ENAMA
ENTE NAZIONALE PER LA MECCANIZZAZIONE AGRICOLA

ENAMA
CERTIFICATA VS

VS ENAMA Certificate

N. 05.275

Awarded to Matermacc Spa

Via Gemona, 18 – 33078 San Vito al Tagliamento (PN) - Italy

Mod. G2 rev.01 - 23/01/19

Rome, 2019/04/10

(Valid until five years or until reference regulations are altered)

The Mounted Boom Sprayer
MBS 1000 Z 15 (with pump 168 l/min and steel boom)

(extensions: MBS 800 Z 15 with pump 168 l/min and steel boom; MBS 800 Z 16 with pump 168 l/min and steel boom; MBS 800 ZA 12 with pump 168 l/min and aluminum boom; MBS 800 ZA 15 with pump 168 l/min and aluminum boom; MBS 800 ZA 16 with pump 168 l/min and aluminium boom; MBS 1000 Z 16 with pump 168 l/min and steel boom; MBS 1000 Z 18 with pump 168 l/min e and steel boom; MBS 1000 ZA 15 with pump 168 l/min and aluminum boom; MBS 1000 ZA 16 with pump 168 l/min and aluminum boom; MBS 1000 ZA 18 with pump 168 l/min and aluminum boom; MBS 1000 Z 15 with pump 200 l/min e and steel boom; MBS 1000 Z 16 with pump 200 l/min and steel boom; MBS 1000 Z 18 with pump 200 l/min and steel boom; MBS 1000 ZA 15 with pump 200 l/min and aluminum boom; MBS 1000 ZA 16 with pump 200 l/min and aluminum boom; MBS 1000 ZA 18 with pump 200 l/min and aluminum boom; MBS 1000 FA 21 with pump 200 l/min and aluminum boom; MBS 1200 Z 15 with pump 168 l/min and steel boom; MBS 1200 Z 16 with pump 168 l/min and steel boom; MBS 1200 Z 18 with pump 168 l/min and steel boom; MBS 1200 ZA 15 with pump168 l/min and aluminum boom; MBS 1200 ZA 16 with pump168 l/min e and aluminum boom; MBS 1200 ZA 18 with pump 168 l/min and aluminum boom; MBS 1200 Z 15 with pump 200 l/min and steel boom; MBS 1200 Z 16 with pump 200 l/min e and steel boom; MBS 1200 Z 18 with pump 200 l/min and steel boom; MBS 1200 ZA 15 with pump 200 l/min and aluminum boom; MBS 1200 ZA 16 with pump 200 l/min e and aluminum boom; MBS 1200 ZA 18 with pump 200 l/min and aluminum boom; MBS 1200 FA 21 with pump 200 l/min and aluminum boom)

conforms to the requirements of safety of ENAMA specifications cat. 05.03 – Crop protection machines: Mounted boom sprayers and front-tanks - rev. 4.3 dated 2016/05/25 that contains the harmonized standards and technical specifications: UNI EN ISO 4254-1:2015; UNI EN ISO 4254-6:2010; ISO 11684:1995.

The Director

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The President

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ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

PRD N° 088 B

Membro di MLA EA per gli schemi di accreditamento
SGQ, SGA, PRD, PRS, ISP, GHG, LAB, LAT e PTP,
di MLA IAF per gli schemi di accreditamento
SGQ, SGA, SSI, FSM, PRD e PRS
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Signatory of EA MLA for the accreditation schemes
QMS, EMS, PRD, PRS, INSP, GHG, TL, CL and PTP,
of IAF MLA for the accreditation schemes
QMS, EMS ISMS, FSMS, PRD and PRS,
and of ILAC MRA for the accreditation schemes
TL, ML, CL and INSP

Present certificate validity is subject to periodic surveillance and check in conformity with the modality of ENAMA contract.

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ENTAM

ENTAM - Test Report

Sprayer type: Mounted boom sprayer

Trade mark: MaterMacc Spa

Models: MBS 1000 Z 15 (pump 168 l/min – steel booms) and extensions

Manufacturer:
MaterMacc Spa
Via Gemona, 18
33078 S. Vito al Tagliamento (PN) - ITALY

Test report: 05.275

April 2019

Assessment table

		Assessment		
n°	Contents	800	1000	1200
1	Spary tank surface roughness		xxx	
2	Spray tank overvolume (% up to nominal volume)	xx	x	xx
3	Residual (related to the max value)	xx	xx	xx
4	Spray tank content gauge up to 10% filling	xxx	xxx	xxx
5	Spray tank content gauge up to 20% filling	xxx	xxx	xxx
6	Spray tank content gauge from 20% filling	xx	xx	xxx
7	Agitation system test (max concentration error)		xx	
8	Boom section widht		x	
9	Boom height adjustment range		x	
10	Accuracy of pressure gauge (max deviation)		xxx	
11	Deviation of spray computer from desired value		xxx	
12	Regulation speed		xx	
13	Repeatability of spray computer		xxx	
14	Deviation of single nozzle output from table		xx	
15	Pressure drop		xx	
16	Transverse distribution		xx	
17	Rinsing water tank	xxx	xx	x
18	Fan flow rate (provided/measured)		n.a.	
19	Efficiency cleaning system		x	
20	Efficiency of wash tank		xxx	

