bogballe

FS
Operator's Manual

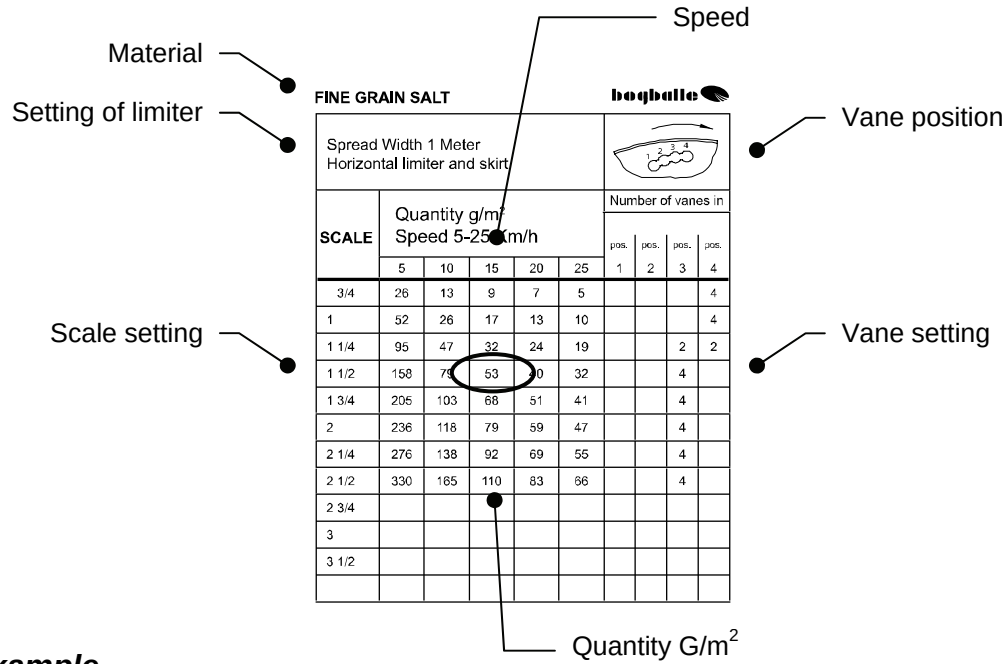
CONTENTS

NB! ***Fitting instructions for different options – <u>are supplied with the options!</u>***

MAIN SETTINGS

①	PTO- speed	540	rpm.
②	TILT-angle	Mounted Horizontal	
③	WORKING HEIGHT from ground to discs	60	Cm
④	QUANTITY SETTING	See chart	G/m^2
⑤	VANE POSITION	See chart	

Spread Chart



FINE GRAIN SALT

Spread Width 1 Meter
Horizontal limiter and skirt

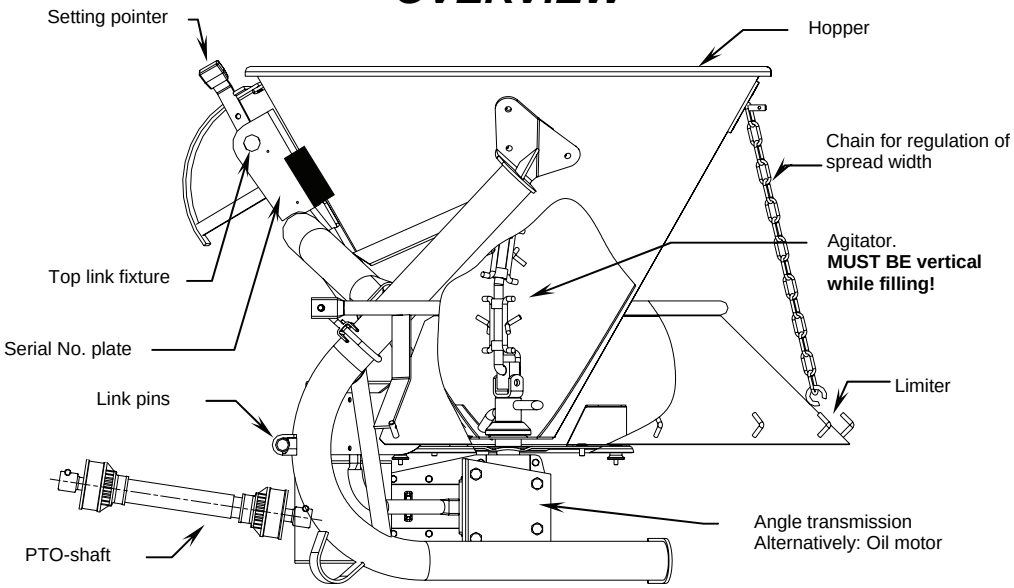
SCALE	Quantity g/m^2 Speed 5-25 Km/h					Number of vanes in			
						pos.	pos.	pos.	pos.
	5	10	15	20	25	1	2	3	4
3/4	26	13	9	7	5				4
1	52	26	17	13	10				4
1 1/4	95	47	32	24	19			2	2
1 1/2	158	79	53	40	32			4	
1 3/4	205	103	68	51	41			4	
2	236	118	79	59	47			4	
2 1/4	276	138	92	69	55			4	
2 1/2	330	165	110	83	66			4	
2 3/4									
3									
3 1/2									

