

Agri-Spread Spreader Controller

Operation

RDS Part No.: Document Issue: Software Issue: S/DC/500-10-XXX 1.0: 25/03/14 PS701-001rev06

Electromagnetic Compatibility (EMC)



This product complies with Council Directive 2004/108/EEC when installed and used in accordance with the relevant instructions.

IMPORTANT, READ THIS BEFORE USING THE PS8000i

The *PS8000i* installation is a part of the Precision Farming System ("the System"). It is very important that you follow the described calibration procedures before operating the *PS8000i* instrument. Calibration and operation of the *PS8000i* must be in accordance with these instructions. Use of the System is subject to the following disclaimer;

- So far as is legally permissible RDS Technology ("RDS"), or its distributors, shall not be liable, whatever the cause, for any increased costs, loss of profits, business, contracts, income, or anticipate savings or for any special, indirect or inconsequential damage whatsover (death or personal injury excluded).
- The capabilities and functions of the Precision Farming System ("the System") are limited as set out in the specification of the System, details of which are contained in the Help files and product literature and which must be read before using the System.
- 3. Without prejudice to the generality of the above it is hereby acknowledged that the System is not designed nor intended to a) originate variable treatment plans or b) achieve or avoid any application rate outside application parameters, which in both cases shall be the responsibility of the operator.
- The standard terms and conditions of RDS (except clause 7), a copy of which is available on request, apply to the supply and operation of this System.

Service and Technical Support

PLEASE CONTACT YOUR NEAREST RDS DISTRIBUTOR If unknown then contact RDS Technology Ltd for further information.

Tel: +44 (0) 1453 733300
Fax: +44 (0) 1453 733311
e-mail: info@rdstec.com
web: www.rdstec.com

Our policy is one of continuous improvement and the information in this document is subject to change without notice. Check that the software reference matches that displayed by the instrument.

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AGRISPREAD - SPREADER CONTROLLER

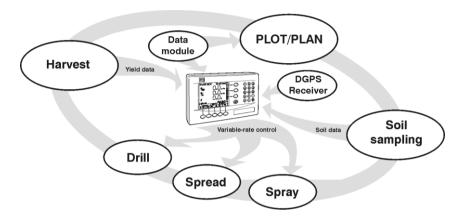
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1. Overview

1.1 The RDS Precision Farming System

The RDS *PS8000i* head unit is a fully DGPS compatible, multi-function cab computer for a wide range of applications and is the central component of RDS Precision Farming hardware (figure 1).

Figure 1 The Pro-Series is the central component of RDS Precision Farming hardware



1.2 Installation and Inter-operability with other systems

An RDS control system comprises several component kits. This modular approach means that a suitable control system can be specified for a very wide range of implements. When re-configured with the appropriate control software, the head unit can be simply transferred between different implements.

The *PS8000i* can also output variable-rate instructions to other control systems including Vicon, Bogballe and Amatron systems, as well as acting on variable-rate instructions received from Fieldstar, Soyl Opti, Agrocom ACT, JD Greenstar, Raven and Hydro-N Sensor systems.

1.3 Control Software

Your PS8000i instrument is pre-loaded with "Apollo Fertiliser" spreader control software only.

With the purchase of a "secondary software module" - an electronic chip loaded into the back of the instrument, the Pro-Series can be instantly switched to perform another function e.g. from a Spreader Controller to a Data Logger for route navigation and soil mapping tasks. This is done from "Instrument Select" in the "USER OPTIONS" menu.

There are software modules for yield monitoring/mapping, route/soil mapping, variable-rate spreader control, variable-rate disc spreader control, and variable-rate seed drilling.

For information on connecting and configuring RDS PF *hardware* e.g. the Secondary Software Module, DGPS Receiver, cables etc, and data transfer to your PC, please refer to the "Data Logging and Transfer" manual.

1.4 Control System

Closed loop control

The Apollo Fertiliser PS8000i is a single channel controller, operating a control system comprising of a sensor to monitor the floor speed and a control valve to regulate the motor speed to the floor to enable closed loop control.

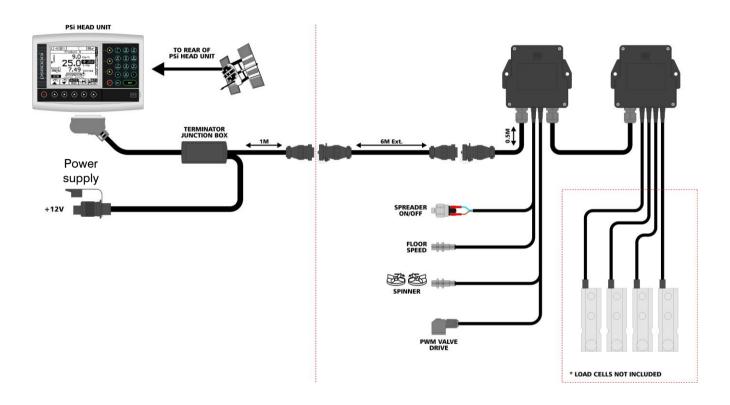
Proportional control

Also, forward speed measurement and cut out (in work or out of work) sensing enables full *proportional* control, i.e. to maintain a set application rate irrespective of forward speed (within limits).

The forward speed sensor may be fitted either to the tractor/self-propelled spreader or a trailed spreader. It may be either a simple magnetic sensor measuring wheel or propshaft rotation, or a radar sensor. Speed measurement via a GPS VTG message is also an option.

The cut out status is detected via a switch in the cab or by a hydraulic switch on the spreader.

Figure 2 The 'Apollo FERTILISER' control system



System configuration

The *PS8000i* can be configured to accurately control any spreader, via a range of settings made in the calibration menu on initial installation. These settings are normally made by a technician, and should not need to be adjusted during normal operation. They are described in the separate Calibration manual supplied.

During normal operation, the operator needs only to set/calibrate the system for the product being applied. The operator can also 'fine-tune' the product calibration to account for variations in field conditions. These calibration procedures are described in this manual.

1.5 Spreader Control Modes

1.5.1 Automatic Control Mode

This gives fully automatic rate control. Floor Speed is automatically regulated as forward speed varies, to ensure that the actual application rate constantly matches a preset target rate. The application rate can be manually nudged up and down from the target rate as required for spot application in specific areas. Programmable alarms warn of high and low flow rates.

Field data ("job summaries") can be logged and are stored in the instrument memory. Up to 75 summaries can be stored. If you have a GPS receiver connected, as well as creating a job summary, you can also log the vehicle route and application data to a "dynamic log" file on the SD memory card. The job summary data is also appended to this file, which can be viewed using PC-based Precision Farming software programs.

1.5.2 Manual Control Mode

This gives simple manual control of application rate, the floor speed can be manually controlled using an up or down arrow button. Field data ("job summaries") can be logged and are stored in the instrument memory. Up to 75 summaries can be stored.

1.5.3 VRT (Variable-rate treatment) Control Mode

This enables the system to be controlled via treatment instructions prepared using PC-based Precision Farming software programs, in conjunction with DGPS position data. To enable fully automatic variable-rate treatment for Precision Farming applications, the *PS8000i* requires a suitable DGPS receiver and suitably formatted SD memory, card to implement treatment plans generated using PC-based Precision Farming software programs.

A work record file is automatically created on the SD card to log data confirming the actual treatment. The job summary data is also appended to this file, which can be viewed using PC-based Precision Farming software programs. Please refer to the "Data Logging and Transfer" manual Pt No. S/DC/500-10-573 for details of DGPS installation, setup and data transfer with the PC.

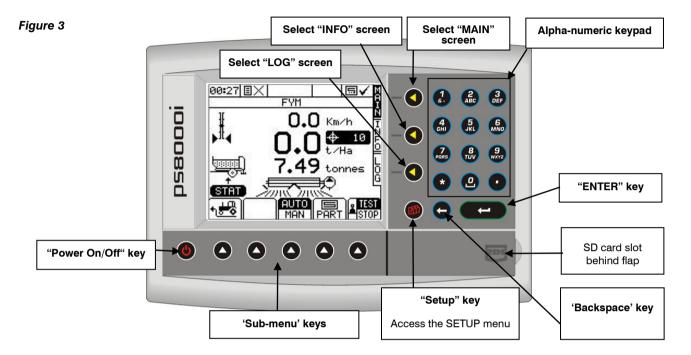
1.6 The Head Unit Keypad

1.6.1 Menu keys

All instrument functions are accessed via the menu keys adjacent to the LCD display.

The four menu keys to the right of the screen (figure 3) access the primary screen pages (those viewed during normal operation). There are two primary screens, MAIN and INFO for normal operating functions, and a SETUP screen for calibration functions.

The five sub-menu keys below the screen control the various display functions and settings for each of the primary screen pages. Text or icons are displayed adjacent to the sub-menu keys to denote their function.



1.6.2 Startup

Press the key. The startup screen, which shows the software version, will display for about 8 seconds then the MAIN screen is displayed.

1.6.3 Data Entry

Alpha-numeric values are entered via the right-hand keypad. You must press the key from 2 to 5 times to select the required letter. (Some keys have additional special characters not shown on the key legend).

The *key will either toggle between lower and upper case characters, or when preceeding a numerical entry, sets a MINUS value.

The (0) key will toggle between 0 and a SPACE.

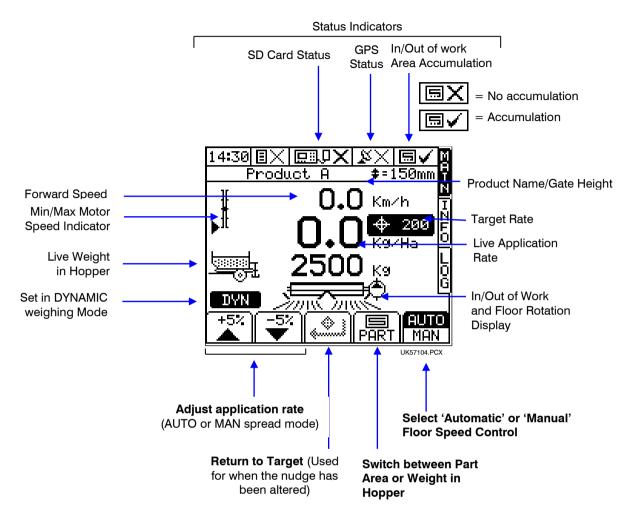
The 👉 key will BACKSPACE the screen cursor if you need to re-enter a character.

