

QUALITY

INTELLIGENT DESIGN
EXCELLENCE
PARTNERSHIP

INTEGRATED SOLUTIONS

GOLDENISO
ISOBARIC HOSE RANGE

 **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 and refrigeration applications.

Golden ISO™

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.

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.

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 Benefits

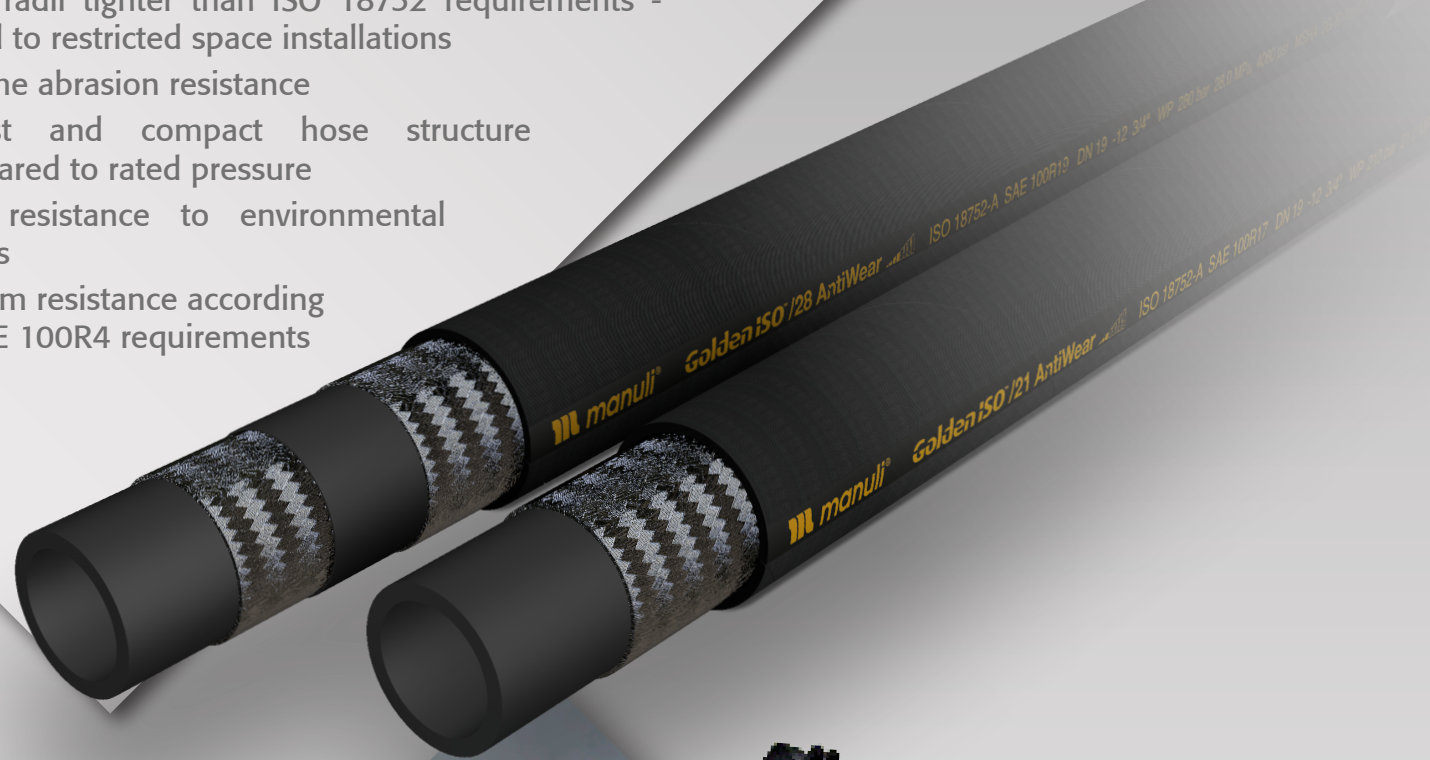
- User friendly product selection due to isobaric approach
- Wide product range for any application
- Easy handling and installation
- Hoses have high compatibility with a wide range of modern hydraulic oils
 - Covers have high abrasion, weather and flame resistance
- Compact and light with reduced bend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

