



Translation of the original operating manual

MDD, MDP, MDG, MDC

Read carefully before initial operation!

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It may NOT

seem inconvenient and unnecessary to read and observe the operating instructions. It is not enough to hear and see from others that an implement is good, and then to buy it and believe that everything takes care of itself. The person concerned would then not only cause damage to himself, but also make the mistake of assuming that the cause of any problems is due to the implement, instead of himself. To ensure success, one has to go into the spirit of things, and instruct oneself about the purpose of all equipment on the implement and gain experience with its handling. Only then can one be satisfied both with the implement and oneself. These operating instructions aim to achieve this.

Leipzig-Plagwitz 1872

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1 EC Declaration of Conformity

In compliance with Directive 2006/42/EC

The manufacturer APV - Technische Produkte GmbH.
Dallein 15, AT-3753 Hötzelstdorf hereby declares that the product

Multi-metering systems MDD, MDP, MDG, MDC

Implement type designation / serial no. (see handover declaration and title page)

to which this declaration of conformity refers, complies with the relevant basic safety and health requirements of EC Directive 2006/42 EC as well as the requirements of other relevant EC Directives

2006/42/EC Machinery Directive
2004/108/EC EMC Directive

If applicable: Title / Number / Current version of the other EC Directives

For proper implementation of the safety and health requirements mentioned in the EC Directives, the following standards and/or technical specifications were taken into account:

EN 14018 Agricultural and forestry machinery – Seed drills – Safety
EN 349 Safety of machinery – Minimum gaps to avoid crushing of parts of the human body
EN 60204-1 Safety of machinery – Electrical equipment
EN 953 Safety of machinery – Guards
ISO 12100 Safety of machinery – General principles for design –
Risk assessment and risk reduction
ISO 13857 Safety of machinery – Safety distances
ISO 14982 Agricultural and forestry machinery – Electromagnetic compatibility –
Test methods and acceptance criteria

If applicable: Title / Number / Current version

Your CE contact person at APV is Mr. Jürgen Schöls.
He can be reached at the telephone number +43(0) 2913-8001.

Dallein, 05/2018
City, Date



Signature

Ing. Jürgen Schöls
Management

2 Provisions

Dear customer!

We are pleased and congratulate you on your purchase and wish you lots of fun and success in working with this implement!

Please be sure to read all the instructions in this operating manual before operating the implement!

3 Warranty

Please check the implement for any transport damage immediately upon receipt. Later claims regarding transport damage can no longer be considered.

We provide a one-year factory warranty as of the date of delivery (your invoice or the delivery slip serve as a warranty certificate).

This warranty is applicable for cases of material or construction faults and does not include parts that are damaged by normal or excessive wear.

The warranty expires

- if damage is caused by external forces.
- in cases of operating errors.
- if the prescribed requirements are not met.
- if the implement is modified, expanded or equipped with third-party spare parts without our permission.
- if the implement is cleaned with water.
- if the spreader is used for snow and ice removal.

4 Accident prevention safety instructions

The general accident prevention regulations of the respective countries must be observed.

The implement may only be used by persons who are informed of the hazards.

Check the hazard area before starting up and operating the implement! (Children!)
Ensure sufficient visibility!

The warning and information stickers applied to the implement provide important instructions for safe operation: observe them for the sake of your own safety!

Before starting work, you should get to know all of the equipment and operating elements as well as their functions.

5 Layout and mounting the implement

5.1 Layout and mode of operation

The multi-metering unit is a spreading and seeding unit with a capacity of 40/100 litres.

The seeding shaft is driven by a 12-V gear motor, which is regulated using the control box. The speed of the seeding shaft can be comfortably adjusted using the control box from the driver's seat. With the MDD version (with spreading plate), the working width can also be adjusted from the driver's seat.

As an option, there is the possibility of adjusting the speed of the seeding shaft to the speed of the tractor by using various speed sensors (available as an accessory).

Furthermore, tractor linkage sensors are also available as an option, which are responsible for automatically switching on and off at the headland.

Power can be supplied to the control box either through the 3-pin standard socket or optionally directly from the battery.

5.2 Mounting the implement

To mount the seeder on the soil tillage implement, use the counter plate that is supplied as a standard, which can be bolted onto the frame of various implements.

Counter plate for mounting

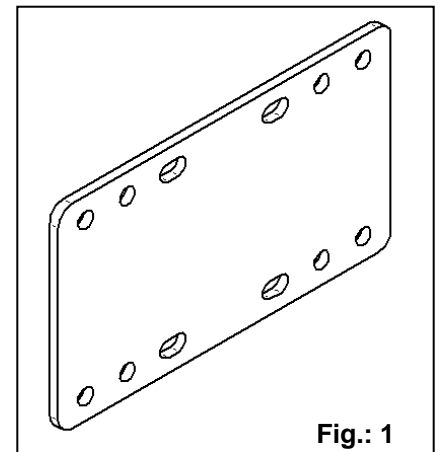


Fig.: 1

To attach the seeder, you should use at least 8 bolts with a diameter of 10 mm and the required length to ensure secure and firm attachment of the implement.

Please note that the MDD must be mounted at a height of more than 1.5 m (delivery height of the spreading plate).



Fig.: 2

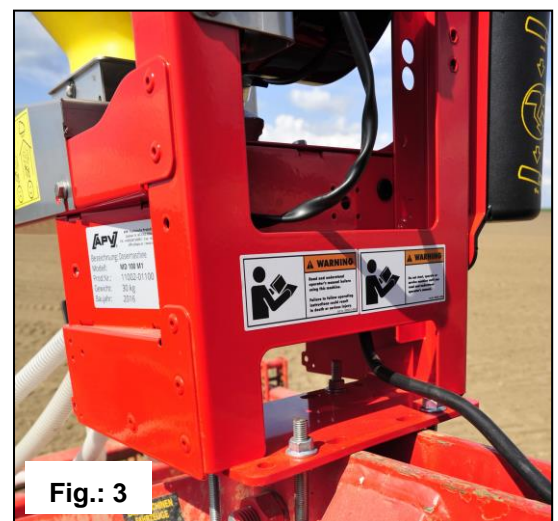


Fig.: 3

To mount the implement on the three-point linkage of the tractor, bolt the tractor linkage drawbar between your seeder and the supplies counter plate. You should use at least 8 bolts with a diameter of 10 mm. Then install the supplies top link bracket onto the frame of the spreader. Now you can attach the spreader onto the three-point linkage of your towing vehicle.



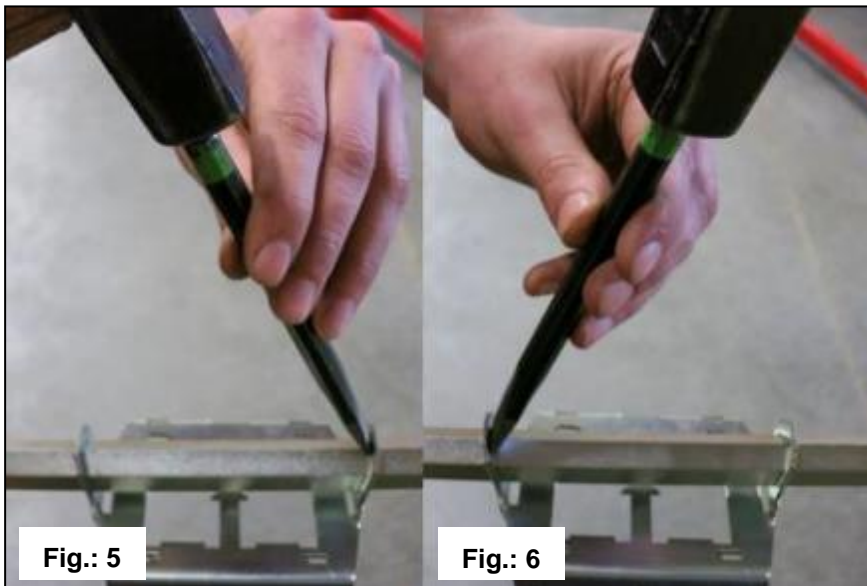
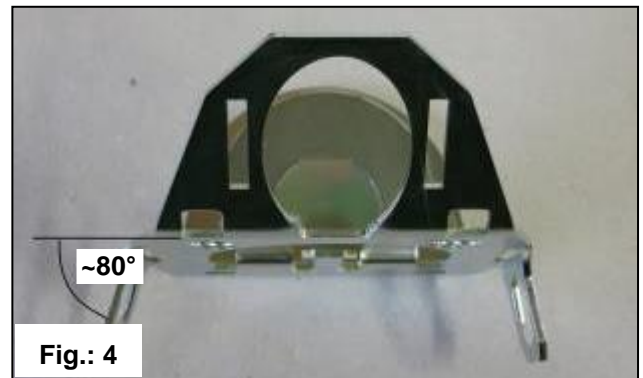
CAUTION: APV is not liable for improper mounting or faulty use of the implement.

5.3 Installation of the baffle plates on the MDP and MDG

The baffle plates can be mounted using the standard supplied hexagon shaft or directly (without the hexagon shaft) onto the soil tillage implement.

The following points must be noted when mounting onto the implement (cultivator, harrow, etc.):

- To install the baffle plates, you must bend the "tabs" on the sides towards the rear (approx. 80°, see Fig.: 4) using pliers and then bolt or weld them with the hexagon shaft onto the implement.
- To prevent the baffle plates from sliding to the sides on the hexagon shaft, fasten the baffle plates with a chisel and hammer (see Fig.: 5, Fig.: 6).



- The baffle plates should be evenly distributed over the entire width of the implement, with a max. spacing of 75 cm.



NOTE: for proper distribution, the max. spacing between the baffle plates may not exceed 75 cm. For the MDP (6 outlets), this results in a maximum working width of 4.5 m.

- The baffle plates should have approx. 40 cm clearance from the tilled soil!
- The seed hoses should flow into the dispersion plates vertically (90°). Therefore, the baffle plates should also be mounted vertically (90°) on the hexagon shaft! (Fig.: 7).

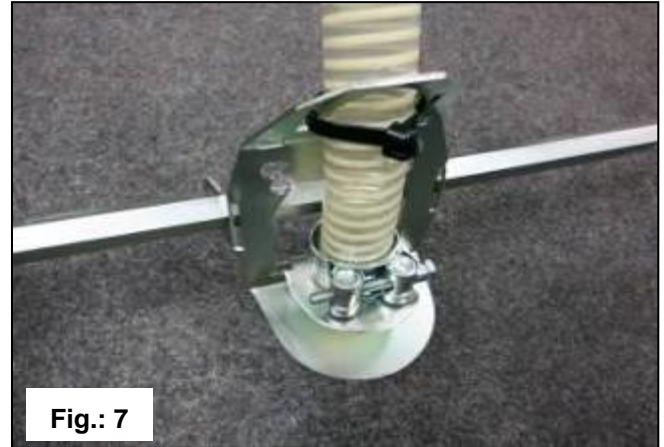


Fig.: 7



Fig.: 8



NOTE: when hose routing, ensure that they do not have a gradient (see Fig.: 8), otherwise the hoses can get clogged!

