



ZEBRA / ZENIT / NEPTUN / ZATURN

The intelligent sprayer
VINE SPRAYERS



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Your Benefits of Ownership: Robust, Efficient and Practical

Tank: Impact proof, UV resistant, 12 mm wide walls

Pumps: Diaphragm, self-priming, can run dry

Frame: Heavy-duty design and construction

Air delivery: Meet your air volume/air speed needs from L-540, HF-540, HF-540D and HF-640D

Spraying: OPTIMUS, pneumatic and hydropneumatic systems for every pesticide formulation needs

Turbine: Fans selected and adjusted to deliver your specified optimal performance

Unique versatility

This range of sprayers can –without any compromise– spray all types and growing systems of vines. Whatever your needs, from small young vines to well established plantations, this product range from HARDI will truly meet all your needs. Consider, for example, the adjustable blower with its 2 speed gearbox that can deliver the widest range of controlled and variable air volumes and air speeds. You choose and we deliver!

Performance without stops

From the comfort and safety of your tractor seat, use HARDI electrical switching gear to simply make critical adjustments –such as your angle of air and spray delivery– to win unparalleled accuracy ‘on the go’.

Robustness and simplicity

The overall design of these sprayers benefit, time and again, from the expertise gained with HARDI’s unique worldwide experience in vine spraying. Everything about this valued heritage can be seen in the quality of its construction; from the tank to the boom to its electronic control system and to the nozzles themselves.

Details do matter!

Time and again, we have listened to your needs! These vine sprayers are equipped, for example, with a centrifugal clutch to ensure a smooth start and stop, avoiding damage to the drive system when PTO speeds cannot be kept constant under difficult driving conditions.



TurboFiller

Filling, mixing and loading your sprayer exceeds every standard with this unbeatable but compact TurboFiller. Undiluted liquid formulations are induced safely and at speed. Dry formulations can be premixed and induced too. No mess, no hold back, no spills, no need for buckets and stirring sticks.

Outstanding air control with OPTIMUS

Directing the air in a controlled manner is critical for quality spraying. Wasteful drift can be greatly reduced, spray deposits maximised, by directing and controlling the air as and when it is needed. Early in the season, for example, air outlets can be completely closed so the spray is safely retained by the young developing plant. In contrast, air speed may need to be higher when controlling mildew on maturing grape bunches hidden by foliage.

Operator and environmental safety come first with HARDI

Every varying need has to be met with an appropriate spray delivery system; only the OPTIMUS can meet all these changing needs for optimised pesticide use in vines.

LINER boom

The LINER boom family is the lightest in structure as well as the narrowest in the HARDI vine boom range.

The FIX version is never wider than the tank of your sprayer. Being adjustable in height and angle, these spouts ensure the very best spraying methods whenever your row access is restricted.

The START version allows manual adjustment to the canopy, optionally hydraulic adjusted by 2X0.35 m.

It can be set up to spray Face to Face or in Projection to the next row.



LINER FIX

This boom is ideal for vines grown with narrow access rows. Spouts are adjusted to spray the vines to the nearer sides of both adjacent rows.

Adjust from 0.2 to 1.0 m.



LINER START

Holds the spraying OPTIMUS spray devices in the top and allows a wider width adjustment from 1.1 to 1.8 m.

ATLAS boom

The light boom structure allows to be set up for 4 or 6 faces.

Auto recoverable brake away clutch protects the boom.

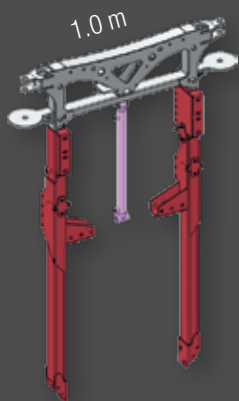
Hydraulic folding and lift.

The lightest way to treat up to 6 rows in row distance of 2 to 2.5 m.

The ATLAS AGILE specially designed for the COMPACT models and SOLID for the PLUS models.



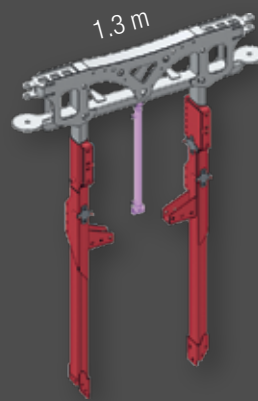
Spraying spouts OPTIMUS 35 on ATLAS SOLID boom



ATLAS AGILE

Hydraulically folded and height adjustable. Adjustable boom width from 3.0-3.8 option for hydraulic width adjustment.