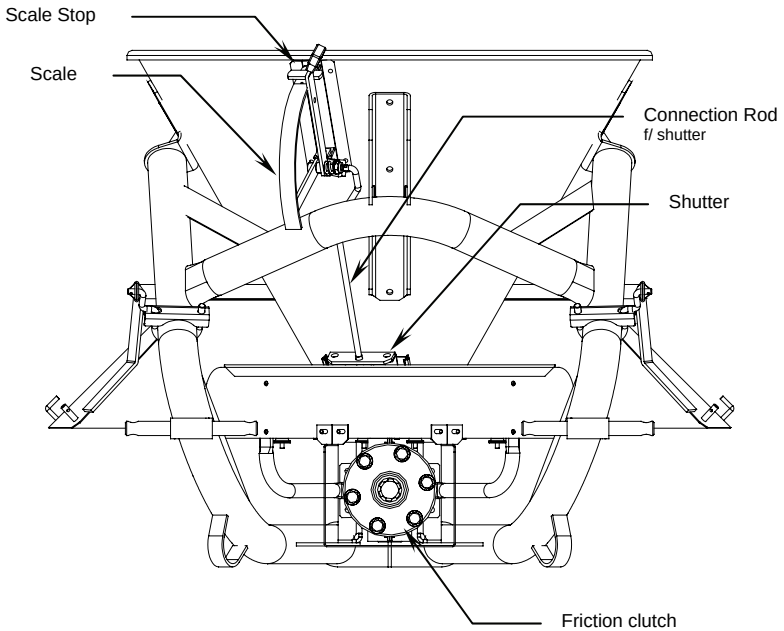
Example

Spread Width	:	1	Meter
Speed	:	15	Km/h
Quantity	:	53	G/m^2
Scale	**:**	**1 ½**	

All 4 vanes are set in position 3

OVERVIEW


Setting pointer
Hopper
Chain for regulation of spread width
Agitator.
MUST BE vertical while filling!
Top link fixture
Serial No. plate
Limiter
Link pins
Angle transmission
Alternatively: Oil motor
PTO-shaft


Scale Stop
Scale
Connection Rod
f/ shutter
Shutter
Friction clutch

PRACTICAL USE

- When driving with a full hopper it's **NOT** recommended to drive on an uneven surface for a longer time – this might cause the material to shake up.
- The stabilization chains of the tractor must be tightened in order to prevent the spreader from swinging from side to side while driving.
- When filling the hopper the material has to be filled in cautiously in a steady flow. Don't let the material fall in *at once* and from too high a position.

AGITATOR

- When filling the hopper the agitator must be in vertical position. In doing so the load of the transmission and agitator is reduced during start-up. When driven by PTO the rotation has to be started slowly with the tractor idling.

It is always necessary to START the tractor PTO "slowly / smoothly"!

- As standard the FS spreader is delivered with agitator for SALT (agitator w/ circular rubber disc). When spreading SAND the circular rubber disc has to be replaced by the square rubber disc.
- When spreading very rough material (small chrushed stones) the special agitator with pressure compensator cone has to be used.
- When spreading dry smooth-running materials – as an example dry rock salt or UREA you can benefit from dismounting the agitator.

- During driving on a moist road and in high speed it's possible that water and snow/ice might be hurled from the tractor's rear wheel into the hopper. In these cases it's suggested to use ***BOGBALLE's hopper cover***.

- The spread chart indicates what position the spreading vanes have to be placed in – respectively 1, 2, 3 or 4. Furthermore, the limiter's settings are indicated.
    - The spreading vanes are set by pulling the vanes "plastic button" which is accessible underneath the spreading disc – subsequently, the vanes can be set / turned to the wanted position. Afterwards, make sure that the vane is locked in position!
    - If the spreading vanes are set in the rotational direction (lower position number) the amount to the left of the machine will be increased.
    - If the spreading vanes are set counter the rotational direction (higher position number) the amount to the right of the machine will be increased.

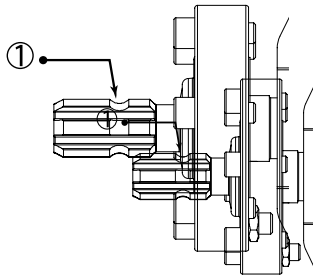
CHECK OF SPREADER- before use

The adjustment and closing shutters must be easy to move. Never use force. If the system is not easy to move – the reason is often lack of lubrication of the moving part of the setting system.

- The spreading discs must turn easily when the PTO is not mounted. Alternatively when using oil motor with open flow.
- Regulating outlets must be easy to turn.
- The speading vanes must be intact and correctly fixed.
- **The PTO shaft must be of correct length, with suitable overlap of the axle ends (min. 50 mm.). If the overlap is too long or too short it will result in a serious damage of the transmission axle.**
- DO NOT lift the spreader higher than working height.

If the shaft is not of correct length – and if the transmission is damaged, it will clearly appear from ”press marks ①” on the splined axle.

Such damage is of course <u>not</u> under warranty!



TECHNICAL SPECIFICATIONS, general

		FS 110	FS 220	
• Hopper volume	:	110	220, 350	Litres
• Hopper capacity	:	Max. 150	Max. 450	Kg.
• Spread width	:	1 – 6	1 – 6	Metres
• Spreading capacity	:	App. 5 – 350	App. 5 – 350	G/M^2
• 3-point linkage	:	Cat. I / ISO 730/I	Cat. I / ISO 730/I	

W/ Oil Motor

• Oil pressure	:	Min. 120	Max. 140	Bar
• Oil flow	:	Min. 30	Max. 35	L/Min.

