Multi Jet / Combi Jet

Trailed pneumatic seed drills

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Multi Jet/Combi Jet

is a load carrying high capacity machine with pneumatic transport of seed and fertiliser to the coulters. Multi Jet and Combi Jet are available with 4, 6 and 8 meter working width. Together with the Multi Flex board in the front and the consolidating rubber wheels for the entire working width, sowing in many conditions can take place directly after the plough or the stubble cultivator. The power requirement for Multi Jet / Combi Jet is low compared to the performance of work. That benefits in lower tractor cost and less compaction due to less tractor weight. The machine consists of a strong chassis with a large hopper. Large LGP-tyres carry full load with low inflation pressure, avoiding compaction damage.

The strong coulter assembly and the powerful airflow secure that each individual seed is placed in the correct position, even in difficult conditions. The coulter pressure can be adjusted up to 20 kg/coulter. The result of this is that clods, which normally lift the coulter, are pressed to the side and the coulter maintains its position in contact with the moist soil.

The simple and robust design of the coulters reduces the maintenance cost to a minimum. Easy daily maintenance increases drilling productivity

Single disc coulters can be supplied as an alternative for Multi Jet / Combi Jet for drilling in cultivated soil with crop residues. The coulter pressure is then adjustable up to 30 kg/coulter.

All Multi Jet / Combi Jet models can be equipped with the Multi Flex system for seed bed preparation, and treaded rubber wheels for consolidation before the coulters, over the full working width.

This makes Multi Jet / Combi Jet to multi-operation-machines capable of seedbed preparation, consolidation, fertilising/cultivating and drilling in one operation. Pneumatic small seed box for simultaneous establishing of catch crop or grassland is available as accessory.

Combi Jet performs seedbed preparation, consolidation, fertilising and drilling in one operation. The Multi Flex system in the front levels, shatters clods and prepare seedbed. The full width packer with tractor treaded rubber tyres crushes and consolidate the seed bed before the narrow fertiliser coulters place the fertiliser underneath the seed depth for optimum combined placement effect.
Finally the seed is placed with individually moving seed coulters for optimum seed placement in contact with moist soil. The following harrow leaves a loose surface, to prevent crust and evaporation. Multi Jet can be equipped with two rows of cultivator tines in the coulter assembly instead of fertiliser coulters.

The Jet method

The powerful Jet fan is used to give the seed high velocity and quick transport to the coulters. The material metered by each feed roller into the ejector receives such a high velocity that each seed is planted in the groove behind the coulter tip. The Jet method performs reliable germination even under very difficult conditions. By the ingenious simple design the Jet-coulter “finds” moist soil for the seed. The narrow coulter tip works its way through the dry topsoil and makes a groove in the moist soil in proportion to the actual coulter loading. The coulters are individually free to move, and can therefore find the correct depth, even if the surface is uneven. The different load of the seed hopper does not affect the seed coulters. This self-adjusting ability for each individual coulter to find the right germination environment for the seed has made the Jet-method renowned for reliable germination and simple adjustments.

Multi Jet / Combi Jet are designed for a working speed between 10 – 15 km/h.

All Jet-models from 4 to 8 m working width are hydraulically folded to 3 m transport width.

High working speed

Despite high working speed the Jet-coulters maintain their secure seed placement. The coulter pressure and the effective pneumatic transport secure perfect seed placement even in 10 – 15 km/h working speed. The following harrow leaves an even and loose protection against evaporation and crust.

Load carrier

Multi Jet / Combi Jet is equipped with a large easily filled hopper, making the seed drill a convenient transport wagon between the farm and the field. The easy folding to 3 m. transport width makes it possible for one person to control the complete operation, without relying on extra service back up.

K-Tronic offers possibilities to control application rates from the driver's seat while on the go.

K-Tronic

The K-Tronic offers possibilities to control the seed rate from the driver's seat while on the move. On dry patches and in rough structure the seed rate can be increased, whereas in wet hollows, the seed rate can be reduced with K-Tronic in three steps, each of 10 %. Being able to reduce the seed rate in parts of the field where the crop would otherwise have been too dense implies major savings in reduced fungal attracks. The K-Tronic reduces the work with calibration tests to a minimum. One test and the calibration is completed. Setup time when changing varieties is reduced, and thus the output is increased.

