

# 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.**







TST

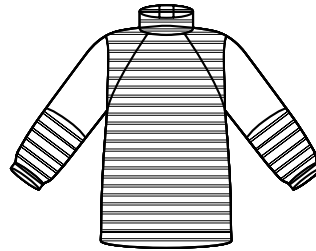
PROTECTION LEVEL 2000  
EN 1073-2:2000 (EN 1073-2:2000)  
ROTOR 2000 (EN 1073-2:2000)  
CE 06/08/04/05/06

PROTECTION LEVEL 2000  
EN 1073-2:2000 (EN 1073-2:2000)  
ROTOR 2000 (EN 1073-2:2000)  
CE 06/08/04/05/06

PROTECTION LEVEL 2000  
EN 1073-2:2000 (EN 1073-2:2000)  
ROTOR 2000 (EN 1073-2:2000)  
CE 06/08/04/05/06



# Important!



## 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.

## NEW CERTIFICATION

Pumps and accessories gets more and more effective. Our new clothing is tested and certified in accordance with today's technical level and both for single and rotor jet.

## WATER PROOF

New outer material in a 3 layer laminate withstands water and dirt more effectively. This makes the operator dryer and lighter, and the clothing is easy to clean.

## EASY TO CHOOSE

The new collection is selected with experience from 16 years of service and continuous contact with the users.

**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



2



3



## 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.

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. The Delta Kit includes: Waistcoat, Trousers and Hand Protection.

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

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.

*Foot protection is not included in the kits. See page 13.*

## 3 GAMMA COMPLETE KIT

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

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

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.





Comfort details in the back.



# Top comfort

# High flexibility

# New certification

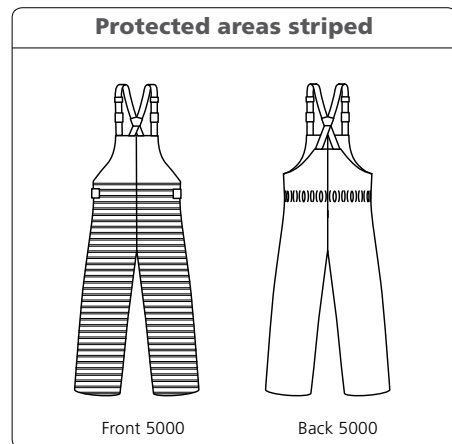
## TROUSERS

The Trousers are fitted with front protection up to the waist. The zips on the outside of the legs are protected by a sealing velcro flap. Wide, adjustable braces with stretch in the back. Elastic part in the rear waist and adjustable band in the sides for maximum comfort and perfect fit. Trousers are very popular among workers who move a lot, climb or crawl. Preferably used in combination with Waistcoat or Jacket, Hand Protections, Gaiters or Boots 3000. Weight 2.4 kg / 5.3 lbs. (Trousers 20/30, L/XL).

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



Waist adjustment for perfect fit.



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.



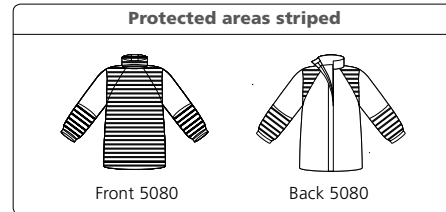
*Integrated Hand Protection*

## 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.

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.



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

## 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.



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.



## OVERALL WITH HAND PROTECTION

Protection against water jets on the front of the legs, the forearms and on the integrated Hand Protection. The neoprene collar seals well against 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. Ideally combined with Waistcoat for upper body protection, Gaiters or Boots 3000 for foot protection and Balacava for better comfort. The overall can also be suited with Ventilation. Weight 3.3 kg / 7.3 lbs. (Overall 20/30 Model 5080, XL).

**Art. No. Optional Ventilation** 5198000

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

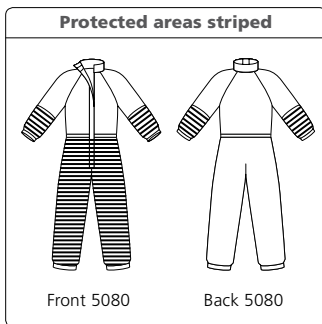
*Neopren collar seals round the neck.*



*Ventilation – comfort option for warm environments.*



*Connection with flow regulator.  
6 bar / 87 psi  
up to 120 l/min / 32 gpm*



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.



