

Information for Practice

This chapter will help you to use the machine better for all the different possible works.

1.1 Blasting result – optimization of the parameter

The setting of the machine depends on the result which is needed. The following settings influence the blasting result and have to be conformed to the result:

- blasting pressure;
- blasting hose;
- blasting nozzle;
- blasting media;
- quantity of blasting mixture and water.

There is no general solution for the setting because of always different working conditions. But there are some rules to exclude typical mistakes at the setting and to find a close optimized solution for the setting.

1.1.1 Soft blasting

The target for soft blasting is to have an equable and clean result without respectively with low damage of the surface.

The most unnecessary mistakes during soft blasting are:

- Selection of the blasting media (hardness, grain),
- Setting blasting mixture consumption,
- Setting blasting pressure,
- Combination of blasting hose and blasting nozzle and
- Handling of the blasting nozzle.



See table at chapter 1.2. for the best initial values.

Information for the best handling of the blasting nozzle, look at chapter 1.3..

1.1.2. Power blasting

The target for power blasting is to have a maximum on abrasion power.

This means not only that it is enough to have plenty of air volume and the right blasting media and setting for blasting mixture, but also to have low power losses.

Needless power losses arise when:

- The cross-section of the air hose between air-compressor and machine or the cross-section of the blasting hose is too small;
- The hoses are too long or have too much arcs;
- The nozzle has a wrong cross-section or –shape;
- The blasting mixture or the setting of blasting mixture is wrong.



- Examples for the initial setting, see table at chapter 1.2.

1.2. Adjustments and settings

In the first column of the first table „Material of object to be blasted“ the work to be done is to be stipulated. Following this, the approximate values for the selection of the blasting mixture, the required volume of blasting mixture, the pressure at the machine, the diameter of the blasting nozzle and of the blasting hose may be taken from the respective line.

After selecting the settings and the blasting nozzle by means of the first table you have to select the right air-compressor size, air hose between compressor and machine and the blasting hose size for the blasting nozzle by using the information shown in the second table.

The data in the tables are approx. values only and may differ from case to case.

Table 1: Directional data for settings

Material of the object to be blasted	Type of blasting media	Volume of blasting mixt. lt. per min	Blasting pressure bar	Blasting nozzle mm
Softest cleaning	a)	0,4 / 0,6 / 0,8 / 1,0	0,5 to 1,5	8 to 10
Soft cleaning	a)	0,6 / 0,8 / 1,0 / 1,5	0,5 to 2,0	6 to 8
Cleaning	a) b)	0,6 / 0,8 / 1,0 / 2,0	1,0 to 5,0	10 to 12
Blasting up to 5 m ³ /min	b) c)	2,0 / 3,0	to 10,0	10 to 12
Blasting up to 7 m ³ /min	b) c)	3,0 / 4,0	to 10,0	12 to 14
Blasting up to 10 m ³ /min	b) c)	4,0 / 5,0	to 10,0	14 to 16
Blasting up to 15 m ³ /min	b) c)	4,0 / 5,0 / 6,0	to 10,0	14 to 16

Information to the table 1**Column 2 „Type of blasting media“**

- a) Stone dust, calcite powder, basalt, finical and soft blasting media without sharp edges resp. soft media upto 0,4 mm and with a hardness upto 4 Mohs.
- b) Stone dust, glas powder and other fine blasting media upto 0,8 mm and a hardness upto 8 Mohs.
- c) Slag, granite powder, garnet and other blasting media upto 1,5 (2,0) mm and with hardness upto 8 (9) Mohs.
- d) Sodium bicarbonate, lime (suitable for the removal of paint coat without damaging the metallic surface) and other fine and soft blasting media of a very low hardness.



- In order to ensure a good flow of the blasting mixture it is recommended to use a blasting mixture containing superfines (disadvantageous e.g. a grainage from 1 to 2 mm; better: e.g. 0,4 to 2,0 mm).
- To get more soft cleaning, you may have to use extra water, set ball valve “We” (24).

Column 3 „Volume of blasting mixt.“

- For cleaning, always test soft blasting media first.
- The blasting mixture is already mixed with 20% water. If you need more water for soft cleaning, you may have to use extra water set ball valve “We” (24).
- For cleaning, the percentage of water may be increased in the case of machines with dosing facility for extra water to achieve an optimum result in a still more gentle way.

Column 4 „Blasting pressure“

- For cleaning, always test with a low blasting pressure first.
- The blasting pressure at the machine and at the blasting nozzle may differ because of different length and different diameter of the blasting hoses.

