

Pneumatic Fertilizer Spreader

AMAZONE

JET 1204/1504 F/H

Instruction Manual



To ensure that you will get the best possible results from your "AMAZONE" we would ask you to read and observe these instructions carefully. You will of course appreciate that we will not be able to accept claims under guarantee if any damage is caused due to incorrect operation.

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Factories for: Fertilizer-spreaders, -storage halls, -handling systems. Seed drills. Soil cultivation machines. Field sprayers. Potato-graders, -sorters.

Please enter the serial number of your pneumatic broadcaster here. You will find the number stamped on the right front side of the main frame.

Please always quote the serial number when ordering spareparts or making enquiries.

Machine serial No.

Please study these instructions carefully and by adhering to them make fullest use of your machine. You will then enjoy trouble-free and accurate spreading with your new AMAZONE Pneumatic Fertilizer Spreader.

No responsibility can be accepted by us if complaints and breakages are due to faulty operation or lack of maintenance.

Your pneumatic spreader complies only with the regulations of the agricultural health and safety authorities when in the case of repair **original** spareparts of AMAZONE are used for replacement.

Never put into operation your AMAZONE pneumatic spreader before having read chapter 3 Safety technical advices and 3.2 General safety and accident prevention advice.

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1 Specification of the machine

1.1 Manufacturer

AMAZONEN-WERKE, H. Dreyer GmbH & Co. KG

P. O.Box 51, D-4507 Hasbergen-Gaste, Federal Republic of Germany

1.2 Types of pneumatic spreaders

Order-No.

AMAZONE JET 1204 F	2610020
AMAZONE JET 1504 F	2810020
AMAZONE JET 1204 H	2710020
AMAZONE JET 1504 H	2910020

1.3 Boom sizes

Spreading width 10 m	19510
Spreading width 12 m	19610
Spreading width 15 m	19710
Spreading width 16 m	19810
Spreading width 18 m	19910

1.4 Technical data

Length	1.34 m
Filling height	0.90 - 1.05 m

At working width	10 m	12 m	15 m	16 m	18 m
No. of jets	16	16	30	32	32
Jet spacing	0.625 m	0.75 m	0.50 m	0.50 m	0.56 m
Hydr. boom folding	option	option	standard	standard	standard
Transport width	2.50 m	2.50 m	2.90 m	2.90 m	2.90 m
Total height	2.36 m	2.82 m	2.98 m	2.98 m	3,16 m
Weight of booms	126 kgs	140 kgs	248 kgs	259 kgs	265 kgs
Spreadrate at	60-1125	50-1000	40-875	40-875	30-750
8 k.p.h. in kg/ha					

Type of pneumatic spreader	JET 1204 J	ET 1504
Net weight of base machine	380 kgs	399 kgs
Hopper capacity	1200 litres	1500 litres
Metering system	Metering sprockets	
Checking of spread rate	Possibility for calibrating	
Spread pattern adjustable	Normal- and late top dressing	

We reserve the right for any technical changes without notice.

Standard specification mentioned herein may vary by country.

1.5 Application range

The pneumatic spreaders **AMAZONE JET 1204** and **JET 1504** are suitable for spreading granular fertilizers, microgranules, seeds and materials of similar consistency.

1.6 Description of the machine's function

The material for spreading is metered from the hopper into the injector sluices by force feed toothed wheel rollers, which are depending on the type driven by a free-wheel with stepless variable stroke or hydraulically. The P.T.O.-driven blower fan provides a stream of air which transports the spreading material from the injector sluices through the pipes to the distributing jets on the booms. Deflector plates spread the material fan-like to the ground, whereby the spreading fans overlap one another 2 – 4 fold to ensure an optimum lateral distribution.

2 Hints upon receiving the machine

On receipt check the spreader for damage and missing parts. Claims must be made to the carrier immediately if compensation is to be obtained. Please ensure also that all parts listed in the consignment note have been received.

Before starting remove all packing material incl. wires and check lubrication (P.T.O. shaft!).



3 Safety technical advices

3.1 Declined use of the machine

The **pneumatic spreader AMAZONE JET 04** has been exclusively designed for the usual operation in agriculture especially for the distribution of granular fertilizers.

The machine is designed to spread on slopes of up to 20% (18°) inclination.

If the spreader is used on slopes exceeding 20% it is no longer considered as proper use. The manufacturer does not accept any responsibility for damages resulting from this; the operator himself carries the full risk. Adhere to the manufacturer's prescribed operation, maintenance and repair conditions.

The pneumatic spreader AMAZONE JET 04 may only be operated, maintained and repaired by such persons who have been made acquainted with it and who have been advised about the dangers. The Health and Safety Executive advise as well as further generally accepted safety technical, working, medical and traffic laws should be adhered to.

Any damages resulting from arbitrary changes on the machine rule out the responsibility of the manufacturer.

3.2 General safety and accident prevention advice

- 3.2.1 Basic principle:** Always check traffic and operational safety before putting the machine into any operation!
- 3.2.2** Adhere to the general rules of health- and safety precautions as well as to the advice in this instruction manual.
- 3.2.3** When making use of public roads adhere to the applicable traffic rules.
- 3.2.4** Become acquainted with all devices and controlling elements as well with their function **before** beginning operation.
Doing this during operation would be too late!
- 3.2.5** Before beginning to drive check surrounding (children). Ensure sufficient visibility!
- 3.2.6** The clothing of the operator should fit tight. Avoid wearing loose clothing!
- 3.2.7** Sitting or standing on the implement during the operation or during transport is not permissible.
- 3.2.8** Mount the implement as prescribed. Movement characteristics, steering, and braking ability are affected by mounted implements, trailers and ballast weights. Herefore take account of these affects and allow sufficient steerage and braking.

- 3.2.9** Adhere to the maximum permissible axle loads and total weight. (Refer to vehicle documents and machine's instruction manual.) When lifting the fertilizer spreader the front axle load of the tractor is relieved by different amounts depending on the size of the tractor. Always check, that the necessary front axle load of the tractor (20% of the tractor's net weight) is maintained.
- 3.2.10** If a trailer hitch is provided it must only be used for **towing** suitable implements or **twin** axle trailers up to a maximum of 25 km/h (outside West-Germany different laws may prevail).
Single axle trailers must not be towed under any circumstances.
- 3.2.11** When driving into bends mind the projection to the sides and the gyrating mass of the implement!
To avoid sideways swing of the spreader during operation stabilizer bars or chains can be fitted to the tractor's lower link arms (see tractor accessory).
- 3.2.12** During driving never leave the operator's seat!
- 3.2.13** Before leaving the tractor lower the implement to the ground. Actuate the parking brake, stop the engine and remove the ignition key!
- 3.2.14** Never stay or let anyone stay within the operating area!
Warning: Never come near to folding booms, danger of injury!
- 3.2.15** During the calibration test watch out for danger zones due to rotating parts of the machine!
- 3.2.16** Filling of the fertilizer broadcaster may only be done with a stopped tractor engine, removed ignition key.
- 3.2.17** Note maximum permissible filling loads!
Maximum filling load of the JET 1204/1504 (F+H): 1500 kgs
- 3.2.18** If a filled machine is to be parked without the tractor the fertilizer inside the hopper should be levelled – otherwise danger of tipping over!
- 3.2.19** Do not place any foreign objects inside the hopper.
- 3.2.20** Be careful when staying or when seeing other persons staying within the spreading zone of the fertilizer spreader.
- 3.2.21** Mount the implement only with the prescribed tools.
- 3.2.22** Special care should be taken when the implement is coupled to or off the tractor.
- 3.2.23** Secure implement and tractor against unintentional rolling away.
- 3.2.24** Put implement to operation only when all guards are fitted in position.
- 3.2.25** When fitting the machine to the three-point linkage of the tractor bring all control levers in such a position at which an unintentional lifting or lowering is impossible!
- 3.2.26** When actuating the control levers for the three-point linkage never step between tractor and implement!
- 3.2.27** When driving on public roads with a lifted machine the lifting control lever should be locked against unintentional lowering – before leaving the tractor lower the mounted implement onto the ground and remove ignition key!

- 3.2.28** Nobody should stay between tractor and implement if the tractor is not secured against rolling away by the parking brake and/or by chocks!
- 3.2.29** When fitting to the three-point linkage the mounting categories at the tractor and the implement must coincide!
- 3.2.30** Working implements should only be transported and driven on tractors which are designed to do this!
- 3.2.31** Check maximum permissible axle loads of the tractor (see vehicle documents).
- 3.2.32** Do not exceed maximum permissible transport measurements of the traffic department.
- 3.2.33** Fit and check transport gear, e.g. traffic lights, warning- and protection devices!
- 3.2.34** On all hydraulically actuated pivoting parts there exists a danger of injury by bruising and trapping.
- 3.2.35** The release ropes for quick coupler should hang freely and in the low position must not release the quick coupling by themselves.
- 3.2.36** Affix any ballast weights always as prescribed to the correct fixing points!

Universal joint (P.T.O.) shaft

- 3.2.37** Use only P.T.O. shafts which are designed for the implement and which are equipped with all legally requested guards.
- 3.2.38** Fit and remove the P.T.O. shaft only when engine is stopped.
- 3.2.39** When operating with a switched-on P.T.O. shaft allow no one to stay near to the spinning P.T.O.- or universal joint shaft.
- 3.2.40** Guard tubes and cones of the P.T.O. shaft as well as a tractor and implement side P.T.O. guard must be fitted and kept in the correct place.
- 3.2.41** After switching off the P.T.O. the mounted implement may still continue to run by its dynamic masses. During this period never come too close to the implement. Begin work on the implement only after it has come to a full standstill!
- 3.2.42** Put to operation P.T.O. shafts only if they are completely equipped with guards on the implement side!
- 3.2.43** Connect P.T.O. shaft only after the engine is stopped completely and the P.T.O. shaft has been switched off!
- 3.2.44** Before switching on the P.T.O. shaft take care, that no one stays in the danger zone of the implement!
- 3.2.45** Before switching on the P.T.O. shaft ensure that the chosen P.T.O.-speed of the tractor corresponds to the allowable implement input speed.
- 3.2.46** Slow engagement of the P.T.O. shaft protects tractor and spreader.
- 3.2.47** Switch off the P.T.O. shaft as soon as the machine's outlet openings have been shut off.
- 3.2.48** After removal of the universal joint shaft replace protective cap over the tractor's P.T.O.
- 3.2.49** Clean and grease the universal joint shaft and the P.T.O.- driven implement only after the P.T.O. shaft and engine have been stopped and ignition key pulled out!
- 3.2.50** Never switch on the tractor P.T.O. while the engine is stopped.
- 3.2.51** Stop P.T.O. always when it is not needed or when the shaft is in an adverse position!
- 3.2.52** Remedy of damage is to be undertaken before beginning operation!
- 3.2.53** Ascertain correct fitting and securing of the P.T.O. lock.
- 3.2.54** Prevent P.T.O. guard from spinning by fixing the provided chain to a nearby static part.

Maintenance

- 3.2.55** Liquids leaking under high pressure (Diesel fuel, hydraulic oil) can penetrate the skin and cause severe injury. When injured see a doctor immediately. Danger of infection!
- 3.2.56** Dispose of old oils, grease and filters as prescribed by law.
- 3.2.57** Check and retighten if necessary nuts and bolts regularly, initially after 3 – 4 hopper fillings.
- 3.2.58** When conducting maintenance work on the lifted implement always place suitable supports underneath.
- 3.2.59** When conducting electrical welding operations on the tractor or on the mounted implement remove cable from the generator and the battery.
- 3.2.60** The hydraulic systems is under high pressure.
- 3.2.61** When searching for leaks appropriate aids should be used because of the danger of injury.
- 3.2.62** Before starting to do repair work on the hydraulic system relieve it of pressure by actuating the control lever accordingly and stop tractor engine.
- 3.2.63** When fitting the hydraulic hoses to the tractor hydraulic sockets always ensure that the hydraulic system on the tractor as well as on the implement side is without pressure.
- 3.2.64** Fit the hydraulic hoses to the tractor according to the advice in the instructions. To avoid wrong connection sockets and plugs should be colour coded. This helps to prevent mis-operation and reduces the danger of accidents caused by it.
- 3.2.65** The period of use of any hose circuit should not exceed six years including a possible storing period of two years in maximum. Also when stored and used properly hoses and hose circuits do age. Therefore their longevity and period of use is limited. Deviations from the above may be accepted by the Health- and Safety Authorities depending on experience made and the danger potential. For hoses and hose circuits made of thermoplasts other guide-lines may prevail.

