



**FOREST** master 

**SUPERIOR PERFORMANCE  
HOSE ASSEMBLIES FOR  
FORESTRY MACHINES**



## THE PROBLEM

**The use of timber as a resource is constantly on the increase. As a result the need for high-quality, long service life equipment in the forestry industry has never been greater.**

Subject to high working pressures, harsh environmental conditions and constant mechanical impact and abrasion, hydraulic hoses on forestry equipment must be of the highest standard to meet the needs of the industry. To ensure both maximum productivity and user safety, hydraulic hoses are regularly checked, and are often replaced prematurely as a precaution. Hose durability is therefore a critical factor in minimising the Total Cost of Ownership (TCO) of forestry equipment.

## THE SOLUTION

The **ForestMaster™** hose range from Manuli Hydraulics has been specifically designed for the forestry industry, and guarantees real-world long service life in even the most demanding of applications.

When compared to standard hydraulic hoses used in similar applications, ForestMaster hoses offer the following benefits:

- **Superior abrasion resistance**
- **Improved service temperature down to -46°C**
- **High flexibility**
- **Multiple assembly solutions**

## THE SECRET

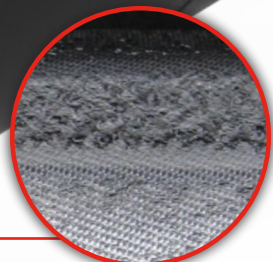
**The ForestMaster hose range is the culmination of years of research and development in both hose structural design and rubber compound formulation.**

The inner hose structure is a high-tensile, 4-wire spiral arrangement, allowing for high working pressures, excellent flexibility and improved impulse resistance. In addition the internal tube is made from a rubber compound that has been proven to resist cracking at temperatures as low as -46°C (-50°F). Excellent design and performance as you would expect from a Manuli product, but a fairly standard solution all the same.

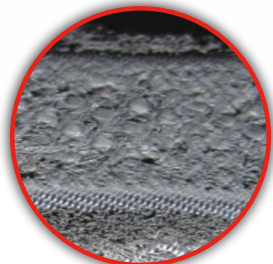
The outer cover on the other hand, represents a quantum leap forward in both abrasion resistance and low temperature resilience.

This innovative new cover is made up of 2 components unique to the ForestMaster hose range:

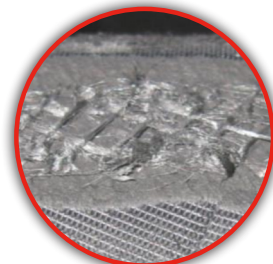
- **Outer cover made from a proprietary, specially formulated anti-wear rubber compound**
- **High-tensile textile breaker layer**



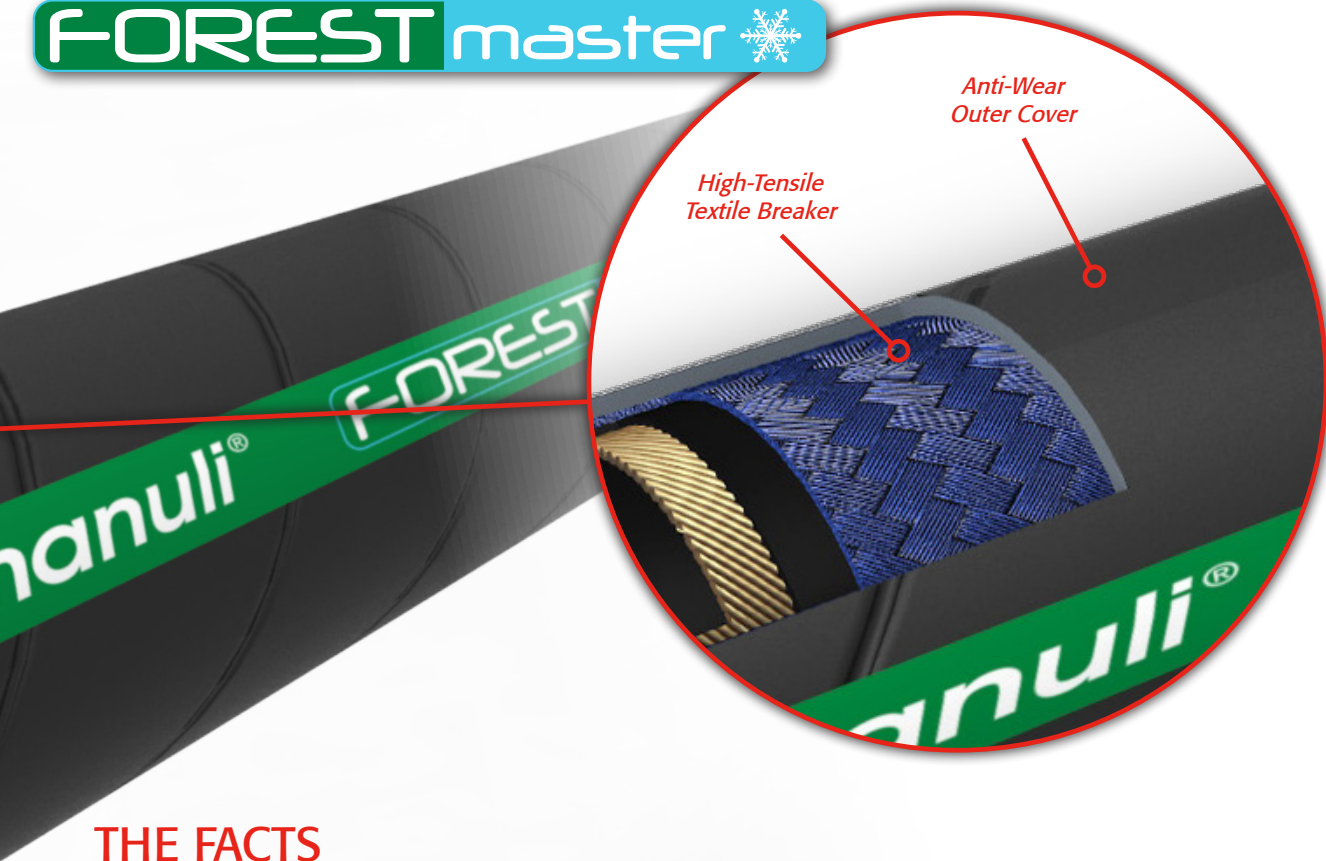
2,000 cycles (10kg)