Table 2: Max. compressor size required as a function of the blasting nozzle

Diameter blasting nozzle	mm	6	8	10	12	14	16
Compressor output	m ³ /min	1,8	3,2	5,0	7,2	9,8	12,8
Blasting hose and	mm	13/7; 19/7	19/7; 25/7	25/7; 32/8	32/8	32/8; 49/8	32/8; 49/8
Compressed-air hose		1/2; 3/4	3/4; 1	1; 5/4	5/4	5/4; 1 1/2	5/4; 1 1/2



- The shorter the hose and the bigger the diameter of the hose, the lower is the loss of blasting power. (This concerns the air hose between the compressor and the machine and the blasting hose).

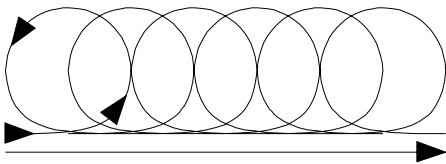
1.3. Blasting nozzle and operating

The nozzle: Standard nozzles are Cylinder- and Venturi-nozzles, but the Venturi-nozzle produces a higher speed of the blasting mixture at the nozzle. The result of the higher blasting mixture speed is a higher production efficiency of blasting power (upto 30%). Also long blasting nozzles have upto 20% more blasting power in comparison to short nozzles.

Handling of the blasting nozzle: This is not a question of the machine or the equipment, but of the training of the operator. A well trained operator with experience get up to 50% more production efficiency than a operator without training.

The first step to get the maximum blasting performance is to have a good planning, the right blasting mixture and the right setting of the machine.

After planning, the operator has to know which result is required, so that the operator knows how to handel the nozzle.



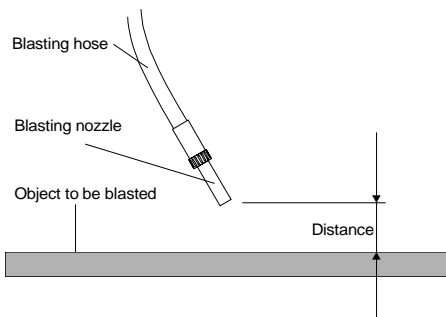
Chapt. 5, Figure 3: movement of the nozzle

Movement of the nozzle

The best way to move the blasting nozzle on large objects is to circulating and side longe the nozzle at the same time. If you don't circular the nozzle, the surface will look unintegrated.



- The faster the circulating and the side longe, the lower the wear on the surface.



Chapt. 5, Figure 1: distance of the nozzle

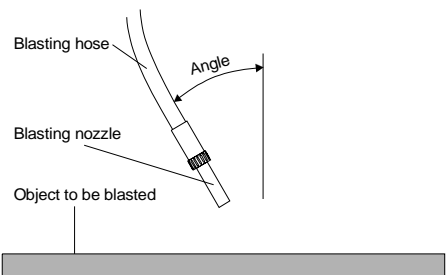
Distance of the nozzle

The normal distance between object to be blasted and blasting nozzle is approx. 20 to 25 cm.

One possibility to influence the aggressiveness of the blasting process, is to increase the distance between object and blasting nozzle.



- The nearer the blasting nozzle to the object, the stronger the aggressiveness of the nozzle and the smaller the surface simultaneously treated.



Chapt. 3, Figure 2: angle of the nozzle

Angle of the nozzle

The normal angle between object and blasting nozzle is 20 to 45°.

One possibility to influence the aggressiveness of the blasting process, is to increase the angle between object and blasting nozzle.