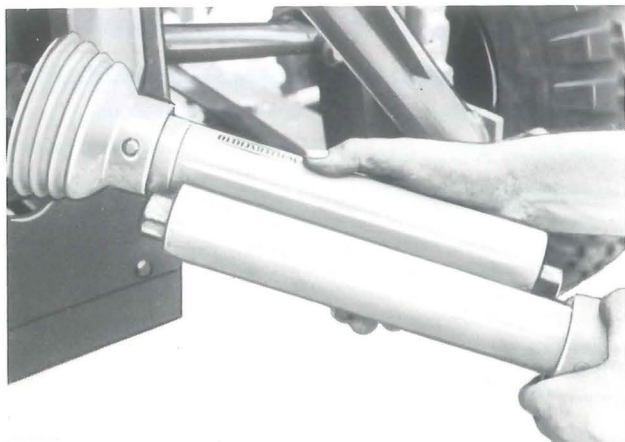


Fig. 1

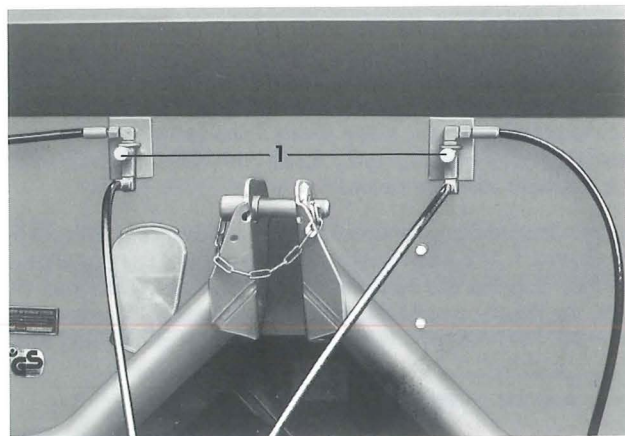


Fig. 2

4 Putting into operation

4.1 Attaching to the tractor

The machine is attached to the category II three point linkage system of the tractor in the usual manner. Under normal conditions the three point mounting pins of the machine should be mounted in the upper position, for late top dressing in the lower position.

In the operating position the machine should be set parallel with the ground by adjustment of the top link. **In working position the distance between the lower part of the machine and the ground or the top of the crop should be about 700 mm.** If this mounting height cannot be achieved for top dressing, the deflector plates at the outlets should be mounted facing upwards (compare para. 5.5).

4.2 Universal joint shaft (very important!)

When attaching the machine for the first time to the three point linkage of the tractor do not attach the P.T.O. shaft to the tractor. Instead pull the front half of the P.T.O. shaft out first, attach it to the splined P.T.O. shaft of the tractor, lift the machine into working position and check the overlap of the P.T.O. shaft by holding both free ends side by side and simultaneously lower the hydraulic to the floor. A minimum overlap of 60 mm (2 1/2") should be maintained in all lifting positions of the machine. On the other hand the inner and outer tube must under no circumstances touch the universal joint on the end of the tubes (Fig. 1). If the P.T.O. shaft halves are too long they have to be shortened by the same amount on either side (including the protective tubes). Apply grease to the inner shaft!

The angling of a universal joint must not exceed 25 degrees.

The P.T.O. guard can be taken off for maintenance and shortening.

4.3 Fitting of the boom halves

The fitting of the boom halves should be done according to the separately supplied fitting instructions. For the first operation of the hydraulically actuated booms the throttle valves (Fig. 2/1) should be set in such a way that the boom halves **slowly** fold up or down.

Before it is possible to turn the setting screw on the throttle valve it is necessary to loosen the threaded pin with Allen key head (twisting safety provision).

4.4 Hydraulic boom lifting

The machines with 15 m, 16 m and 18 m booms are supplied as standard with hydraulic boom lifting.

For the other boom widths it is available as special option. The boom halves can be conveniently raised and lowered by two extra single acting control valves. The raising and lowering speed may be set according to the oil's viscosity.

For road transport the boom halves must be fixed and secured in the transport position.

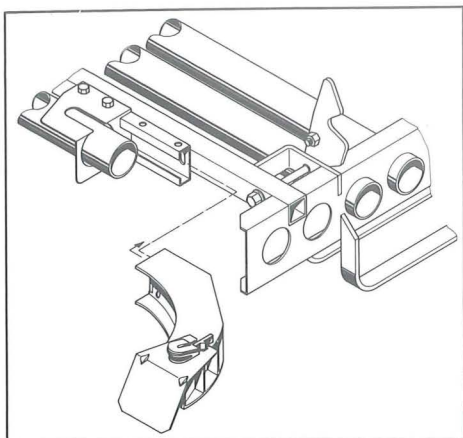


Fig.3

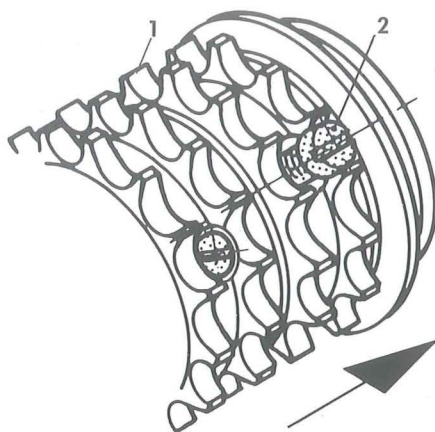


Fig.5



Fig.4

4.5 Injector sluice and metering sprockets

4.5.1 Completing and fitting of the injector sluice

First assemble the unfitted outlets in the manner shown (Fig. 3). Then insert the injector frame from below into the main chassis (Fig. 4.1). For this the injector sluice frame should rest on the studs in front of the air channel. Then raise the rear, pull the grip (Fig. 4/2) and hang in. Check the proper seating of the injector frame because a possible loss of air would have negative effect on the spread pattern.

4.5.2 Resetting the metering sprocket-rollers for changing the delivery volume of the working width

Every metering sprocket (Fig. 5/1) is coupled to the drive shaft by a screw (Fig. 5/2). By unlocking out this screw (Fig. 5/2) the corresponding metering sprocket is stopped from turning (delivering). Therefore the screw should only be undone (not to be removed) until the metering sprocket can freely turn on the drive shaft.

When starting the machine this metering sprocket is stopped by the protruding screw so that it discontinues to deliver fertilizer etc. This way it is possible, for example, to stop every second metering sprocket, so that for some spreading materials which require an extremely low spread rate the delivery is reduced by half. In the same way, i. e. by stopping any corresponding metering sprockets, it is possible to reduce the spreading width or for special requirements to spread only on certain areas within the boom width.

To set the spread width to 15 m only the first fixing screw (Fig. 5/2) on the left- and right hand side should be undone (do **not** remove).

4.6 Hydraulic connections on the JET 04 F range

Type of pneumatic spreader: Size of booms:		JET 1204 F 10/12 m	JET 1504 F 10/12 m	JET 1204 F 15/16/18 m	JET 1504 F 15/16/18 m
half side boom control hydraulic with 4-fold pre-selection possibility	boom folding: manual	2 x 1 SA or 1 x 1 SA + two-way valve			
	boom folding: hydraulic with double control	2 x 1 SA or 1 x 1 SA + two-way-valve			

S.A. = Single acting control valve

D.A. = Double acting control valve

4.7 Hydraulic connections on the JET 04 H range

In any case a double acting control valve is needed for the drive of the hydro-static motor or, if this is inexistent, a single acting control valve with a pressure-free return hose.

For machines with a hydraulic boom lift we urgently recommend the use of a dual control chest (option).

The necessary hydraulic connections can be taken from the following table.

***Note:** On tractors with only one hydraulic circuit the parallel drive of the hydro-static motor and hydraulic boom lift is **not possible**.

Type of pneumatic spreader: Size of booms:		JET 1204 H 10/12 m	JET 1504 H 10/12 m	JET 1204 H 15/16/18 m	JET 1504 H 15/16/18 m
	boom folding: manual	1 DA or 1 SA + pressure free return			
with dual control chest	boom folding: hydraulic	1 DA + 1 pressure free return or 1 SA + 2 pressure free returns			
without dual control chest	boom folding: hydraulic	1 DA + 2 SA or 3 SA + 1 pressure free return			

S.A. = Single acting control valve

D.A. = Double acting control valve

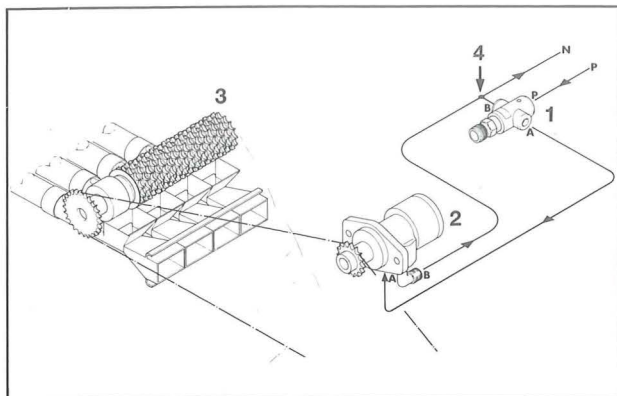


Fig. 6

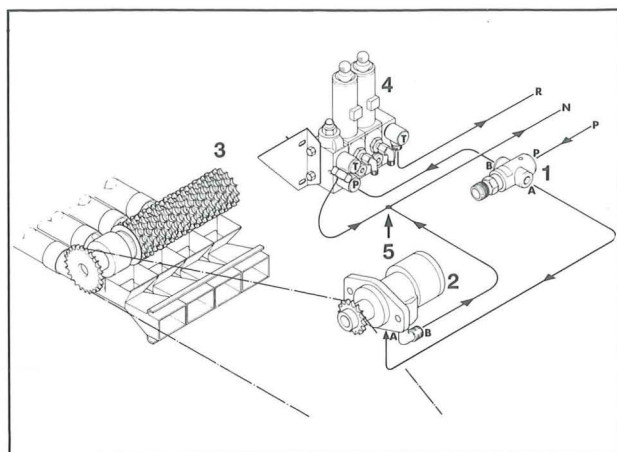


Fig. 7

4.7.1 Hydraulic circuit (principle of function)

As illustrated in Fig. 6 (standard) and Fig. 7 (JET with optional control chest) the JET is supplied with oil from the tractor via the pipeline P. The maximum oil requirement is about 30 l/min. With the aid of the three-way-regulating valve (Fig. 6/1 and 7/1) and the setting motor this flow of oil is variably divided. Accordingly the speed of the hydraulic motor (Fig. 6/2 and 7/2) and thus of the metering rollers (Fig. 6/3 and 7/3) is changed. The amount of the oil which is not needed for the hydraulic motor is guided into the return-flow hose N (Fig. 6/4). If, however, the machine is additionally equipped with a control chest (Fig. 7/4) this amount of oil is available for hydraulic "side-functions" on the control chest. If no oil is needed at the control chest for the hydraulic control, it is returned to the tractor through the return flow hose N together with the oil returned from the hydraulic motor (Fig. 7/5). The hose R brings the oil coming from the control chest and that from the hydraulic rams directly back into the tractor tank. In the hose R the oil must be able to return without pressure. By the use of the solenoid control chest many tractor-spool control valves are saved and the simultaneous operation of hydraulic motor and hydraulic functions remains always possible without altering the speed of the hydraulic motor (and of the metering units).

4.7.2 Connecting the hydraulic to the tractor

Note: The hydraulic circuit is protected by return-valves against wrong connections or by one-way acting hydraulic plug (tin coloured) on the hydraulic pipeline.

John Deere-Tractors are equipped with a special hydraulic system (constant pressure system) which is not immediately available for driving oil motors.

Please adhere to the recommendation of the tractor manufacturer and ask your AMAZONE dealer or importer for further information.

4.7.3 JET 1204/1504 H without solenoid control chest

Take the end of the hydraulic hoses from the implement side carriers and connect the pressure feeding hose P and the return flow hose N to a double acting control valve at the tractor.

If no double acting control valve is available, P must be connected with a single acting control valve and N should be connected as a pressure free return flow directly to the oil tank of the tractor.

The other hydraulic connections are needed for the hydraulic boom lifting control and are connected to the remaining free single acting or to one side of a double acting control valve.

4.7.4 JET 1204/1504 H with solenoid control chest (special option)

Remove the three hydraulic hoses with the descriptions P, N and R from the provided fixing place and connect as follows:

Hydraulic hose P (pressure feeding) and N (return flow) to the double acting control valve of the tractor. The hose R (pressureless return flow) should be connected directly to the oil tank of the tractor. If such a possibility is not provided at the tractor it can either be installed by the tractor service department or it can perhaps also be connected with a single acting control valve which during operation is set on "lowering".

