ENTAM - Test Report

Sprayer type:	Trailed sprayer
Trade mark:	SAE 1946 srl*
Model:	Turbmatic Defender MK2 91/1000

Manufacturer:
SAE 1946 srl
Via due Abeti 15/18
44122 Ferrara - ITALY

Test report: 05.167

First emission:
September 2015
Current emission:
September 2022 (**)

(*) In 2020 the company SAE 1946 srl purchased the business branch of the company SAE sas relating to the production of industrial agricultural machinery and machine tools in agriculture in general as well as related accessories. (company declaration dated 12/11/20).

(**)As declared by the DISAFA Technicians on 18/03/21, this certification of functional aspects can be maintained. For the safety aspects, the machine has been subjected to a new check according to the VS ENAMA scheme.

Assessment table

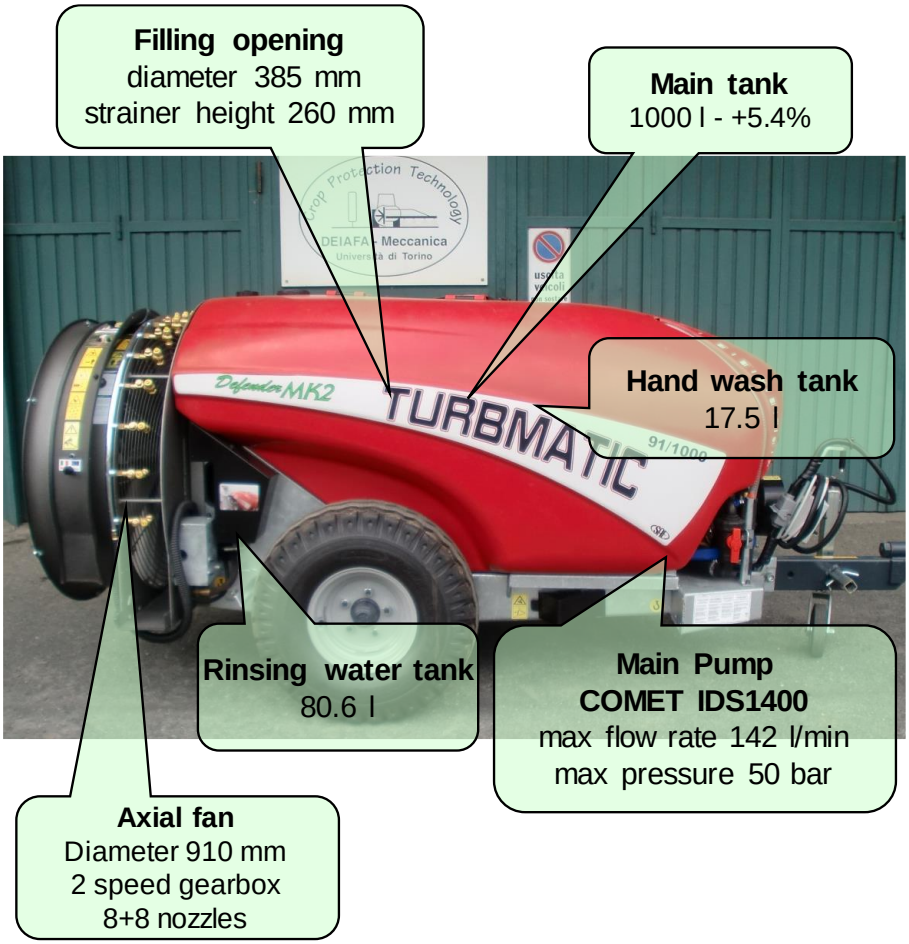
No.	Contents	Assesment
1	Spray tank surface roughness	**xxx**
2	Spray tank overvolume	**x**
3	Volume of total residual	**xxx**
4	Spray tank content gauge up to 10% filling	**xx**
5	Spray tank content gauge from 10% to 20% filling	**xx**
6	Spray tank content gauge from 20% filling	**xx**
7	Agitation system (deviation of even solution)	**x**
8	Pressure drop between manometer and nozzles	**xx**
9	Deviation of single nozzle output from tables	**xx**
10	Accuracy of pressure gauge (max deviation)	**xx**
11	Liquid flow rate left/right	**xx**
12	Rinsing water tank	**x**
13	Cleaning system efficaiency	**xx**
14	Tank cleaning efficiency	**xx**

Note: The assessment keys are listed below. All detailed results are in the following test report.