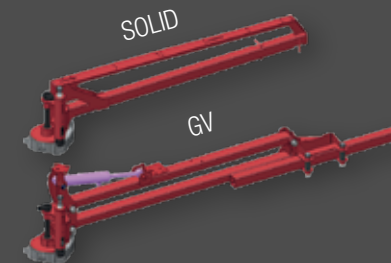
Available as SOLID and GV wings.



ATLAS SOLID

Hydraulically folded and height adjustable physical boom width of 5.6 m. that lets the dropleg to be set in any position.

Available as SOLID and GV wings.



Boom wings S=0.8 m, M=1.1 m, L=1.4 m



BOXER VERTICAL

Telescoping boom, allows adapting to row distance.

The outer boom element flips down into the row, and sprays against the outer face of the row. Ideal in windy areas, reduces the drift, as the spray device is down and between the rows.

As option to set up spray device M in projection and cover longer distance.

Spraying spouts OPTIMUS 15 on BOXER VERTICAL boom

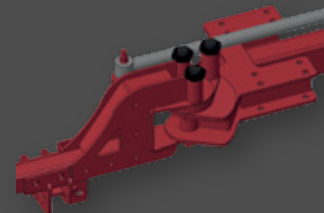


BOXER AGILE

Boom width 2.0 telescoping to 4.5 m according to angling of outer device.

Just 3 pistons, direct to the tractor on 3 double acting hydraulic connections, allow full control of the boom, lift and fold.

Available as vertical and horizontal.



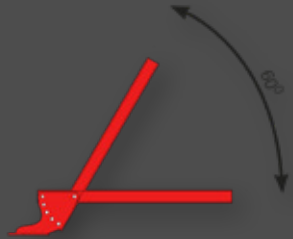
The pivoting point in the outer bracket with breakaway clutch folds in parallel with the sprayer in transport position.



BOXER HORIZONTAL
 Telescoping boom, adapts to row spacing.
 Brake away clutch on both models, outer spray device can be set up to spray in Projection; likewise, cannon towards the outer rows.
 Outer spray device can be adjusted either electrically or manually. Can be set up to spray 6 faces with the kit, CONTRARANGO OPTIMUS.



The outer boom sections are manually adjusted but, as an option, electrically driven pistons are available for control from the tractor cab.

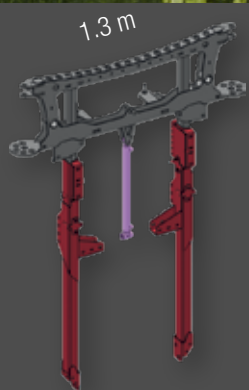


Both versions of BOXER boom are equipped with an adjustable boom arm, to position the nozzle right to the target.



BOXER SOLID

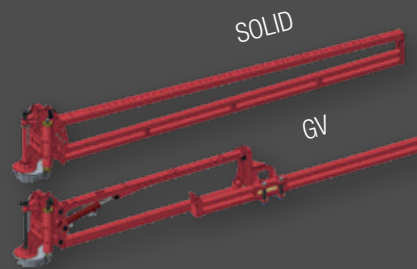
Boom width 2.5 telescoping to 6.5 m according to angling of outer device. Hydraulic lift and fold. Polyethylene tubes conduct the air to the OPTIMUS spouts. Available as vertical and horizontal.



CRONOS SOLID

Hydraulic boom fold and lift of 0.65 m.

Total boom width accordingly to choice of boom wings S, M or L.



Boom wings are length S = 1,8, M = 2,4, L = 2,9



CRONOS RIDER

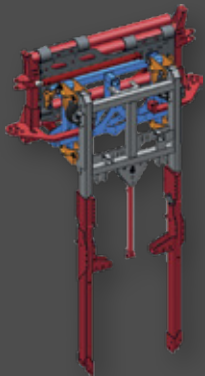
The boom designed for intensive use.

The RIDER suspension is a trapeze balance that levels the boom wings and absorbs the shocks.

Boom width 4.9 or 6.1 or 7.1 m.



Spraying panels OPTIMUS 55 on CRONOS DOUBLE VARIA boom



CRONOS SUSPENSION

Central with pneumatic FLOAT RIDE suspension.