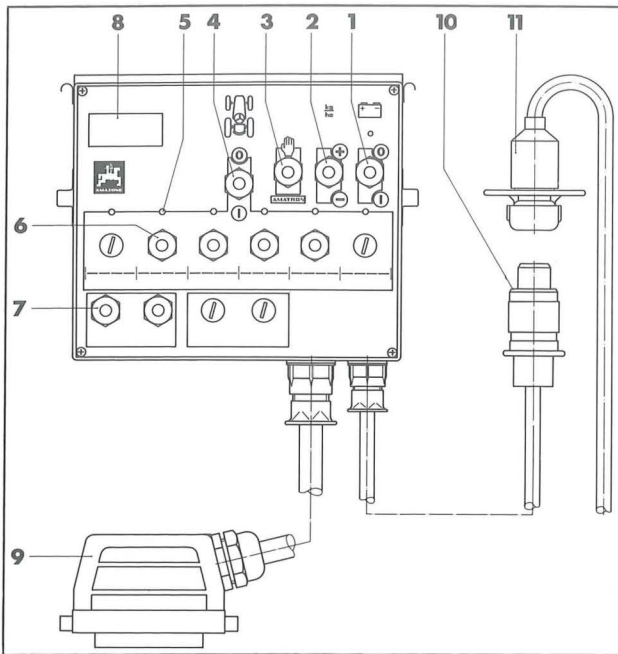


Fig. 8

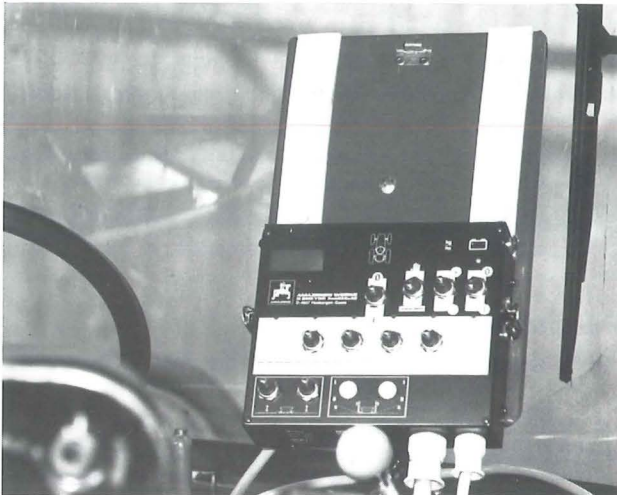


Fig. 9

4.7.5 Connecting of control box SKJ 3 (JET) (Fig. 8)

The electric remote control box is separately packed and is connected to the machine with an implement plug (Fig. 8/9). For the electric supply the enclosed connecting cable should be directly fitted to the tractor's battery (12 Volt), blue to earth (negative) and brown to (12 Volt), blue to earth, negative and brown to live. Put plug (Fig. 8/10) into the socket (Fig. 8/11).

Attention: The negative pole must always be connected to earth (frame or chassis). This is especially important with older American, Canadian or British tractor types.

Mount the control box with the aid of the enclosed brackets if possible to the right above the linkage panel within reach of the tractor operator (Fig. 9). A mounting bracket should be made to suit the particular possibilities of the existing tractor.

Description of the individual switches (Fig. 8)

- 1 – Battery main switch
By switching this switch into position 1 the complete control box is ready to start. The red pilot light below the battery symbol is turned on. When connecting the plugs 9, 10, 11 or the AMATRON (extra option) with the SKJ. the battery main switch should always be in off position (0).
- 2 – Sensor for spread rate adjustment
With this sensor (2) you actuate the setting motor which controls the three-way regulating valve and in consequence the speed of the metering rollers.
- 3 – By switch (3) you can decide whether the setting motor is being controlled manually (i. e. with aid of switch 2) or automatically (AMATRON). Without AMATRON switch (3) should be set to the manual operation (hand-symbol).
- 4 – Main boom switch for switching on or off the metering units across the entire boom width.
- 5 – Pilot light (green)
For every boom section one pilot light lights up if fertilizer is metered through that section.
- 6 – Switch for shutting on/off of the individual metering units (boom spread sections).
- 7 – Switch for lifting/lowering of the boom halves.
- 8 – Digital LCD-display for checking of the oilmotor/metering roller speed.

N.B.: The switches 4 and 6 should be held in minimum for a period of 2 seconds in the on- or off-position, to ensure switching function.

If the JET is equipped with an AMATRON-control computer (special option) please follow the fitting and function description of the separate AMATRON instruction manual.

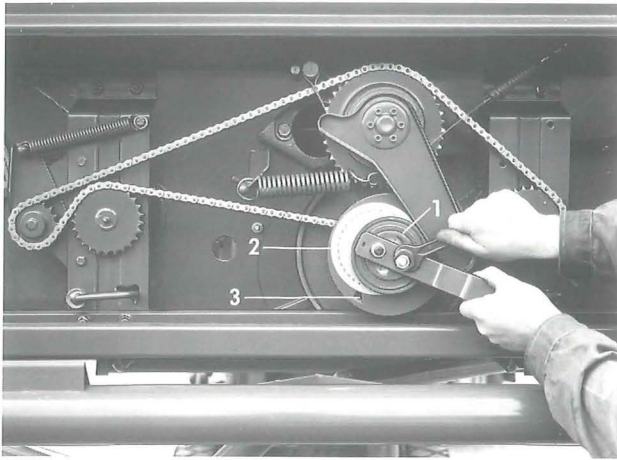


Fig. 10

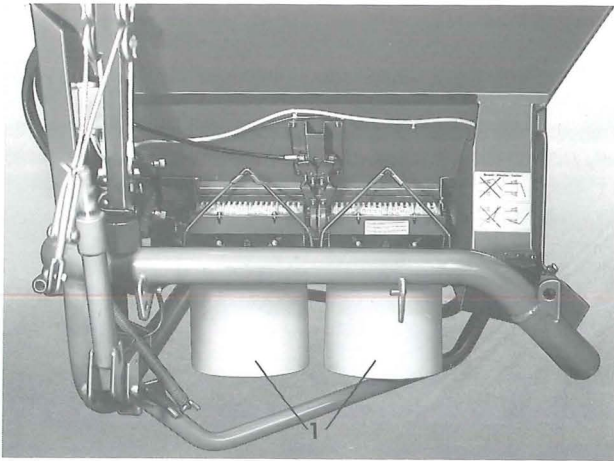


Fig. 11

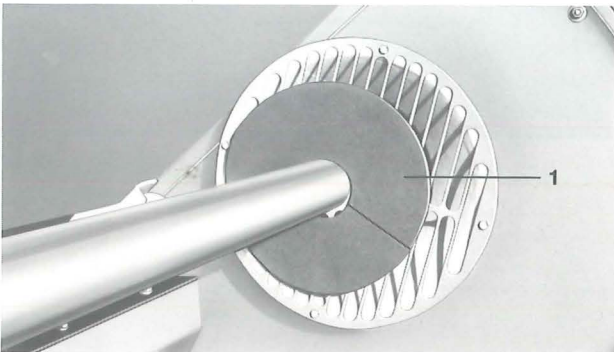


Fig. 12

5 Practical operation in the field

5.1 Setting of the spread rate – general hints -

Before setting and calibrating the spreader check whether the corresponding metering sprockets are switched "on" or "off" (refer to paragraph 4.5.2).

5.1.1 Setting of the spread rate on the JET 04 F range

The desired spread rates can be read off the setting chart for fertilizer and micro granules which may be found inside the machines rear cover. Thus, the column should be considered which relates to the desired tractor speed and to the material to be spread. The relative position of the adjustable eccentric-cam (Fig. 10/1) towards the scale may be taken from the same setting chart and will be set after having slackened the off-centre nut (not self-locking nut) of the eccentric-cam (roller bearing, Fig. 11/1) by swivelling the eccentric-cam with the fixed scale by means of the setting lever provided as shown in Fig. 10 until the arrow (Fig. 10/3) oppose the desired figure on the scale between 0 – 180 (Fig. 10/2).

For the reduction of the max. delivery of the metering rollers follow the advices in paragraph 4.5.2.

5.1.2 Calibrating the required spread rate on the JET 04 F range

First find from the calibration table the desired type of material to be spread, the desired forward speed, the application rate and set the machine according to para. 5.1.1. The calibration test is carried out on the **left** side of the machine (see in operation direction). For this purpose the right metering unit must be disengaged by operating first both hydraulic rams from the tractor whereby both metering units become disengaged.

For preparation of the calibration test the left injector sluice (Fig. 4) has to be disengaged and pulled downwards and to the side while the boom halves remain folded and secured. Afterwards hang calibration buckets (Fig. 11/1) as shown in Fig. 5 and place the rubber throttle disc (diam. 210 mm) on the air-intake of the blower according to Fig. 12/1.

Before starting with the calibration the metering housings are to be primed with fertilizer by briefly engaging the P.T.O. shaft. Thereafter the calibration buckets must be emptied completely.

The machine is then to be run at a P.T.O. speed of 540 R.P.M. at the desired forward speed (k.p.h.) across the metering distance, which represents the equivalent of 1/40 hectare.

for 10 m working width use as metering distance 50.0 m
for 12 m working width use as metering distance 41.6 m
for 15 m working width use as metering distance 33.3 m
for 16 m working width use as metering distance 31.3 m
for 18 m working width use as metering distance 27.7 m

(For machines with the optional reduction gear for 1000 R.P.M.-P.T.O. drive the necessary P.T.O. speed for testing is 1000 R.P.M.)

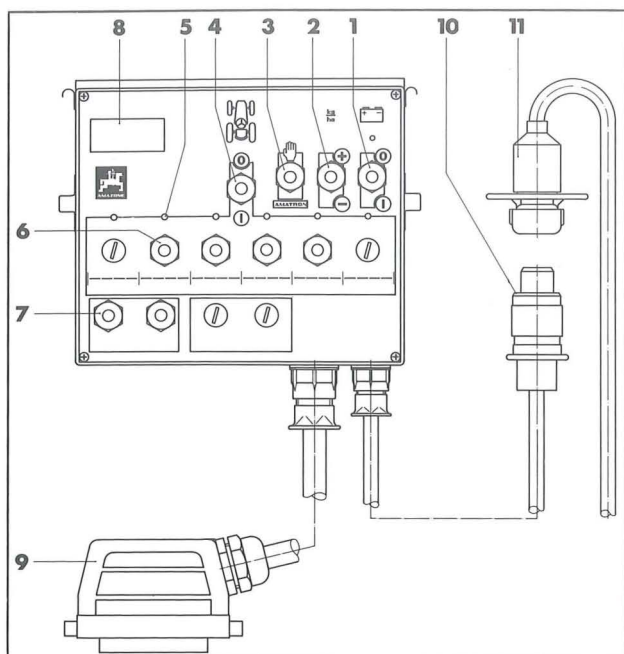


Fig. 8



Fig. 11a

The spreading material collected in the calibration buckets (Fig. 11/1) should then be weighed and the weight **be multiplied by 40** to determine the effective spread rate per hectare.

After the calibration test put the injector sluice back into place and remove the rubber throttle disc from the blower except for special cases as described in **paragraph 5.6**. For broadcasting on the field, **both** forced feed metering units are to be reengaged.

Calibration example:

Desired spread rate:	306 kgs/ha of NPK-compound fertilizer
Desired speed:	8 k.p.h.
Working width:	12 m
Eccentric scale position:	46
Collected quantity:	7.3 kgs
Actual spread rate:	$40 \times 7.3 = 292 \text{ kgs/ha}$

By this setting – using a forward speed of 8 km/h (k.p.h.) – the spread rate of 292 kgs/ha would be obtained.

If the obtained rates need to be corrected, the above calibration test should be redone, after a corresponding readjustment of the eccentric cam (Fig. 10/1) position.

Special hints for broadcasting micro granules

For broadcasting fine-grained materials such as micro granules close the intake of the blower with the supplied rubber throttle disc (210 mm diam., Fig. 12/1) during operation.

5.1.3 Setting of the spread rate on the JET 04 H range

The spread rate depends on the revolving speed of the metering roller and the chosen tractor forward speed. The metering rollers are driven by the hydraulic motor; the ratio hydraulic motor/metering unit is equivalent to 1 : 1.6. With the aid of the three-way oil flow control valve which is actuated by a setting motor the amount of oil being fed and thus the revolving speed of the hydraulic motor/metering roller is steplessly controlled. The setting motor is controlled by switch 2 (Fig. 8) of the SKJ 3.

5.1.4 Calibrating the required spread rate on the JET 04 H range

Before the first use of the spreader we highly recommend that you practise the following working steps first without fertilizer to get acquainted with the individual operation levers.

5.1.4.1 Calibration procedure (not for machines with AMATRON II)

- Shut swivelable bottom flaps (see Fig. 25/1).
- Fill hopper with fertilizer.
- Remove left hand injector sluice (compare Fig. 4).
- Hang the supplied calibration bucket as shown in Fig. 11a.
- Switch on battery main switch 1 (Fig. 8) and the hydraulic motor. Simultaneously switch off the metering units by switch 4 (Fig. 8).
- Briefly switch on and again off the lefthand metering unit by switch 6 (Fig. 8), so that the metering unit is charged with fertilizer.
- Empty bucket and replace under the metering unit again.

