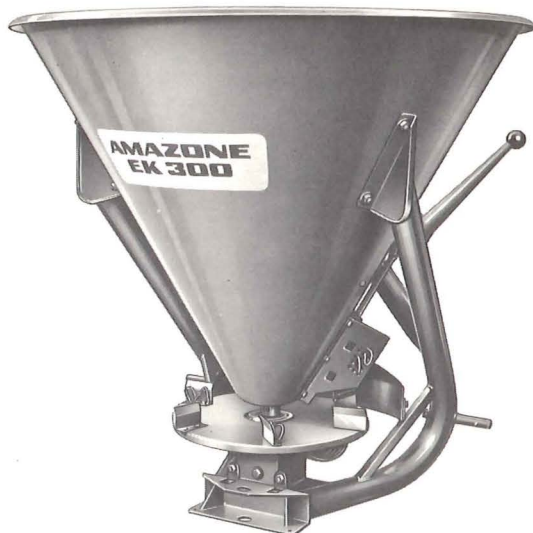


CENTRIFUGAL BROADCASTER

AMAZONE EK

OPERATION MANUAL



We invite you to study these instructions carefully, and by adhering to them, make fullest use of your machine. You will then enjoy troublefree and accurate broadcasting with your new AMAZONE precision single disc broadcaster.

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

AMAZONEN-WERKE H.DREYER



Factories in W.-Germany:
D-4507 Hasbergen-Gaste
 Tel.: Hasbergen (05405) *1043
 Telex: 09 4801

D-2872 Hude (Oldbg.)
 Tel.: Hude (04408) *1031
 Telex: 02 51 010

Factory in France:
AMAZONE - Machines Agricoles S.A.
 F-57602 FORBACH - Rue de la Verrerie
 Tel.: (87) *85 1531 - Telex: 0042 86 04 92

Factories for: Mineral-fertilizer spreaders, seed drills, reciprocating harrows, potato grading-machines, fertilizer silos, conveyors, universal sprayers, fertilizer containers

A. ON RECEIPT OF THE BROADCASTER

Check that no damage has been caused in transit and that all parts are present. Claims must be made within 3 days upon receipt, otherwise no responsibility can be accepted by us or the carriers.

B. COMMENCING WORK

Remove entirely all wires and grease all grease nipples (P.T.O.-unit packages). The tractor guard, which had to be removed for shipping purposes and has been put loosely between the hopper and the spreading disc, has to be bolted to the flat-iron brackets on the tractor's side of the machine in front of the spreading disc.

Fitting:

The AMAZONE fertilizer broadcaster EK has been designed for quick and easy attachment to all tractors with either cat. I or II linkage. When fitting to the hydraulic linkage of a cat. II-tractor the three bushes (Fig. 1/1) available as optional for the hitch points should be fitted. Ensure that the machine is level and the discs are $29\frac{1}{2}$ " (75 cm) above the crop or ground.

Since tractors have differing distances from the P.T.O.-shaft to the fitting point of the hydraulic linkage be careful at the first lifting of the hydraulic linkage after the machine has been mounted. To avoid any costly damage, we recommend you to proceed as follows: Pull the universal joint shaft apart by leaving the implement half of the shaft attached to the broadcaster and push the tractor half of the shaft onto the tractor's P.T.O.-shaft separately. Now it can easily be checked whether in any position of the hydraulic linkage the shafts are overlapping at least $2\frac{1}{2}$ " (60 mm) by simply holding the two shaft ends with their long side together. This way it can also be predetermined whether too long shafts will hit the yokes on both ends (Fig. 2).

If the shaft halves are too long, shorten both ends by the same amount! The angling of the universal joints should not exceed 25° ! If the shaft is too short, ask for a longer shaft, available as optional. Take care that the universal joint shaft guards are fitted and the universal joint shaft **does not run at an acute angle**.

Should your tractor be not equipped with an hydraulic lifting device the broadcaster could also be fitted to the tractor's draw-bar. Please ask your dealer for our "Mounting Device for Draw-Bars", which is available as optional.

