

Damp spraying/Fire protection

Highly effective thermal barrier and sound insulation



Damp spraying/Fire protection

- ▶ The damp spraying principle
- ▶ Spray heads and pipes (terminators)
- ▶ Pumps and wall scrubbers
- ▶ Spray heads with inline nozzle



The damp spraying principle

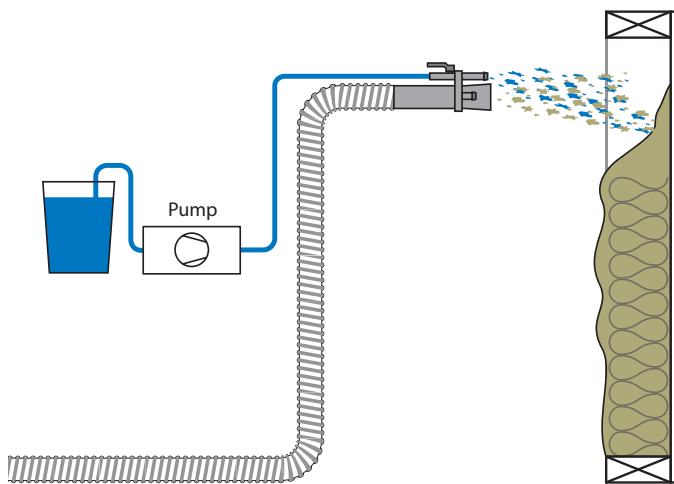
Method and application

In the damp spraying process, the loose insulation or fibre material is applied to walls and ceilings or boilers, pipes and fittings by means of special spraying systems moistened with water. The moisture dissolves the binders in the fibres and the insulation material becomes adhesive. Sprayed on smoothly and evenly open, the fibres form a permanent bond with the surface and create a highly efficient thermal barrier as well as effective sound and corrosion protection.

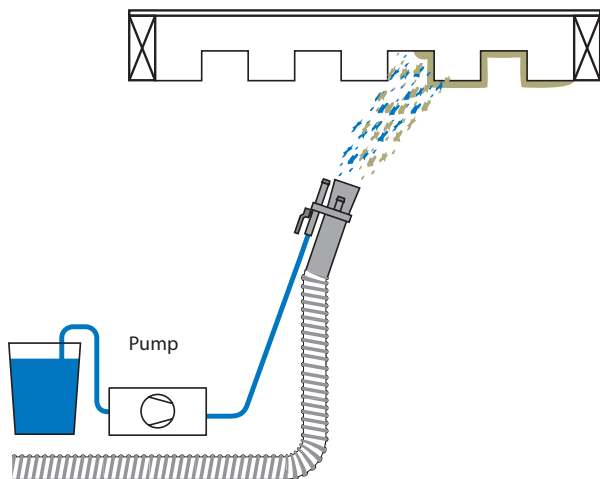
Optionally, an adhesive can be added to the water, which increases the bonding effect. In preventive fire protection, cement or gypsum is used as a binder, for example, and adhesive base coats are sometimes applied before the fire protection plaster.

In addition to the classic application for thermal or sound insulation, the process is also used in the film industry, e.g. for the realistic implementation of the illusion of ice and snow - one of the most demanding jobs in the field of special effects, for which specially suitable materials, equipment and working techniques are required.

Damp spraying/CSO



Fire protection



Application: Technical insulation



Application: Acoustic insulation



Application: Fire protection plaster



Application: Special effect with cellulose snow (Reference: Snow Business GmbH)

Damp spraying

In damp spraying, the insulation material is moistened with water after it exits the hose. Spray heads and pipes (terminators) with one or more spray nozzles are used for this purpose. The insulating material jet is optimally bundled, evenly moistened and openly applied to walls and ceilings up to the desired layer thickness.

If an adhesive is added to the water, the binding effect is increased so that thicker layers can be applied without any problems. This also makes upside-down application of the insulation material more convenient and easier.

