THE SPISE ADVICE FOR FUNCTIONAL INSPECTION OF WEED WIPER

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Mainly used to weed control in:
- Weed beet
- Grass weed population
- Red rice (wild rice)

And to control volunteer potatoes in sugar beet

Working principle: difference in height between weed plants and crops
INTRODUCTION

Two main types of wiper devices

**Type A:**
Product used: *herbicide/chemical mixture* concentrated or diluted (up to 60%)

Absorbent surface: cotton, sponge, roller with carpet

**Type B**
Product used: *herbicide/chemical product not diluted*

Absorbent surface: cord

Tank closed

Tank open

Tank for herbicide
It is based on EN ISO 16122-1, 2 standardized methods when applicable

- Pre inspection
- Inspection (main components to be inspected)
  - Tank
  - Pump
  - Hoses
  - Cleaning equipment
  - Control devices
  - Boom
  - Electronic devices
PRE – INSPECTION

It is important that the inspection can be executed in a way that is safe for the inspector and the environment.

CLEANING

The sprayer shall be clean. Cleaning shall include internal parts, filters, filter inserts and external surfaces giving special consideration to areas of contamination to which the inspector could be exposed during the inspection.

Visual check

POWER TRANSMISSION PARTS

The power take-off (PTO) drive shaft guard and the guard of the power input connection (PIC) shall be fitted and in good condition. In addition:
1) the different parts of the shaft, the universal joints and locking systems shall not show excessive wear, 2) the PTO drive shaft guard shall be present and shall not show any deformations or tears, 3) in case of non-rotating guards, the restraining device that prevents the rotation of the power take off drive shaft guard shall be present and shall work properly. Protective devices and any moving or rotating transmission parts shall not be affected in their function.
**PRE – INSPECTION**

### MOVING PARTS

*All guards provided for protection of the operator shall be present and function correctly.*

**Visual check**

### PIPES AH HOSE FOR HYDRAULIC TRANSMISSION

*There shall be no visible leakage from the hydraulic system.*

Hydraulic hoses shall not show excessive bending and abrasion through contact with surrounding surfaces.

They shall be free from defects such as excessive surface wear, cuts or cracks.

Hydraulic pipes shall be retained in position and be free of significant corrosion or damage.

**Visual check**
STRUCTURAL PARTS AND FRAMEWORK

All structural parts and framework shall be in a good condition without permanent deformation, significant corrosion or other defects which could affect the rigidity or the strength of the sprayer. This requirement applies also to the hitching device.

Visual check

LOCKABLE FOLDABLE PARTS

Locking of foldable parts of the wiper shall secure these parts in their intended positions

Visual check
LEAKS (Wiper type A&B)

The tank(s) for chemical mixture/herbicide should be filled with water to its nominal capacity. With the pump, if provided, not running and the machine parked on level horizontal surface, a visual inspection for any leakage shall be carried out.

DRIPPING (Wiper type A&B)

With the pump, if provided, running at a pressure which is equal to the maximum obtainable pressure for the system, \textit{with the section valves closed, there shall be no dripping from any part of the machine.}
PUMP (wiper type A)

Capacity
The pump capacity shall be suited to the needs of the equipment.

Pulsations (if pressure gauge is provided)
The pulsations shall not exceed 10% of the working pressure.

Air chamber (if provided)
The membrane shall not be damaged, there shall be no appearance of liquid when operated at the maximum pressure recommended by the manufacturer. The air pressure shall be the pressure recommended by the manufacturer. Normally 1/3 of the spray pressure is used.
AGITATION (wiper type A)

**NOTE:** If the wiper only is used with chemicals which go into a solution (e.g. Glyphosate), no agitation is needed. Often this small wipers only have pump capacity only for operating, not for agitation. *Agitation systems are usually not installed in this type of machine*. If instead agitation system is present:

**Hydraulic**
A clearly visible agitation shall be maintained:
— when operating at the maximum working pressure as recommended by the manufacturer;
— with pump rotation speed as recommended by the manufacturer;
— with the tank filled to half its nominal capacity.

**Mechanical**
A clearly visible agitation shall be maintained when the agitation system is working as recommended by the manufacturer, with the tank filled to half its nominal capacity.

*Visual check*
**MAIN TANK**

*Lid (wiper type A)*

The tank shall be provided with a lid that shall be well adapted and in good condition. This *lid shall be tightly sealed to avoid unexpected opening*. If a vent is fitted in the lid it shall prevent spillage.

*Filling hole(s) (wiper type A)*

There shall be a strainer in good condition in the filling hole(s). If the filling hole is smaller than 100 mm (smaller wipers), there shall be a funnel with sieve.

*Pressure compensation (wiper type A)*

There shall be a pressure compensation device to avoid over-pressure and under-pressure in the tank.
**INSPECTION**
(requirements and methods of verification)

**MAIN TANK**

*Tank content indicator(s) (wiper type A)*
The volume of liquid in the tank shall be clearly readable from the operator’s position and/or from where the tank is filled.