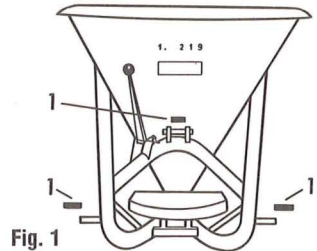


Fig. 1

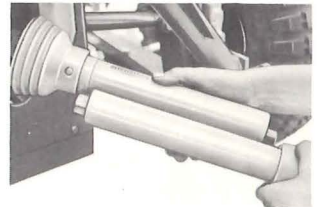


Fig. 2

C. SETTING AND BROADCASTING

We refer to the separate setting chart of centrifugal broadcasters "AMAZONE EK" for the setting of the broadcaster according to the desired broadcasting quantity. Deviations from the figures stated in the setting chart may occur due to the varying conditions of the fertilizer. To set the distribution rate select the amount of fertilizer required per acre and find this reading on the distribution table.

Two rods are provided of different thickness. Note: The calibration table has been compiled using the thick rod (Fig. 3/1). For intermediate quantities use the thin rod (Fig. 3/2).

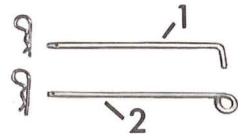


Fig. 3

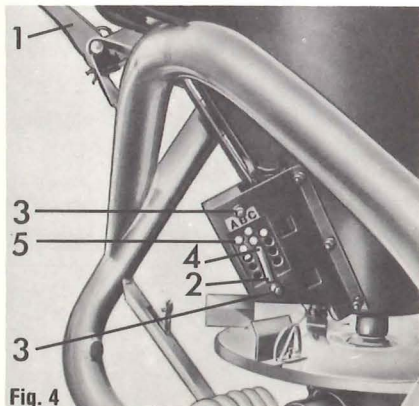


Fig. 4

The control rod (Fig. 4/2) will be inserted according to the setting determined from the setting chart into the hole of the dial-plate (Fig. 4/5) with the hole rows A-C. The hole row C lies next to the hopper, the hole numbers are counting from down to up.

By operating the shutter control lever (Fig. 4/1 and Fig. 5/1) both shutters will be opened to the same extent according to the pre-set adjustment (Fig. 4/4).

Example for the setting of intermediate quantities

If for some reasons the tractor-speed in relation to the desired quantity setting cannot be changed, the demand for setting of intermediate quantities may occur.

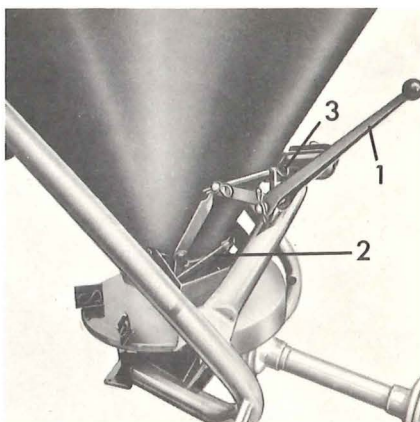
Example: Should you like to broadcast NPK-compounds at a speed of 5 miles/h, and the setting of C 2 showing 220 pounds/acre being too much whilst the setting of B 2 showing 141 pounds/acre being too little an intermediate

quantity between these two can be reached by simply inserting the **thin** control rod into hole B 2 whereby approx. 180 pounds/acre will be obtained opposed to 141 pounds/acre, when the **thick** control rod is inserted into B 2.

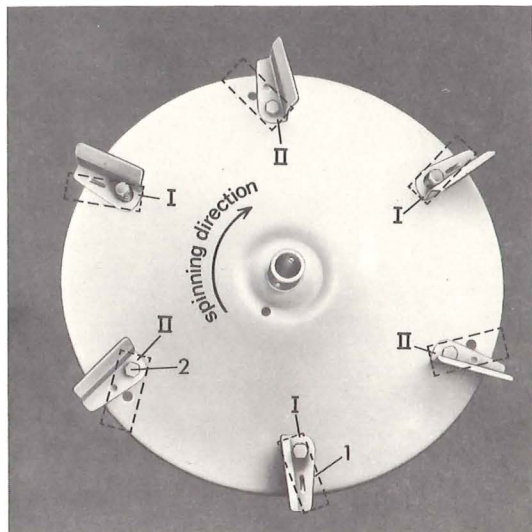
When turning at head-lands shut the broadcaster by pulling the shut-off-lever (Fig. 5/1) all the way upward.

