- Mining applications

Today's hydraulic systems are expected to meet progressively higher standards and increasingly stringent requirements, therefore technology must evolve to accommodate these demands.

New specifications are developing in order to incorporate these changing requirements. ISO 18752 is a modern isobaric approach to hose design, providing a consistent pressure rating across an entire hose family.



GoldenISO Benefits

- User friendly product selection due to isobaric approach
- Wide product range for any application
- Easy handling and installation
- Hoses have high compatibility with a wide range of modern hydraulic oils
 - Covers have high abrasion, weather and flame resistance
 - Compact and light with reduced bend radius

ISO 18752

GoldenISO hose are designed to meet the requirements of isobaric specification ISO 18752. This describes hoses according to isobaric pressure levels, and grades them A, B, C or D according to their resistance to impulse pressure, temperature and minimum number of cycles.

These grades allow users to select the most appropriate hose and fitting solutions for their field of application.

ISO 18752 Performance Grades and Type

| Grade | Type ^a | Resistance to impulse | | |
|-------|-------------------|-----------------------|---|--------------------------|
| | | Temperature °C | Impulse pressure (% of MWP ^b) | Minimum number of cycles |
| A | AS | 100 | 133% | 200 000 |
| | AC | | | |
| B | BS | 100 | 133% | 500 000 |
| | BC | | | |
| C | CS | 120 | 133% and 120% ^c | 500 000 |
| | CC | | | |
| D | DC | 120 | 133% | 1 000 000 |

^a Standard or compact, e.g. CS is grade C and standard type. Standard types have larger outside diameters and larger bend radii and compact types have smaller outside diameters and smaller bend radii

^b Maximum working pressure

^c 120% of the MWP shall be used for classes 350, 420 and 560 instead of 133%

GOLDENISO ANTIWEAR (3000, 4000 PSI)

Compact wire braid reinforced hoses with excellent flexibility and low bending force

Key features

- ISO 18752 Grade A - approved at 200,000 impulse cycles at 100 °C
- Bend radii tighter than ISO 18752 requirements - suited to restricted space installations
- Extreme abrasion resistance
- Robust and compact hose structure compared to rated pressure
- High resistance to environmental agents
- Vacuum resistance according to SAE 100R4 requirements

