HORSCH®

Specialists in modern cultivation and seeding technology

02/2009

HORSCH Pronto

7 / 8 / 9 DC 8 PPF

Operating Instructions

Read carefully prior to starting up!
Keep operating instructions in a safe place!

Art.: 80200202 en

EC Declaration of Conformity

In accordance with EC Directive 98/37/EC

We, HORSCH Maschinen GmbH
Sitzenhof 1
D-92421 Schwandorf

do solely declare that the product

HORSCH Pronto	7 DC	from Serial No.	23771251
	8 DC		23781282
	9 DC		23791277
	8 PPF		23881250

which is the subject of this declaration, fully conforms with the pertinent safety and health requirements specified in EC Directive 98/37/EC.
The following harmonised standards and technical specifications were applied for correct interpretation of the safety and health requirements specified in the EC Directive:

DIN EN ISO 12100 - 1
DIN EN ISO 12100 - 2

Schwandorf, 12.06.2007
Place and Date

M. Horsch
(Managing Director)

P. Horsch
(Development and Construction)

Please detach and send to HORSCH Maschinen GmbH or give to the service technician when receiving instruction

Machine Registration

No warranty claims will be accepted if this machine registration form is not returned !

To
SIMBA International Ltd.
Woodbridge Road
GB-Sleaford, Lincolnshire NG34 7EW
Fax: +44 (0) 1529 / 413101

For customers **out of Great Britain**, return it to your local dealer!

Type of machine: .....
Serial number: .....
Delivery date: .....

- ☐ Demonstration machine – initial use
- ☐ Demonstration machine - relocation
- ☐ Demonstration machine final sale - use
- ☐ New machine final sale – initial use
- ☐ Customer‘s machine - relocation

Operating instructions: 02/2009 80200202 Pronto 7 - 9 DC / 8 PPF en

I hereby confirm receipt of the operating instructions and spare parts list for the above mentioned machine.

I have been instructed by a HORSCH service technician or authorised dealer in the operation and functions of the machine, as well as in the safety requirements.

.....
Name of the service technician

Dealer
Name: .....
Street: .....
Postal code: .....
Place: .....
Tel.: .....
Fax:.....
E-mail: .....
Customer No. : .....

Customer
Name: .....
Street: .....
Postal code: .....
Place: .....
Tel.: .....
Fax:.....
E-mail: .....
Customer No. : .....

I am aware that a warranty claim will only be valid if this form has been fully completed, signed and returned to HORSCH Maschinen GmbH, or has been given to the Service Technician, immediately after first instruction.

....
Place, date of first instruction Buyer’s signature

- Translation of the Original Operating Instructions -

Machine Identification

The corresponding data is to be entered into the list below upon receiving the machine:

Serial number: .....
Machine type: .....
Year of construction: .....
Initial installation: .....
Optional extras: .....
.....
.....
.....

Publication date of Operation Manual: 02/2009

Address of Retailer:

Name: .....
Road: .....
Town/City: .....
Tel.: .....

Customer No.:
Retailer: .....

Address of HORSCH:

HORSCH Maschinen GmbH
92421 Schwandorf, Sitzenhof 1
92401 Schwandorf, Postbox 1038

Tel.: +49 (0) 9431 / 7143-0
Fax: +49 (0) 9431 / 41364
E-mail: info@horsch.com

Customer No.:
HORSCH: .....

Table of contents

Introduction....8
Foreword....8
Warranty claims....8
Intended use....9
Consequential damage....9
Authorised operators....10
Protective clothing....10

Information regarding safety....11
Safety symbols....11
Operational safety....15
Road traffic safety....15
Accident prevention....15
Hitching up / unhitching....15
Changing implements....16
In operation....16
Service and maintenance....17

Transport/Installation....18
Delivery....18
Machines with DrillManager ME....18
Installation....18
Install DrillManager....19
Adjusting the bout markers....20

Technical data....21
Pronto 7 DC....21
Pronto 8 DC....21
Pronto 9 DC....22
Pronto 8 PPF....22
Road lighting equipment....23
Hydraulic system Pronto 7/8/9 DC....24
Hydraulic system Pronto 7/8/9 DC with front packer....25
Hydraulics Pronto 8 DC PPF....26
Brake system....27
Pneumatic brake....27
Hydraulic brake....28
Hitching-up the machine....30
Connecting the hydraulic system....30
Connecting the road lighting equipment....30
Hydraulic function....31
Unfold / fold machine....31
Parking the machine....32

Operation....33
Pneumatics Pronto DC....33
Fan....33
Fan direct drive....34
Fan with PTO-shaft driven pump....35
Re-tightening the fan impeller....37
Hopper 7/8/9 DC....38
Hopper 8 PPF....38
Venturi-type injector....38
Half side shut-down....38
Twin hoppers 8 PPF for 2 x seed....39
Distribution box seed and fertiliser....41
Hose arrangement....42
Metering unit....43
Roller change....44
Roller change with full hopper....44
Checking the sealing lip....45
Roller for fine seeds....45
Rape brushes....47
Coarse seeds....48
Metering unit with Venturi-type injector....48
Servicing the metering unit....49
Seeding component....50
Rear Harrow....52
Calibration....53

Setting....53
Drill depth....53
Prework tools....55
Work instructions....57
Checks....58
Additional Fittings....60
Pre emergency markers....60
Hydr. coulter pressure adjustment....61
Track Eradicators....61
Filling Auger....62

Service and maintenance....63
Cleaning....63
Maintenance intervals....63
Preparation for storage....63
Lubricating the machine....64
Hygiene....64
Handling of lubricants....64
Service....64
Maintenance schedule....65
Lubrication points....67
Bolt tightening torques - metric bolts....69
Bolt tightening torques - imperial bolts....70

Introduction

Foreword

Before operating the machine read and strictly comply with the operating instructions. In doing so, you will avoid accidents, reduce repair costs and downtime and increase the reliability and service life to your machine. Pay attention to the safety instructions!

HORSCH will not assume liability for any damage or malfunctions resulting from failure to comply with the operating instructions.

These operating instructions will assist you in getting to know your machine and in using it correctly for its intended purposes.
The operating instructions must be read and strictly adhered to by all persons working on or with the machine e.g.:

- operation (including preparation, fault rectification during work and servicing)
- maintenance (maintenance and inspection)
- Transport

Together with the operating instructions, you also receive a spare parts list and a machine registration form. Field service technicians will instruct you in the operation and care of your machine. After this you should return the machine registration form to HORSCH. This confirms your formal acceptance receipt of the machine. The warranty period starts with the date of delivery.

We reserve the right for alter illustrations as well as technical data and weights contained in these operating instructions for the purpose of improving the machine.

Warranty claims

Warranty claim forms must be submitted through your local HORSCH dealer to the HORSCH Service Department in Schwandorf.
Only claims, which have been correctly completed and submitted no later than four weeks after the defect occurred, can be processed.

Exchange parts, which require the old part to be returned, are marked with the letter "R".
Please return these components cleaned and emptied to HORSCH within 4 weeks together with a warranty claim form and precise fault description.

Exchange parts, which do not require the old part to be returned. Please keep such parts for 12 weeks, until a decision has been made on the action to be taken.

Warranty repairs, which are to be carried out by a third-party company, or which are expected to take longer than 10 working hours, must be agreed upon in advance with the Customer Service Department.

Intended use

The drill is state-of-the-art and designed in accordance with relevant, recognised safety regulations. However, risks of injury to the operator or third parties and impairment of the machine or other tangible assets can occur during use.

The machine must only be operated for its intended use if in a technically perfect condition, whilst being aware of safety and risks and in strict compliance with the operating instructions!
Faults, particularly those which impair safety, must be remedied immediately.

The machine must only be operated, serviced and repaired by persons who are familiar with it and have been made aware of the dangers involved.

Genuine spare parts and accessories from HORSCH have been specially designed for this machine. Spare parts and accessories which are not delivered by us, have not been tested or approved by us.
Installation or use of non-original HORSCH products may have a detrimental effect on specific design features of the machine and impair the safety of machine operators and the machine itself.
HORSCH will not assume liability whatsoever for damage resulting from the use of non-original parts and accessories.

The machine is designed to distribute seeds and fertilisers. Any other use beyond these limits, e.g. as a means of transport, is deemed improper.
HORSCH will not assume liability whatsoever fro damage resulting from unintended use. The risk will be borne solely by the user.

The respective accident prevention regulations and other generally recognised safety-related, occupational medical and road traffic regulations are to be adhered to.

Intended use also includes the strict compliance with the operating instructions and adherence to the operating, maintenance and repair instructions specified by the manufacturer.

Consequential damage

The machine has been manufactured by HORSCH with great care. Nevertheless, even when used properly, deviations or complete failure in the application rate may be caused, e.g. by:

- differences in the composition of seed or fertiliser (i.e. grain size distribution, density, geometrical shape, dressing, sealing).
- blockages or seed bridging (i.e. caused by foreign bodies, non-smooth seeds, sticky dressing, moist fertiliser).
- Worn wearing parts (e.g. metering unit).
- Damage caused by external influences.
- incorrect drive motor speeds and driving speeds.
- incorrect setting of the unit (incorrect connection, non-observance of setting tables).

Therefore, it is crucial to always check your machine before and during operation for correct operation and adequate application accuracy.

Compensation claims for damages which have not been caused by the machine, are excluded. This also includes that any liability for consequential damages caused by drill and control commands, is excluded.

In these operating instructions

The operating instructions distinguish between three different types of warning and safety instructions. The following graphic symbols are used:

 important instructions.

 if there is a risk of injury!

 if there is a risk to life and limb!

It is important that all the safety instructions contained in these operating instructions and all the warning signs on the machine are read thoroughly

Ensure that the warning signs are in a legible and replace and signs that are missing or damaged.

These instructions must be followed in order to prevent accidents. Inform other users of the warnings and safety instructions.

Do not carry out any operations which may affect the safe use of the machine.

Authorised operators

Only those persons who have been authorised and instructed by the operator may operate the machine. Operators must be at least 16 years of age.

The operator must hold a valid driving licence. He is responsible for third parties in the operating area.

The person in charge must

- make the operating instructions available to the operator.
- ensure that the operator has read and understood the operating instructions.

The operating instructions are a component part of the machine.

Protective clothing

For operation and maintenance you need:

- snug fitting clothing.
- protective gloves to protect against sharp-edged machine parts.
- protective goggles to protect the eyes against dust or spray, when working with fertiliser or liquid fertiliser. Strictly observe the handling instructions given by the fertiliser manufacturer.
- when handling dressing or dressed seed wear a respirator mask and protective gloves. Strictly observe the handling instructions given by the dressing manufacturer.

Information regarding safety

The following warnings and safety instructions apply to all sections in these operating instructions.

Safety symbols

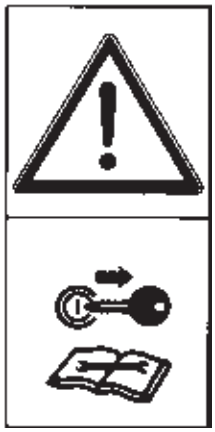
On the machine

Do not climb on rotatable parts. Use mounting steps provided for this purpose.

Read and adhere to the operating instructions before starting up the machine!

No passengers are allowed to ride on the machine!

Switch the engine off and pull out the key before starting maintenance and repair work.



Never reach into areas where there is a risk of crushing, as long as parts could still be moving!

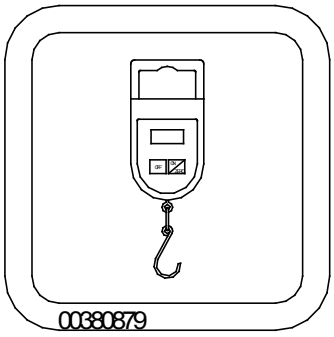
Watch out for fluids spraying out under high pressure, follow the operating instructions

Stay clear of swinging area of retractable and extendible machine parts!

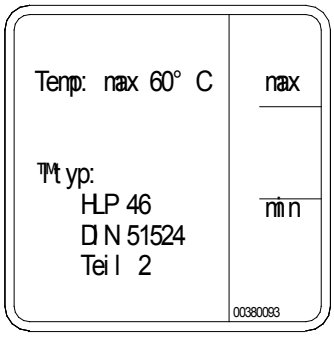
In order to prevent eye injuries, do not look directly at the beam area when the radar sensor is switched on!

It is only permitted to remain in the danger zone if the safety support is in place

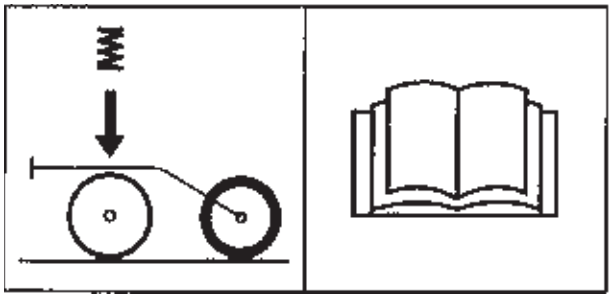
Attach the scales here when calibrating.



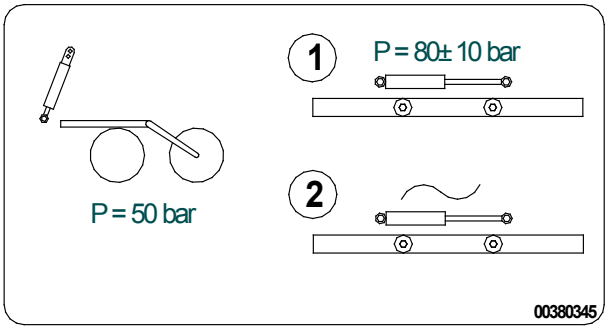
The filling level must be between min. and max.



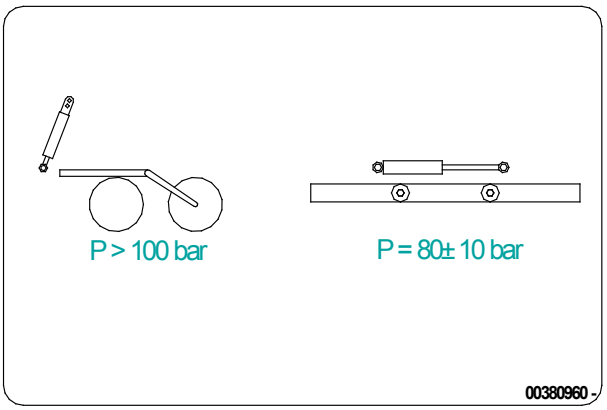
Adjust the coulter pressure - read the operating instructions.



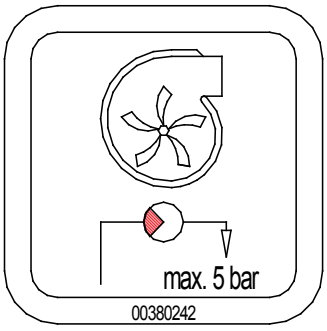
Pronto 7 / 8 / 9 DC
Lower with 50 bar coulter pressure; Preload wing hydraulics with 80 bar, then switch to floating position.



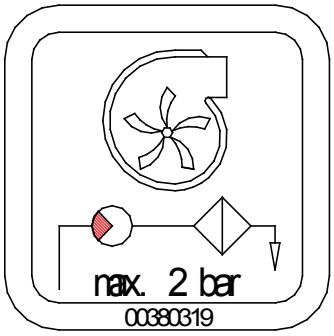
Pronto 8 PPF
Lower with at least 100 bar coulter pressure; Preload wing hydraulics with 80 bar.



The return flow pressure at the fan drive must not exceed 5 bar, as otherwise the hydraulic motor may be destroyed.

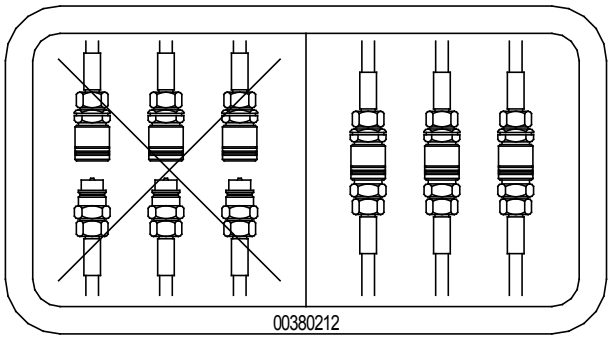


If the return flow pressure exceeds 2 bar replace the filter and change the oil.

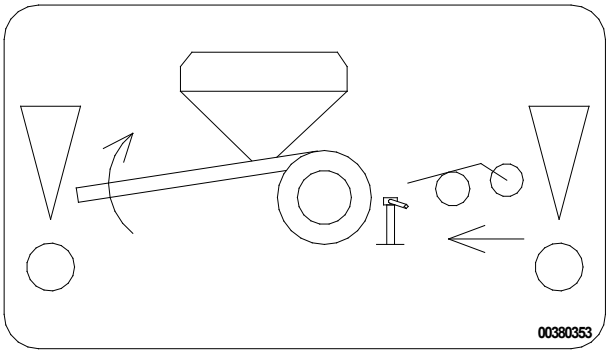


Retighten the wheel nuts / wheel bolts after 50 hours.