No.	unit	x	xx	xxx	No.	unit	x	xx	xxx
1	µm	>70-100	30-70	<30	9	%	>7-10	3-7	<3
2	%	5-8	>8-12	>12	10	bar	>0.10-0.20	>0.05-0.10	0.00-0.05
3	of allow. value	>2/3-3/3	1/3-2/3	<1/3	11	%	4-5	2-4	0-2
4	%	15-10	10-5	<5	12	multiple of residual	10-12	>12-14	>14
5	%	7.5-5.0	5.0-2.5	<2.5		% nominal volume	10-12	>12-15	>15
6	%	5.0-4.0	<4.0-2.0	<2.0	13	%	99.67-99.80	>99.80-99.90	> 99.90
7	%	>10-15	5-10	<5	14	%	70-80	>80-90	>90
8	%	>7-10	3-7	<3					

Free download of the complete test report on:
www.ENTAM.eu or www.ENAMASERVIZI.it

Technical data of sprayer



Dimensions and weights

Model	lenght (mm)	width (mm)	max height (mm)	tank height (mm)	empty weight (kg)	total weight (kg)
Turbmatic Defender MK2 1000 91	3220	1180	1350	1300	530	1682

Description of sprayer

The implement is a trailed sprayer for use on orchard crops. The sprayer is attached to the tractor via the towing hook.
The machine frame is made out of hot galvanised steel, the main and auxiliary tanks are made out of polyethylene. The main tank is equipped with two gauges, one on the front right and the other on the left side. The liquid level is indicated by a transparent external tube with float. Agitation is via hydraulic stirrers located at the back of the tank. The tank is completely emptied using a valve located on the left side. Access to the main tank if directly from the ground.
The rinsing water tank is located in longitudinal central position to limit the roll and to ensure the stability of the machine even with the main tank empty.
The implement is powered via the tractor PTO having a rated power of 540 rpm. The implement is endowed with a piston-diaphragm pump located in an ad hoc space in the front section of the main tank. Pressure regulation and liquid dispensing are controlled using electrically operated controls that can be placed in the tractor cab.
There are 2 filters: one suction filter, which can be inspected even if the main tank is full, and one discharge filter.
The pressure gauge for checking operating pressure is positioned on the front of the main tank. It has a diameter of 100 mm, end scale of 60 bar and is in intervals of 1 bar.
Liquid is sprayed under pressure, while drops and related dispensing are conveyed via an airflow generated by an axial fan (no.7 blades) with back to the suction fan unit. To regularize the air flow of the outgoing is an against fan fixed with 12 blades.
The speed of rotation of the fan may be modified via a 2-speed gear (+ disengagement). It is possible to interrupt the air flow on right of the dispensing side by a bulkhead that is moved manually.
Nozzle holder units, endowed with membrane antidrip devices, are located inside the air outlet section. Each nozzle can be closed singly to adjust the distribution profile in relation to the vegetation being treated.

The strainer basket filters located on the openings of the main tank contain a bottle washing device and a powder mixer.

The main tank is equipped with an internal washing system using a rotary nozzle.

On the right side of the machine is a spray gun for washing the outside of the machine.

Frontal view

Control panel

Distribution unit

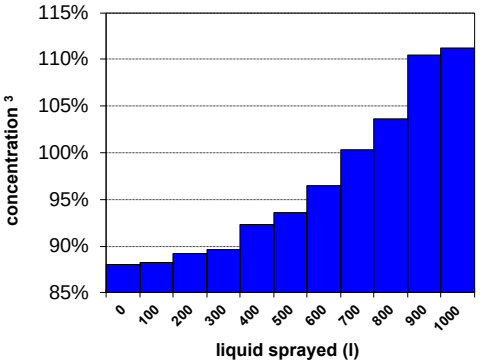
Adjustable nozzle

Main results of functional test

Residual (l)	
in the tank	
horizontal	
with back flow - with agitation	1.95
with back flow - without agitation	--
without back flow - without agitation	0.15
inclined to right	0.15
inclined to left	0.15
inclined to rear	2.90
inclined to front	0.25
in the hoses: dilutable	4.45
dilutable residual [1]	7.35
in the hoses: non dilutable [2]	0.70
total residual	**8.05**

[1] Liquid that can flow back into the main tank and can be diluted by the washing tank contents
[2] Liquid that not can flow back into the main tank
* Position at which the rinsing water tank is too small

Agitator performance



[3] Copper oxychloride concentration measured during the tank empying, after 16 hours standing and 10 minutes of agitation.