Procedure damp spraying

A: Machine setting (ex. EM365):

- ① Air output (1 blower, 20-50%)
- ② Material dosage (slider 15-30%, M=6...10)
- ③ Pressure (15...30bar)
- ④ Pump
- ⑤ **Valve position, liquid quantity**

Moisture addition exemplary

Example:

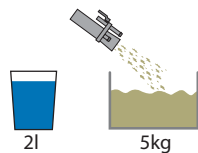
f: moisture content (%)

m_L : mass of liquid (kg)

m_{DS} : mass of insulating material (kg)

$$m_L = 2 \text{ kg}$$

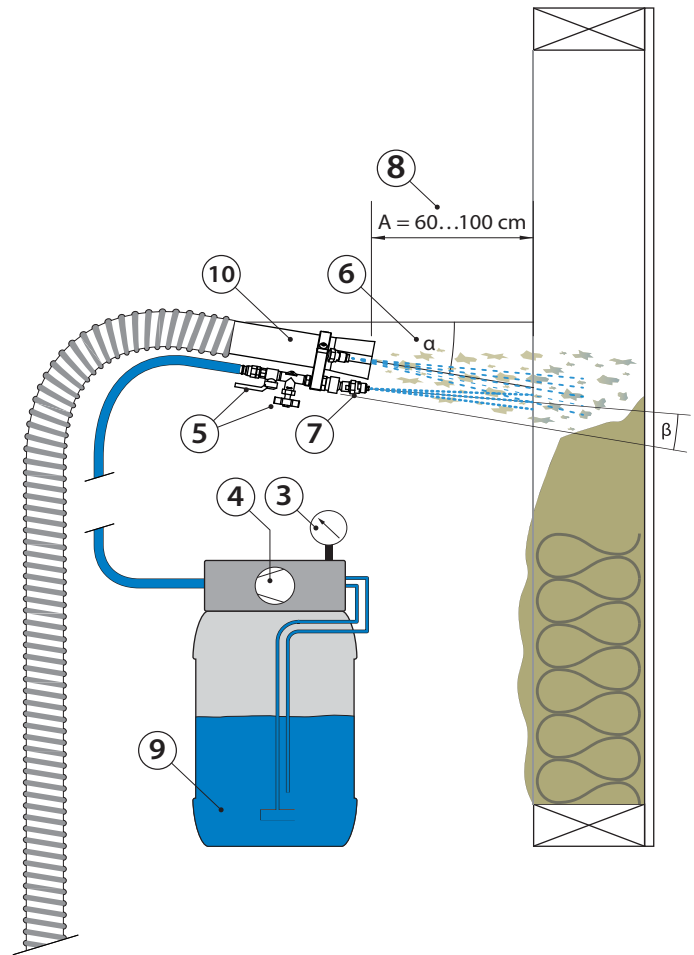
$$m_{DS} = 5 \text{ kg}$$



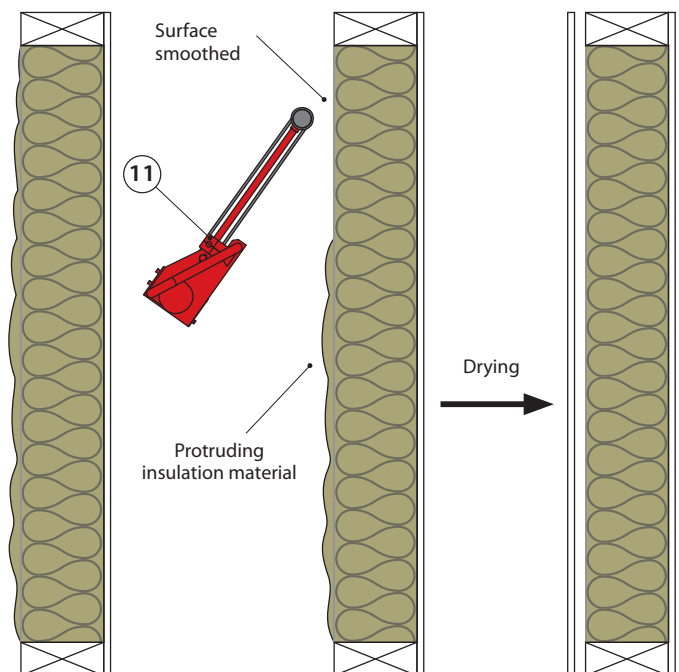
$$f = \frac{m_L}{m_L + m_{DS}} = \frac{2}{5 + 2} = 29\%$$