20,000 cycles (10kg)



60,000 cycles (10kg)



## THE FACTS

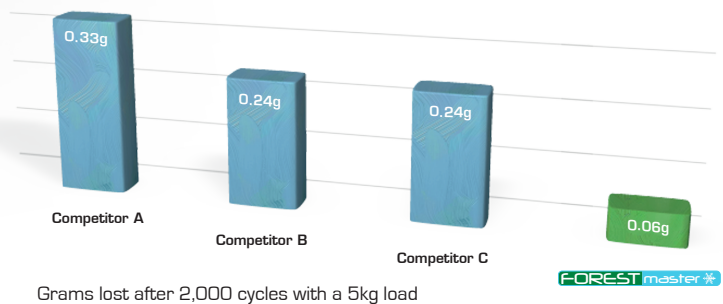
### ABRASION RESISTANCE

In standard ISO 6945 abrasion tests a reciprocating 5kg load is used to create wear on the hose cover. The test lasts for 2,000 cycles and measures the mass (in grams) of material lost. The lower the result, the better the performance.

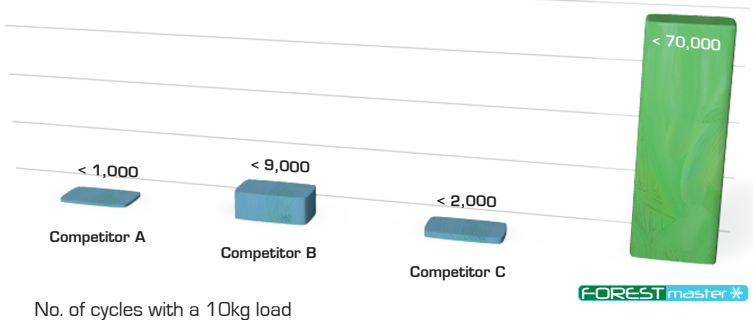
However, to truly test the performance of the cover, Manuli devised a more severe test. A 10kg reciprocating load was used, and the number of cycles required to expose the steel reinforcement was determined. In this case, the higher the result, the better the performance.

*ForestMaster hoses performed up to 5 times better than the competition in standard ISO 6945 abrasion tests; and lasted as much as 30 times longer before the steel reinforcement was exposed.*

### Abrasion Test According to ISO 6945



### No. of Cycles Before Reinforcement Exposure





## THE FACTS (CONTINUED)

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### TEMPERATURE RESISTANCE

The rubber outer cover on ForestMaster hoses has also been specially formulated to resist extremes of temperature. This is especially useful in the forestry industry where northern winter climates regularly lead to temperatures well below freezing. The rubber compound used in the ForestMaster outer cover remains crack-resistant at temperatures as low as -50°C (-58°F) thanks to the ingenious way it has been created.