*Integrated Hand Protection*

# Products for all environments

## WAISTCOAT WITH APRON

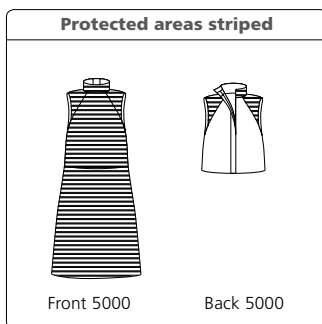
A thoughtful combination between Waistcoat and Apron giving superior freedom of movement and comfort, but still offering effective protection for the whole front of the body. The construction with a Waistcoat on top helps spreading the weight of the protective garment. The height of the Apron can be 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.





## APRON

The full area of the Apron has built-in protection. The position of the Apron can be changed through the adjustable neck-band. There is also an adjustable band in the waist, which is an important comfort detail as it takes weight off the neck. Very simple to put on and take 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 1,5 kg / 3.3 lbs. (Apron 20/30).

**One size.**

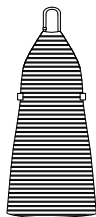
*Adjustable neck-band – optimal placing and comfort!*



*Adjustable waist-band – perfect fit and weight distribution!*



Protected areas striped



Front 5000

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.



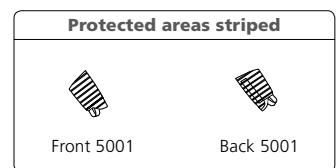


## HAND PROTECTION

The Hand Protection protects the hand and the forearm. The entire area is protected. Easy to put on and a thumb strap keeps it in place. 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.



## 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. 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 8.5, 9, 10, 11, 12, 13.5

Level*	Size	Art. No.	Model No.
30/30	8.5-13.5	5052080	5000

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



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

## 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



## GAITERS

The Gaiters are intended to be worn outside of the user's regular protective boots. Three clips and velcro in the rear, and an adjustable strap under the sole, ensure that the Gaiters stay in place. The entire area is protected. Very comfortable and light to wear. Sold in pairs. Weight 1.0 kg / 2.2 lbs. (Gaiters 20/30).

**One size.**

Single/Rotor*	Size	Art. No.	Model No.
10/28	One size	5158047	5000
20/30	One size	5158068	5000

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



# The ideal complement for good protection



## HOSE PROTECTION

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.

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 to the pistol. The Hose Protection 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 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





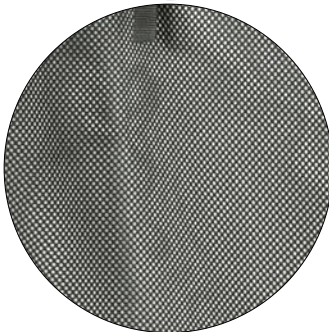
*Adjustable neck-band – optimal placing and comfort!*



*Waist adjustment for perfect fit.*



*Comfort details in the back.*



*Mesh inner lining – comfortable for the operator and excellent drying.*



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



*Ventilation – comfort option for warm environments.*



*Connection and flow regulator*

## COMFORT IS IMPORTANT

Our aim is to always be able to offer products that provide effective protection while maintaining a high level of comfort. Ventilation in overalls is one example of how comfort can be improved. Design is another important aspect.

Our large range of products gives the user the chance to choose the ideal model appropriate for the work in question.

Two different levels of protection also give the possibility to find an optimal solution.

## 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.



## 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		
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")	85 (33")
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
36	4 1/2	4
37	5	4 1/2
38	6	5 1/2
39	6 1/2	6
40	7 1/2	6 1/2
41	8	7 1/2
42	9	8
43	9 1/2	9
44	10 1/2	10
45	11 1/2	11
46	12	11 1/2
47	13	12 1/2
48	13 1/2	13 1/2

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



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