Hydraulic boom fold and hydraulic lift of 0.65 m.

Total Boom as described S, M or L.



CRONOS VARIA

Central with VARIA on RIDER suspension.

Hydraulic boom fold and hydraulic lift of 0.65 m.

Total boom width S = 6.1, M = 7.3, L = 8.8 m



CRONOS DOUBLE VARIA

As the name indicates, double telescoping effect (2X 0,65 m + 2X 1.0 m) to a total of 4.6 m.

The booms hold the Optimus 55 recycling panels FLOAT RIDE boom suspension.

Vine sprayers

OPTIMUS 55

Air flows:

- › Leaves' agitation.
- › Spraying.
- › Recovery of spray drift

OPTIMUS 55 advantages:

- › **Air flow:** Air hoses and connections with larger diameters, no restriction in air flow.
- › **Precision:** More quantity of diffusers in the droplegs.
- › **Materials:** Polyethylene droplegs, ABS diffusers, fluid system with Push-In, no metal parts that can be oxidized.
- › **Robust booms.**
- › **Optimus diffusers:** Angle and depth adjustment by configurable flaps for optimal treatment, DIFFUSED FLOW, easy disassembly and repair, easy cleaning of interior parts, independent FLUID and AIR locking for each diffuser.

35% of possible savings of chemical product:

- › Versus any machine from other manufacturers.
- › Versus any of our previous solutions.



Juan Esteve: Masters of Science – Plant Science, California State University – Fresno Viticulture Technical Director, Raimat Winery (Codorníu Group), Lleida-Spain

Last summer we started to work with Hardi's brand new Optimus system and it has been a very positive experience. The main reason is that we have been able to recover 50% of the drift in the beginning of the season, percentage that has decreased proportionally

to the growth of the vegetation, reaching an estimated 20% in total for the season.

The application has been, by far, much better than with a standard machine. It made a big difference that we were able to treat in windy conditions that here normally come after

the rain, when the mildew pressure is much higher.

The efficacy of the machine is much higher and the coverage is much better than with any other machine. It has been a very positive experience for us.

Adjustable air outlets make it quick and easy to adjust the air stream towards the canopy as well as provide an optimised air velocity and direction; all critical features of the OPTIMUS to ensure the most effective movement and penetration of drops, onto and through canopies and their secure target retention.

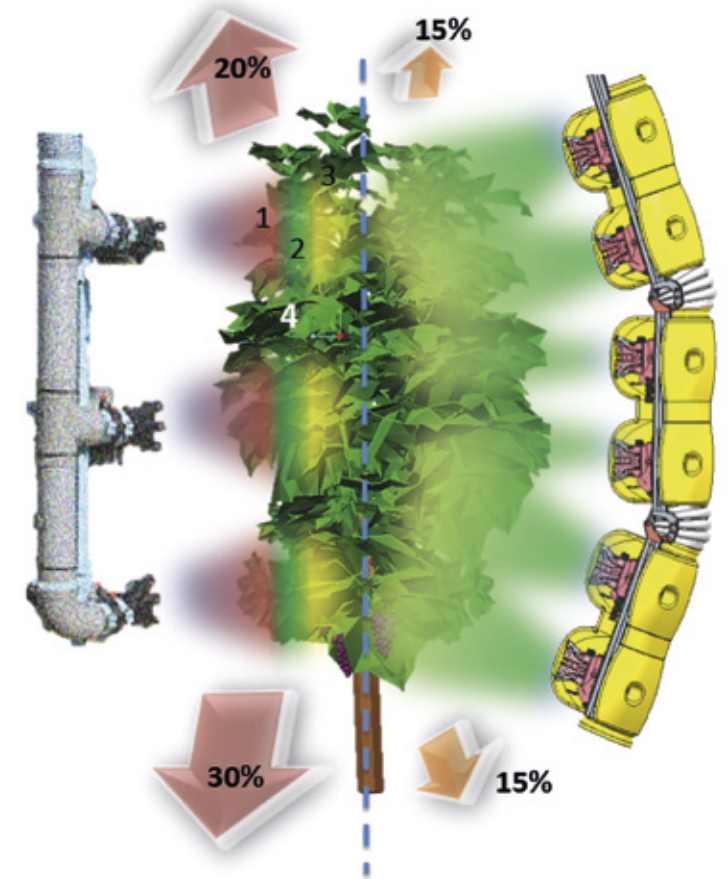
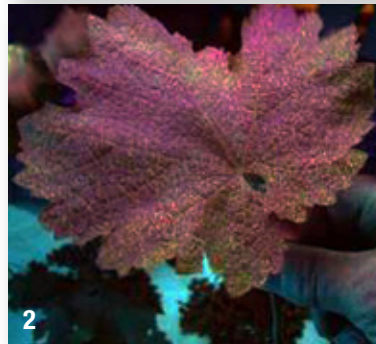


Tested, proven and grower acclaimed

Field tests by independent experts and commercial growers assess spraying performance in a range of ways.