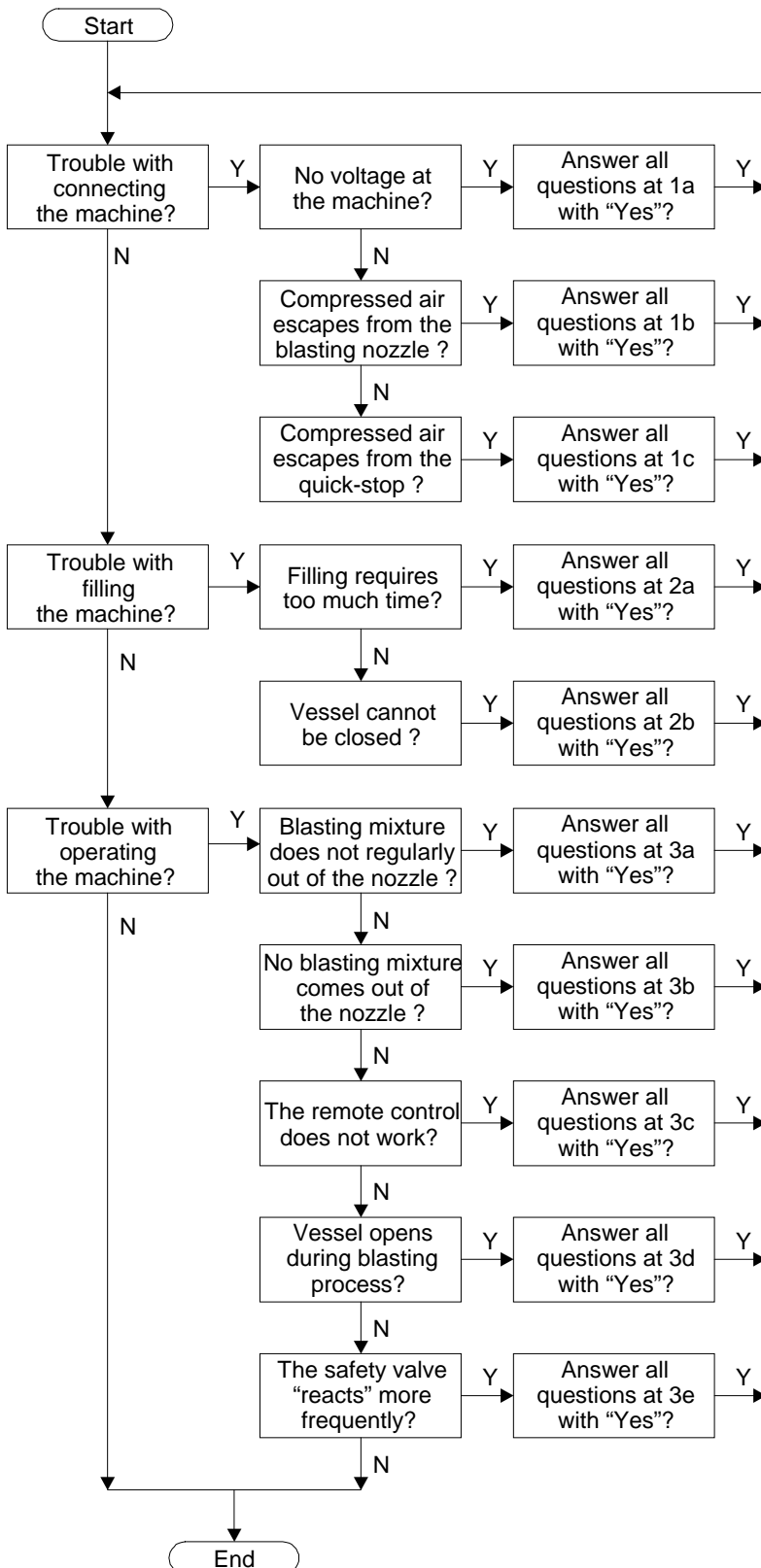


- The smaller the specified angle to the object, the stronger the aggressiveness of the nozzle and the smaller the surface simultaneously treated.

2. Trouble-shooting

To find the reason for a possible trouble please proceed as follows:

1. Begin at „Start“ in the diagram and answer to one question after the other.
2. If a possible source of trouble is found the corresponding questions under this item has to be checked at the machine.
3. If the answer to the first question is „Yes“, the next item has to be checked as long as one item has to be answered with „No“.
4. This reason for the trouble has to be repaired.



Questions 1a

- Are the pole tongs at the connecting cable clean?
- Is interlock of EMERGENCY-OFF-switch deactivated?

Questions 1b

- Is the ball valve (blue handle) for the compressed air control closed?

Question 1c

- Is the ball valve (blue handle) for the compressed air control closed?
- Are the plugs in the actuating units quick-stop and compressed air o.k.?

Questions 2a

- Are the flushing nozzles in the sieve top actuated and does water penetrate from the nozzle?
- Is the blasting mixture granulate correct?

Questions 2b

- Is the ball valve (blue handle) for the compressed air control closed?
- Has the vessel lock been relieved from blasting mixture?
- Is the pressure control open?
- Has the overflow been closed?

Questions 3a

- Has the blasting mixture got a sufficient percentage of superfines?
- Has the cross-section of the blasting hose and the nozzle diameter been chosen correctly?
- Is the interior of the blasting hoses and blasting nozzle free?
- Is the non-return valve in the pressure vessel o.k.?

Questions 3b

- Has the machine been set for blasting?
- Is the blasting mixture fine enough?
- Does blasting mixture penetrate from the vessel, when the blasting mixture hose has been uncoupled?
- Does the switching unit `blasting mixture` open?
- Have the pneumatic hoses of the switching unit been checked?

Questions 3c

- Are the extension cables of the remote control checked?
- Are the plugs at the control valves for the switching units checked?
- Are the coils at the control valves checked?
- Is the remote control checked?

Questions 3d

- Does the air pressure connected at the machine exceed 2 bar?
- Is the ball valve at the overflow closed and leakproof?
- Is the filter element in the air filter controller checked and clean?
- Is the vessel locking plate at the vessel lock checked?
- Is the plug in the switching unit `blasting mixture` checked?
- Is the non-return valve in the vessel checked?

Questions 3e

- Is the connected water pressure (see manometer) less than 12 bar?
- Has the control pressure (see manometer) been set correctly (between 11 and 12 bar)?