The rubber compound has an extremely low glass transition point (the point at which the material becomes brittle), preventing it from cracking well after other rubber compounds would have failed. In addition, the lowered transition phase temperatures allow the hose to retain its flexibility even in these severe conditions.

### THE PRODUCT

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**Designed using the latest technologies to ensure high pressure resistance and mechanical robustness, the ForestMaster range is organised into two Isobaric lines:**

**ForestMaster/35** - Suitable for working pressures up to 350 bar and currently available in DN19 and DN25 sizes.



**ForestMaster/42** - Suitable for working pressures up to 420 bar and currently available in DN19 and DN25 sizes.



### THE INTEGRATED SOLUTION

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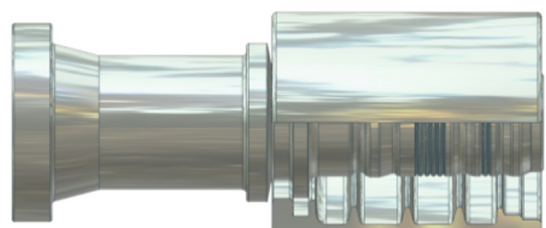
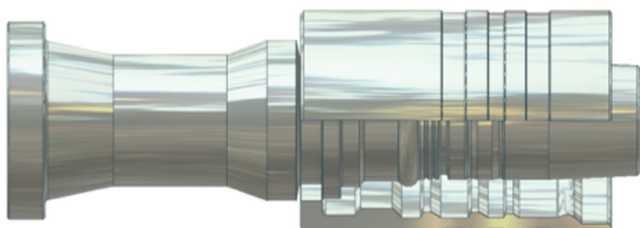
**ForestMaster hoses are compatible with two standard Manuli Hydraulics fitting solutions which have been specially selected to meet the needs of the customer:**

#### STANDARD 1 - INTERLOCK™ PLUS

Designed for maximum durability, this robust fitting has been tested for over 1,000,000 impulse cycles. Suitable for both the 35MPa and 42MPa lines, this fitting requires a double skive of the hose.

#### STANDARD 2 - SPIRALFIT™

A convenient, no-skive fitting solution designed to facilitate field maintenance and after-market distribution. This fitting solution is only compatible with the 35MPa line.





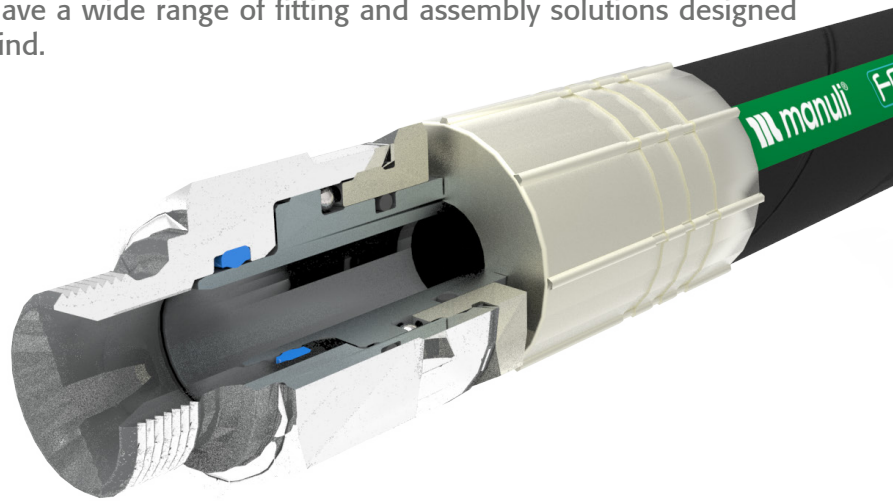
## THE INTEGRATED SOLUTION (CONTINUED)

As an integrated supplier Manuli Hydraulics have a wide range of fitting and assembly solutions designed with Manuli hoses and their applications in mind.