TECHNICAL SPECIFICATIONS, specific

SPECIFICATIONS		**FS 110**	**FS 220**	**FS 220, 350**
Load height	cm.	81	96	113
Hopper volume	Litres	110	220	350
Hopper capacity	Kg.	150	300	450
Fill opening	cm.	83	99	85
Net weight	Kg.	80	86	93
Total weight	Kg.	280	436	593

The hopper capacity is made from hopper volume in litres multiplied with a specific weight of ~ 1,35 Kg/litres.

STANDARD EQUIPMENT

The FS is from the factory supplied with all necessary standard equipment.

- PTO Shaft / alternatively w/ oil motor
- Opening-type two-part sieve w/ safety feature to prevent unintended opening
- Agitator f/ Salt (circular rubber disc) and f/ Sand (square rubber disc)
- Pressure Compensator for protection of agitator (only FS 220).
- Transmission, with friction / overload clutch (not w/ oil motor)
- Spreading vanes
- Limiter with plastic sheeting

OPTIONAL EQUIPMENT

The following options can be supplied for the machine:

COMPONENT	DESCRIPTION	DIMENSION	
Module for FS 220	130 litres	Ø 85 x 17	cm
Remote Control of Dosage	Hydraulic		
Remote Control of Dosage	Electric motor, actuator		
Remote Control of Spread Width	Electric motor, actuator		
Traffic Lights			
Special Agitator for Rough Material	Inclusive of pressure compensator cone		
Hopper Cover FS 110			
Hopper Cover FS 220			
Undercarriage	ONLY for FS with hydraulic motor		

All BOGBALLE products are subject to a continuous development. Therefore, the list might not always be up-to-date.

MAINTENANCE AND CARE

NORMAL MAINTENANCE

The BOGBALLE machine is manufactured in such a way that it requires a minimum of maintenance.

In the construction it is considered that cleaning and lubrication can be completed quickly and thoroughly – without taking apart the machine.

The surface treatment consists of a robust FlexiCoat powder paint – in addition all essential wear parts and bolt assembling are made of stainless steel.

Many of the components of the machine are greased once and need no extra maintenance, for instance the central and angle gears of the transmission.

The maintenance mentioned below is absolutely necessary!

"If the machine is maintained – it will still be new - in 5 years ! "

"If the machine is <u>not</u> maintained – it will be old – next year ! "

The machine <u>must always be thoroughly cleaned after use</u>. The cleaning should be done with water perhaps including soap. When using a high-pressure cleaner only use low pressure and <u>do not clean direct on</u> the axle seals of the transmission.

Do not use grease-removing cleaning liquid – without giving the machine – just after drying – an application of anti corrosion oil.

☞ It is strongly recommended to grease the machine – BEFORE using it first time. Remember always to grease the entire machine in a corrosion protecting liquid (for instance oil). It is not sufficient just to wash the machine.

☝
- **Without protection, rust might arise within a few hours in areas, where the paint has been damaged – salt is very corrosive.**

Any paint damage should be cleaned and painted. A possibility could also be to treat the damage by *Tectyl* or a similar product.

☝ Please consider that cleaning products and corrosion protecting liquids might include dissolvent that might dissolve the glue fixing the transfers.

PROTECION, Friction clutch

👍 The transmission of the machine is equipped with friction / overload clutch.

☞ *The friction clutch is a most important component protecting against overload – and a damaged transmission and agitator.*

☝ The friction clutch must ”slip” at START of the tractor PTO.
If the clutch does not slip – the transmission will be damaged.

The friction clutch is in principle maintenance free, but minimum once a year the torque must be checked – to make sure that the torque is between 145 – 175 Nm.
If the torque exceeds those limits, dismantle and clean the clutch components as corrosion or wear might be the reason.
After mantling the clutch, check that the torque limits are within 145 – 175 Nm.

👍 The friction clutch ”slips” approx. 1-2 turns at START of the tractor PTO. This reduces the load on the components of the transmission to approx. 1/10 of the load to which the transmission is exposed, if the coupling is not able to ”slip”.

☞ ***It is always necessary to START the tractor PTO ”slowly / smoothly”!***

LUBRICATION

☝ **The components below must be greased according to below instruction.**

See the explaining sketch in the paragraph ***"OVERVIEW"***.

LUBRICATION ONCE A DAY:

COMPONENT	INSTRUCTION
Cardan joint and lock of the PTO	Use grease
Telescope axles of the PTO	Use grease
Setting and closing shutter (Bottom of hopper)	Use grease

PARTS GREASED ONCE:

👍 The central and angle gears are filled with special grease and needs no lubrication.

GENERAL

☞ A new machine will always "move" a little bit in all nuts + bolts.

Therefore all nuts and bolts of the machine must be retightened - first time it is put into operation – after 5 to 8 hours operation.

Exception is the bolts in the central and angle gears – these are locked with Locktite.

