



NEWSLETTER



Quality & Experience



CASE STORY: COMMANDER 3300I 24M TWIN FORCE,
MASTER PLUS 1200L 18M, COMMANDER TWIN FORCE 36 M,
MASTER PLUS 1800 24M VPZ BOOM, HARDI NK,
HARDI NAVIGATOR 3000

PRODUCT NEWS: NEW ALPHA EVO II CAB,
HARDI AutoSelect, 25 CM NOZZLE SPACE

ENTAM TEST REPORT: NAVIGATOR DELTA FORCE

MARKET'S BEST BOOM STABILITY: HARDI AutoTerrain

Content





Change nozzles on the go **HARDI AutoSelect** – for full flexibility

Change nozzles
from driver's seat

4 different modes

Auto function
for higher user
friendliness

Variable
driving speed

Automatic and safe change of nozzles from the driver's seat
to quickly overcome field and weather conditions

AutoSelect – for full flexibility

HARDI introduced an air controlled nozzle concept at Agromek 2016, allowing the driver to switch between 2 nozzles or to use both at the same time.

You can for example use one drift reducing nozzle in headland or at sensitive buffer zones and a "normal" FlatFan or LowDrift nozzle in the rest of the field.

The driver is also able to react on weather conditions and change nozzles on the go if wind conditions have changed since the start of the spraying job.

Excellent at speed changes

If you need to run with big changes in speed, AutoSelect can automatically and instantly change between two sizes of noz-

zles, so one nozzles work can be taken over by a larger nozzle, at higher speeds. This will result in a higher droplet quality and a better application.

Change of dose during the spraying job

If you need to change dose in the field, this can be done by changing to a more suitable nozzle on the go - without compromising the spraying quality.

You have the possibility to use 9 to 13 sections and maximum 8 nozzles per section.

AutoSelect works with air pressure. If you have a pneumatic braking system on your tractor, your air source is already provided. If not, an air compressor is available as an option.

You have the possibility to change between 4 functions:

1. Spray with nozzle A
2. Spray with nozzle B
3. Spray with both nozzle A and B
4. Auto mode – AutoSelect can work with pre-defined pressure settings or working speeds



The HARDI COMMANDER 3300i 24 m TWIN FORCE Boom

Kildare Grower "Picks his own" Sprayer

Paul Brophy runs an unusual farm in some respects, from its base close to Naas in Co. Kildare. The original home farm was a mixed beef / tillage enterprise, but Paul decided to make some changes.

Today, Paul Brophy Produce is the largest producer of Broccoli in the country, supplying directly to Supermarkets and the Wholesale trade. Managing the farm for Paul, is a young man Pat Smyth. Who did his Horticultural training in Warrenstown College up in Co. Meath, this is now sadly closed.



I asked Pat why they decided to pick the HARDI COMMANDER. "We grow around 400 acres of Brassicas here, mostly Broccoli plus white and green cabbage,

said Pat. "In addition we grow around 250 acres of cereals. So, as you can see we are in the fields often and have different conditions to contend with. We also need to use fresh land for Brassica production every year to prevent disease such as Club Root.

This means that rented land under crop can be widespread so we needed good capacity and some additional features in a new sprayer. We already had experience with the HARDI Air System - it's really good at getting into and below the crop - so had decided on this system again".

"The Trailed 3300 litre COMMANDER with a 24 Metre Air Boom was our final choice because of overall weight and capacity. We added a suspended axle to reduce the shock loads on the boom, plus hydraulic brakes for safety. We specified the "Touch the Future" HC9500 Control Panel for Guidance, AutoSectionControl, Data Logging, Report generating and Automated Steering".

"The new DynamicFluid4 Liquid System is now exactly what we need, the fluid on/shut off is instant" says Pat. "And the way the boom is plumbed we can select via the tractor's GPS system where to spray and where to shut off. This function can be easily programmed once you have used it once

or twice. The SafeTrack Steering System ensures the boom is always at 90 degrees to the tramline so no double spraying at turns and no overlapping".

"What about hilly ground" I asked. "Let me show you the boom" says Pat. "Because we moved to a 24 metre boom we automatically got two additional rows of crop, so that was the first bonus. It's fitted with the AutoHeight system which keeps the wide boom parallel to the ground, and here you have Ultrasonic sensors to measure the height above the crop.

It adjusts itself to maintain the setting you want. We can spray even on windy days and are sure to get good penetration even into the growing Broccoli, say for pest control. In cereals it's also great as the wind FORCES the crop to move, giving real good under- leaf cover, with no missed targets. We now know the system and can often cut down on overall liquid application and indeed also on overall chemical usage.



"We already had experience with the HARDI Air System – it's really good at getting into and below the crop – so had decided on this system again ..."

These are all time and money saving concepts and give us better control of the growing crop.

We are in the fields in all conditions from March to December, as Brassicas are maturing on a daily and weekly basis. We have seedlings in one field and mature crops in another-each needing its own specific treatment. Supermarkets demand traceability and the HARDI HC9500 provides this and indeed cuts down on some of my hand recording work by providing a print out of acres covered and chemical usage". "We use both powder and liquid chemicals. The big 35 litre Chemical filler does this very well - wetting the powder and integrating it well. Each nozzle on the stainless steel boom line is in fact a

cluster of five allowing us always to have the right one on board. Going from crop to crop we need to be able to flush out the lines completely, a must if you have just used Roundup. This BoomFlush facility and indeed a complete washing system for the outside of the tank are fitted as standard on this COMMANDER. The water for this operation comes from a clean water tank mounted just over the sprayer axle".