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

n°	Key	x	xx	xxx
1	µm	>70-100	30-70	<30
2	%	5-8	>8-12	>12
3		>2/3-3/3	1/3-2/3	<1/3
4	%	15.0-10.0	10.0-5.0	<5.0
5	%	7.5-5.0	5.0-2.5	<2.5
6	%	5.0-4.0	<4.0-2.0	<2.0
7	%	>10-15	5-10	<5
8	m	4.0-4.5	<4.0-3.5	<3.5
9	m	1.0-1.5	>1..5-2.0	>2.0
10	bar	>0.10-0.20	>0.05-0.10	0.00-0.05

n°	Key	x	xx	xxx
11	s	>4-6	2-4	<2
12	s	>7-10	3-7	<3
13	CV	>2-3	1-2	<1
14	%	>7-10	3-7	<3
15	%	>7-10	3-7	<3
16	%	>7-9	4-7	<4
17	time dilutable volume	10-12	>12-15	>15
18	%	>7-10	3-7	<3
19	%	99.67-99.80	99.80-99.90	> 99.90
20	%	80-85	>85-90	>90

Free download of the complete test report under: www.ENTAM.net
or: www.ENAMA.it

Technical data of sprayer

boom		boom sections 1	2	3	4	5	6	7
12 m	nozzle no.	6	4	4	4	6		
	width (m)	3,0	2,0	2,0	2,0	3,0		
15 m	nozzle no.	5	8	4	8	5		
	width (m)	2,5	4,0	2,0	4,0	2,5		
16 m	nozzle no.	4	8	8	8	4		
	width (m)	2,0	4,0	4,0	4,0	2,0		
18 m	nozzle no.	6	5	5	4	5	5	6
	width (m)	3,0	2,5	2,5	2,0	2,5	2,5	3,0
21 m	nozzle no.	6	6	6	6	6	6	6
	width (m)	3,0	3,0	3,0	3,0	3,0	3,0	3,0

report	type	report	type
05.275a	MBS 1000 Z15 - 168 l/min - steel booms	05.275q	MBS 1000 ZA18 - 200 l/min - aluminum booms
05.275b	MBS 800 Z15 - 168 l/min - steel booms	05.275r	MBS 1000 FA21 - 200 l/min - aluminum booms
05.275c	MBS 800 Z16 - 168 l/min - steel booms	05.275s	MBS 1200 Z15 - 168 l/min - steel booms
05.275d	MBS 800 ZA 12 - 168 l/min - aluminum booms	05.275t	MBS 1200 Z16 - 168 l/min - steel booms
05.275e	MBS 800 ZA 15 - 168 l/min - aluminum booms	05.275u	MBS 1200 Z18 - 168 l/min - steel booms
05.275f	MBS 800 ZA 16 - 168 l/min - aluminum booms	05.275v	MBS 1200 ZA15 - 168 l/min - aluminum booms
05.275g	MBS 1000 Z16 - 168 l/min - steel booms	05.275w	MBS 1200 ZA16 - 168 l/min - aluminum booms
05.275h	MBS 1000 Z18 - 168 l/min - steel booms	05.275x	MBS 1200 ZA18 - 168 l/min - aluminum booms
05.275i	MBS 1000 ZA15 - 168 l/min - aluminum booms	05.275y	MBS 1200 Z15 - 200 l/min - steel booms
05.275j	MBS 1000 ZA16 - 168 l/min - aluminum booms	05.275z	MBS 1200 Z16 - 200 l/min - steel booms
05.275k	MBS 1000 ZA18 - 168 l/min - aluminum booms	05.275aa	MBS 1200 Z18 - 200 l/min - steel booms
05.275l	MBS 1000 Z15 - 200 l/min - steel booms	05.275ab	MBS 1200 ZA15 - 200 l/min - aluminum booms
05.275m	MBS 1000 Z16 - 200 l/min - steel booms	05.275ac	MBS 1200 ZA16 - 200 l/min - aluminum booms
05.275n	MBS 1000 Z18 - 200 l/min - steel booms	05.275ad	MBS 1200 ZA18 - 200 l/min - aluminum booms
05.275o	MBS 1000 ZA15 - 200 l/min - aluminum booms	05.275ae	MBS 1200 FA21 - 200 l/min - aluminum booms
05.275p	MBS 1000 ZA16 - 200 l/min - aluminum booms		

Version	lenght (mm)	width (mm)	max height (mm)	empty weight (kg)	total weight (kg)
MBS 1000 Z 15 - 168 l/min - steel boom	1600	2450	2700	920	2023

Description of sprayer

The implement is a mounted sprayer for use on herbaceous crops. The sprayer is attached to the tractor via the three-point linkage with a quick coupling system.