Recommended: 22%...40%

- ⑥ Spray head inclination angle α
 - ⑦ Nozzle inclination angle β
 - ⑧ Distance to wall A
 - ⑨ Liquid with adhesive additive if necessary
 - ⑩ Spray head guidance: slow horizontal movement building up from bottom to top
- B:** After completion of the insulation work, mill off the protruding insulation material with a flat brush (to smooth the surface).
- ⑪ Wall scrubber
- Allow the insulation material to dry out completely and, if necessary, seal the surface after drying



A: Example of machine setting for damp spraying



B: Smooth surface and seal after drying if necessary

X-Floc Spray heads and pipes

Application examples

Cellulose insulation sprayed with water:

- ▶ Ceiling insulation applied openly
- ▶ Dome insulation sprayed on
- ▶ Insulation of interior walls and installation levels
- ▶ Acoustic coating of surfaces with adhesive
- ▶ Interior insulation of solid masonry with adhesive

Glass and rock wool blown open

- ▶ Surface consolidation with water glass
- ▶ Continuous consolidation with water glass

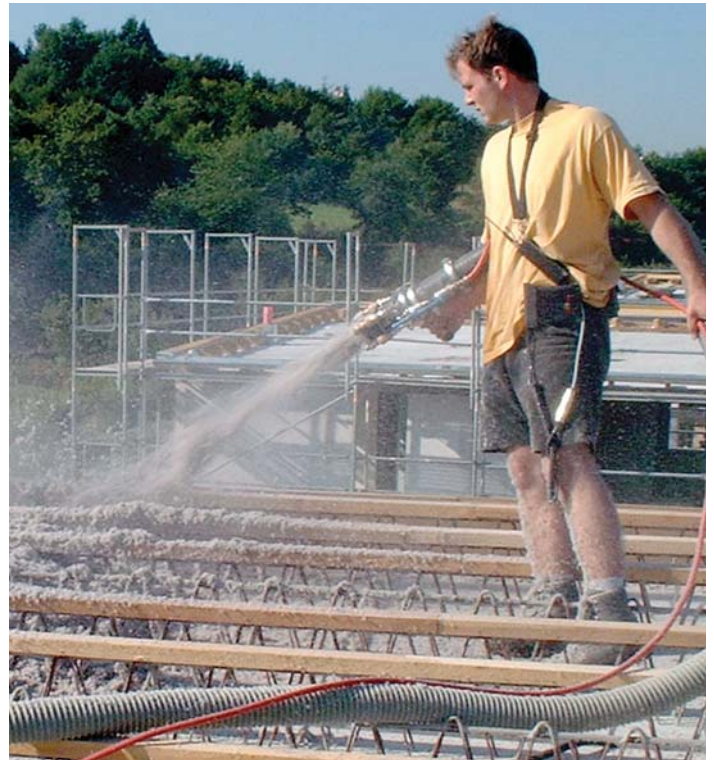
Rock wool with added adhesive

- ▶ Fire protection coating sprayed with water

Wood insulation materials

- ▶ Coatings with adhesive additive

When coating walls and ceilings, the smaller spray heads tend to be used; when moistening insulation layers, the Terminator spray heads with four nozzles are used.



Spray heads and spray pipes in comparison

X-Floc blow-in machines are suitable for almost all insulation materials and blow-in methods. In addition to the right machine, you can also choose the spray heads or spray pipes best suited to your needs for damp spraying. Contact us - we will be happy to advise you!

Series	Sprühköpfe					
Type	NW63 compressed air	NW50 Inline Type II	NW50 Inline (stainless steel)	NW50 Inline (plastic)	NW50 Inline Type III	NW63 Inline Type III
Art.no.	3196	4781	3535	5099	10714	7841
Spray nozzles	6 nozzles drilled	6 nozzles drilled	1 nozzle screwed	1 nozzle integrated	1 nozzle integrated	1 nozzle integrated
Pressure range	< 6bar	< 16bar	< 10bar	< 10bar	< 10bar	< 10bar
Water volume	< 10l/min	< 8l/min	< 1,6l/min	< 3l/min	< 3l/min	< 3l/min
Setting	2 adjustment valves	1 shut-off valve	Shut-off valve and needle valve	Shut-off valve	Shut-off valve	Shut-off valve
Application areas (exemplary)						
Mineral fibre spray insulation	●	●	○	○	○	○
Ceiling coating	○	○	●	●	●	●
Wall coating	○	○	●	●	●	●
Acoustic coating	○	○	●	●	●	●
Fire protection	○	○	○	●	●	●
Open/attic blowing	○	○	○	●	●	●
Weight	1,22kg	0,68kg	1,42kg	0,235kg	0,235kg	0,235kg
Total length	300mm	230mm	300mm	130mm	210mm	210mm
Material	Aluminium/plastic	Aluminium	Stainless steel	Plastic	Aluminium	Aluminium
Exchangeable nozzles	○	○	on request	○	○	○

● suitable/yes | ○ unsuitable/no/no details | All values are approximate.