5.4 Hose connection

- Slightly loosen the locking bolts (not completely)!
- Apply a little silicone spray onto the hoses (only on the outside!) to make it easier to push them through the sealing. The hoses must be completely pushed in (until you feel the stop) so that the seed can flow smoothly.
- Then tighten the bolts. The seal is pressed together and thus holds the hose firmly.

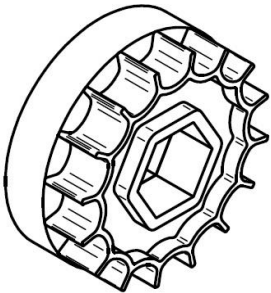
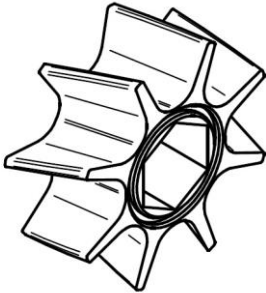
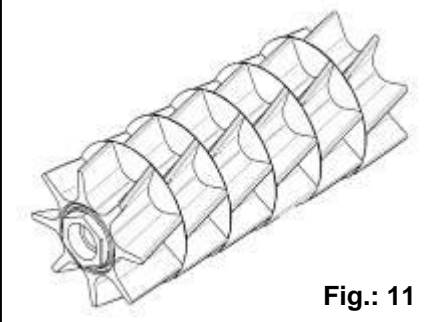


6 Settings

6.1 Proper selection of the seeding shaft



Before filling the hopper with seed, it is important to select the proper seeding shaft (Flex20, fine or blind).

The selection is based on the properties of the seed and the rate to be spread.

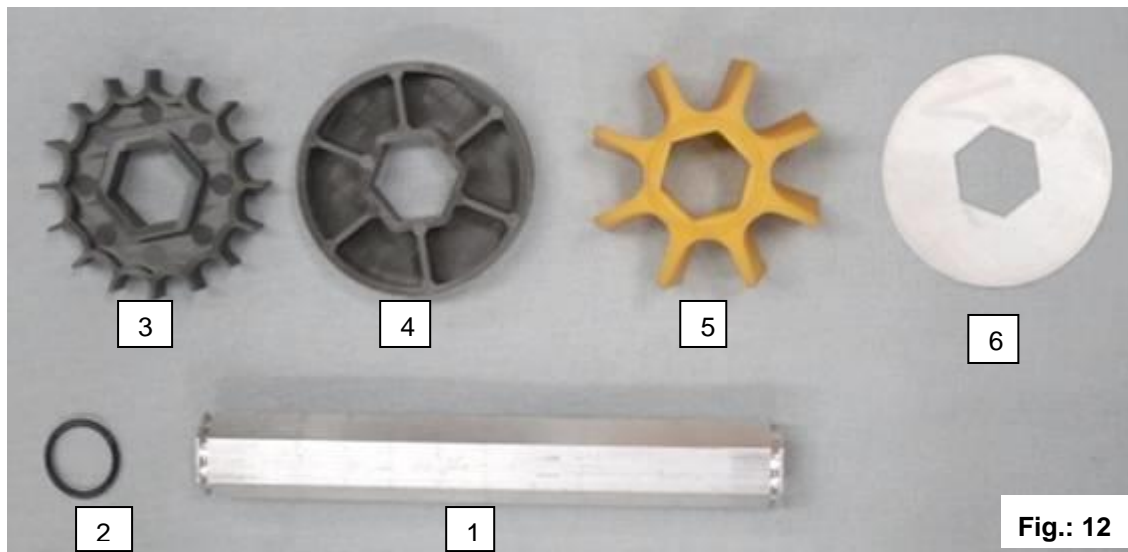
Seeding shaft types		Standard equipment
		
fb-f	Flex20	
Granulated fertiliser, mustard, phacelia	Granulated fertiliser, grass mixtures, cereals	 Fig.: 11

A seed wheel accessories kit is included in the standard scope of delivery for the MD:

- 6 x Flex20 seed wheel
- 12 x f seed wheel
- 12 x fb seed wheel
- 12 x O-ring 14.1 x 1.6
- 2 x seed metering wheel hexagon shaft
- 10 x spacing discs
- 1 x rubber driving belt

Seeding shaft types: Available as an option	
	
fb-ef-eb	efv-efv
Poppy	Oil rape seed

6.2 Assembly of the seeding shaft



- 1 hexagon shaft
- 2 O-ring
- 3 f seed wheel
- 4 Blind fb seed wheel
- 5 Flex 20 seed wheel
- 6 Spacing discs

The number and type of the seed wheels must be the same for each outlet. The arrangement and design of the seed wheels depends on the required spread rate and the seed type. This can be read from the seeding table, after the spread rate was calculated as explained in section 6.8.

The O-ring is inserted in the groove on the hexagon shaft, and then the seed wheels are attached.

For example: (per outlet)	1 fine seed wheel 1 blind seed wheel 1 spacing disc	or:	1 Flex20 seed wheel 1 spacing disc
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This sequence is repeated until the shaft is fully equipped. Now the seeding shaft is sealed with an O-ring.

The seeding shaft does not have a defined installation direction, since each outlet is equipped individually.



CAUTION: it is important that the closed side of the blind fb seed wheel (Fig.: 12/4) is always resting on the f fine seed wheel (Fig.: 12/3) and the spacing discs are placed between the open sides of the seed wheels.

5 spacing discs must be installed for each combination.

Furthermore, the fine seed wheels must be arranged **offset** beside each other (Fig.: 15).

Scope of use for the Flex20 seeding shaft:

Generally for granulated fertiliser, high rates or large grain sizes.
E.g.: Grass mixtures, rye, barley, wheat, oats, etc.

Scope of use for the fine-toothed seeding shaft

Generally for low rates or small grain sizes as well as micro granules.
Small seeds such as oil rape seed, clover, phacelia, slug pellets, etc.

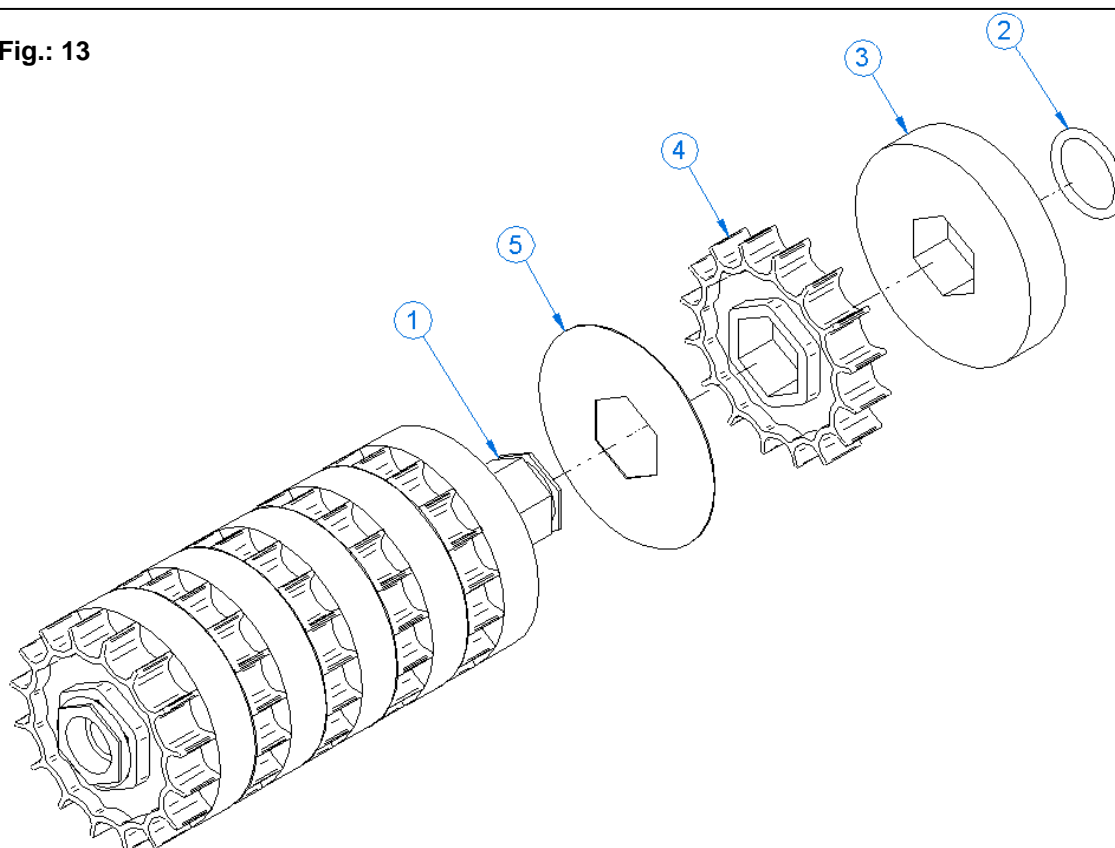


TIP: the spread rate can be reduced by using blind or extra-fine seed wheels. However, ensure that the same number and type of seed wheels are installed for each outlet!