Electro hydraulics

Using electro hydraulics the entire drill can be manouvred from the K-Tronic box. The most commonly required manouvres are performed using a joystick. With electro hydraulics the machine needs only one hydraulic pressure outlet and a return.

Half working width

The Multi Jet/Combi Jet can be electrically shut-off to half working width. The equipment is not standard on the basic machines, but are available as option. The basic machines are equipped with mechanical half working width shut off.

Tramlining

Since feed rollers can be shut-off, tramlines can be laid out to facilitate fertiliser spreading and weed control after emergence of the crop. Tramlining equipment is standard.

Pre emergence markers

Two harrow tines draw lines at the same time as the tramlining is activated. The marks made by the harrow tines make the tramlines visible before the crop has emerged. Optional.

Weighing equipment

Weighing equipment and a sack for calibration controls are available for convenient mounting on the calibration side of the drill. Optional.

Centrally located grease points

On the Multi Jet/Combi Jet all the grease points for the feed roller shaft have been extended out to the side of the hopper. This makes the daily maintenance extremely simple. Standard.

Track eradicators

Track eradicators consisting of 2x7 harrow tines can be placed behind the wheels in front of the coulter unit. The attachment bracket is wide enough to cover the dual wheels of the tractor. The track eradicators can be adjusted vertically by means of a series of holes. Optional.

Discharge opening

One opening for seed (and one for fertiliser) and a hose with quick coupling. Uneases emptying the hopper when changing varieties. The last rest is taken out in the calibration trays. Standard.

Hydraulic coulter pressure adjustment

With a double acting spool valve the coulter pressure can be regulated on the go. When there is big variation in soil type within the same field, it is a benefit to increase the coultrer pressure in the hard parts, and reduce in the soft parts, where the seed otherwise run the risk to be placed too deep.

Vario-K gearboxes controlled by K-Tronic offer possibilities to control the application rates while on the go.

Area counters, hopper level- and roation controls and tramlining is managed by the K-Tram system

Weighing equipment eases the calibration test.

Track eradicators wide enough to cover the dual wheels of the tractor.

Hydraulic coulter pressure adjustment cylinder with indicator placed on the outer end of the wing section.

CD 4504

Combi Jet 4504 is built on well proven principals for best possible seed placement. The strong coulter assembly with good clearance together with the possibility to mount the Multi Flex system and full width tyre packers in front of the coulters, give the option to cultivate, reconfirm, fertilise and seed in the same go. The machine above is equipped with optional grass seed box for simultaneous shallow grass establishment.

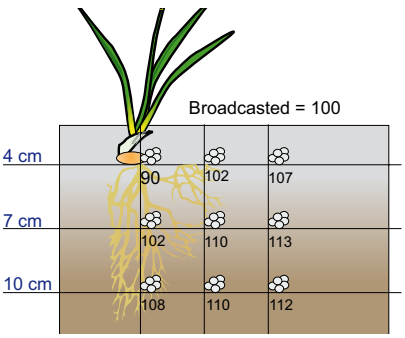
Combi Jet

Combi Jet has 4, 6 or 8 m. working width and a total hopper capacity of 4500 or 5400 litres.
Hydraulic folding of the coulter assembly to 3 m. transport width makes transportation easy through narrow passages. The large, easily-filled, hopper and the flexible transport possibilities offer rational handling of seed and fertiliser at home on the farmstead.
The coulter assembly is strong with generous clearance, capable of high speed and tough conditions. Increased space will also reduce the risk of blockages when drilling among crop residues.

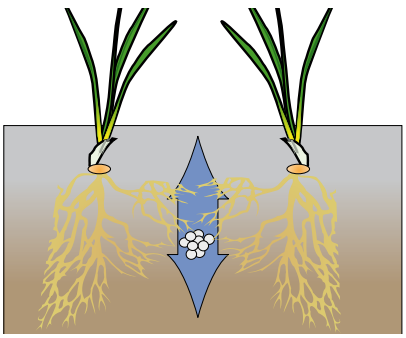
The possibility to fold the coulter unit in two sections has made the maintenance easier, since all the coulters can be easily reached without having to crawl under the machine. What was already a low maintenance cost, has now become even lower.