"We also got LED lights fitted for night spraying" says Pat "as we do operate at night as well as very early morning. These lights ensure that we can see the spray pattern should a blockage occur". "This seldom happens" says Pat "as the self-cleaning filtration system is also special".

"We fitted a quick filling system and incorporated HARDI's AutoFill as well. This means you can pre-set the sprayer to fill the required amount of water and it will shut off when completed. You then add your chemicals and the unit is ready".

"We walk the crops on a weekly basis" says Pat. "We employ approx. ten people on a regular basis with an additional 30 or so at peak harvesting times. The Broccoli crop is labour intensive and the crop is still all hand cut. It's then individually wrapped at our base in Naas ready for the Super-market shelf".

"The COMMANDER is now part of the production line with us", says Pat.



HARDI MASTER Plus 1200l 18m

“I looked at other machines available on the market but it was the simplicity and compact nature of the HARDI booms that really sold it to me”

**John Hennessy, Threecastles,
Co.Kilkenny**

Kilkenny man John Hennessy farms 280 acres just outside the city in an area known as Threecastles. He is the 3rd generation to farm here taking over from his father Paddy over 42 years ago after leaving school at the age of 14. “Farming is all I ever wanted to do, so as soon as I could I finished my schooling and returned home to farm full time to help my father”.

The farm is divided up into both tillage and suckler enterprises which both account for approximately half of the farmed area. John finishes between 140-200 cattle and sows a combination of various cereals such as winter wheat, barley, oats and fodder beet. “The farm is roughly divided 50:50 between the tillage and cattle which suits my system as I use some of the crops and

straw for the animals during the winter while the bulk of it is sold to the co-ops”.

To take care of the crops John trusts one brand of sprayer and one only, HARDI. “I purchased my first HARDI sprayer back in 1977 off the local dealer at the time in Kilkenny, Barlo. The reason I chose HARDI at the time was mainly because the dealer was nearby for backup and parts which I never even needed. The HARDI sprayer would have also been quite popular in the area with many of my neighbours working them and getting on very well”.

The initial HARDI on the Hennessy farm was an 88 gallon (400l) machine with 12m booms which was replaced no less than 15 years later by a new version which was converted in house by IAM from a 12m to an unusual 13m machine to suit the seeder John had on the farm at the time.

As time passed on and the machinery on the farm inevitably got larger and more efficient so too did the sprayers. “I took a big step forward in 2012 when I bought a new 1000l HARDI with 18m booms mainly because the tractor which I was using for spraying was now larger capable of handling a bigger sprayer, plus I was doing most of the work on the farm myself which meant I needed an efficient machine to get the job done faster”.

This sprayer was then recently changed for Johns fifth HARDI sprayer, a 2018 MASTER Plus 1200l machine with 18m booms, “I thought the last sprayer would see me out but decided because of the TAMS grant I was going to upgrade it to a slightly larger machine with a few more creature comforts, the new sprayer has an even better pump than the previous machine and



the induction bowl is now more powerful which is a big advantage especially when using powdered sprays”.

Folding of the booms is controlled completely hydraulically and was one of the main selling points for John when choosing HARDI, “I looked at other machines available on the market but it was the simplicity and compact nature of the HARDI booms that really sold it to me, they fold up neat and tidy behind the sprayer and don’t protrude out where they can get caught by bushes. Even though they have a break back protection system as standard I still don’t want to take the chance of doing damage to them”.

The new sprayer has a hydraulic levelling system which again can be controlled inside the cab for both height and angle which is vital on the larger 18m booms which are now also cushioned to help when working on rougher ground. For added operator comfort all the functions are controlled electronically on a simple to use and compact control box which allows the user to utilise the section control feature which virtually eliminates overlap thus saving time and money.” I am by no means a big GPS guidance fan but the benefits of using section control and its simple and accurate operation is swaying me more and more that direction”.

In relation to maintenance and looking after the sprayer it is made even simpler on the new MASTER Plus as all the grease points are now accessible from two grease banks at the front of the machine. All the operative controls are clearly labelled and distinguishable making them easy to understand.

“The HARDI for me is a pleasure to work, its simple to use yet accurate in the field, it’s construction is robust to deal with Irish conditions without any problem and it is extremely well designed which is very noticeable by how well balanced it is on the tractor, I would have absolutely no hesitation in recommending a HARDI sprayer to anyone I would say, Go ahead any buy one you won’t regret it”.





COMMANDER 7000 TWIN FORCE 36 m

More spraying days – better coverage

Season has already begun at Jan Wagner when we arrive at his house in Groß Hundorf in Germany. It is the end of March; the sun is shining from a clear sky, and Mr. Wagner has just sent his 1 year old HARDI COMMANDER 7000 in the field.

The former agricultural advisor invites us to his office in his private residence. "We have been farming here for almost 25 years", he says. "But for the last three years, we have combined FORCES with two other farms from the neighbourhood, this way we can share machines and thereby lower our costs." Of the total amount of approx. 1,700 hectares, Jan Wagner owns the 550 hectares. "Our most important crops are definitely wheat, followed by winter rape and winter barley, they represent 600, 480 and 250 hectares accordingly. Besides that, we have a bit of triticale, beans, peas and maize."

