

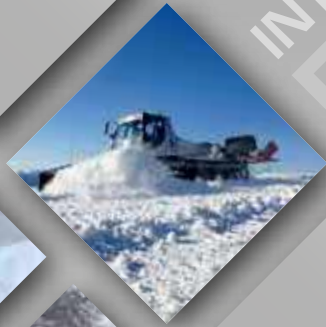
QUALITY

INTELLIGENT DESIGN

EXCELLENCE

PARTNERSHIP

INTEGRATED SOLUTIONS



**CRYOFLEX**  
LOW TEMPERATURE SOLUTIONS

 **manuli**<sup>®</sup>  
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

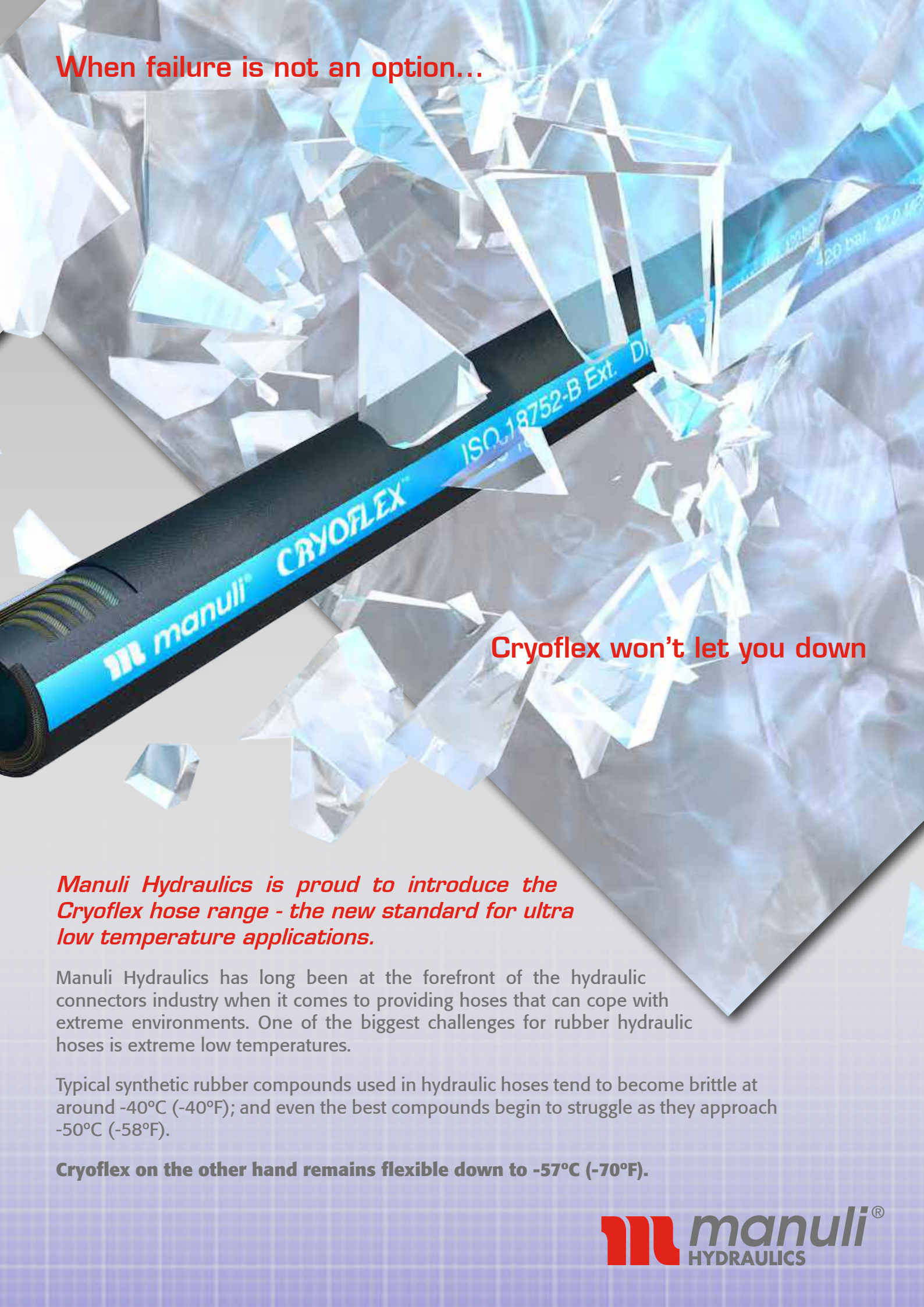
Modern hydraulics applications require robust fluid connector solutions with guaranteed long lasting performance. To that end, Manuli Hydraulics offers a complete range of hoses, fittings and assembly equipment which are designed to work seamlessly together. This harmonised approach allows us to guarantee the quality and performance of hose assemblies in a way that 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.





When failure is not an option...



**Cryoflex won't let you down**

***Manuli Hydraulics is proud to introduce the Cryoflex hose range - the new standard for ultra low temperature applications.***

Manuli Hydraulics has long been at the forefront of the hydraulic connectors industry when it comes to providing hoses that can cope with extreme environments. One of the biggest challenges for rubber hydraulic hoses is extreme low temperatures.

Typical synthetic rubber compounds used in hydraulic hoses tend to become brittle at around  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ); and even the best compounds begin to struggle as they approach  $-50^{\circ}\text{C}$  ( $-58^{\circ}\text{F}$ ).