Spray heads

In the damp spraying process, fibre insulation materials are applied with the addition of water and, if necessary, adhesive for thermal insulation, soundproofing and fire protection, etc.

- ▶ Smaller spray heads with up to two spray nozzles are particularly suitable for wall and ceiling coatings.
- ▶ Spray heads with three or more nozzles can also be used for wall coating. In practice, however, these nozzles are mainly used for open/attic blowing.

Spray pipes (terminators)

Spray pipes or terminators with four spray nozzles are mostly used for open application of insulation layers with dust binding and consolidation of the insulation material as well as for spraying insulation layers with finer nozzle sets.

- ▶ Even from a few metres away, the spray pipes offer a high degree of accuracy when applying the insulation material.
- ▶ Terminator 4-jet spray heads are equipped with a handle and a ball swivel joint, making them very comfortable to handle.



Sprühköpfe			Sprührohre		
NW75 Inline Type III	NW50 with 2 spray nozzles	NW63 with 3 spray nozzles	NW63 with 4 to 8 spray nozzles	NW63 with 4 spray nozzles	NW75 with 4 spray nozzles
7842	1983	3169	5824	1494	1720
1 nozzle integrated	2 nozzles changeable	3 nozzles changeable with ball joint	6 nozzles screwed (optional 4-8 nozzles)	4 nozzles changeable with ball joint	4 nozzles changeable with ball-and-socket joint
< 10bar	< 50bar	< 50bar	< 10bar	< 50bar	< 50bar
< 3l/min	< 1,25l/min	< 1,9l/min	< 10l/min	< 2,5l/min	< 2,5l/min
Shut-off valve	Shut-off valve and needle valve for fine adjustment	Shut-off valve and needle valve for fine adjustment	Shut-off valve and needle valve for fine adjustment	Shut-off valve and needle valve for fine adjustment	Shut-off valve and needle valve for fine adjustment
○	○	○	○	○	○
●	●	●	●	○	○
●	●	●	●	●	○
●	○	○	○	○	○
●	○	○	○	●	●
0,235kg	0,96kg	1,22kg	0,98kg	1,2kg	1,5kg
210mm	250mm	260mm	180mm	750mm	400mm
Aluminium	Aluminium	Aluminium	Aluminium	Plastic/Aluminium	Plastic/Aluminium
○	Many sizes available	Many sizes available	On request	Many sizes available	Many sizes available

X-Floc Pumps and wall scrubbers

Pumps

For damp spraying, pure water or a water-adhesive mixture is added to the fibre insulation material. Depending on the application, the liquid is pumped with the help of piston or diaphragm pumps. Piston pumps work with higher pressure (P) than diaphragm pumps. With both pumps, the working pressure can be precisely adjusted by means of an adjusting wheel and pressure gauge.

Piston pump

The **piston pump** is usually used for pumping pure water. This pump is connected directly to the water pipe via a hose. This eliminates the need to set up and refill a water tank. However, if necessary, it is possible to supply this pump from a slightly higher water tank. The water cannot be sucked in, but must reach the pump with some pressure.