A lower weight and more spraying days

Besides Mr. Wagner, 3 seasonal workers help with the daily work. Jan Wagner's son, who is studying a MASTER degree in agriculture, is helping out. He is also today's spray driver, and after a talk in the office, we drive towards one of Mr. Wagner's fields 30 km away.

His HARDI COMMANDER 7000 with 36 m. TWIN FORCE boom was delivered in April

*"With this sprayer,
I can use 50 litres less
water per hectare,
compared to my previous
conventional sprayer..."*

2016 and is now driving its second season. "I needed a machine with just one axle and a smaller tank. I wanted to keep the weight down to lower the pressure in the field, but still have the capacity of a bigger sprayer. The TWIN FORCE system is giving me that. This way I can use a smaller tractor than if I had chosen a bigger sprayer." He says.

"With this sprayer, I can use 50 litres less water per hectare, compared to my previous conventional sprayer. Today we spray at 100-160 litres per hectare at 10-11 km/h. We do that 7-8 times per year and is thereby covering around 13,000 hectares in total. Besides the less use of water, I have the possibility to spray with a 025 FlatFan nozzle at 2,5-3 bar. This gives me a fine droplet, covering the whole crop a lot better than with a coarser nozzle. This

is the result of the TWIN system's ability to angle the air stream and thereby the course of the droplets, besides minimizing drift. The possibility of spraying in more wind conditions has also affected my choice of sprayer. I believe we have up to 20% more spraying days now than with the conventional sprayer.

The future

When talking about the future of the farming industry, Jan Wagner is convinced that there will be focused on self-driving tractors. "This would really be a benefit for me, if it resulted in me not being dependent on having a driver on the tractor, but able to use this capacity somewhere else. Besides that, I think the tendency of less, but bigger farms will still be seen in the future. The economy in German farming is on a decent level now, and I believe it will be even better in the future, so my life as a German farmer is pretty good", Jan Wagner ends with a smile.



From left Niels Wagner, Mr. Wagner and Sven Höppner – a worker on the farm.

FARM FACTS:

- › Location: Groß Hundorf, Germany
- › 3 farms covering almost 1,700 ha
- › Family Carstens owns 1,150 ha
- › Family Wagner 550 ha

MOST IMPORTANT CROPS:

- › 600 ha wheat
- › 450 ha winter rape
- › 250 ha winter barley
- › 160 ha triticale
- › 80 ha beans
- › 60 ha maize
- › 3 full time employees, besides Jan Wagner and his son

MACHINE SPECIFICATIONS:

- › HARDI COMMANDER
- › Tank: 7000 l
- › Boom: 36 m TWIN FORCE
- › Spraying speed: 10-11 km/h
- › Age: From April 2016, spraying its second season

SPRAY FACTS:

- › Area sprayed: 1,800 ha
- › Spraying 7-8 times a year
- › Spraying 13,000 ha per year in total
- › Spraying 100-160 l/ha
- › Fertilizer from livestock, using up to 15 m³ per ha.



Product news

HARDI ALPHA evo II cab

To match the farmers' need of a comfortable and high visibility cabin, HARDI has introduced the self-developed evo II cabin for the self-propelled sprayer range. With 3 pillar design, a vision of 320° and a glass area of 6,58 m², the evo II cab makes the day to day work less stressful.

Higher driver safety and comfort: Class 4 category

The self-propelled sprayer range, ALPHA evo, will be equipped with a cab conforming to the safety norm EN-15695. The cabin is equipped with a pressurization system, a fresh air dust filtering system, an aerosol and vapour filter to protect the driver and fulfil the class 4 requirements:

The class 4 air filter must be stored into a hermetic bag while the machine is not used; otherwise its lifetime is reduced. To avoid this, HARDI's engineering team has implemented a lid to close the filter box hermetically when the class 4 filter is not in use. A possibility to switch off the class 4 filtration while driving on the road has also been implemented.

To avoid misting caused by humidity in the cab, the ALPHA's air condition system has been oversized to dry up a higher volume of air per minute.

The evo II cab gets a new air condition system for highest comfort

HARDI has upgraded the air condition system of the ALPHA evo II. The performance has been tested in a climate room where extreme weather conditions were simulated (temperatures, humidity and irradiating) to cover all driving conditions in Denmark, Germany, France or Australia. This new air condition system can reduce the inside cab temperature from 40°C to 28°C within 5 min. with the same irradiating conditions as in Australia.

To be able to do this the air flow capacity has been increased by 38%, which results in a very low noise level due to lower fan rpm.

The new evo II cab gets new features

A new steering column brings a triple adjustment to reduce driver stress while driving

A new display bracket gives the driver full flexibility in positioning the operating screen. An extra bracket can be supplied to allow even more position options.

A foot rest has been added to the left-hand side of the steering column; allowing the driver to easily maintain his position in slope and reduce fatigue by less effort and stress.

