

# Waterjet Protection



UNIQUE PROTECTION EQUIPMENT





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### **Advanced protective equipment for waterjetting**

Ever since we developed our first collection of protective clothing for waterjetting in 1994, we have consulted end users across the world. Our aim is to offer a broad range of protective equipment with technically advanced features, high level of comfort and high quality. TST® was first with CE-marked products for waterjetting protection and it is a challenge to keep up with the technical development on pumps and accessories, and the demands from the users. To further improve our products, we use special fabrics containing the worlds strongest fiber – Dyneema® fiber. Being an official licensee of DSM Dyneema gives us, and you, a great advantage for the future!

WITH  
**Dyneema®**

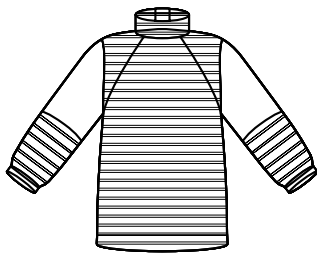
**High pressure on oil platforms  
or in the process industry – we  
have the protective products.**







# Read this!



## AREAS WITH PROTECTION

Striped fabric clearly identifies protected areas and the labels tell the level of protection. As waterjetting is very dangerous, it is essential that the operator knows where and what he is protected for.



**PROTECTION LEVEL 10/28**  
SINGLE 1000 bar/15000 psi  
ROTOR 2800 bar/40000 psi  
CE 89/686/EEC

**PROTECTION LEVEL 20/30**  
SINGLE 2000 bar/30000 psi  
ROTOR 3000 bar/43500 psi  
CE 89/686/EEC

## PROTECTION LEVEL – YELLOW AND ORANGE

Yellow label indicates protection for 1000 bar/15000 psi single jet and 2800 bar/40000 psi rotor jet – 10/28.

Orange label indicates protection for 2000 bar/30000 psi single jet and 3000 bar/43500 psi rotor jet – 20/30.

Single/Rotor*	Size	Art. No.	Model No.
10/28	S/M-2XL/3XL	5132047	5000
20/30	S/M-2XL/3XL	5132068	5000

\*Protection level – see test results on last page.

## CERTIFICATION

Pumps and accessories gets more and more effective. TST clothes and equipment are tested and certified in accordance with todays technical level and both for single and rotor jet.

## WATER PROOF

New outer material in a 2 layer laminate withstands water and dirt more effectively. This makes the operator dryer and lighter, and the clothing is easy to clean.

## VENTILATION

We have taken comfort to the next level introducing the option Ventilation in Trousers and Overall. This improves comfort when working in warm environments. Look for the Hot-to-Cool symbol.

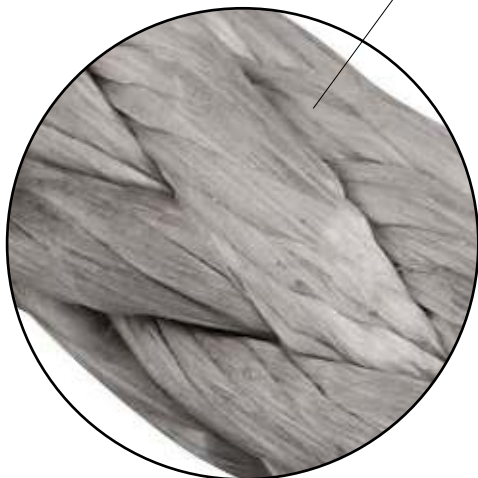




# The strongest fiber in the world!



## EVOLUTION



### STRONGER PROTECTION

Dyneema® is the world's strongest fiber (15 times stronger than steel on a weight for weight basis). This makes it possible to offer high levels of protection against waterjetting hazards even with lightweight fabric. Being much thinner and more flexible than traditional materials, such as leather, cotton and metals, products made with Dyneema® fiber will be very comfortable. Employees will appreciate this comfort, combined with higher protection, and consequently are more likely to wear them at all times.