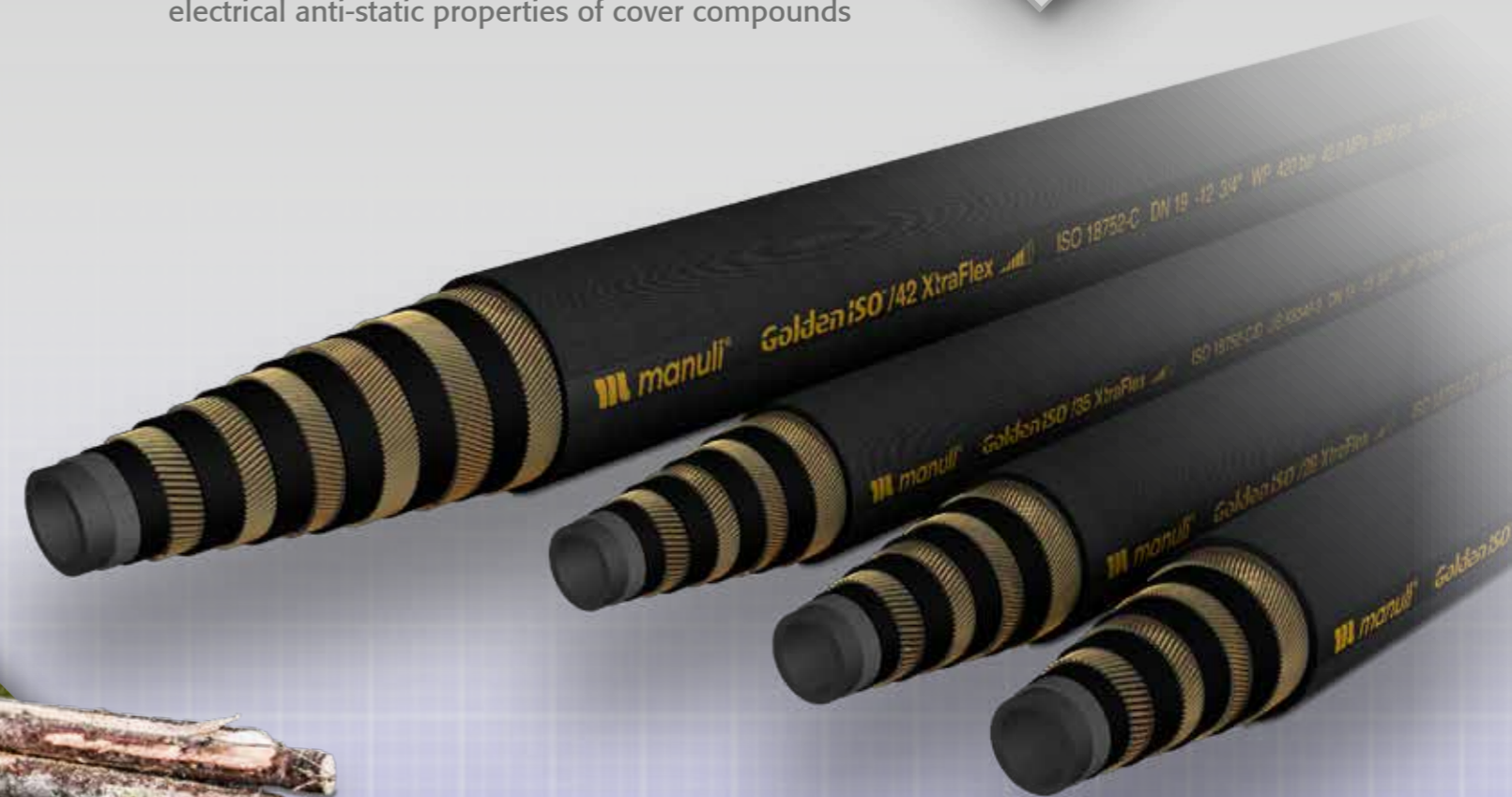
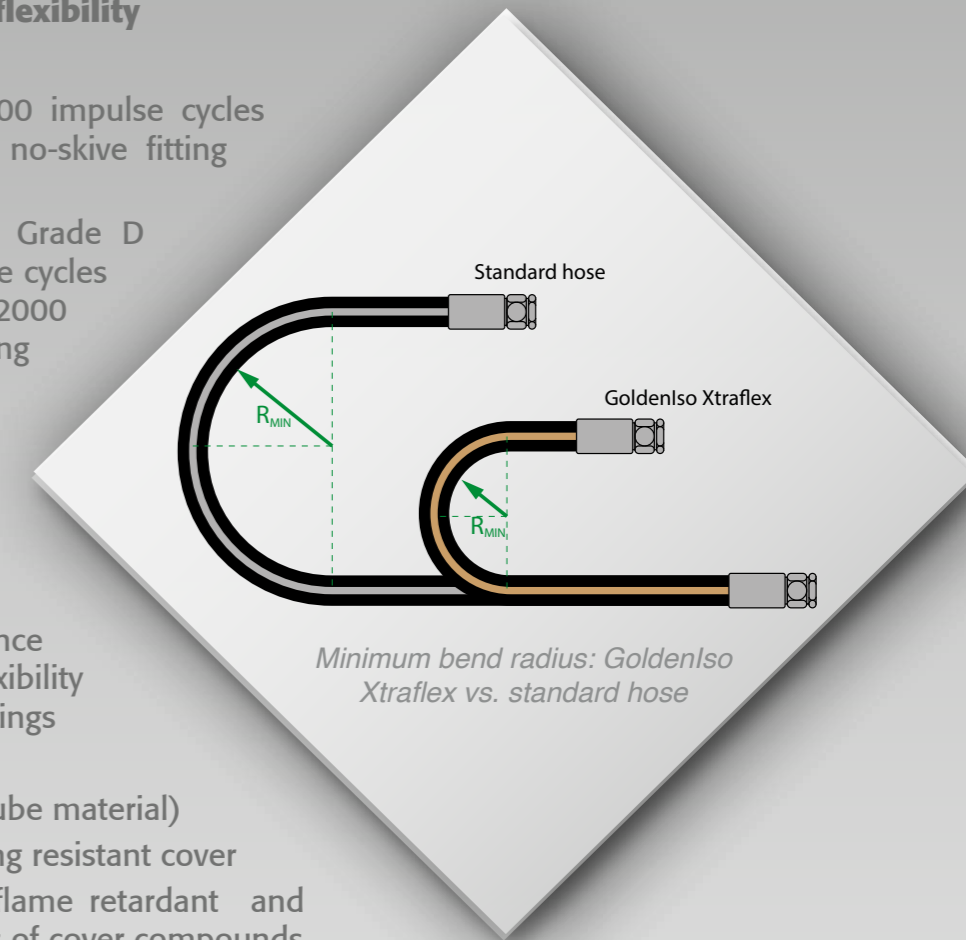