- Accelerate engine R.P.M. to 540 P.T.O.-R.P.M., however, do not engage P.T.O. shaft!
- Set speed of hydraulic motor with the aid of switch 2 (Fig. 8) to speed as stated in the setting chart (see annex). Should the fertilizer be unknown start with speed '25'!
- The machine prepared in this way is then run across the test area of 1/40 ha at the desired tractor forward speed and engaged left hand metering unit. Please see also para. 5.1.4.2.

5.1.4.2 Driving the calibration distance and calculating of the desired spread rate

Depending on its working width and the desired tractor forward speed the machine must be driven along the following calibration distances:

at 18 m working width over a calibration distance of 27.70 m
 at 16 m working width over a calibration distance of 31.25 m
 at 15 m working width over a calibration distance of 33.30 m
 at 12 m working width over a calibration distance of 41.60 m
 at 10 m working width over a calibration distance of 50.00 m

Due to the possibility to disengage individual metering sprockets, **other working widths** may prevail. In such a case the calibration distance should be calculated according to the following example:

$$\frac{500}{\text{working width (m)}} = \text{calibration distance in m}$$

for example: (10.5 m working width) $\frac{500}{10.50} = 47,62 \text{ m calibration distance}$

The calibration distance multiplied by half the working width is equivalent to an area of 1/40 ha. The spreading material collected in the calibration bucket is afterwards weighed and multiplied by the factor 40 to determine the spread rate in kg/ha.

Example:

Desired spread rate:	360 kgs/ha
Setting motor speed according to setting chart:	15
Chosen tractor forward speed:	8 k.p.h. (km/h)
Working width:	18 m
Calibration distance:	27.7 m
Collected fertilizer quantity:	9.0 kgs
Effective spread rate:	360 kgs/ha

If the desired spread rate deviates from the actual spread rate the setting speed of the hydraulic motor must be corrected. The correct speed setting can then be determined without conducting another calibration test following chapter 5.1.4.3.

5.1.4.3 Setting of the spread rate for unknown fertilizers or fertilizers not stated in the setting chart

Calibration example:

Desired tractor forward speed	8 k.p.h. (km/h)
Working width – for example	18 m
Speed of hydraulic motor	25
Desired spread rate	360 kgs/ha

$$\text{Desired spread rate for 1/40 ha: } \frac{360}{40} = 9 \text{ kg}$$

Actually collected quantity at setting 25 15 kgs
 Thus the machine is spreading 6 kgs too much.

$$\begin{array}{l} \text{Now calculate the correct speed} \\ \text{of the hydraulic motor:} \end{array} \quad \frac{25 \times 9}{15} = 15 \text{ kgs}$$

The correct hydraulic motor speed for the desired spread rate of 360 kg/ha would be 15 at a tractor forward speed of 8 k.p.h. (km/h).

After the calibration test has been completed the injector sluice has to be replaced.

5.1.4.4 Calibration procedure for machines equipped with AMATRON II

Please follow the operating and fitting instructions accompanying AMATRON II.

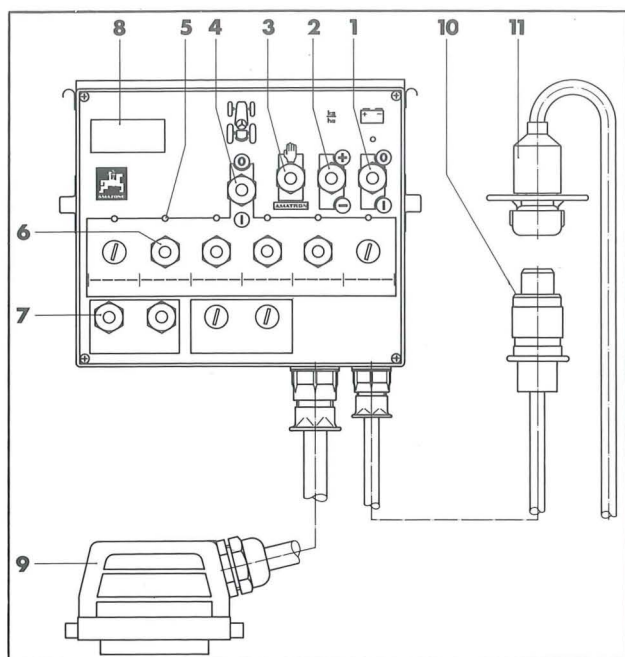


Fig. 8

5.1.5 Changing the spread rate during operation on JET 04 'H' range

With the aid of the standard supplied electric remote control (SKJ 3) it is possible to adjust the spread rate to the varying nutrition demand of the crop within one field. To do this, use switch 2 (Fig. 8) by which it is possible to spread defined higher or reduced spread rates. If you wish to increase or decrease your spread rate by 10% at a constant forward speed you just increase or decrease the figure in the LCD-display at the SKJ.

Example:

Set hydraulic motor speed: 30, actual spread rate 600 kgs/ha. For a 10 % change of the spread rate with an hydraulic motor speed of 33 or 27 should be set. This would result in a spread rate of either 660 kgs/ha or 540 kgs/ha.

5.1.6 Matching spread rate to tractor gear change on JET 04 'H' range

Should the terrain make it necessary to change the tractor gear within one field, the speed of the hydraulic motor must be changed in the same proportion as the forward speed has been changed.

Example:

The previous forward speed was 9 k.p.h. (km/h) at an hydraulic motor speed of 50 and a spread rate of 600 kgs/ha. The new changed forward speed now is 6 k.p.h. (km/h). This change is equivalent to – 33%. Thus the hydraulic motor speed should be changed by 33% to the speed of 20 so that the spread rate of 600 kgs/ha remains unchanged.

5.2 4-fold part section spread control

By the 4-fold part section spread control it is possible at random to switch on or off part sections of the total spread width.

5.2.1 Electric 4-fold part section spread control

This control which comes as standard with the JET 04 H range is available as option for the JET 04 F range by the SKJ 3. It allows by remote control from the tractor's cab of boom part sections (Fig. 8/6) to be switched off or on.

When operating the SKJ 3 it should be remembered that switch 4 (Fig. 8) has predominance over switch 6 (Fig. 8). This device has practical importance e.g. when spreading field tips. If the field tip becomes narrower from the left hand to the right hand also the part sections should be switched off in that same order. If one then drives into the next "full tramline" all metering rollers are switched on by switch 4 (Fig. 8). Thus it is not necessary to switch on all individual part sections via switch 6.

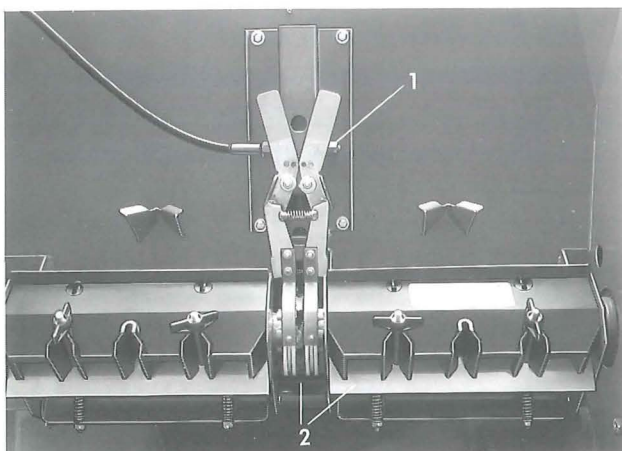


Fig. 13



Fig. 14

5.2.2 JET 04 F range with half-side boom section control with manual 4-fold preselection possibility

With machines of the JET 04 F range it is possible to switch hydraulically on or off from the tractor cab the right hand or the left hand metering roller independently by either two single acting spool valves or by a two way control valve on the tractor.

Additionally it is possible to switch on or off in any order boom spread sections manually by the manually controlled 4-fold preselection boom section control. To do this actuate manual control levers (Fig. 13/2) at the metering rollers (Fig. 13/1) accordingly whereby each one metering roller per boom side is switched on or off.

As soon as the drive to the metering roller is switched on the corresponding metering roller section comes to a stand-still so that the corresponding boom section area is not being spread on.

5.2.3 JET 04 F range with hydraulic half side control with manual 4-fold preselection possibility and hydraulic boom lift (hydraulic double control)

With these types the hydraulic functions (boom lift on/off) are combined for each the left hand or right hand, whereby the control is done by two single acting spool valves or by a single acting spool valve and a two-way control unit.

As with the hydraulic control always the on/off function begins first. When starting to spread, the P.T.O. shaft is switched on **only after** the boom halves have completely been folded down.

During turning at the end of the field the hydraulic should be switched on only as long until the on or off switching is completed.

5.3 Folding of booms

Disconnect the road safety boom pins and then fold down the booms either by hand or hydraulically. To do this with the hydraulic boom folding unit use either a control valve on the tractor or the solenoid control chest on the machine by switch 7 (Fig. 8). **Please ensure that the boom halves are completely lowered down.**

If the outer boom ends hit firm obstacles they give way to the rear and upwards and after the obstacle has been passed, return into the original position.

Attention:

It is prohibited to stay in the swinging area of the hydraulic booms! Keep others away too!

For booms which are folded up or down by hand it is recommended to lift the boom in the place as shown in Fig. 14. In this position, the boom can be lifted or lowered safely with a relative small power.

When transporting the booms in the lifted position they must always be secured with the mechanical safety device!



Fig. 15



Fig. 16

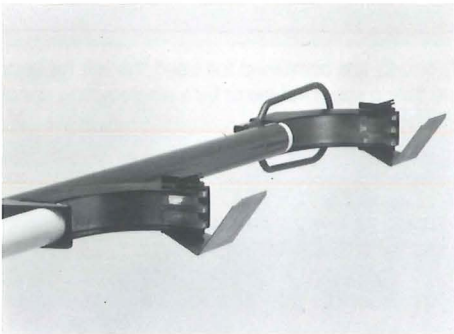


Fig. 17

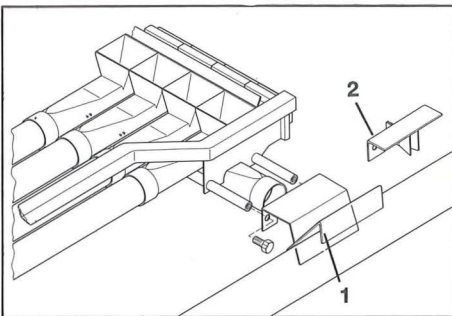


Fig. 18

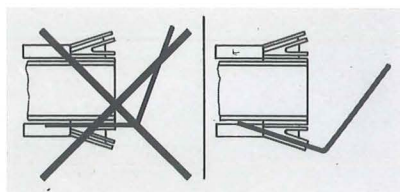
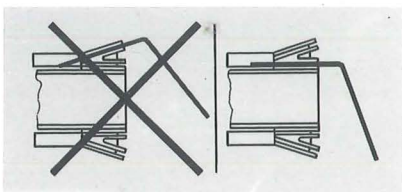


Fig. 19

5.4 Normal spreading and late top dressing

Normal spreading:

The machine is mounted parallel to the ground, the spacing between the boom and the ground or crop is 700 mm.

All deflector plates on the boom and those integrated into the main chassis are pointing downwards; this way the spread fan is hardly affected by wind (Fig. 15, 16/1, 16/2).

Late top dressing

The machine is mounted parallel to the ground and lifted slightly above the top of the ears. Should for this the lifting height of the tractor's hydraulic is no longer sufficient the possibility exists to bolt the lower link pins into the holes provided 18 cm below (Fig. 25/2). (The further holes are provided to take up category-III pins.)

All deflector plates on the boom are pointing upwards (Fig. 17).

The deflector plates in the outer chassis area (Fig. 16/1) left and right hand are removed. Beneath the machine (Fig. 16/2) the deflector plates are removed on the 15 m-, 6 m- and 18 m-booms (compare also Fig. 18/1). If the machine is equipped with a 10 m- or 12 m-boom the deflector plates below the chassis (Fig. 16/2) are exchanged for the deflector plates shown in Fig. 18/2.

Turning the deflector plates on the booms is done without tools. To do this the plastic catch on the deflector plate mounting is bent sideways and the deflector plate is pulled off. The reversed deflector plate must then be slid into the correct slot (Fig. 19) until the plastic catch grips.

5.5 Spreading in the field, hints for the JET 04 H range

Engage P.T.O. shaft and the oil drive at a low engine speed and accelerate up to 540 R.P.M. Now set the hydraulic motor's speed which was previously calculated during the calibration test and begin the operation at the chosen forward speed. The metering of the material to be spread is activated by the main switch 4 (Fig. 8) (remember to press the switch for at least 2 seconds). At the field end the metering drive is switched off by the same main switch, then the tractor slows and turns.

For the new bout, increase tractor engine speed to obtain the necessary 540 R.P.M. at the P.T.O. shaft, switch on metering drive and continue to operate at the constant predetermined forward speed.