☝ *Be aware that stainless nuts + bolts might "weld together" When mounting such bolts – the thread must be greased with cutting lubricant or copper grease!*

SPREADING VANES

☝ The vanes will be worn due to the material. Therefore, the vanes are to be considered a wearing part – that must be exchanged dependent on the quantity and type of material.

Always clean the contact surfaces of the vanes and the spreading disc for dust etc – before mounting and tightening the vane!

IF HOLES ARE WORN IN THE VANES THEY MUST BE EXCHANGED AT ONCE!

GUARANTEE / RESPONSIBILITY

- Claim conditions are according to Danish legislation. Service and repair are made free of cost within 12 months from date of purchase on the following conditions:
    - That the failure is due to construction or material faults (Normal wear, missing maintenance and misuse not included).
    - That the failure is not due to not original components / equipments.
    - That persons with no technical knowledge to the machine have not tried to repair.
    - Compensation for person or crop injury does not fall on the supplier.

GENERALLY

This machine is intended for spreading sand, salt, urea and the like.
Spreading of other flowing materials might also be possible. If so we draw the attention to data list of the material concerned in order to determine possible safety or health measures to be taken.
If the machine is used for spreading material which is not defined in the spread charts for the spreader, the manufacturer of the machine can never be held responsible.

SAFETY and PROTECTION

The transmission system of the machine:
PTO shaft, friction clutch and spreading discs w/ vanes – must be considered *"as dangerous"*, and absolute care must be taken with these machine parts, especially in connection with rotation of the tractor PTO system.

DO NOT LEAVE THE TRACTOR CABIN – WITHOUT STOPPING THE PTO SYSTEM OF THE TRACTOR!

- **Never go behind the machine – with rotating spreading discs.**
- **Never clean the machine - with rotating spreading discs.**
- **Never put hand/object into the hopper – with rotating spreading discs.**
- **Always check that the spreading vanes are correctly fixed.**
- **Check that the protection tubes of the PTO are intact.**
- **Check that the security chain of the PTO is fixed.**
- **Check that top link and top link pins are intact and secured by lynch pin.**
- **Check that lift arms and link pins are secured by lynch pin.**
- **Check that the sieve is locked / secured and can't be opened unintended**

EC-Declaration of Conformity

Manufacturer:

BOGBALLE A/S
Bogballe · DK-7171 Uldum
Phone +45 7589 3266 Fax +45 7589 3766

Declares that machine:
Sand and salt spreader

FS

Is made in conformity with:
directive of 14th June 1989 conc. mutual approximation of the laws of the member states on machines (98/37/EØF), with special reference to the enclosure II, A and enclosure I of the directive, conc. essential safety and health claims in connection with construction and manufacture of machines.

International/national standards:
DS/EN 292-1 og DS/EN 292-2
DS/EN 294
DS/EN 349
DS 6010 / ISO730/1, 1997
DS 6005 / ISO DR No. 1724
DS 6003
DS 6009 / ISO 500, 1st edition – 1979.02.15

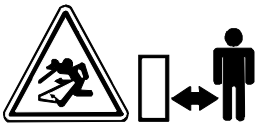
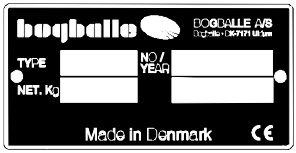
International/national standards:

EN 50081-1 and EN 50082-2

Bogballe, 2001-01-01

Nils Jørn Laursen

Pictogram

	Read Operator's Manual and safety rules before starting.
	Staying under the machine is prohibited.
	Safety distance for flying material must be observed.
	Avoid contact with rotating parts.
	Avoid contact as long as parts are moving.
	Do not spray water in this area.
< 70 dB (A)	Noise level of the machine is below 70 dB (A)
	1: YEAR / 2002 2: NET. Kg standard machine / Total: See manual

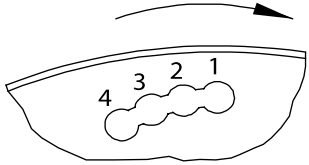
SPREAD CHARTS

Contents

FINE GRAIN SALT

Spread width : **1** Meter

Horizontal limiter and skirt



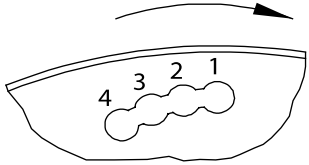
Number of vanes in

Scale	Quantity g/m² Speed 5 – 25 Km/h					Pos. 1	Pos. 2	Pos. 3	Pos. 4
	5	**10**	**15**	**20**	**25**				
¾	26	13	9	7	5				4
1	52	26	17	13	10				4
1 ¼	95	47	32	24	19			2	2
1 ½	158	79	53	40	32			4	
1 ¾	205	103	68	51	41			4	
2	236	118	79	59	47			4	
2 ¼	276	138	92	69	55			4	
2 ½	330	165	110	83	66			4	
2 ¾									
3									
3 ½									

FINE GRAIN SALT

Spread width : **2** Metres

Horizontal limiter



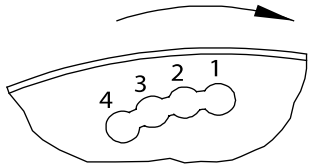
Number of vanes in

Scale	Quantity g/m² Speed 5 – 25 Km/h					Pos. 1	Pos. 2	Pos. 3	Pos. 4
	5	**10**	**15**	**20**	**25**				
¾	13	7							4
1	26	13	9	6	5				4
1 ¼	47	24	16	12	9			4	
1 ½	79	40	26	20	16			4	
1 ¾	103	51	34	26	21			4	
2	118	59	39	30	24			4	
2 ¼	138	69	46	35	28			4	
2 ½	165	83	55	41	33			4	
2 ¾									
3									
3 ½									