The (key is the ENTER key and is normally pressed to confirm the data entry into memory.

1.7 The MAIN screen page

The instrument will always default to the MAIN screen on startup. The MAIN screen displays the following information.

Figure 4



1.7.1 Target Rate Indicator

The target rate is displayed by the graphic in 'AUTO' spread mode. If the application rate has been adjusted above or below the target rate, then the target rate will be flashing.

There is no target rate icon in 'MAN' spread mode.

1.7.2 Min/Max Motor Speed Indicator

The Spread performance Indicator shows the motor speed within the minimum and maximum parameters set for the motor speed range. The "Target Speed" is at the middle of the speed range.

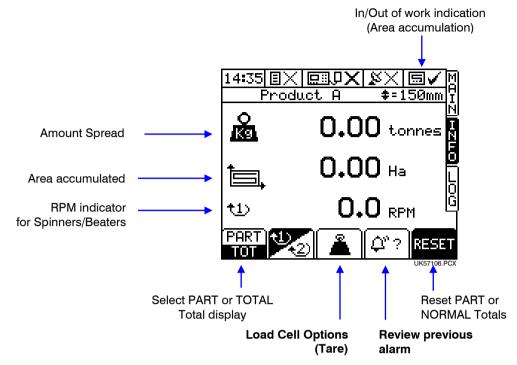


If the target motor speed is output of this range then the system will alarm that the forward speed is either too high or too low.

1.8 The INFO screen page

Additional work measurement functions are displayed on this page.

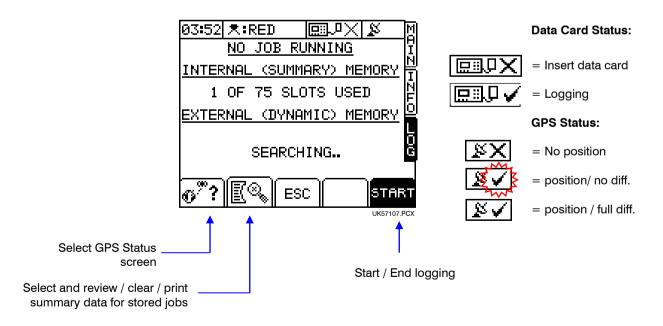
Figure 6 The INFO screen



1.9 The LOG screen page

This page controls data logging (Field Summary data), and P.F. functions, and data transfer (e.g. printing a job summary).

Figure 7 The LOG screen

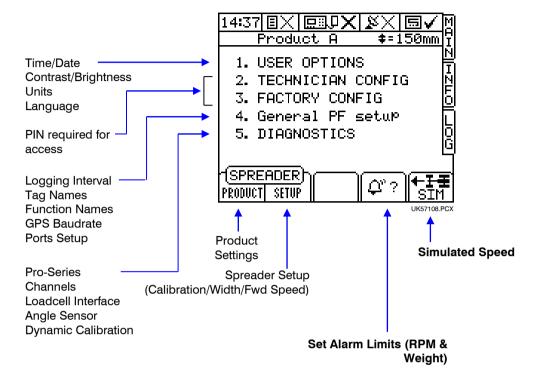


Please refer to the "Data Logging and Transfer" manual for further information.

1.10 The SETUP screen page

The key selects the SETUP menu for calibration factors and calibration settings specific to particular products being spread and nozzle types fitted.

Figure 8 The SETUP screen



You should not need to enter menus 1, 2 and 3 in normal use. These settings are generally made only on initial installation. Menus 2 and 3 can be protected with a personalised PIN number to prevent unauthorized access. Calibration settings that need to be changed during normal use are shown on figure 8.

1.11 **Units**

Information can be displayed in Metric or Imperial units by selecting the desired option via the SETUP menu.

	Units										
Function	Metric	US Imperial									
Forward Speed	km/hr	miles/h									
A malination water	kg/ha	lbs/acre									
Application rate	tonnes/ha	tons/acre									
Part/Total Area	hectares	Acres									
Tank volume/ Part/Total volume applied	Tonnes	lbs									

2. Operation

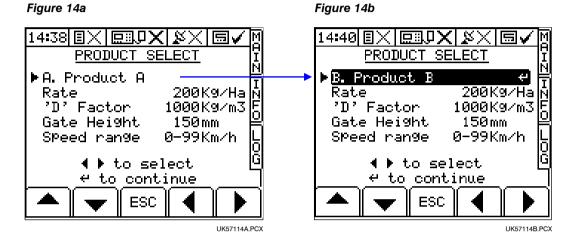
2.1 Product presets

You can select any one of up to eight different product presets via the 'PRODUCT SELECTION' screen. For each preset, you can programme the product name and individual settings, or perform/adjust the volume calibration as follows,

to

2.1.1 Selecting a product

- 1. Press the (fig. 8). key and then press the PRODUCT key (fig. 8).
- Select the product using the arrow keys (default names are 'Product A' to 'Product H') and press confirm.



3. Press the MAIN key to return to the "MAIN" screen page.

2.1.2 Editing a product name

The 8 default product descriptions are 'Product A' to 'Product H'.

From the 'USER OPTIONS' menu, select 'CUSTOMISE' and then select 'EDIT PRODUCT NAMES'.

Select the product name using the arrow keys, and edit the name using the alpha-numeric keypad. Pressing the * key will switch between upper and lower case characters.

2.1.3 Programming a product 'D' factor

The D factor is the calibration factor that is altered while the spreader is dispensing product. It stands for the product Density, the weight of 1m³ of product in Kg. While spreading, this number will be automatically updated to suit the current product, the system will then automatically compensate in order to maintain the correct application rate and spread performance.

NOTE: In normal circumstances the D factor should be anywhere between 450 kg/m3 and 1500 kg/m3. As the system will automatically calculate this number based on the load cell readings it is usually not necessary to modify it unless starting to spread a new unknown product.

2.1.4 Gate Height

The gate height for the selected product is displayed here.

Note: When a new product is selected on the Product Select screen the instrument will prompt the operator to re-confirm the spreader gate height.

2.1.5 Speed Range

The operating speed range for the selected product is displayed here. This is defined by the characteristics of the minimum and maximum floor speed, gate height and product calibration factor. The auto calibration will attempt to calculate a gate height that allows the target forward speed to be in the middle of this range.

2.2 Automatic Rate Control



Select 'AUTO' from the 'MAIN' screen. The flow rate will be automatically adjusted as forward speed and/or applied width varies, to ensure that the application rate constantly matches the preset target rate.

2.2.1 Setting the Target Rate

From the "MAIN" screen simply key-in the desired target rate and press



2.2.2 Overriding the Target Rate

1. Press +5% -5% to override the target rate.

The preset target rate can be overridden in $\pm 5\%$ steps while spreading, e.g. boundaries or other crop conditions.

While overridden, the target rate indicator # 100 will flash.

2. Press to return to the target rate.

The instrument will automatically alarm if the application rate cannot be maintained within a specified % of the target rate (the % band is programmed via the 'Alarm Setup' screen in the Setup MENU).

When the alarm threshold is reached, the instrument beeps, and an alarm screen displays the message "UNDER APPLICATION" (e.g. if the forward speed is too high), or "OVER APPLICATION" (e.g. if the forward speed is too low).

Pressing any of the lower 'OK' keys will cancel the alarm screen and return to the 'MAIN' operating screen.

NOTE: If you continue spreading at the same speed, the instrument will not automatically re-alarm. It will however, realarm if the spreader is switched off and back on again.

2.3 Manual Rate Control



You do not normally need to select this mode, however in the event you experience a problem with automatic control (if for example the forward speed sensor had stopped working), you can still control the application rate manually.

Select 'MAN' from the 'MAIN' screen. To maintain the required application rate, you must maintain a constant forward speed. You can also log and store field data ("job summaries") as you go, and print them out or download them to a PC or printer when convenient.

Press to adjust the application rate.

NOTE: The speed range indicator functions as normal, however there is no forward speed or rate alarm in manual mode.

2.4 Beginning Work

Ensure that the instrument is on the main screen, and that AUTO mode is selected. Turn on tractor hydraulics and engage the spinner drive. Turn on the CUTOUT SWITCH (red button) located by the instrument. Start the spreader moving and the belt will begin to turn. The MAIN screen will now display an instantaneous application rate, and area accumulation will begin.

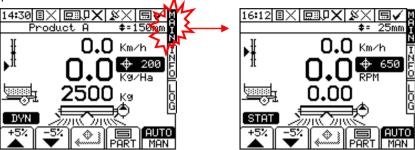
The floor speed will now be related to forward speed, if the forward speed doubles then so will the floor speed.

= Out of Work (No accumulation)
= In Work (Accumulation)

To turn the spreader off, turn off the cutout switch. The floor belt will stop turning and the area accumulation will stop.

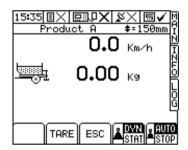
2.5 Setting Spinner Speed

The Spinner Speed can be controlled by the system. From the MAIN Page, press the MAIN button and the screen will change to RPM Control. Using the keypad in the same way as setting the application rate, the spinner speed can be entered.



2.6 Tare Load Cells

As product and debris builds up on the spreader, it is important to tare or remove this debris to ensure that what is loaded in the spreader hopper each time is an accurate reading. This can be achieved by entering the INFO page and selecting the Weighing icon in the centre of the page.



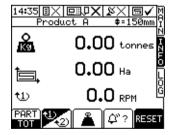
Using the key, this will set the live hopper weight back to 0kg. It is important however not to do this while there is still product in the main body of the spreader, only for discounting product that is stuck to the chassis or the mud flaps.