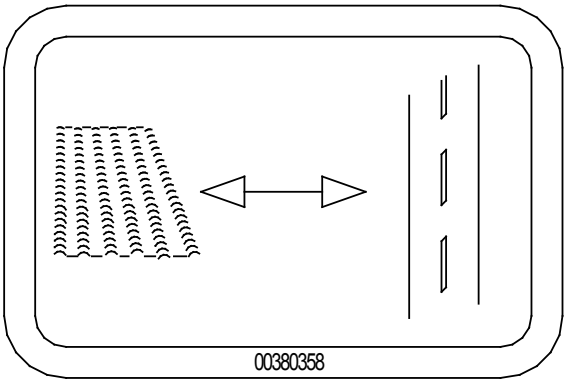
Always plug in all hydraulic lines. Otherwise components could be damaged because of interconnected hydraulic functions.



If the disc tools are not installed, put the front and rear supports in place before parking.



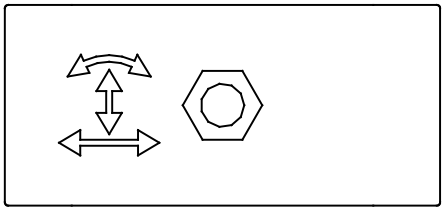
Lever position when switching between working and transport positions



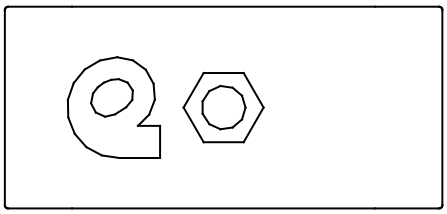
Identification marks on hydraulic hoses

The symbol is always found on the hose requiring pressure to bring the machine to transport position (raising, folding, etc.).

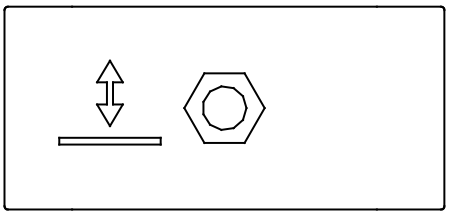
Hydraulic valve block



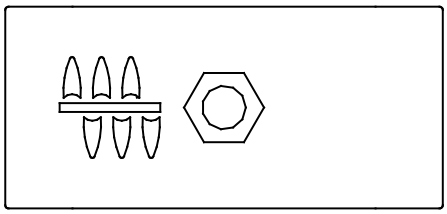
Fan



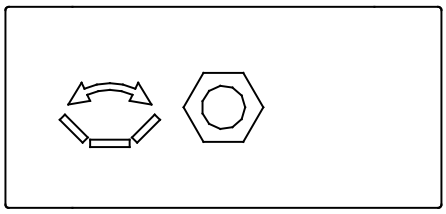
Machine up / down



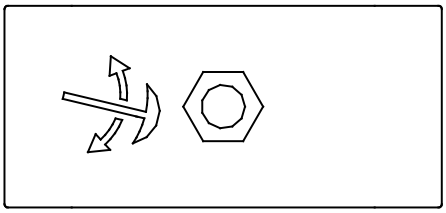
Filling auger



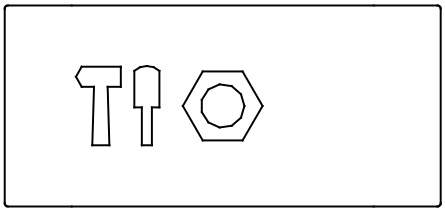
Unfold / fold machine



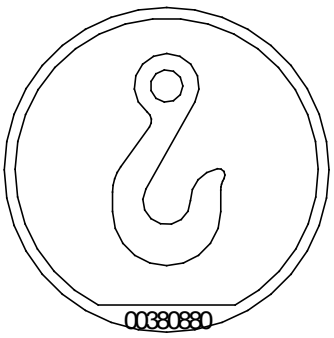
Bout marker



Tools



Lifting hook; attach lifting tackle (chains, ropes, etc.) here when performing loading work.



Operational safety

The machine must only be put into operation after receiving instructions by employees of the authorized dealer or a HORSCH employee. The machine registration form has to be completed and returned to HORSCH.

All protective features and safety equipment, such as detachable protective devices, must be correctly in place and reliably functioning before the machine is put into operation.

- Check and tighten nuts and screws at regular intervals.
- Check tyre pressure regularly.
- In case of malfunctions stop and secure the machine immediately!

Road traffic safety

The valid road traffic regulations are to be observed when travelling on public roads, paths and areas.
Do not exceed the max. permissible widths and attach light system, warning and protective devices.
Also observe transport height depending on the coupled machine!

Do not exceed the permissible axle loads, tyre carrying capacities and total weights, in order to ensure sufficient steering and braking capabilities. Handling is affected by the implement connected. It is important to take into account the large overhang and the centrifugal mass of the implement, particularly when cornering.

The whole machine is to be cleaned of soil that has been collected before travel on public roads.
Passengers are strictly forbidden to ride on the machine.

On public roads travel at a maximum speed of 25 km/h and only with am empty seed hopper.

Accident prevention

In addition to the operating instructions, it is important to observe the accident prevention regulations specified by agricultural trade associations!

Hitching up / unhitching

There is risk of injury to persons when hitching up / unhitching the machine to the drawbar of the tractor.

- Secure the machine against rolling away.
- Take special care when reversing the tractor. Never stand between tractor and machine.
- Only park the machine on a firm and level surface. Before unhitching the machine, lower it to the ground.

Brake system

Depending on the equipment, the machines can be equipped with a pneumatic or a hydraulic brake system.

For road transportation the brake system must always be connected and fully functional.
After hitching the machine and before transportation you should always check the function and condition of the brake system.

Always secure the machine against rolling away and apply the parking brake before unhitching.

Hydraulic connections

- Do not connect hydraulic lines to the tractor, before both hydraulic systems (machine and tractor) are de-pressurised.
- The hydraulic system is under high pressure. Check all lines, hoses and screwed connections regularly for leaks and any visible external damage!
- Only use appropriate aids when checking for leaks. Repair any damage immediately! Oil sprays can cause injuries and fire!
- In the case of injury, contact a doctor immediately!

Power sockets and connectors on the hydraulic connections between the tractor and machine should be colour-coded in order to exclude operating errors.

The control units on the tractor must be secured or locked when not in use or when the machine is in transport position, in order to prevent accidents caused by unintended hydraulic movements or movements caused by persons other than the operator (children, passengers).

Changing implements

- Secure the machine against unintended rolling!
- Secure lifted frame parts, under which you will be working, with suitable supports!
- Caution! Danger of injury caused by protruding parts (harrow, tines, share)!
- Do not use packer tyres or other rotating parts when climbing onto the machine. These could start to rotate and you could fall and be seriously injured.

In operation

- Check the area around the machine (for children!) before setting off and starting operation of the machine. Ensure sufficient visibility.
- Do not remove any of the mandatory and supplied protective devices.
- Stay clear of the operating range of hydraulically operated parts.
- Only use ascending aids and steps when machine is at standstill. Passengers are not allowed to ride on the machine during operation!

Service and maintenance

- Ensure that regular tests and inspections are always carried out to schedule, as specified in the operating instructions.
- Prior to performing maintenance and servicing work, ensure that the machine is positioned on firm, level ground and that it is properly secured against rolling away.
- De-pressurise the hydraulic system and lower or support the implement.
- Before cleaning the machine with high pressure cleaning equipment cover all openings, which should stay clear of water, steam or cleaning agents for reasons of safety or operation. Do not aim the water jet directly at electrical or electronic components, bearings or the fan.
- After cleaning, check all hydraulic lines for leaks and loose connections.
- Check hoses for chafing and signs of other damage. Remedy any faults immediately!
- Prior to working on the electrical system, disconnect it from the electric power supply.
- When performing welding work on the machine, disconnect the cables from computers and other electronic components. The ground connection must be as close as possible to the welding point.
- Retighten screwed connections which had been loosened during servicing and maintenance work.

Do not wash new machines with a steam-jet or high-pressure cleaner. The paint takes approx. 3 months to cure and could thus be damaged if this time has not yet expired.

Transport/Installation

There is increased risk of accident on initial installation. Please pay attention to the instructions in the appropriate chapters.

Delivery

The seeder and optional equipment is usually delivered with a low-loader in a fully assembled condition.

If parts or optional equipment are disassembled for transportation then they are assembled on-site by our distribution partners or our company fitters.

The machine can be unloaded with a tractor or has to be lifted off with suitable lifting gear (fork lift or crane) depending on the version of the low-loader.

Pay attention that the lifting equipment and hoisting devices provide sufficient load bearing capacity.

The bearing pressure and clamping points are indicated by stickers.
Attention is to be paid to the centre of gravity and distribution of weight for other hitching points. These points should definitely only be attached to the frame of the machines.

Machines with DrillManager ME

The lifting / lowering hydraulic function does not need to be additionally installed in all machines with the DrillManager ME seeder control panel.
These machines can be unloaded from the low-loader without the basic equipment having to be installed.
Further hydraulic functions like wings or bout markers can only operated from the tractor after the basic equipment has been installed.
The function " wings" is connected to its own control unit in some versions.

Installation

Our customer service employees or distribution partners are responsible for instructing the operator and carrying out the initial installation of the machine.

Use of machine prior to instruction is prohibited!

The machine can only be cleared for operation after instructions have been made by customer service employees or distribution partners and the operating instructions have been read.

There is increased risk of accident when carrying out installation and maintenance work. Make yourself familiar with the machine and read the Operation Manual before carrying out installation and maintenance work.

Depending on equipment

- Remove the bulk components supplied on delivery from the machine.
- Remove all components from the seed hopper!
- Check all important screw connections!
- Lubricate all lubricating nipples!
- Check the air pressure in the tires!
- Check all hydraulic connections and hoses for mounting and function.
- Immediately eliminate defects or have defects eliminated!

Install DrillManager

The basic equipment has to be installed on the tractor during initial installation in all machines with seeder controls.

The cables for the basic equipment have to be directly connected to the battery on the tractor. The cables should not rub and the insulation should not be damaged.

The connections have to make good connect with the battery. Assembly errors result in voltage drops and undefinable error messages and malfunctions.

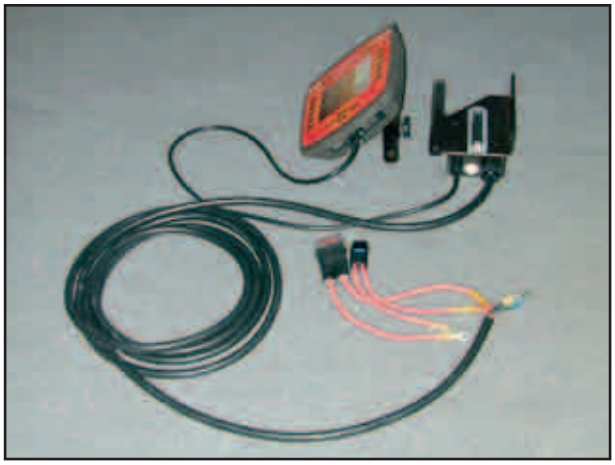
☞ The cables should never be connected to other connectors in the operator's cabin.

DrillManager Müller (ME)

The basic equipment is fitted with 2 x 6 mm² and 2 x 2.5 mm² cables respectively for the electrical power supply.
Only the two 6 mm² cables have to be connected in deliveries up to approx. May 2006 (only one 50 A fuse is available).
From approx. May 2006, all cables have to be connected (an additional 10 A fuse is available for the red 2.5 mm² cable).

☞ The screen should not impair the operator's visibility of the road

Assembly:



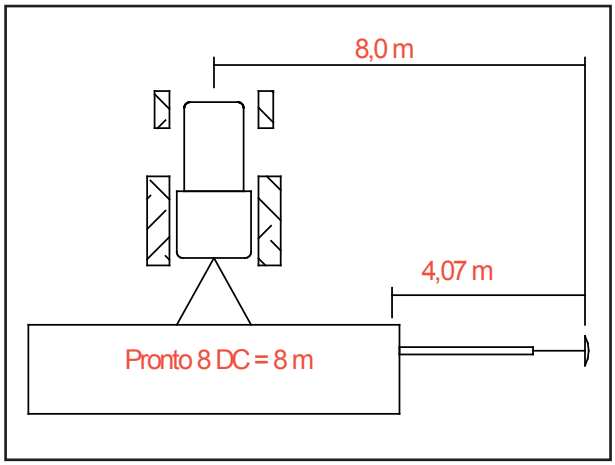
Basic equipment with screen

- Assemble the screen holder in a suitable place within the operator's area of visibility and operation.
- Route the thick cable to the battery and trim, if necessary.
- Tightly and permanently connect both fuse holders to the cable.
- Tightly connect both red cables to the plus on the battery and both black cables to the minus on the battery.
- Attach the screen holder to the screen and fix the connecting cable on the underside of the screen.

Adjusting the bout markers

No persons are to remain within the operating range of the bout markers. There are pinching or shearing points on all moving parts.

When installing for the first time, the bout markers must be set to working width. The marking takes place in relation to the centre of the tractor.



Setting the bout markers

The setting length of the bout markers is half the machine width plus half the coulter spacing, measured from the centre of the outermost coulter.

E.g.: 800 cm : 2 = 400 cm
400 cm + 7,5 cm = 407.50 cm

The bout markers on
Pronto 7 DC must be set to 3,57 m
Pronto 8 DC must be set to 4,07 m
Pronto 9 DC must be set to 4,57 m
Pronto 8 PPF must be set to 4,07 m
from the middle of the outermost coulter.

Technical data

Pronto 7 DC

Dimensions and weights

Transport width: ..... 3,00 m
Transport height: ..... 3,60 m
Length: ..... 8,80 m
Working width: ..... 7,50 m
Curb weight: ..... max. 10.500 kg
Drawbar weight: ..... 0 - 1,500 kg
Hopper capacity: ..... 4000 l

Standard version

Number of coulters: 52
Coulter spacing: ..... 144 mm
Sowing depth: ..... 0 - 100 mm
Coulter pressure: ..... 5 - 120 kg
Metering unit drive: ..... electronic
Metering: ..... 2 - 500 kg/ha
Hydraulic fan: ..... 4.000 rpm

Tractor power required

Tractor power from: ..... 145 - 205 KW
Hydraulic pressure: ..... 180 bar
1 x double acting: ..... Hydr. block
1 x double acting with
flow control valve: ..... Fan
1 x freeflow return max.: 5 bar ..... case drain
Oil quantity with direct fan drive: ..... 35 - 45 l

Pronto 8 DC

Dimensions and weights

Transport width: ..... 3,00 m
Transport height: ..... 3,60 m
Length: ..... 8,80 m
Working width: ..... 8,00 m
Curb weight: ..... max. 10.700 kg
Drawbar weight: ..... 0 - 1,500 kg
Hopper capacity: ..... 4000 l

Standard version

Number of coulters: 52
Coulter spacing: ..... 154 mm
Sowing depth: ..... 0 - 100 mm
Coulter pressure: ..... 5 - 120 kg
Metering unit drive: ..... electronic
Metering: ..... 2 - 500 kg/ha
Hydraulic fan: ..... 4.000 rpm

Tractor power required

Tractor power from: ..... 155 - 215 KW
Hydraulic pressure: ..... 180 bar
1 x double acting: ..... Hydr. block
1 x double acting with
flow control valve: ..... Fan
1 x freeflow return max.: 5 bar ..... case drain
Oil quantity with direct fan drive: ..... 35 - 45 l

Pronto 9 DC

Dimensions and weights

Transport width: ..... 3,00 m
Transport height: ..... 4,06 m
Length: ..... 8,80 m
Working width: ..... 9,00 m
Curb weight: ..... max. 11.400 kg
Drawbar weight: ..... 0 - 1,500 kg
Hopper capacity: ..... 4000 l

Standard version

Number of coulters: 60
Coulter spacing: ..... 150 mm
Sowing depth: ..... 0 - 100 mm
Coulter pressure: ..... 5 - 120 kg
Metering unit drive: ..... electronic
Metering: ..... 2 - 500 kg/ha
Hydraulic fan: ..... 4.000 rpm

Tractor power required

Tractor power from: ..... 175 - 240 KW
Hydraulic pressure: ..... 180 bar
1 x double acting: ..... Hydr. block
1 x double acting with
flow control valve: ..... Fan
1 x freeflow return max.: 5 bar ..... case drain
Oil quantity with direct fan drive: ..... 35 - 45 l

Pronto 8 PPF

Dimensions and weights

Transport width: ..... 3,00 m
Transport height: ..... 3,60 m
Length: ..... 9,60 m
Working width: ..... 8,00 m
Curb weight: ..... 13.500 kg
Hopper capacity - 60/40: ..... 7100 l