The Combi Jet method

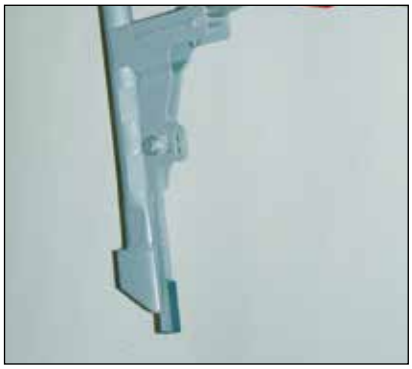
Official tests at the Swedish University of Agriculture have shown that the best combined placement effect is obtained when the fertiliser is placed 6 cm beside, and 3 cm deeper than the seed row. The concentrated fertiliser row is less affected by the water movement in the soil. Therefore a larger part of the fertiliser is effectively used by the plants. Fertiliser placed too close to the seed could harm the germination.
The fertiliser coulter on the Combi Jet incorporates a wear resistant tip of cemented carbide protecting the full width of the coulter. In working position the fertiliser coulter will penetrate to the set depth, and cut down the fertiliser.



Yield results from different fertiliser placement, compared to broadcasted fertiliser. 6 cm beside and 3 cm deeper than the seed gave max. yield.



Combined placement drilling reduces the movement of the nutrients in the soil during the vegetation period, allowing the plants to utilize it better.



The Combi Jet fertiliser coulter is equipped with a wear resistant tip of cemented carbide. The hard tip retains its full width and protects the coulter outlet without adjustment throughout its lifetime. Savings in time and cost.

Combi Jet 5406 equipped with Multi Flex system, Full width tyre packer, light following harrow and pre emergence marker, incorporates seedbed preparation, consolidation, fertiliser placement and seeding in one go. All Combi Jet models can also be delivered in disc coulter version for conditions with crop residues.

The new Combi Jet

The new design of the Combi Jet is directed to more effective operation. All adjustments of hydraulics, application rates, calibration test etc are concentrated to the left hand side of the machine. The new Vario-K gear boxes for adjustment of application rates are equipped with plain scales for easy setting. Agitator axle is standard equipment in the seed hopper. Improved bearings and spring loaded chain tighteners reduces the power demand in the feed mechanism.

Cross shaft hitch

The new cross shaft hitch on the Combi Jet, with swivel axle behind the fan, has improved manoeuvrability on headlands and makes it easier to reach out in the corners. Since the blower follows the tractor when turning, it can be powered by a straight PTO connection.
The cross shaft hitch requires that the tractor lower links can be locked sideways without play.

Multi Flex

The Multi Flex system can be mounted on the front of the chassie, well controlled by the driver. This system consists of two connected, hydraulically charged, tine axles suitable for seedbed preparation. It is possible to let the tines go automatically in and out of work together with the coulters, or to control the Multi Flex with a separate valve. In both cases the driver can adjust the pressure on the tines on the go.

Double Flex-board

Two rows of Flex-tines can handle large amounts of crop residues, and can work well in most drilling conditions. Despite the spacious tine pattern, the entire surface between the two rows is effectively processed. Fine tilth is produced and sorted down to the seed level.

Harrow tines together with Flex-board

In some soil conditions it is required to break up the soil to produce material for the Flex-board to work with. Then the combination of one row of loosening harrow tines followed by a Flex-board is suitable.

Full width tyre packer

(see page 6)

Low ground pressure

Combi Jet is equipped with large LGP-tyres with ability to carry full load also in road transport. It means soft going and convienient transport, but most of all low ground pressure in the field when the soil is as most sensitive for compaction damage.

New larger hopper

Refilling of seed and fertiliser is quick and easy since the hopper has been equipped with a user friendly spring loaded roll-tarpaulin manouvered from the stairway in the front. Large openings for both seed and fertiliser contributes to quick filling, and the effective drilling time is increased. The middle wall between seed and fertiliser is foldable, making most of the hopper volume available for seed when fertiliser is not wanted. CD 4504 can then load 3700 liters of seed, and the two bigger models 4600 liters.

All adjustments are concentrated to the left hand side of the machine.