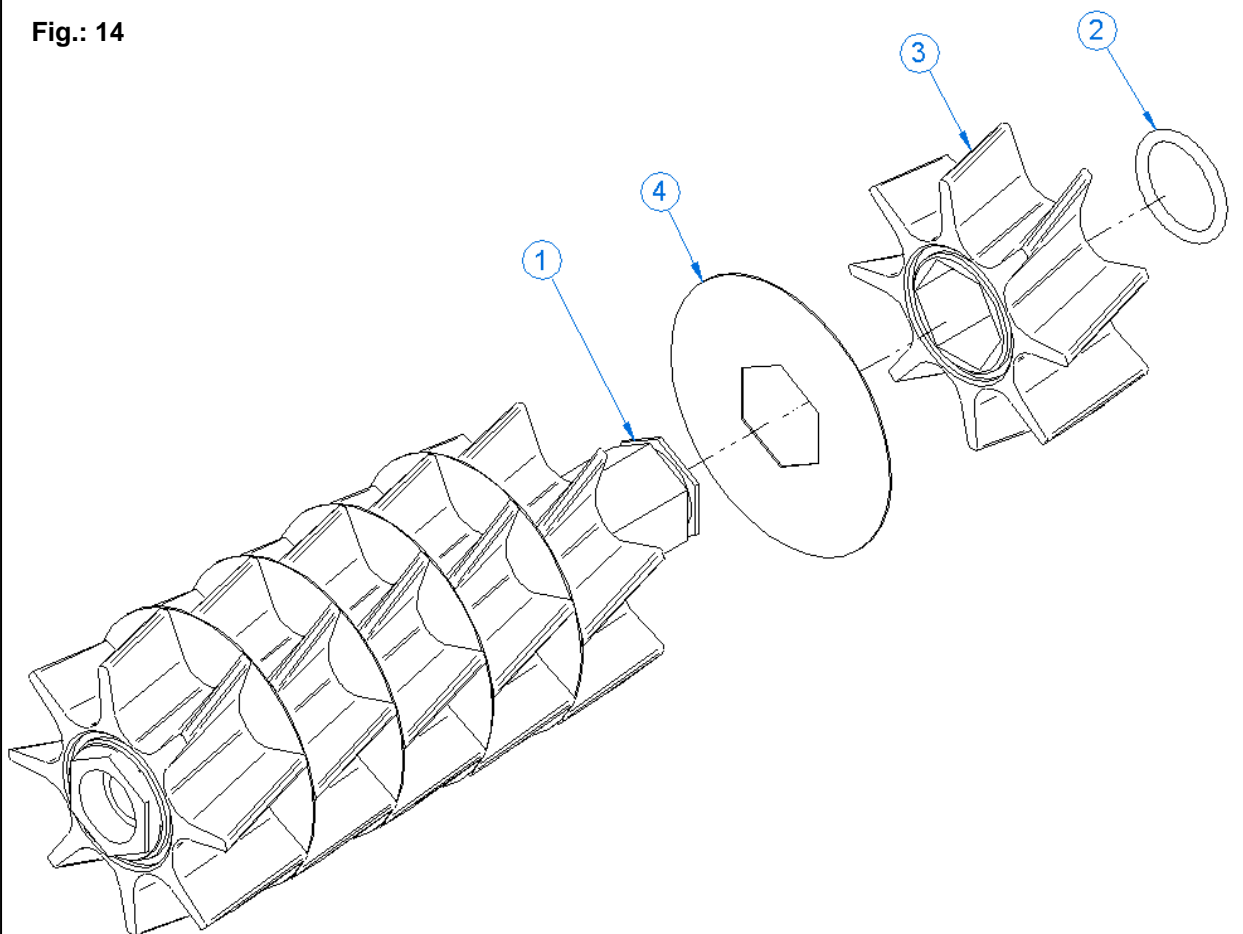
CAUTION: it is important to select the combination of seed wheels such that the seeding shaft settings on the control box are ideally between 20 % and 80 %. This ensures good regulation and homogeneous delivery of the seed even with ground speed related spreading at very low or high speeds!

Fig.: 13



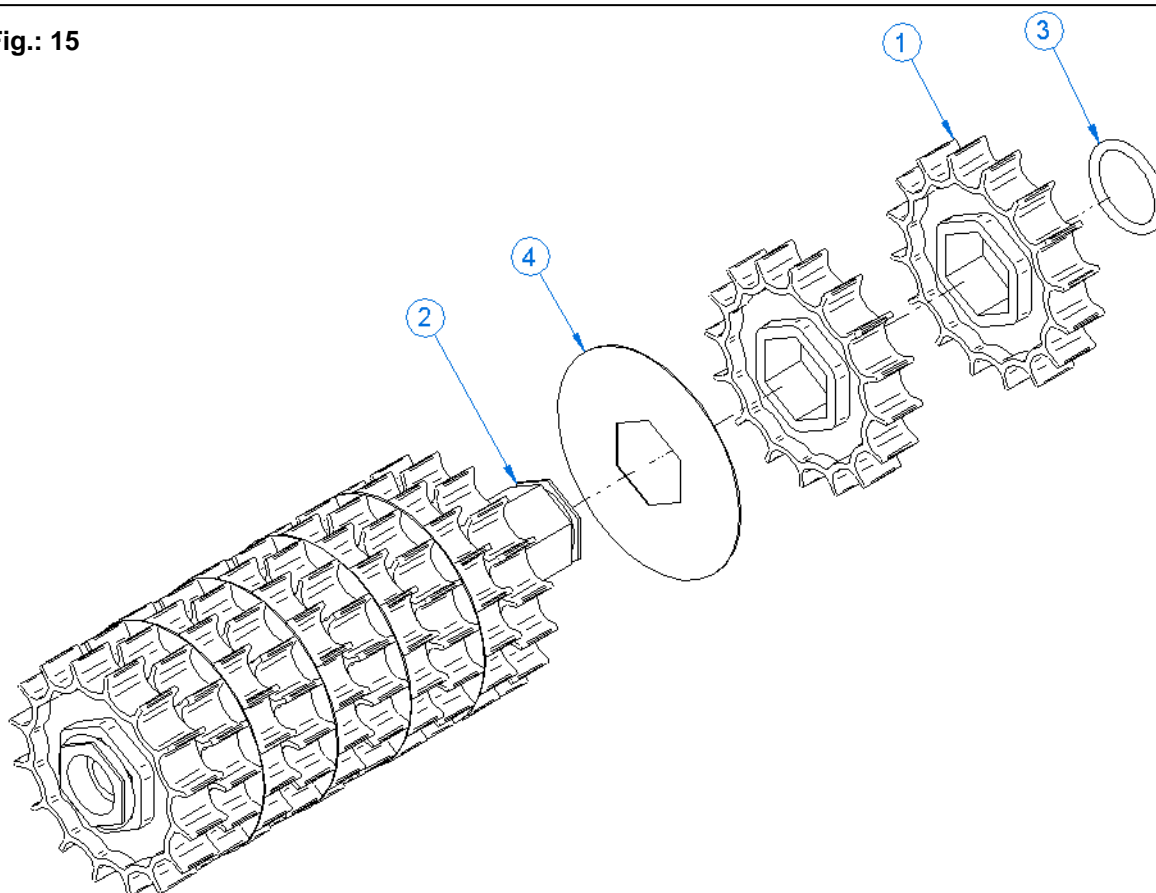
Pos.	Art.Nr.	Bezeichnung	Name_EN	Menge
1	11000-3-001	Säradsechskantwelle	—	1
2	04000-3-711	O-Ring 14,1x1,6	O-ring 14.1x1.6	2
3	04000-3-710	Särad fb	Sowing wheel fb	6
4	04000-3-709	Särad f	Sowing wheel f	6
5	04000-3-029	Distanzscheibe 0,3mm KB	Spacer 0.3mm KB	5

Fig.: 14



Pos.	Art.Nr.	Bezeichnung	Name_EN	Menge
1	11000-3-001	Säradsechskantwelle	—	1
2	04000-3-711	O-Ring 14,1x1,6	O-ring 14.1x1.6	2
3	04000-3-601	Särad Flex20	Sowing wheel Flex20	6
4	04000-3-029	Distanzscheibe 0,3mm KB	Spacer 0.3mm KB	5

Fig.: 15



Pos.	Art.Nr.	Bezeichnung	Name_EN	Menge
1	04000-3-709	Sarad f	Sowing wheel f	12
2	11000-3-001	Säradsechskantwelle	—	1
3	04000-3-711	O-Ring 14,1x1,6	O-ring 14.1x1.6	2
4	04000-3-029	Distanzscheibe 0,3mm KB	Spacer 0.3mm KB	5

6.3 Spreading width of the MDD

The spreading width depends on the density and the shape of the seed as well as the speed of the spreading disc. The MDD is designed such that it can spread seed (slug pellets) uniformly over a width of up to 28 m. For this to succeed, the battery and the alternator must be in good condition. The precise settings for the spread rate, working width etc. can be taken from the setting chart under point 6.10. The spreader must be mounted at least 1.5 m above the ground to achieve optimal spreading density.



Fig.: 16



NOTE: when the MDD is mounted on implements with small working widths and the seed should be spread directly in/in front of the roller, the spreader can also be mounted slanted slightly downwards.

However, we recommend installing a precision dispersion plate (available as an option) to achieve more precise spreading results with small working widths up to max. 4 m.

6.4 Table for the working width

Seed Seed Graines	Speed Speed Vitesse	Working width Working width Largeur de travail
Gras Grass Herbe	350	1-2 m
	1600	~ 4 m
	2800	~ 6 m
	3000	~ 7 m
Senf Mustard Moutarde	350	1-2 m
	1600	~ 7 m
	2800	~ 14 m
	3000	~ 17 m
Weißklee White clover Trèfle Blanc	350	1-2 m
	1600	~ 7 m
	2800	~ 14 m
	3000	~ 17 m
Blaue Lupine Blue lupine Lupin bleu	350	2-3 m
	1600	~ 10 m
	2800	~ 20 m
	3000	~ 21 m
Rettich Radish Radis	350	1-2 m
	1600	~ 7 m
	2800	~ 14 m
	3000	~ 17 m
Phacelia Phacelia Phacélie	350	1-2 m
	1600	~ 5 m
	2800	~ 10 m
	3000	~ 12 m
Luzerne Alfala Luzerne	200	1-2 m
	1400	~ 6 m
	2700	~ 8 m
	3000	~ 11 m
Buchweizen Buckwheat Blé noir	350	1-2 m
	1600	~ 12 m
	2800	~ 15 m
	3000	~ 17 m

Seed Seed Graines	Speed Speed Vitesse	Working width Working width Largeur de travail
Wicke Vetch Vesce	350	1-2 m
	1600	~ 14 m
	2800	~ 17 m
	3000	~ 18 m
Rotklee Red clover Trèfle rouge	350	1-2 m
	1600	~ 9 m
	2800	~ 15 m
	3000	~ 16 m
Metarex INOV Metarex INO Metarex TDS	350	~ 6 m
	1600	~ 12 m
	2800	~ 21 m
	3000	~ 28 m
Schneckenlinsen Slug lentils Lentilles antimilaces	350	~ 5 m
	1600	~ 11 m
	2800	~ 22 m
	3000	~ 28 m
Allowin / Allowin Quattro	350	~ 6 m
	1600	~ 12 m
	2800	~ 22 m
	3000	~ 28 m
Clartex Neo Slug OFF Xeon Pro	350	~ 6 m
	1600	~ 12 m
	2800	~ 22 m
	3000	~ 28 m
Mesurol Schneckenkorn Slug pellets Grains anti-limaces	350	~ 5 m
	1600	~ 11 m
	2800	~ 22 m
	3000	~ 28 m
Commercial fertiliser DC37	350	1-2 m
	1600	~ 13 m
	2800	~ 16 m
	3000	~ 18 m

6.5 Point of impact adjustment for the MDD

The point of impact adjustment can be used to adjust the entire spreading pattern by 20° in both directions. This can be important for some spreading materials. For example, if the spreading pattern is turned by 15° to the right, the point of impact adjustment is turned by 15° to the left. If you move it further to the right, a boundary spreading function can also be obtained.



Fig.: 17



Fig.: 18

6.6 Spreading disc, lateral distribution, and throwing vanes for the MDD

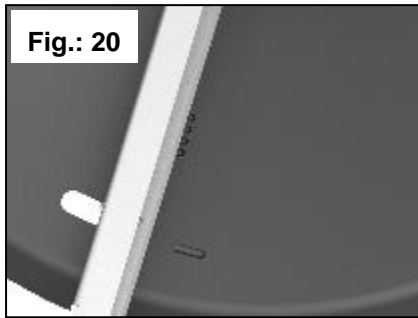
The spreading disc must rotate counter clockwise. The spreading plate has 2 throwing vanes that are positioned not quite parallel to each other. They are only slightly adjustable, since their arrangement and shape are already trimmed for perfect lateral distribution. The spreading cone is only corrected using the point of impact adjustment and the throwing vanes. To achieve optimal lateral distribution for the selected working width, you must then still adjust the setting of the throwing vanes on the spreading plate. When doing so, be sure to disconnect the power supply from the control box!