The new ALPHA air suspension: FloatRide

To allow even more comfort on uneven terrain, HARDI has added pneumatic airbag suspension to the ALPHA evo. By equipping the ALPHA with the optional FloatRide, the standard coil spring suspension is replaced by airbags. This ensures even more boom stability and maintains balance of the ALPHA in strong slopes. The height of the chassis will be maintained whatever the tank volume. By allowing individual wheel movement, the ALPHA provides maximum comfort, even at high spraying speeds through a wheel travel of 185 mm.

To ensure the required amount of air is maintained, an extra air tank of 8 litres has been implemented to the suspension system.



Other product news



DELTA FORCE carbon-fibre break-away

The low weight and the stiffness of carbon-fibre allow a 4 m long break-away compared to the 2.5 m version of the 36 m boom allowing you to drive with boom widths of up to 39 m.

DELTA FORCE 24 m

The reliable heavy-duty DELTA FORCE boom is now also available with 24 m. The boom can be delivered on NAVIGATOR 4000 / 5000 / 6000 and COMMANDER 4500 / 5500. The center section is the same as on 27 to 39 m, there are all features as boom management system and hydraulic AntiYaw available.

DELTA FORCE AutoTerrain

All DELTA FORCE booms can now be equipped with AutoTerrain boom management. The negative tilt of 4° for each boom wing and the center section is reacting direct and fast. AutoTerrain works and reacts on both boom movements and twisting FORCES on the boom. This allows the system to be proactive and react on the cause more than on the symptom.

TWIN FORCE 32-36 m AutoTerrain

The 3rd generation of TWIN FORCE booms with 32 to 36 m has negative tilt of the boom wings when used in combination with AutoTerrain boom management. The negative tilt is approximate 4° for each boom wing and the center section is reacting direct and fast. The TWIN FORCE hydraulic allows a fast tilt reaction which is needed to get a good performance in challenging conditions. Tests have shown that the AutoTerrain solution offers best possible boom performance and allow higher driving speeds.

NAVIGATOR 3000 / 4000 VPZ boom

The NAVIGATOR is now available with the vertically folded VPZ boom with 20 to 28 m. The sprayer has a narrow transport width. And the boom can be used reduced folded to spray around obstacles.



AutoTerrain with negative tilt for superb boom precision



HARDI MASTER Plus 1800 24m VPZ boom

Armagh based Father and son contracting team Megaw Contracts are no strangers to employing the latest technology within their business in order to improve performance and efficiency. This is clearly evident with their latest purchase, a HARDI MASTER Plus 1800 litre with 24 metre VPZ boom.

Megaw Contracts, Druminargle House, Co. Armagh

Megaw Contracts was established by John Megaw back in the 1960s and has always been loyal users of the HARDI product. Today Ivan Megaw is at the helm aided by his son William. "I went straight into the contracting once I left school which is 34 years ago" recalls Ivan, "my father John was contracting for as long as I can remember and is still active in the business today. Machinery is what I grew up around and is a real passion for me; it's all I ever wanted to do".

In recent years Ivan's son William has also joined the business and added another

view on how the business can progress into the future by employing technology to improve what they are already doing. "It's a disease to be honest", laughs William, "machinery is in my blood from growing up around it every day, I suppose being young has enabled me to bring a different aspect into the business in terms of how we can use technology to become more efficient and productive".

The Megaw team each year get through over 8000 acres of silage and wholecrop as well as 2000 acres of cereals for both themselves as well as for local customers, "We carry out all aspects of contracting, from ploughing and sowing all the way up

to harvesting and slurry, at this game you have to be able to offer your customers what they want done".

On top of the contracting the duo also farm 500 acres in total which is split into 450 acres of tillage and 50 acres of grass for their 100 head of cattle. "We keep a combination of suckler and beef cattle as well as also growing oil seed rape, winter wheat and barley, spring wheat and barley, fodder beet and Rye for feed; it definitely keeps us busy that's for sure".

To keep on top of such a broad range of crops the Megaws recently purchased a HARDI MASTER Plus 1800 litre which they



also specified with 24m VPZ booms along with the HC5500 rate controller, replacing a 5 year old HARDI 1200 with 12m booms. "We have always had HARDI sprayers here on the farm from as long back as I can remember, I can recall my father John spraying with a small HARDI 10m machine mounted on a Ford 3600 tractor, it's scary how far along things have come in such a relatively short space of time. One thing that hasn't changing is that we have stayed loyal to HARDI, which is down to numerous reasons, our local dealer GA Allen is very good to us regarding back up and service, the machines themselves are robust enough to withstand modern day contracting and they get the job done fast and efficiently without over complicating the job at hand which is vitally important for us as we could have a number of different operators on the machine, simplicity is key".

The new sprayer is fitted on a John Deere 6930 tractor which is equipped with GPS guidance and a 700 litre front mounted

tank to increase the sprayers coverage area. "We can easily cover 30 acres per fill which is a big step up from what was fitted to the 3600 all those years ago only covering 7 acres at a time. The GPS on the tractor communicates with the sprayer along us to full utilise the rate control and auto section control, it's a super feature that has saved us time and money".

"Machinery is in my blood from growing up around it every day..."

The new sprayer has already covered over 8000 acres in its first season and has worn out one complete set of nozzles in the process. "We cover a lot of ground every year with the sprayer which is a lot of the reason why we opted for 24m booms this time in order to get the efficiency up, this was a huge improvement not only in reducing the time used but the booms themselves which are a stand out feature for me. They

are extremely stable even at higher speeds, being 24m you would expect stability issues when we would be in rough ground but they simply just float along".