Keep the hydraulic motor drive switched on at the headland.

During operation it may occur that the figures in the digital display vary, however, deviations of ± 1 have no significance. When the oil warms up its viscosity will change and this leads to deviations of the set R.P.M. In this case the R.P.M. should be re-set with the aid of switch 2 (Fig. 8).

Always try to maintain the forward speed chosen for the calibration test as well as the blower and P.T.O. R.P.M. (540 R.P.M.).

Also on machines which are used with AMATRON, the speed on the fan in dependence of the working width should not be allowed to drop off too much as otherwise a precise lateral distribution of the fertilizer can no longer be ensured.

Should the electrics or the remote control fail it is possible to control the speed of the hydraulic motor by hand.

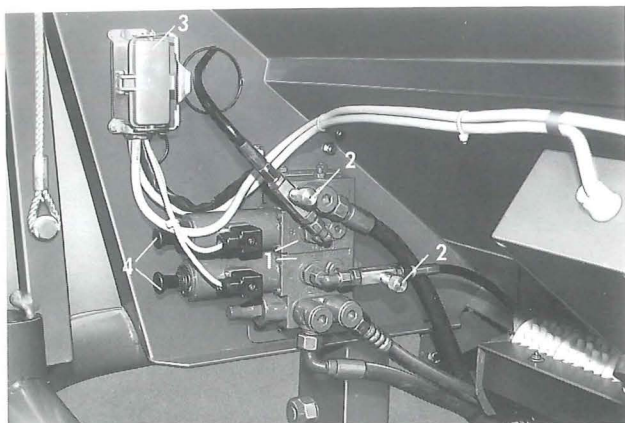


Fig. 20

5.6 Hints for special care!

The pneumatic spreaders JET 04 are suitable for spreading of granular fertilizers, grass seeds, micro granules or similar products.

For spreading grass seeds or slug pellets it is possible to reduce the spread rate by disengaging certain metering sprockets (see 4.5.2).

When spreading fertilizers of a low bulk density such as Urea and prilled Calcium Nitrate the supplied restriction disc 210 mm diam. (Fig. 12/1) should be used during the spreading operation.

With some spreading materials such as Kieserite-Silicates, Excello- granular and Magnesium Sulphate, increased wear on the delivery tubes and on the end outlets should be taken into account.

6. Special optional equipment

Note: As standard specification varies by country it is possible that some of the "special optional equipment" stated in the following are included in the scope of delivery of your machine and some of the "standard specifications" mentioned in this manual are left off.

6.1 Two-way control valve (Order No. 145600)

If the tractor has only one single acting hydraulic valve, individual control of the metering unit clutches from the tractor is possible by using the two-way valve.

6.2 Hydraulic boom lifting (Order No. 190100)

The machines with 15 m-, 16 m- and 18 m-booms are supplied as standard with hydraulic boom lift. For machines with 10 m- and 12 m- booms it is available as special option.

The boom halves can be conveniently raised and lowered by two single acting control valves or two solenoid control chests (Fig. 20/1). The raising and lowering speed may be set according to the oil's viscosity by an adjustable throttle valve (Fig. 20/2).

6.3 4-fold electric part spread section control

Please refer to paragraph 5.2.1.

6.4 Foam marker

The foam marker is needed if an accurate spread is needed on fields which were sown without tram-lines. The foam marker with compressor is connected to the electric circuit of the tractor whereas the implement without compressor is used on tractors which are provided with a compressor. More details may be taken from the instructions supplied with this option.

6.5 Position lights, tail lights, light carriers

These items can be fitted to the machine without difficulty and they are required when travelling on public roads.

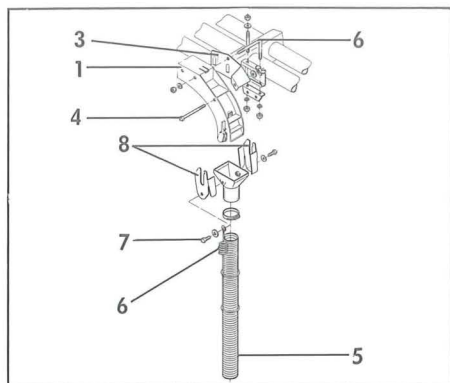


Fig. 21

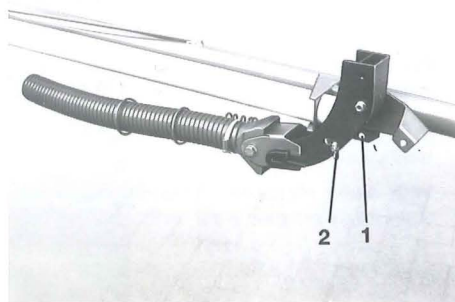


Fig. 22

6.6 Row spreading attachment (for 10 m- and 12 m-booms only)

Being especially designed for fertilizing of crops which are planted in wider spaced rows ("row crop") such as potatoes, maize, sugar cane etc. It consists of a total of 16 big diameter hose attachments being either 62.5 (10 m boom) or 75 cm (12 m boom) or a multiple of these spacings apart. The 2 centre hoses attach directly to the main centre frame. The fertilizer is placed in a wider band on the ground by the side of the plant-rows so that nutrition concentrations in the root area is avoided.

The attaching of this row spreading attachment is rather simple:

The two deflector plates (Fig. 16/2 and 18/1) are removed from the injector tubes after removing the fixing bolts below the main centre frame.

Use the same bolts to fix the guide hoses instead of the removed deflector plates. Remove all other deflector plates of both boom halves. Pull off the PVC-outlet bends (Fig. 21/1) by inserting a screw driver to push back the locking tongue. Thereafter mount the PVC outlet bends (Fig. 21/1) in the position as shown in Fig. 21 to the boom by using the threaded pin and the hook-bolt (Fig. 21/4). Now clip-on the hose outlets (Fig. 21/5) to the outlet bends (Fig. 21/1).

To avoid exceeding the permissible transport width and at the JET 1204/JET 1504 a hitting of the middle hose outlet (Fig. 21/5) against the hopper when folding the booms up, some of the hose outlets (Fig. 21/1) should be swung into the position as shown on Fig. 22 before by removing the related wing nut and bolt (Fig. 22/2).

If the machine is equipped with a hydraulic boom lift it is **absolutely necessary** before folding the booms upwards to swing the hose outlets (Fig. 21/1) into the position as shown in Fig. 22. Furthermore it has to be ascertained when fitting the hose outlets that on the left and right side the guide spring (Fig. 21/6) of the outer hose outlets (Fig. 21/1) at the inner boom sections – contrary to the part as shown in Fig. 21 – should be mounted to the rear (seen in driving direction). When folding the booms watch that the hose (Fig. 21/5) of the inner hose outlet (Fig. 21/1) of the outer boom section is not clamped in but lays on the mounting bracket of the boom.

The setting of the hose outlets (Fig. 21/5) to the desired row widths of the various crops should preferably be done in the field by slackening the bolts (Fig. 21/7) and by turning the connecting tube (Fig. 21/8) and the guide springs (Fig. 21/6), so that the position of the hose outlets (Fig. 21/5) can be set to the widths of the crops' rows. Some examples for different row widths are shown in the diagram in paragraph 9.1. (However, also other row widths can be set too by manipulation of the metering units (paragraph 4.5.2).

At the examples "a" – "d" two rows of crop are situated between the tractor wheels whereas at the example "e" one or three rows of crop are between the tractor wheels. The example "e" is used when having either very wide or very narrow row spacings. In this case the hoses may not be crossed.

The more accurate the adjacent bouts were shown or planted the more constant are the row spacings and the better the fertilizing with the row-spreading attachment can be done. If the row spacings are irregular danger prevails that in some rows the fertilizer is placed on top of the plants and thus scorching of the leaves occurs. The distance between the guide hoses is 75 cm (12 m boom width) or 62.5 cm (10 m boom width). If there are any deviations between the crop rows and the fertilizer outlets of the machine (75 or 62.5 cm resp.) some of the guide hoses must be placed at an angle. However, this affects the total bout width of the JET-spreader.

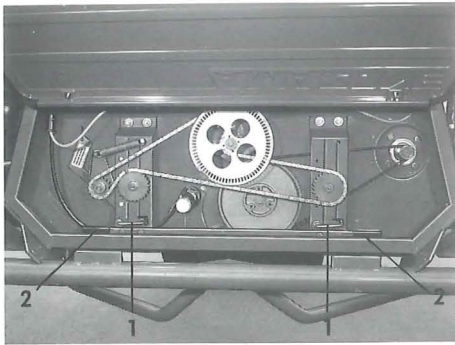


Fig. 23

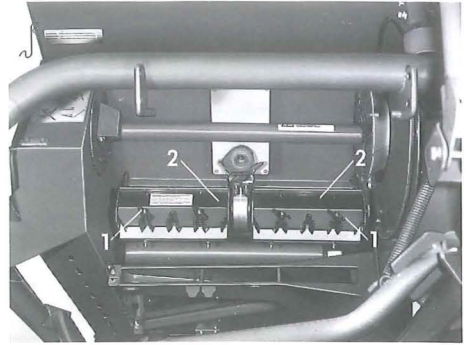


Fig. 24

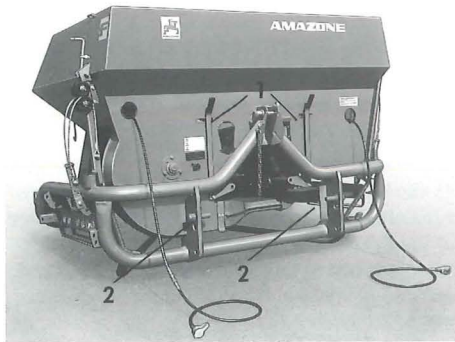


Fig. 25

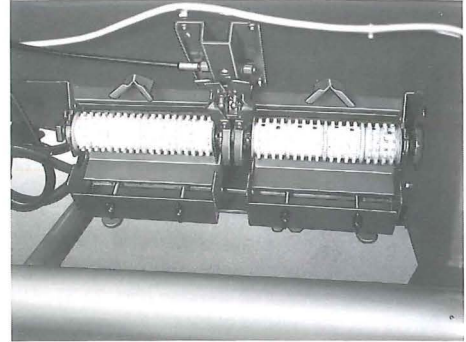


Fig. 26

The spread rate is set according to paragraph 5.1 of these instructions. Bear in mind, however, that the working widths are changed as soon as the crop's row widths are differing from the spacing of the guide hoses (75 or 62.5 cm).

If for example the crop's row width is 70 cm, the normal working width of the machine is reduced from 12 m to $16 \times 0.70 \text{ m} = 11.20 \text{ m}$. This means, that the working width is reduced by approx. 7% so that a setting should be chosen from the table with a setting rate being 7 % less.

(Example: Desired setting rate is 500 kgs/ha. The digital display shows 28, the machine's setting rate should then be 465 kgs/ha in accordance with a display figure of 26.)

Vice versa, if the row spacing is 80 cm the working width is increased to $16 \times 0.80 = 12.80 \text{ m}$ (this represents an increase of the working width by 7%). Therefore one should look for a 7% increased spread rate setting in the table.

(Example: Desired setting rate is 500 kgs/ha, the hydraulic motor speed or the digital display should then read 30 which corresponds to a spread rate of 535 kgs/ha).

To achieve an even distribution of the fertilizer it is recommended during spreading to place the throttle disc (Fig. 12/1) in front of the fans' air intake funnel.

7 Maintenance, emptying and cleaning of the machine

7.1 General hints

For emptying the pneumatic spreader proceed as follows:

First unhook injector sluice (see Fig. 4) and lift off manually metering roller couplings left and right (Fig. 23). For this, lift securing bracket (Fig. 23/1) and pull it back by hand with the aid of the swing (Fig. 23/2) until the securing bracket is caught again.

Now place either the calibration buckets or other suited collecting devices beneath the metering rollers and open bottom flaps (levers in front of hopper Fig. 25/1). Now open the thumb nuts of the bottom flap front parts (see Fig. 24/1) as far as possible without taking them entirely off. Take the bottom flap lever (Fig. 25/1) from its arresting plate and swing it towards the machine's side.

Now the bottom flap front parts (see Fig. 24/2) can be removed. A stainless steel guide plate remains on the bracket and ensures a controlled flow of the fertilizer (Fig. 26).