To adjust the throwing vanes, loosen them and turn the throwing vane to the required position. Then tighten all of the bolts again!

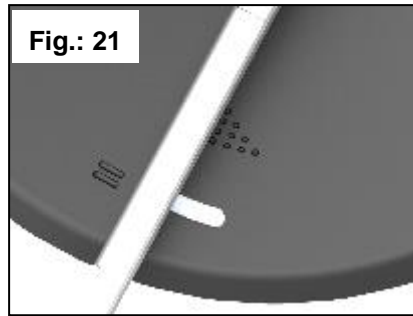


Fig.: 19

There are marks directly on the spreading plate, which can be used to see the current position of the throwing vanes:




Throwing vane I at Point 4



Throwing vane II at Point 4

The table shows the settings for slug pellets:

Slug pellets		
Slug pellets		
Grains anti-limaces		
Working width	Throwing vane I	Throwing vane II
<20m	Point 1	Point 1
20m	Point 2	Point 2
24m	Point 3	Point 3
28m	Point 4	Point 4

The following general rule applies for all seed types: if the spreading density is higher in the outer area than in the middle, the throwing vanes must be adjusted further towards "Point 1".



NOTE: the seeding shaft can only be switched on when the spreading plate is rotating!

6.7 Dismounting (changing) the seeding shaft

To dismount the seeding shaft, proceed as follows:



NOTE: when changing the seeding shaft, ensure that the hopper is completely empty.

After installing the seeding shaft, check the implement for smooth running.

- Empty the hopper completely.
- Remove the hood on the side for the drive rollers.
- Using the socket wrench supplied on the cover, loosen the nut so that the cover can be pulled off upwards.
- Pull the round belt off of the drive rollers (Fig.: 24).
- Screw off the locking nuts of the cover plate for the seeding shaft on the side (Fig.: 25).
- Now remove the entire seeding shaft along with the side cover plate (Fig.: 26).
- Read the required equipment of the seeding shaft from the seeding table (Point 6.11).
- Now the new seeding shaft can be installed in the implement.
- Install the disassembled parts again in the reverse sequence.





6.8 Agitator

Use of the agitator is only required for seed types that tend towards bridging or for very light seed (e.g. for grasses).

When the agitator is not required, you only have to remove the driving belt that is spanned on the drive wheels between the agitator and the seeding shaft.



6.9 Sensor (fill level sensor)

The fill level sensor sends a message to the control box when it is no longer covered with seed. The sensitivity of the sensor can be adjusted for the respective seed type. It is adjusted using the small slotted screw at the rear of the sensor. (In most cases, it is not necessary to change the adjustment.) In addition, the height of the fill level sensor can be comfortably adjusted from the outside.

To verify the function, an object can be held in front of the sensor and the LED on the back should light up.



Fig.: 28

6.10 Calibration test/regulation of the seed rate

The speed of the seeding shaft depends on the spread rate and the forward speed when operating with sensors. To determine the desired spread rate, you should perform a calibration test before beginning work.

The seeding tables show the spread rate for the respective seed types in kilograms per minute (= calibrated quantity).

The spread rate is calculated with the following formula:

$$\text{SpR} = \frac{\text{m(wgt)} \times \text{v(tractor)} \times \text{w(working)}}{600}$$

SpR: spread rate in kg/min

m(wgt): desired spread rate in kg/ha

v(tractor): speed of the tractor in km/h

w(working): working width in m

Example:
$$\frac{5 \text{ [kg/ha]} \times 12 \text{ [km/h]} \times 12 \text{ [m]}}{600} = 1,2 \text{ [kg/min]}$$

Proceed as follows to perform the calibration test:

1. Remove the hoses and/or the spreading plate by opening the quick fasteners.



2. For the calibration test, use the supplied sack or a different hopper that can be attached to the metering unit to collect the seed.
3. Using the formula shown under Point 6.10, calculate the desired spread rate per minute.
4. A precise description of the calibration test can be found in the operating manual of the respective control box.
5. After beginning operation, you should verify the spreading on the field. In particular, check the forward speed, the spread rate, the placement depth and distribution of the seed.



CAUTION: for safety-related reasons, the plug in the motor supply line on the MDD must be disconnected as soon as the spreading plate unit is folded down.

6.11 Seeding tables



CAUTION: the seeding tables are based on 6 outlets with the same equipment! If you are using e.g. only 2 outlets instead of the 6 outlets, the calibrated quantity is reduced accordingly.




NOTE: these tables can be used as reference values, however, they cannot be used in the same way everywhere, since many factors play a role and there may be strong changes (e.g.: thousand grain weight, moisture in the seed, change in the flow behaviour, etc.).





NOTE: the spread rate can be reduced or increased by adapting the seed wheel combination. The addition of blind seed wheels reduces the spread rate, and the addition of fine or Flex20 seed wheel increases the spread rate.





TIP: setting charts with other seed types can be found on our homepage www.apv.at.


Grass	
Grass	
Herbe	
Lolium perenne	
Rate	kg/min
Seeding shaft	ff
2	0.02
5	0.08
10	0.18
15	0.29
20	0.39
25	0.49
30	0.52
35	0.55
40	0.58
45	0.62
50	0.65
55	0.68
60	0.72
65	0.76
70	0.8
75	0.84
80	0.88
85	0.92
90	0.95
95	1.00
100	1.05


Wheat		
Blé Wheat		
Blé		
Triticum		
Rate	kg/min	kg/min
Seeding shaft	ff	Flex20
2	0.05	0.26
5	0.06	0.44
10	0.08	0.74
15	0.09	1.04
20	0.11	1.34
25	0.12	1.64
30	0.59	1.94
35	1.07	2.24
40	1.54	2.54
45	2.01	2.84
50	2.49	3.14
55	2.61	3.44
60	2.73	3.75
65	2.85	4.05
70	2.97	4.35
75	3.10	4.65
80	3.22	4.95
85	3.34	5.25
90	3.46	5.55
95	3.70	5.85
100	3.93	6.15


Barley	
Barley	
Orge	
Hordeum	
Rate	kg/min
Seeding shaft	ff
2	0.07
5	0.18
10	0.36
15	0.55
20	0.74
25	0.92
30	1.11
35	1.29
40	1.48
45	1.66
50	1.85
55	1.88
60	1.92
65	1.96
70	2.00
75	2.03
80	2.07
85	2.10
90	2.14
95	2.18
100	2.21


Radish	
Radish	
Radis	
Raphanus raphanistrum	
Rate	kg/min
Seeding shaft	ff
2	0.09
5	0.23
10	0.48
15	0.72
20	0.96
25	1.20
30	1.35
35	1.61
40	1.87
45	
50	
55	
60	
65	
70	
75	
80	
85	
90	
95	
100	


Vetch Vetch Vesce		
Vicia		
Rate	kg/min	kg/min
Seeding shaft	f-fb	ff
2	0.57	1.26
5	1.07	1.46
10	1.88	1.78
15	2.71	2.10
20	3.53	2.43
25	4.36	2.75
30		3
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		

Buckwheat Buckwheat Blé Noir		
Fagopyrum		
Rate	kg/min	kg/min
Seeding shaft	ff	Flex20
2	0.03	0.25
5	0.15	0.38
10	0.34	0.59
15	0.53	0.80
20	0.72	1.01
25	0.91	1.23
30	1.07	1.44
35	1.24	1.66
40	1.40	1.87
45	1.57	2.09
50	1.73	2.30
55	1.82	2.51
60	1.9	2.73
65	1.98	2.94
70	2.06	3.16
75	2.15	3.37
80	2.23	3.59
85	2.31	3.80
90	2.39	4.01
95		4.22
100		4.44

Oats Oats Avoine		
Avena		
Rate	kg/min	
Seeding shaft	f-fb	
2	0.01	
5	0.02	
10	0.03	
15	0.05	
20	0.05	
25	0.07	
30	0.09	
35	0.11	
40	0.13	
45	0.14	
50	0.17	
55	0.17	
60	0.18	
65	0.19	
70	0.20	
75	0.20	
80	0.20	
85	0.20	
90	0.20	
95	0.21	
100	0.23	

Mustard Mustard Moutarde			
Sinapis Alba			
Rate	kg/min	kg/min	
Seeding shaft	f-fb	ff	
2	0.03	0.12	
5	0.11	0.28	
10	0.25	0.54	
15	0.38	0.81	
20	0.51	1.07	
25	0.65	1.34	
30	0.75	1.59	
35	0.86	1.83	
40	0.97	2.09	
45	1.07	2.33	
50	1.19	2.58	
55	1.24	2.72	
60	1.29	2.85	
65	1.34	2.99	
70	1.40	3.12	
75	1.45	3.26	
80	1.50	3.39	
85	1.55	3.53	
90	1.61	3.66	
95	1.73	3.88	
100	1.86	4.10	

Alfalfa Alfalfa Alfalfa			
Medicago Sativa			
Rate	kg/min	kg/min	
Seeding shaft	f-fb	ff	
2	0.08	0.11	
5	0.16	0.26	
10	0.30	0.52	
15	0.45	0.77	
20	0.59	1.02	
25	0.74	1.28	
30	0.86	1.52	
35	0.99	1.77	
40	1.12	2.01	
45	1.24	2.25	
50	1.37	2.50	
55	1.40	2.64	
60	1.43	2.78	
65	1.45	2.91	
70	1.48	3.05	
75	1.51	3.19	
80	1.53	3.33	
85	1.56	3.47	
90	1.59	3.60	
95	1.68	3.87	
100	1.77	4.15	

Red clover Red Clover Trèfle rouge			
Trifolium			
Rate	kg/min	kg/min	
Seeding shaft	f-fb	ff	
2	0.03	0.21	
5	0.11	0.51	
10	0.25	1.02	
15	0.38	1.52	
20	0.53	2.03	
25	0.66	2.54	
30	0.80	2.62	
35	0.92	2.71	
40	1.06	2.79	
45	1.19	2.88	
50	1.32	2.97	
55	1.37	3.05	
60	1.40	3.14	
65	1.45	3.22	
70	1.49	3.31	
75	1.53	3.39	
80	1.57	3.48	
85	1.61	3.57	
90	1.65	3.65	
95	1.75	3.88	
100	1.85	4.10	

Phacelia Phacelia Phacélie		
Phacelia tanacetifolia		
Rate	kg/min	kg/min
Seeding shaft	f-fb	ff
2	0.11	0.13
5	0.23	0.29
10	0.46	0.56
15	0.68	0.83
20	0.89	1.10
25	1.12	1.37
30	1.14	
35	1.17	
40	1.19	
45	1.22	
50	1.25	
55	1.31	
60	1.39	
65	1.46	
70	1.53	
75	1.60	
80	1.67	
85	1.74	
90	1.82	
95	1.89	
100	1.97	