All the functions on the VPZ booms are electro-hydraulically operated from the in cab control panel where all the primary controls which are used in the field, such as boom height, independent tilting of either boom section and complete boom slanting are all grouped together making operation that bit simpler.

"We are delighted with the new sprayer after its first season, it's done everything we could of asked of it without any issues, its ability to cover ground fast while remaining stable and balanced is really its party piece, I would have absolutely no hesitation in recommending a HARDI sprayer to anyone, we ourselves will not be changing that much is for sure, if it's not broke don't fix it".



HARDI NK

"HARDI by name HARDI by nature"

"Over the 30 years I have had it the only part that it ever needed was a pump diaphragm"

Ned Millea, Warrington, Co. Kilkenny

Kilkenny man Ned Millea farms 60 acres of prime agricultural land just outside the city of Kilkenny. On the farm Ned grows a combination of spring barley and grass all of which he sells locally, "I have been farming all my life for longer than I care to remember, in the 1980s and early 90s I would have been heavily involved in tillage, taking up to 150 acres of rented ground on top of my own 60 acres which back then was a lot of work. Unfortunately in the early 90s the prices went down and the costs went up so we downscaled to just our own land. Today I farm with my son John where we grow both barley and grass all of which we sell in the local area where the farm is situated which has a lot of equestrian industry. We sell the straw, grain and all our grass in the form of haylage to this market which works well for us".

When dealing with the equestrian market it is of vital importance that the crops are right, to keep weeds and pests under con-

trol Ned employs the help of a HARDI NK sprayer which is no less than 30 years old. "I purchased the HARDI sprayer back in the 1980s off IAM in Kilkenny, I had seen them working around and was very impressed by how simple they were and how good a job they done, couple that with the fact that I had a local backup service for parts which in reality I didn't need, it was really an easy decision in the end and I have never looked back since".

"The HARDI has stood the test of time for me always producing good results in the crops..."

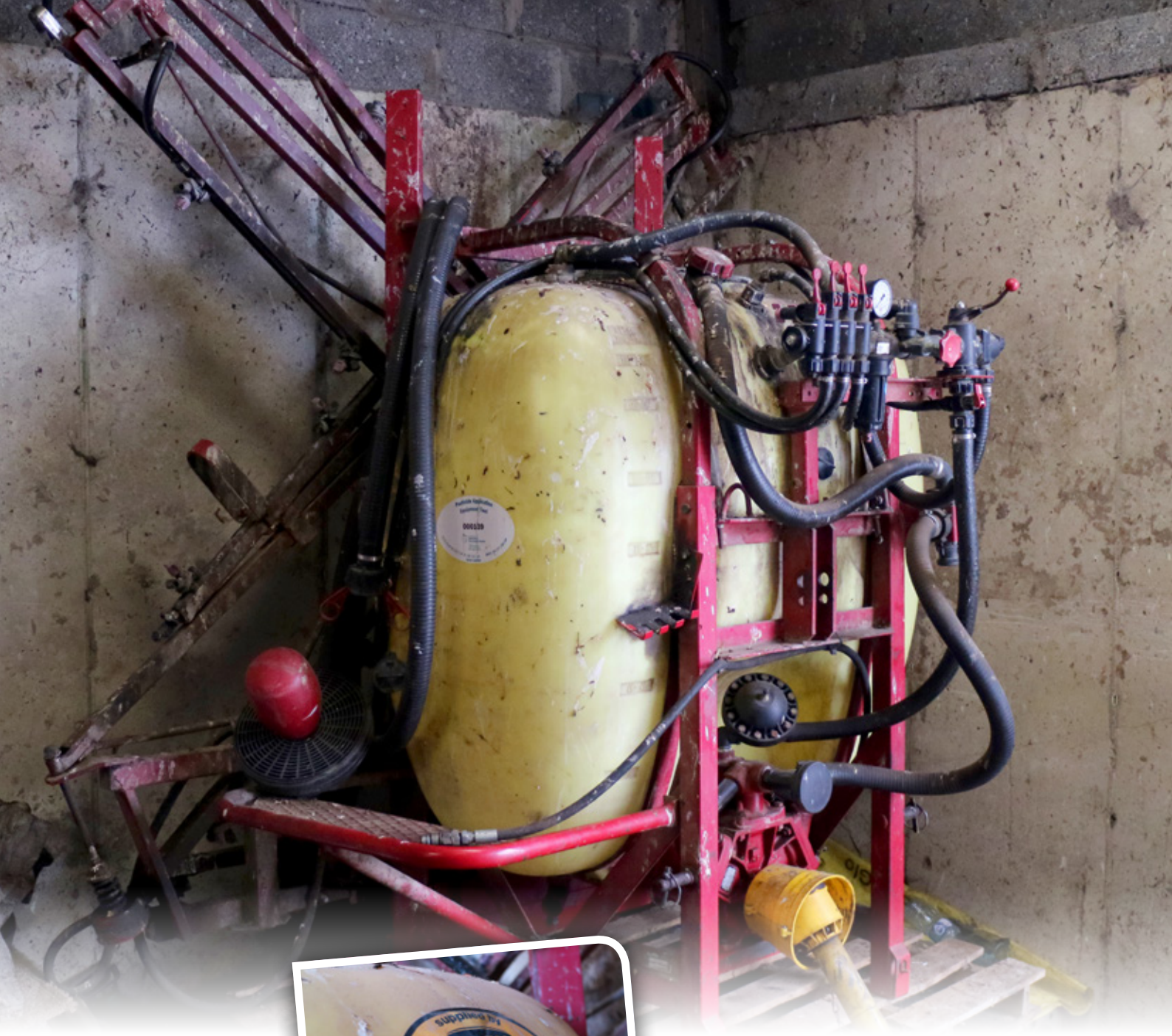
Ned opted for a 600 litre model NK sprayer with 12m booms which was coupled to a 70hp Leyland 272 which it still works on today. "I chose the NK model with 12m booms as it was a simple machine yet done everything I wanted it to, the