The new cross shaft hitch makes the machine reach the corners and follows the tractor better when turning on the head land.

The spring loaded roll-tarpaulin and the large hopper openings makes refilling quick and easy.

MD 3706

Multi Jet 3706 base machine is a load carrying seed drill with low power demand. High drilling capacity can be achieved with a 100 hp tractor. Six metre working width and hopper capacity for more than 15 ha wheat gives high output.

The new Multi Jet

Multi Jet is available with 4, 6 or 8 m. working width. The 4- and 6-metre models have 3700 litre hopper capacity, and the larger 8-metre model has 4600 litre hopper capacity.
All adjustments of hydraulics, application rates, calibration test etc are concentrated to the left hand side of the machine, resulting in less set-up time and better efficiency.
The new Vario-K gear box for adjustment of application rate is equipped with plain scales for easy setting.
In order to handle all types of seed, an agitator axle is standard in the seed hopper. Improved bearings and spring loaded chain tighteners reduces the power demand in the feed mechanism.
All grease points for bearings for the feed shafts etc are placed in easily accessable groups on the hopper sides.

Full width tyre packer

The Multi Jet can be equipped with a hydraulically charged tyre packer between the large LGP tyres in order to achieve consolidation of the otherwise soft section between the tractor tyres.
The load on this active tyre packer is taken from the machine weight. Therefore the load on the ordinary wheels is reduced by up to 2000 kg. This middle packer is active also on the headland, but is automatically lifted when the machine is folded for transport.
On the wing sections it is possible to mount sidepackers with the same type of tractor threaded rubber wheels in order to provide full width consolidation to the 4, 6 or 8-metre working width. Beside consolidation the wing packers effectively control the working depth of the harrow tines.
The consolidation is important when llimited seed bed preparation is done. It contributes to strengthen the capillary capacity of the soil in order to supply the new seed with water. Harrow tines, coulters and following harrow loosen the top layer, preventing evaporation and crust.

Multi Flex

See page 5.

Cross shaft hitch

The new cross shaft hitch on the Multi Jet, with swivel axle behind the fan, has improved manoeuvrability on headlands and makes it easier to reach out in the corners. Since the blower follows the tractor when turning, it can be powered by a straight PTO connection.
The cross shaft hitch requires that the tractor lower links can be locked sideways without play.

Easy to fill hopper

Refilling of seed and fertiliser is quick and easy since the hopper has been equipped with a user friendly spring loaded roll-tarpaulin manouvered from the stairway in the front. Large opening for seed contributes to quick filling, and the effective drilling time is increased.

Side packers with two, four or eight threaded rubber wheels can be mounted per side in order to achieve full width consolidation for 4, 6 and 8 m. working width.

Re-consolidation between the wheels of the tractor can be performed with an accumulator-loaded tyre packer between the large LGP-tyres.

The Multi Jet can be equipped with two rows of harrow tines in the coulter unit, placed to work the soil between each seed coulter.

MD 4608 Disc

The Multi Jet 4608 Disc is developed to drill also in conditions with large amounts of crop residues. The spring loaded disc coulter is followed by a pressure wheel consolidating over the seed row, and at the same time keeping the maximum working depth of the coulter.

Multi Jet Disc

The disc coulter on Multi Jet Disc is designed to drill in all types of cultivated soil. Stubble cultivated soil with chopped straw and stubble residues on the surface, as well as ploughed conditions. The scalloped disc ensures safe rolling without stop in both heavy straw and in light soil.
The disc is made from 3-mm thick hardened steel and has a diameter of 33 cm. This gives a very good wearing resistance and low maintenance costs.
The coulter pressure can be adjusted, both centrally and individually, from 10-30 kg/coulter.
Hydraulic coulter pressure adjustment from the drivers seat is available as an accessory.