Dyneema® is a registered trademark of Royal DSM N.V.

## Selected combinations with attractive pricing

1



### 1 SIGMA COMPLETE KIT

Offering very good protection. All you need to be protected and dry. Ventilation is an option. The Sigma Kit includes: Waistcoat and Overall with integrated Hand Protection.

**Size** S, M, L, XL, 2XL, 3XL.

**Art. No. Opt. Ventilation** 5198000 5040

Single/Rotor*	Size	Art. No.
10/28	S-3XL	51K20047
20/30	S-3XL	51K20068

\*Protection level – see test results on last page.

### 2 DELTA COMPLETE KIT

Offering very good protection and excellent comfort. Ventilation is an option. The Delta Kit includes: Waistcoat, Trousers and Hand Protections.

**Size** S/M, L/XL, 2XL/3XL.

**Art. No. Opt. Ventilation** 5198000 5030

Single/Rotor*	Size	Art. No.
10/28	S/M-2XL/3XL	51K10047
20/30	S/M-2XL/3XL	51K10068

\*Protection level – see test results on last page.

2



*Foot protection is not included in the kits. See page 7.*

### 3 GAMMA COMPLETE KIT

Provides comprehensive protection and high comfort. Ventilation is an option. The Gamma Kit includes: Trousers and Jacket with integrated Hand Protection.

**Size** S/M, L/XL, 2XL/3XL.

**Art. No. Opt. Ventilation** 5198000 5030

Single/Rotor*	Size	Art. No.
10/28	S/M-2XL/3XL	51K30047
20/30	S/M-2XL/3XL	51K30068

\*Protection level – see test results on last page.

3



## GAITERS

The Gaiters are to be worn outside of the user's regular protective boots. The entire area round the leg and the foot is protected. Three clips and velcro in the rear, and an easily adjustable strap under the sole, ensure that the Gaiters stay in place. Very comfortable and light to wear. Also available in a Flame Retardent AND High Visibility version, in protection level 20/30. Certified according to EN 20471:2013

Sold in pairs. Weight 1.0 kg/2.2 lbs.

**One size.**

**Art. No.** 5158068 5000

**Art. No. Flame Retardent & High Visibility** 5158068 5095

*Protection  
all around  
the leg !*



## BALACLAVA

The balaclava, which is made of neoprene, is designed to keep the body dry. The breast lap is made of Cordura fitted with adjustable straps to hold it in place. **The Balaclava offers no protection against waterjetting.** Can ideally be used together with the Overall.

**One size.**

**Art. No.** 5010000 5000



## BOOTS 3000

Boots 3000 withstands "everything" within waterjetting on account of its fixed aluminium gaiters. The gaiters are moulded and jointed, which gives both excellent comfort and mobility. Not suitable on uneven ground and is sensitive to small stones. (For that we recommend the Gaiters.) The Boots conform to the requirements set out in BGR 191 and EN 345-1 99A5 S5.

Weight 1.9 kg / 4.2 lbs. each (Boot 3000 size 9).

**Size** Eur 42-48 / US 9, 9.5, 10, 10.5, 11, 12, 13

**Art. No.** 5052080 5000

Pressure bar (psi)	Flow l/min (gpm)	Nozzle Size mm (in.)	Distance mm (in.)	Linear Speed m/s (in./sec)	Thrust N (lbs)
1700 (25000)	20.0 (5.3)	Single 1.0 (.039)	75 (3)	0.2 (7.9)	250 (56)
2500 (36000)	19.0 (5.0)	Monro Jet 0.8 (.031)	75 (3)	0.2 (7.9)	227 (51)
3000 (43500)	19.0 (5.0)	Rotary 3x0.5 (.020)	75 (3)	0.2 (7.9)	243 (55)
3000 (43500)	16.2 (4.3)	Single 0.8 (.031)	75 (3)	0.2 (7.9)	207 (47)