2.7 Part / Total Accumulation and RPM display

TARE

You can record the area and volume spread for a particular job using the "PART" Total function. In addition the area and volume will be recorded to the "TOTAL" memory register.

Select the "INFO" screen to display the accumulated totals and the RPM display.



TOT

Select 'PART' to display the Part Area and Part Volume accumulation,



Select "TOTAL" to display the Total Area and Total Volume accumulation.

2.7.1 Reset Totals

Select the "PART" or "TOTAL" display.

Press the **RESET** key.

Press (\longleftarrow) to zero the totals or press **ESC** to return to the "INFO" screen.

2.8 Alarms

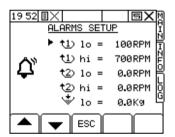
There are a number of alarms, most being programmable by the operator. Note that setting alarm limits to zero will disable that alarm function.

Press any of the lower 'OK' keys to cancel an alarm and return to the MAIN screen.

Application Rate	'UNDER APPLICATION' 'OVER APPLICATION'	This alarm is based on % variance from the target rate. It therefore alerts the operator to speed up or slow down until the alarm condition is cancelled.
		The limits can be set by the operator on the 'Alarms Setup' screen in the SETUP menu. The default limits are ±20% of the target rate.
	if set (except for RPM alarm). The I	but would normally be overridden by the imits must be set in respect of flow sensor capacity
Forward Speed	'FORWARD SPEED LOW'	The limits can be set by the operator on the
	'FORWARD SPEED HIGH'	'Alarms Setup' screen in the SETUP menu.
RPM	'RPM LOW'	The limits can be set by the operator on the 'RPM Setup' screen in the SETUP menu.
	'RPM HIGH'	III III Octup Solocii iii tile OLTOT Tiletiu.

2.8.1 Setting the Alarm thresholds

- 1. Press (1) to select the "SETUP" menu.
- 2. Select the "ALARMS SETUP" button at the base of the screen



3. Select the appropriate alarm threshold using the arrow keys, and enter the value via the numeric keypad.

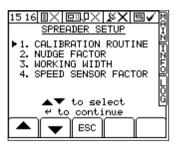
3. **Calibration**

Product Calibration 3.1

Each product has its own calibration memory, so select the product that you wish to spread initially and then if it is the first time that this product is being spread, follow the calibration routine as per below.

3.1.1 Spreader Setup Page

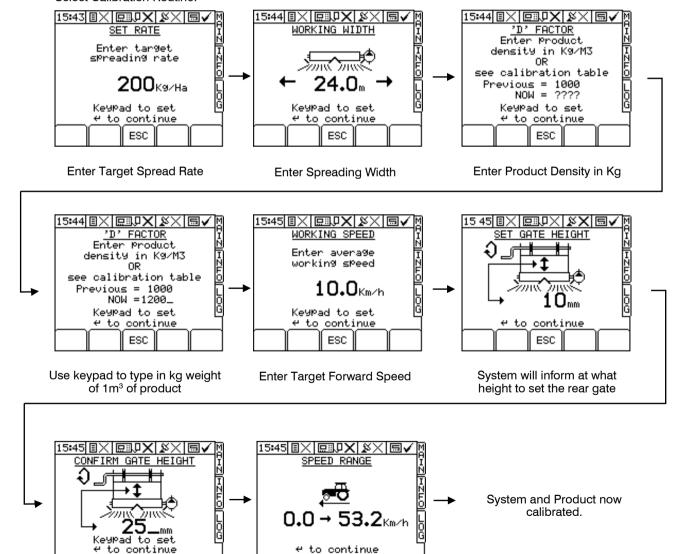
(SPREADER) key and then press the SETUP 1. Press the (的) key (fig. 8).



3.2 **Calibration Routine**

Before spreading a product for the first time you need to establish an initial calibration factor for that product. Using the calibration procedure below the instrument will calculate the required gate height to achieve the target application rate given the target forward speed and product density.

Select Calibration Routine:



ESC

System will then inform operator of the forward speed range

ESC

3.3 Nudge Factor

If the actual amount dispensed over the course of a hopper load is different from the theoretical amount dispensed (calculated by the instrument - displayed on INFO screen) then it is possible to nudge the calibration factor. The nudge procedure will adjust the 'D' factor by a percentage based on the variation between the actual amount and theoretical amount of product dispensed.

Example: The target application rate was 50kg/ha and over 1 ha the spread dispensed 55 kg. the product 'D' factor was 1200kg/m3.

Enter the target weight in kg: 50 and press enter Enter the actual weight in kg: 55 and press enter

The instrument then displays

OLD CAL factor: 1200 NEW CAL factor: 1320

Error: 10%

To accept the new CAL factor press enter.

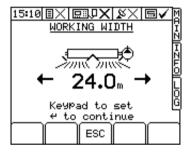
3.4 Working Width

To set the working width of the system to ensure that the application rate and the accumulated area is correct -

Press the (1911) key and then press the

Select 1. Working Width from the menu and confirm using the





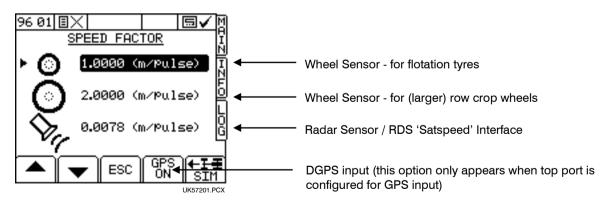
Using the number keypad, the width can be programmed and then confirmed using the



kov

3.5 Forward Speed Sensor

3.5.1 Select Sensor Option



2. Move the arrow cursor to select the option and press (-) to confirm.

3.5.2 Wheel sensor calibration – 'Autocal'

If the Spreader has a standard wheel sensor and magnets installed, you can programme the instrument with two speed sensor factors - for flotation tyres and for row crop wheels. Remember to select the appropriate factor after changing wheels.

The Speed Sensor Factor ("SSF") is the distance travelled forward in the time between two pulses from the forward speed sensor. This could be calculated based on the nominal tyre diameter or rolling distance and then entered manually (ref. section 1.1.3), however this does not take into account wheel slip, compaction, or tyre deformation under practical operating conditions.

The best method is to do an "Auto Cal".

Mark a set distance of 100 metres (or 100 yards depending on the units set on the instrument) by suitable means. The surface should be representative of the average field conditions (i.e. not a paved surface). Position the vehicle with the first marker level with a suitable reference point on the vehicle.

With the appropriation option highlighted on the "SPEED FACTOR" page, press ENTER, then select "Auto Cal". Press and then follow the screen instructions.

Stop the vehicle when the second marker lines up with the pre-determined reference point on the vehicle and press to end the "Auto Cal" procedure. The Speed Sensor Factor is automatically re-calculated and stored in memory.

NOTE: If you overrun the marker, do not simply reverse - repeat the "Auto Cal" procedure from the beginning.

3.5.3 Wheel sensor calibration - manually calculating the Forward Speed Factor

The smaller the speed sensor factor the better the speed update will be. Aim for a factor less than 2.000 m (78.78").

NOTE: Perform the following calculations in <u>inches</u> or <u>metres</u> depending on whether the instrument is set for Imperial or Metric units. If you calculate the factor using any other unit of measurement e.g. feet or centimetres, the forward speed display will be incorrect.

(i) <u>To Calculate</u>, Manual Speed Sensor Factor = <u>Circumference Of Wheel</u>
Number of Magnets

Example Calculation

A vehicle is fitted with a 5 magnets on the wheel hub, the diameter of the tyre is 1.36 metres and therefore the circumference of the tyre is 4.272m

- 1. Convert the diameter to circumference :- $1.36 \times 3.142 = 4.272$
- 2. Divide by 5 (magnet pulses) to give the calibration factor:- 4.272 / 5 = 0.854
- 3. Programme the factor '0.854' as the speed sensor factor.

3.5.4 Radar Sensor

If an RDS Radar sensor is installed at the correct angle of $37\pm1^{\circ}$, the Speed Sensor Factor is **0.0078** m (or **0.312** inches). It is still recommended to do an 'Autocal' since the sensor may not be mounted exactly at 37° .

3.5.5 RDS 'Satspeed' Interface / NMEA VTG Input

No calibration is necessary.

4. Dynamic & Static Calibration

4.1 Dynamic Calibrations

The Apollo can display actual hopper contents as measured by a series of load cells fitted to the spreader. This weight reading will be a live display on the MAIN page. Weight applied, as displayed on the INFO page, will remain as a theoretical weight calculated from the floor belt speed and the material CAL factor.

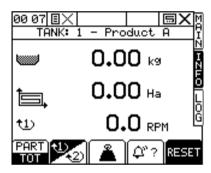
The change in actual weight can be used to retrospectively correct the calibration factor using either a static or dynamic calibration routine.

The Apollo receives weight information via a Loadcell Interface located on the spreader. The Loadcell Interface sends an electrical signal to the instrument via a CAN Bus which is then converted into a weight reading. The Loadcell Interface also includes a dual axis inclinometer, which is used to record the angle of the spreader relative to the ground.

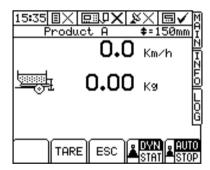
When the spreader is traveling in the field the instrument applies a software filter to remove fluctuations in the weight reading. The filter is inactive when the machine is stationary.

4.2 Operation

The instrument MAIN screen will display a weight reading as below.



Press the weight button to display the weighing options page.



The weighing option screen displays the current forward speed and current weight in the spreader.

<u>TARE -</u> With the hopper completely empty and the machine stationary on level ground, use the TARE button to set the displayed weight to zero.

<u>DYN/STAT</u> – The Pro-Series will use the loadcells to adjust the calibration of the system. This can be done in STATIC or DYNAMIC mode but the system should normally be left in DYN.

The static calibration can be carried in two ways. The first method involves spreader the product out over a required distance, the vehicle spreader must be stationary at the start and end of the test. The second method involves setting a simulated forward speed and then unloading the product back onto the fertiliser pile.

Using the dynamic procedure the instrument will take weight reading over a given time period whilst he machine is moving in the paddock.