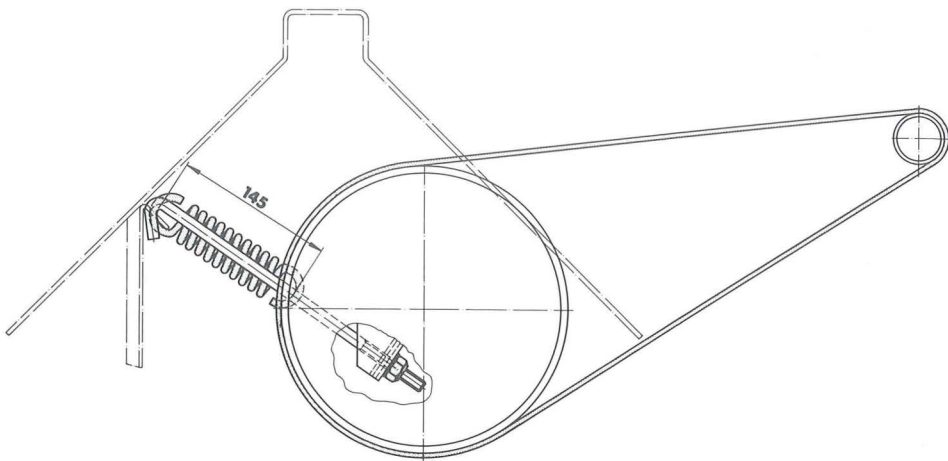


Fig. 27

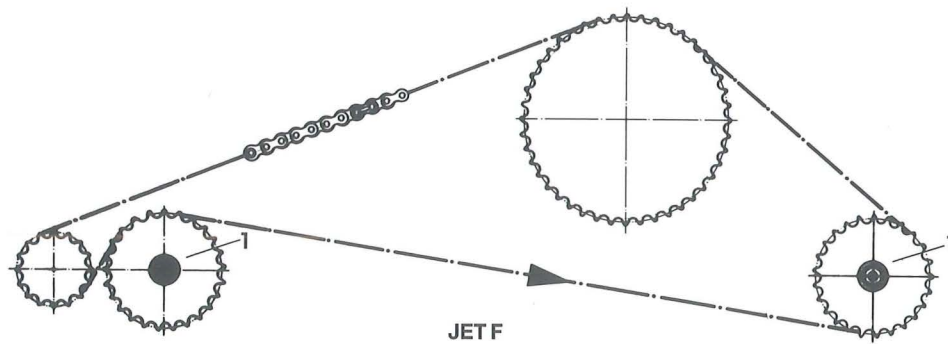


Fig. 28

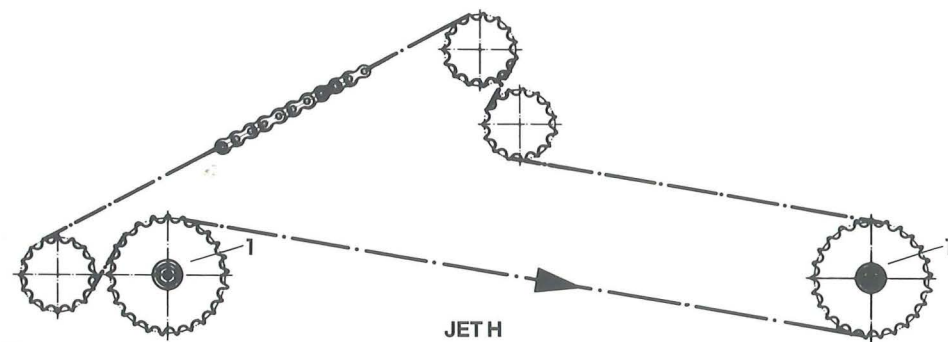


Fig. 29

Hopper, metering rollers and injector sluices may be cleaned with water. The dismantled bottom flap front parts and the injector sluices should be placed in such a way into the machine's hopper, that the water can drain off. Fit these parts only just prior to the next operation in vice versa order.

When using a high pressure cleaner please take care, that the ray of water should not be directed to the outlet of the shifting rod of the coupling (see Fig. 24/3), the eccentric of the freewheel drive (see Fig. 10/1) and to the electric motor for the 3-way hydraulic diverter valve adjustment (Fig. 23/3).

The switch box SKJ 3 and also the AMATRON II should be stored away well protected in a dry place. Close tightly the implement side socket (Fig. 20/3) by the cover to prevent corrosion to the electric connections.

7.2 Maintenance

After the first 10 hours of operation all bolts and nuts should be checked for tightness.

Additionally the tension of the drive belt should be checked as it elongates during the run-in period. The tensioning is correct if the spring pretension at the main drive shaft has the measure of 145 mm as shown in Fig. 27. Checking and readjustment is done from the machine's underside, after the machine has been lifted by the tractor and is additionally secured against unintentional dropping (see Health- and Safety Instructions herein).

The pretensioning of the spring should only be done at the short pull rod. The parallel lying longer pull rod should have a play of 2 mm.

The following bearings should be greased from time to time:

Universal joint shaft:	2 grease nipples
Blower wheel shaft:	2 grease nipples
Chain sprocket shaft:	left and right (Fig. 28/1 or 29/1)

Apply grease from time to time to the universal joint shaft tubes.

For maintenance of the roller chain during a longer operational pause it is recommended to wash it in Kerosine and to dip it into clean oil or heated grease and fitted according to Fig. 28 for type 04 F or Fig. 29 for type 04 H.

Also apply grease to the chrome-plated piston rods of the hydraulic rams after cleaning of the machine.

7.3 Attention! Hints for assembling the blower wheel shaft

In case the repair of the blower wheel shaft becomes necessary, the assembly should follow the following points:

The bearing is firmly connected to the blower wheel shaft by the clamping sleeve nut. The necessary firm seating of this connection can only be achieved if the nut is tightened with a torque M of the following momentum:

Blower shaft (front) diam. 35 mm: $M = 50 \text{ Nm}$

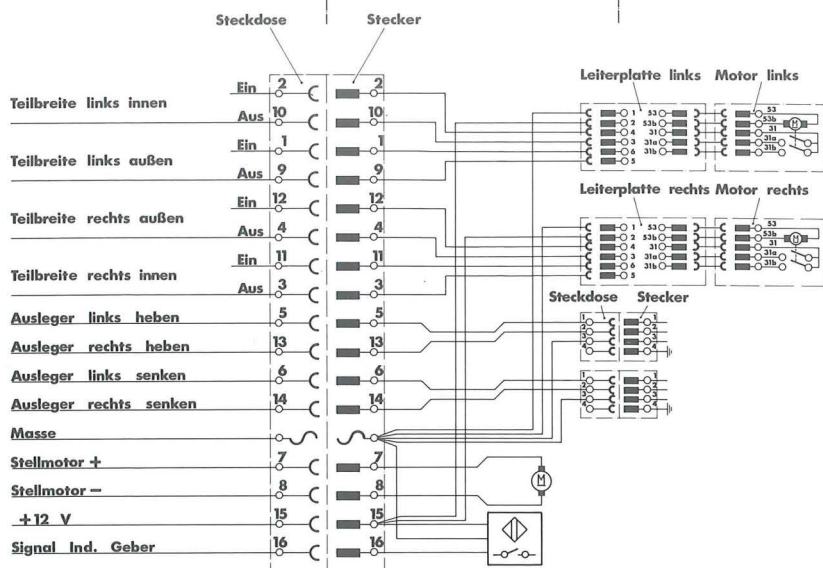


Fig.30

8 Function trouble / Trouble shooting

8.1 Electric remote control box

	Trouble	Cause	Remedy
8.1.1	Remote control does not function.	Fuse in the main power supply from the battery is defect. Fuse is intact, then check cable from the battery and socket (Fig. 8) for damage. Check if voltage at the socket is 12 V (see wiring plan Fig. 30).	Exchange fuse. Sight-check the cable and exchange if necessary. Check socket
8.1.2	Digital display shows varying figures	Drive transducer (Fig. 23/3) does not have the correct distance towards the impulse disc.	Correct spacing to the prescribed distance between drive transducer/impulse disc of 1 mm \pm 0.5 mm.
8.1.3	Setting motor for spread rate adjustment does not react.	Switch 3 (Fig. 8) was not switched to "Hand"-symbol. Cable defect. Check whether any voltage is arriving at the setting motor when actuating switch No. 3 (Fig. 8)	Switch to "Hand" symbol. If voltage is noticeable, probably the setting motor is defect. Exchange. Field operation can still be continued to its end by setting the spread rate manually (see para. 8.3).
8.1.4	Setting motor turns contrary to the switch position \pm	Wires have been misconnected.ive voltage.	Check wires vice versa (Fig. 30).

Trouble	Cause	Remedy
8.1.5 * Some hydraulic functions, i.e. boom lifting cannot be actuated.	Solenoid switch does not receive voltage.	Check corresponding poles at implement side plug (Fig. 30) for voltage, check cable by sight.
	Solenoid switch defect, oiled up (if voltage gets to the solenoid switch). Defect to switch of SKJ (no voltage gets to the implement plug).	Exchange solenoid switch; spreading operation can still be ended, switch valves by hand (see para. 8.3). SKJ defect; Check. Exchange by service.
8.1.6 * Hydr. functions switch the other way round, for example boom actuation left instead of right.	Misconnecting of hydraulic hoses. Poles to the socket (Fig. 30) were wrongly wired.	Unscrew and connect correctly. Wire correctly according to the wiring plan (Fig. 30).

* Is only applicable for machines with solenoid control chest (option).

8.2 Hydraulics

	Trouble	Cause	Remedy
8.2.1	Hydraulic motor does not run.	Hose connections P, N. mixed up. Loss of oil on the hoses and joints. Three-way hydraulic divertor valve is set to "shut". Defect in three-way hydraulic divertor valve.	Connection P oil feed N return flow Tighten joints' screw nuts, exchange hose. Drive open the valve (see para. 5.2.3). See specialist service, workshop.
8.2.2	Hydraulic motor hydraul. secondary functions cannot be controlled (simultaneously)	On machines without solenoid control chest no simultaneous operation is possible. * Tractor hydraulic pump delivery insufficient for the chosen oil rate (about 30 l/ min.) * Solenoid valves of the control chest do not function (sight-check).	Switch off oil drive operate hydraulical secondary functions (boom lift). switch on oil drive again. Choose a slower hydr. motor speed and a corresponding slower tractor forward speed. For tractors with reduced pump oil delivery in some cases the use of a special hydraulic motor may be of help. (See table of function troubles. Electric control box.)
8.2.3	Hydraulic boom lift control does not lift/lower	Please refer to para. 8.2.2. Throttle valve (Fig. 2 or Fig. 20/2 resp.) set on "shut" or is blocked up.	Turn open valve, lift and lower boom several times, thereafter readjust or remove valve and clean.
8.2.4	Excessive oil heating	High resistance in the back flow system (N) of the tractor.	Check whether a free oil return flow is existing at the tractor oil tank. Max. allowable resistance at the coupling plug (N) approx. 20 bar.

* Refers only to machines which are equipped with the solenoid control chest (extra option).

8.3 Continuing field operation after break down of electric functions

Should the electric/electronic devices fail to function, the machine can still be operated manually.

Examples:

- a) The electric motor for the metering shaft dog clutch does not function any more.
- b) Solenoid valve for the boom folding does not operate.*
For lifting or lowering of the booms, the valve at the control chest can be actuated by hand by pulling or pressing the black ball head (Fig. 20/4).
* Is only applicable for machines with control chest (option).
- c) Setting motor does not produce any function.

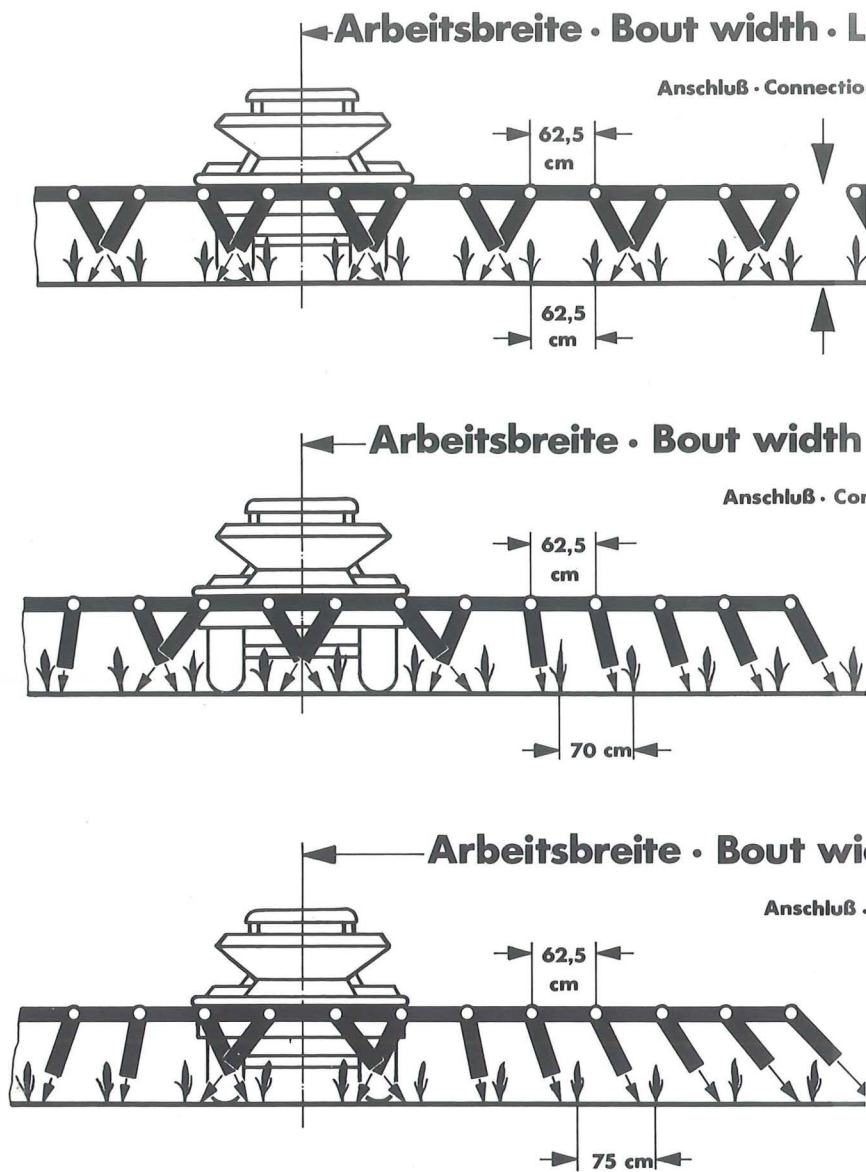
The spread rate adjustment can be done via the three-way hydraulic diverter valve by hand. For this loosen the clamp behind the graduated disc and pull the motor to the rear away from the three-way hydraulic diverter valve. Set the speed of the hydraulic motor at the black handle adjusting screw of the three-way hydraulic diverter valve.