Scope of delivery Piston high-pressure pump, portable:

- ▶ Pump, AC motor 230V/1,5kW incl. adjustment wheel
- ▶ Pressure gauge
- ▶ Pressure-side hose set with spray gun and lance
- ▶ Pump screwed onto carrying handle

Diaphragm pump

With the **diaphragm pump**, water can be sucked out of a water tank. This can be used to process pure water as well as a low-viscosity water-glyce mixture. It is important to note that the adhesive should be compatible with the rubber membrane and that the pump should be rinsed with sufficient clear water after use. If necessary, the diaphragm can be replaced; replacement diaphragms are available

Scope of delivery Diaphragm high-pressure pump, portable:

- ▶ Pump, AC motor 230V/0,75kW or 2,2kW incl. adjustment wheel
- ▶ Pressure gauge
- ▶ Pressure-side hose set with spray gun and lance
- ▶ Pump screwed to base plate



Ordering information

Pump type	Pressure p max.	Flow rate max.	Art.no.
Piston	80bar	9,4l/min	1577
Diaphragm	20bar	20l/min	206
	30bar	33 l/min	10840

Accessories	Length	Art.no.
High-pressure hose (use max. 2 high-pressure hoses)	15m	715
	30m	5054
	50m	5055



Piston high-pressure pump



Diaphragm high-pressure pump

Wall scrubbers

Wall scrubbers are used to remove protruding insulation material and to smooth the surface. This is done quickly and easily with the powerful, lightweight brushes from X-Floc. The abrasion takes place by means of a supergrip profile. All rollers are covered with 4.5 mm thick soft PVC friction coating, which may be easily replaced by the customer if it is worn out due to intensive use of the wall scrubber.

Wall scrubber M05

The **M05 wall scrubber** with 4m cable is driven by a 220VAC 100 Watt carbon brush motor by means of a V-belt. The wall scrubber M05 model with cable connection is available in brush widths of 690mm and 1000mm, optionally the shorter roller can be widened to 990mm with an extension set.

Technical data at a glance:

- ▶ Brush width W= 690 mm (1000mm)
- ▶ Total depth D= 610 mm
- ▶ Brush weight: approx. 7,5 kg (approx. 8,3kg)
- ▶ Drive: 220 VAC 100 Watt carbon brush motor
- ▶ Belt: Standard V-belt RL1202 with protective cover for belt pulley

Battery wall scrubber

The ultra light **battery wall scrubber** is perfect for working in hard-to-reach places, overhead or in similarly uncomfortable postures. Uninterrupted work is possible thanks to the battery-powered angle drill, which can run continuously thanks to the interchangeable battery and quick charger supplied.

Technical data at a glance:

- ▶ Aluminium tube frame W= 490mm, D= 750mm
- ▶ Main roller L= 400mm, push-on roller L= 310mm
- ▶ Brush weight: approx. 3,5kg
- ▶ Drive: Angle drill (incl. 2 pcs. battery 2,6Ah)
- ▶ Running time with full battery approx. 36-40 min. depending on load, duration for quick charge 30 min.
- ▶ Lever linkage for speed adjustment / on / off



Ordering information

Description	Roller width	Drive	Art.no.
Wall scrubber M05 with 4m cable	approx. 690mm	220V	2364
	approx. 1000mm	220V	4246
Roller extension kit for art.no. 2364	+150mm on both sides (up to approx. 990mm)		2438
Battery wall scrubber incl. roller extension kit	approx. 400mm	12V	3803
	approx. 710mm		