FINE GRAIN SALT

Spread width : **5** Metres

Limiter in highest position

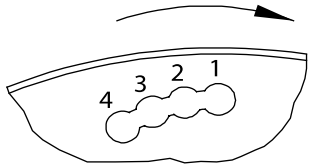


Scale	Quantity g/m² Speed 5 – 25 Km/h					Number of vanes in			
	5	10	15	20	25	Pos. 1	Pos. 2	Pos. 3	Pos. 4
¾	10	5					2	2	
1	19	9	6	5			2	2	
1 ¼	32	16	11	8	6		2	2	
1 ½	41	21	14	10	8		2	2	
1 ¾	47	24	16	12	9			4	
2	55	28	18	14	11			4	
2 ¼	66	33	22	17	13			4	
2 ½									
2 ¾									
3									
3 ½									

STONE SALT

Spread width : **2** Metres

Horizontal limiter



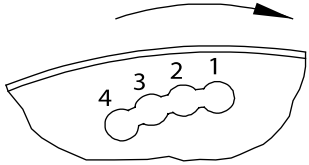
Number of vanes in

Scale	Quantity g/m² Speed 5 – 25 Km/h					Pos. 1	Pos. 2	Pos. 3	Pos. 4
	5	**10**	**15**	**20**	**25**				
¾									
1	43	21	14	11	9				4
1 ¼	95	47	32	24	19				4
1 ½	136	68	45	34	27			2	2
1 ¾	178	59	59	45	36			2	2
2	211	105	70	53	42			4	
2 ¼	256	128	85	64	51			4	
2 ½	287	143	96	72	57		2	2	
2 ¾	312	156	104	78	62		2	2	
3	341	170	114	85	68		2	2	
3 ½									

STONE SALT

Spread width : **4** Metres

Limiter raised in 1 chain link

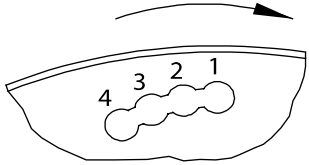


Scale	Quantity g/m² Speed 5 – 25 Km/h					Number of vanes in			
	5	10	15	20	25	Pos. 1	Pos. 2	Pos. 3	Pos. 4
¾									
1	21	11	7	5					4
1 ¼	47	24	16	12	9				4
1 ½	68	34	23	17	14			2	2
1 ¾	89	45	30	22	18			2	2
2	105	53	35	26	21			4	
2 ¼	128	64	43	32	26			4	
2 ½	143	72	48	36	29		2	2	
2 ¾	156	78	52	39	31		2	2	
3	170	85	57	43	34		2	2	
3 ½									

STENSALT

Spread width : **6** Metres

Limiter raised in highest position

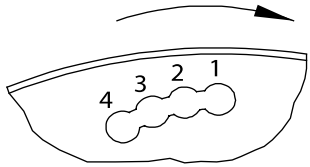


Scale	Quantity g/m² Speed 5 – 25 Km/h					Number of vanes in			
	5	10	15	20	25	Pos. 1	Pos. 2	Pos. 3	Pos. 4
¾									
1	14	7	5					4	
1 ¼	32	16	11	8	6			4	
1 ½	45	23	15	11	9			4	
1 ¾	59	30	20	15	12			4	
2	70	35	23	18	14			4	
2 ¼	85	43	28	21	17			4	
2 ½	96	48	32	24	19		2	2	
2 ¾	104	52	35	26	21		2	2	
3	114	57	38	30	23		2	2	
3 ½									

KEMIRA NPK / CALCIUM AMMONIUM NITRATE

Spread width : **6** Metres

Limiter raised in highest position

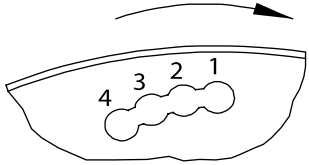


Scale	Quantity g/m² Speed 6 – 12 Km/h					Number of vanes in			
	6	8	10	12		Pos. 1	Pos. 2	Pos. 3	Pos. 4
1	9	7	6	5		2	2		
1 ½	24	18	15	12		3	1		
2	38	28	23	19		3	1		
2 ½	53	40	32	27		3	1		
3	72	54	43	36		3	1		
3 ½	90	68	54	45		3	1		
4	108	81	65	54		3	1		
4 ½	122	92	73	61		4			
5	136	102	82	68		4			