GOLDENISO ANTIWEAR (21, 28 MPa)

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

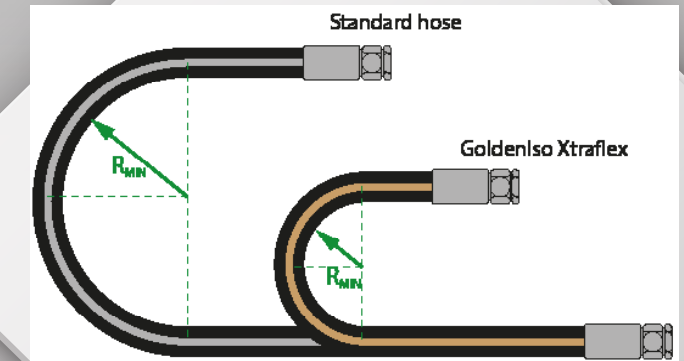


GOLDENISO XTRAFLEX (21, 28, 35, 42 MPa)

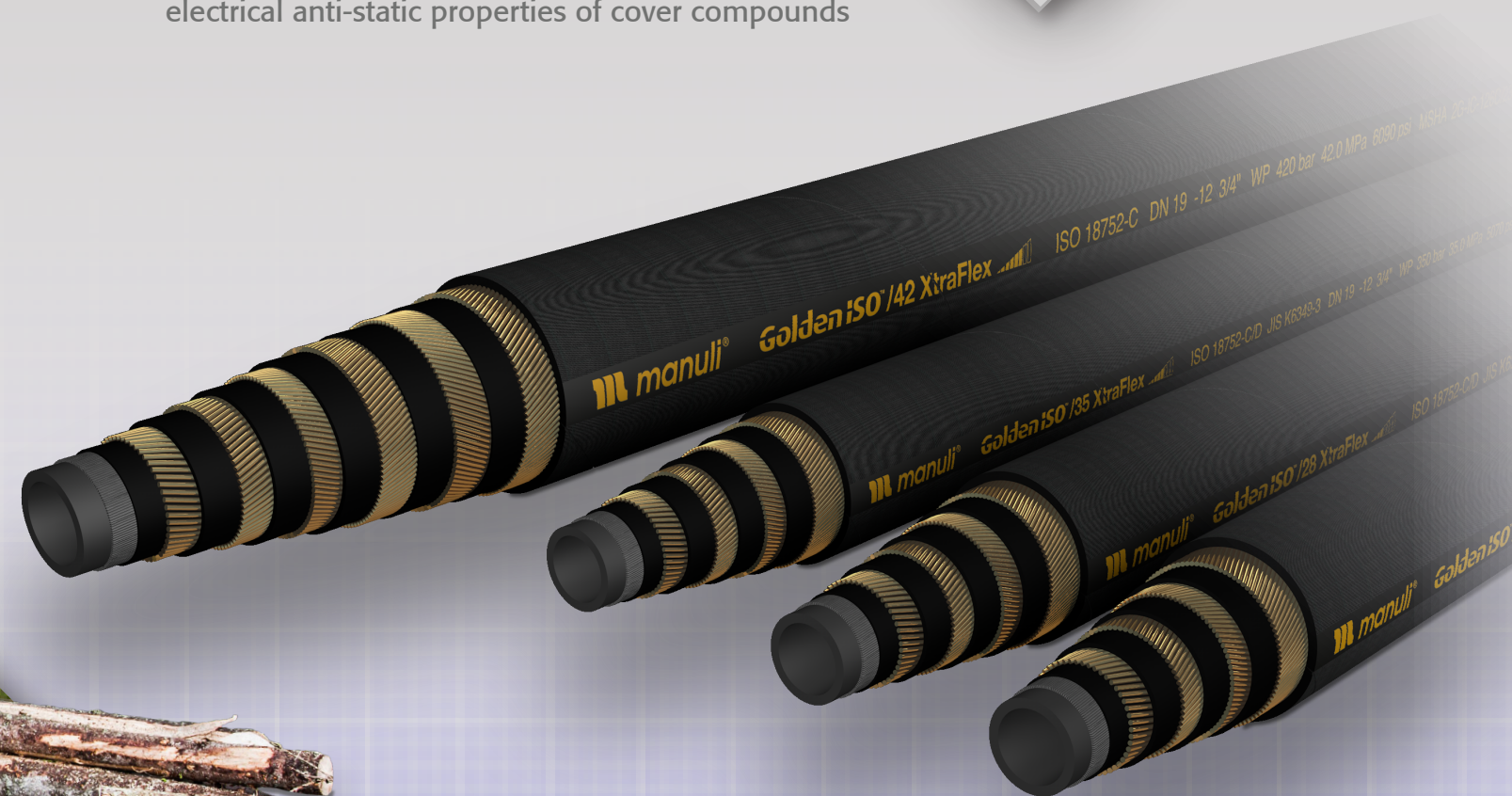
Compact wire spiral hose structures, characterised by their low weight and excellent flexibility