Head-lands and sides of the fields can also be broadcasted by adjusting the machine to "one-side-broadcasting". Hereby the lifting rod (Fig. 5/2) on that side, which shall not be broadcasted has to be disconnected by pulling out the "R"-pin (Fig. 5/3) and taking off the lifting rod. Reinsert the "R"-pin again to prevent loss. This way the shutter control lever controls only the shutter on the side to be broadcasted.

Fig. 5



6 spinner blades (Fig. 6/I and II) are fixed to the spreading disc, three of which are adjustable (Fig. 6/I). Herefore lift those spinner blades, which are having a spring around the fixing bolt, on the outer side and move them to the rear position as indicated in Fig. 6 until the nose of the blade rests in the hole provided. — For the other 3 spinner blades (Fig. 6/II) the bolts (Fig. 6/2) must be loosened. Thereafter also these spinner blades can be pushed backward until their noses also rest in the holes provided. Tighten nuts of bolts (Fig. 6/2) again!



All 6 spinner blades are assembled at the factory in the front position as shown, this is looking in the direction of travel.

Attention: Shut off tractor engine when changing blade positions!

Spinner Blade Position A = Standard

All 6 blades are in front position as shown in Fig. 6.

Spinner Blade Position B

The 3 blades with springs only set in rear position as indicated in Fig. 6/I.

Spinner Blade Position C

All 6 blades are in rear position as indicated (Fig. 6/I and 6/II).

Fig. 6

The spinner blades positions A, B and C are for the various fertilizers as indicated in the setting chart, which you may find separately enclosed. When changing the material to be broadcasted, please do not forget to check the spinner blade positions according to the setting chart and readjust them if indicated there.

Several different types of dry fertilizers, which must have the same spreading behaviour can be broadcasted simultaneously without mixing them in advance. The different types of fertilizers would then have to be pured into the hopper at the same time or to be filled in layers. Before filling the hopper perhaps some fertilizer may be mixed in the tip of the hopper to ensure that mixed fertilizer will be broadcasted from the beginning. If the broadcasting of to-be mixed fertilizers shall be continued never empty the broadcaster fully to avoid any repeated mixing in the hopper-tip.

The P.T.O.-RPM. must be for all granulated, crystalline and moist powdery spreading material 540 R.P.M. Dry powdery fertilizers should be broadcasted with 450 R.P.M – approx. $\frac{3}{4}$ accelerator position.

The working width as indicated in the spreading chart is giving the distance between the tractor's wheel-marks up and down the fields. To facilitate later top-dressing of your crops, you could already when seeding sow wider row-spacings where the tractor's wheels lateron have to drive, when fertilizing or spraying the fields.

D. INSTALLATION OF THE AGITATOR

The special agitator is designed for use in extremely damp material, which has a tendency to lump or bridge. It should also be used if the fertilizer has been moistened purposely, so that it would not flow by itself smoothly onto the spreading discs.

The special agitator should also be used with those dry fertilizers, which will not flow smoothly onto the spreading discs (relative recommendations please find in the setting chart of each type of fertilizer). Several different kinds of moistened fertilizers will be mixed satisfactorily with the special agitator, if these are filled into the hopper in layers. We recommend to use abt. 2 quarts of water per cwt. or 3 litres per 100 kgs.

When moistening the powdery fertilizers a larger working width will be obtained (compare setting chart) and any development of dust when broadcasting will be prevented. For moistened powdery fertilizers the P.T.O. revolutions should be 540 R.P.M.

Attention: Never use the agitator when broadcasting dry granulated fertilizers!

Installation of the special agitator

Remove plastic-plugs in the hopper side and place the guide ring (Fig. 7/1) so that two brackets opposing each other (Fig. 7/2) will be over the holes. Now insert the 2 bolts and tighten nuts. Insert stirrer head-pin (Fig. 7/5 and 8/3) into the bush on the lower end of the agitator (Fig. 7/4) and secure it with the pin-clip (Fig. 7/6).