Danger of accident:

Switch off hydraulic motor before conducting any setting at the hydraulic motor.

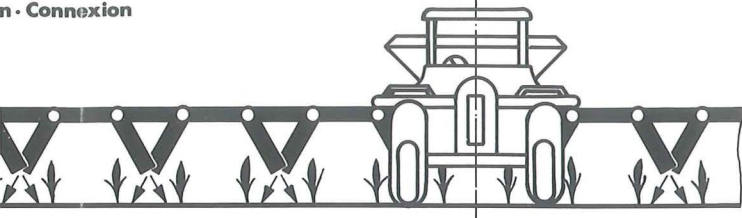
9 Annex

9.1 Setting of the row spreading attachment



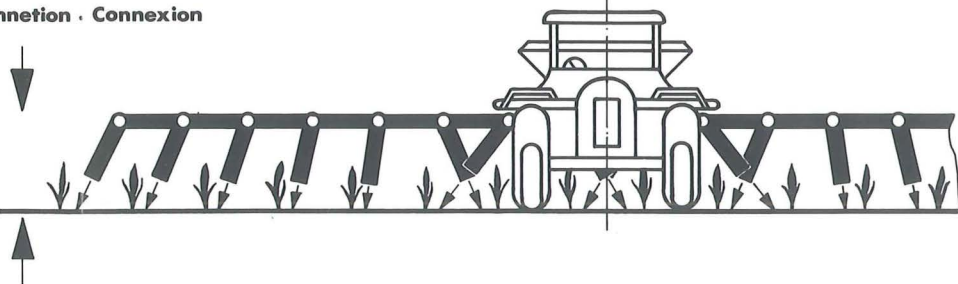
argeur de travail: 10 m →

n · Connexion



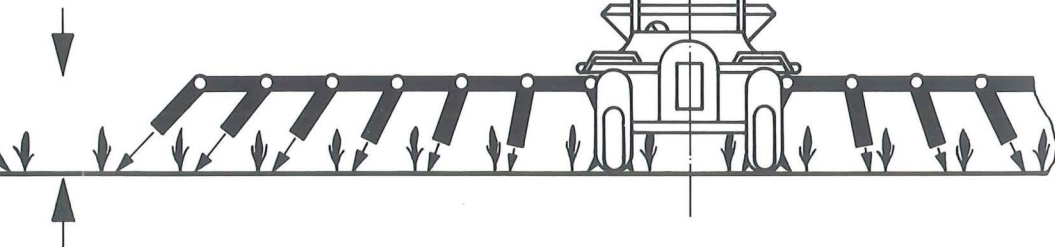
· Largeur de travail: 11,20 m →

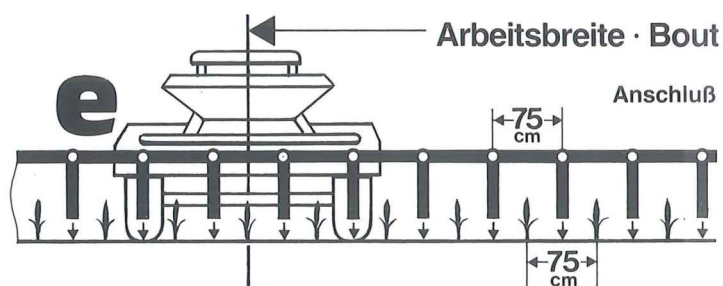
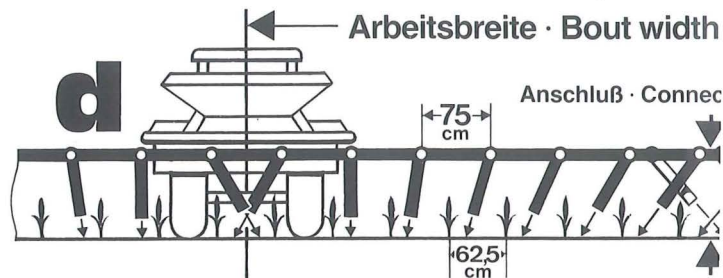
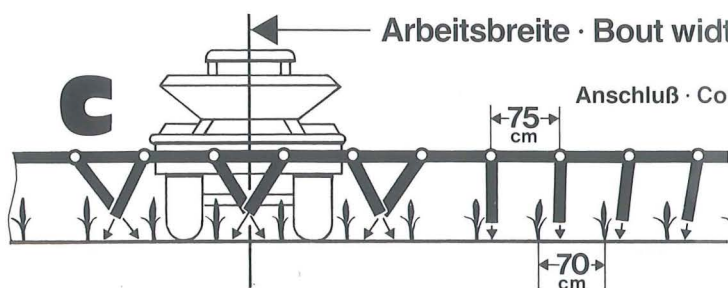
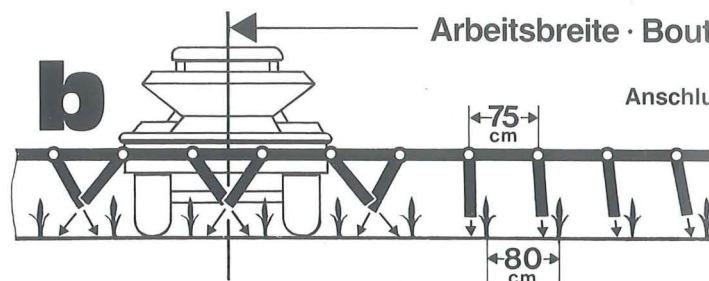
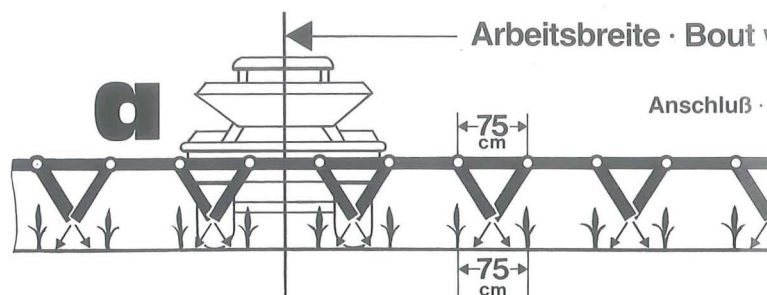
nnexion · Connexion