12m suited standard tramlines and it had hydraulic height control and a great pump that was really fast when filling".

Back in the bulk of the tillage days the sprayer was responsible for covering up to 600 acres in the year which it tackled with ease. Today the sprayer looks after Neds 60 acres as well as that of 6 neighbours, spraying on average 250-300 acres a year.

"I cannot fault the HARDI machine, over the 30 years I have had it the only part that it ever needed was a pump diaphragm and that was just to get it pasted for the sprayer certification. They are very well designed and engineered machines with features such as hydraulic height adjustment and side steps which we not available on competitor machines of the same era".

"The HARDI has stood the test of time for me always producing good results in the crops. To be honest if I was ever changing the sprayer I wouldn't buy anything else".



ENTAM test report NAVIGATOR DELTA FORCE

During the last year, a NAVIGATOR 4000 I with 27 m DELTA FORCE boom has been tested at the German Julius-Kuehn Institute (JKI). The test report has now been published in an ENTAM report

The aim of the association of testing institutes ENTAM (European Network for Testing of Agricultural Machines) is the harmonization of testing agricultural equipment and its mutual recognition. Thereby, equipment once tested is recognized Europe-wide. The working group for plant protection has currently 11 testing institutes as members. This network avoids multiple testing in different countries. Furthermore, a greater number of tested equipment can be provided to the farmers. Technical measurements are performed on the equipment to be tested. Field tests are not carried out. The results are compiled in a European test report.

Many standards to fulfill

There are many standards, which needs to be fulfilled before a sprayer can be placed on the market. In HARDI we are working actively in the world of standardization, and we comply with the different standards with all our products.

In application technique, there are different important standards. Technical, performance, safety and environmental standards made in the European system (CEN) and on the global level (ISO). Some are obligatory to fulfil, others are voluntary. Over the last years, the major focus has been on the development of harmonized safety and

environmental standards, to make farming safer for the operator and the environment and to be prepared in the registration discussion of plant protection products! This is important as there is more and more pressure against plant protection, and only good and safe equipment allows an environmental safe application. Most standards define a way to measure and to proof a component, and then there are parts which define the state of art, which means the performance level.

There are also demands and obligations to do inspections of sprayers in use. We in HARDI also do an inspection in the production to deliver our sprayers in excellent quality and certified.

Self-certification

A self-certification process is demanded to bring a sprayer on the market, where we as the manufacturer sign that the sprayer fulfils the demands of the DIRECTIVE 2009/127/EC, also known as the amendment to the machinery directive. The detailed requirements are specified in the EN/ISO standards of the 16119 series. Before we launch a product, we do a certain number of tests to proof that the component is fulfilling the specific demand. For example, the agitation test which is a very important test.

By an ENTAM report the self-certification is proven, and specific measurements are done as agitation test, rinsing test or regulation speed etc. Components as our nozzles are approved by the JKI. Due to 2 reasons, first the quality needs to be certified, and secondly we need a drift reduction certification.

The ENTAM test is a laboratory test; partly it is tested if all obligations are fulfilled, and if these are in the allowed limits. Other tests measure performance levels, and these tests are far more complex and time consuming to do and must also to be within the allowed limits. The agitation test is a good example for this as it needs approx. 20 h, and is done with a 1 % cooper solution, having to be re-agitated after a 16 h break.



The results of the test are published in an ENTAM report which can be downloaded at the JKI web page.

https://www.julius-kuehn.de/media/Institute/AT/PDF_RichtlinienListenPruefberichte/ENTAM_Feld/Hardi_Navigator_D2058_en_V2.pdf

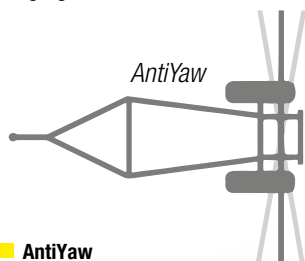
Market's best boom stability AutoTerrain boom management system

The HARDI AutoTerrain boom management system was developed parallel to the design of the new boom centers of DELTA FORCE and TWIN FORCE 3.1 booms

The AutoTerrain has been tested under the toughest and most challenging field conditions and has shown excellent performance at high driving speeds and low boom heights.

The AutoTerrain is a fully automatic boom control. Based on intelligent ultra-sonic sensors on the boom wings and angle sensors on the center, the system is constantly monitoring the boom position and makes the needed correction direct and fast. AutoTerrain distinguishes from other systems by measuring on FORCES added to the boom and making a pro-active correction before the boom is affected by the FORCE in practice meaning that the system prevents unintended movement instead of correcting these.