Tested and certified according to BGR 191



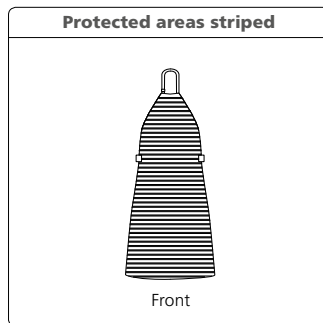


## APRON

The full area of the Apron has built-in protection. The position of the Apron can be changed through the adjustable shoulderband. The special construction of this band helps spreading the weight of the Apron which is an important comfort detail.

The Apron can be upfolded and fastened, for easier work in stairs and on ladders. Very easy to put on and off. Recommended for work on flat surfaces and is often used in combination with Hand Protections and Gaiters or Boots 3000. The Apron comes in one size. Weight 1,4 kg / 3.0 lbs. (Apron 20/30).

**One size.**



Single/Rotor*	Size	Art. No.	Model No.
10/28	One size	5123047	5000
20/30	One size	5123068	5000

\*Protection level – see test results on last page.

## HAND PROTECTIONS

The Hand Protection protects the hand and the forearm. The entire area round the arm is protected. Easy to put on and a thumb strap keeps it in place. A wide velcro makes it easy to adjust for different arms and clothing. Often used in combination with Waistcoat or Apron. (Hand Protection is integrated in the Overall and the Jacket.) Specific right and left hand designs. Weight 0.3 kg / 0.6 lbs. (Hand Protection 20/30).

**One size.**



Single/Rotor*	L/R	Art. No.	Model No.
10/28	Left	5100047	5001
10/28	Right	5100047	5002
20/30	Left	5100068	5001
20/30	Right	5100068	5002

\*Protection level – see test results on last page.



*Adjustable shoulderband – for perfect fit and weight distribution!*



*Foldable front which fastens with press studs. Makes it easier to work in stairs or on ladders!*





# Products for all environments

## WAISTCOAT WITH APRON

A thoughtful combination between Waistcoat and Apron giving superior freedom of movement and comfort, but still offering effective protection for the whole front of the body. The construction with a Waistcoat on top helps spreading the weight of the protective garment. The height of the Apron can be adjusted and the size of the Waistcoat can be adjusted with velcros – this means that it can be used by different operators or for different purposes. Hand Protections and Gaiters or Boots 3000 are suitable complements for extended protection.

Weight 3.3 kg / 7.3 lbs. (Waistcoat with Apron 20/30).

**One size.**



*Adjustable height of the Apron – safer, better comfort and can be used by different sized operators*



Single/Rotor*	Size	Art. No.	Model No.
10/28	One size	5123547	5000
20/30	One size	5123568	5000

\*Protection level – see test results on last page.



## JACKET WITH HAND PROTECTION

The Jacket provides effective full front protection as well as around the neck and shoulders. It also has integrated Hand Protection. Ideally combined with Trousers and Gaiters or Boots 3000 for maximum protection.

Also available in a Flame Retardant AND High Visibility version, in protection level 20/30. Certified according to EN 20471:2013 Weight 2.4 kg / 5.3 lbs. (Jacket 20/30 Model 5080, L/XL).

**Size** S/M, L/XL, 2XL/3XL.

Single/Rotor*	Size	Art. No.	Model No.
10/28	S/M-2XL/3XL	5122047	5080
20/30	S/M-2XL/3XL	5122068	5080

\*Protection level – see test results on last page.



### Protected areas striped



Front



Back

Single/Rotor*	Size	Art. No.	Model No.
20/30	S/M-2XL/3XL	5122068	5090

\*Protection level – see test results on last page.

Integrated  
Hand Protection

## WAISTCOAT

The Waistcoat offers effective protection and optimal comfort.

Various sizes possible by using the velcro fasteners at the waist and back. The Waistcoat is often used in combination with Hand Protection, Trousers, Overall and Gaiters or Boots 3000.