Wall scrubber M05



Battery wall scrubber

Inline humidification

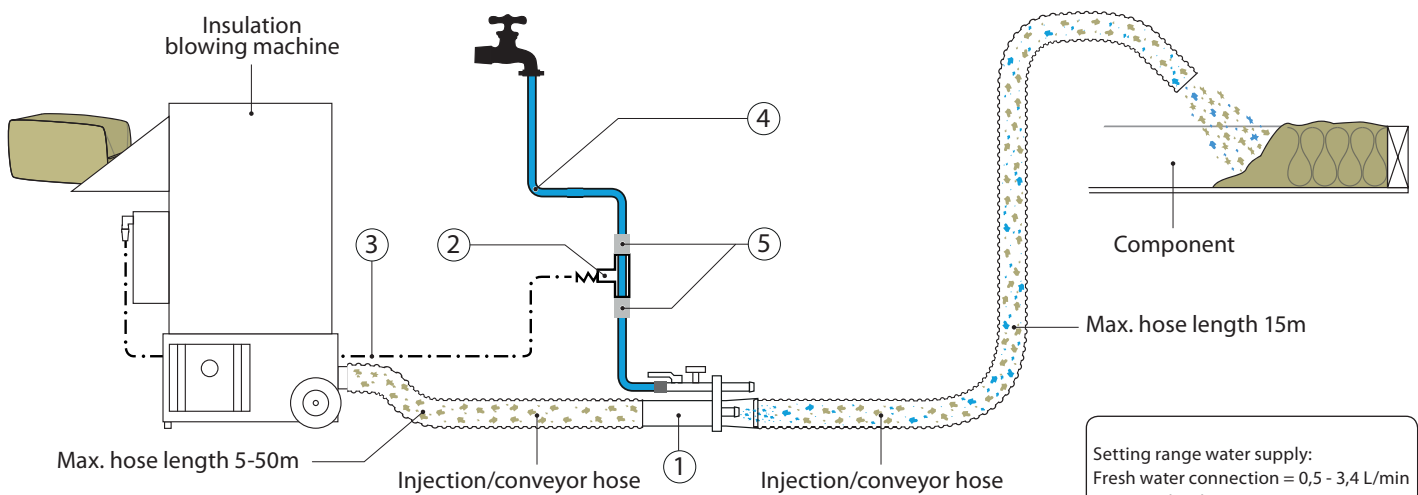
Effective dust reduction

Especially when loose insulation materials, such as cellulose or wood fibre, are blown open, dust formation cannot be avoided. With the help of an inline humidifier, this dust development can be significantly reduced.

An inline humidifier is a hose connector with an internal spray nozzle that is activated by a solenoid valve when the material feed is switched on. Water is now added and this creates a liquid mist that binds the fine particles contained in the material flow so that less dust is created when the material exits.



Inline humidification with fresh water connection



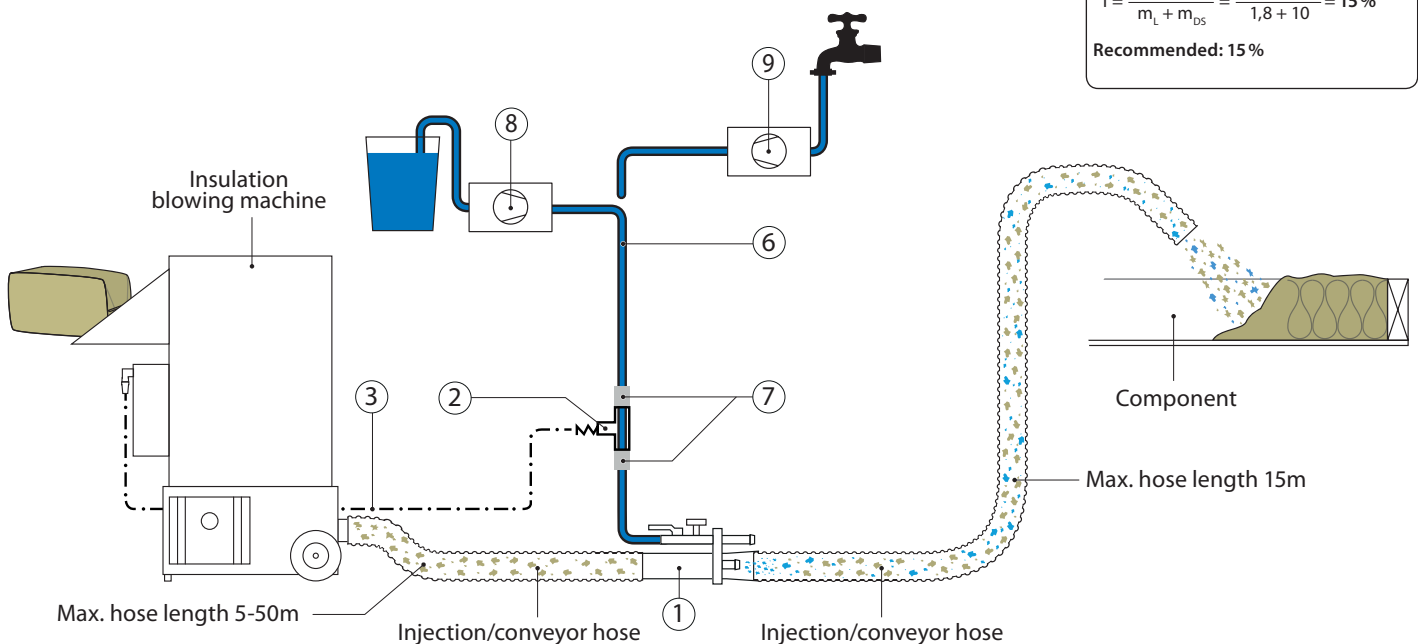
Setting range water supply:
 Fresh water connection = 0,5 - 3,4 L/min
 Pump technology = 0,5 L/min - 8 L/min