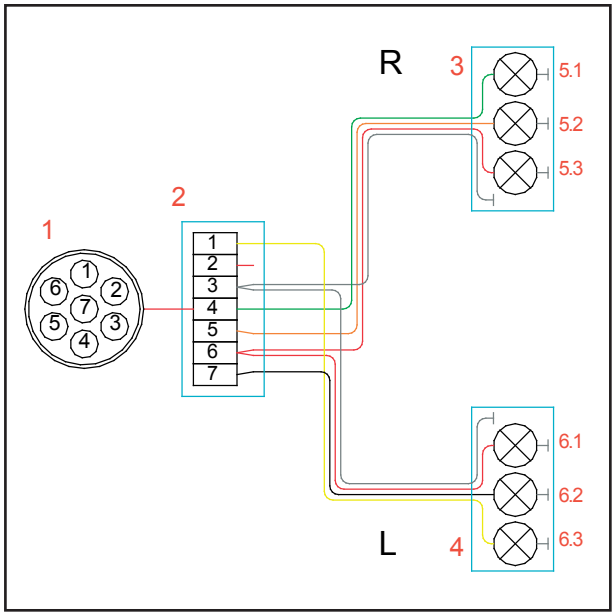
Standard version

Number of coulters: 52
Number of PPF rows: 26
Coulter spacing: ..... 154 mm
Sowing depth: ..... 0 - 100 mm
Coulter pressure: ..... 5 - 120 kg
Coulter pressure PPF: ..... - 200 kg
Metering unit drive: ..... electronic
Metering: ..... 2 - 500 kg/ha
Hydraulic fan: ..... - 5.500 rpm

Tractor power required

Tractor power from: ..... 205 - 260 KW
Hydraulic pressure: ..... 180 bar
1 x double acting: ..... Hydr. block
1 x double acting: ..... Fertiliser coulter
1 x double acting with
flow control valve: ..... Fan
1 x freeflow return max.: 5 bar ..... case drain
Oil quantity with direct fan drive: ..... 70 - 90 l

Road lighting equipment



Road lighting equipment

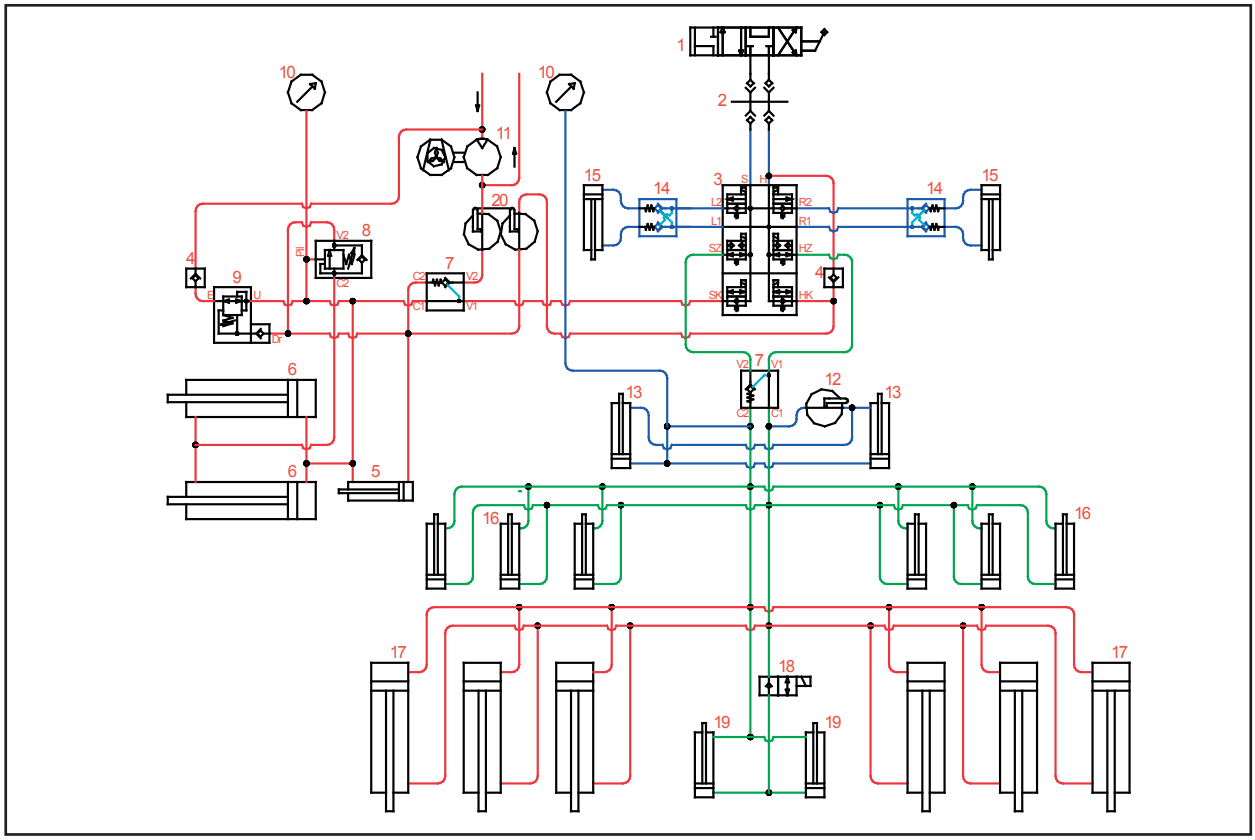
1. 7-pin plug
2. Distribution box
3. Tail-light, right
5.1 Lamp, direction indicator
5.2 Lamp, tail-light
5.3 Lamp, brake light
4. Tail-light, left
6.1 Lamp, brake light
6.2 Lamp, tail-light
6.3 Lamp, direction indicator

Plug and cable assignment:

No.	Desig.	Colour	Function
1.	L	yellow	Indicator, left
2.	54 g	- - -	- - -
3.	31	white	Earth
4.	R	green	Indicator, right
5.	58 R	brown	Tail-light, right
6.	54	red	Brake light
7.	58 L	black	Tail-light, left

Check the road lighting equipment at regular intervals, to prevent any other road users from being endangered by negligence!

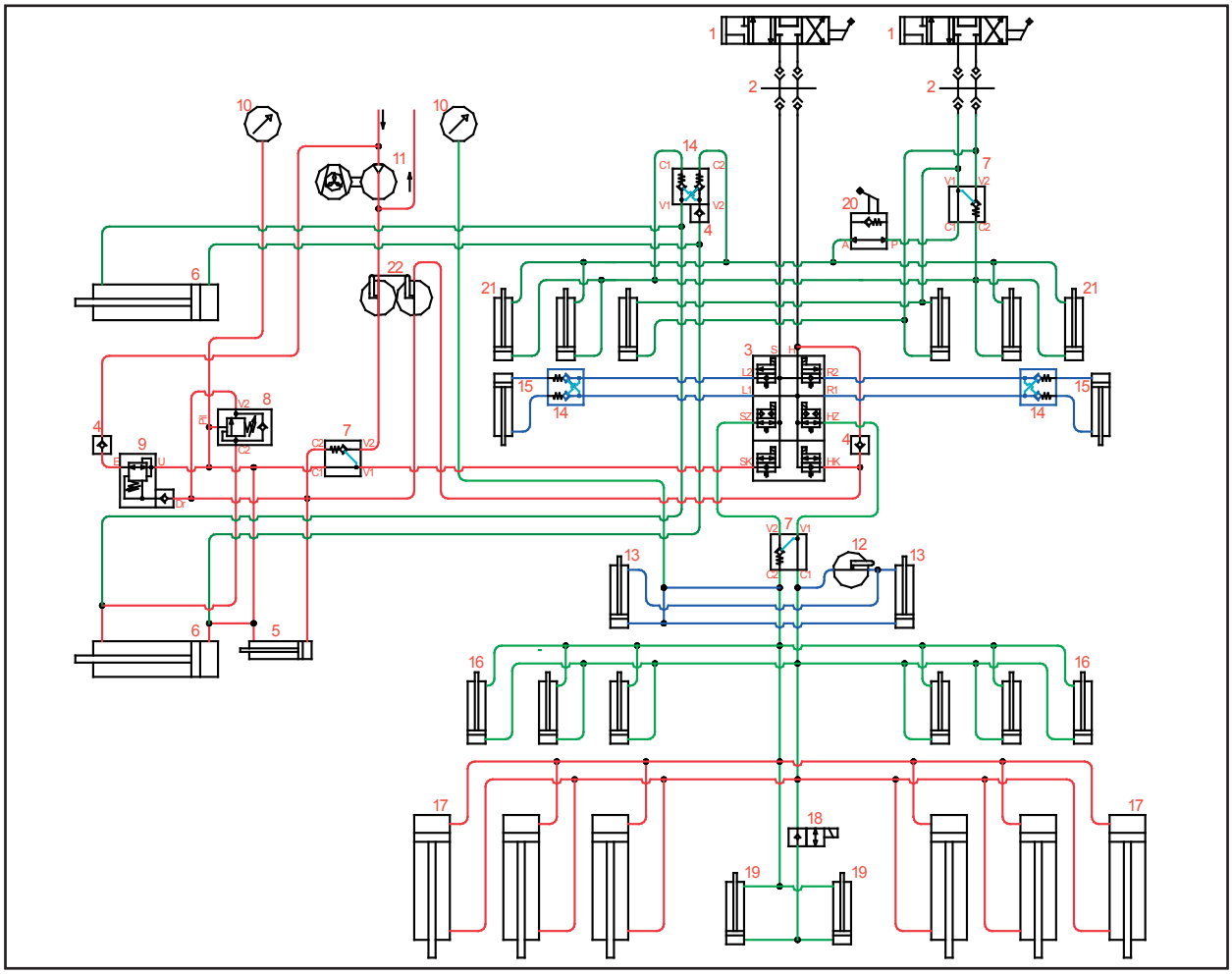
Hydraulic system Pronto 7/8/9 DC



Hydraulic system Pronto 7/8/9 DC

1. Control unit
2. Hydr. coupling
3. Hydr. valve block
4. Shut-off valve
5. Hydr. cylinder wing lock
6. Hydr. cylinder wings
7. Hydr. shut-off valve - single sided
8. Hydr. valve
9. Hydr. valve
10. Pressure gauge
11. Hydr. motor "Fan drive"
12. Shut-off valve
13. Hydr. cylinder track eradicators
14. Hydr. shut-off valve
15. Hydr. cyl. - bout marker
16. Hydr. cylinder cultivation tools
17. Hydr. cylinder, lift
18. Hydr. valve, pre-emergence markers
19. Hydr. cylinder, pre-emergence markers
20. Double shut-off valve

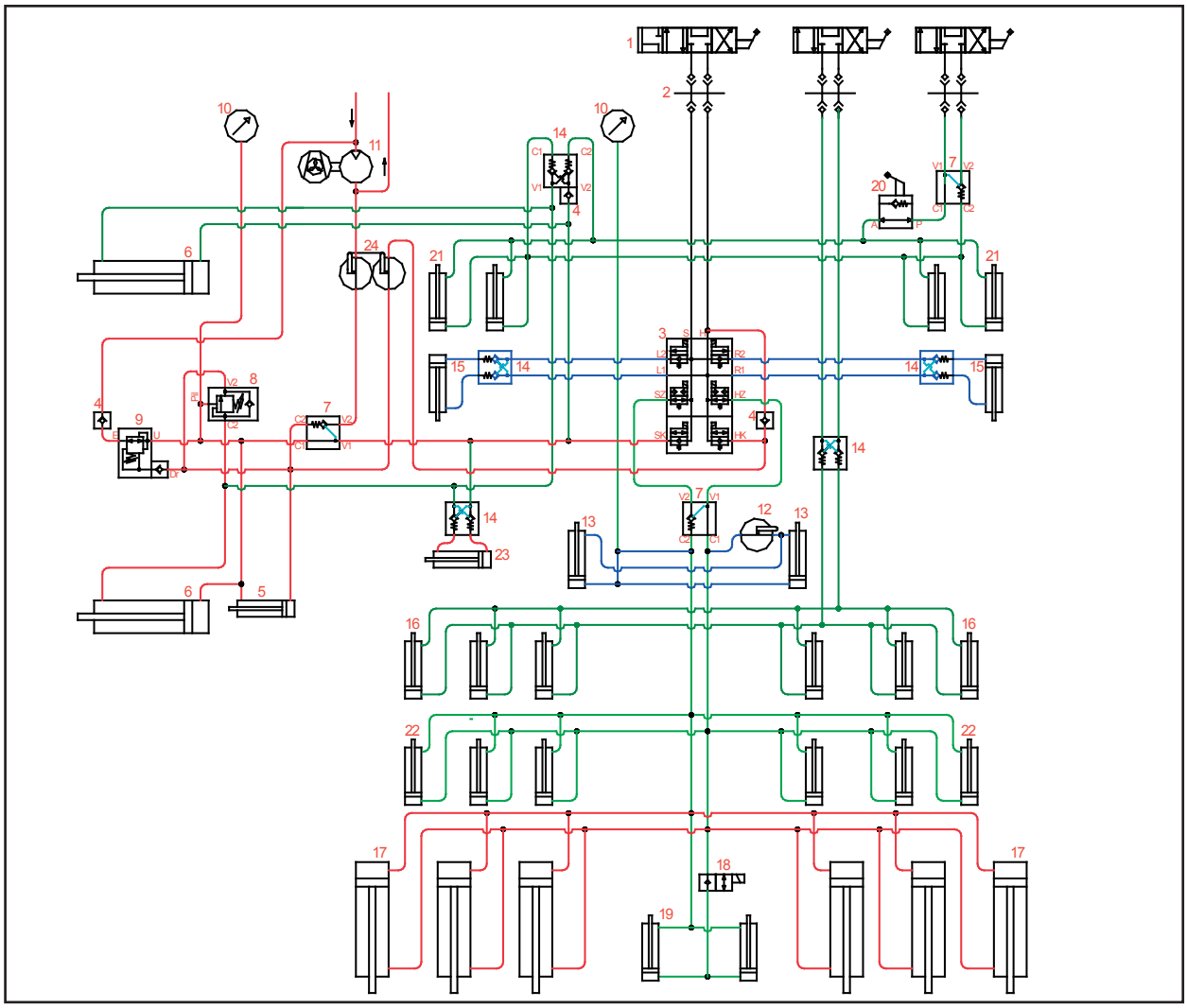
Hydraulic system Pronto 7/8/9 DC with front packer



Hydraulic system Pronto 7/8/9 DC with front packer

1. Control unit
2. Hydr. coupling
3. Hydr. valve block
4. Shut-off valve
5. Hydr. cylinder wing lock
6. Hydr. cylinder wings
7. Hydr. shut-off valve - single sided
8. Hydr. valve
9. Hydr. valve
10. Pressure gauge
11. Hydr. motor "Fan drive"
12. Shut-off valve
13. Hydr. cylinder track eradicators
14. Hydr. shut-off valve
15. Hydr. cyl. - bout marker
16. Hydr. cylinder cultivation tools
17. Hydr. cylinder, lift
18. Hydr. valve, pre-emergence markers
19. Hydr. cylinder, pre-emergence markers
20. Hydr. valve for front packer
21. Hydr. cylinder front packer
22. Double shut-off valve

Hydraulics Pronto 8 DC PPF



Hydraulics Pronto 8 DC PPF

1. Control unit
2. Hydr. coupling
3. Hydr. valve block
4. Shut-off valve
5. Hydr. cylinder wing lock
6. Hydr. cylinder wings
7. Hydr. shut-off valve - single sided
8. Hydr. valve
9. Hydr. valve
10. Pressure gauge
11. Hydr. motor "Fan drive"
12. Shut-off valve
13. Hydr. cylinder track loosener
14. Hydr. shut-off valve
15. Hydr. cyl. - bout marker
16. Hydr. cylinder cultivation tools
17. Hydr. cylinder, lift
18. Hydr. valve, pre-emergence markers
19. Hydr. cylinder, pre-emergence markers
20. Hydr. valve for front packer
21. Hydr. cylinder front packer
22. Hydr. cylinder fertiliser coulters
23. Hydr. cylinder access steps
24. Double shut-off valve

Brake system

The machine is equipped with a service brake and a parking brake. The service brake can be controlled pneumatically or hydraulically.
The parking brake uses a brake cable to actuate the brake pads of the drum brake.

Parking brake

The parking brake must be applied before the machine is shut down.
The lever travel should be 6 - 12 teeth. Adjust by the cable if required.

If the machine is to be parked over a longer period of time, e.g. after the end of the season, the brake should be released to prevent the brake pads from sticking to the brake drum, making restarting more difficult.
Use wheel chocks or other means to secure the machine against rolling away.

Pneumatic brake

This dual-line pneumatic brake controls the brake power to the master brake cylinder. The master brake cylinder uses brake fluid to forward the pressure to the wheel cylinders.

Hitching-up

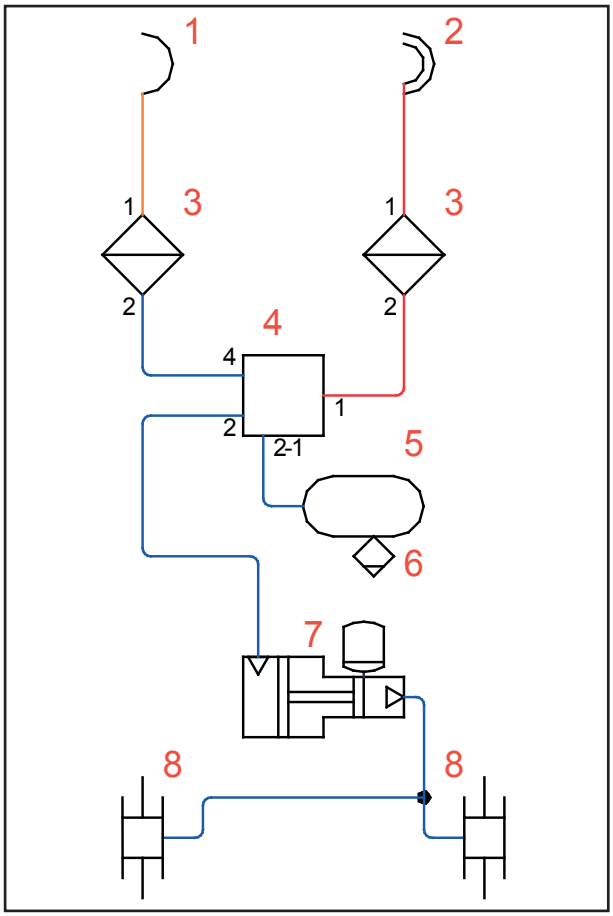
- When hitching up connect the pneumatic brake hose coupling "Brake" (yellow) first and then the pneumatic brake hose coupling "Provision" red.
- Release the parking brake.