YARA NPK

Spread width : **5** Metres

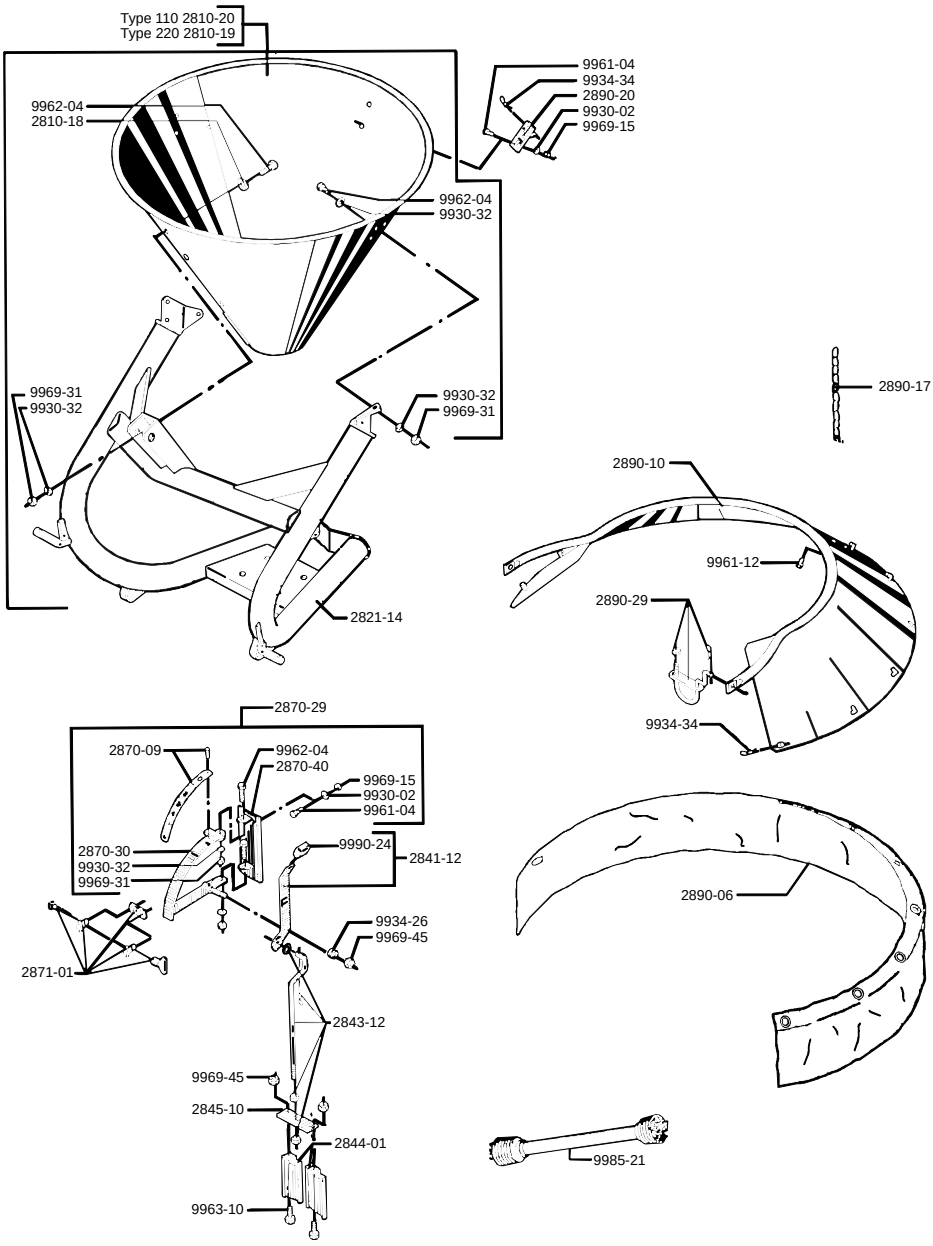
Limiter raised in highest position



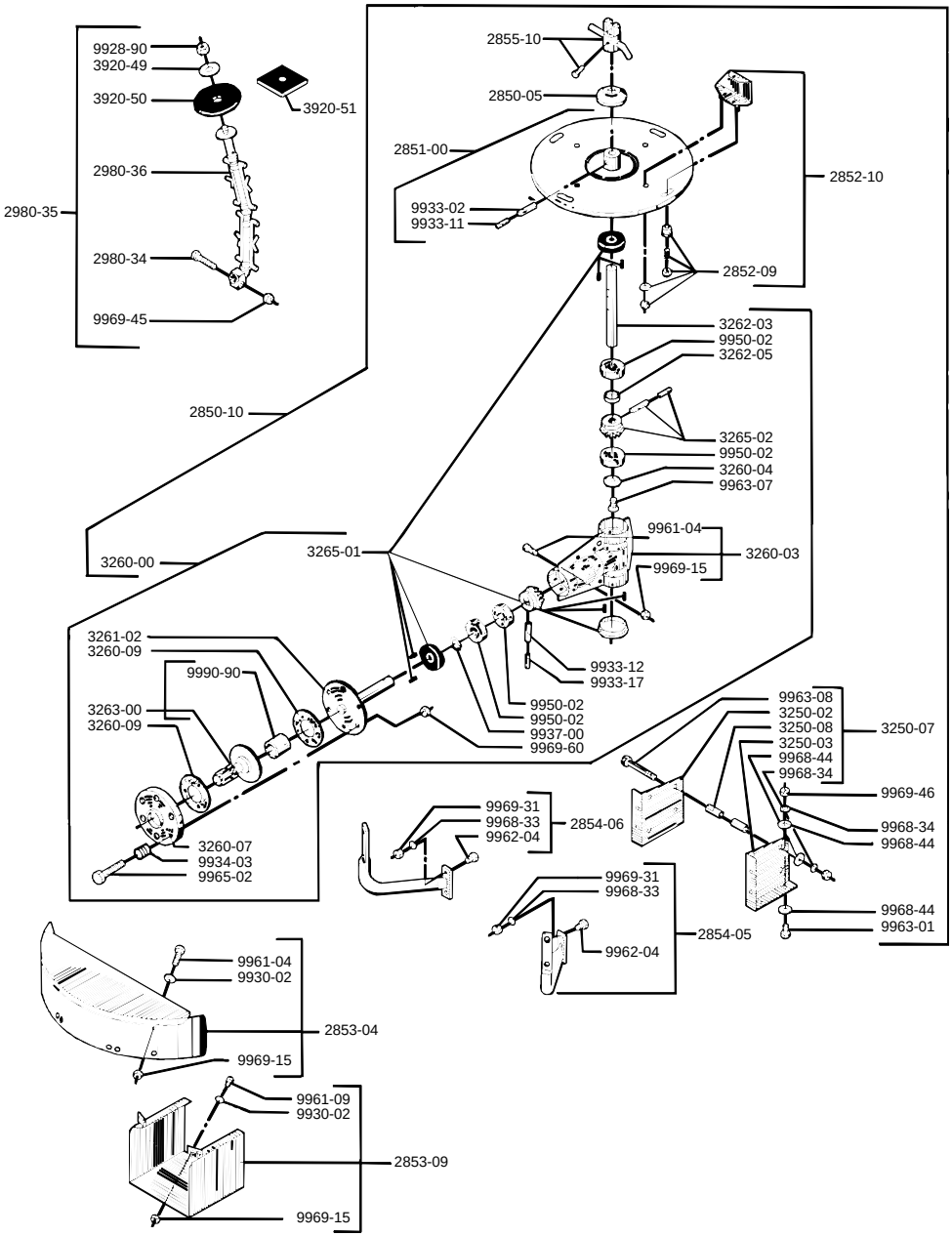
Number of vanes in

Scale	Quantity g/m² Speed 6 – 12 Km/h					Pos. 1	Pos. 2	Pos. 3	Pos. 4
	6	8	10	12					
1	14	10	8	7		2	2		
1 ½	33	24	20	16		2	2		
2	54	40	32	27		2	2		
2 ½	75	56	45	37		2	2		
3	99	74	59	50		2	2		
3 ½	119	90	72	60		3	1		
4	138	103	83	69		3	1		
4 ½	153	115	92	77		3	1		
5	167	125	100	84		3	1		

Spare Parts Lists


Type 110 2810-20
Type 220 2810-19
9961-04
9934-34
2890-20
9930-02
9969-15
9962-04
2810-18
9962-04
9930-32
9969-31
9930-32
9930-32
9969-31
2821-14
2890-17
2890-10
9961-12
2890-29
9934-34
2870-29
2870-09
9962-04
2870-40
9969-15
9930-02
9961-04
2870-30
9930-32
9969-31
9990-24
2841-12
9934-26
9969-45
2871-01
2843-12
9969-45
2845-10
2844-01
9963-10
2890-06
9985-21

Pos. No.	Order no.	Notes	Pos. No.	Order no.	Notes
	2810-18 2810-19 2810-20 2821-14 2841-12	 FS 220 FS 110			
	2843-12 2844-01 2845-10 2870-09 2870-29				
	2870-30 2870-40 2871-01 2890-06 2890-10				
	2890-17 2890-20 2890-29 9930-02 9930-32	 Ø6 Ø8			
	9934-26 9934-34 9961-04 9961-12 9962-04	4,5 x 20 x 16 Ø3 M6 x 16 M6 x 20 M8 x 20			
	9963-10 9969-15 9969-31 9969-45 9985-21	M10 x 20 M6 M8 M10			
	9990-24				
					September 2004