Oil rape seed Rape Colza			
Brassica Napus			
Rate	kg/min	kg/min	kg/min
Seeding shaft	f-fb	ef-eb-fb	efv-efv
2	0.08	0.03	0.01
5	0.16	0.05	0.01
10	0.29	0.07	0.04
15	0.41	0.10	0.06
20	0.54	0.13	0.08
25	0.66	0.16	0.10
30	0.77	0.22	0.12
35	0.88	0.28	0.14
40	0.99	0.34	0.16
45	1.10	0.39	0.18
50	1.21	0.45	0.20
55	1.26	0.48	0.22
60	1.32	0.50	0.25
65	1.37	0.53	0.27
70	1.42	0.55	0.29
75	1.47	0.57	0.31
80	1.52	0.60	0.33
85	1.57	0.62	0.35
90	1.63	0.65	0.37
95	1.73	0.68	0.39
100	1.83	0.71	0.41




Poppy Poppy Pavot	
Papaver	
Rate	kg/min
Seeding shaft	ef-eb-fb
2	0.02
5	0.04
10	0.06
15	0.09
20	0.11
25	0.14
30	0.20
35	0.25
40	0.31
45	0.37
50	0.42
55	0.45
60	0.48
65	0.51
70	0.53
75	0.56
80	0.59
85	0.62
90	0.64
95	0.68
100	0.71



Pea Pea Pois	
Pisum sativum	
Rate	kg/min
Seeding shaft	Flex 20
2	0.35
5	0.50
10	0.77
15	1.03
20	1.29
25	1.55
30	1.82
35	2.08
40	2.34
45	2.61
50	2.87
55	3.14
60	3.40
65	3.66
70	3.92
75	4.19
80	4.45
85	4.71
90	4.98
95	5.24
100	5.51



Horse gram Field beans Féveroles	
	
Macrotyloma uniflorum	
Rate	kg/min
Seeding shaft	Flex20
2	0.35
5	0.50
10	0.75
15	1.01
20	1.26
25	1.52
30	1.77
35	2.03
40	2.28
45	2.54
50	2.78
55	3.04
60	3.29
65	3.55
70	3.80
75	4.06
80	4.31
85	4.57
90	4.82
95	5.08
100	5.33

Chia WHITE		
Rate	kg/min	
Seeding shaft	f-fb	ef-eb-fb
2	0.04	0.02
5	0.09	0.04
10	0.18	0.06
15	0.26	0.09
20	0.35	0.11
25	0.46	0.14
30		0.19
35		0.24
40		0.29
45		0.34
50		0.39
55		0.41
60		0.44
65		0.46
70		0.49
75		0.51
80		0.53
85		0.56
90		0.58
95		0.59
100		0.60

DC 37 bulk	
Rate	kg/min
Seeding shaft	Flex20
2	0.47
5	0.70
10	1.07
15	1.46
20	1.84
25	2.22
30	2.60
35	2.98
40	3.36
45	3.74
50	4.12
55	4.50
60	4.88
65	5.26
70	5.64
75	6.02
80	6.35
85	6.52
90	6.70
95	6.87
100	7.04

PHYSIOSTART		
Rate	kg/min	kg/min
Seeding shaft	f-fb	Flex20
2	0.16	0.46
5	0.23	0.70
10	0.35	1.09
15	0.47	1.49
20	0.59	1.88
25	0.71	2.27
30	0.83	2.67
35	0.94	3.07
40	1.06	3.46
45	1.18	3.86
50	1.30	4.25
55	1.42	4.64
60	1.54	5.04
65	1.65	5.43
70	1.77	5.83
75	1.89	6.23
80	1.99	6.62
85	2.04	6.92
90	2.09	7.20
95	2.15	7.49
100	2.24	7.89

Florex	
Rate	kg/min
Seeding shaft	f-fb
2	0.00
5	0.06
10	0.16
15	0.25
20	0.35
25	0.44
30	0.54
35	0.64
40	0.74
45	0.83
50	0.92
55	1.02
60	1.12
65	1.22
70	1.31
75	1.41
80	1.50
85	1.60
90	1.70
95	1.79
100	1.89

6.12 Operation on the field

When you start seeding, proceed as follows:

- Start your towing vehicle.
- Switch on the control box using the "On/Off" button.
- **MDP/MDD:** start the fan / spreading plate using the "Fan / Spreading plate" button.
- **MDG/MDP/MDD/MDC:** to start the seed delivery, now press the "Seeding shaft" button to start the gear motor.



NOTE: the next point is not applicable if you are working with a lifting unit sensor (7-pin plug, tractor linkage sensor).

- When you are turning at the headlands, you only have to press the "Seeding shaft" button. The green LED is turned off. To start again, press the "Seeding shaft" button.
- When the work is finished, first switch off the seeding shaft, then the blower fan/spreading plate, and finally the entire control box with the "On/Off" button.

When operating the MDP on the field, the following points must be observed:

- The blower fan should always be switched on during field operation
- Verify the required spread rate
- Check that the width division (distance) of the baffle plates
- Check the height of the baffle plates: Distance from the ground approx. 40 cm
- Angle of the baffle plates: Attachment plate for the baffle plates should be mounted at approx. 90° (perpendicular) to the ground
- The hoses should be routed slightly slanted down or horizontally on the implement
- The hopper cover must be tightly sealed
- Check the placement depth of the seed

When operating the MDD on the field, the following points must be observed:

- The spreading plate should always be switched on during field operation
- Verify the required spread rate
- Ensure a working height of at least 1.5 m (delivery height of the spreading plate)

When operating the MDG or MDC on the field, the following points must be observed:

- Verify the required spread rate
- Check the placement depth of the spreading material

7 Special features of the MDC spreader type

7.1 General information

The MDC spreader type was specially developed to meet the requirements posed by products that may only be spread in **2 rows and without air support**.

7.2 Features

7.2.1 Surefill adapter

The scope of delivery of the MDC already includes a sealed and bolted hopper cover with **integrated Surefill adapter**. This ensures that you do not come into direct contact with the product when filling the hopper.

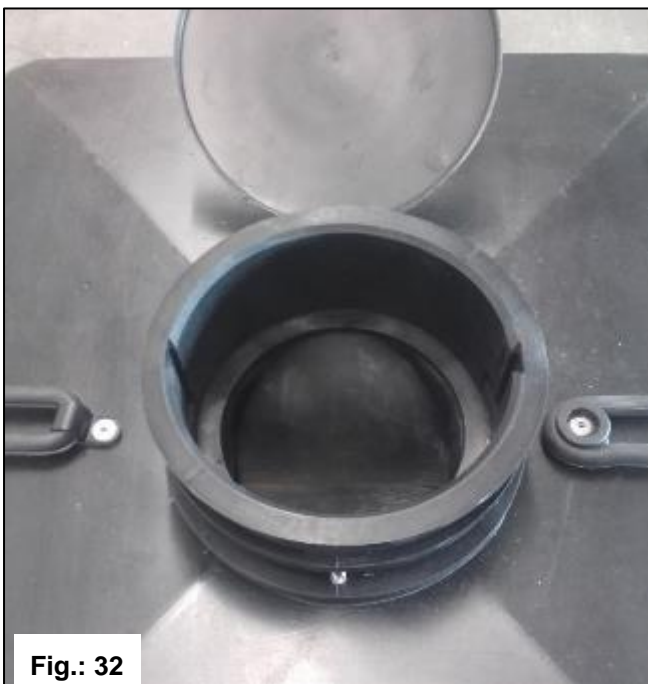


Fig.: 32

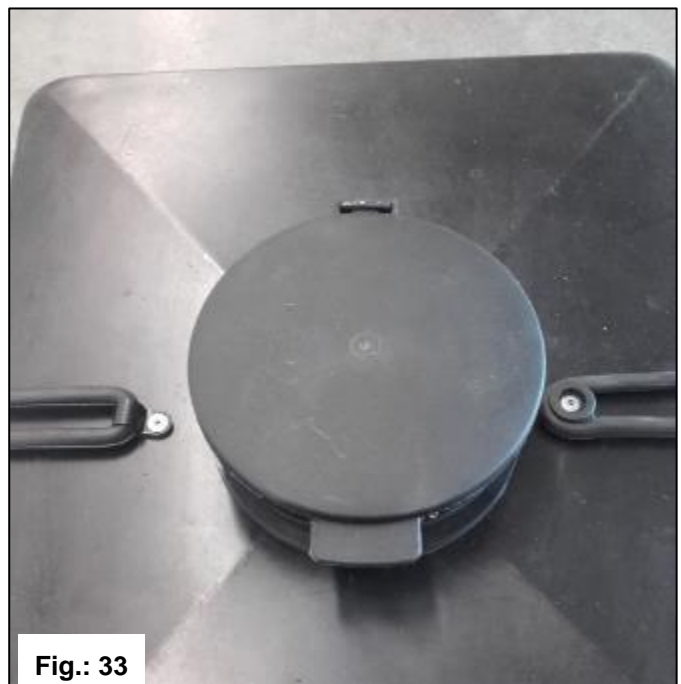


Fig.: 33

7.2.2 Fishtail coulters

The standard scope of delivery of the MDC includes 2 **fishtail coulters** as well as 5 m of hose and 2 hinge bolt clamps. The fishtail coulters are used to spread the product in the middle of the row so that it can reach its full efficacy.

Installation of the fishtail coulters

The fishtail coulters can be mounted on the hoses with the hinge bolt clamps.



Fig.: 34

The following points must be noted for installation on the implement:

- The fishtail coulters must be attached in the middle above the rows of the implement!
- The seed hoses should flow into the fishtail coulters vertically (90°).

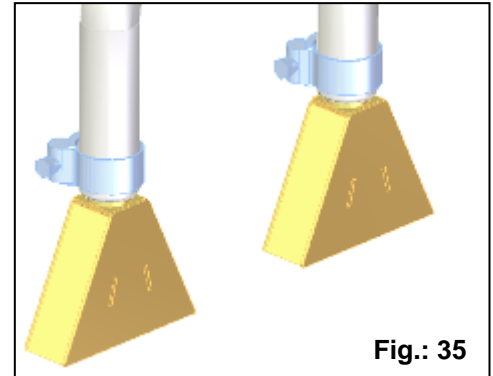


Fig.: 35



NOTE: Ensure that the hoses are routed vertically, as this is the only way to ensure continuous and blockage-free spreading of the product!

7.3 Calibration table

For the metering of fine-grained granules, we recommend the use of **three fine metering cartridges per outlet**.

SW [%]	Spread rate [kg/min] Mocap fb-f (a total of 6 fine seed wheels)
	2
5	0.10
10	0.20
15	0.28
20	0.36
25	0.43
30	0.51
35	0.60
40	0.68
45	0.73
50	0.78
55	0.86
60	0.95
65	1.02
70	1.08
75	1.14
80	1.19
85	1.28
90	1.38
95	1.44
99	1.49

The general point 6.10 Calibration test explains how to calculate the required quantity in kg/min.