Weight 1.2 kg / 2.6 lbs. (Waistcoat 20/30 Model 5000, M/2XL).

**Size** M/2XL, 3XL.

### Protected areas striped



Front



Back

Single/Rotor*	Size	Art. No.	Model No.
10/28	M/2XL, 3XL	5120047	5000
20/30	M/2XL, 3XL	5120068	5000

\*Protection level – see test results on last page.

A higher cut in  
the front makes  
it easier to bend  
forwards







Elastic, soft and comfortable shoulder band.



**AVOID HEAT STRESS**  
Ventilation – an option for comfort in warm environments.

Belt that helps to distribute weight – for better fit and higher comfort!



Two flaps protect the zipper.



Very good durability with a coated Kevlar® band.



# Top comfort

## Optional Ventilation

## New details

### TROUSERS

The Trousers are fitted with full front protection up to the waist. The zips on the outside of the legs are protected by a sealing flap and a velcro flap. Wide, adjustable braces in stretch material. Elastic part in the rear waist and a belt which helps to distribute weight and improves the comfort.. Trousers are very popular among workers who move a lot, climb or crawl.

For work in warm environments Trousers can be ordered with ventilation, which distributes fresh air in the legs and up in the front. Needs hook up to a compressor. Trousers are preferably used in combination with Waistcoat or Jacket, Hand Protections, Gaiters or Boots 3000.

Also available in a Flame Retardent AND High Visibility version, in protection level 20/30. Certified according to EN 20471:2013 Weight 2.4 kg / 5.3 lbs. (Trousers 20/30, L/XL).

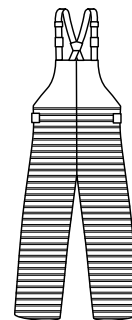
**Size** S/M, L/XL, 2XL/3XL.

**Art. No. Optional Ventilation** 5198000 5030

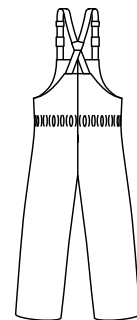
Single/Rotor*	Size	Art. No.	Model No.
10/28	S/M–2XL/3XL	5132047	5000
20/30	S/M–2XL/3XL	5132068	5000

\*Protection level – see test results on last page.

### Protected areas striped



Front



Back

Single/Rotor*	Size	Art. No.	Model No.
20/30	S/M–2XL/3XL	5132068	5095

\*Protection level – see test results on last page.

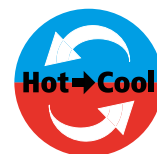
## OVERALL WITH HAND PROTECTION

Protection against water jets on the whole front of the legs up to the waist, on the forearms and on the integrated Hand Protections. The neoprene collar seals well round the neck while maintaining freedom of movement. An Overall is always in place, no matter if the operator is climbing on ladders or working in narrow spaces. For work in warm environments Overall can be ordered with ventilation, which distributes fresh air in the legs and up in the back. Needs hook up to a compressor. Ideally combined with Waistcoat for upper body protection, Gaiters or Boots 3000 for foot protection and Balaclava for better comfort.

Weight 3.3 kg / 7.3 lbs. (Overall 20/30 Model 5080, XL).

**Art. No. Optional Ventilation** 5198000 5040

**Size** S, M, L, XL, 2XL, 3XL



*Neoprene collar seals round the neck.*

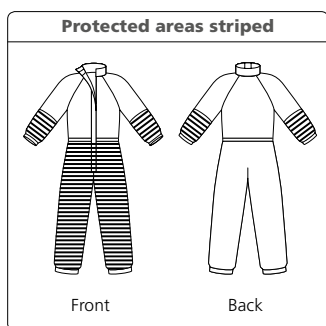
### AVOID HEAT STRESS

*Ventilation – an option for comfort in warm environments.*



*Belt that helps to distribute weight – for better fit and higher comfort!*

*Integrated Hand Protection*



Single/Rotor*	Size	Art. No.	Model No.
10/28	S-3XL	5144047	5080
20/30	S-3XL	5144068	5080

\*Protection level – see test results on last page.