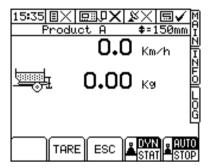
Static Calibration is more accurate, however it requires operator intervention. The initial calibration of a new product or different door opening must be carried out in Static mode.

Dynamic Calibration is continuous and requires no operator input. If the spreader is working over very rough terrain, then dynamic calibration should not be used. In normal field conditions, the software filter will reduce the effects of bouncing in the field.

4.3 Dynamic Weighing

When dynamic calibration is selected on the weighing option page, the instrument will automatically recalibrate the CAL factor with operator intervention.

Choose DYN and AUTO on the weighing options page. The following screen is displayed.



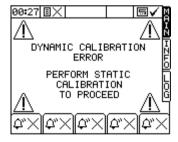
Now start work. To stop the Dynamic Calibration at anytime press STOP.

The dynamic test will be aborted when the spreader is switched off at the headlands and to avoid weighing errors when turning. It will be restarted some seconds are the spreader has been switched again.

A dynamic test will not correct the calibration factor if the test has run for too small a quantity of material, too short a time period, if excessive weight fluctuation is recorded of it the suggested correction is greater than certain difference. For more information see LOADCELL CORRECTION.

Dynamic calibration is not effected by re-loading. When the instrument is switched off, the dynamic calibration is also turned off and must be re-enabled next time the instrument is turned on.

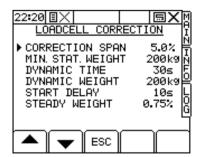
If there is an error between the newly calculated CAL factor and the old CAL factor that is greater than a set limit, the instrument will display the following alarm.



It is recommended to run a static test if the Dynamic Calibration error appears.

4.4 Loadcell Correction

The loadcell correction page is accessed from the Technical Config screen.



On this screen the technician can configure the operation of the load cells for calibration purposes.

CORRECTION SPAN – dynamic calibration will not change the calibration factor if the error is greater than this percentage set.

MINIMUM STATIC WEIGHT – the distance required for the static calibration is calculated based on this minimum weight change required (both actual and theoretical).

DYNAMIC TIME – this is the period for each dynamic test. The calibration factor is updated every 30 seconds.

DYNAMIC WEIGHT – the dynamic test will not end until at least this weight has been spread (actual and theoretical) or until the time period has elapsed.

START DELAY – this is the time delay between starting a new bout and the dynamic test starting. This allows for the spreader to reach a normal, smooth operating speed.

STEADY WEIGHT – if a weight fluctuation is seen above this level, the weight reading is considered 'unstable' and a dynamic test will be aborted.

Issue 1.00: 11/12/13

Original issue

Gate height Settings for Agrispread Apollo Computer

Gate heights for EFC09230 Valve set up

Gate heights given are a guideline for initial set up. Use this as a guideline for initial startup. As shown below, with the amount of variables involved it is necessary to test your settings to insure the product is being spread to the correct rate and to the correct width. Oil temperatures should be monitored to insure the tractor pump is operating to normal working conditions.

See Page 9 of operators manual to see Forward speed indicator. This shows min and max forward speed indicator in relation to your valve set up, door height set and oil flow. Good indicator of weather the door height needs resetting in relation to other factors.

By reducing any items from C through G, the oil flow required is reduced

General Notes:

- 1. Based on tractor oil flow of 100 litres per minute
- 2. Door heights are a combination of
 - A. Oil flow on tractor available
 - B. Oil pressure on pump
 - C. Spinner speed required
 - D. Density of material being spread
 - E. Forward speed
 - F. Spread width
 - G. Rate being spread
- 3. Based on Dual Brand Valve hydraulic set up. (EFC09230)
- 4. Spinner Motor: 80cc 2K (104-1503-006)
- 5. Floor Motor: 130cc 2k (104-3265-006)
- 6. If oil flow on tractor is less than 100 litres per minute increase door height until rate is obtainable with spinner speed and forward speed
- 7. If there is more than 100 litres of oil available then the door heights can be reduced if required. This needs to be checked on product being spread. Oil flow as shown above is only one factor.

Density 700 kg m³

			_								-						
Rate	25kg per hectar			4.5	Rate	25k	g per hect			4=	_	Rate	251	g per hect			4.5
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15	_	forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24	_	spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	700	700	700	700	density of material kg m3		700	700	700	700	d	lensity of material kg m3		700	700	700	700
door height (mm)	30	25	20	15	door height (mm)		12	10	8	6	L	door height (mm)		4	4	4	4
Rate	50kg per hectai				Rate	EOL	g per hect	tare			+	Rate	FOI	g per hect	250		
forward speed (kph)	30	25	20	15	forward speed (kph)	SUK	30 30	25	20	15	-	forward speed (kph)	501	30	25	20	15
	36	36	36	36			24	25	24	24	_			12	12	12	12
spread width (meters)	970	970	970	970	spread width (meters)		850	850	850	850	_	spread width (meters)		700	700	700	700
spinner revs density of material kg m3	700	700	700	700	spinner revs density of material kg m3		700	700	700	700	- 4	spinner revs density of material kg m3		700	700	700	700
door height (mm)	60	50	40	30	door height (mm)		24	20	16	12	u	door height (mm)		8	8	700	6
door neight (min)	- 00	30	40	30	door neight (min)		24	20	10	12	_	door neight (min)		0	0	/	U
Rate	100kg per hecta	re			Rate	100	kg per hec	tare				Rate	100	kg per hec	tare		
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850	_	spinner revs		700	700	700	700
density of material kg m3	700	700	700	700	density of material kg m3		700	700	700	700	d	lensity of material kg m3		700	700	700	700
door height (mm)	114	95	76	57	door height (mm)		45.6	38	30.4	22.8	Ĕ	door height (mm)		15.2	15.2	13.3	11.4
Rate	150kg per hecta	re			Rate	150	kg per hec	tare				Rate	150	kg per hec	tare		
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	700	700	700	700	density of material kg m3		700	700	700	700	d	lensity of material kg m3		700	700	700	700
door height (mm)	171	142.5	114	85.5	door height (mm)		68.4	57	45.6	34.2		door height (mm)		22.8	22.8	19.95	17.1
Rate	200kg per hecta	re			Rate	200	kg per hec	tare				Rate	200	kg per hec	tare		
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	700	700	700	700	density of material kg m3		700	700	700	700	d	lensity of material kg m3		700	700	700	700
door height (mm)	\	190	152	114	door height (mm)		91.2	76	60.8	45.6		door height (mm)		30.4	30.4	26.6	22.8
Rate	250kg per hecta	re			Rate	250	kg per hec	tare				Rate	250	kg per hec	tare		
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	700	700	700	700	density of material kg m3		700	700	700	700	d	lensity of material kg m3		700	700	700	700
door height (mm)	\	\	190	143	door height (mm)		114	95	76	57		door height (mm)		38	38	33.25	28.5
Rate	300kg per hecta		 	L	Rate	300	01:					Rate	300	01:		L	
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36 970	36 970	36 970	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970		_	_	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	700	700	700	700 171	density of material kg m3		700 171	700 142.5	700 114	700 85.5	а	lensity of material kg m3		700 57	700 57	700 49.875	700 42.75
door height (mm)			228	1/1	door height (mm)		1/1	142.5	114	85.5		door height (mm)		5/	5/	49.875	42.75
											+						
Rate	350kg per hecta	re			Rate	350	kg per hec	tare			\top	Rate	350	kg per hec	tare		
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15	T	forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	850		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850	T	spinner revs		700	700	700	700
											-						
density of material kg m3	700	700	700	700	density of material kg m3		700	700	700	700	d	lensity of material kg m3		700	700	700	700
density of material kg m3 door height (mm)	700	700	700	700	density of material kg m3 door height (mm)		700	700 190	700 152	700 114	d	door height (mm)		700 76	700 76	700 66.5	700 57