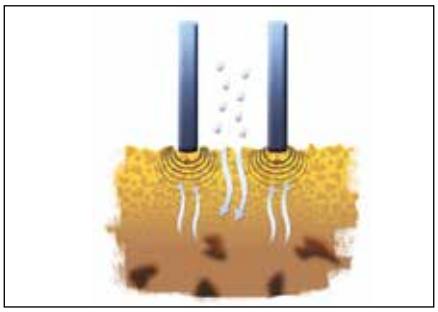
Depth control

The drilling depth is controlled through a 4 cm wide depth control wheel.
The wheel has a soft rubber surface, keeping it clean in all conditions. The wheels make it possible to drill with high coulter pressure even in light soils without drilling too deep.
The depth control wheel also reconsolidates the soil just around the seed giving it optimal germination conditions.
The soil between the rows is left loose to be able to drain heavy rainfalls, reducing the risk of soil erosion and crust.
The drilling depth is easy set in steps of 5 mm through a series of holes.
The setting is done with a spring-loaded pin.

Soil preparation

The two axles in the coulter assembly can be equipped with cultivating tines.
Two types of tines are available:
Standard straight tines, suited for ploughed or clean land, or a drag tine for conditions with crop residues or stones. The straight tine works with accurate depth control, without dragging up wet soil to the surface.
The dragtine is a tine specially made for mulch drills. The angle of attatck is leaning backwards like the Flex tine, keeping it clean. The replacable wearing part has a slight angle to the side in the lower part that will secure full width soil preparation.

The individually spring loaded scalloped disc coulter on Multi Jet Disc has a pressure wheel consolidating over the seed row. A heavy rear harrow leaves an even loose surface.



The pressure wheels only compact the soil around the seed leaving the rest loose to drain heavy rain.

The depth control wheel is very easy and accurately set through a series of holes in steps of 5 mm.

Technical specifications

Equipment	MD 3704	MD 3706	MD 4608	CD 4504	CD 5406	CD 5408
Screen	•	•	•	•	•	•
Equipment for calibration test	•	•	•	•	•	•
Reduction inserts for rollers	•	•	•	•	•	•
Reduction gear	•	•	•	•	•	•
Tramlining equipment	•	•	•	•	•	•
Pre-em. markers for tramlining	x	x	x	x	x	x
Roll tarpaulin	•	•	•	•	•	•
Electronic control K-Tram	•	•	•	•	•	•
Electronic control K-Tronic	x	x	x	x	x	x
Following harrow light / heavy	x	x	x	x	x	x
Multi Flex system	x	x	x	x	x	x
Inter-wheel packers	x	x	x	x	x	x
Side packers	x	x	x	x	x	x
Track eradicators	x	x	x	x	x	x
Electrical hydraulics	x	x	x	x	x	x
Half-width shut-off, mech.	•	•	•	•	•	•
Half-width shut-off, electr.	x	x	x	x	x	x
Weighing equipment	x	x	x	x	x	x
Hydr. coulter pressure adjustment	x	x	x	x	x	x
Pneum. Grass seed box	x	x	x	x	x	x

• = standard equip. x = extra equip. - = not available

Model		MD 3704	MD 3706	MD 4608	CD 4504	CD 5406	CD 5408
Hopper volume seed only	l	3700	3700	4600	3700	4600	4600
Hopper volume seed/fertiliser	l	-	-	-	2050/2450	2500/2900	2500/2900
Working width	m	4	6	8	4	6	8
No. of seed coulters		32	48	64	32	48	64
Spacing between coulters	cm	12,5	12,5	12,5	12,5	12,5	12,5
Distance front-rear row of coulters	cm	45	45	45	45	45	45
Adjustable coulter pressure	kg	3-20 (10-30)*	3-20 (10-30)*	3-20 (10-30)*	3-20 (10-30)*	3-20 (10-30)*	3-20 (10-30)*
Number of fertiliser coulters CD		-	-	-	16	24	32
Number of harrow tines MD		33	49	65	-	-	-
Filling height	m	2,67	2,67	2,83	2,67	2,83	2,83
Transport width	m	3,0	3,0	3,0	3,0	3,0	3,0
Wheel dimensions		600x26.5	800x26.5	800x30.5	800x26.5	800x30.5	800x30.5
Weight unloaded	kg	3300 (3400)*	3700 (3900)*	4100 (4500)*	3500 (3600)*	3900 (4200)*	4200 (4600)*
Length	m	8,2	8,2	8,2	8,2	8,2	8,2
Transport height	m	2,6	3,6	4,45	2,6	3,6	4,45
Recommended tractor power	hk	90-130	100-160	130-220	110-150	130-180	180-240

* with disc coulters

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