# The ideal complement for good protection



## HOSE PROTECTION/SHROUD

Hoses break and couplings break, often very close to the operator and at sensitive areas of the body, such as the abdomen, the arm pit or the neck. These areas are difficult to protect properly. To further improve the safety of the operator, it is recommended to use a Hose Protection/Shroud. The Hose Protection is placed on the hose at the connection to the pistol. Closest to the pistol, where the hose is most likely to break, there is a 250 mm / 9.8 in. solid steel collar. This provides effective protection for the operator as it has been tested for 3000 bar / 43500 psi. An adjustable strap holds the Hose Protection/Shroud to the pistol. The Hose Protection/Shroud is smooth and flexible.

Available in 3 lengths: 750, 1400, 1800 mm / 2.5, 4.6, 5.9 ft.,

and 3 diameters: 36, 47 (swivel) and 59 mm / 1.42, 1.85 (swivel) and 2.32 in.

Weight 2.3 kg / 5.1 lbs. (Hose Protection diameter 59 mm, length 1400 mm / 2.32 in., length 4.6 ft.).



Hose Protection diameter 47mm / 1.85 in. (swivel)

Hose Protection	Length	Art. No.	Mod. No.
Ø 36 mm / 1.42 in.	750 mm/2.5 ft.	5060040	5920
Ø 36 mm / 1.42 in.	1400 mm/4.6 ft.	5060040	5940
Ø 36 mm / 1.42 in.	1800 mm/5.9 ft.	5060040	5960
Ø 47 mm/1.85 in. sw	1400 mm/4.6 ft.	5060050	5942
Ø 59 mm / 2.32 in.	750 mm/2.5 ft.	5060060	5920
Ø 59 mm / 2.32 in.	1400 mm/4.6 ft.	5060060	5940
Ø 59 mm / 2.32 in.	1800 mm/5.9 ft.	5060060	5960

## PROTECTIVE CURTAIN 3000 BAR

When you need to protect sensitive equipment, machinery or people from water, waterjetting, gravel spray and ricochets! Practical curtains which can be put together to form a protective wall of desired length. It withstands up to 3000 bar/43500 psi at 250 mm/10 in. distance. Each section is 154x250 cm/60x98 in. and when put together they build 134 cm/53 in. each. On top there are 5 straps for easy mounting and in the bottom there are holes for further securing. The sections are easily connected through 6 smart, strong and easily handled locks. Available as standard in red with warning sign in English.

Optionally available in white, black, yellow, light grey, dark grey, blue and green. Also available with your own branding and warning sign in another language. Each option requires minimum order 10 pcs. Contact TST for further specifications.

Weight 7.5 kg/16.5 lbs.

**Size** 154x250 cm / 60x98 in.

**Art. No.** 5910030 5000

*Easily handled  
locks connects  
multiple curtains  
– build the wall  
you need!.*



## WHIP STOP

An excellent way to secure hose ends at foot pedals, pumps or connections. Properly mounted, it will catch a broken hose and prevent it from whipping. The whip stop is mounted by slipping it over the hose ends, stretching it and finally tightening the ends and secure with the rubber lock rings.

Tensile strength 1800 kg / 4000 lbs.

Length approx. 75 cm / 2,5 ft.

Minimum order 100 pcs.

**Art. No.** 5072000 5000







## HOSE CONNECTION COVER

The Hose Connection Cover is a safety device made to be put where hoses have couplings and connections, for example at foot pedals and pumps. An adjustable strap holds the Connection Cover securely in place. In the other end, there are loops for further fastening or assembling several Covers. It is not tested for "pin hole leaks", but for hose burst at 3000 bar / 43500 psi.