**Visual check**

*Tank emptying (wiper type A&B)*
It shall be possible to:
• empty the tank e.g. using a tap, and
• collect the liquid without contamination of the environment and without potential risk of exposure of the operator.

**Visual check**

*Tank filling (wiper type A)*
If there is a water filling device on the machine, water from the machine shall be prevented from returning to the water source (e.g. by means of a non-return valve).

**Visual check**
CLEANING DEVICE FOR PLANT PROTECTION PRODUCT CONTAINER (wiper type A&B)

If provided, shall work properly.

Visual check and functional test

CLEANING EQUIPMENT (wiper type A&B)

If provided, devices for external cleaning, devices for induction hoppers cleaning and devices for the internal cleaning of the complete machine, shall function.

Visual check and functional test
INSPECTION
(requirements and methods of verification)

CONTROLS (wiper type A&B)

General
All devices for measuring and/or adjusting the pressure and/or flow rate shall function. The valves for switching on or off the distribution shall operate properly.

Only if the machine shall be adjusted during operation, the controls shall be operable from the operator`s position and the instrument displays shall be readable from this position.

Switching on and off individual machine sections, if provided, shall be possible.

NOTE: Turning of the head and the upper body is acceptable to achieve these requirements.
For analogue pressure indicators the minimum diameter shall be 63 mm.

The accuracy of the pressure indicator shall be:
- ± 0.2 bar for working pressures at 2 bar and below,
- ± 10% of the real value for pressures at 2 bar and above.

The scale of the digital or analogue pressure indicator shall be clearly readable from the operator's position and suitable for the working pressure range used.

The scale of analogue pressure indicators shall provide graduations at least every 0.2 bar for working pressures less than 5 bar;

Pressure adjusting devices (if provided) (wiper type A)
All devices for adjusting pressure shall maintain a constant pressure with a tolerance of 10% at constant setting and shall return within 10 s to the original working pressure ±10% after the equipment has been switched off and on again.
HOSES (wiper type A&B)

Hoses shall not show excessive bending and abrasion through contact with surrounding surfaces.
They shall be free from defects such as excessive surface wear, cuts or cracks.

Visual check
Isolating device
It shall be possible, with the tank filled at its nominal volume, to clean filters without any spray liquid leaking out except for that which may be present in the filter casing and the suction lines.

Filters (wiper type A)

Presence
NOTE: *if using Glyphosate only, no filters are required*
If pump is provided there shall be at least one filter on the discharge side of the pump and, in case of positive displacement pumps, one filter on the suction side. The filter(s) shall be in good condition.

Examination of specification and visual check.

Isolating device
It shall be possible, with the tank filled at its nominal volume, to clean filters without any spray liquid leaking out except for that which may be present in the filter casing and the suction lines.

Functional check

Filters insert changeability
Filter inserts shall be changeable in accordance with the machine manufacturers' instructions.

Visual check and functional test
Stability/alignment
Horizontal boom shall be stable in all directions, i.e. *no excessive movement caused by wear and/or permanent deformation.*

**Visual check**

Automatic resetting
When provided, the automatic resetting of horizontal boom shall operate to move backwards and/or forwards, in case of contact with “critical” obstacles.

**Visual check and functional test**
**Height adjustment**
When provided, height adjustment devices shall function.

**Vertical position**
When measured with the machine stationary, the difference between maximum and minimum distance from boom and a horizontal reference line (e.g. on a level horizontal surface) shall non vary more than ± 10 mm or ± 0.05 % of the working width, whichever is the highest.

**Damping, slope compensation and stabilization**
When provided, devices for damping unintended boom movements, slope compensation and stabilization systems shall function.

**Visual check and functional test**
INSPECTION
(requrement and methods of verification)

WEED DETECTION SYSTEM AND OTHER ELECTRONIC OR MECHANICAL DEVICES (wiper type A&B)

When provided, shall work properly.  
*Visual check*

CONDITION OF THE CLOTH/ROLL/CORD (wiper type A&B)

The cloth, the material where the roll is covered or the cord shall be in good condition and shall have no visible damages.

*Visual check*

Humidification of the cloth/roll/cord (wiper type A&B)

All provisions which ensure the correct wetting of the cloth/roll/cord shall function properly.

*Functional test*
CONCLUSIONS

No standard specification requirements available for new wipers

Difficult (impossible??) to make “strictly” requirements

Those mentioned in this draft Advice are then necessary limited for the inspection of wipers in use

Special acknowledgments to:

Bruno Huyghebaert - CRA-W – Dept. of Production and Sectors Gembloux, Belgium
Tom Bals – Micron Sprayers - Bromyard, Herefordshire, United Kingdom
Emilio Paitoni - MAR sas – Ronsecco (Vercelli), Italy
Giovanni Carenzo – Union Services srl – Novara, Italy
QUESTIONS?

THANK YOU FOR YOUR ATTENTION!