Water Sensitive Paper: Attached onto target plants, these specialised paper strips are used to show where the spray drops will be deposited; their numbers, distribution and sizes being all instantly recorded in the field (Image 1).

Fluorescent tracers: Special dyes added to the spray liquid. Spray deposits from drops containing these dyes are seen and recorded under UV light. Whole grape vines can be scanned to record where the spray is deposited; from the tops of the vines (Image 2) to the fruit itself (Image 3).



Nozzles
1299 ceramic hollow cone

OPTIMUS 35 (save 35%)

- ▶ Recover 15% of the loss to the ground.
- ▶ Recover 5% of the loss to the air.
- ▶ Recover 5% of back spray drift.
- ▶ Reduce the dose by 10% with better deposition in sensitive areas (vegetation center, clusters...).
- ▶ Adapt the shape to the geometry of the vegetation.

Blowers / Air kits

Designed by aerodynamic specialists, these air kits are the key to better air distribution, lower noise levels and less power consumption; all benefits that deliver enhanced spraying efficiency, greater savings on fuel costs and less environmental impact.

Blowers are adapted to your plantation and growing techniques.

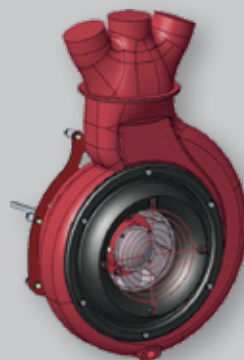
The full HARDI range of air kits, fans and turbines are made from the finest steel and aluminium. Note carefully every major feature such as the patented centrifugal clutch that minimises wear to the sprayer and tractor as well as economising on fuel and enhancing your safety.



L-540

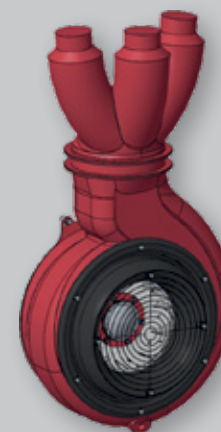
10,000 m³/h. Suitable for treatments in vine and berry bushes. Belt driven. Disengagement. Centrifugal clutch. Air intake from the rear. Polyethylene fan housing. Power consumption: 10 kW.

Polyethylene fan housing



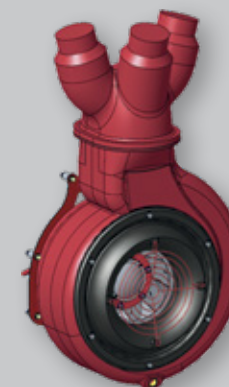
HF-540

14,000 m³/h. Suitable for treatments in vine and berry bushes. Two-speed gear box with neutral position. Centrifugal clutch. Air intake from the rear. Polyethylene fan housing. Transport lights (optional in ZENIT). Power consumption: 16 kW.



HF-540D

18,000 m³/h. Suitable for treatments in vine and berry bushes. Two-speed gear box with neutral position. Centrifugal clutch. Air intake from both rear and front. Polyethylene fan housing. Transport lights (optional in ZENIT). Power consumption: 22 kW.



HF-640D

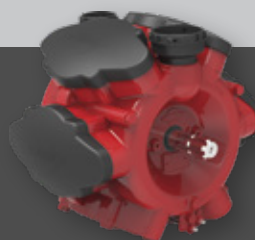
37,000 m³/h. Suitable for vine in hedge row plantation. Two speed gear box with neutral position. Centrifugal clutch. Transport lights. Air intake from both rear and front. Polyester fan housing. Power consumption: 36 kW.

Gearbox and Pump



The HARDI heavy-duty gearbox stands up to the extreme conditions that orchard applications provoke, in very warm climate conditions as well as in severe terrain, where engine revolutions cannot be maintained constant.