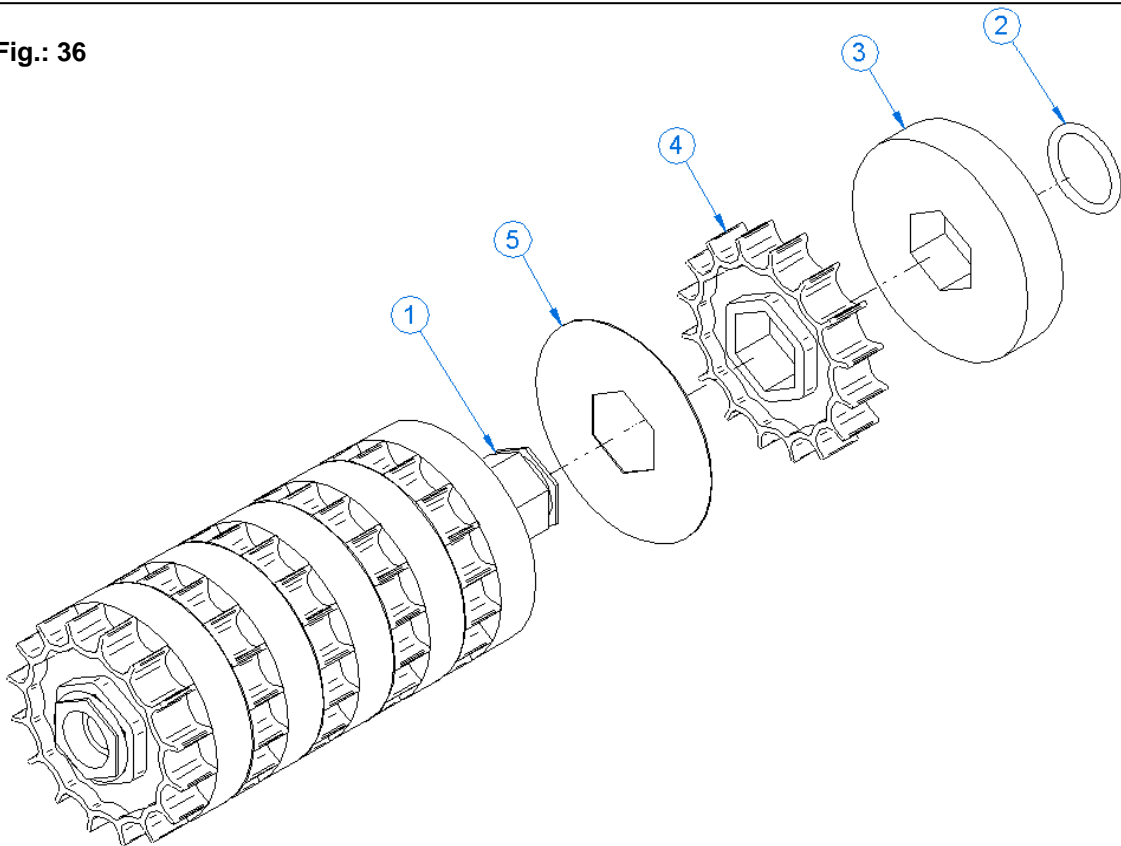


NOTE: with the MDC, you should perform the calibration test in such a manner that you collect the product at the end of the hoses! Wear suitable protective clothing and respiratory protection to avoid contact with the product!

7.4 Assembling the seeding shaft for the MDC

Assemble the seeding shaft according to the following drawing:

Fig.: 36



Pos.	Art.Nr.	Bezeichnung	Name_EN	Menge
1	11000-3-001	Säradsechskantwelle	—	1
2	04000-3-711	O-Ring 14,1x1,6	O-ring 14.1x1.6	2
3	04000-3-710	Särad fb	Sowing wheel fb	6
4	04000-3-709	Särad f	Sowing wheel f	6
5	04000-3-029	Distanzscheibe 0,3mm KB	Spacer 0.3mm KB	5



CAUTION: it is important that the closed side of the blind fb seed wheel is always resting on the fine f seed wheel and the spacing discs are placed between the open sides of the seed wheels.

5 spacing discs must be installed for each combination.

8 Cleaning, maintenance, care, and repairs

8.1 General information

To maintain the implement in good condition even after a long service life, the following instructions must be observed:

- Original parts and accessories are designed especially for the machines or implements.
- Please note that parts and accessories not supplied by us have also not been tested and approved by us.
- The installation or use of such products can therefore possibly negatively change or impede the constructional properties of your implement. The manufacturer rules out any liability for damages resulting from the use of non-original parts and accessories.
- The manufacturer is not liable for any unauthorised modifications and the use of components and auxiliary parts.
- All bolted connections should be re-tightened at the latest after 3 operating hours and again after 20 hours, and then checked regularly. (Loose bolts can cause significant consequential damage, which is not covered by the warranty.)
- During the winter, the implement should be protected against rust with an environmentally-friendly product.
- Park the implement protected from weather conditions.
- Do **NOT** clean the implement with water. It is recommended to clean the implement with compressed air.

Caution: the paint can be damaged by cleaning with excessive air pressure.

8.2 Emptying the seed hopper

Before cleaning or decommissioning, the seed remaining in the seed drill must be removed from the seed hopper.

To empty the hopper, unscrew the screw plug on the emptying nozzle (Fig.: 37) at the front of the hopper, and hold a container, sack or other vessel underneath (only possible with 100 l hopper).

To ensure complete emptying, you must also remove the accessories kit located below the metering unit by opening the quick fasteners (Fig.: 38, Fig.: 39), and then attach a sack or suitable hopper to collect the residual quantity (Fig.: 40).

Then actuate the menu point "Emptying" on the control box. With this menu point, the seeding shaft starts rotating automatically. Now let the seeding shaft rotate until the hopper is completely empty, and the seed wheels no longer deliver seed.



TIP: To remove even the last seed residues, clean out the hopper with compressed air.

Alternatively, you can suck out the seed residues with an industrial vacuum cleaner.



Fig.: 37

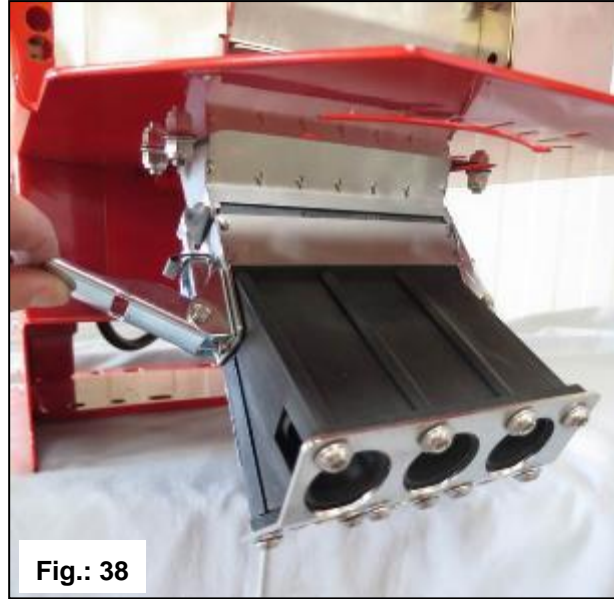


Fig.: 38



Fig.: 39



Fig.: 40

8.3 Cleaning the seed drill

The seed drill must be cleaned inside and out on a regular basis to ensure long-term proper functioning. If not cleaned properly, germs can form inside the seed drill due to seed residues.

To clean the seed drill:

1. Empty the seed hopper (see Emptying the seed hopper for this, Point 8.2).
2. Remove the seeding shaft (see Dismounting (changing) the seeding shaft for this, Point 6.7).
3. Fold back the cover of the seed hopper to open it. (Caution: the cover of the MDC cannot be opened without tools.)
4. Clean the inside of the seed drill and the seed paths with compressed air.
5. Clean the outside of the seed drill with a moist cloth.



CAUTION: ensure that no water enters the hopper or the implement. The inside of the implement can only be cleaned with compressed air!

8.4 Repairs and service

In case of failure or damage to the seed drill, please contact the manufacturer. The contact data can be found on the last page of this operating manual.

9 Technical data

9.1 MDD

Designation:	MDD 40 M1
Hopper content:	40 litre
Weight:	28 kg
Dimensions (H x W x D):	805 x 420 x 570 mm
Max. working width:	28 m (with 12 % COV) Tested by Irstea with Metarex slug pellets from De Sangosse
Max. spreading width:	31 m (with Metarex slug pellets)
Power supply:	12 V, 25 A
Spreading plate motor data (nominal power):	170 watts
Power consumption of the spreading plate motor:	25 amps when starting, 14 amps during normal operation
Speed range max.:	2600-3000 rpm
Mount category:	Cat. II (top link)

Designation:	MDD 100 M1
Hopper content:	105 litre
Weight:	30 kg
Dimensions (H x W x D):	1025 x 520 x 530 mm
Max. working width:	28 m (with 12 % COV) Tested by Irstea with Metarex slug pellets from De Sangosse
Max. spreading width:	31 m (with Metarex slug pellets)
Power supply:	12 V, 25 A
Spreading plate motor data (nominal power):	170 watts
Power consumption of the spreading plate motor:	25 amps when starting, 14 amps during normal operation
Speed range max.:	2600-3000 rpm
Mount category:	Cat. II (top link)

9.2 MDP

Designation:	MDP 40 M1
Hopper content:	40 litre
Weight:	28 kg
Dimensions (H x W x D):	805 x 420 x 570 mm
Max. working width:	4.5 m
Power supply:	12 V, 25 A
Power consumption of the electric fan:	25 amps when starting, 14 amps during normal operation
Mount category:	Cat. II (top link)

Designation:	MDP 100 M1
Hopper content:	105 litre
Weight:	30 kg
Dimensions (H x W x D):	1025 x 520 x 530 mm
Max. working width:	4.5 m
Power supply:	12 V, 25 A
Power consumption of the electric fan:	25 amps when starting, 14 amps during normal operation
Mount category:	Cat. II (top link)