9928-90
3920-49
3920-50
3920-51
2980-36
2980-35
2980-34
9969-45
2855-10
2850-05
2851-00
2852-10
9933-02
9933-11
2852-09
3262-03
9950-02
3262-05
2850-10
3265-02
9950-02
3260-04
9963-07
9961-04
3260-03
3260-00
3265-01
9969-15
3261-02
3260-09
9990-90
9933-12
9933-17
3263-00
3260-09
9950-02
9950-02
9937-00
9969-60
9963-08
3250-02
3250-08
3250-07
3250-03
9968-44
9968-34
9969-46
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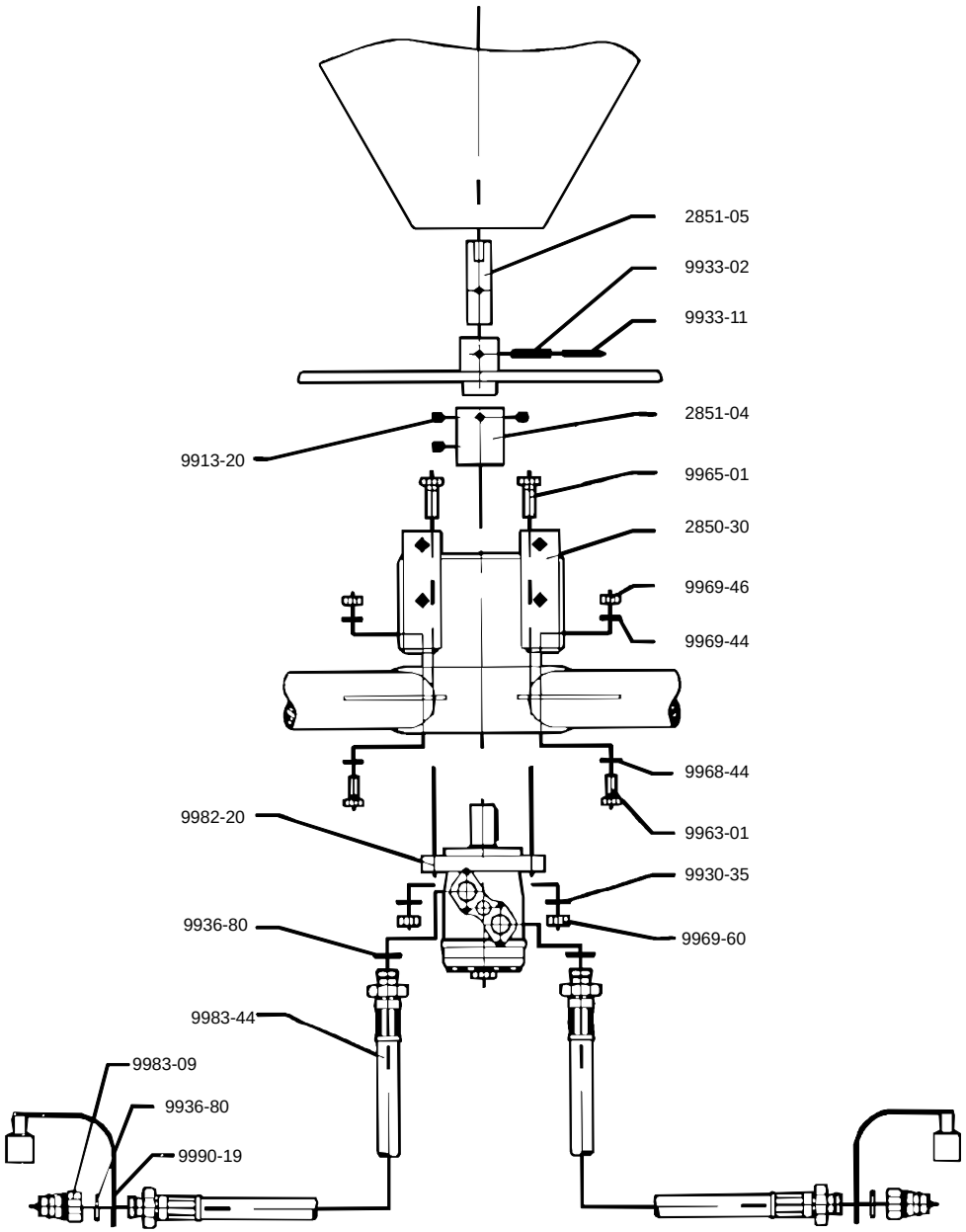
9968-33
9962-04
2854-06
9968-34
9968-44
3260-07
9934-03
9965-02
9969-31
9968-33
9968-44
9963-01
9962-04
2854-05
9961-04
9930-02
2853-04
9969-15
9961-09
9930-02
2853-09
9969-15

Pos. No.	Order no.	Notes	Pos. No.	Order no.	Notes
	2850-05		9965-02	M12 x 65	
	2850-10		9968-33	Ø8	
	2851-00		9968-34	Ø10	
	2852-09		9968-44	M10	
	2852-10		9969-15	M6	
	2853-04		9969-31	M8	
	2853-09		9969-45	M10	
	2854-05		9969-46	M10	
	2854-06		9969-60	M12	
	2855-10		9990-90		
	2980-34				
	2980-35				
	2980-36				
	3250-02				
	3250-03				
	3250-07				
	3250-08				
	3260-00				
	3260-03				
	3260-04				
	3260-07				
	3260-09				
	3261-02				
	3262-03				
	3262-05				
	3263-00				
	3265-01				
	3265-02				
	3920-49				
	3920-50				
	3920-51				
	9928-90	½" WG			
	9930-00				
	9933-02	Ø8 x 40			
	9933-11	Ø5 x 40			
	9933-12	Ø8 x 45			
	9933-17	Ø5 x 45			
	9934-03				
	9937-00	UK 25 x 1,2			
	9950-02	6305-2RS			
	9962-04	M8 x 20			
	9963-01	M10 x 25			
	9963-07	M10 x 25			
	9963-08	M10 x 110			
	9964-03	M6 x 10			
	9964-04	M6 x 15			Juni 2005


2851-05
9933-02
9933-11
2851-04
9913-20
9965-01
2850-30
9969-46
9969-44
9968-44
9982-20
9963-01
9930-35
9936-80
9969-60
9983-44
9983-09
9936-80
9990-19

Pos. No.	Order no.	Notes	Pos. No.	Order no.	Notes
	2850-30 2851-04 2851-05 9913-20 9930-35	 M8 x 10 D10/22			
	9933-02 9933-11 9936-80 9963-01 9965-01	Ø8 x 40 Ø5 x 40 M10 x 25 M12 x 35			
	9968-44 9969-46 9969-60 9982-20 9983-09	D10/21 M10 M12			
	9983-44 9990-19				
					September 1995

NOTES:

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