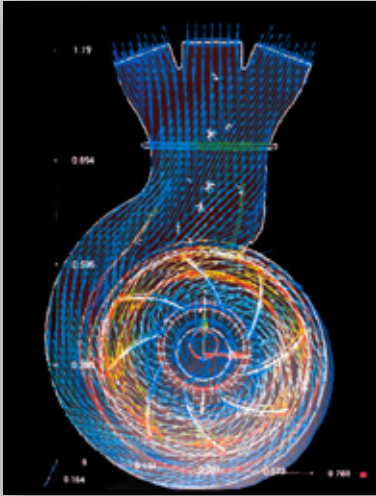
- ▶ Safety device to avoid unintended disengagement.
- ▶ Strong all-in-one body casing with simplified greasing needs.
- ▶ Easy access.



HARDI diaphragm pumps need no introduction! From the very beginning, these pumps were exclusively designed and made for agricultural and horticultural sprayers and, for decades, have continued to uphold their world leading position. Every need is met. Look, for example, at: Model 364 with 6 diaphragms that can deliver 140 to 195 l/min at pressures of up to 20 bars whilst the Model 321 has 2 diaphragms and will deliver an output of 70 l/min at a pressure of 25 bars.

Features:

- ▶ Self-priming.
- ▶ Able to run dry without damage.
- ▶ Grease lubricated crankcase.
- ▶ Chemical resistant diaphragms and valves.
- ▶ Can be used to rotate clockwise or anti-clockwise.
- ▶ Easy to service without special tools.



Designed by aerodynamic specialists, these air kits are the key to better air distribution, lower noise levels and less power consumption; all benefits that deliver enhanced spraying efficiency, greater savings on fuel costs and less environmental impact.

Operating units CB/2, CB/4, CA/2 & CA/4

Precision spraying is dependent on these - the very best - valve controls and constant pressure systems.

Spray computer use is aided with the addition of a sonic flowmeter.

As well operating units as SV and manual operating units are offered.



Above picture shows the DB3620 color screen with the fluid box FB3620 under it, followed by the hydraulic box HB3620.

The large color display shows the flow, tank capacity, pressure and application rate, for just to mention a few of the many practical information the rate controller is able to provide.

Joystick combines with display 3620 and replaces the control boxes.



Controls boxes



The Fluid Box FB3610 is the standard equipment on all electrical operating units. Where more section valves is the case; the larger control box FB3620 is controlling the operating unit.

Hydraulics are controlled by the HB3610 or the larger HB3620 according to hydraulic functions in the boom.



Sonar

Automatic on/off of the spray mist, as optional sensors detect trees and gaps in the row.