With AutoTerrain the DELTA FORCE and TWIN FORCE 3.1 booms work with negative tilt, so that each boom side can angle below the horizontal by -4° . So the boom can spray on a field below own level, if for instance running on a ridge. It is important to get the best performance under challenging conditions.



AntiYaw

For dampening the booms backward going movements

AntiYaw

For dampening the booms forward going movements

AutoTerrain

Boom stability

Manuel set-up

5 steps and variable dampening

AutoTerrain works with 3 proportional, hydraulic valves for a precise and soft regulation; changes are smoothly and without hard movements.

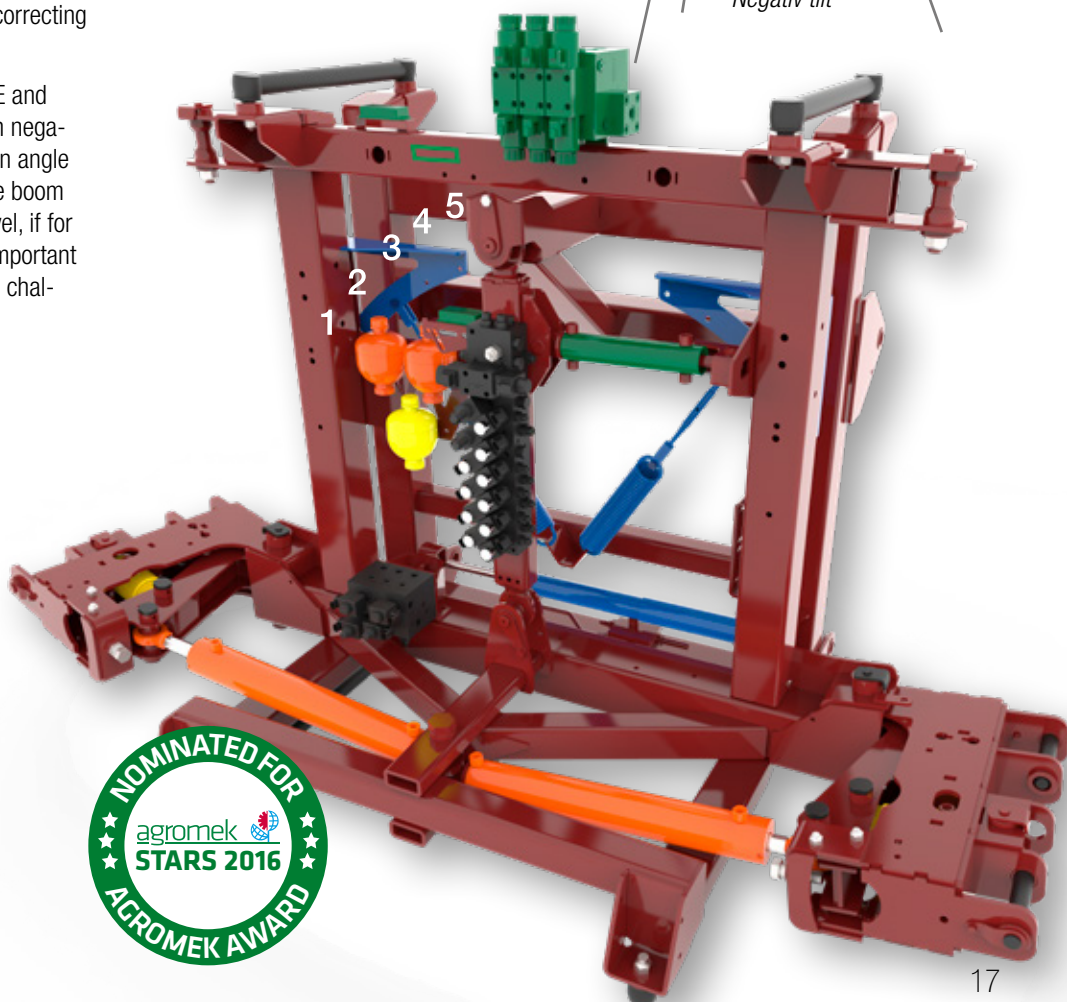
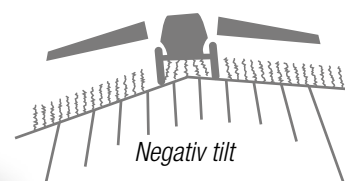
But it is still an optional extra, so the booms will also perform in manual mode if needed.

Increase spraying capacity – driving fast with lower boom height

The combination of negative tilt, hydraulic AntiYaw function and hydraulic ParaLift suspension are the foundation for a significantly higher working speed, also at low boom heights to ensure optimal application.

Also at spraying speeds more than 15 km/h, AutoTerrain constantly keeps the boom in place at the correct pre-set height above the target.

Auto Terrain will also help the operator when turning on headlands, where the boom usually will lower the inner boom side due to the pendulum effect. With active AutoTerrain the boom stays at level, and the turning can be done at higher speed.





HARDI NAVIGATOR 3000

"A Professional Sprayer for a Professional User"

Dominic Dunne is a third generation farmer based in Rathangan County Kildare. Dominic grows 250 acres of tillage on his farm with the help of his son Michael.