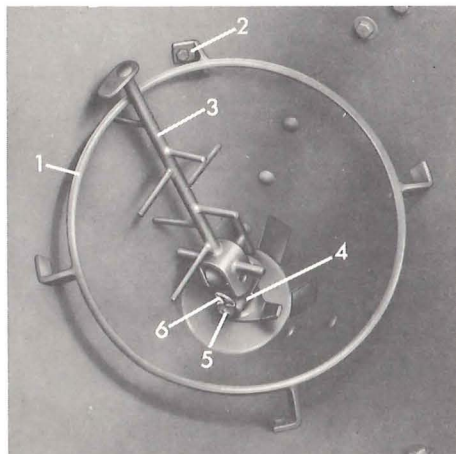


Fig. 7

E. IMPORTANT REPAIR PARTS

Description	Order No.	Description	Order No.
Stirrer head cpl.	1.4.03-05-02.20-2	Shutter box	1.4.30-05-03.10-0
Spinner blade	1.4.30-05-01.21-1	Thick control rod	1.4.30-05-03.13-0
Spinner blade	1.4.30-05-01.23-1	Thin control rod	1.4.05-05-04.90-0
Spring for spinner blade	1.4.30-05-01.22-1	Universal joint shaft	1.4.02-03-05.60-0
Shutter, left	1.4.30-05-03.30-0	Tractor guard	1.4.30-05-01.30-1
Shutter, right	1.4.30-05-03.20-0	Special agitator cpl.	1.4.30-15-00.00-0
Gear box cpl.	1.4.30.-03-00.00-1	Shear pin $\frac{5}{16}$ " or 8 mm ϕ	8 x 55 DIN 1471
Spreading disc., cpl.	1.4.30-05-01.00-2		

F. REMOVAL OF THE STIRRER HEAD

1. Remove the double roll-pin of the stirrer head (underneath the hopper and above the spreading disc).
2. Pull off stirrer head.
3. After the installation of the new stirrer head please watch that the space between the stirrer finger (measured at the front edge (Fig. 8/2), which has been welded) and the hopper wall, does not exceed $1\frac{1}{8}$ " (27+1 mm) (Fig. 8). Readjust if necessary. Furthermore watch that the stirrer head is not grinding on the bottom of the hopper. When it touches push the hopper bottom slightly downward!
4. Reinstall the double roll-pin to fasten the spinner disc and the stirrer head to the spinner shaft!

G. SHUTTER SETTING

1. Place thick selector pin (Fig. 3/1) in the C-3 holes in the regulator plates as shown.
2. Push down on the shutter lever until the shutter arms make contact with the pin.
3. Check the shutter opening (Fig. 8/1). The shutters should be open $1\frac{7}{16}$ " (37.5 mm) on the bottom side as indicated. To attain this setting, loosen the regulator plate bolts (Fig. 4/3) and shift the plate up or down to obtain the proper setting. Check and **adjust** each shutter **separately**. Tighten bolts.

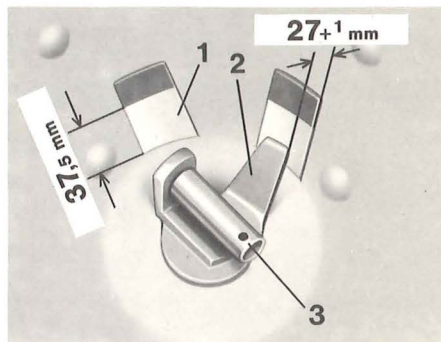
H. SPECIAL HINTS

1. Never travel long distances with a filled hopper. Engage clutch of the tractor slowly!
2. Stabilizer-bars should be fitted to the tractor's lower links to avoid swinging to and fro of the broadcaster during work.
3. At 25 HP-Ferguson tractors with their very low positioned P.T.O.-shaft never lift the broadcaster above 23" (58 cm), since otherwise the universal joints of the P.T.O.-shaft will be angled too much and may brake! (Reduced working width!)
4. At tractor-types with a P.T.O., which is located extremely offset of the centre of the gearbox, the broadcaster should be attached exactly behind the P.T.O. (i. e. offset).
5. Apply oil between the shutter arms and the guides and also between the shutters and the hopper after a day's operation and before putting the machine away for longer periods!
6. Clean periodically the hopper tip and the spinner blades.
7. Check distance between the stirrer head and the hopper wall. The stirrer finger should be parallel to the hopper wall and should have a distance of $1\frac{1}{16}$ " (27 + 1 mm) (Fig. 8).
8. Before shutting off the tractor's P.T.O. shut the machine's outlet.
9. If it cannot be avoided to travel with the machine longer distances with a filled hopper without broadcasting (travelling to the fields), open the shutters fully (position B 5) before beginning to broadcast, i. e. before engaging the P.T.O.-shaft. Hereafter **engage the P.T.O.-shaft slowly** and broadcast shortly on the stand! Hereafter the shutters may be set on the desired setting and the broadcasting may be commenced.
10. The coupling on the rear of the machine may be used for pulling implements as harrows or two-axle trailers.