Unhitching

- Apply the parking brake.
- When unhitching disconnect the red pneumatic brake hose coupling first and the yellow one after. The brake-air pressure is thereby applied to the brake cylinders and the machine is permanently braked.

In case of a pressure loss the braking effect of the parked machine will drop.
The machine must therefore always be secured with the parking brake.

In order to check whether the parking brake is able to hold the machine, the air brake must first be released by pressing the releasing button.
The machine must solely be held by the parking brake. Otherwise you must choose a different parking location.



Pneumatic brake schematic

1. Pneumatic brake hose coupling "Brake" yellow
2. Pneumatic brake hose coupling "Provision" red
3. Pipe filter
4. Trailer brake valve
5. Air reservoir
6. Drain valve
7. Master brake cylinder
8. Wheel cylinder

Care

For functional safety of the valves, anti-freeze agent should be mixed to the compressed air (follow the operating instructions of the tractor manufacturer).
This agent maintains the elasticity of the seals and reduces rust deposits in lines and reservoirs.

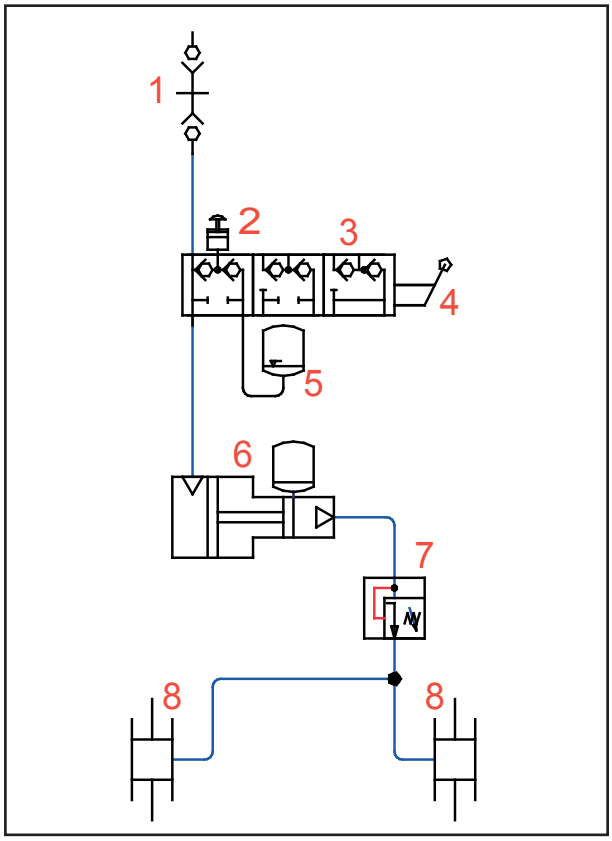
As a preventive measure against damage caused by moisture, the pneumatic brake hose couplings can be covered with plastic lids or a plastic bag.

Maintenance

- Drain the air reservoir every day during operation.
- Clean the line filter as required, but at least once every year.
- The brake is self-adjusting. The brake linings must be regularly checked for wear and replaced if necessary.
- Renew the brake fluid (DOT 4) every two years.

Hydraulic brake

The hydraulic line controls the brake power to the master brake cylinder. The master brake cylinder uses brake fluid to forward the pressure to the wheel cylinders.
Depending on the design, the brake system may also be equipped with a breakaway protection.



Brake diagram hydraulic brake

1. Hydraulic coupling for brake
2. Pressure accumulator
3. Breakaway brake valve
4. Emergency operation (spring cotter)
5. Manual brake releasing pump
6. Master brake cylinder
7. Pressure relief valve
8. Wheel cylinder

The pressure relief valve has been factory set to 90 bar for 7 / 8 and 9 DC.

Hitching-up
When hitching up connect the hydraulic brake line with the brake line of the tractor and release the parking brake of the machine.
Fasten the release rope for the breakaway protection on a suitable point on the tractor. The rope must under no circumstances become entangled with other parts of the machine when e.g. driving curves. It could otherwise cause full braking during travel.

The pressure accumulator for emergency braking must be filled before starting to drive during initial commissioning or after longer periods of standstill. Fully kick down the brake pedal on the tractor for this purpose. With each braking operation the pressure is applied to the pressure accumulator and fills it up as required.
Once this has been done you may drive on the road.

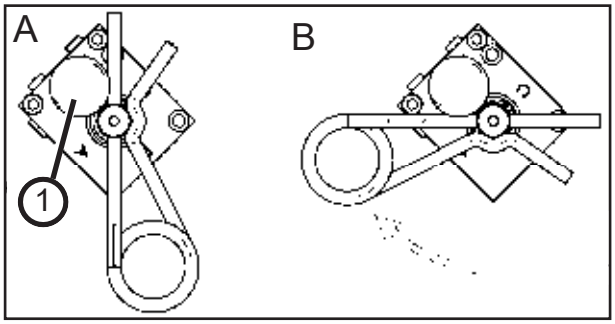
☞ The brake inlet pressure should not exceed 100 - 130 bar.

Unhitching
Apply the parking brake.
Disconnect the brake line and unhitch the machine.

Unhitching does not trigger the breakaway brake. Emergency braking is only triggered if the spring cotter is turned to the front.

Function of the breakaway brake valve

The valve has two positions:
A - operating position
B - emergency braking



Breakaway brake valve

1. Manual brake releasing pump

Manual brake releasing pump

Emergency braking caused by the breakaway brake valve can also be released without the tractor.

Turn the spring cotter back to working position and operate the manual brake releasing button until the brake is released.

Maintenance
- The brake is self-adjusting; The brake linings must be regularly checked for wear and replaced if necessary.
- Renew the brake fluid (DOT 4) if required.

Hitching-up the machine

Nobody is to remain between the tractor and the machine when hitching up.

There is a danger of being injured on function-related sharp edges and when converting the machine.

Hitching-up

- Two-point hitching
  Lock the tractor link arms against swinging sideways.
- Hitch the machine to the two-point or swinging drawbar of the tractor.
- Connect the drill controls.
- Connect working hydraulics and fan drive in dependence on the equipment.
- Connect the road lighting equipment.
- Connecting the brake lines
- Lift and fold the drill. Make sure the wing locks have clicked into place.

Route cables, lines and tubes so that they will not be damaged during operation (when turning).

Check plug connections (hydraulic and electric) for cleanliness and tight fit.
Dirty connectors will contaminate the flowing media. The connectors therefore become worn and this results in malfunctions and failures in the connected assembly groups.

Connecting the hydraulic system

Connect the hydraulic system only after it has been depressurized on machine and implement side.
The hydraulic system is under high pressure. Hydraulic oil escaping under pressure can penetrate the skin and cause serious injuries. In the case of injury, consult a doctor immediately.

Plug-in couplings are colour-coded in order to avoid wrong connections.

When operating hydraulic components, slow down the control unit before the machine components reach the limit stop.

Connecting the road lighting equipment

For transportation on public roads the road lighting equipment must be plugged in and needs to be in good working order.

- Connect the plug of the machine lighting equipment to the tractor.
- Check lighting equipment and warning decals for function and cleanliness.

Hydraulic function

Tractor mounted control units must be secured or locked when not in use or in transport position.

Persons must not remain in the operating range of foldable machine components.

When operating hydraulic components, slow down the control unit before the machine components reach the limit stop.

Perform folding operations only after the machine has been raised.

Hydraulic function
DrillManager ME (Müller)
On these machines the hydraulic functions are selected in the menu of the DrillManager.
The DrillManager ME therefore has to be connected to the tractor electrics at all times.

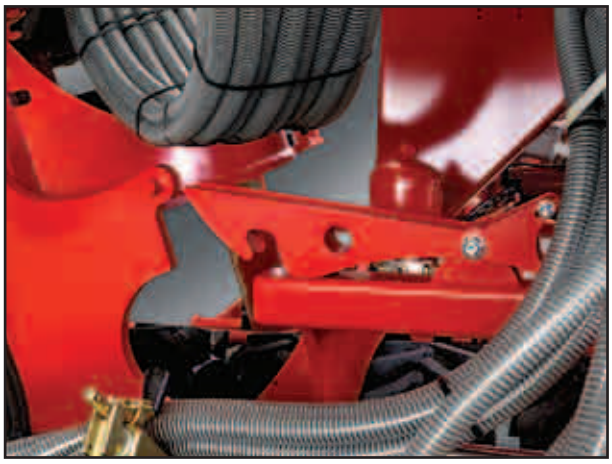
The hydraulic functions can only be selected (see instructions on DrillManager ME) after the machine data has been entered into the menu and the hydraulic bout marker controls have been activated.
The function "Lift" is enabled when de-energized and locked when energized.
The functions "Fold and Bout Markers" are switched on with electricity and blocked.

The bout markers are retracted when lifting up the machine in case of a power failure.

Unfold / fold machine

Folding

- Connect the DrillManager and select hydraulics "Lift" in the display.
- Lift the drilling coulters
- With front packer: Lift the front packer.
- Switch on "Wings" in the display, operate the control unit and fold the machine up against the stop.
- The safety catch automatically clicks into place. The function of the safety catch must be checked, to prevent accidents.
- For road travel switch off the DrillManager and secure the control units.
- Switch the double shut-off valve to "Transport position". This disconnects the fan-folding circuit and the machine cannot be unfolded unintentionally by the fan drive.



Safety catch

Unfolding

- Switch the double shut-off valve to "Working position".
- Unlock the control units.
- Switch on the DrillManager, select "Lift" in the display and raise the drill coulters.
- Select "Wings" in the display. Operate the control unit, unfold the machine to the end stop and preload it with 50 bar (pressure gauge).

This preload displaces the weight from the middle section to both wings to achieve a uniform placement of seed.
During operation this preload is maintained by the hydraulic pressure of the fan drive.

Parking the machine

The drill should be parked in a shed or under a roof so that no moisture can accumulate in the, metering unit and seed pipes.
It can thus be parked in unfolded or folded condition.

Without cultivation tools the machine may tip backwards. In this case both supports, front and rear, must be in place.

When manoeuvring the machine, pay attention to the surroundings. No persons (children) are to remain in the manoeuvring area of the machine.

- Park the machine on level and solid ground.
- Rest the machine on the support.
- Secure the machine against rolling away and unhitch it.
- Disconnect hydraulic and electrical connections and hook into storage holders.
- Drain the water from the air tank of the pneumatic brake.
- Apply the parking brake.
- Empty the seed hopper.
- Clean the metering unit.
- Close the hopper lid.
- Keep electrical and electronic components for the drill controls in dry rooms.

Thoroughly clean the machine and hopper if dry fertiliser was used. Fertiliser is aggressive and speeds up the corrosion process. It especially attacks galvanised components like bolts.

If the machine is to be parked for a longer period of time, secure it against rolling away and release the parking brake, to prevent the brake pads from sticking.

Operation

Pneumatics Pronto DC

The pneumatic system consists of fan, Venturi area with distributor and the distributor boxes.

Fan

The hydraulic fan is directly driven by the tractor hydraulics or by a PTO-shaft driven pump.

The generated air flow conveys the seed from the Venturi pipe to the coulters. The required air quantity depends on seed (type and weight), seed quantity, working width and sowing speed.
A correct fan speed cannot be specified and must therefore be determined by tests in the field.

The air flow must not be excessively high, so that the seed does not bounce out of the furrow or is blown out through the grill on the metering unit (see metering unit).
It must, however, not be too weak, so that the seed does not remain in the hoses and cause blockage. To weak an air flow may also have a negative effect on the distribution.
The fan speed should therefore be set as high as possible.
Depending on working width and seed a fan speed of min. 3500 rpm is recommended in order to achieve uniform distribution.

Fan setting, seed transportation and seed placement must be checked on all coulters when starting sowing, and also at regular intervals when working on large areas.

Fan impeller and protective grid have to be regularly checked for deposits and cleaned.

Deposits on the protective grid restrict the air flow and thus lead to blockage in the seed pipes.
Deposits on the fan impeller cause unbalance. The bearing will thereby be overloaded and can be damaged.

If the fan is switched on in transport position, the machine will slowly unfold. Always unfold the machine before operating the fan

Fan direct drive

The hydraulic fan is directly driven by the tractor hydraulics.
The tractor must be equipped with a flow-control valve to control the fan speed.

The hydraulic pump must deliver sufficient oil to prevent the fan speed dropping, even when the tractor speed drops or other hydraulic functions are activated.

☞ The fan speed is adjusted via the oil quantity on the flow control valve in the tractor.

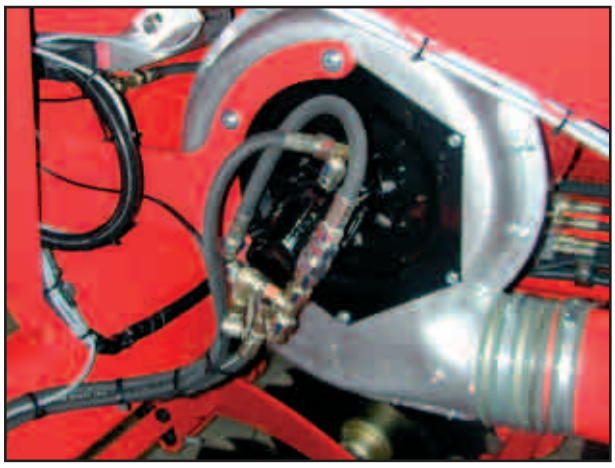
Checks and maintenance

- Ensure a return flow pressure of max. 5 bar.
- Clean the air intake grille at regular intervals to prevent a restriction in air flow and resulting blockage.
- Clean any dirt or deposits from the fan blades to prevent unbalance and damage to impeller and bearing.
- Retighten the clamping taper on the fan shaft (see chapter Fan Flange).

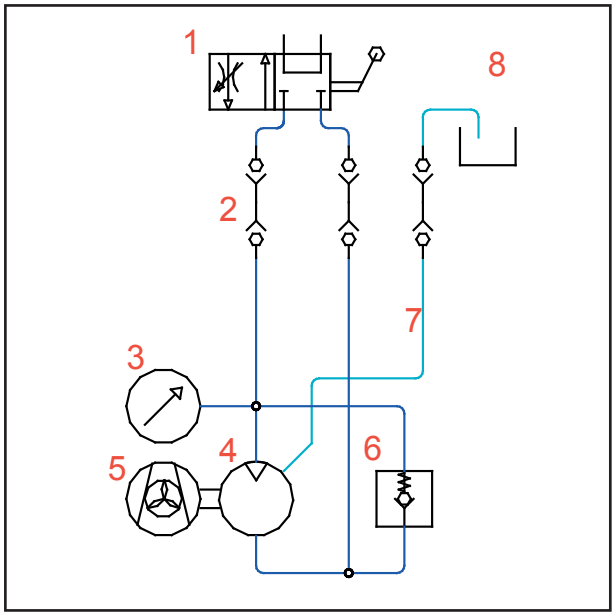
Fan motor Pronto DC

The leak oil line must be connected to the tractor free of pressure!

☞ Free flow oil return pressure max. 5 bar!
RPM speed max. 4500 rpm



Direct drive fan motor

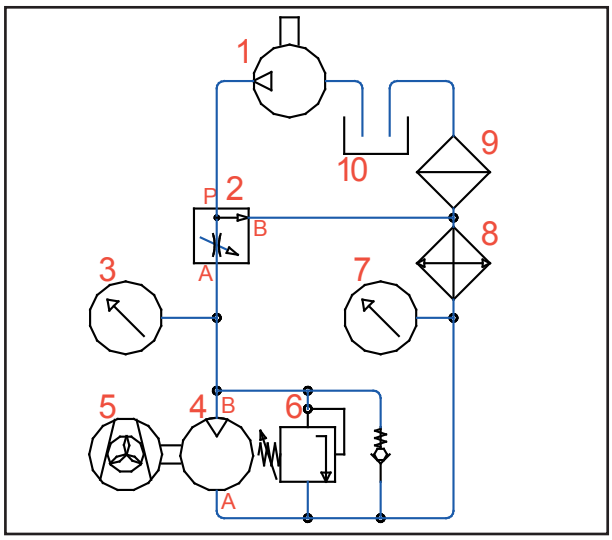


Fan drive hydraulics

1. Hydr. valve with flow control
2. Hydr. coupling
3. Pressure gauge
4. Hydr. motor
5. Fan
6. Check valve
7. Leak oil line
8. Hydr. connection on tractor

Fan with PTO-shaft driven pump

The hydraulic fan is driven by a PTO-shaft driven pump.