Dominic Dunne, Barnfield Farm, Co. Kildare

"I have been farming here for over 30 years and I am the 3rd generation to do so, my son Michael helps me from time to time especially during the busy seasons when he is free from school, on the farm itself we grow a combination of crops such as winter barley and oil seed rape but with a difference, the crops grown here are used to produce seed for Waterford based company Seedtech. We use a short rotation of three years which is broken up by grass which we use for our suckler herd, it's a simple system that works very well for us".

As you can imagine when producing cereal crops which are then being used to produce seed for other tillage farmers, it is of vital importance that the crop is cared for properly. "When producing seed it can be

a challenge, there is no grey area, the crop has to be 100% all of the time".

To keep his crops in order Dominic has just recently purchased a new HARDI NAVIGATOR 3000 trailed sprayer equipped with 24m DELTA booms. "I purchased my first HARDI sprayer over 20 years ago off

"I am truly delighted with HARDI sprayers, they are completely reliable which in my line of work is a must, ..."

local dealer Youngs Garage in Portarlinton who I still deal with today, it was a 800 litre mounted sprayer with 12m booms. I kept that sprayer for over 10 years before

replacing it with a HARDI TY Trailed sprayer which was equipped with 24m booms and a LH Agro rate controller. It was quite a big step forward in terms of the machine itself and its efficiency and output which was badly needed due to the increased workload and smaller time frames. On the farm the sprayer will cover 250 acres three to four times a year as well as another 100 acres on my brother John's farm whom I share the machinery with. We also do a small bit of commercial spraying for neighbours so all in all the sprayer would realistically cover 1800-2000 acres a year. The TY machine was kept in service here up until last year when we decided to upgrade for a NAVIGATOR 3000 machine also with 24m booms".

Dominic specified the new NAVIGATOR with 24m DELTA booms to suit his current



tramline system. The DELTA boom is designed as a compact and high-performing boom built for the very demanding user. The boom features an advanced suspension system, which in combination with the 3-dimensional boom design ensures the most accurate spray application. The centre section is fitted with a coil spring pendulum and telescopic damper system which absorbs movements caused by the tractor. The hydraulically activated pendulum lock stabilizes the boom whilst folding or unfolding while an anti-yaw system dampens the forward and backward horizontal movements as well as any horizontal shock load during operation.

Fitted to the booms are triplet nozzles which Dominic has fitted with Gardian Air nozzles for low drift. "The new sprayer is much more efficient not only in its application and technology but it is also saving use fuel, the TY was fitted with 0.25 nozzles and would use 0.6 litres of diesel per hectare while the NAVIGATOR has 0.3 nozzles and only burns 0.5 litres per hectare".

Further improving the NAVIGATORs efficiency is the new DynamicFluid4 system which calculates the consequences of the increased RPM and makes the regulation change instantly keeping a constant application rate. The DynamicFluid4 uses four sensors in the fluid system which measure RPM, position of regulation valves, flow and pressure.

"One of the first things I noticed on the new sprayer as opposed to the TY was how quick it responds, it's almost instant. Because I had already used the LH Agro rate controller on the TY I opted for the HC5500 rate controller with the NAVIGATOR. It is a simple to understand controller which does not over complicate the job at hand, all features are easily distinguishable and all buttons fall close to hand. The HC5500 has a 6 section cut off which makes working in awkward fields a relatively easy task while also improving efficiency, reducing overlap and saving on spray".

The spray is incorporated into the main tank via a turbofiller which folds out into

the working position at an easy to use waist height. Sprays and powders are easily mixed and incorporated thanks to a rotational cleaning and mixing system within the filler. "Mixing what would have been traditionally hard to use sprays and powders are no longer an issue with the new turbofiller, it makes small work of the toughest chemicals which helps save time. All the controls are very simple to use and the filters are conveniently located for easy servicing".

All the components are fitting into an extremely well designed and balanced chassis thanks to its low centre of gravity. Dominic didn't choose to go for a steered axle or drawbar option but instead specified a "maintenance free" suspended and braked axle fitted with 14.6 X 46 tyres.

"I am truly delighted with HARDI sprayers, they are completely reliable which in my line of work is a must, they do everything we ever want and then some, I would have absolutely no hesitation in recommending HARDI to anyone".

25 cm Nozzle Space **DELTA FORCE**

DELTA FORCE 25 cm nozzle space lowers boom height for drift reduction – possible to use a nozzle space of both 25 and 50 cm

- › On-center solution – the extra nozzles are positioned between the 50 cm standard nozzle holders
- › NAVIGATOR 4000 / 5000 / 6000
- › COMMANDER 4500 / 5500
- › DELTA FORCE 27-36 m
- › 9 section EFC two-folded booms 27 / 28 / 30 m
- › 13 sections EFC three-folded booms 32 / 33 / 36 m
- › Stainless steel nozzle tubes as standard

The main argument for a distance of 25 cm is to reduce the height of the boom to 30 cm and to reduce the potential for spray drift. The low boom height requires a good boom management system. The best system on the market is the DELTA FORCE boom series along with the HARDI AutoTerrain. The other advantage is a smaller nozzle VMD (volume median diameter) which increases the coverage.

Drift reduction
Application with
30 cm boom height
Better attachment
to the crop
25 cm / 50 cm
application possible



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