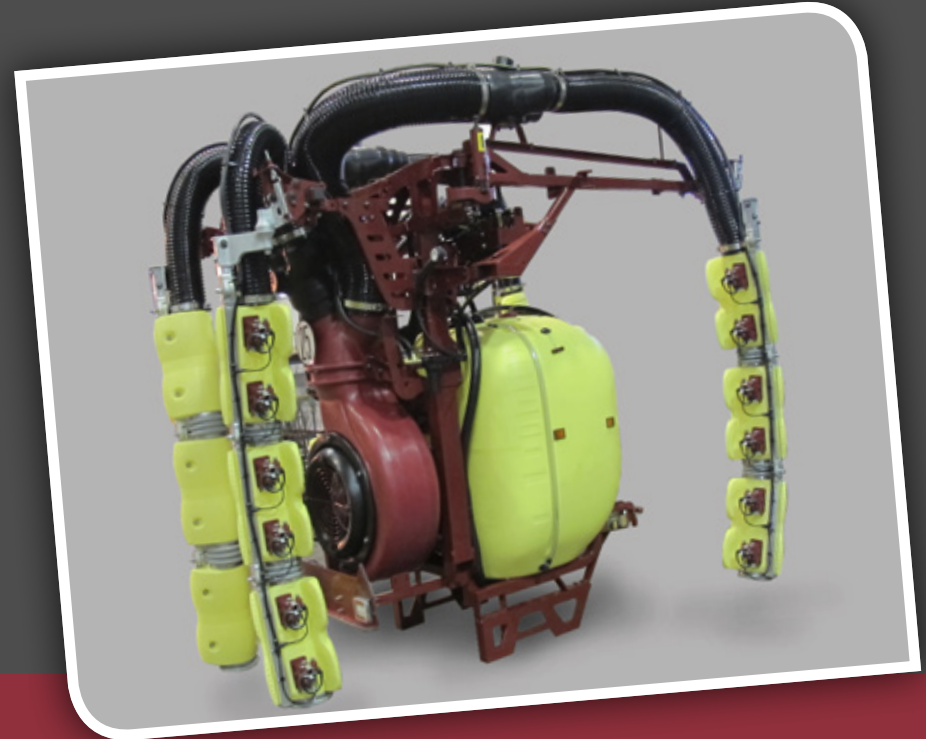


The black & white rate controller DB3610 is, apart from being a spray computer, as well a control box for up to 4 sections operating unit, and two hydraulic pistons.



ZEBRA

There is no doubt that the ZEBRA can offer professional solutions to all the challenges of spraying vineyards with the most narrow access between cropping rows. Choose your boom from the 3 ATLAS options to meet any need; very narrow access to 'over-the-row' spraying.



ZENIT

Large vine plantations and contractors demand all the benefits of the ZENIT range. Tank sizes up to 1200 l and the BOXER booms ensure that these professionals can meet any vine spraying challenge. Easily adjusted booms are just one feature offered by this range to ease the rapid and safe adaptations from one spraying need to another.



ZATURN COMPACT

Narrow access rows of just 0.94 m can be sprayed using the ZATURN COMPACT with tank sizes of 800 or 1000 l.

Larger and slightly wider ZATURN 1000, 1500, 2000 and 3000 l are ideal for the larger vineyards and soft fruit plantations. Choose your ZATURN to meet your needs from the JET, BOXER or CRONOS range.



ZATURN

The ZATURN range has won the pole position in the world of vine spraying. Trend setting designs allow this sprayer to be available in versions to meet almost every need. Every detail is a winner. Look at the clean design and the outstanding weight balance; features demanded to meet every need.

Consider the benefits, for example, the incorporated front mounted rinsing tank; better sprayer cleaning = greater crop safety; better weight balance = greater hill stability, yet all integrated into the flowing ZATURN lines.



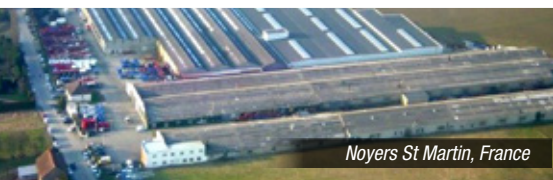
Nørre Alslev, Denmark



Lleida, Spain



Savigny, France



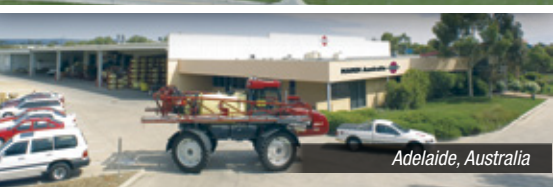
Noyers St Martin, France



Beaurainville, France



Davenport, USA



Adelaide, Australia

HARDI

The Sprayer

HARDI INTERNATIONAL A/S

is an international group whose basic idea is to satisfy the user's requirements for quality products which ensure efficient, punctual and precise application of crop protection products. Our world-wide distribution and sales network comprise of more than 100 countries where we are represented by importers, agents and sales subsidiaries. These are situated in Sweden, Norway, Denmark, the UK, France, Spain, North America, Germany, Australia, China and EMC – Russia & CIS countries.

Since 1957 HARDI has committed to the ever-increasing demands for efficient and precise plant protection. HARDI is the trendsetter within application of crop protection products. To achieve this position continued developments and innovation are essential. HARDI is committed to the long term future of plant protection.

Testing procedures

Sprayers leaving HARDI INTERNATIONAL A/S are tested according to the strictest quality standards.

Our staff responsible for final testing are accredited to test and document national approvals and standards from: Germany (BBA/JKI), UK (NSTS), China (CCC) and Denmark, where HARDI is approved to inspect sprayers.

This ensures that the highest quality sprayers are delivered to farmers.



Superb surface treatment

The high-technology surface treatment contains 13 treatments, including a pre-treatment and powder coat painting of all major components.

Together with the Delta/Magni treatment of nuts, bolts and other items, we supply high corrosion protection of our products.

HARDI INTERNATIONAL A/S

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