Density 1000 kg m3

				_							-						
Rate	25kg per hecta				Rate	25k	g per hect					Rate	25	kg per hect			
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	1000	1000	1000	1000	density of material kg m3		1000	1000	1000	1000		density of material kg m3		1000	1000	1000	1000
door height (mm)	20	17	14	10	door height (mm)		8	6	5	4		door height (mm)		4	4	4	4
Rate	50kg per hecta	re			Rate	50k	g per hect	are				Rate	501	kg per hect	are		
forward speed (kph)	30	25	20	15	forward speed (kph)	50.	30	25	20	15		forward speed (kph)	50.	30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
		970	970	970							_						
spinner revs	970				spinner revs		850	850	850	850	_	spinner revs		700	700	700	700
density of material kg m3	1000	1000	1000	1000	density of material kg m3		1000	1000	1000	1000		density of material kg m3		1000	1000	1000	1000
door height (mm)	40	34	28	20	door height (mm)		16	12	10	8		door height (mm)		8	8	8	8
Rate	100kg per hecta	ire			Rate	100	kg per hec	tare				Rate	100	kg per hec	tare		
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	1000	1000	1000	1000	density of material kg m3		1000	1000	1000	1000		density of material kg m3		1000	1000	1000	1000
door height (mm)	48	80	32	24	door height (mm)		28	23	19	14		door height (mm)		14	12	10	7
door neight (min)		- 00	32		door neight (min)		20	23	13	27		door neight (min)		2.7	-12	10	
n	4501			\vdash	B :	4=-				\vdash	-	D.:		lana i			
Rate	150kg per hecta			L.	Rate	150	01.					Rate	150	01:-		L	
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	1000	1000	1000	1000	density of material kg m3		1000	1000	1000	1000		density of material kg m3		1000	1000	1000	1000
door height (mm)	72	120	48	36	door height (mm)		42	34.5	28.5	21		door height (mm)		21	18	15	10.5
Rate	200kg per hecta	re			Rate	200	kg per hec	tare				Rate	200	kg per hec	tare		
forward speed (kph)	30	25	20	15	forward speed (kph)	200	30	25	20	15		forward speed (kph)	200	30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24	_	spread width (meters)		12	12	12	12
											_						
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	1000	1000	1000	1000	density of material kg m3		1000	1000	1000	1000		density of material kg m3		1000	1000	1000	1000
door height (mm)	\	160	64	48	door height (mm)		\	46	38	28		door height (mm)		\	24	20	14
										_	_						
Rate	250kg per hecta				Rate	250	Mg per nee					Rate	250	kg per hec			
forward speed (kph)	30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)	36	36	36	36	spread width (meters)		24	24	24	24		spread width (meters)		12	12	12	12
spinner revs	970	970	970	970	spinner revs		850	850	850	850		spinner revs		700	700	700	700
density of material kg m3	1000	1000	1000	1000	density of material kg m3		1000	1000	1000	1000		density of material kg m3		1000	1000	1000	1000
door height (mm)	\	200	80	60	door height (mm)		\	57.5	47.5	35		door height (mm)		\	30	25	17.5
											_		200	kg per hec			
Poto	200kg par hasts	ro			Data	200	ka nor ho s	taro				Pa+a			taro		
Rate	300kg per hecta		20	15	Rate	300	0111		20	15		Rate	300	01:-		20	15
forward speed (kph)	30	25	20	15	forward speed (kph)	300	30	25	20	15		forward speed (kph)	300	30	25	20	15
forward speed (kph) spread width (meters)	30 36	25 36	36	36	forward speed (kph) spread width (meters)	300	30 24	25 24	24	24		forward speed (kph) spread width (meters)	300	30 12	25 12	12	12
forward speed (kph) spread width (meters) spinner revs	30 36 970	25 36 970	36 970	36 970	forward speed (kph) spread width (meters) spinner revs	300	30 24 850	25 24 850	24 850	24 850		forward speed (kph) spread width (meters) spinner revs	300	30 12 700	25 12 700	12 700	12 700
forward speed (kph) spread width (meters)	30 36	25 36	36	36	forward speed (kph) spread width (meters)	300	30 24	25 24	24	24		forward speed (kph) spread width (meters)	300	30 12	25 12	12	12
forward speed (kph) spread width (meters) spinner revs	30 36 970	25 36 970	36 970	36 970	forward speed (kph) spread width (meters) spinner revs	300	30 24 850	25 24 850	24 850	24 850		forward speed (kph) spread width (meters) spinner revs	300	30 12 700	25 12 700	12 700	12 700
forward speed (kph) spread width (meters) spinner revs density of material kg m3	30 36 970	25 36 970	36 970 1000	36 970 1000	forward speed (kph) spread width (meters) spinner revs density of material kg m3	300	30 24 850	25 24 850 1000	24 850 1000	24 850 1000		forward speed (kph) spread width (meters) spinner revs density of material kg m3	300	30 12 700	25 12 700 1000	12 700 1000	12 700 1000
forward speed (kph) spread width (meters) spinner revs density of material kg m3	30 36 970	25 36 970	36 970 1000	36 970 1000	forward speed (kph) spread width (meters) spinner revs density of material kg m3	300	30 24 850	25 24 850 1000	24 850 1000	24 850 1000		forward speed (kph) spread width (meters) spinner revs density of material kg m3	300	30 12 700	25 12 700 1000	12 700 1000	12 700 1000
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	30 36 970 1000	25 36 970 1000	36 970 1000	36 970 1000	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		30 24 850 1000	25 24 850 1000 86.25	24 850 1000	24 850 1000		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		30 12 700 1000	25 12 700 1000 45	12 700 1000	12 700 1000
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate	30 36 970 1000 \ 350kg per hecta	25 36 970 1000 \	36 970 1000 96	36 970 1000 72	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate		30 24 850 1000 \	25 24 850 1000 86.25	24 850 1000 71.25	24 850 1000 52.5		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		30 12 700 1000 \ kg per hec	25 12 700 1000 45	12 700 1000 37.5	12 700 1000 26.25
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)	30 36 970 1000 \ \ 350kg per hecta	25 36 970 1000 \ \	36 970 1000 96	36 970 1000 72	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)		30 24 850 1000 \ \ kg per hec	25 24 850 1000 86.25 tare	24 850 1000 71.25	24 850 1000 52.5		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)		30 12 700 1000 \ kg per hect	25 12 700 1000 45 tare	12 700 1000 37.5	12 700 1000 26.25
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)	30 36 970 1000 \ \ 350kg per hectz 30 36	25 36 970 1000 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	36 970 1000 96 20 36	36 970 1000 72 15 36	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)		30 24 850 1000 \ \ kg per hec 30 24	25 24 850 1000 86.25 tare 25 24	24 850 1000 71.25 20 24	24 850 1000 52.5 15 850		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)		30 12 700 1000 \ kg per hect 30 12	25 12 700 1000 45 tare 25 12	12 700 1000 37.5 20 12	12 700 1000 26.25
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs	30 36 970 1000 \ \ 350kg per hects 30 36 970	25 36 970 1000 \ \ \ \ \ \ \ 25 36 970	36 970 1000 96 20 36 970	36 970 1000 72 15 36 970	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		30 24 850 1000 \ kg per hed 30 24 850	25 24 850 1000 86.25 tare 25 24 850	24 850 1000 71.25 20 24 850	24 850 1000 52.5 15 850 850		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		30 12 700 1000 \ kg per hec 30 12 700	25 12 700 1000 45 are 25 12 700	12 700 1000 37.5 20 12 700	12 700 1000 26.25 15 12 700
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spinner revs density of material kg m3	30 36 970 1000 \ \ 350kg per hectz 30 36	25 36 970 1000 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	36 970 1000 96 20 36 970 1000	36 970 1000 72 15 36 970 1000	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 24 850 1000 \ \ kg per hec 30 24	25 24 850 1000 86.25 tare 25 24 850 1000	24 850 1000 71.25 20 24 850 1000	24 850 1000 52.5 15 850 850 1000		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 12 700 1000 \ kg per hect 30 12	25 12 700 1000 45 25 12 700 1000	12 700 1000 37.5 20 12 700 1000	12 700 1000 26.25 15 12 700 1000
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs	30 36 970 1000 \ \ 350kg per hects 30 36 970	25 36 970 1000 \ \ \ \ \ \ \ 25 36 970	36 970 1000 96 20 36 970	36 970 1000 72 15 36 970	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		30 24 850 1000 \ kg per hed 30 24 850	25 24 850 1000 86.25 tare 25 24 850	24 850 1000 71.25 20 24 850	24 850 1000 52.5 15 850 850		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		30 12 700 1000 \ kg per hec 30 12 700	25 12 700 1000 45 are 25 12 700	12 700 1000 37.5 20 12 700	12 700 1000 26.25 15 12 700