**It is NOT intended for use on any hand held equipment.**

Lengths 400 mm / 1 ft 4 in. or 5 m / 16 ft 5 in.

Inner diameter 61 mm / 2.4 in.

Weight 400 mm – 0.4 kg / 0.9 lbs., 5 m – 3.8 kg / 8.4 lbs.

Hose Connection Cover	Length	Art. No.	Mod. No.
Ø 61 mm / 2.4 in.	400 mm / 1 ft 4 in.	5071000	5910
Ø 61 mm / 2.4 in.	5 m / 16 ft 5 in.	5071000	5978

## TST SPECIAL GREASE REMOVER

Mix the TST Grease Remover 1:10 with warm water 40°C/105°F. Apply to the dirty garment surfaces with a brush. Leave for about 20 minutes. If the garments are extremely dirty, use the brush together with lukewarm water on the dirty areas. Rinse with lukewarm water. Let the garment dry in a drying room and reach a temperature of max 60°C/140°F (to reactivate the water and grease protection).

DO NOT TUMBLE DRY.

- Nonionic surfactants >30%
- Solubilising agents (alkane diol)
- Greying inhibitors <5%
- PH 7.3
- Avoid contact with skin and eyes
- Product temperature of less than 15°C/60°F may impair proper function
- Do not store below 15°C/60°F

**Size** 0.5 litre.

**Art. No.** 5092000 5010



# Protection up to 3000 bar/43500 psi

## TECHNICAL DESCRIPTION

Outer material: Laminated Polyamide. Inner material: Polyester mesh. Protective material: Special fabric containing Dyneema® fiber. Seams: Taped. Washing instructions: TST Special Grease Remover.

CE-marking: Approved according to the directive 89/686/EEC and BGR 191.



Dyneema® is a registered trademark of Royal DSM N.V.

## TEST RESULTS FOR CLOTHING

The different levels of protection have been determined by testing according to the table below.

Note! Different values (pressure, water flow, nozzle, distance, speed) can give significantly different results!

Protection level	Pressure bar (psi)	Flow l/min (gpm)	Nozzles		RPM	Distance mm (in.)	Linear Speed m/s (in./sec)	Result
			n	Dia. mm (in.)				
10/28	1000 (15000)	19.8 (5.2)	1	1.0 (.039)	–	75 (3)	0.5 (20)	No penetration
10/28	2800 (40000)	18.8 (5.0)	2	0.6 (.024)	3000	75 (3)	0.5 (20)	No penetration
20/30	2000 (30000)	17.9 (4.7)	1	0.8 (.031)	–	75 (3)	0.5 (20)	No penetration
20/30	3000 (43500)	19.5 (5.2)	2	0.6 (.024)	3000	75 (3)	0.5 (20)	No penetration

Sizes (men's)		
Trousers and Jacket	Height cm (ft. in.)	Chest cm (in.)
S/M	<186 (<6'1")	85-100 (33"-39")
L/XL	187-192 (6'2"-6'4")	108-116 (43"-46")
2XL/3XL	193-206 (6'4"-6'9")	124-132 (49"-52")
Waistcoat		
M-2XL	176-196 (5'10"-6'5")	85-124 (33"-49")
3XL	196-206 (6'5"-6'9")	124-132 (49"-52")
Overall		
S	<175 (<5'9")	92 (36")
M	176-180 (5'9"-5'11")	100 (39")
L	181-186 (5'11"-6'1")	108 (43")
XL	187-192 (6'2"-6'4")	116 (46")
2XL	193-200 (6'4"-6'7")	124 (49")
3XL	201-206 (6'7"-6'9")	132 (52")

Conversion table for shoe sizes		
EUR	US	UK
42	9	9
43	9 1/2	9 1/2
44	10	10
45	10 1/2	10 1/2
46	11	11
47	12	12
48	13	13

Certified according to ISO 9001:2008 and ISO 14001:2004



UNIQUE PROTECTION EQUIPMENT