Example:
 f: Moisture content [%]
 m_L : Mass of liquid [kg] = 1,8 kg
 m_{DS} : Mass of insulation material [kg] = 10 kg

$$f = \frac{m_L}{m_L + m_{DS}} = \frac{1,8}{1,8 + 10} = 15\%$$

Recommended: 15%

Inline humidification with pump technology

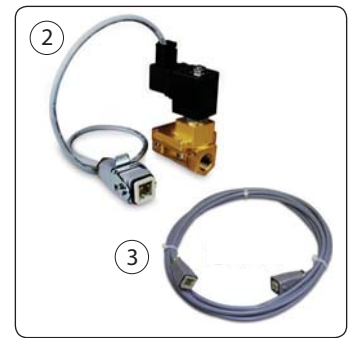


Ordering information

	Description	Art.no.
①	Inline humidifier NW50 (Art.no. 5099 (Plastic)) Inline humidifier NW63 Inline humidifier NW75	10714 7841 7842
②	2/2-way solenoid valve with control cable connection for switching the liquid supply on/off	8334
③	Connection control cable for control via EMB L=5 m L=2,5m L=25m L=50m	1856 1351 1192 1193
④	Fresh water hose \varnothing 15/9mm, L=25m	6540
⑤	Threaded nozzle 9mm (1/4"), 16bar for fresh water PVC fabric hose	6261
⑥	High pressure hose \varnothing 13,5/9mm, max. 180bar L=15m L=30m L=50m	715 5054 5055
⑦	Closing sleeve, shut-off on both sides 9mm (1/4"), nominal pressure min. 100bar for high pressure hose/HD pump connections	576
⑧	Piston pump	1577
⑨	Diaphragm pump 0,75kW, p=20bar Diaphragm pump 2,2kW, p=30bar	206 10840