PTO-shaft driven fan

1. PTO-shaft
2. Flow control valve
3. High pressure gauge
4. Hydr. fan drive motor
5. Fan
6. Hydr. valve block with pressure relief valve and check valve
7. Return flow pressure gauge (max. 2 bar)
8. Cooler
9. Filter
10. Oil tank

Technical data

Hydr. pump:	43 cm^3
Hydr. motor:	10 cm^3
Operating pressure:	- 130 bar
PTO-shaft speed:	1000 rpm
Connection:	Z 6, Z 20 and Z 21
Fan speed:	- 4500 rpm

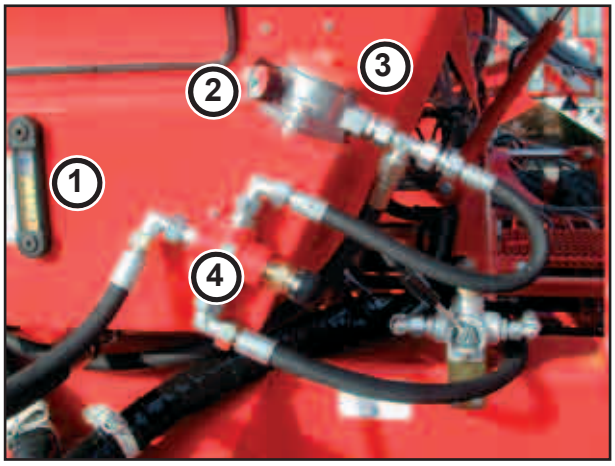
Function

The PTO-shaft driven pump drives the hydraulic motor of the fan
The flow control valve is used to regulate the oil flow and thus the fan speed.

A pressure gauge shows the operating pressure in the hydraulic system. This pressure rises proportionally to the fan speed and is limited to 200 bar by the pressure relief valve.

The püressure relief valve inside the hydraulic valve block protects the components and a check valve enables coasting down of the fan when the PTO-shaft is switched off.

The oil in the return flow is guided through the cooler and a filter back into the oil tank.
A pressure gauge in the return flow monitors the dynamic pressure. With a return flow pressure of more than 2 bar the filter needs to be replaced.



Oil tank for PTO-shaft pump

1. Oil level inspection glass
2. Return flow pressure gauge
3. Oil filter
4. Flow control valve

Hydraulic motor

Fan motor

Checks and Maintenance

- Observe return pressure of max. 2 bar.
- Check oil level.
- Clean protective guard for fan and cooler slats.
- Clean fan blades.
- Change oil and filter, if necessary.
- Tighten taper lock cone on the fan shaft (see chapter on fan impeller).

☞ The cooler slats have to be cleaned regularly, because otherwise the cooling air flow and air flow from the fan is reduced. The hydraulic oil overheats and the seed tubes get blocked.

☞ The power take-off pump is attached to the shaft end during assembly. The pump has to be mounted tightly and without tension to the tractor using the brackets.
The pump should not move during operation otherwise the shaft and the bearings could be damaged.

Fan with power take-off pump		
Malfunction	**Possible cause**	**Remedy**
Bearing damage on fan	Normal wear Fan has been run too fast Unbalance on wheel	Replace bearing Never operate fan without pneumatic tubes Replace wheel or clean in case of dirt
Shaft sealing ring on motor leaking	Return pressure larger than 2 bar	Check return pressure
Hydr. oil overheated	Fan run on excess power Oil filter dirty Protective grid for fan dirty Oil cooler dirty Excess pressure valve set too low	Reduce power and check oil level Check pressure on fan Renew oil and oil filter Clean protective grid on fan Clean cooler slats Correctly set pressure valve
Hydr. motor defective	Fan has been run too fast Hydraulic oil dirty	Reduce power and check pressure on fan Change hydraulic oil and filter
Power take-off pump bearing rejected	Pump distorted or mounted not tightly enough to the tractor	Renew bearing, mount pump tightly and without tension
No air flow to the coulters Air tubes blocked	Suction air grid dirty	Clean suction air grid

Re-tightening the fan impeller

The conical clamp on the hydraulic motor fan drive can become loose due to temperature fluctuations and material deposits on the impeller. The impeller can creep along the drive shaft and destroy the fan.

☞ The conical clamp should, therefore, be re-tightened after approx. 50 operating hours and checked once per year.

To do this, the fan guard must be removed.

The conical clamp fixes the impeller in position and, at the same time, clamps firmly onto the drive shaft.

Conical clamp

When re-tightening the clamping screws, attention must be paid to the following.

- When tightening the screws, particularly when re-assembling, the impeller creeps towards the housing in the direction of the guard.
- Therefore a loose flange must be aligned closer to the hydraulic motor.
- The clamping surfaces must be free of oil and grease.
- The clamping bolts must be tightened as evenly as possible in several steps. In between, tap the flange lightly (plastic hammer or hammer handle) to facilitate mounting on the cone.
- The imperial screws in the version no. 10 - 24 4.6 must be tightened to a max. torque of 6.8 Nm.
- After tightening, check the impeller for free and even running.

Hopper 7/8/9 DC

The hopper has a capacity of 4000 litres and can be fitted with foldable filling aids.
With the slider installed the seed can be distributed and the hopper completely filled.

The tarpaulin should always be kept closed to protect the seed against contamination, dust and moisture.
In case of extreme development of dust, this dust can deposit in the hopper and fill up the roller flutes. This causes metering faults and unnecessary wear inside the metering unit.

Hopper 8 PPF

The twin hopper has a capacity of 7100 litres and is divided with a ratio of 60:40.
The pressurised hopper design enables higher application rates. It must be permanently kept closed and sealed to avoid problems.

☞ Air losses in the pneumatic system will reduce the calibrated rate. It may even drop to zero.

Whenever the hopper lid has been opened it should be checked for air leaks with the fan running, by listening and feeling with the hands along the seal.

Pressurized hopper 8 PPF

Venturi-type injector

In the Venturi-type injector the metering unit injects the seed into the air flow.
The Venturi-type injector is designed as a distributor to distribute the air flow to both drill boxes.

A foldable cover is attached at the bottom. For the purpose of calibrating the cover is opened and the calibration bag is hooked on to the hooks on the housing.

In order to avoid malfunctions on the injector nozzle or on the seed transport or its distribution during the seed placement, all connections and the lid must be tightly closed.

☞ Air leaks lead to metering errors.

Half side shut-down

The machine can be equipped with an electric half side shut-down and manual switching to half side is possible.
The electric half side control is triggered from the DrillManager and automatically reduces the seed quantity and thus the drilled area by half.

The valve inside the Venturi area can also be switched over manually. In this case the seed quantity must be reduced to half the amount in the DrillManager or to 50% with the “ % “-button.
The area counter still counts the full working width.

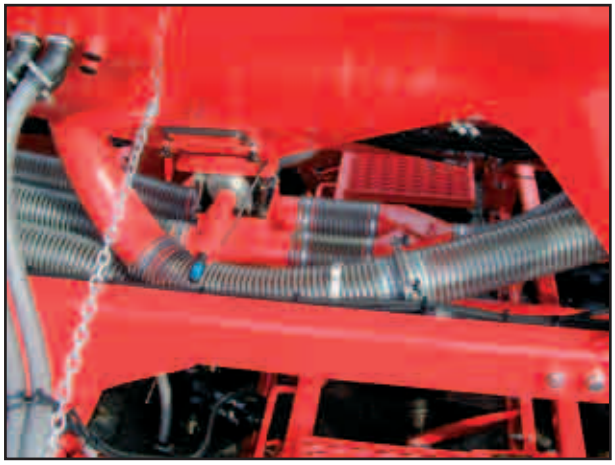
☞ On the Pronto 8 DC PPF the fertiliser cannot be switched off on the half side.

Twin hoppers 8 PPF for 2 x seed

When using the Pronto DC 8 PPF both hoppers can be used simultaneously for the seeding seed only.
For this purpose the metering unit of the front hopper is connected to the right hand seed box.

Conversion

- Disconnect the fan hose from the front metering unit and connect it to the lower hose.



Fan hose connection and seed hose

- Switch the valve on the seed hose to the right to direct fan air into the left hose.
- Switch the valves on the Venturi area and on the half side shut-down in such a way, that the seed is only blown into the left seed box.

With the electric half side shut-off please observe:

If the valve is switched with the half side shut-off in the DrillManager, the DrillManager will half the seed quantity and the area is only counted half.
The seed quantity can be “corrected” by entering double the quantity on metering unit 1.
The area is still only counted half.
It is therefore recommended to switch the valve manually.

- Connect the fan hoses from the right hand seed box to the hose from the front metering unit.

Fan hose right seed box

The desired seed quantity must then be entered in the DrillManager, always half distributed to each of the metering units.

The coulter discs for the placement of fertiliser can thereby be locked in top position.

Adjusting the working depth of the fertiliser coulters

- Lift the coulter discs fully out.
- Remove depth adjustment bolts.
- Insert the bolts into the upper bracket.

☞ In raised position the discs should not touch the soil.

The discs would in this case wear off non-circular and could no longer be used.
However, should the working conditions force the discs to contact the ground, the discs should not be locked, but should be allowed to simply run along in the ground.

Distribution box seed and fertiliser

The two seed distribution boxes are installed at the rear of the drilling machine, the fertiliser distribution box on the 8 PPF machine is installed in the fertiliser hopper. They distribute and direct both seed and fertiliser to the coulters.

All distribution components must be leak tight. Even slightest leaks and air losses will cause uneven distribution.

Seed distribution box with motorised valves for tramline control

The motorised valves for the tramline control and the sensors for seed flow monitoring are installed on the distribution head.

Motorised valves for tramline control

The motorised valves for tramline control have a small identification mark on the underside of the shaft, which shows the position of the valves. This enables checking the rotary motion of the valve and its end position.

Seed flow sensors

The seed flow sensors monitor the seed flow. They alarm in case of quantity changes during the flow of seed and fertiliser and in case of blocked hoses.

If the hoses for the tramlines are monitored with sensors, the numbers of these sensors must be entered into the DrillManager. These sensors are then excluded from monitoring when the tramline is activated - see instructions for DrillManager.

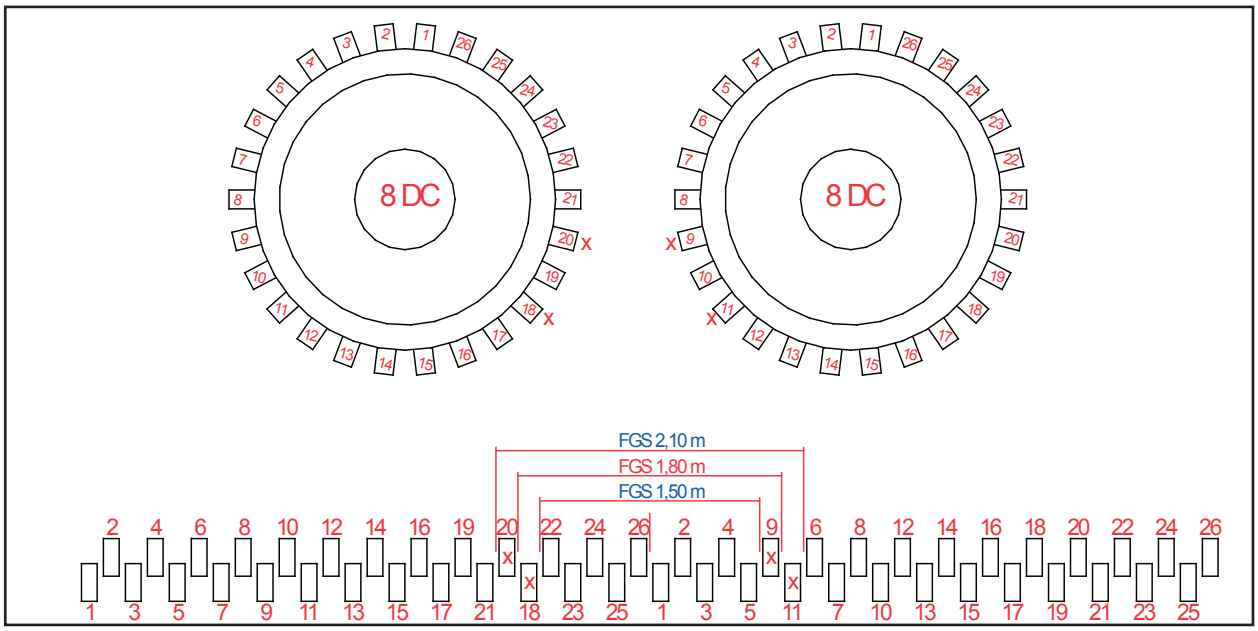
☞ The distribution heads must be regularly checked for foreign objects and deposits.
These disturb the seed flow and the function of the valves.

For special applications single outlets on the distribution box can be closed. For this purpose unscrew the cover and plug the filling pieces with the angled side downwards into the corresponding outlets.

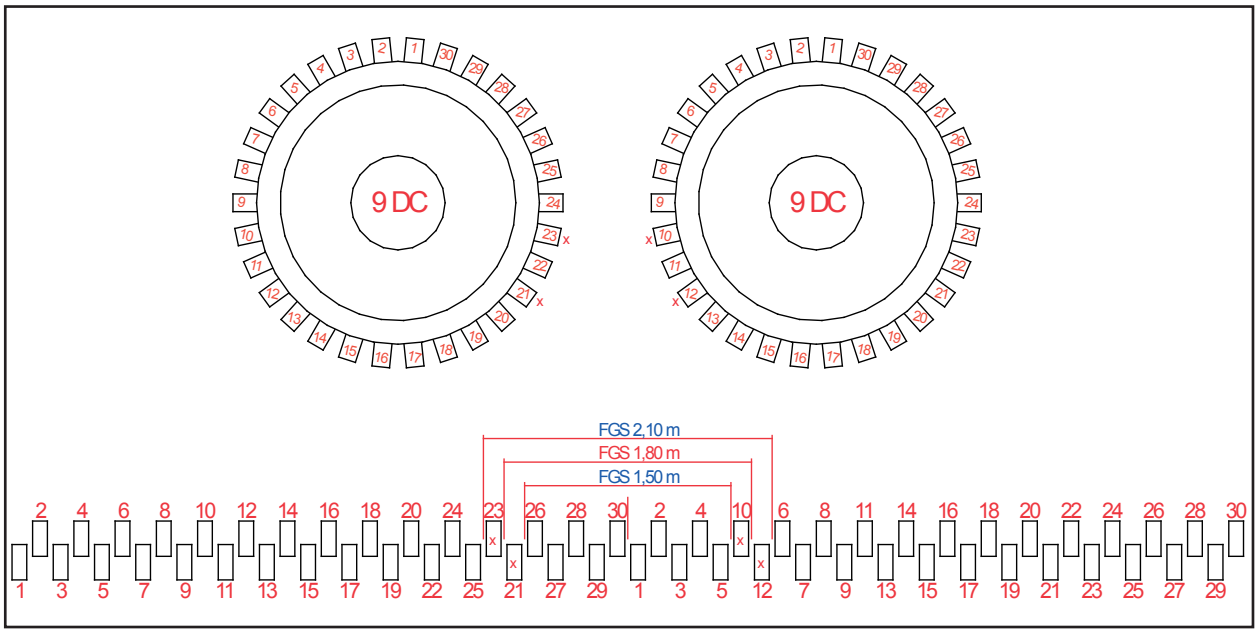
Filling pieces

Hose arrangement

Pronto 7 and 8 DC / 8 PPF

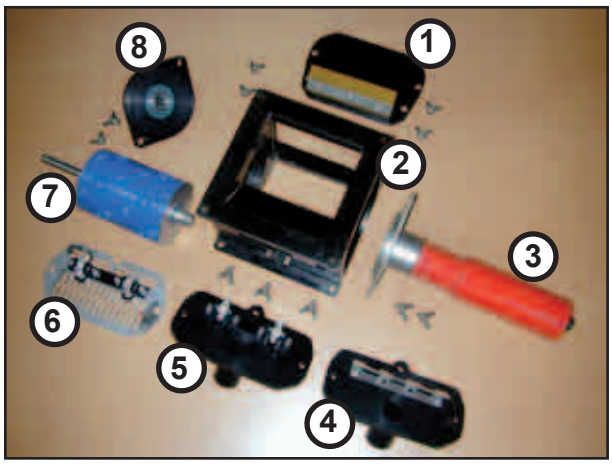


Pronto 9 DC



Metering unit

The HORSCH metering unit consists of only a few individual parts and can be dismantled without tools.



