CONCRETE SPRAYING MACHINE

FILAMOS
Construction and Mining Technology

SSB 02

DUO
COM-F

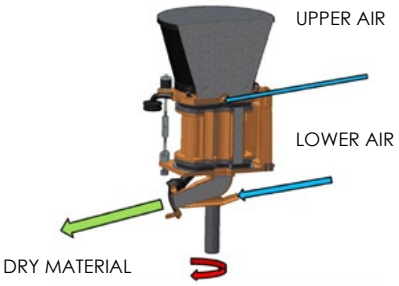
WORKING PRINCIPLE

Shotcreting machine SSB 02 works on the rotor principle and it is designed for the processing of dry or wet mixtures. It is the most efficient model of the shotcreting machines (concrete spraying machines) series SSB and it is appropriate to execute works of medium and large scope. It is used, in particular, to reinforce surfaces of engineering structures and the construction of water works, to reinforce the vaulting of tunnels and collectors in underground engineering and to maintain concrete constructions.

The machine may be used in media with temperatures ranging from +5 to +40 °C.

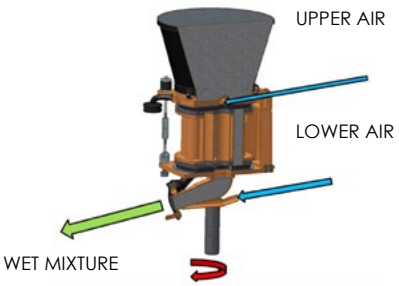
Dry method (gunite)

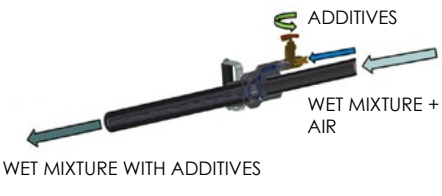
The dry mixture for spraying or transportation is poured in the machine and smoothly fills the cylinders of the rotor below **the hopper.** To fill a mixture into the rotor more easily, **a vibrator** and a **rippling** are fitted in the hopper. The rotating movement of the rotor moves the mixture along by 180° in the clockwise direction. The mixture is thus blown out from individual cylinders of the rotor into transport hoses. As the mix passes through the blower into the transport hoses, lower pressure air is added to enhance the continuous flow of the material in hoses. The hoses are equipped with the spraying nozlles at the end, into which the mixing water is fed at the same time to wet the transported mixture. The required wetting of the mixture is controlled with the supply cock.



Wet method (shotcrete)

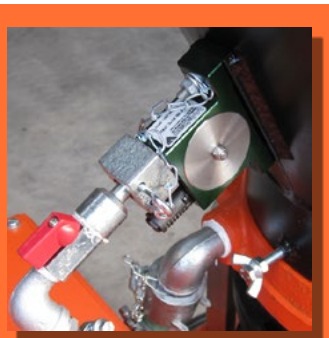
When the concrete mixture is applied in so-called wet method, the hopper is filled in with the prepared wet mix. In principle, the mix passes through the machine in the same way as when spraying the dry mixture. A hose for addition of chemical additives (e. g. accelerating admixture) is taken from the external dosing pump DC 50/200 to the spraying nozzle instead of mixing water.






Hopper - standard

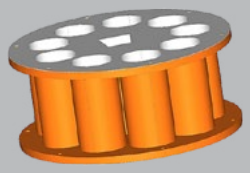

Hopper - skewed


Air vibrator

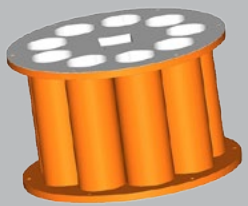

Rippling device

OPTIONAL EQUIPMENT

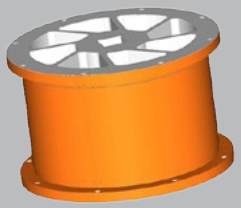
- different sizes of dosing rotor
- automatic central lubrication system for greasing of rotor and sealing plates
- cable remote control of the machine in the length of 40 meters
- water separator (to separate excess water from the air supplied)
- solid frame modification (standard delivery - wheel frame)