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



Minimum bend radius: GoldenISO Xtraflex vs. standard hose

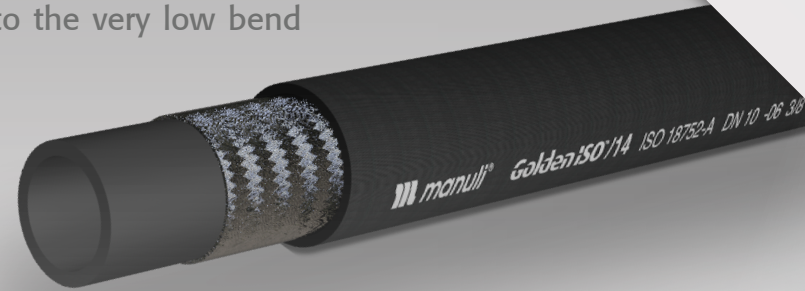


GOLDENISO/14 PILOT (14 MPa)

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

Key features

- ISO 18752 Grade C - means 500.000 impulse cycles at 121 °C
- Qualified to relevant OEM specifications for servo lines (1M cycles)
- Isobaric small bore hose line, available in the range of DN5 to DN12
- 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 (38, 45 MPa)

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 121 °C - tested at a higher pressure rating than the standard demands (GoldenISO/38 Longlife DN 6 to 12 are wire braided, exceeds ISO 18752-C extension)
- 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/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 PILOT	Wire braided	ISO 18752-C	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	420	420
GOLDENISO/38 LONGLIFE		380	380	380	380		380	380	380		
GOLDENISO/45 LONGLIFE		460				460	460	460	450	450	
GOLDENISO/14 PILOT	140	140	140	140	140						

HOSES BY APPROVALS

HOSE	HYDRAULICS, MARINE EQUIPMENT TYPE APPROVALS					MINING SAFETY TYPE APPROVALS			GOVERNMENT, SAFETY AND SPECIAL TYPE APPROVALS	
	DNV-GL	DNV-GL (MED)	ABS	BV	LLOYD'S REGISTER	MSHA	FRAS	MA	CU-TR	
GOLDENISO/21 ANTIWEAR		*				*	*		*	
GOLDENISO/28 ANTIWEAR	*	*				*	*		*	
GOLDENISO/21 XTRAFLEX		*	*	*	*	*			*	
GOLDENISO/28 XTRAFLEX		*	*	*	*	*	*		*	
GOLDENISO/35 XTRAFLEX	*	*	*	*	*	*	*	*	*	
GOLDENISO/42 XTRAFLEX	*	*	*	*	*	*	*	*	*	
GOLDENISO/38 LONGLIFE						*			*	
GOLDENISO/45 LONGLIFE						*			*	
GOLDENISO/14 PILOT						*			*	

* Approved



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