**Cryoflex on the other hand remains flexible down to  $-57^{\circ}\text{C}$  ( $-70^{\circ}\text{F}$ ).**



# Exceptional flexibility in the coldest conditions

## The ideal solution for challenging low temperature applications

With an continuous service temperature of  $-57^{\circ}\text{C}$  ( $-70^{\circ}\text{F}$ ), Cryoflex is perfectly suited for use in the most demanding low temperature situations. At temperatures where other hoses would rapidly begin to fail due to cracking of the rubber, Cryoflex's incredibly low glass transition point allows it to maintain flexibility and structural integrity.

In addition, the innovative outer cover and inner tube rubber compounds allow Cryoflex to be "cold-fit" in maintenance situations in extremely cold environments.

The Cryoflex range is designed in accordance with the latest Isobaric standard (ISO 18752), meaning that each family has a constant pressure rating regardless of bore size, allowing for simpler, more user-friendly hose selection.

With working pressures of either 21 or 35 MPa (with a 42 MPa family in development), the Cryoflex range is available in sizes DN 6 to DN 31.



## Integration for the highest quality assemblies

The Cryoflex range can be combined with a variety of Manuli Hydraulics' fittings, ensuring a long-lasting and robust assembly.

With skive and no-skive solutions available, it is possible to adopt a fully integrated approach to hose manufacturing.

### *Skive solutions*

Manuli Hydraulics' range of two piece fittings are manufactured with an eco-friendly zinc plating treatment, which also provides high corrosion resistance. For smaller Cryoflex hose the Multifit range provides an ideal solution, whilst Interlock Plus can be used for the larger sizes. Both solutions are highly robust, with Interlock Plus available in stainless steel for increased durability.

### *No-skive solutions*

No-skive fitting solutions allow for easy and fast hose assembly operations, and are intended primarily for aftermarket and maintenance activities.

Manuli Hydraulics' One-Piece Flat (OPF) fittings are no-skive, compact and flat-crimp fittings, suitable for the smaller bore Cryoflex hoses. For the larger sizes, SpiralFit inserts are the no-skive solution.





# TECHNICAL DATA SHEETS

## CRYOFLEX/21

### EXTREME COLD ENVIRONMENTS



#### KEY FEATURES



- Good flexibility also at very low temperatures
- Reduced Bend radius, according to compact hoses standard requirements
- Easy mounting in any installation
- High impulse resistance according to ISO 18752 requirements
- Weight saving vs traditional hose construction
- No-skive fitting solution is available
- Isobaric pressure rating for easy selection and product management

#### APPLICATIONS & FLUIDS



- Medium pressure hydraulic lines for general hydraulics in extreme cold environments
- Return lines of hydraulic systems
- 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

MIL	Key		Ø		Ø		bar		PSI		Ø		kg		Std		
	DN	dash	inch	mm	inch	mm	inch	bar	psi	bar	psi	mm	inch	g/m	lb/ft	Std1	Std2
H01158016*	16	- 10	5/8"	22,2	0,87	24,0	0,94	210	3040	840	12180	100	3,94	609	0,41	MF+M03400-10	OPF-10
H01158019*	19	- 12	3/4"	25,6	1,01	27,7	1,09	210	3040	840	12180	120	4,72	765	0,51	MF+M03400-12	OPF-12

#### CONTINUOUS SERVICE TEMPERATURE RANGE

-70 °F / 212 °F  
-57 °C / 100 °C

#### TUBE

Oil resistant synthetic rubber

#### REINFORCEMENT

2 high tensile steel braids

#### COVER

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

#### APPLICABLE SPECS

ISO 18752-B Ext.

#### TYPE APPROVALS

MSHA





# TECHNICAL DATA SHEETS

## CRYOFLEX/35

EXTREME COLD ENVIRONMENTS



### KEY FEATURES



- Good flexibility also at very low temperatures
- Bend radius which exceed the standard requirements by - 30% to -50%
- 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 in extreme cold environments
- 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

PART. REF.	HOSE SIZE			R.O.D.		O.D.		MAX W.P.		BURST		MIN.BEND		WEIGHT		FITTINGS	
	DN	dash	inch	mm	inch	mm	inch	bar	psi	bar	psi	mm	inch	g/m	lb/ft	Std1	Std2
H01159006*	6	- 4	1/4"	11,3	0,44	13,1	0,52	350	5070	1400	20300	45	1,77	285	0,19	MF+M03400-04	OPF-04
H01159010*	10	- 6	3/8"	15,0	0,59	16,8	0,66	350	5070	1400	20300	65	2,56	390	0,26	MF+M00120-06	OPF-06
H01159012*	12	- 8	1/2"	18,6	0,73	20,4	0,80	350	5070	1400	20300	80	3,15	553	0,37	MF+M00120-08	OPF-08
H01159019*	19	- 12	3/4"	27,5	1,08	29,9	1,18	350	5070	1400	20300	120	4,72	1212	0,81	IP+M01500-12	SP+M05400-12
H01159025*	25	- 16	1"	34,6	1,36	37,0	1,46	350	5070	1400	20300	150	5,91	1773	1,19	IP+M01500-16	SP+M05400-16
H01159031*	31	- 20	1.1/4"	42,1	1,66	44,9	1,77	350	5070	1400	20300	230	9,06	2335	1,57	IP+M01500-20	SP+M05400-20

### CONTINUOUS SERVICE TEMPERATURE RANGE

-70 °F / 212 °F  
-57 °C / 100 °C

### TUBE

Oil resistant synthetic rubber

### REINFORCEMENT

Two high tensile steel braids (DN 6÷12). High tensile steel spirals (DN 16÷31).

### COVER

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

### APPLICABLE SPECS

ISO 18752-B Ext.

### TYPE APPROVALS

MSHA



[www.manuli-hydraulics.com](http://www.manuli-hydraulics.com)

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