Pressure gauge

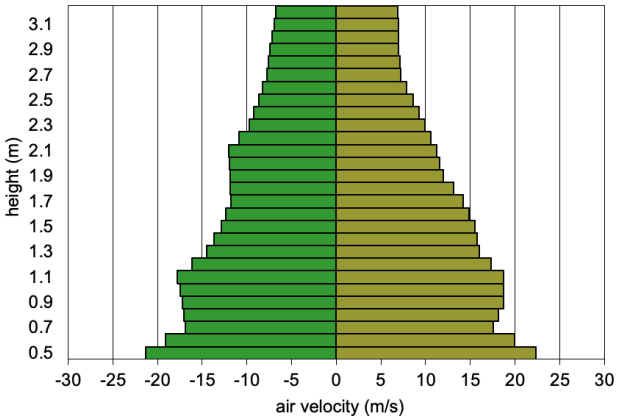
distance between mark	0.10 bar
accuracy	0.10 bar

Fan

	flow rate*	power needed
I	40400 m^3/h	10.2 kW
II	46600 m^3/h	19.6 kW

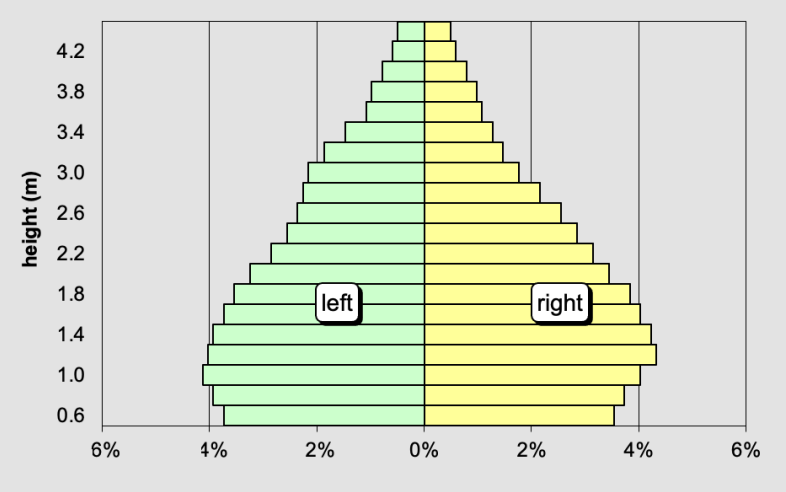
* measured follow ISO 9898 point 5.2.3 indication

Air velocity measured 0.50 m fron outlet



I – 1890 rpm

Distribution of liquid measured with row spacing of 2.0 m



I – 1890 rpm

Explanation on testing

Testing takes place according to the Technical Instructions for ENTAM-Tests of air assisted sprayers (release 5). This procedure was developed by the competent testing authorities of the European countries participating in ENTAM and is based on the CEN standard EN ISO 16119-3 “Agricultural and forestry machinery – Environmental requirements for sprayers – Part 3: Sprayers for bush and tree crops”. This test is only a technical performance test which takes place without an accompanying field test. The test results apply only to the tested appurtenances of the sprayer. Statements on the behaviour of the sprayer with different appurtenances cannot be derived from these results.

Responsibility and recognition

Performing competent authority:

Crop Protection Technology
DISAFA – University of Torino
Largo Paolo Braccini, 2
I - 10095 Grugliasco (TO) - ITALY

This test is recognized by the ENTAM members:

Generalitat de Catalunya Departament d'Agricultura, Alimentació i Acció Rural	**CMA** - Administració de la Generalitat de Catalunya, Centre de Mecanització Agrària -SPAIN-	**EPHP10/23**
INRAE	**INRAE** Institut National De Recherche en Agriculture, Alimentation et Environnement -FRANCE-	**INRAE/ CEMAGREF/ ENTAM/23/011**
JKI Julius Kühn-Institut Bundesforschungsinstitut für Kulturpflanzen	**JKI** - Julius Kühn-Institut (formerly BBA) -GERMANY-	**ENT-I-46/23**