### 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.

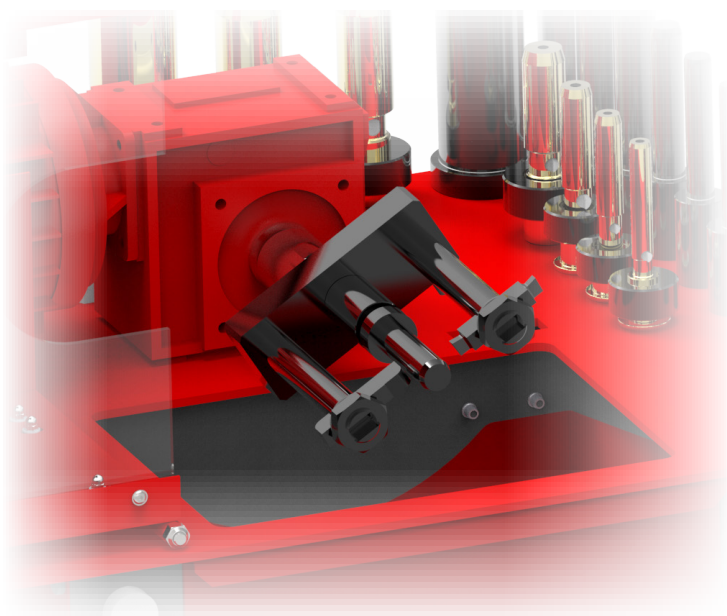
The additional advantage of RotoFit is that it is a “Direct-to-Hose” and “Direct-to-Port” solution. By eliminating the need for adapters, the number of possible leak points is reduced.



### FORESTMASTER SKIVING TOOL

Due to the robust nature of the ForestMaster hose cover, and in particular the addition of the textile breaker layer, traditional skiving tools may not be completely effective.

So, in order to ensure that a high-quality skive can be achieved quickly and efficiently, Manuli Hydraulics have produced a dedicated skiving tool for the ForestMaster hose family. This tool is compatible with all Manuli skiving machines and is designed specifically to achieve a high quality external skive including the textile breaker layer.



Description	Part Number
ForestMaster Skiving Tool, DN19	ESS3220NMESP19F
ForestMaster Skiving Tool, DN25	ESS3220NMESP25F

## PRODUCT VALIDATION

Used in some of the harshest application positions, ForestMaster hoses have been used by Scandanavian forestry end users since 2014 and are now the preferred solution to minimise maintenance requirements and reduce costs. In fact field tests have shown that ForestMaster hoses typically last up to 3 times longer than the competition.

ForestMaster hoses can also be effectively used in any hydraulic system for critical applications, such as:

- bundled hoses with a high risk of abrasion due to rubbing
- external hose assemblies exposed to stones, sand, dirt etc.
- positions with unavoidable friction contacts
- flexing assemblies protected by a metal spring that would normally damage the rubber cover



## TECHNICAL DATA SHEETS

# FORESTMASTER/35

FORESTRY MACHINES



### KEY FEATURES



- Extreme high abrasion resistance, long life before reinforcement scratching
- Special composite cover layer with textile reinforcement for the maximum resistance in harsh environments
- Reduced bend radius
- Good flexibility in the whole temperature range
- Easy mounting in any installation
- High impulse resistance according to ISO 18752 requirements

### APPLICATIONS & FLUIDS



- High pressure power lines for general hydraulics
- Designed for forestry machines booms and harvester heads, harsh environments and severe abrasions
- 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.		BURST		MIN.BEND		WEIGHT		FITTINGS	
	DN	dash	inch	mm	inch	mm	inch	bar	psi	bar	psi	mm	inch	g/m	lb/ft	Std1	Std2
H10111019*	19	- 12	3/4"	27,5	1,08	31,7	1,25	350	5070	1400	20300	140	5,51	1251	0,84	IP+M01500-12	SP+M05400-12
H10111025*	25	- 16	1"	34,6	1,36	38,8	1,53	350	5070	1400	20300	190	7,48	1843	1,24	IP+M01500-16	SP+M05400-16

#### CONTINUOUS SERVICE TEMPERATURE RANGE

-50 °F / 250 °F  
-46 °C / 121 °C

#### MAX OPERATING TEMPERATURE

125 °C, 257 °F

#### TUBE

Oil resistant synthetic rubber

#### REINFORCEMENT

Four high tensile steel spirals

#### COVER

Composite cover with textile reinforcement, realized with high abrasion and ozone resistant synthetic rubber

#### APPLICABLE SPECS

Manuli design, ref. ISO 18752-C

#### TYPE APPROVALS

MSHA

# TECHNICAL DATA SHEETS

## FORESTMASTER/42

FORESTRY MACHINES



### KEY FEATURES



- Extreme high abrasion resistance, long life before reinforcement scratching
- Special composite cover layer with textile reinforcement for the maximum resistance in harsh environments
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H10112019*	19	- 12	3/4"	27,7	1,09	31,9	1,26	420	6090	1680	24360	150	5,91	1331	0,89	IP+M01500-12	
H10112025*	25	- 16	1"	34,8	1,37	39,0	1,54	420	6090	1680	24360	210	8,27	1970	1,32	IP+M01500-16	

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