

SIFTER SYSTEMS | ALLU SCREENER CRUSHER

ALLU Finland Oy | Finland

GENERAL DESCRIPTION

ALLU Finland Oy manufactures attachments for excavators and wheel loaders in Hollola, Finland. It delivered its first *ALLU Screener Crusher* processing attachment for AP mine clearance to the British HALO Trust organisation in 2002.

The machine's most common applications are the treatment of soil, gravel or demolition waste. It can screen, crush, pulverize, aerate, blend, mix, separate, carry, feed and load, all in one-step operation. This working method is called "ALLUizing" by the manufacturer.

When the Screener Crusher is used for AP mine clearance the wheel loader or excavator must be armoured, so that the operator is fully protected against any possible mine blast. In addition to the SCH 4-25 model shown, the manufacturer can also supply its SCH (heavy duty) and SCM (extra heavy duty) models for mine clearance. The size of the loader determines the model of bucket to choose.



ALLU | Screener crusher

CLEARANCE METHODOLOGY

Contaminated soil is collected from the affected soil storage area with the ALLU bucket. The bucket is then placed under a splash screen or it is equipped with a hydraulic closing lid to prevent possibly exploding mine pieces being blown out of the bucket. The contaminated soil is processed through the Screener Crusher, thus destroying all mines (residual minuscule crushed particles remain in the processed soil). The Screener Crusher has a rigid steel frame, onto which horizontally rotating screening and crushing drums have been mounted. All the drums rotate in the same direction. The blades of the drums crush, screen, aerate, pulverize and force the material through the drums, leaving big and hard fragments in the bucket from where they can easily be piled separately for further inspection. The working speed is about 40 cubic metres per hour or up to 200 m³/h depending on soil conditions. The manufacturer says that mine-contaminated soil, when processed through the Screener Crusher, is safe to return to cleared land.

MACHINES IN USE TO DATE

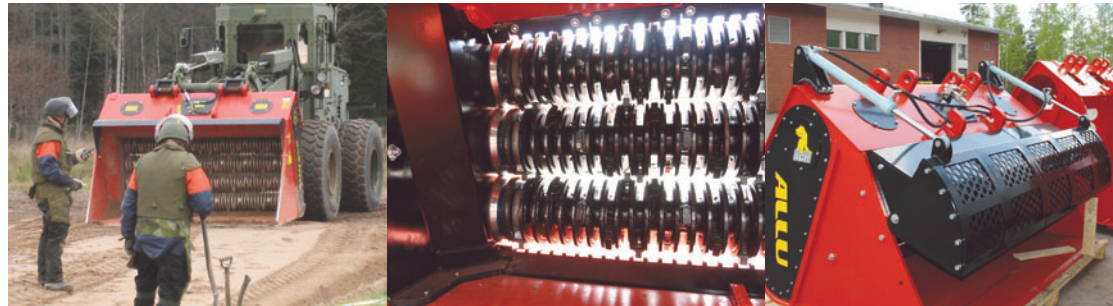
Screener Crushers have been used in Afghanistan, Angola, Cambodia and Sri Lanka. New units were delivered to Lebanon in August 2007 for demining by SRSA, Svenska Räddningsverket.

ENGINE, FUEL AND OIL

Depends on the prime mover used.

FACTORY SUPPORT

Spare parts are available from the manufacturer or from the supplier of the prime mover. Training will be done by supplier or dealer in one hour and is part of the purchasing package. Instruction manuals and documentation are part of the package and are available in different languages on request. One-year warranty. A spare parts catalogue is supplied.



ALLU | Detailed view of the system

MAINTENANCE AND SUPPORT

- > Recommended level of required maintenance is ten minutes a day.
- > Weekly servicing also takes about ten minutes, plus any time needed for changing blades. The lifetime of the blades depends on the material processed, varying from 20 to 100 cubic metres per blade.

