Owner's Manual For Abrasive Blasting Units

Rev 2.

Symbol	Consequences	Probability
	Death or serious injury	Will result
	Death or serious injury	Could result
	Minor or moderate injury	May result
	Property damage	May result

Clemco International GmbH
Carl-Zeiss-Str. 21
83052 Bruckmühl / Germany
Fax: +49 (0)8062 / 9008-50
Tel.: +49 (0)8062 / 9008-0
www.clemco-international.com

0. General Advise

0.1 Scope of Manual

This owner's manual is based on a risk analyse, which means

+ the blasting unit cannot be altered,
+ operator must be trained.

0.2 CE-Conformity

Refers to a complete blasting unit, consisting of.

- pressure pot including:
  - Piping
  - remotes (remote control valve, remote and connection hoses, remote control handle, etc.)
  - metering valve
- hoses and couplings
- nozzle and nozzle holder
- additional safety devices like e.g. Quick Stop System

In case of component purchase, this CE – declaration of conformity only covers these components. To achieve complete conformity, the following is needed

- complete the unit with all other components, which are approved by us
- or a new risk analyse needs to be done

0.3 Applications and Restrictions

The operator is responsible, that the following limits are not exceeded e.g.

+ if the pressure rate of the air supply is exceeding the pressure limit of the system, a pressure regulator and safety valve needs to be mounted in the air supply line
+ the pulsating load has to be traced to avoid exceeding the limit

Table 1: scope of operation

Parameter	**Scale**
Working pressure	0,5 ... 12bar **Depends on lowest rated component: refer to Sticker** 0,5 … 10bar 0,5 … 8bar
Transport temperature	-20°C to + 80°C
Operation temperature	0 ... 50°C
Medium	- Filtered, oil-free and dried compressed air according to DIN 8573-1; 2010, Class 6-3-4, each free from aggressive components. Deviating from this, the pressure dew point must be at least 10°C below the lowest ambient temperature that occurs. - Inert blast medias, which do not cause any additional risks
Pulsating load	Swelling: **max. load cycle cannot be exceeded**
Operation area	- explosion risk areas need special safety measure - enclosed rooms need efficient fresh air supply and room ventilation
	- in open area the following is required: - permission to operate blasting process - follow the local noise level restrictions - safety measures for others - if special safety measures are impossible, the minimum distance to other people should be 10 x operating pressure (bar) = distance (m)
Stability	- only to achieve on even solid ground - if e.g. silos are mounted on top of the machine, additional safety measures are required for stability

Maximum pulsating load

The operator is responsible to follow the national directives in respect of re-approvals.
Our pressure pots are designed according to AD 2000, which requires

- cycle for re-approval = a quarter of specified pulsating load.
- additional requirements refer to the owner's manual for the bare pot shell
- Clemco recommends:
  + re-approval latest after 4 years even if pulsating load is not reached
  + pot book to trace and record pulsating load (refer table 2).

Table 2: average pulsating loads

	Pulsating loads		
Kind of blasting operation	**Per minute**	**Per hour**	**Anual** 8h /day; 200 work days / year
Normal job blaster	5 … 10	6 … 12	9.600 ... 19.200
Blasting small components , which require constant grasp	2 … 5	12 … 30	19.200 ... 48.000
Blasting big structure which do not require constant grasp	10 … 15	4 … 6	6.400 ... 9.600
Dual chamber blast machine	Cycle time 2min	30 x	48.000
Dual chamber blast machine	Cycle time 5min	12 x	19.200

0.4 Valuation of residual risk

Although when following all advise from the owner's manual the following residual risks can result from the operation:
Risk of injury because of:

+ as media and air stream needs to be considered a open tool (refer table 3).
+ the blast hose could be ripped out of the hand, due to recoil when starting the equipment ➔ during manual blasting with pressures > 8bar max. use 12,5mm nozzles.

- noise: - > 80dB(A) to 180dB(A)➔ ear protection required
  - depending on nozzle type, size, working pressure etc. the noise level increases
- dust load (refer table 4)
- burst to components, which are effected by wear (refer table 5). To limit the risk of injury, the maintenance like described in the manual needs to be done

Table 3: measures to reduce risks „open tool“

Parameter	**Higher risk**	**Recommended measures**
Operating pressure	Higher pressure	Use of: - shortest possible hose - pneumatic controlled metering valve to limit expansion from the pot to the hose - use quick remote systems e.g. electro-pneumatic remote controls - Use SSAS quick Stop system
Hose length	Longer	
Pot size	Higher volume	
Operation area	Spatial separation between operator and pot	Use special safety remote systems, which stop blasting in case of interruption or failure

Table 4: >Measures to reduce dust emission on open blasting applications

Usage of	**Example**	**Comment**
Enclosures with dust extrac-tion	tents, blasting containers,	
Dust free units	HSP 20, HS 200 P and Educt-O-matic	Limited applications
Wet blasting devises	Wet blast head KB 25 and KB 52 Soft nozzle	determine water waste process

Table 5: Factors, which result is higher wear .

Factor	Wear	Comment
Media characteristics	round ➔ less wear angular ➔ higher wear	
Media material	Softer ➔ less wear Harder ➔ higher wear	Very high wear when using Aluminium Oxide
Speed of media transport	Low ➔ less wear high ➔ high wear	Recommended speed when **ID of hose = 3 ... 4x nozzle orifice**
Ratio between ID of hose and nozzle orifice	< 3 ➔ high wear 3 ... 4 ➔ less wear > 4 problems with media transport	

0.5 Stocking / limits

Components and parts, which are made from organic material (e.g. rubber products) do age depending on the following circumstances (refer Table 6)

Table 6

Influence	Comments in respect of long term stocking
Temperature	ideal between -10° and +15°C, no exposure to direct heat source.
Atmosphere	- no ozone => no operation of E-motors, welding units in stock area, as they produce ozone - no aggressive chemicals,
Humidity	- humidity above 65% damages the material
UV-Light	- avoid direct solar radiation and other ultraviolet sources

Table 7: Components with restricted stocking / operation times

	Specified by	Total time of usage *1) stocking + operation *2)	Usage in blasting unit *2)
Blast hoses	DIN 20066	max. 6 years	max. 6 years
Remote control hoses	DIN 20066	max. 6 years	max. 6 years
Pop-Up Valve	manufacturer	max. 10 years	max. 5 years
O-Rings	manufacturer	max. 10 years	max. 5 years
Gaskets	Clemco´s experience	max. 10 years	max. 5 years

*1) The time for usage can very much reduce in case of temperature above 25°C, exposure to sun light or other negative influence.
*2) Mechanical wear due to operation is not considered