dth · Largeur de travail: 12 m →

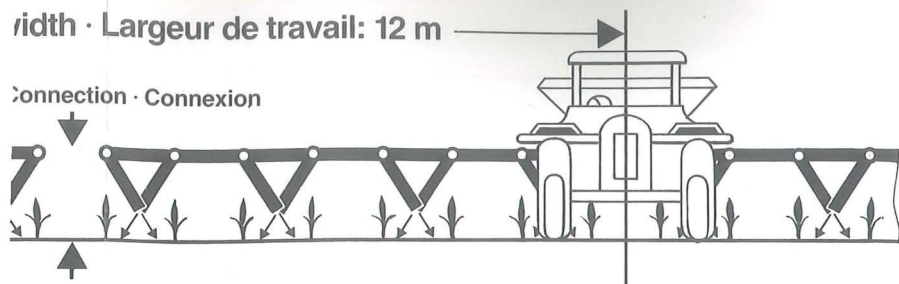
Connection · Connexion





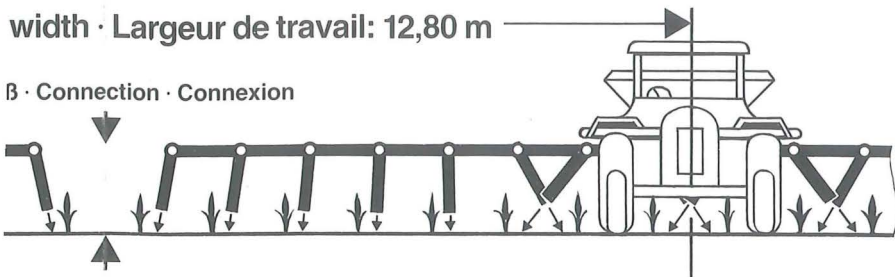
width · Largeur de travail: 12 m

Connection · Connexion



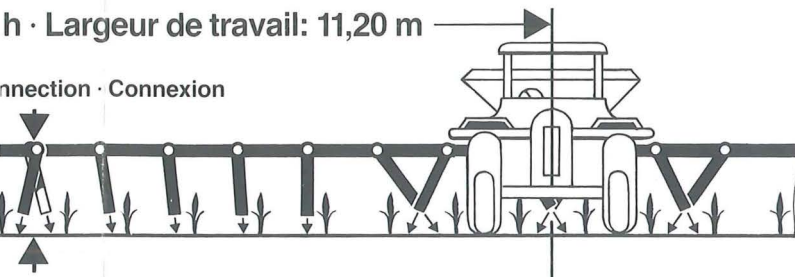
width · Largeur de travail: 12,80 m

β · Connection · Connexion



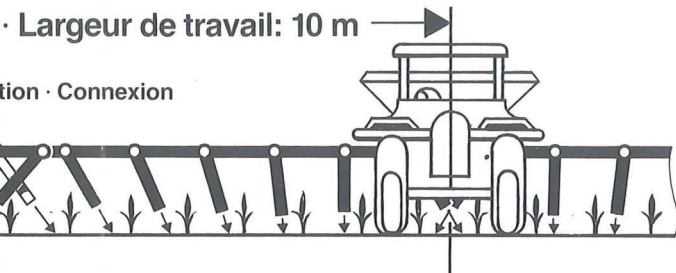
h · Largeur de travail: 11,20 m

Connection · Connexion



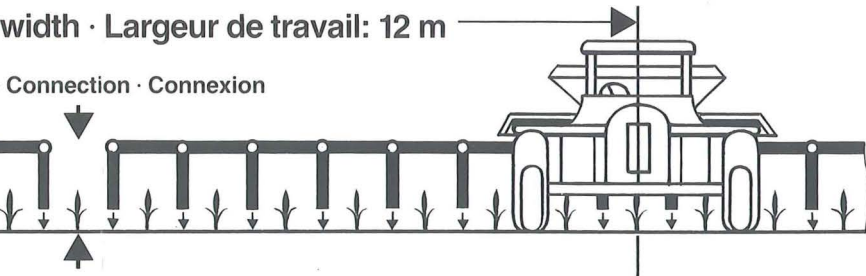
· Largeur de travail: 10 m

tion · Connexion



width · Largeur de travail: 12 m

Connection · Connexion



9.2 Setting chart JET 04 F/H

Düngersorte Sorte d'engrais Type of Fertilizer	Schüttgewicht Poids spéc. Bulk density kg/l	km/h	Streutabelle/Tableau de Réglage/Setting chart																
			Die in der Tabelle angegebenen Werte sind Richtwerte in kg/ha / Touts																
			Digitalanzeige SKJ /																
			Exzent																
			Jet H																
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
Jet F																			
10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42			
Kalkamonsalpeter 27% Ammonitrate 27% CAN Calcium Ammon. Nitrate 27%	1,00	1 6 8 10	756 128 95 76	889 148 111 89	1044 174 130 104	1200 200 150 120	1356 226 169 136	1500 250 188 150	1622 270 203 162	1756 381 219 176	1889 315 236 189	2000 333 250 200	2156 359 269 216	2289 381 286 229	2422 407 303 242	2533 422 317 253	2667 444 333 267	2800 467 350 280	
Harnstoff Urée Urea	0,75	1 6 8 10	422 70 53 42	511 85 64 51	600 100 75 60	689 115 86 69	778 130 97 78	867 144 108 87	956 159 119 96	1044 174 130 104	1111 185 139 111	1200 200 150 120	1280 214 160 128	1422 237 178 142	1511 252 189 151	1622 270 203 162	1711 285 214 171	1822 303 228 182	
ICI Nitram 34,5% Nitrashell 34,5%	1,02	1 6 8 10	689 115 86 69	800 133 100 80	933 155 117 93	1088 182 136 109	1222 204 153 122	1333 222 167 133	1466 245 183 147	1600 267 200 160	1733 289 217 173	1866 311 233 187	1980 330 248 198	2133 356 267 213	2266 378 283 227	2444 407 306 245	2556 426 319 256	2711 452 339 271	
Suprasalpeter N28	1,07	1 6 8 10	622 104 78 62	733 122 92 73	844 141 106 84	978 163 122 98	1111 185 138 111	1267 211 158 127	1422 237 178 142	1556 259 195 156	1733 289 217 173	1867 311 233 187	1980 330 248 198	2133 356 267 213	2244 374 281 224	2355 393 294 235	2488 415 311 249	2622 437 328 262	
Ammonitrate 33,5%	1,04	1 6 8 10	578 96 72 58	689 115 86 69	800 133 100 80	933 155 117 93	1044 174 130 104	1178 196 147 118	1289 215 161 129	1422 237 178 142	1533 256 192 153	1667 278 208 167	1760 294 220 176	1934 322 242 193	2067 344 258 207	2200 367 275 220	2334 389 292 233	2467 411 308 247	
Ammoniumsulfat ZA21	1,12	1 6 8 10	711 119 88 71	844 141 106 84	1000 167 125 100	1133 189 142 113	1244 207 156 124	1400 233 175 140	1511 252 189 151	1644 274 206 164	1778 296 222 178	1911 319 233 191	2022 337 252 202	2222 372 278 222	2356 393 294 236	2533 422 317 253	2689 448 336 269	2867 478 358 287	
NPK 13-13-21	1,08	1 6 8 10	667 111 87 67	800 133 100 80	933 155 117 93	1067 178 133 107	1200 200 150 120	1311 219 169 131	1444 241 181 144	1556 259 195 156	1689 281 211 169	1822 303 228 182	1920 320 240 192	2044 341 256 204	2178 363 272 218	2289 381 286 229	2400 400 300 240	2533 422 317 253	
NPK 17-17-17 ORKEM - AZF	1,08	1 6 8 10	533 88 66 53	667 111 83 66	778 130 100 83	889 148 111 89	1000 167 125 100	1134 189 142 113	1244 207 156 124	1378 230 172 138	1489 248 186 149	1622 270 203 162	1720 287 215 172	1867 311 233 187	1978 330 248 198	2089 347 261 209	2200 367 275 220	2333 389 292 233	
NPK 17-17-17 COFAZ	0,94	1 6 8 10	489 82 61 49	578 96 72 58	667 115 83 67	800 133 100 80	911 152 114 91	1022 170 127 102	1133 189 142 113	1244 207 156 124	1378 230 172 138	1489 248 186 149	1580 264 198 158	1733 289 217 173	1844 307 231 184	2000 333 250 200	2111 352 264 211	2222 370 278 222	
PK 0-23-23 CEDEST	1,27	1 6 8 10	956 159 119 96	1156 193 144 116	1333 222 167 133	1533 256 192 153	1733 289 217 173	1933 322 242 193	2133 356 267 213	2333 389 292 233	2533 422 317 253	2733 456 342 273	2920 487 365 292	3111 519 389 311	3266 544 408 326	3444 574 431 345	3600 603 450 360	3800 633 475 380	
Ammonitrate 34,5%	1,04	1 6 8 10	644 107 81 64	778 130 97 78	889 148 111 89	1022 170 127 102	1156 193 144 116	1244 207 156 124	1356 226 169 136	1489 248 186 149	1600 267 200 160	1711 285 214 171	1820 304 228 182	2000 330 253 200	2178 363 272 218	2333 389 292 233	2533 422 317 253	2689 448 336 269	
Kornkali Chlorure de potassium granulé Rough grain potash	1,05	1 6 8 10	756 128 95 76	912 152 114 92	1067 178 133 92	1222 204 153 122	1355 226 170 136	1489 242 186 149	1556 259 195 156	1778 296 226 178	1911 345 257 191	2067 375 279 207	2200 407 297 220	2378 436 317 238	2533 462 333 253	2711 492 361 271	2889 511 383 289	3067 542 411 307	

Berechnung der Streumengen bei verschiedenen Arbeitsbreiten

10m	Werte der Streutabelle mit 1,2 multiplizieren
12m	Werte der Streutabelle entnehmen
15m	Werte der Streutabelle mit 0,75 multiplizieren
16m	Werte der Streutabelle mit 0,75 multiplizieren
18m	Werte der Streutabelle mit 0,67 multiplizieren

Détermination des débits pour différents

multiplier les valeurs du tableau
prendre les valeurs du tableau
multiplier les valeurs du tableau
multiplier les valeurs du tableau
multiplier les valeurs du tableau

AMAZONE JET 1204/1504 F/H

Les valeurs mentionnées dans le tableau sont approximatives en kg/ha / Application rates in kg/ha (mean figures)

Valeur de réglage affichée à l'écran du SKJ / SKJ digit No. display																									Jet H
14	15	16	18	20	25	30	35	40																	
Herstellung/Position de l'exentrique/Eccentre position																									Jet F
42	44	46	48	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155
933	3067	3200	3333	3467	3778	4111	4444	4756	5067	5422	5720	5956	6156	6378	6600	6800	6911	7044	7156	7267	7378	7489	7600	7733	7822
489	511	533	556	578	630	685	741	793	844	904	954	993	1026	1063	1100	1134	1152	1174	1193	1211	1230	1248	1267	1289	1304
242	266	289	310	417	433	472	514	556	594	633	678	715	744	767	825	806	864	881	894	908	922	936	950	967	978
293	307	320	333	347	378	411	444	476	507	542	572	596	616	638	660	680	691	704	716	727	738	749	760	773	782
933	2044	2111	2200	2267	2444	2640	2844	3022	3200	3422	3622	3822	4040	4133	4244	4356	4444	4560	4644	4711	4478	4844	4933	5000	5067
322	341	352	367	378	407	440	474	504	534	570	604	637	674	689	707	726	741	760	774	785	796	807	822	834	844
242	256	264	275	283	306	330	356	378	400	428	453	478	505	517	531	544	556	570	581	589	597	605	617	625	633
193	204	211	220	227	245	264	284	302	320	342	362	382	404	413	424	436	444	456	464	471	448	484	493	500	507
922	2977	3111	3244	3422	3778	4160	4444	4711	5000	5266	5556	5822	6080	6267	6467	6667	6844	7040	7155	7267	7400	7511	7622	7755	7866
470	496	519	541	570	630	694	741	785	834	878	926	970	1014	1045	1078	1111	1140	1174	1193	1211	1233	1252	1270	1293	1311
253	272	289	306	323	348	374	400	426	452	478	504	530	556	580	604	628	652	676	699	723	747	771	795	819	843
282	298	311	324	342	378	416	444	471	500	527	556	582	608	627	647	667	684	704	716	727	740	751	762	776	787
756	2867	3000	3133	3289	3600	3960	4289	4667	4920	5244	5556	5867	6160	6355	6533	6733	6933	7120	7200	7311	7400	7489	7600	7689	7778
459	478	500	522	548	600	660	715	778	820	874	926	978	1027	1059	1089	1122	1156	1187	1200	1219	1233	1248	1267	1281	1296
344	358	375	392	411	450	495	536	583	615	656	694	733	770	794	817	842	866	890	900	914	925	936	950	961	972
276	287	300	313	329	360	396	429	467	492	524	556	587	616	636	653	673	693	712	720	731	740	749	760	769	778
600	2734	2844	2956	3044	3289	3560	3844	4133	4440	4667	4933	5156	5360	5578	5733	5911	6067	6240	6289	6356	6422	6489	6533	6600	6667
325	346	362	376	389	411	445	481	517	555	593	617	644	670	697	717	739	758	780	786	794	803	811	817	825	833
260	273	284	296	304	329	356	384	413	444	467	493	516	536	558	573	591	607	624	629	636	642	649	653	660	667
922	3168	3333	3467	3578	3889	4200	4533	4889	5200	5489	5778	6044	6320	6489	6667	6844	7022	7200	7311	7400	7511	7600	7689	7800	7911
404	530	556	578	596	648	700	755	815	867	915	963	1007	1054	1081	1111	1140	1170	1200	1219	1233	1252	1267	1281	1300	1318
378	397	417	433	447	486	525	567	611	650	686	722	756	790	811	833	856	878	900	914	925	939	950	961	975	989
302	318	333	347	358	389	420	453	489	520	549	578	604	632	649	667	684	702	720	731	740	751	760	769	780	791
922	2756	2889	3000	3111	3422	3720	4111	4466	4840	5089	5333	5622	5920	6022	6155	6311	6422	6560	6667	6778	6889	7000	7089	7222	7311
437	459	482	500	519	570	620	685	744	807	848	889	937	987	1004	1026	1052	1070	1094	1111	1130	1148	1167	1181	1204	1219
328	344	361	375	389	428	465	514	558	605	636	667	703	747	753	769	789	803	820	833	847	861	875	886	903	914
262	276	289	300	311	342	372	411	447	484	509	533	562	592	602	616	631	642	656	667	678	689	700	709	722	731
444	2556	2667	2822	2956	3289	3640	3911	4133	4360	4578	4778	5000	5200	5356	5511	5689	5844	6000	6133	6267	6400	6533	6667	6800	6911
407	429	444	470	493	548	607	652	689	727	763	796	834	867	893	919	948	974	1000	1022	1045	1067	1089	1111	1134	1152
306	319	333	353	369	411	455	489	517	545	572	597	625	650	669	689	711	731	750	767	783	800	817	833	850	864
245	256	267	282	296	329	364	391	413	436	458	478	500	520	536	551	569	584	600	613	627	640	653	667	680	691
356	2489	2622	2711	2844	3111	3360	3644	3933	4120	4356	4622	4889	5120	5244	5377	5511	5644	5760	5866	5933	6000	6089	6177	6266	6311
293	315	337	352	374	419	459	501	546	587	628	670	711	754	770	785	804	819	836	851	869	880	891	903	914	925
234	241	258	271	284	311	336	364	393	412	436	462	489	512	524	538	551	564	576	587	593	600	609	616	627	631
955	4133	4311	4511	4689	5133	5600	6067	6489	6960	7311	7689	8044	8400	8711	9022	9333	9644	10000	10066	10133	10222	10311	10400	10488	10577
659	689	719	752	781	856	934	1011	1081	1160	1219	1281	1340	1400	1452	1503	1556	1607	1667	1678	1689	1703	1719	1733	1748	1763
494	517	539	564	586	642	700	758	811	870	914	961	1006	1050	1089	1127	1167	1206	1250	1258	1478	1278	1289	1300	1311	1322
396	413	431	451	469	513	560	607	649	696	731	769	804	840	871	902	933	964	1000	1006	1013	1022	1031	1040	1048	1058
800	2889	2978	3089	3177	3445	3680	3933	4177	4444	4667	4911	5155	5360	5556	5711	5911	6066	6240	6333	6422	6533	6644	6733	6844	6933
467	482	496	515	530	574	614	656	696	741	778	819	859	894	926	952	985	1011	1040	1055	1070	1089	1107	1122	1140	1156
350	361	372	386	397	431	460	492	522	556	583	614	644	670	694	713	739	758	780	792	803	817	830	842	856	866
280	289	298	309	318	345	368	393	418	444	467	491	516	536	556	571	591	607	624	633	642	653	664	673	684	693
222	3400	3556	3733	3889	4289	4680	5022	5378	5680	6067	6400	6756	7120	7333	7556	7756	8000	8240	8333	8445	8533	8645	8756	8845	8956
503	567	593	622	648	715	780	837	896	947	1011	1067	1126	1187	1222	1259	1293	1333	1373	1389	1408	1422	1441	1459	1474	1493
437	425	445	467	486	536	585	628	672	710	758	800	845	890	917	945	970	1000	1030	1042	1056	1066	1081	1095	1106	1120
322	340	356	373	389	429	468	502	538	568	607	640	676	712	733	756	776	800	824	833	845	853	865	876	885	896

Largeurs		Calculation of the spread rates for the various working	
Largeur par 1,2		multiply rates of the setting table by 1.2	
Largeur par 0,75		use the rates given in the setting table	
Largeur par 0,75		multiply rates of the setting table by 0.75	
Largeur par 0,75		multiply rates of the setting table by 0.75	
Largeur par 0,67		multiply rates of the setting table by 0.67	