GOLDENISO XTRAFLEX (3000, 4000, 5000, 6000 PSI)

Compact wire spiral hose structures, characterised by their low weight and excellent flexibility

Key features

- ISO 18752 Grade C - 500,000 impulse cycles at 120 °C when used with no-skive fitting solutions (SpiralFit, Multifit)
- ISO 18752 Grade C(+) and Grade D Extension - 1,000,000 impulse cycles at 121 °C when used with MF2000 skive and double skive fitting solutions (Interlock Plus)
- Minimal bend radius - bend radii tighter than specified by ISO 18752
- Improved cold resistance (-46 °C/-50 °F)
- Easy to use in maintenance operations due to good flexibility and availability of no-skive fittings
- High fatigue resistance
- Large oil compatibility (NBR tube material)
- High abrasion, ozone and aging resistant cover
- Suitable for mining, due to flame retardant and electrical anti-static properties of cover compounds



GOLDENISO/14 (2000 PSI)

Compact wire braid hose, highly flexible with a very low bend radius

Key features

- ISO 18752 Grade A - approved at 2000,000 impulse cycles at 100 °C
- Qualified to JCB standard (1,000,000 full-omega cycles) for servo lines
- Isobaric, smooth cover, small bore hose line, available in DN6 and DN10
- Suitable for difficult installations, due to the very low bend radius
- Flame retardant, MSHA approved cover
- Suitable for low pressure lines, pilot line and auxiliary hydraulic systems
- Integrated with the new compact MiniFit fitting solution - special dedicated fittings with compact dimensions designed for small bore 1 wire braid hose

GOLDENISO LONGLIFE (5500, 6500 PSI)

An innovative wire spiral, premium class hose designed for heavy duty applications and high fatigue resistance

Key features

- Exceeds ISO 18752 Grade D Extension - 1,000,000 impulse cycles at 120 °C - tested at a higher pressure rating than the standard demands
- Durable - meets the requirements of the most demanding OEMs, with superior abrasion, ozone and weather resistance
 - Cover is flame resistant with antistatic properties
 - Low bend radius and high flexibility
 - High performance Nitrile tube compound for the best chemical compatibility with a wide range of hydraulic oils
 - Interlock Plus fitting solution provides superior robustness and durability