Inline humidifier



Solenoid valve and connection control cable for EMB



Fresh water hose



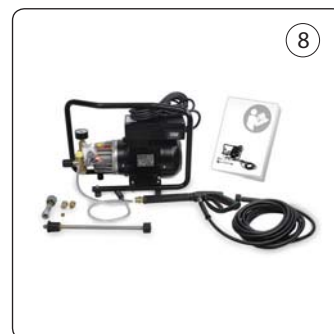
Threaded nozzle for fresh water hose



High pressure hose with coupling and plug



Closure sleeve for high pressure hose



Piston pump



Diaphragm pump



Adhesive technology

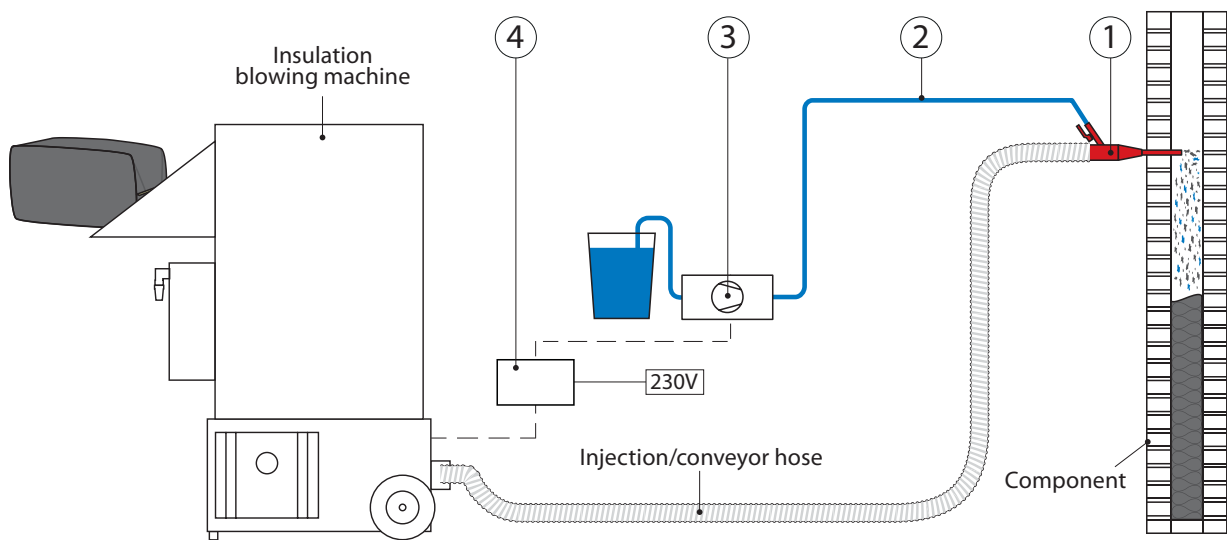
Spray head Inline/Adhesive NW50>24

The **Spray head Inline/Adhesive NW50 (2")** is used for injecting and bonding of EPS granulate. Due to the complete wetting of the granulate beads, the cavity layer insulation solidifies permanently after the adhesive has set. The nozzle tube with specially shaped outlet allows a high processing speed despite the relatively small bore diameter. The nozzle tube insert is easy to replace.



Technical data at a glance:

- ▶ Nozzle tube $\varnothing D=24\text{mm}$, insertion depth approx. 260 mm
- ▶ One-hand shut-off coupling $\frac{1}{4}"$ with shut-off valve (P max. 20bar)
- ▶ Flow rate: approx. 0,25l/min at 10bar
- ▶ Weight: approx. 0,95 kg



Ordering information

	Description	Art.no.
①	Spray head, inline / adhesive NW50>24 Spray head, inline / adhesive NW50>21	7881 8120
②	High pressure hose 9mm/1/4", max. 180bar L=15m L=30m L=50m	715 5054 5055
③	Diaphragm pump 0,75kW, p=20bar Diaphragm pump 2,2kW, p=30bar	206 10840
④	Master-slave control 24V= / 230V~	1057
⑤	Adhesive XF10 for bonding EPS granulate	7976



Inline humidifier / adhesive



High pressure hose



Diaphragm pump



Master-slave control and adhesive XF10

Damp spraying equipment and usage



The high-performance blow-in machine X-Floc Turboblast EM500...



...in use for power damp spraying



Sustainable noise protection with acoustic insulation



Frequently used for damp spraying: the mobile all-rounder X-Floc Minifant M99



Surface smoothing with the wall scrubber M05



Fire protection in turbine construction at Warsaw University of Technology



Snow Business GmbH provides cellulose snow rain on the set



Special effects by Pyrofolie's, Paris: „Snow“ in Marraksch

Equipment and accessories

Machine accessories

X-Floc blow-in machines, amplifier/vacuum stations and other products can be operated and combined in a variety of ways. Detailed information on radio remote controls, cable control, power generators as well as bag supports, suction drums and other machine accessories can be found in the

▶ Product brochure **Machine accessories**



Nozzles and blowing accessories

For each insulation blow-in principle and each application, tools and/or accessories are necessary for insertion, sealing and venting. Detailed information about these accessories and everything about tools such as injection nozzles, injection needles/lances as well as hole saws and sealing parts can be found in the

▶ Product brochure **Nozzles and blowing accessories**



Hoses and connectors

Hoses and connectors are an essential part of the blow-in equipment because they can be used to create all conceivable transport lines and circuits. Detailed information on conveying and injection hoses as well as hose connectors, hose clamps, Y-pieces and fibre switches can be found in the

▶ Product brochure **Hoses and connectors**



Measurement devices

X-Floc maintains close cooperation with university research and development institutions. This results in an extensive product range in the field of measuring and testing technology for blow-in technicians, insulation manufacturers and material testing institutes, and many more. You can find detailed information in the

▶ Product brochure **Measurement devices**



Damp spraying

In the damp spray process, thermal insulation material is moistened with water after exiting the hose. Detailed information on spray heads and pipes for the various applications as well as on high-pressure pumps such as membrane or piston pumps and on wall scrubber for smooth surfaces can be found in the

▶ Product brochure **Damp spraying**



Industrial safety and respiratory protection

The special work suit with hood protects the blow-in professional from contact with skin-irritating insulation materials. Detailed information on the X-Floc range of workwear, dust masks, professional respirators with legal approval as well as air filters, rechargeable batteries and other accessories can be found in the

▶ Product brochure **Industrial safety and respiratory protection**



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