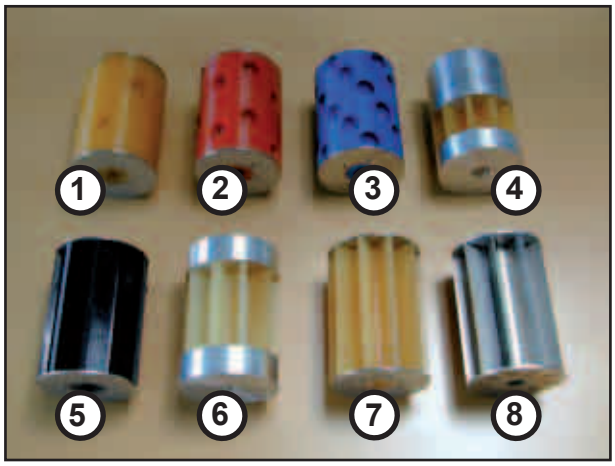
Metering unit

1. Clearing valve with sealing lip
2. Housing
3. Drive motor
4. Side cover for pressurized hopper with scraper plate
5. Side cover for pressurized hopper with rape brushes
6. Side cover for normal hopper with rape brushes
7. Roller
8. Side cover with roller bearing

Various cell rollers are available for the placement of the various seed sizes and quantities. The choice of rollers is described in the DrillManager instructions.

The cell rollers are arranged according to their delivery rate per revolution.

Rollers for all types of grain and solid fertiliser



Cell rollers

No.	Size cm³	Colour			
1	20	yellow	not suitable for beans and solid fertilisers		
2	40	red			
3	100	blue			
4	170	yellow / alu	-	-	-
5	250	black	-	-	-
6	320	yellow / alu	-	-	-
7	500	yellow	-	-	-
8	800	metal	-	-	-

Absolute leak tightness of components must be assured with all work on the metering unit. Leaks lead to metering errors.

When assembling the metering unit all contact faces must be sealed and distortion of the housing caused by screwing on must be avoided.

Towards the bottom the metering unit is completed by the Venturi area. In the Venturi area the seed is picked up by the air flow.

During calibration the seed is taken out of the metering unit through the opening in the Venturi area.

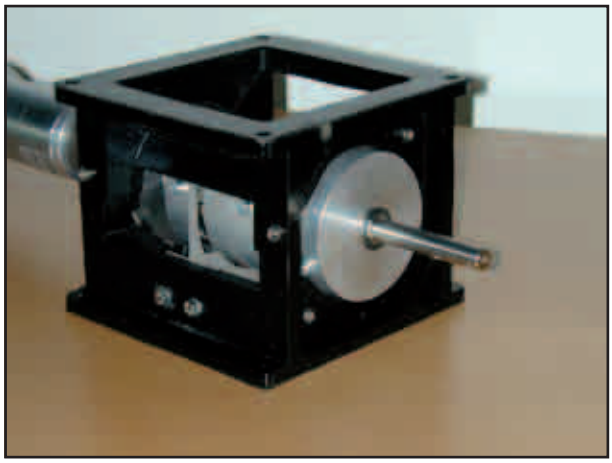
The cover must subsequently be closed again tightly.

Roller change

After choosing a roller from the table, it must be installed in the metering unit.

☞ The seed hopper should be empty when changing the roller.

- Unscrew the side cover.
- Pull out the roller with the drive shaft.



Roller change

- Remove lock washer and washer.
- Pull out the drive shaft and assemble the new roller.

The drive shaft requires axial clearance in the roller for self-cleaning of the roller in the metering housing.

Changing the roller

The setting of sealing lip and the concentricity of the roller must be checked after each roller change.

Roller change with full hopper

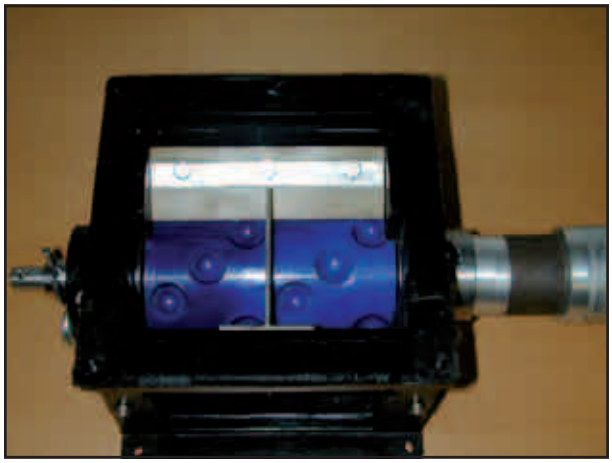
Roller change with full hopper

- Unscrew the wing screws on side cover and drive motor, take off side cover and motor.
- Remove lock washer and washer from the drive shaft.
- Plug the new cell roller on the drive shaft and use it to push the old roller out of the motor side.
- Fix the drive shaft, assemble and fasten side cover and motor.

Checking the sealing lip

A defective sealing lip or an incorrectly assembled supporting plate causes metering errors during sowing.

- The sealing lip should not be cracked or damaged; replace if necessary.
- Insert the side cover with the sealing lip into the metering housing. The seal must firmly rest on the roller.



Sealing lip

The holes for the retaining plate for the sealing lip are off set.

With all normal and fine seeds the wider side must face towards the roller.
With coarse seeds like corn, beans, etc. the narrow side must face towards the roller.

Roller for fine seeds

The rollers for fine seeds consist of cell discs, spacers and drive shaft.

In order to avoid malfunction when sowing fine seed, the cell rollers are completely pre-assembled in the factory.

Rollers for fine seeds

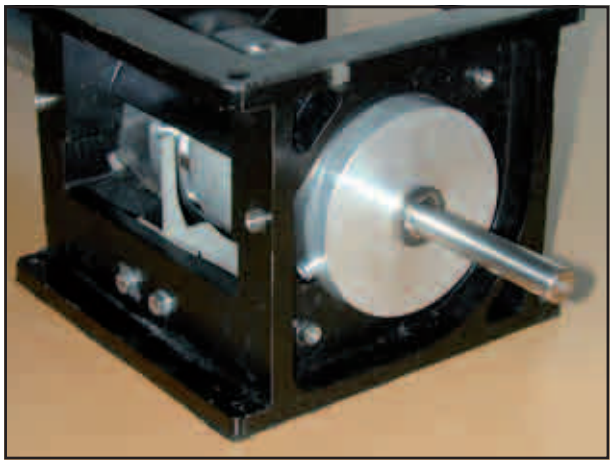
Rollers fine seeds

The rollers can be assembled with one or two cell discs.
The use of two cell discs on the roller doubles the delivery rate.
Cell discs are available with delivery rates of 3.5 cm³, 5 cm³ and 10 cm³.

Size cm³	Cell shape / cell size	Number of cells
3,5	half-round, radius 4 mm	10
7	2 cell discs 3.5 cm³	20
5	Groove depth approx. 19 x 3 mm	12
10	2 cell discs 5 cm³	24
10	Groove depth approx. 23 x 5 mm	12
20	2 cell discs 10 cm³	24

During sowing only the cell discs in the roller will rotate, the spacers are stopped from rotating by stops on the housing

The anti-rotation locks must be turned towards the recess in the housing in order to remove and disassemble the rollers.



Assembly of roller for fine seeds

Maintenance:
The function and operability of fine seed rollers must be checked every day.

- There should be no gap between the cell discs. If the gap is too big, shims must be removed.
- The cell discs must be light turning. Dressing or similar materials must not clog cell discs or bearings.
- The safety clips must be in place and correctly assembled to avoid the formation of a gap.

Assembly note:
Cell discs and spacers are assemble with shims to keep the roller assembly tight, thus ensuring that no seed will enter between cell discs and spacers.

Roller for fine seeds

The spacers are fitted with bearings.
Depending on the manufacturing tolerance shims are added to avoid any friction between cell discs and spacers.

After the assembly of all parts the remaining gap to the lock washer is filled up with shims.

Finally assemble the lock washer.
With the roller correctly assembled the cell discs between the spacers can just be freely turned. The parts should not rub against one another, but the clearance should be as small as possible.

When checking against a light source the gap should just be visible.

Function test
After installing a new roller the function and concentricity of the new roller must be checked.

For this purpose switch on the roller as described in the section “Calibration test”.

- The drive motor must run “smoothly”. No stiff points should be recognizable.

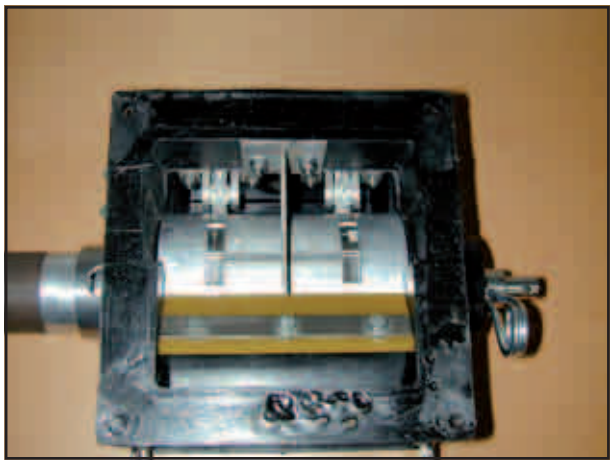
☞ Untrue running causes inaccurate metering and may overload the motor.

- If possible locate the stiff point.
- Rework damaged parts (by machining ...) or replace.
- Loosen the screws on the side covers for drive motor and roller bearing and realign the side covers to release tension.
- If the drive shaft has been bent, realign or replace it.
- Remove any foreign bodies that may have been jammed between roller and housing.
- If dust or dressing in the roller has entered between cell discs and spacers dismantle and clean the roller.

Rape brushes

The rape brushes clean the cell discs in the rollers for fine seeds.

Before sowing fine seeds the rape brushes must be installed in the side cover and their function must be checked.



Rape brushes assembled

- Check concentricity and fastening.
- Check condition and cleaning effect of brushes.
- Install the side cover with the brushes into the metering unit.
- The brushes must firmly rest against the cell discs and should rotate with the roller.

☞ The function and cleaning effect of the rape brushes must be checked before starting sowing and at regular intervals during work.

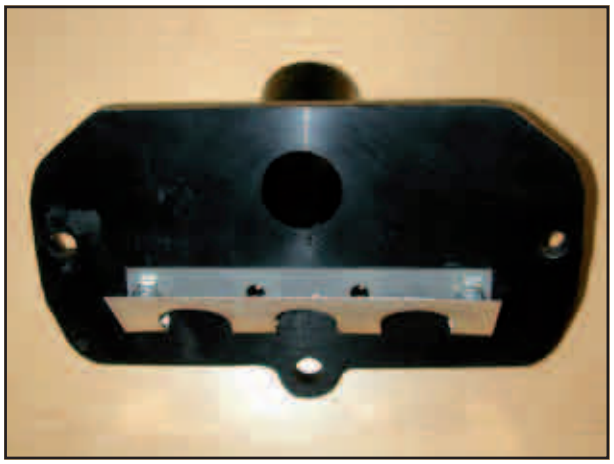
Sticking cell discs cause metering errors during sowing. Less seed is metered.

The side cover with the rape brushes can be removed even when the seed hopper is full. Sticking cell discs can then also be cleaned in assembled condition.

The rape brushes should be disassembled when sowing normal seeds. The housing holes must be closed again.

Coarse seeds

For coarse seeds (corn, beans, peas, etc.) a deflector is installed instead of the rape brushes.
This deflector prevents large seed grains from getting caught between roller and housing, being crushed and thus blocking the roller.



Deflector

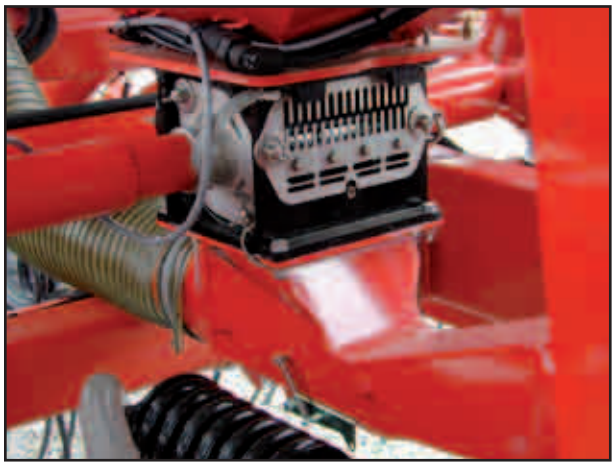
Some metering units are fitted with a high separating plate.
This plate must be cut off at the bottom edge of the inspection window, to accommodate the installation of the deflector.

Large seed grains partly have poor trickling characteristics and thus do not fill the roller flutes completely.
In such cases talcum powder or graphite powder may be added to the seed.

Metering unit with Venturi-type injector

The metering units in machines with normal hopper and Venturi-type injector are equipped with a V2A-cover with machined recesses.

During operation the injector nozzle is exposed to vacuum. This V2A-cover adds addition air to the air flow.



Metering unit with cover for injector nozzle

The adjustment between injector nozzle and cover works up to a max. possible seed quantity.

Exceeding this quantity results in a dynamic pressure at the injector nozzle. This may blow seed out through the perforated plate, which leads to a band of seed coming up towards the middle of the machine.

These grains are visible on the surface of the field before thy are covered by the packer or the harrow.

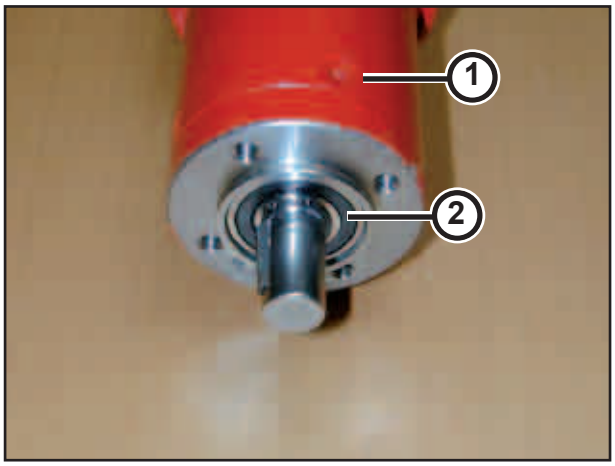
In extreme cases the overpressure may block the seed flow in the hopper and thus cause a drill failure.

☞ You should therefore always check the function of the pneumatic system and the placement of seed, especially with high seed quantities and working speeds.
No grains should remain on the surface of the field.

If grains are blown out the fan speed must be increased (short-term up to 4000 rpm) or the working speed reduced, until the injector system works correctly again.

Servicing the metering unit

The metering unit does not require any specific maintenance.
In order to avoid repair related downtimes, both the metering unit and the drive motor should be cleaned and subjected to a function test after the end of the season.
The bearings in the side cover in particular can be damaged or may become hard moving because of dressing dust.
If necessary keep bearings in stock and replace in due time.



Drive motor

1. Screws
2. Radial seal and bearing

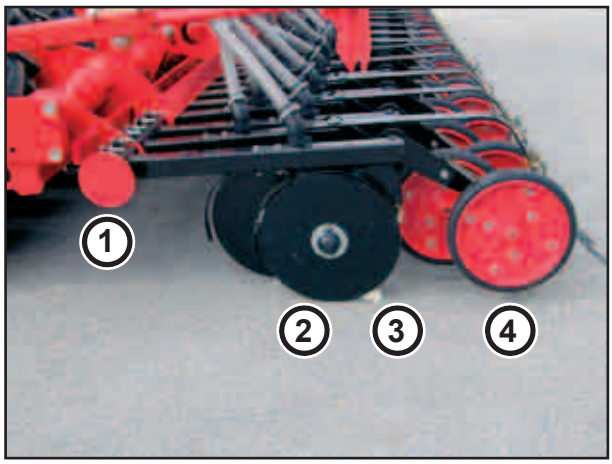
Plug assignment on engine

In case of cable breakage or repair work on the plug, the cables can be connected by soldering.
However, the use of crimping contacts is recommended.

Pin No.	cable
1.	grey and blue
2.	red and pink
3.	white
4.	brown
5.	green
6.	yellow

Seeding component

The seeding component is comprised of the coulter arm, seed coulter and press wheels.



Coulter component

1. Coulter arm pivot
2. Disc coulter
3. Uniformer
4. Press wheels

The coulter arm is attached by maintenance-free rubber bearings. It connects the seed coulter and the press wheel to the main frame and transmits the coulter pressure.

The discs are pressured together at a forward angle to each other under slight pretension for an easy work load and an exact opening of the seed channel.
The double disc coulters cut through the seed bed and uncover the seed zone.
The seed is placed between the discs and lightly pressed by the uniformers.

A scraper keeps the inside of the discs of dirt. The scraper is self adjusting.

☞ Adjustment, impact and wear to the scrapers has to be regularly checked.

The pretension of the coulter discs should not be too excesive in case of wet or loose soil so that the discs are not stopped rotating or worn on one side only.
A washer can be additionally inserted if necessary.

When the discs no longer come into contact with each other in case of wear of the coulter discs. The coulter discs then have to be renewed or the pretension has to be adjusted by removing the washers.

☞ The seed is sown in bunches if the discs do not rotate due to incorrect pretension, in loose soil or due to wear.

If the coulter discs are renewed, the pretension of both coulter discs has to be adjusted by means of the washers.
Some pretension has to be applied to the coulter discs on the edge, but they still have to be able to be easily rotated freely without applying any force.

The function of the scrapers also has to be observed. If the scrappers do not clean the inside of the discs because the scrapper has not automatically adjusted it self then either a new disc or scrapper must be fitted.

☞ Keep the rubber suspension free of oil. Oils and grease can damage the rubber and have a negative effect on their function.