9.3 MDG

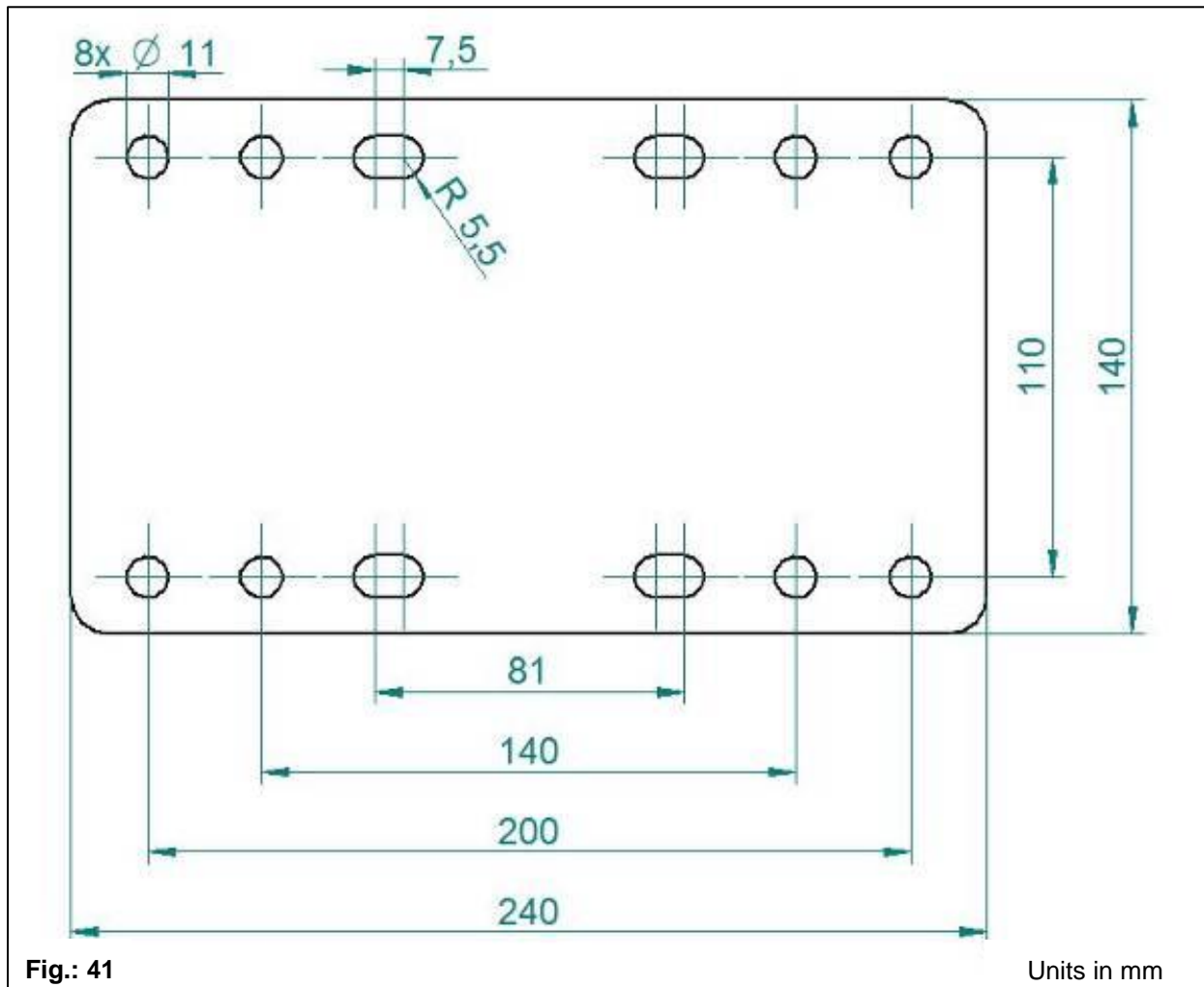
Designation:	MDG 40 M1
Hopper content:	40 litre
Weight:	28 kg
Dimensions (H x W x D):	805 x 420 x 570 mm
Power supply:	12 V, 10 A
Power consumption of the motor:	max. 9A
Mount category:	Cat. II (top link)

Designation:	MDP 100 M1
Hopper content:	105 litre
Weight:	30 kg
Dimensions (H x W x D):	1025 x 520 x 530 mm
Power supply:	12 V, 10 A
Power consumption of the motor:	max. 9 A
Mount category:	Cat. II (top link)

9.4 MDC

Designation:	MDC 40 M1
Hopper content:	40 litre
Weight:	28 kg
Dimensions (H x W x D):	805 x 420 x 570 mm
Power supply:	12 V, 10 A
Power consumption of the motor:	max. 9 A
Mount category:	Cat. II (top link)

Hole pattern on the counter plate:



The contact area must have a minimum dimension of 240 x 140 mm.

9.5 Location of the rating plate

The rating plate is located on the steel frame.

In cases of inquiries or warranty claims, please always tell us the production number of your machine.

	APV - Technische Produkte GmbH Dallein 15, AT-3753 Hötzelendorf Tel: +43(0)2913/8001 Fax: +43(0)2913/8002 office@apvat www.apvat			 
	Bezeichnung: Modell: Prod.Nr.: Gewicht: Baujahr:	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	

Fig.: 42

10 Decommissioning, storage and disposal

10.1 Decommissioning the implement

To ensure that the implement remains fully functional even if it is out of operation for longer periods of time, it is important to take precautions for storage:

1. Completely remove all seed from the seed drill.
2. Clean the seed drill inside and out (see Point 8.3).
3. Store the seed drill in a dry place to prevent the formation of germs inside the implement.

10.2 Storage of the implement

The implement must be stored in a dry place protected from weather conditions to ensure that it remains functional even if it is stored for a longer period of time.

10.3 Disposal

Disposal of the implement must be performed according to the local disposal regulations for machines.

11 Accessories

11.1 Fill level sensor

This sensor can be retrofitted on the MD. However, a 5.2 control box is required. It measures the fill level in the hopper and triggers an alarm on the control box when the set level is undercut. The sensitivity of the sensor can be adjusted for the respective seed type. It is adjusted using the small slotted screw at the rear of the sensor. Connect the sensor cable according to the connection diagram.

<u>Scope of delivery:</u>	1 fill level sensor 1 assembly plate 4 bolts 5 nuts
<u>Order number:</u>	Item no.: 11000-2-060



Fig.: 43

11.2 Cable extension 2 m (6-pin)

If the standard installed implement cable is too short due to the length of the soil tillage implement or how the implement is mounted, or if the cable cannot be routed practically, this cable extension can be ordered as an accessory.

<u>Scope of delivery:</u>	1 cable extension
<u>Order number:</u>	Item no.: 00410-2-148



Fig.: 44

11.3 Cable extension 5 m (6-pin)

If the standard installed implement cable is too short due to the length of the soil tillage implement or how the implement is mounted, or if the cable cannot be routed practically, this cable extension can be ordered as an accessory.

<u>Scope of delivery:</u>	1 cable extension
<u>Order number:</u>	Item no.: 00410-2-149



Fig.: 45

11.4 Calibration button

Using the calibration switch, you can start the calibration test directly on the seed drill. The calibration switch is installed directly in the cable harness of the implement and is simply mounted on the implement with the integrated magnets.

Scope of delivery:

1 calibration switch

Order number:

Item no.: 00410-2-185



Fig.: 46

11.5 Toggle switch accessories kit

Using the toggle switch, you can switch between the spreading plate and the electric fan without having to adjust the wiring.

Scope of delivery:

1 toggle switch connection cable

1 toggle switch 20A

1 adapter plate

1 sticker for the MD toggle switch

8 bolts

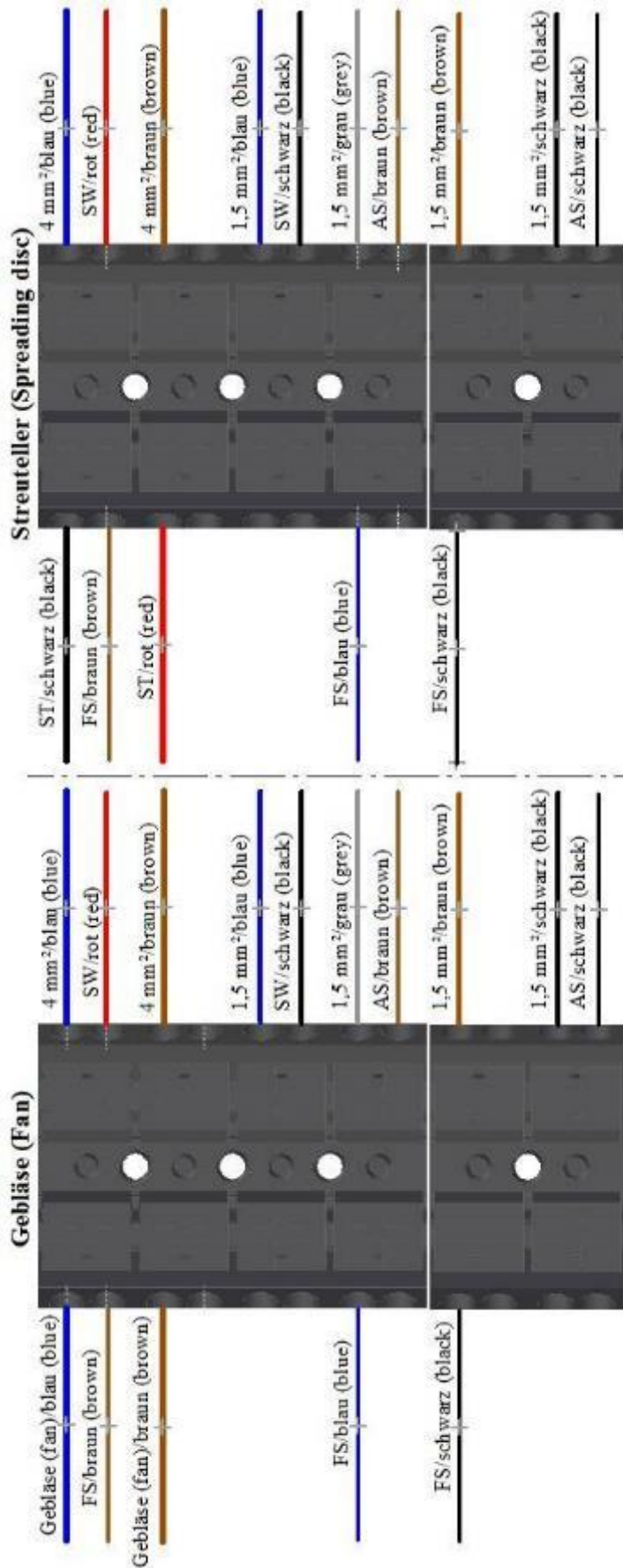
Order number:

Item no.: 11000-2-067



Fig.: 47

12 Connection diagram



Stecker-PIN (plug-pin)	Geräteka- bel (ma- chine ca- ble)	Geblä- se (fan)	Streteller (ST) (spreading disc)	Säwellenmotor (SW) (sowing shaft motor)	Füllstandsensor (FS) (fill level sensor)	Abdrehschalter (AS) (calibration button)
1	4 mm ² / blau (blue)	4 mm ² / blau (blue)	2,5 mm ² / schwarz (black)	1,5 mm ² / rot (red)	0,75 mm ² / braun (brown)	
2	4 mm ² / braun (brown)	4 mm ² / braun (brown)				
3	1,5 mm ² / blau (blue)		2,5 mm ² / rot (red)	1,5 mm ² / schwarz (black)	0,75 mm ² / blau (blue)	0,75 mm ² / braun (brown)
4	1,5 mm ² / grau (grey)				0,75 mm ² / schwarz (black)	
5	1,5 mm ² / braun (brown)					
6	1,5 mm ² / schwarz (black)					0,75 mm ² / schwarz (black)

13 My idea

The multi-metering units from the **MDG, MDP, MDD and MDC** model series have been extensively developed and tested. It took a long time from the initial idea to serial production. It required lots of commitment from the entire development team.

Nonetheless, the most valuable experience is gained in practice. Our motto:

"Inspired by Farmers & realized by Professionals."

This is how customer proximity of the development department creates a leading edge for you and APV.