GOLDENISO HOSE RANGE

| HOSE | HOSE STRUCTURE | NORM | KEY PERFORMANCE |
|-----------------------|----------------|--|--|
| GOLDENISO/21 ANTIWEAR | Wire braided | ISO 18752-A, ISO 11237-R17, SAE J517-100R17 | Extreme abrasion resistance |
| GOLDENISO/28 ANTIWEAR | Wire braided | ISO 18752-A, ISO 11237-R19, SAE J517-100R19 | Extreme abrasion resistance |
| GOLDENISO/21 XTRAFLEX | Wire spiralled | ISO 18752-C/D, JIS K6349 | Extreme flexibility |
| GOLDENISO/28 XTRAFLEX | Wire spiralled | ISO 18752-C/D, JIS K6349 | Extreme flexibility |
| GOLDENISO/35 XTRAFLEX | Wire spiralled | ISO 18752-C/D, JIS K6349 | Extreme flexibility |
| GOLDENISO/42 XTRAFLEX | Wire spiralled | ISO 18752-C/C Plus | Extreme flexibility |
| GOLDENISO/35 LONGLIFE | Wire braided | ISO 18752-B | High fatigue resistance |
| GOLDENISO/38 LONGLIFE | Wire spiralled | ISO 18752-C/D | High fatigue resistance |
| GOLDENISO/45 LONGLIFE | Wire spiralled | ISO 18752-D ext., ISO 11237-R15, SAE J517-100R15 | High fatigue resistance |
| GOLDENISO/14 | Wire braided | ISO 18752-A | High flexibility for auxiliary systems |



HOSES BY WORKING PRESSURE

| HOSE SIZE | WORKING PRESSURE (bar) | | | | | | | | | | | |
|-----------------------|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| | DN | 5 | 6 | 8 | 10 | 12 | 16 | 19 | 25 | 31 | 38 | 51 |
| dash | -03 | -04 | -05 | -06 | -08 | -10 | -12 | -16 | -20 | -24 | -32 | |
| GOLDENISO/21 ANTIWEAR | 210 | 210 | 210 | 210 | 210 | 210 | 210 | 210 | | | | |
| GOLDENISO/28 ANTIWEAR | | 280 | 280 | 280 | 280 | 280 | 280 | | | | | |
| GOLDENISO/21 XTRAFLEX | | | | | | | | | 210 | 210 | 210 | |
| GOLDENISO/28 XTRAFLEX | | | | 280 | 280 | 280 | 280 | 280 | 280 | 280 | 280 | |
| GOLDENISO/35 XTRAFLEX | | | | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | |
| GOLDENISO/42 XTRAFLEX | | | | 420 | 420 | 420 | 420 | 420 | 420 | 420 | | |
| GOLDENISO/35 LONGLIFE | | 350 | | 350 | | | | | | | | |
| GOLDENISO/38 LONGLIFE | | | | | | | 380 | 380 | 380 | 380 | 380 | |
| GOLDENISO/45 LONGLIFE | | 460 | | | | 460 | 460 | 460 | 450 | | | |
| GOLDENISO/14 | | 140 | 140 | 140 | | | | | | | | |

HOSES BY APPROVALS

| HOSE | HYDRAULICS, MARINE EQUIPMENT TYPE APPROVALS | MINING SAFETY TYPE APPROVALS | | | GOVERNMENT, SAFETY AND SPECIAL TYPE APPROVALS |
|-----------------------|---|------------------------------|------|----------|---|
| | DNV-GL | MSHA | FRAS | Polish B | CU-TR |
| GOLDENISO/21 ANTIWEAR | * | * | * | * | * |
| GOLDENISO/28 ANTIWEAR | * | * | * | * | * |
| GOLDENISO/21 XTRAFLEX | * | * | * | * | * |
| GOLDENISO/28 XTRAFLEX | * | * | * | * | * |
| GOLDENISO/35 XTRAFLEX | * | * | * | * | * |
| GOLDENISO/42 XTRAFLEX | * | * | * | * | * |
| GOLDENISO/35 LONGLIFE | | * | | | * |
| GOLDENISO/38 LONGLIFE | * | * | * | | * |
| GOLDENISO/45 LONGLIFE | * | * | * | | * |
| GOLDENISO/14 | | * | | | * |

* Approved

* Approval in progress



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