Scraper for coulter discs and press wheels

Uniformer

The uniformer firms the seed in the seed bed and presses it down slightly.
The uniformer can pick up residue in the event of wet and sticky soil conditions. In this case it should be dismantled.
If the machine is lowered it should not be put into reverse so as not to damage the uniformer.

Press wheels

The press wheels are fixed to the coulter arm with a serrated stepped adjusting system.
They are responsible for the depth control of the seed placement, cover the seed with fine soil and press this onto the seed.

A scraper keeps the press wheels free of dirt. The scraper can be reset, if necessary.

If the press wheels do not provide depth control in soft or sandy soil conditions, they can be replaced with 7.5 cm or 10 cm wide press wheels.

Maintenance

- Check the condition of coulter arm bearing (rubber); renew depending on level of deterioration or if the tension force is greatly reduced.
- Check the press wheels for condition and ease of movement and check retaining screw on the serrated stepped adjusting system for tight fitting.
- Reset the scraper on the press wheels if necessary.
- Check the coulter discs and bearings for wear, pretension and ease of movement.
- Tighten the coulter screws with 130 to
- 150 Nm.
- Check the scraper and Uniformer for condition, tight fitting and adjustment.

Rear Harrow

The harrow is guided by the press wheels at the rear, the brackets are spring mounted and individually attached to the coulter arm.
The tines can be adjusted accordingly and have to be adapted to the soil conditions and crop residues when in operation.

Harrow

The harrow tines level the seed bed behind the seed coulters and cover any seed that remains uncovered.

The tines can be put into a lower operating position in the event of wear or for higher pre-tension.

Calibration

Perform calibration only when the machine has been lowered and is stationary.

Do not use sticky dressings with seed. These influence the metering accuracy.
Check seed and hopper for foreign objects!

- Depending on the seed, install the rape brushes or the deflector. Check all side covers on the metering unit.
- Install the appropriate roller for the seed quantity and check for true running.
- Check condition and correct setting of sealing strip.
- Fill the hopper with seed. Only fill small amounts of fine seeds.
- Open the outlet on the Venturi-type injector and fit the calibration bag.
- Calibrate the machine (see DrillManager instructions).
- Close the flap; check for leaks!

Venturi-type injector with calibration bag

If the machine is calibrated in folded condition, there is a risk of head or eye injuries.
Wear appropriate protective clothing.

Setting

Drill depth

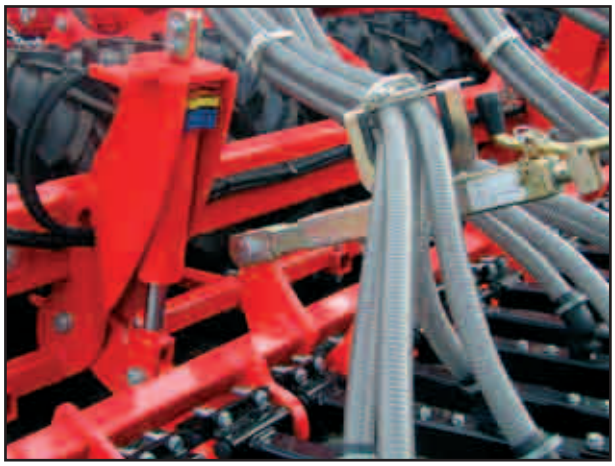
The drilling depth is determined by the depth setting of the machine on the hydraulic cylinders and the pressure setting on the drill coulters.

The fine tuning of adjustment possibilities must be matched to the soil conditions and can thus only be found in the field using operating position.

Additional aluminium clips must be inserted to enable a deeper placement of seed.

Coulter pressure

The harder the soil and the deeper the seed is to be placed, the higher the required pressure.
The seed coulters are pivoted down when lowering. The depth is adjusted with aluminium clips on the hydraulic cylinders.



Hydraulic cylinder and adjustment crank handle

The resulting pressure is transferred to coulters and pressure roller via the rubber elements.

The coulter pressure can be increased by altering the adjustment spindle.
Too much pressure on the coulters will just have the opposite effect. The press wheels will slightly lift the frame or the press wheels will submerge in the soil and are no longer able to guarantee an exact depth guidance.
The settings on the hydraulic cylinder and the coulter pressure adjustment complement and effect one another.

Changes to the hydraulic cylinder mainly effect the drill depth, but also the coulter pressure and the press wheels.
Changes to the coulter pressure adjustment mainly effect coulters and pressure rollers, but also have an influence on the drill depth.

☞ With each alteration one must therefore check the drill depth and the effect of the press wheels on recompaction and depth guidance.

Depth setting

It is highly recommended to find the correct setting by trying and testing.

- Turn the coulter pressure adjustment back to a low pressure;
- Insert the same quantity and colour combination of aluminium clips on the hydraulic cylinders.
- Lower the machine in operating position on the aluminium clips and drive a few meters in the field. The cylinders must always be fully extended - watch the pressure gauge.
- Check the coulter depth and the consolidation by the press wheels.
- If necessary increase the coulter pressure and check for changes after driving a few meters in the field.

If the desired adjustment cannot be found within the coulter pressure adjustment range, the process must be repeated using the next lower setting on the hydraulic cylinder, until the correct setting is found.

☞ Set all adjustment possibilities on the machine equally.

The wing hydraulics must be preloaded with 50 bar. When working on uneven ground this preload is compensated by the fan pressure.

Cultivation tools

Depth setting

The depth setting must be matched to the soil conditions and can thus only be found in the field using operating position.
The harder the ground and the deeper the cultivation tools need to work, the higher the required preload of the rubber elements.

Coulter disc adjustment

The depth of the cultivation tools is set on the hydraulic cylinders by adding or removing aluminium clips.
The cultivation tools are always raised when the machine is lifted out. When lowering, the cylinders rest against the aluminium clips.

It is highly recommended to find the correct setting by trying and testing.

- Insert the same quantity and colour combination of aluminium clips on the hydraulic cylinders.
- In working position apply pressure to lower the machine, until the hydraulic cylinders rest against the aluminium clips.
- Set the control unit to neutral position and drive a few yards in the field.
- Check the penetrating depth and the loosening effect of the cultivation tools.
- For a deeper setting remove aluminium clips, until the desired working depth is reached.

Hydraulic cylinder depth setting with aluminium clips

Always insert or remove the same amount and colour combination of aluminium clips on all hydraulic cylinders.

☞ Check the adjustment before starting work and also in-between.

Maintenance:
The bearings are oil filled and therefore maintenance free.

Check the discs regularly for clearance, leak tightness and unrestricted rotation.

Notes on cleaning

The mechanical seals are very sensitive if water has entered and the machine is then parked over a longer period of time.

This can cause corrosion and both mechanical seal rings may stick together. The mechanical seal rings will then rotate around the O-ring and damage it. Oil would run out and the bearing would be damaged after a short while.

- Bearings must therefore not be cleaned with high pressure cleaning equipment.
- Before longer periods of rest the bearing locations should be sprayed with a rust dissolver or similar.
- Before resuming operation the discs should be turned by hand and checked for unrestricted rotation.

Pronto 8 PPF

On the Pronto 8 PPF both the fertiliser coulters and the cultivation tools have a common pivot point.

Pronto 8 PPF

Depth setting

The fertiliser coulters are pressed into the soil by the piston rod. Aluminium clips are added to the piston rod to adjust the depth, or removed for deeper drilling.

The coulter discs on the cultivation tools and the fertiliser discs are connected by a rod or a hydraulic cylinder.
When lowering the fertiliser coulters, the cultivation tools will therefore also move down.
If the bolt is in middle position, both disc systems work in the same depth.

The bolt can be adjusted up or down to compensate for disc system wear or to achieve a different working depth.
In top position the cultivation tools work at a lower depth than the fertiliser coulters.

If the cultivation tools are equipped with hydraulic cylinders (option), these can be adjusted with a dedicated control unit, independently from the fertiliser coulters.
With the cylinders fully extended and the bolts in middle position, both disc systems work in the same depth.
With the cylinders retracted, the cultivation tools work deeper than the fertiliser coulters.

Work instructions

Working speed

The Pronto DC seed drill is suitable for high working speeds.

The speed depends on field conditions, soil type, harvest residues, seed, seed quantity and other factors.

☞ Operate somewhat slower under difficult conditions.

Turning

During sowing the rotational speed should only be reduced shortly before raising the drill, so that the fan output does not drop too much and causes the hoses to block.

Raise the machine for transport.

After turning on the headland position the machine approx. 2 to 5 m in front of the seed bed with appropriate fan speed. The seed requires some time to flow from the metering unit to the coulters.
The operation switch will only release the signal after the pressure in the lifting hydraulics has dropped below 50 bar.

After sowing

Seed hopper and metering unit should be emptied and cleaned after sowing.
Seed and dressing could become moist overnight and clot.
This could result in seed bridging in the seed hopper and agglutination of roller flutes. Metering and seed errors could thus occur.

The seed hopper can be emptied through the clearing valve on the side. For this purpose use a suitable container and open both handle screws.
Residues can be emptied through the Venturi area.

Parking the machine

In order to avoid damage caused by moisture the machine should preferably be parked in a hall or under a roof.

- Park the machine on level and solid ground.
- Use the support on the seed wagon (DC without cultivation tools).
- Turn the coulter pressure control back in order to relieve the rubbers so that they will not loose their tensioning force.
- Disconnect electrical and hydraulic connections from the tractor. Hook the plug connectors to the brackets provided for this purpose.
- Unhitch the machine;
- Empty the seed hopper;
- Clean the metering unit;
- Close the seed hopper cover;
- Store electrical components, such as the DrillManager control, in a dry room.
- Keep rubber elements free of oil and grease.

☞ Thoroughly clean the machine and hopper if dry fertiliser was used. Fertiliser is aggressive and speeds up the corrosion process. It especially attacks galvanised components.

Checks

The sowing quality essentially depends on the adjustments and checks made prior to and during sowing, as well as on regular servicing and maintenance of the machine.

Before starting sowing you should therefore carry out all maintenance and lubrication work.

Checks before and during sowing

Machine

- Has the machine been hitched up correctly and are the coupling devices locked?
- Have the hydraulic lines been connected without being mixed up by mistake?
- Have the tractor link arms been locked to reduce sideways movement?
- Have the safety catches been engaged and does the light system work properly?
- Is the folding hydraulics pre-loaded with 50 bar in working position?
- Have the bout markers been set to the correct length?
- Has the hydraulic system been switched to float position for sowing?
- Has the machine been levelled and the sowing depth correctly adjusted?
- Is the pressurized hopper tightly closed?

Cultivation tools

- Are coulters, harrows (wear items) and other cultivation tools and optional equipment still in a serviceable state?
- Do the coulters have sufficient pretension and do they all rotate lightly?
- Are the scrapers still in good condition and correctly adjusted?
- Are packer wheels and packer bearings in good order?

Fan

- Is the hydraulic fan connected to a pressure free return flow?
- Is the PTO-shaft driven pump correctly mounted?
- Are oil level and filter for the PTO-shaft driven pump OK?
- Are fan and blower grille clean?
- Is the fan tightly mounted on the shaft?
- Are fan speed and drive pressure not exceeded?

Pneumatic system

- Are tramline valves installed in the correct seed lines for the tramlines?
- Has the tramline rhythm been adjusted and do the motorised valves close?
- Are the seed lines for tramlines completely closed and completely opened?
- Are the seed hoses free of sagging, water and other deposits?
- Are all air lines between fan and coulters leak tight and firmly connected?
- Does air flow out uniformly of all coulters?
- Has the air volume been set correctly on the fan? Does the seed bounce out of the seed furrow, or does it remain in the pipes and cause blockage?
- Is the gate in the distributor in middle position?
- Is the gate in the venturi area in middle position?

Metering unit

- Are the sealing lips and the brush seals in the metering unit still serviceable?
- In the case of small seed, has the cleaning brush been installed and is it in order?
- In the case of large seed, has the scraper been installed?
- Are all connections air tight and has the emptying outlet been closed firmly and leak free?
- Is seed coming out of all coulters?
- Are bridges forming in the hopper (particularly with husky seed)?
- Is, especially in the case of small seed, the correct seed quantity being distributed?
- Is seed being blown out through the grille?

When sowing, these checks must be carried out at the beginning of work and, in case of larger fields, at regular intervals during work!

Additional Fittings

Pre emergence markers

The pre-emergence markers mark the tram lines before the seed grows. They can also be additionally mounted to the coulter arms.
The discs are hydraulically lifted and electrically activated by the tram line control system.

Pre emergency markers

The impact of the discs can be adjusted to suit the soil conditions and the required marking depth by rotating the bracket.
Simply release the bracket and rotate the four-cornered shaft until the required coulter disc angle is attained. The marking should not be deeper than necessary.
Then tighten the screws again.

An additional set of brackets is supplied and can be exchanged for a more aggressive setting.

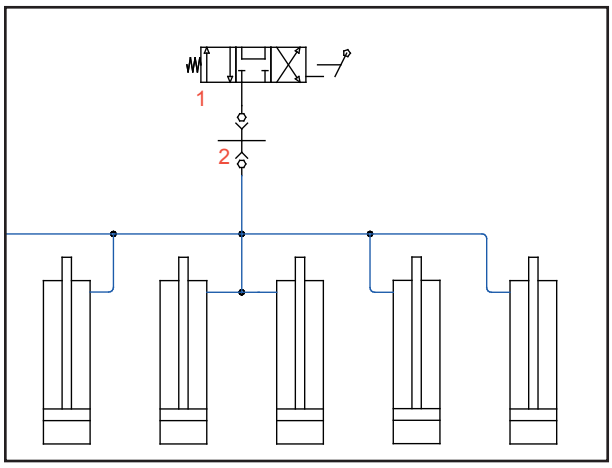
Depth Setting
The marking depth can be adjusted on the bracket using the bolts and the adjusting holes.
The arm is locked in the uppermost hole and the marking is switched off.

Height adjustment on pre emergency marker

Maintenance:
- Check ease of movement of bearing and bearing play.
- Check function of hydraulic valve and markers on discs prior to starting work.
- Check for wear on coulter discs.

Hydr. coulter pressure adjustment

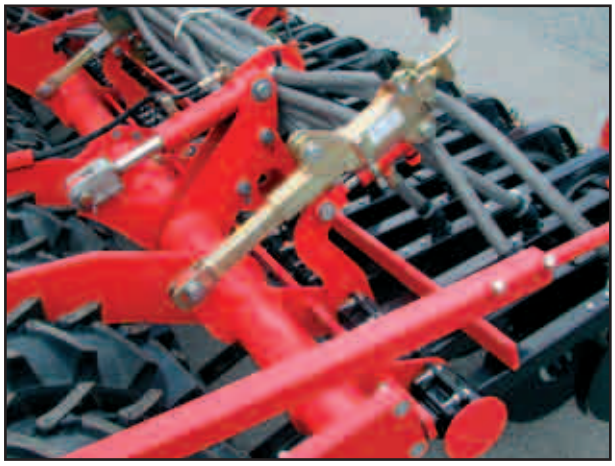
The hydraulic coulter pressure adjustment is operated from the tractor via a dedicated control unit.



Hydraulic coulter pressure adjustment

Setting

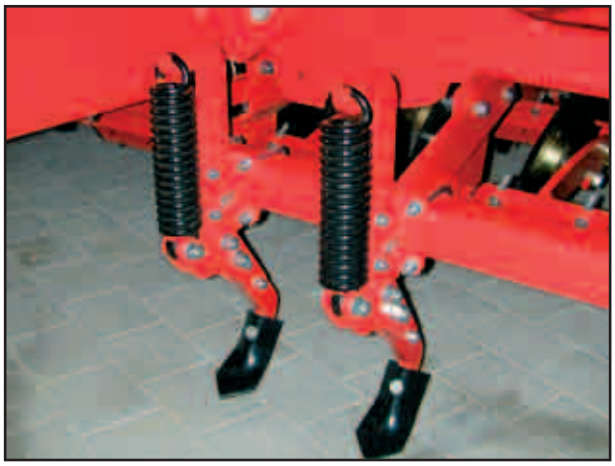
To adjust the seed depth extend the hydraulic cylinders and adjust the coulter pressure with the screw, as described for the depth adjustment.
This adjustment must take place at a “normal location” in the field.
In case of difficult or hard areas in the field the coulter pressure can then be raised during sowing.
The controlled pressure is indicated by the pressure gauge.
Extend the cylinders again when meeting “normal” soil conditions.



Hydraulic coulter pressure adjustment

Track Eradicators

The track eradicator tines loosen compressed tractor tracks and level the soil in case of deep tracks in the loosened seed bed.
The tines are spring mounted and can be adjusted in height and distance.



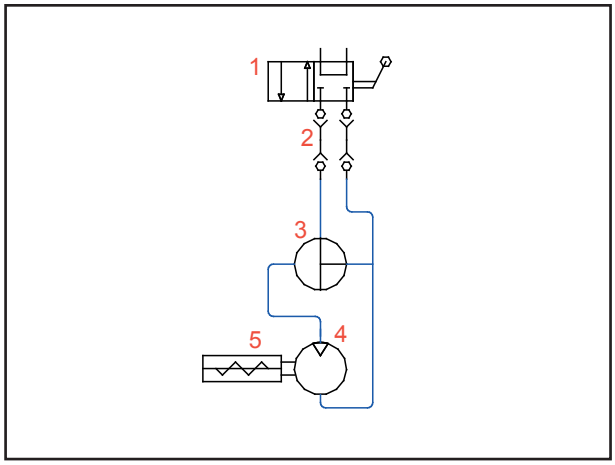
Track eradicator tines

Additional tines can also be mounted, if necessary.