TESTS AND EVALUATIONS

One test report is available at the website www.itep.ws

1. J. Morrissey, *Test and Evaluation Report. Volvo L90 Armoured Front End Loader and ALLU SCH 4-25 Crushing and Screening Bucket*, by SRSA, SWEDEC, 2006.

REPORTED LIMITATIONS AND STRENGTHS

Limitations

- > The system is relatively time consuming.

Strengths

The tools and most of the vehicle are produced commercially. The test report cited above states: "... the system has the ability to perform well within anti-personnel contaminated areas. The system would prove extremely useful, and versatile, in cases where standard clearance methodologies would be rendered ineffective due to high metal contamination, extensive use of minimum metal mine types, deeply buried mines and shifting soil conditions. This system is highly capable in the activation and neutralisation of anti-personnel landmines, if the points raised during the trials are carefully addressed, recommendations incorporated and strict guidelines for the employment of the system are implemented. This coupled with thorough internal and external quality assurance methods, will ensure the system is capable of providing 'clear ground'."

DIMENSIONAL DATA

1. Length without attachment	
2. Length total	1,500 - 1,650 mm (depending on the model)
3. Width without attachment	
4. Width total	2,152 - 3,090 mm (depending on the model)
5. Clearing Working width	1,742 - 2,680 mm (depending on the model)
6. Height Overall	1,350 - 1,600 mm (depending on the model)
7. Mass Basic vehicle	Wheel loader (14,000 - 24,000 kg)
8. Mass Detachable unit(s)	2,500 - 3,700 kg (depending on the model)
9. Mass Overall	Wheel loader (14,000 - 24,000 kg) + bucket 2,500 - 3,700 kg

OPERATIONAL DATA

10. Wheels Tracks (description)	Not given
11. Ground Bearing Pressure (kPa)	Depending on the wheel loader
12. Hill climbing ability (in degrees)	Not given
13. Number of Chains Chisels Tools	N/A
14. Beat pattern (hits per m ²) at different operating speeds	N/A
15. Length of Chains Tools	N/A
16. Diameter of flail drum	300 mm
17. Rotation Speed	300 rpm
18. Clearance Working depth in varying terrain	N/A
19. Working Speed (m ² /h)	
> Light Soil Medium Vegetation	Up to 200 m ² /h
> Medium Soil Medium Vegetation	Up to 150 m ² /h
> Heavy Soil Dense Vegetation	Up to 70 m ² /h
20. Control of Clearance Working depth	
21. Additional attachable working tools	Wheel loader + Allu Screener Crusher
22. Armour	Depending on the wheel loader
23. Remote controlled	
> greatest distance	No
24. Transportation	
> short distances	With the wheel loader
> long distances	
> sea transport	
> air transport	

SYSTEM STATUS AND DEPLOYMENT

25. Machines in use	Wheel loader + Allu Screener Crusher
26. Other types	Not given
27. Location of use	Afghanistan, Angola, Cambodia, Lebanon, and Sri Lanka
28. Totally cleared so far (m ²)	Not given

ENGINE | FUEL | OIL

29. Engine	Depending on the wheel loader
30. Engine power at the flywheel	Depending on the wheel loader
31. Sufficient power supplied to working tool	Max 120 kw
32. Fuel capacity	Depending on the wheel loader
33. Fuel consumption	Depending on the wheel loader
34. Separate engine for working unit	N/A
35. Cooling system	Depending on the wheel loader
36. Oil capacity (both engines)	Depending on the wheel loader
37. Hydraulic oil capacity (both engines)	Depending on the wheel loader

COSTS

38. Cost of system	46,000 - 80,000 euros
39. Other costs	
> training	Not given
> spare part set chains belts	BLADES 10 euros/pc (88-216 pieces needed, depending on the model)
> repair costs for one year	Not given
36. Availability for hire	No

OTHER

41. Operator comfort	Depending on the wheel loader
42. Air conditioning	Depending on the wheel loader