Density 1100 kg m³

							_	1									_						
Rate	1000	kg per he	ctare					Rate	1000	kg per hect	tare					Rate	1000	Okg per hed	ctare				
forward speed (kph)		30		25	20	15		forward speed (kph)		30		25	20	1	15	forward speed (kph)		30		25		20	15
spread width (meters)		14		14	14	14	7	spread width (meters)		12		12	12		12	spread width (meters)		9		9		9	9
spinner revs		700		700	700	700	7	spinner revs		650		650	650	6	50	spinner revs		500		500		500	500
density of material kg m3		1100		1100	1100	1100	1	density of material kg m3		1100		1100	1100		100	density of material kg m3		1100		1100	П	1100	1100
door height (mm)		90		75	58	50		door height (mm)		70		70	60		50	door height (mm)		60		50		50	50
uooi neigne (mm)		50		7.5	30	50	_	acor neight (mm)		,,,		70	- 00		,,,	uooi neigni (mm)		- 00		50	_	50	30
Rate	1500	kg per he					_	Rate	1500	kg per hect						Rate	1500	Okg per hed					
	1500		ctare	35	20	45	-		1500	01-	tare	25	20	-			1500		Llare	35	\vdash	20	15
forward speed (kph)		30	-	25	20	15	-	forward speed (kph)		30	-	25	20		15	forward speed (kph)		30		25	+		
spread width (meters)		14		14	14	14	_	spread width (meters)		12		12	12		12	spread width (meters)		9		9	\vdash	9	9
spinner revs		700		700	700	700	_	spinner revs		650		650	650		50	spinner revs		500		500	\vdash	500	500
density of material kg m3		1100		1100	1100	1100	_	density of material kg m3		1100		1100	1100		100	density of material kg m3		1100		1100		1100	1100
door height (mm)		135		110	90	70		door height (mm)		105		90	70		50	door height (mm)		90		70		70	60
							_																
Rate	2000	kg per he	ctare					Rate	2000	kg per hect	tare					Rate	2000	Okg per hed	ctare				
forward speed (kph)		30		25	20	15		forward speed (kph)		30		25	20		15	forward speed (kph)		30		25		20	15
spread width (meters)		14		14	14	14	1	spread width (meters)		12		12	12	- :	12	spread width (meters)		9	П	9		9	9
spinner revs		700		700	700	700		spinner revs		650		650	650	6	50	spinner revs		500		500		500	500
density of material kg m3		1100		1100	1100	1100		density of material kg m3		1100		1100	1100		100	density of material kg m3		1100	П	1100		1100	1100
door height (mm)		180		145	120	90		door height (mm)		140		115	100		30	door height (mm)		100		80		70	60
8																							
Rate	2500	kg per he	ctare				7	Rate	2500	kg per hect	tare					Rate	2500	Okg per hed	ctare				
forward speed (kph)	2550	30	1	25	20	15	-	forward speed (kph)	2300	30		25	20	-	15	forward speed (kph)	2300	30		25	\vdash	20	15
spread width (meters)		14	1	14	14	14	+	spread width (meters)		12		12	12	_	12	spread width (meters)		9		9	+	9	9
spinner revs		700		700	700	700	+	spinner revs		650		650	650		50	spinner revs		500		500	H	500	500
		1100	-	1100	1100	1100	+			1100		1100	1100		100			1100		1100	H	1100	1100
density of material kg m3		220		190	150		+	density of material kg m3		170		140	1100		70	density of material kg m3		80				70	
door height (mm)		220		190	150	120	_	door height (mm)		1/0	_	140	115	_	70	door height (mm)		80		70		70	60
							_						_									-	
Rate	3000	kg per he	ctare					Rate	3000	kg per hect	tare					Rate	3000	Okg per hed	ctare				
forward speed (kph)	3000	30	ctare	25	20	15		forward speed (kph)	3000	30	tare	25	20		15	forward speed (kph)	3000	30	ctare	25		20	15
forward speed (kph) spread width (meters)	3000	30 14	ctare	14	14	14		forward speed (kph) spread width (meters)	3000	30 12	tare	12	12		12	forward speed (kph) spread width (meters)	3000	30 9	ctare	9		9	9
forward speed (kph) spread width (meters) spinner revs	3000	30 14 700	ctare	14 700	14 700	14 700		forward speed (kph) spread width (meters) spinner revs		30 12 650	tare	12 650	12 650	6	12 50	forward speed (kph) spread width (meters) spinner revs	3000	30 9 500	ctare	9 500		9 500	9 500
forward speed (kph) spread width (meters)	3000	30 14 700 1100	ctare	14 700 1100	14 700 1100	14 700 1100		forward speed (kph) spread width (meters)		30 12 650 1100	tare	12 650 1100	12	6	12 50 100	forward speed (kph) spread width (meters)	3000	30 9 500 1100	ctare	9		9	9
forward speed (kph) spread width (meters) spinner revs	3000	30 14 700	ctare	14 700	14 700	14 700		forward speed (kph) spread width (meters) spinner revs		30 12 650	tare	12 650	12 650	6	12 50	forward speed (kph) spread width (meters) spinner revs	3000	30 9 500	ctare	9 500		9 500	9 500
forward speed (kph) spread width (meters) spinner revs density of material kg m3	3000	30 14 700 1100	ctare	14 700 1100	14 700 1100	14 700 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 12 650 1100	tare	12 650 1100	12 650 1100	6	12 50 100	forward speed (kph) spread width (meters) spinner revs density of material kg m3	3000	30 9 500 1100	ctare	9 500 1100		9 500 1100	9 500 1100
forward speed (kph) spread width (meters) spinner revs density of material kg m3	3000	30 14 700 1100	ctare	14 700 1100	14 700 1100	14 700 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 12 650 1100	tare	12 650 1100	12 650 1100	6	12 50 100	forward speed (kph) spread width (meters) spinner revs density of material kg m3	3000	30 9 500 1100	ctare	9 500 1100		9 500 1100	9 500 1100
forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 14 700 1100		14 700 1100	14 700 1100	14 700 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 12 650 1100		12 650 1100	12 650 1100	6	12 50 100	forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 9 500 1100		9 500 1100		9 500 1100	9 500 1100
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		30 14 700 1100 270		14 700 1100	14 700 1100	14 700 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		30 12 650 1100 210		12 650 1100	12 650 1100	6 1:	12 50 100	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		30 9 500 1100 120		9 500 1100		9 500 1100	9 500 1100
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate		30 14 700 1100 270		14 700 1100 220	14 700 1100 180	14 700 1100 140		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		30 12 650 1100 210		12 650 1100 170	12 650 1100 140	6 11 1	12 50 100 10	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		30 9 500 1100 120		9 500 1100 100		9 500 1100 80	9 500 1100 70
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)		30 14 700 1100 270 270		14 700 1100 220	14 700 1100 180	14 700 1100 140		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)		30 12 650 1100 210 kg per hect		12 650 1100 170	12 650 1100 140	6 1: 1	12 50 100 10	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)		30 9 500 1100 120 0kg per hec		9 500 1100 100		9 500 1100 80 20	9 500 1100 70
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)		30 14 700 1100 270 kg per he- 30 14		14 700 1100 220 25 14	14 700 1100 180 20 14	14 700 1100 140		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)		30 12 650 1100 210 kg per hect 30 12	tare	12 650 1100 170 25 12	12 650 1100 140	1 6 1 1 1	12 50 100 10 10	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)		30 9 500 1100 120 0kg per hec 30 9		9 500 1100 100 25 9		9 500 1100 80 20 9	9 500 1100 70 15 9
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 14 700 1100 270 kg per he 30 14 700		14 700 1100 220 25 14 700 1100	14 700 1100 180 20 14 700 1100	14 700 1100 140 15 14 700 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 12 650 1100 210 210 210 210	tare	12 650 1100 170 25 12 650 1100	12 650 1100 140 20 12 650	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 50 100 10 10 15 50 50	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 9 500 1100 120 0kg per hec 30 9		9 500 1100 100 25 9 500 1100		9 500 1100 80 20 9 500	9 500 1100 70 15 9 500 1100
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		30 14 700 1100 270 kg per he 30 14 700		14 700 1100 220 25 14 700	14 700 1100 180 20 14 700	14 700 1100 140 15 14 700		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		30 12 650 1100 210 210 210 210	tare	12 650 1100 170 25 12 650	12 650 1100 140 20 12 650 1100	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 50 100 10 10	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		30 9 500 1100 120 0kg per hec 30 9		9 500 1100 100 25 9 500		9 500 1100 80 20 9 500 1100	9 500 1100 70 15 9 500
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 14 700 1100 270 kg per he 30 14 700		14 700 1100 220 25 14 700 1100	14 700 1100 180 20 14 700 1100	14 700 1100 140 15 14 700 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 12 650 1100 210 210 210 210	tare	12 650 1100 170 25 12 650 1100	12 650 1100 140 20 12 650 1100	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 50 100 10 10 15 50 50	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		30 9 500 1100 120 0kg per hec 30 9		9 500 1100 100 25 9 500 1100		9 500 1100 80 20 9 500 1100	9 500 1100 70 15 9 500 1100
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 kg per he 30 14 700 1100	ctare	14 700 1100 220 25 14 700 1100	14 700 1100 180 20 14 700 1100	14 700 1100 140 15 14 700 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 12 650 1100 210 kkg per hect 30 12 650 1100	tare	12 650 1100 170 25 12 650 1100	12 650 1100 140 20 12 650 1100	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 50 100 10 10 15 50 50	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 9 500 1100 120 Okg per hec 30 9 500 1100	ctare	9 500 1100 100 25 9 500 1100		9 500 1100 80 20 9 500 1100	9 500 1100 70 15 9 500 1100