Attention: 1. The pulling of a one-axle trailer is not allowed.

2. If a two-axle trailer shall be pulled over public roads, please consult with your local traffic authorities concerning the regulations to be considered.

11. Fertilizers, which are supplied in bulk should first be screened to avoid foreign particles damaging the machine's mechanism.
12. After use, clean the machine with water and lubricate it. Pull the shutters out of the guides and let them hang down freely on their lifting rods.
13. The supplied shear pin ($\frac{5}{16}$ " or 8 mm ϕ) may be used as a spare part for broken shear pins at the input shaft of the machine and the implement side yoke of the P.T.O.-shaft (safety device). **Never replace broken shear pins with roll-pins or hardened steel pins!** Please insert the shear pin only in the small diameter-hole of the P.T.O.-shaft yoke. The large hole is provided only for easier removal of that part of the broken shear pin, which remained in the input-shaft. Before putting the yoke onto the input-shaft again, please apply some grease to prevent the yoke from rusting to the input-shaft. The grease overthere may disappear after a longer period and in order to have the shear pin always ready to function, it is recommendable to remove ones a year the P.T.O.-shaft from the input shaft of the machine and to apply some new grease.
14. Requests for guaranty replacements of parts which have been altered in their design by the user cannot be accepted.



37,5 mm = $1\frac{7}{16}$ "
27+1 mm = $1\frac{1}{16}$ "

Fig. 8

TROUBLE SHOOTING

PROBLEM	CAUSE	CORRECTION
1. Shearing shear bolts.	(a) Obstruction in machine. (b) Sudden engagement of P.T.O.	(a) Remove obstruction. (b) Engage P.T.O. Slowly. Use only genuine shear bolts. See H-9 and H-13.
2. Spreader sways to and fro.	(a) Stabilizer bar or block not on tractor.	(a) Install stabilizer bar or block on tractor. See H-2.
3. Spreader not holding at 29 1/2" recommended.	(a) Hydraulic system not holding.	(a) Install support chains if available as tractor-optional.
4. Not spreading even.	(a) Agitator finger not adjusted properly. (b) Shutter openings not adjusted equally. (c) Spinner blades not adjusted properly.	(a) Readjust agitator finger. See H-7, Fig. 8. (b) Readjust shutters so openings are the same. See G-1-3, Figs. 4 and 8. (c) Readjust blades. See C, Fig. 6 and H-6.
5. Not spreading width shown on chart.	(a) Not operating at recommended 540 R.P.M. P.T.O. speed (resp. 450 R.P.M.). (b) Spreading in tall stubble or grass. (c) Spinner blades not adjusted properly.	(a) Spread only at 540 R.P.M.-P.T.O. speed (resp. 450 R.P.M.). (b) Raise the machine to 29 1/2" (75 cm) above top of the stubble or grass. (c) Readjust blades. See C, Fig. 6.
6. Material not moving down in hopper.	(a) Spreading damp material.	(a) Install special optional agitator. See D, Fig. 7.
7. Not spreading damp or powdery material evenly.	(a) Spinner blades not adjusted properly. (b) Material build-up on spinner blades, discharge ports and hopper.	(a) Check blades for proper adjustment. See C, Fig. 6. (b) Clean and flush material build-up from all parts. See H-6.
8. Not spreading granular material evenly.	(a) Material build-up on spinner blades, discharge ports and hopper. (b) Spinner blades not adjusted properly, or bent spinner blades.	(a) Clean and flush material build-up from all parts. See H-6. (b) Check blades for proper adjustment, or replace blades if they are damaged. See C, Fig. 6.
9. Shutters difficult to operate.	(a) Lack of lubrication.	(a) Apply oil to pivot points of shutter control. Apply oil between the shutter arms and the guides, also, between the shutters and the hopper. See H-5 and 12.