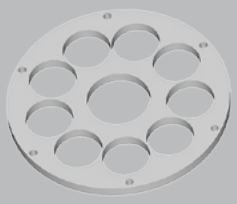
Rotor (9,4 l)
rounded holes



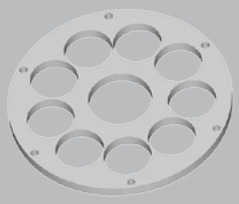
Rotor (13,5 l)
rounded holes



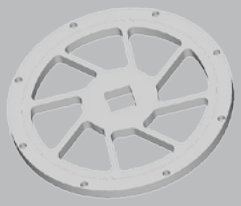
Rotor (21,9 l)
trapezoidal holes



Wearing plate
rounded holes



Wearing plate
rounded holes



Wearing plate
trapezoidal holes

The machine is delivered with optional accessories set corresponding with required output. Each type of accessories set differs from each other by an inner diameter of transport hose. Marking DN xx (e.g. DN50 = transport hose with an inner diameter 50 mm).

Reccomended set of accessories consists of :

- End hose with the nozzle + coupling – 20 m
- Extension hose + coupling – 20 m
- Water hose – 20 m
- Upper sealing plate - 3 pcs
- Lower sealing plate - 3 pcs
- Nozzle ending (rubber) – 2 pcs

Above mentioned set is reccomended when buying a new machine.

It is possible to order individual components according to requirements (hoses, sealing plates, etc.) additionally.

Accessories	Rotor 9,4 l	Rotor 13,5 l	Rotor 21,9 l
DN 50	X	X	---
DN 60	---	X	X
DN 65	-	X	X

Automatic lubrication

Water separator

Cable remote controller

Solid frame modification

End hose with nozzle

Extension hose

Water hose

Sealing plate (upper)

Sealing plate (lower)

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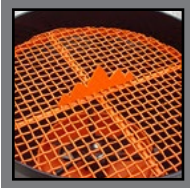


Large hopper includes built-in sieve for safety (skewed alternatively)

Air vibrator with a smooth vibration, it allows fluent flow of the material into the rotor

Automatic lubrication system for lubrication of rubber sealing plates solved with **Automatic system**,

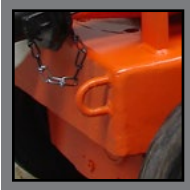
or by **Manual system**, with lever press

Output switch (lower / higher)

Tightening screws to be tightened equally to achieve best sealing effect.

Quick-coupling to connect material hose

Air inlet with required air pressure of 0,5 - 0,6 MPa, air hose is connected either **to one DN50,**



Eyes for lifting-up with the crane

or **2 x DN25 air inlets**

Regulation of air vibrator

Solid steerable wheel

SSB 02 COM-F

Filtration bag

Control box equipped with frequency inverter allowing fluent change of machine output by lowering or increasing revolutions of the rotor.

Control of the machine output is being done either by **remote / local** control, or local control exlusively

Blower is connected to a reduction reffering required diameter of transport hoses (DN 50, DN 60). The blower is DN 65.

Lower air (auxiliary) supply to reach longer transport distance

Water separator capturing inpurities and residual moistness of the air

Upper air / Lower air regulation

TECHNICAL DATA - DRY METHOD

			DUO		COM-F	
Engine			Electric motor (4/6 poles)		Electric motor (4 poles)	
Engine output		[kW]	4,5 / 6,5		7,5	
RPM of rotor		[min-1]	6,5 / 10		5 - 13	
Regulation			two speed		smooth	
Means of regulation			two output values (lower/higher output)		frequency invertor	
Output*			**rpm MIN**	**rpm MAX**	**rpm MIN**	**rpm MAX**
			Rotor (9,4 l)		Rotor (9,4 l)	
		[m3 x h-1]	**3,7**	**5,6**	**2,8**	**7,3**
			Rotor (13,5 l)		Rotor (13,5 l)	
		[m3 x h-1]	**5,3**	**8,1**	**4,0**	**10,5**
			Rotor (21,9 l)		Rotor (21,9 l)	
		[m3 x h-1]	**8,5**	**13,1**	**6,6**	**17,0**
Transport distance	horizontal max	[m]	250			
	vertical max	[m]	100			
Ø of the hose / Granularity of transported material	DN50 / DN60	[mm]	16			
	DN60 / DN65	[mm]	20			
Air consumption (distance 40 m)	Rotor 9,4 l Rotor 13,5 l Rotor 21,9 l	[m3 x min-1]	6 - 8 6 - 8 8 - 14			
Air pressure		[max MPa]	0,6			
Remote control	Motor - START / STOP		Optional		Optional	
	Motor rpm change + / -		N/A			
	Air - START / STOP		Optional		Optional	
Ø Water hose		[mm]	DN20			
Dimensions	Length	[mm]	1620		1620	
	Width	[mm]	990		990	
	Height	[mm]	1220		1220	
	Weight	[kg]	950		850	
Electric connection	Mains connection		3 NPE ~ 50 Hz ; 3 x 400/230 V/TN-S		3 NPE ~ 50 Hz ; 3 x 400/230 V/TN-S	
	Coverage		IP 55		IP 55	

* The actual output depends on the design and moisture of transported mixture, the volume and pressure off the compressed air, the transport distance, the diameter of the transport hose and the way of filling the material.