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 kg per he- 30 14 700 1100 \text{\text{\text{kg per he-}}}	ctare	14 700 1100 220 25 14 700 1100 250	14 700 1100 180 20 14 700 1100 210	14 700 1100 140 15 15 14 700 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 12 650 1100 210 kkg per hect 30 12 650 1100 V	tare	12 650 1100 170 25 12 650 1100 200	12 650 1100 140 20 12 650 1100 160	6666611	12 50 100 110 15 50 50 100 20	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate	3500	30 9 500 1100 120 Okg per hec 30 9 500 1100 \	ctare	9 500 1100 100 25 9 500 1100		9 500 1100 80 20 9 500 1100	9 500 1100 70 15 9 500 1100 80
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forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 270 kkg per he- 30 14 700 1100 \ kg per he- 30 14 700	ctare	14 700 1100 220 25 14 700 1100 250	14 700 1100 180 20 14 700 210 210	14 700 1100 140 15 15 14 700 160		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 12 650 1100 210 210 210 210 30 12 650 1100 V	tare	12 650 1100 170 25 12 650 1100 200 25 12 650	12 650 1100 140 20 12 650 1100 160	66 66 66 11	12 50 100 110 115 50 100 100 100 100 100 1	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 9 500 1100 120 0kg per hec 30 9 500 1100 0kg per hec 30 9 500	ctare	9 500 1100 100 25 9 500 1100 120 25 9		9 500 1100 80 20 9 500 1100 20 9 500 1100	9 500 1100 70 15 9 500 1100 80
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 skg per he- 30 114 700 1100 \ kg per he- 30 14 700 1100 \ \	ctare	14 700 1100 220 25 14 700 1100 250	14 700 1100 180 20 14 700 210 210	14 700 1100 140 15 15 14 700 160		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 12 650 1100 210 kg per hect 650 1100 12 650 1100 12 650 1100 12 12 13 14 15 16 17 17 18 18 18 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10	a tare	12 650 1100 170 25 12 650 1100 200 25 12 650	12 650 1100 140 20 12 650 1100 160	66 66 66 11	12 50 100 110 115 50 100 100 100 100 100 1	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 9 500 1100 120 bkg per hed 30 9 500 1100 V	ctare	9 500 1100 100 25 9 500 1100 120 25 9		9 500 1100 80 20 9 500 1100 20 9 500 1100	9 500 1100 70 15 9 500 1100 80
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 1100 270 14 700 1100 \ \ kg per he- 30 14 700 \ \ 1100 \ \ kg per he- 30 14 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ctare	14 700 1100 220 25 14 700 1100 250 25 14 700 1100 1100 1100	14 700 1100 180 20 14 700 210 20 14 700 210	14 700 1100 140 15 14 700 1100 160 15 14 700 1100 190		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 12 650 1100 210 kkg per hect 30 1100 V kkg per hect 30 12 650 1100 V	a tare	12 650 1100 170 25 12 650 1100 200 25 12 650 1100 100 100 100	12 650 1100 140 20 12 650 1100 160 20 20 20 20 20 20 20 20 20 20 20 20 20	6666666666111	12 50 100 110 115 50 50 100 50 100 50	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 9 500 1100 120 Okg per hec 30 9 500 1100 \ Okg per hec 30 9 500 1100 \ Okg per hec 30 9 500 1100 Okg per hec 30 9 500 1100 Okg per hec 30 Okg pe	ctare	9 500 1100 100 25 9 500 1100 120 25 9 500 1100 \		9 500 1100 80 20 9 500 1100 100	9 500 1100 70 15 9 500 1100 80
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 kkg per he 30 114 700 1100 \ \ kg per he 30 14 700 1100 \ \ kg per he 30 30 30 30 30 30 30 30 30 30 30 30 30	ctare	14 700 1100 220 25 14 700 1100 250 25 14 700 1100 100 100 100 100 100 10	14 700 1100 180 20 14 700 1100 210 20 14 700 1100 100 1100 20 20 20 20 20 20 20 20 20	14 700 1100 140 140 15 14 700 1100 15 15 14 100 1100 190		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 12 650 1100 210 kg per hect 30 12 650 1100 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	a tare	12 650 1100 170 170 225 12 650 1100 200 1100 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	12 650 1100 140 20 12 650 1100 160 20 20 20 20 20 20 20 20 20 20 20 20 20	666666666666666666666666666666666666666	12 50 100 110 115 50 50 100 150 50 100 150 15	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 9 500 1100 120 Okg per hec 30 9 500 1100 \ Okg per hec 30 9 500 1100 \ Okg per hec 30 30 9 500 1100 Okg per hec 30 30 30 30 30 30 30 30 30 30	ctare	9 500 1100 100 25 9 500 1100 120 25 9 500 1100 \		9 500 1100 80 20 9 500 1100 20 9 500 1100 120 20 20 20 20 20 20 20 20 20	9 500 1100 70 15 9 500 1100 80 15 9 500 1100 80
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 kg per he 30 14 700 1100 \ kg per he 30 14 700 1100 \ kg per he 30 14 700 1100 1100	ctare	14 700 1100 220 25 14 700 1100 250 25 14 700 1100 \ \	20 1100 2100 2100 210 210 210 20 14 700 1100 210	14 700 1100 140 140 15 14 700 1100 160 15 14 700 1100 190		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 12 650 1100 210 210 30 12 650 1100 V	a tare	12 650 1100 170 25 12 650 1100 200 200 200 1100 1100 1100 1100	12 650 1100 140 20 12 650 1100 160 20 12 650 1100 20 20 20 20	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12 50 100 110 115 50 50 100 50 115 50 15 5	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 9 500 1100 120 Okg per hec 30 9 500 1100 V Okg per hec 30 9 500 1100 V	ctare	9 500 1100 25 9 500 1100 120 25 9 500 1100 \ \		9 500 500 11100 20 9 500 11100 120 20 9 9	9 500 1100 70 115 9 500 1100 80 15 9 500 1100 80
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 1100 270 14 700 1100 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ctare	14 700 1100 220 25 14 700 1100 250 25 14 700 1100 \text{\ti}\text{\texi{\text{\texi\texi{\text{\texitex{\text{\texi\texi{\text{\text{\text{\text{\text{\text{\tet	20 1100 180 20 14 700 1100 210 210 20 14 700 1100 100 100 1100	14 700 1100 140 140 15 14 700 160 15 14 700 1100 190 15 14 14 10 1100 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 112 650 1100 210 12 650 1100 12 650 1100 1100 1100 1100 12 650 1100 12 650 1100 12 650 1100 12 650 1100 12 650 1100 12 650 1100 12 650 150 150 150 150 150 150 150 150 150 1	a tare	12 650 1100 170 25 12 25 12 12 200 200 1100 1100 1100	12 650 1100 140 20 12 650 1100 160 20 12 650 1100 200 20 20 20 20 20 20 20 20 20 20 20	666666666	12 50 100 110 115 50 50 150 50 50 50 50 50 50 50 50 50 50 50 50 5	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner awdid (kph) spread width (meters) spinner revs	3500	30 9 500 1100 120 Okg per hed 30 9 500 1100 V	ctare	9 500 1100 100 25 9 500 1100 120 25 9 500 1100 \tag{25} 9 500 1100 \tag{25} 9 500 1100 100 100 100 100 100 10		9 500 500 80 11100 120 120 9 500 500 500 1500 120 120 120 120 120 120 120 120 120 1	9 500 1100 70 15 9 500 1100 80 15 9 500 1100 80
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 14 700 1100 270 kg per he 30 14 700 1100 \ kg per he 30 14 700 1100 \ kg per he 30 14 700 1100 1100 1100	ctare	14 700 1100 220 25 14 700 1100 250 25 14 700 1100 \ \	20 1100 2100 2100 210 210 210 20 14 700 1100 210	14 700 1100 140 15 14 700 1100 160 15 14 100 190 1100 190		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 12 650 1100 210 210 30 12 650 1100 V	a tare	12 650 1100 170 25 12 650 1100 200 200 200 1100 1100 1100 1100	12 650 1100 140 20 12 650 1100 160 20 12 650 1100 200 20 12 650 1100 200	: : : : : : : : : : : : : : : : : : :	12 50 100 100 100 100 100 100 100 100 100	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 9 500 1100 120 Okg per hec 30 9 500 1100 V Okg per hec 30 9 500 1100 V	ctare	9 500 1100 25 9 500 1100 120 25 9 500 1100 \ \		9 500 500 80 20 9 9 500 11100 120 20 9 9 500 11100 120 120 11100 1	9 500 1100 70 15 9 500 1100 80 15 9 500 1100 80
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	35000	30 14 700 1100 270 1100 270 14 700 1100 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ctare	14 700 1100 220 25 14 700 1100 250 25 14 700 1100 \text{\ti}\text{\texi{\text{\texi\texi{\text{\texitex{\text{\texi\texi{\text{\text{\text{\text{\text{\text{\tet	20 1100 180 20 14 700 1100 210 210 20 14 700 1100 100 100 1100	14 700 1100 140 140 15 14 700 160 15 14 700 1100 190 15 14 14 10 1100 1100		forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 112 650 1100 210 12 650 1100 12 650 1100 1100 1100 1100 12 650 1100 12 650 1100 12 650 1100 12 650 1100 12 650 1100 12 650 1100 12 650 150 150 150 150 150 150 150 150 150 1	a tare	12 650 1100 170 25 12 25 12 12 200 200 1100 1100 1100	12 650 1100 140 20 12 650 1100 160 20 12 650 1100 200 20 20 20 20 20 20 20 20 20 20 20	: : : : : : : : : : : : : : : : : : :	12 50 100 110 115 50 50 150 50 50 50 50 50 50 50 50 50 50 50 50 5	forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner awdid (kph) spread width (meters) spinner revs	3500	30 9 500 1100 120 Okg per hed 30 9 500 1100 V	ctare	9 500 1100 100 25 9 500 1100 120 25 9 500 1100 \tag{25} 9 500 1100 \tag{25} 9 500 1100 100 100 100 100 100 10		9 500 500 80 11100 120 120 9 500 500 500 1500 120 120 120 120 120 120 120 120 120 1	9 500 1100 70 15 9 500 1100 80 15 9 500 1100 80