Filling Auger

The filling device comprises one fixed and one hinged half of an auger.

This ensures quick and easy filling of the seed hopper. The device is powered by a hydraulic motor, which is directly connected to the tractor.



Hydr. filling auger

1. Control unit
2. Hydr. coupling
3. Three-way valve
4. Hydr. motor
5. Filling auger

Do not overrev the filling auger and let it run on max. 450 r/min with approx. 55 litres of oil.

Thoroughly clean the filling auger with pickle or fertiliser especially after it has been used. These agents are aggressive and cause corrosion.

Operation

Never reach into the rotating auger!
Always lock the over centre catch!
The auger has to be retracted and secured in the event of transportation on public roads.

Filling Auger

- Open the transport cover, unlock the flap and fold downwards and lock.
- Let the tractor run on increased motor rotation speed.
- Switch on hydraulic drive on the tractor.
- Switch on the three-way stopcock on the hydraulic motor.
- Fill the seed into the hopper; pay attention to foreign bodies!
- Let the auger continue to run slightly at the filling end and switch off the hydraulic drive with the three-way valve.
- Switch off the hydraulic drive on the tractor and switch off the motor.
- Set up a container under the flap section for residual material in the auger tube.
- Unlock the auger tube then fold upwards and secure. Then lock transport cover.

Service and maintenance

Follow the safety instructions regarding service and maintenance.

Your machine has been designed and assembled for maximum performance, economy and operator friendliness, under a wide range of operating conditions.

Your machine has been tested in the factory and by your authorised dealer prior to delivery to ensure that you receive it in optimum condition. In order to maintain trouble-free operation, it is important that the service and maintenance work is always carried out at the recommended intervals.

Cleaning

In order to maintain readiness for use and to achieve optimum performance, always carry out cleaning and servicing work at regular intervals.

☞ Do not clean electrical components, fan or hydraulic cylinders with a high-pressure cleaner or direct jet of water. The housing, screwed connections and bearings are not watertight.

- Clean the outside of the machine with water. Open the Venturi pipe under the metering unit so that water which has flowed in can drain away.
- Clean the metering roller in the metering unit with a brush.
- Purge the coulters, seed pipes, seed hopper, metering unit and fan with compressed air.
- If the machine has been operated with dry or liquid fertiliser, clean and flush the components thoroughly. Fertilisers are extremely aggressive and can cause corrosion.

Maintenance intervals

The maintenance intervals are determined by many different factors.
For instance, not only do the different operating conditions, climatic conditions, driving and operating speeds, dust and type of soil, the seed, fertiliser and dressing used, etc., have an effect on the maintenance intervals, but the quality of the lubricating agents and care products also determines when the next service is due.

The maintenance intervals stated can therefore only serve as a guide.
In case of deviations from the normal operating conditions, the intervals for the relevant maintenance work must be adapted to the conditions.

Preparation for storage

If the machine is to be out of operation for a longer period:

- Park the machine under a roof, if possible.
- Empty the seed hopper and fertiliser tank completely.
- Open the emptying outlet.
- Disconnect the electrical control devices and store them in a dry place.
- Protect the machine against rust. Use only easily biodegradable oils, e.g., rape seed oil, to spray the machine.
- Relieve the weight on the wheels.
- Protect the piston rods of the hydraulic cylinders against corrosion.

☞ Do not spray plastic and rubber parts with oil or corrosion protection agent. These parts could become brittle and break.

Lubricating the machine

The machine should be lubricated regularly and each time it is washed with high pressure.
This ensures readiness for use and reduces repair costs and downtimes.

Hygiene

Lubricants and mineral oil products are not harmful to health when used in accordance with the instructions.
However, longer contact with the skin, or the inhalation of vapours should be avoided.

Handling of lubricants

CAUTION:
Protect yourself against direct contact with oils by wearing gloves or applying barrier cream.
Wash any traces of oil off the skin thoroughly with warm water and soap. Do not clean your skin with benzine, diesel fuel, or other solvents.
Oil is toxic. If you have swallowed oil, consult a doctor immediately.

- Keep lubricants away from children.
- Never store lubricants in open or unlabelled containers.
- Avoid skin contact with oil-impregnated clothing. Change soiled clothing.
- Do not keep oil-impregnated cleaning cloths in pockets.
- Dispose of oil-impregnated footwear as special waste.
- Flush out any oil which has splashed into the eyes with clear water and consult a doctor if necessary.
- Soak up spilt oil with suitable material agents and dispose of it.
- Never extinguish oil fires with water, use only approved and suitable extinguishing agents and wear respiratory equipment.
- Oil-contaminated wastes and waste oil must be disposed of in accordance with the applicable regulations.

Service

We at HORSCH want you to be completely satisfied with your machine and with us.

If you have any problems, please contact your local dealer.
Our dealer's customer service personnel and the HORSCH customer service personnel are ready to assist you.

We ask you for your assistance in order be able to remedy technical deficiencies as quickly as possible.

Help our customer service personnel to avoid asking unnecessary questions by providing the following information.

- Customer number
- Name of customer service representative
- Name and address
- Type of machine and serial number
- Date purchased and hours of operation / area coverage
- Type of problem

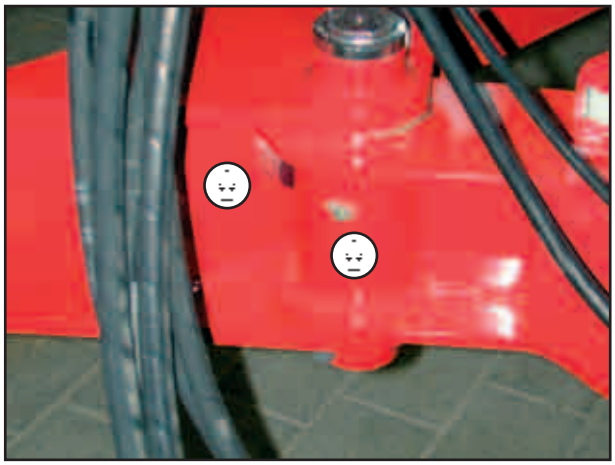
Maintenance schedule

Maintenance overview Pronto 7/8/9 DC - 8 DC PPF		
After the first few operating hours	Work instructions	Interval
All screwed and plug-in connections	Check for tightness and tighten screw connections	
in operation		
Fan		
Fan	Check for leaks, function, speed setting	in operation
Fan guard	Clean of dirt	as required
Impeller wheel	Check condition and fastening, clean off dirt	prior to use
	Tighten the drive flange (first time 50 hrs)	yearly
Hydr. connections and hoses	Check for leaks and chafing marks	prior to use
Free flow return on direct drive	Return flow pressure (max. 5 bar)	in operation
Fan with PTO-shaft driven pump	Check the oil level	prior to use
	Adjust flow control valve for fan speed	in operation
	Change oil and filter (return flow pressure higher than 2 bar)	4 years
Pneumatic system		
Fan, seed hoses and Venturi pipe	Check for leaks, kinks in hoses, chafing and blockage	prior to use
Distributor	Check for tightness, blockages	prior to use
Motorised valves	Check switching function	prior to use
Seed hose	Check flap position and tight fit of flap	prior to use
Metering unit		
Roller and sealing strip	Check condition, setting and state of wear	daily
Motor bearing and housing cover	Check for condition and smooth running	prior to use
Rape brush	Check condition and function - remove if not in use	prior to use
Large seeds	Fit a deflector plate	prior to use
Cultivation tools		
Coulters and press wheels	Check for condition, tightness and wear	prior to use
Scrapers on coulters and press wheels	Check condition, setting and state of wear	prior to use
Bout markers and PE marker	Check for condition, tight seat, function, smooth running	prior to use
Harrows, tines, etc.	Check for condition, tightness, setting and state of wear	prior to use
Screw adjustment	Check setting and light movement, lubricate screw	prior to use
Hydraulic system		
Hydraulic system and components	Check for leaks, kinks in hoses, chafing and operation	prior to use
Wing hydraulics	Check preloading pressure	prior to use
Packer		
Tyres	Check condition, tightness and air pressure (1,5 - 2,5) bar, in area of undercarriage min. 2,0 bar	prior to use
Packer shaft	Check condition, fastening and smooth running	prior to use

Maintenance overview Pronto 7/8/9 DC - 8 DC PPF		
Brake		
Brake	Check function	prior to use
Brake pads	Check for wear (depending on installation position use a mirror)	yearly
Brake lines and hoses	Check for damage, squashing and chafing	prior to use
Brake fluid	Change (DOT 4)	2 years
Air reservoir	Drain	daily
Hydraulic brake	Check breakaway function	prior to use
Machine	Work instructions	Interval
Road lighting equipment and warning plates	Check condition and function	prior to use
Warning and safety labels	Check that they are in place and legible	prior to use
at the end of the season		
Complete machine	Carry out servicing and cleaning work	
Electric control unit (DrillManager)	store in a dry place	
Complete machine	Spray with oil (cover rubber elements)	
Coulter disc oil bath bearing	Spray bearing with penetrating oil, e.g. WD 40	
Piston rods on hydraulic cylinders	Use penetrating oil or other means to protect piston rods against corrosion	
After 3 - 5 years		
Hydraulic lines, lifting hydraulics	Replace in acc. with machine directives, app. I EN 1533	

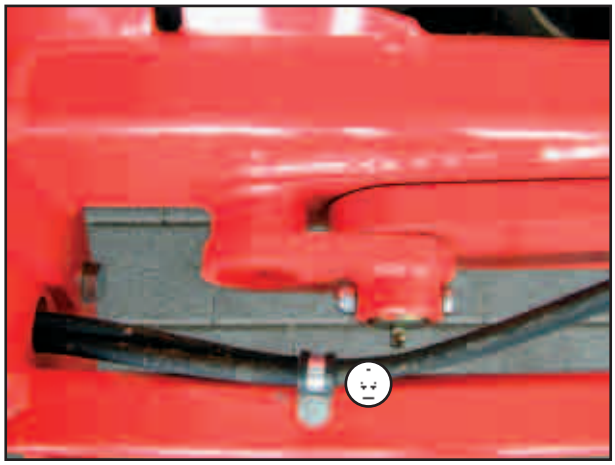
Overview of lubrication points Pronto 7/8/9 DC - 8 PPF		
Lubrication points	Number of	Interval
Drawbar on two-point swivel joint	2	daily
Bolts on wing frame on packer and cultivation tools	6	50 hours
Bearings of rear packer axle	12	daily
Mounting of bout markers	10	daily
Coulter disc bout marker	2	50 hours
Coulter pressure adjustment screw	6	50 hours
Middle packer pivot axis - 8 DC PPF	2	50 hours
Middle packer steering rod - 8 DC PPF	2	50 hours
Drawbar - 8 DC PPF	2	50 hours
Front packer side part - 8 DC PPF	4	50 hours
Optional equipment		
Front packer 7/8/9 DC	12	50 hours
Filling auger	1	50 hours
Coulter disc - pre-emergency markers	2	50 hours

Lubrication points

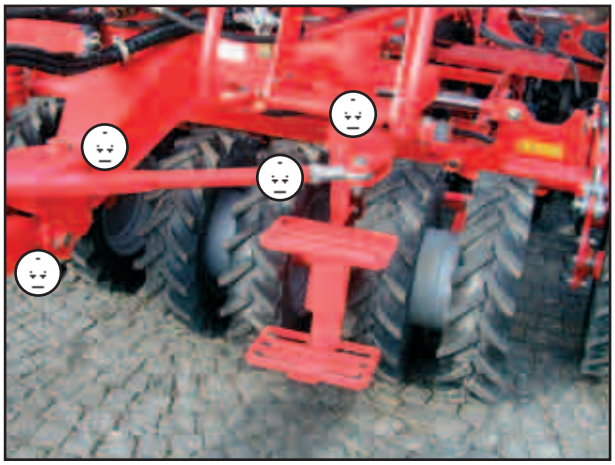


Pivot and tumbler bearings for drawbar

Packer shaft bearing

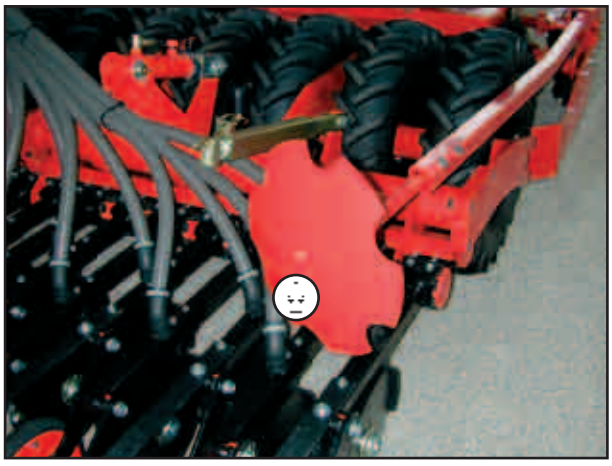


Wing frame bolts

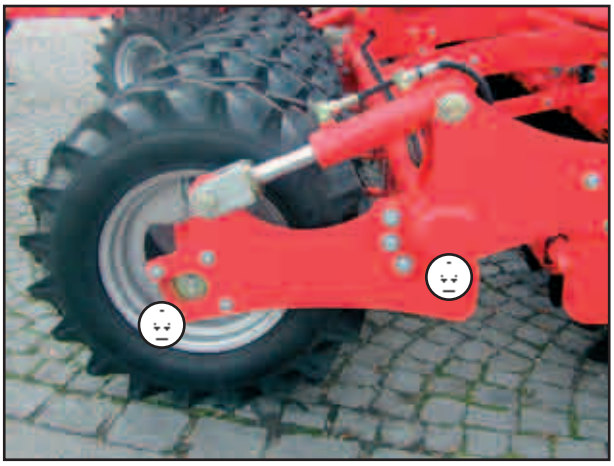


8 DC PPF - drawbar and middle packer

Mounting of bout markers



Lubricate the bout marker



Front packer

Filling auger

Bolt tightening torques - metric bolts

Bolt tightening torques - metric bolts in Nm							
Size ø mm	Pitch mm	Type of bolt - property classes					Wheel nuts/ Wheel bolts
		4.8	**5.8**	**8.8**	**10.9**	**12.9**	
3	0.50	0.9	1.1	1.8	2.6	3.0	
4	0.70	1.6	2.0	3.1	4.5	5.3	
5	0.80	3.2	4.0	6.1	8.9	10.4	
6	1.00	5.5	6.8	10.4	15.3	17.9	
7	1.00	9.3	11.5	17.2	25	30	
8	1.25	13.6	16.8	25	37	44	
8	1.00	14.5	18	27	40	47	
10	1.50	26.6	33	50	73	86	45
10	1.25	28	35	53	78	91	
12	1.75	46	56	86	127	148	
12	1.50						80
12	1.25	50	62	95	139	163	
14	2.00	73	90	137	201	235	
14	1.50	79	96	150	220	257	140
16	2.00	113	141	214	314	369	
16	1.50	121	150	229	336	393	220
18	2.50	157	194	306	435	509	
18	1.50	178	220	345	491	575	300
20	2.50	222	275	432	615	719	
20	1.50	248	307	482	687	804	400
22	2.50	305	376	502	843	987	
22	2.00						450
22	1.50	337	416	654	932	1090	500
24	3.00	383	474	744	1080	1240	
24	2.00	420	519	814	1160	1360	
24	1.50						550
27	3.00	568	703	100	1570	1840	
27	2.00	615	760	1200	1700	1990	
30	3.50	772	995	1500	2130	2500	
30	2.00	850	1060	1670	2370	2380	

Bolt tightening torques - imperial bolts

Bolt tightening torques - imperial bolts in Nm							
Bolt diameter		Strength 2		Strength 5		Strength 8	
		No marking on head		3 markings on head		6 markings on head	
Inch	mm	Coarse thread	Fine thread	Coarse thread	Fine thread	Coarse thread	Fine thread
1/4	6.4	5.6	6.3	8.6	9.8	12.2	13.5
5/16	7.9	10.8	12.2	17.6	19.0	24.4	27.1
3/8	9.5	20.3	23.0	31.2	35.2	44.7	50.2
7/16	11.1	33.9	36.6	50.2	55.6	70.5	78.6
1/2	12.7	47.5	54.2	77.3	86.8	108.5	122.0
9/16	14.3	67.8	81.3	108.5	122.0	156.0	176.3
5/8	15.9	95.0	108.5	149.1	169.5	216.0	244.0
3/4	19.1	169.5	189.8	271.1	298.3	380.0	427.0
7/8	22.2	176.3	196.6	433.9	474.5	610.0	678.0
1	25.4	257.6	278.0	650.8	718.6	915.2	1017
1 1/8	28.6	359.3	406.8	813.5	908.4	1302	1458
1 1/4	31.8	508.5	562.7	1139	1261	1844	2034
1 3/8	34.9	664.4	759.3	1491	1695	2414	2753
1 1/2	38.1	881.3	989.8	1966	2237	3128	3620