Tell us about the positive and negative experiences you have had with the machine. Share your suggestions for improvement and your ideas with us:

meineidee@apv.at

Take pictures or make hand-drawn sketches! We are open and grateful for any information, no matter in what form.

Your information goes directly to the leading developers at APV.

I would like to thank you in advance for your involvement and wish you lots of fun with your APV product!

Sincerely yours

Your Head of Development & Customer Service



Ing. Gregor Witzmann, MSc, MBA

14 Safety instructions



For your safety...

This supplement to the operating manual contains general rules of conduct for the intended use of the implement and safety-related information that should always be observed for your personal safety.

The list is very extensive, and some of the information does not apply exclusively to the delivered implement. However, the summary of the information often reminds you of unconsciously neglected safety regulations for the everyday operation of machines and implements.

14.1 Intended use

The implement is designed solely for normal use in agricultural operations (intended use).

Any other use is considered to be non-intended. The manufacturer is not liable for any resulting damage, the operator alone bears the associated risk.

Intended use also includes compliance with the conditions for operation, maintenance, and repairs prescribed by the manufacturer.

The implement may only be used, maintained and repaired by persons who have relevant experience and were instructed on the risks. The safety instructions must also be handed over to other users.

The applicable accident prevention regulations as well as the other generally safety-related, occupational health and road traffic regulations must also be observed. The manufacturer is not liable for any damage resulting from unauthorised modifications and the use of components and auxiliary parts.

14.2 General safety-related instructions and accident prevention regulations

- Before operating the implement and the tractor, always check for traffic and operational safety (like fractures, cracks, chafe marks, leaks, loose bolts and connections, vibrations and unusual sounds).
- The implements must be checked regularly by the operator (before every use) for any fractures and cracks, chafe marks, leaks, loose bolts and connections, vibrations, unusual sounds, and to ensure they function correctly.
- The implements should be cleaned regularly using compressed air. While doing this, personal protective equipment should be worn if necessary.
- Maintenance and cleaning work must be carried out with the implement lowered, shut down and secured to prevent it being switched on again.
- Working under the implement is forbidden.
- Observe the generally applicable safety and accident prevention regulations!
- Use additional lighting (e.g., flashlight) for repair or maintenance work!
- The warning and information signs applied to the implement provide important instructions for safe operation, observe them for the sake of your own safety!
- Observe the respective regulations when using public roads!
- Before starting work, get to know all of the equipment and operating elements as well as their functions. It is too late to do so during operation!
- Hearing protection must be worn when using the implement.
- The spread rate may only be adjusted exactly according to the operating manual and by trained personnel!
- The user should wear close-fitting clothing. Avoid wearing loose clothes!
- Please always wear safety shoes with non-slip soles!
- To reduce the risk of fire, keep the machines clean. It is also recommended to carry a fire extinguisher on the tractor.
- Check the surrounding area before starting up and operating the implement! (Children!) Ensure sufficient visibility!
- It is not allowed to carry passengers on the implement during operation and transport!
- It is strictly forbidden to carry persons on any implement used to mount the multi-metering system.
- The implement must be coupled according to the instructions and only onto the specified devices!
- Special care must be taken when coupling and uncoupling implement to and from the tractor! Use only self-locking attachments (nuts) as well as high-tensile bolts.
- Check the stability of the tractor and the implement when mounting, operating, and performing maintenance / filling. Depending on the soil tillage implement, on which the seeder is mounted, use a step according to EN 14018 and according to the operating manual.
- When mounting the implement, the hydraulic connections to the tractor hydraulic system must be connected carefully according to the operating manual.
- Always attach ballast weights at the intended attachment points according to the specifications!
- The instructions concerning mounting as well as the requirements for the tractor or agricultural implement as specified in the operating manual are to be observed.
- Observe the permissible axle load, total weight and transport dimensions!

- Transport equipment, e.g. lighting, warning signs and any protective equipment, must be checked and mounted!
- Triggers for fast couplers must be hanging loosely and must not trigger themselves when lowered.
- Never leave the driver's platform while driving!
- The driving behaviour, steering and braking capacity are also affected by mounted or towed implements and ballast weights. For this reason, always ensure sufficient steering and braking capacity!
- When driving in curves, take account of the wide radius and/or the centrifugal mass of the implement!
- The implement may only be operated when all of the protective devices are installed and in safety position!
- It is forbidden to stand in the working area of the implement!
- Do not stand near rotating and swivelling parts of the implement!
- Hydraulic folding frames may only be actuated when nobody is standing in the swivelling range.
- There are pinch and shear points on externally powered (e.g. hydraulic) parts!
- On implements with manual folding, always ensure that the implement is stable!
- For implements that are driven rapidly with soil-driven tools: Danger after lifting due to the still rotating centrifugal mass! Only approach the implement when it has come to a standstill!
- Before exiting the tractor, lower the implement onto the ground, switch off the motor and remove the ignition key!
- Standing between the tractor and the implement is forbidden unless the vehicle is secured against rolling away using the parking brake and/or with wheel chocks!
- Folded frames and lifting devices must be locked in transport position!
- Packer catch arms must be swivelled in and locked before road transport!
- Lock the track markers in transport position!
- When filling the hopper with slug pellets or similar toxic agents, only fill as much as is needed in the near future. Protective clothing, safety gloves, and face and eye protection must be worn during the filling procedure.
- Observe the warning information provided by the manufacturer on the packaging. The seed grains used in your spreader can be toxic!
- Always keep hands, clothing etc. away from rotating parts!
- Keep your distance when the implement is switched on!
- No other persons may be in the hazard area of the multi-metering system with spreading disc.
- Visual check by the driver!
- Never look into the spreading cone!
- Product remains should be returned to the original packaging. Residues must not be released into the environment.
- Authorised crop protection products are not known to have negative effects on the materials of the implement.
- Maintenance, repair, and cleaning work as well as the elimination of malfunctions should always be performed when the drive is switched off and the motor is at a standstill!
- When mounting the spreading device, the operator must connect it to the tractor or vehicle with a metal connection and if necessary, a grounding cable.
- Never look into the radar sensor!

- The operating manual calls for the use of CE-marked exchangeable universal joint shafts as well as their covers!
- Some parts have stickers warning about high temperatures. When working on these parts when they are hot, safety gloves must be worn. Dust deposits on the hydraulic motor must be prevented. Clean.
- The motors of the rotary valve / seeding shaft and spreading plate can get hot. Warning stickers are applied on the motors. The operator must check the motors regularly for changes in temperature and remove any accumulated dust.
- The operator must ensure that no one is in the vicinity of the multi-metering unit when it is being moved by the tractor's hydraulic system for use of the spreading disc. Visual check by the driver. When driving on roads, the operator must ensure that the raised multi-metering unit cannot be lowered (stop valve in the tractor hydraulic system or similar). Moreover, when driving on roads, the controller must be switched off by the user (no accidental starting up of e.g. the spreading disc).

14.3 Mounted implements

- Before mounting and dismounting implements on the three-point linkage, move the operating devices into the position that excludes unintentional lifting or lowering!
- When mounting, the operator must ensure that the requirements for the tractor or agricultural implement specified in the operating manual are met and that the connections specified in the operating manual are made correctly.
- When mounting the multi-metering system, the operator must ensure that there is a metallic connection made to the tractor or agricultural implement.
- For three-point mounting, the mounting categories of the tractor and the implement must match or be adapted!
- There is a risk of injury due to crushing and shearing points in the area of the three-point linkage!
- Do not stand between the tractor and the implement when actuating the external controls for the three-point mounting!
- When the implement is in transport position, always ensure that the tractor three-point linkage is sufficiently locked to the sides!
- When driving on roads with the implement lifted, the operating lever must be locked against lowering!
- To check the procedure, the operator must have a view on the mounted multi-metering system or on the agricultural implement on which it is mounted, as well as hazardous movement zones.
- When performing field passes and when the spreading disc is used, the tractor's speed must be maintained between 1 and 20 km/h, as specified in the operating manual and depending on the seed.

14.4 Maintenance

- Maintenance, repair, and cleaning work as well as the elimination of malfunctions should always be performed when the drive is switched off and the motor is at a standstill! – Remove the ignition key! – Switch off the implement!
- Check the nuts and bolts regularly for tight fit and retighten if necessary!
- When performing maintenance on the lifted implement, always ensure safety through suitable support elements!

- When changing work tools with sharp edges, always use suitable tools and gloves!
- Properly dispose of oils, grease and filters!
- Always cut the power supply when working on the electrical system!
- When performing electrical welding work on the tractor and mounted implement, disconnect the cable on the generator and the battery!
- Spare parts must at least comply with the technical requirements specified by the implement manufacturer! This is ensured with original parts!
- Do not clean the implement with water. It is recommended to clean the implement with compressed air.
- Use additional lighting (e.g. flashlight) if necessary for repair or maintenance work!



PLEASE NOTE: misprints, errors and omissions excepted.

15 Safety signs

Observe this sticker on the implement! It informs you of special dangers!



Read and observe the operating manual before operating the implement!



Read and observe the operating manual before working with the implement!
Operating errors can lead to serious injuries.



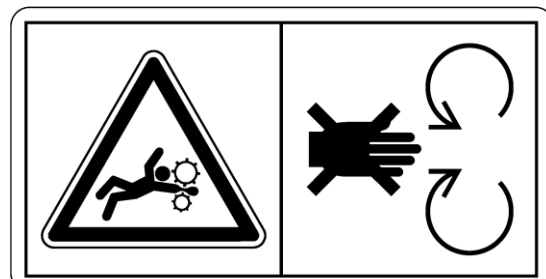
Danger due to thrown parts;
observe the safety distance!



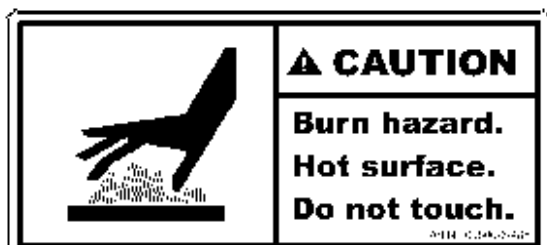
Risk of injury due to moving parts.
Switch off the implement and disconnect the power supply when handling!



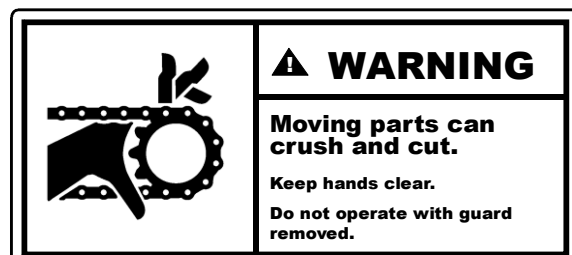
Do not reach into rotating parts.
Switch off the implement and disconnect the power supply when handling!



Maintain a safe distance from rotating implement parts!



Hot surface!
Do not touch!



Risk of injury due to rotating parts. Only work with mounted covers!

16 Notes

A large rectangular area filled with a fine grid pattern, intended for writing notes. The grid consists of small squares and covers most of the page's content area.

Quality for Professionals

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