Density 1400 kg m³

Rate																		
	1000	kg per hed	tare			Rate	1000	kg per he	ctare				Rate	1000	Okg per hec	tare		
forward speed (kph)		30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)		14	14	14	14	spread width (meters)		12	12	12	12		spread width (meters)		9	9	9	9
spinner revs		700	700	700	700	spinner revs	+ +	650	650	650	650	-	spinner revs		500	500	500	500
•							\vdash					-						
density of material kg m3		1400	1400	1400	1400	density of material kg m3		1400	1400	1400	1400		density of material kg m3		1400	1400	1400	1400
door height (mm)		70	70	70	60	door height (mm)		70	70	60	50		door height (mm)		60	50	50	50
B	4500	N la					4500	Lanca de la lace				-	B	4500	01			
Rate	1500	kg per hed				Rate	15001	kg per he				-	Rate	1500	Okg per hec			
forward speed (kph)		30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)		14	14	14	14	spread width (meters)		12	12	12	12		spread width (meters)		9	9	9	9
spinner revs		700	700	700	700	spinner revs		650	650	650	650		spinner revs		500	500	500	500
density of material kg m3		1400	1400	1400	1400	density of material kg m3	-	1400	1400	1400	1400	1	density of material kg m3		1400	1400	1400	1400
							\vdash											
door height (mm)		100	90	70	70	door height (mm)		80	70	70	70		door height (mm)		70	70	70	60
Rate	2000)kg per hed	tare			Rate	2000	kg per he	rtare				Rate	2000	Okg per hec	tare		
	2000			20	45		20001			20	45	-		2000			20	45
forward speed (kph)		30	25	20	15	forward speed (kph)	\longrightarrow	30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)		14	14	14	14	spread width (meters)		12	12	12	12		spread width (meters)		9	9	9	9
spinner revs		700	700	700	700	spinner revs	1 1	650	650	650	650	1	spinner revs		500	500	500	500
density of material kg m3		1400	1400	1400	1400	density of material kg m3	\Box	1400	1400	1400	1400	1	density of material kg m3		1400	1400	1400	1400
		140	120	90	70			110	90	70	70				80	70	70	70
door height (mm)		140	120	90	70	door height (mm)		110	90	/0	/0		door height (mm)		80	70	70	70
							\perp											
							<u> </u>							L				
Rate	2500	kg per hed	tare			Rate	2500	kg per he	ctare				Rate	2500	Okg per hec	tare		
forward speed (kph)		30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
							\vdash					-						
spread width (meters)		14	14	14	14	spread width (meters)		12	12	12	12		spread width (meters)		9	9	9	9
spinner revs		700	700	700	700	spinner revs		650	650	650	650		spinner revs		500	500	500	500
density of material kg m3		1400	1400	1400	1400	density of material kg m3		1400	1400	1400	1400		density of material kg m3		1400	1400	1400	1400
door height (mm)		170	150	120	90	door height (mm)		130	110	90	70		door height (mm)		80	70	70	70
door neight (min)		1/0	150	120	50	uooi neight (mm)		130	110	30	,,,		door neight (min)		00	70	70	70
Data	2000	kg per hed		ı	l	Det.	2000	kg per he	-	1		1	Rate	2000	Oleanan ban		1	I
Rate	3000					Rate	30001	-				-		3000	Okg per hec			
forward speed (kph)		30	25	20	15	forward speed (kph)		30	25	20	15		forward speed (kph)		30	25	20	15
spread width (meters)		14	14	14	14	spread width (meters)		12	12	12	12		spread width (meters)		9	9	9	9
spinner revs		700	700	700	700	spinner revs		650	650	650	650		spinner revs		500	500	500	500
density of material kg m3		1400	1400	1400	1400	density of material kg m3		1400	1400	1400	1400		density of material kg m3		1400	1400	1400	1400
												ı			1400	1400	70	
door height (mm)			4.00							400					400	00		70
		180	160	130	100	door height (mm)		150	130	100	80		door height (mm)		100	80	70	
			160	130	100	door height (mm)				100					100	80	70	
			160	130	100	door height (mm)				100					100	80	70	
Rate	3500	180		130	100		3500	150	130	100			door height (mm)	3500			70	
Rate	3500	180 Okg per hed	tare			Rate	3500	150 kg per he	130 ctare		80		door height (mm)		Okg per hec	tare		15
forward speed (kph)	3500	180 Okg per hed	tare 25	20	15	Rate forward speed (kph)	3500	150 kg per hee	130 ctare 25	20	80		door height (mm) Rate forward speed (kph)		0kg per hec	tare 25	20	15
forward speed (kph) spread width (meters)	3500	180 0kg per hed 30 14	25 14	20	15 14	Rate forward speed (kph) spread width (meters)	3500	150 kg per her 30 12	130 ctare 25 12	20 12	15 650		Rate forward speed (kph) spread width (meters)		0kg per hec 30 9	25 9	20 9	9
forward speed (kph)	3500	180 Okg per hed	tare 25	20 14 700	15 14 700	Rate forward speed (kph)	3500	150 kg per her 30 12 650	130 ctare 25 12 650	20	15 650 650		door height (mm) Rate forward speed (kph)		0kg per hec 30 9 500	25 9 500	20 9 500	9 500
forward speed (kph) spread width (meters)	3500	180 0kg per hed 30 14	25 14	20	15 14	Rate forward speed (kph) spread width (meters)	3300	150 kg per her 30 12	130 ctare 25 12	20 12	15 650		Rate forward speed (kph) spread width (meters)		0kg per hec 30 9	25 9	20 9	9
forward speed (kph) spread width (meters) spinner revs density of material kg m3	3500	180 0kg per hed 30 14 700	25 14 700 1400	20 14 700 1400	15 14 700 1400	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3	3300	150 kg per her 30 12 650 1400	130 ctare 25 12 650 1400	20 12 650 1400	15 650 650 1400		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		0kg per hed 30 9 500 1400	25 9 500 1400	20 9 500 1400	9 500 1400
forward speed (kph) spread width (meters) spinner revs	3500	180 0kg per hed 30 14 700	25 14 700	20 14 700	15 14 700	Rate forward speed (kph) spread width (meters) spinner revs	3300	150 kg per her 30 12 650	130 ctare 25 12 650	20 12 650	15 650 650		Rate forward speed (kph) spread width (meters) spinner revs		0kg per hec 30 9 500	25 9 500	20 9 500	9 500
forward speed (kph) spread width (meters) spinner revs density of material kg m3	3500	180 0kg per hed 30 14 700	25 14 700 1400	20 14 700 1400	15 14 700 1400	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3	3300	150 kg per her 30 12 650 1400	130 ctare 25 12 650 1400	20 12 650 1400	15 650 650 1400		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		0kg per hed 30 9 500 1400	25 9 500 1400	20 9 500 1400	9 500 1400
forward speed (kph) spread width (meters) spinner revs density of material kg m3		180 30 14 700 1400	25 14 700 1400 200	20 14 700 1400	15 14 700 1400	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		150 kg per her 30 12 650 1400 180	130 ctare 25 12 650 1400 150	20 12 650 1400	15 650 650 1400		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3	3500	30 9 500 1400	25 9 500 1400 110	20 9 500 1400	9 500 1400
forward speed (kph) spread width (meters) spinner revs density of material kg m3		180 0kg per hed 30 14 700	25 14 700 1400 200	20 14 700 1400	15 14 700 1400	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		150 kg per her 30 12 650 1400	130 ctare 25 12 650 1400 150	20 12 650 1400	15 650 650 1400		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3	3500	0kg per hed 30 9 500 1400	25 9 500 1400 110	20 9 500 1400	9 500 1400
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)		180 Okg per hed 30 14 700 1400 \text{\text{\text{bkg per hed}}}	25 14 700 1400 200	20 14 700 1400 160	15 14 700 1400 120	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate		150 kg per her 30 12 650 1400 180	130 tare 25 12 650 1400 150	20 12 650 1400 120	15 650 650 1400 90		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	3500	30 9 500 1400 130	tare 25 9 500 1400 110	20 9 500 1400 90	9 500 1400 70
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)		180 0kg per hed 30 14 700 1400 \ 0kg per hed 30 30 30 30 30 30 30 30	25 14 700 1400 200	20 14 700 1400 160	15 14 700 1400 120	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)		150 kg per hed 30 12 650 1400 180 kg per hed 30	130 tare 25 12 650 1400 150 tare 25	20 12 650 1400 120	15 650 650 1400 90		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph)	3500	30 9 500 1400 130 0kg per hec	25 9 500 1400 110	20 9 500 1400 90	9 500 1400 70
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)		180 kkg per hed 30 14 700 1400 kkg per hed 30 14 14 14 14 14 14 14 14 14 14 14 14 14	25 14 700 1400 200	20 14 700 1400 160	15 14 700 1400 120	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)		150 kg per hed 30 12 650 1400 180 kg per hed 30 12	130 25 12 650 1400 150 25 12 12 12 12 12 12 12 12 12	20 12 650 1400 120	15 650 650 1400 90		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)	3500	0kg per hec 30 9 500 1400 130 0kg per hec 30 9	25 9 500 1400 110 tare 25 9	20 9 500 1400 90	9 500 1400 70 15 9
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		180 kkg per hed 30 14 700 1400 \ kg per hed 30 14 700	25 14 700 1400 200 200 201 202 203 204 205 14 700	20 14 700 1400 160	15 14 700 1400 120 15 14 700	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs	40001	150 kg per hee 30 12 650 1400 180 kg per hee 30 12 650	130 25 12 650 1400 150 ctare 25 12 650 1400 150	20 12 650 1400 120 20 12 650	15 650 650 1400 90 15 650 650		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)	3500	0kg per hec 30 9 500 1400 130 0kg per hec 30 9 500	tare 25 9 500 1400 110 tare 25 9 500	20 9 500 1400 90 20 9 500	9 500 1400 70 15 9 500
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)		180 kkg per hed 30 14 700 1400 kkg per hed 30 14 14 14 14 14 14 14 14 14 14 14 14 14	25 14 700 1400 200	20 14 700 1400 160	15 14 700 1400 120	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)	40001	150 kg per hed 30 12 650 1400 180 kg per hed 30 12	130 25 12 650 1400 150 25 12 12 12 12 12 12 12 12 12	20 12 650 1400 120	15 650 650 1400 90		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)	3500	0kg per hec 30 9 500 1400 130 0kg per hec 30 9	25 9 500 1400 110 tare 25 9	20 9 500 1400 90	9 500 1400 70 15 9
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		180 kkg per hed 30 14 700 1400 \ kg per hed 30 14 700	25 14 700 1400 200 200 201 202 203 204 205 14 700	20 14 700 1400 160	15 14 700 1400 120 15 14 700 1400	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	40001	150 kg per hee 30 12 650 1400 180 kg per hee 30 12 650	130 25 12 650 1400 150 ctare 25 12 650 1400 150	20 12 650 1400 120 20 12 650 1400	15 650 650 1400 90 15 650 650 1400		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3	3500	0kg per hec 30 9 500 1400 130 0kg per hec 30 9 500	tare 25 9 500 1400 110 tare 25 9 500	20 9 500 1400 90 20 9 500	9 500 1400 70 15 9 500 1400
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs		180 kkg per hed 30 14 700 1400 \ kg per hed 30 14 700	25 14 700 1400 200 200 201 202 203 204 205 14 700	20 14 700 1400 160 20 14 700 1400	15 14 700 1400 120 15 14 700	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs	40001	150 kg per hee 30 12 650 1400 180 kg per hee 30 12 650	130 ctare 25 12 650 1400 150 ctare 25 12 650 1400	20 12 650 1400 120 20 12 650	15 650 650 1400 90 15 650 650		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters)	3500	0kg per hec 30 9 500 1400 130 0kg per hec 30 9 500	tare 25 9 500 1400 110 tare 25 9 500 1400 1400	20 9 500 1400 90 20 9 500 1400	9 500 1400 70 15 9 500
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3		180 kkg per hed 30 14 700 1400 \ kg per hed 30 14 700	25 14 700 1400 200 200 201 202 203 204 205 14 700	20 14 700 1400 160 20 14 700 1400	15 14 700 1400 120 15 14 700 1400	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	40001	150 kg per hee 30 12 650 1400 180 kg per hee 30 12 650	130 ctare 25 12 650 1400 150 ctare 25 12 650 1400	20 12 650 1400 120 20 12 650 1400	15 650 650 1400 90 15 650 650 1400		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3	3500	0kg per hec 30 9 500 1400 130 0kg per hec 30 9 500	tare 25 9 500 1400 110 tare 25 9 500 1400 1400	20 9 500 1400 90 20 9 500 1400	9 500 1400 70 15 9 500 1400
forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	4000	180 kg per hed 30 14 700 1400 \ kg per hed 30 14 700 1400 \ 14 700 1400	tare 25 14 700 1400 200 1400 1400	20 14 700 1400 160 20 14 700 1400	15 14 700 1400 120 15 14 700 1400	Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	4000	150 kg per her 30 12 650 1400 180 kg per her 30 12 650 1400	130 ctare 25 12 650 1400 150 ctare 25 12 650 1400 180	20 12 650 1400 120 20 12 650 1400	15 650 650 1400 90 15 650 650 1400		Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm) Rate forward speed (kph) spread width (meters) spinner revs density of material kg m3 door height (mm)	4000	0kg per hec 30 9 500 1400 130 0kg per hec 30 9 500 1400	tare 25 9 500 1400 110 tare 25 9 500 1400 130	20 9 500 1400 90 20 9 500 1400	9 500 1400 70 15 9 500 1400
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