The frame of the machine is made of painted steel, the main and auxiliary tanks are made of polyethylene. A gauge is located on the front left of the main tank. The liquid level is indicated by a pointer indicator.

Agitation is through hydraulic stirrers located on the bottom of the tank. The tank is completely emptied using a valve located on the left side.

Access to the main tank can be done by means of a special scale on the left side.

The implement has a range of models, having a main tank nominal capacity of 800, 1000 or 1200 l.

The implement is powered through the tractor PTO having a rated speed of 540 rpm.
The implement has a diaphragm pump located in a special compartment below the main tank.
Pressure regulation and liquid dispensing are controlled using electrically operated controls that can be placed in the tractor cab. The computer is provided as standard for the management of the supply proportional to the forward speed.
The filtration system consists of a suction filter, which can also be inspected with a full tank, a general discharge filter.
The dispensing boom, having a working width of 12, 15, 16, 18 and 21 m, is made out of painted steel (Z series) or aluminium (ZA and FA series). During transport it is folded to the rear of the tank using ad hoc supports used to block the implement.
The boom is attached to the support frame through a sledge-type connection.
Monitoring of the boom position and opening-closing operations are electro-hydraulically operated through a control panel that can be positioned close to the driver's seat.
The blocking of boom oscillation is via a mechanical device that is automatically actuated during the folding of the boom.
All movements are managed by a hydraulic circuit derived from the tractor.
Liquid is sprayed under pressure. The nozzle holders are equipped with a diaphragm antidrip device.
The pressure gauge for checking operating pressure is positioned on the front and it is characterized by a reading interval of 0.1 bar.
An auxiliary tank is installed on the left side of the machine for the pre-mixing of chemical products.

Rear view – transport position

Side view – transport position

Chemical products mixer

Control valves

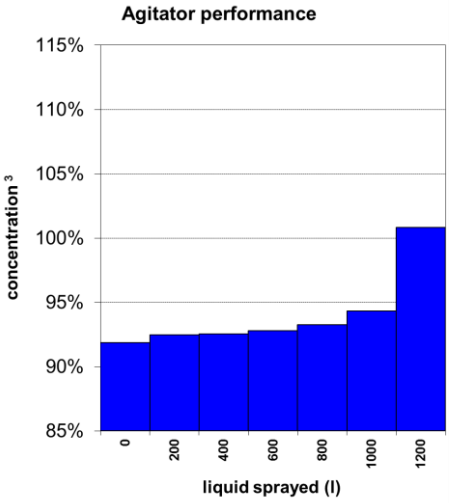
Level indicator

Spraying circuit control

Main results of functional test

Residual (l)		
in the tank		
horizontal		
with back flow - with agitation		3,40
with back flow - without agitation		--
without back flow - without agitation		2,48
inclined to right		3,08
inclined to left		3,33
inclined to rear		3,05
inclined to front		3,10
in the hoses: dilutable		11,05
dilutable residual [1]		14,38
in the hoses: non dilutable [2]		
boom width	**18 m**	**21 m**
	8,40	9,50
total residual		
boom width	**18 m**	**21 m**
	22,78	23,88

[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



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

Cross distribution

Nozzle ASJ AFC 05 - 0.60 m height

pressure (bar)	2	3	5
16 m - CV (%)	5,30	4,80	4,50
18 m - CV (%)	5,80	5,10	4,90
21 m - CV (%)	5,80	4,90	4,70

Explanation on testing

Testing takes place according to the Technical Instructions for ENTAM-Tests of Field Crop 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 16119-2 “Agricultural and forestry machinery – Environmental requirements for sprayers – Part 2: Horizontal boom sprayers“. 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 behavior 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	**EPH12/19**
HBLFA Francisco Josephinum Wieselburg	**HBLFA** Francisco Josephinum – BLT Wieselburg – AUSTRIA	**BLTProtNr. 037/19**
irstea	**IRSTEA** - (formerly CEMAGREF) – FRANCE	**IRSTEA/ CEMAGREF/ ENTAM/19/031**
JKI Julius Kühn-Institut Bundesforschungsinstitut für Kulturpflanzen	**JKI** - Julius Kühn-Institut (formerly BBA) – GERMANY	**ENT-I-../..**
GÖDÖLLŐ 1869	**MGI -** MEZOGAZDASÁGI GÉPESÍTÉSI INTÉZET– HUNGARY	**I-216/2019**
PIMR SIEĆ BADAWCZA ŁUKASIEWICZ	**ŁUKASIEWICZ-PIMR** – Sieć Badawcza ŁUKASIEWICZ – Przemysłowy Instytut Maszyn Rolniczych – POLAND	**PIMR-232/ENTAM/19**