TECHNICAL DATA - WET METHOD

			DUO		COM-F	
Output*			**rpm MIN**	**rpm MAX**	**rpm MIN**	**rpm MAX**
			Rotor (9,4 l)		Rotor (9,4 l)	
		[m3 x h-1]	**3,7**	**5,6**	**2,8**	**7,3**
			Rotor (13,5 l)		Rotor (13,5 l)	
		[m3 x h-1]	**5,3**	**8,1**	**4,0**	**10,5**
			Rotor (21,9 l)		Rotor (21,9 l)	
		[m3 x h-1]	**8,5**	**13,1**	**6,6**	**17,0**
Transport distance	horizontal max	[m]	40			
	vertical max	[m]	15			
Maximální zrnitost dopravovaného mat.	DN50/ DN60 / DN65	[mm]	8			

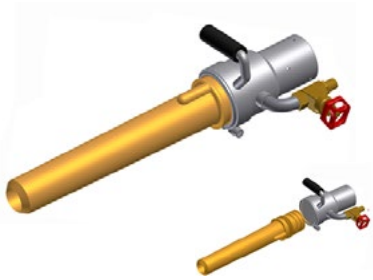
WET METHOD - MATERIAL CHARACTERISTICS

Concrete mixture tested for C 30/37, or C 25/30 strength class, consistency level S4, max. grain size 8 mm, cement quality CEM I 42,5 R, max water / cement ratio 0,5.

NOZZLES

Nozzle AL

Nozzle built from aluminium body, water inlet and rubber ending is being standardly used with SSB 02. The nozzle is equipped with aluminium handle for easier manipulation. Construction of the nozzle allows perfect wetting of the mixture.



Nozzle POLY

Complete one piece POLY nozzle made of polyurethane is used alternatively.

Shotcrete nozzle

The wet shotcrete nozzle with two inlets creates an aerosol of air and additives. It is then evenly dosed with two branches and penetrates better into the concrete mixture.

DC 200 dosing pump

The main advantage is the precise dosing of additives without reversing, easy maintenance, the ability to run dry, long life and the ability to self-soak (up to 9.5 m).

WORKPLACE PREPARATION - DRY METHOD

MATERIAL
- grain size:
max. 16 mm (hose DN 50 / DN 60)
max. 20 mm (hose DN 60 / DN 65)
- moisture: max. 3 - 5 %

WATER HOSE
- pressure min. 0,3 MPa

MAINS CONNECTION
- 3xPEN 400, 50Hz
- input : 7,5 kW
- power take-off: 15,4A
- plug: 32A (5 PIN)

COMPRESSOR
- output - 8 - 10 cbm/min
(valid for horizontal material conveying - 40 m)
- pressure: 0,5 - 0,6 MPa

MATERIAL HOSE
- DN 50 / DN 60 / DN 65
(depending on rotor size)

REDUCER 2 X DN 20/25 - DN 50
- compressor with an air outlet DN 50 is connected directly - without a reducer

WORKPLACE PREPARATION - WET METHOD

MATERIAL
- grain size:
max. 8 mm (hose DN 50 / DN 60 / DN 65)
- appropriate characteristics (S4 level consistency)

ADDITIVES SUPPLY
- by DC 200 dosing pump

MAINS CONNECTION
- 3xPEN 400, 50Hz
- input : 7,5 kW
- power take-off: 15,4A
- plug: 32A (5 PIN)

COMPRESSOR
- output - 8 - 10 cbm/min
(valid for horizontal material conveying - 40 m)
- pressure: 0,5 - 0,6 MPa

MATERIAL HOSE
- DN 50 / DN 60 / DN 65
(depending on rotor size)

REDUCER 2 X DN 20/25 - DN 50
- compressor with an air outlet DN 50 is connected directly - without a reducer

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