

DUPLEX INOX

Two-chamber three-point spreader



Art.No. 10045310

18.07.2018 | Version 1.1 | EN

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* Kugelmann Maschinenbau is a family-run Allgäu business with its main emphasis and tradition in municipal technology. With passion, we manufacture reliable and pioneering machines - we love what we do.

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CHAPTER 01



Important notes

Designated use of three-point spreader

This three-point spreader may only be used for its intended purpose. Grit, spreading salt and brine solution is spread on the road via the spreading disc. The manufacturer assumes no liability or responsibility for any use which goes beyond these limits.

Designated use also includes compliance with the applicable operating regulations and the maintenance and inspection instructions specified by the manufacturer.



Basically, the operation of the machine, responsibility for care, maintenance and reconditioning is restricted to skilled personnel.



Unauthorized alterations to the machine exclude any liability of the manufacturer for any damages arising from such action.

The relevant accident prevention regulations are to be observed. Furthermore, observe the generally recognized rules relating to technical safety requirements and occupational health as well as the rules in road traffic. The safety requirements are defined in DIN EN 292-1, DIN EN 292-2 and DIN EN 1553. Besides the existing regulations, also the specific safety regulations of the country where the device is operated have to be observed.

Improper use



Please absolutely respect the admissible axle loads and the admissible weights of the carrier vehicle. This is absolutely necessary if you have further attachments.

Warranty and liability

Kugelmann Maschinenbau e.K., 87675 Rettenbach a.A., warrants its machines/devices to be free from defects in material and workmanship and undertakes to replace free of charge all parts ex works which have been purchased by relevant Kugelmann dealers and have been acknowledged as defective after having been checked by Kugelmann.

The warranty expressly given shall be limited to a period of 12 months from the date of delivery of the machine to the purchaser. All further claims by the customer shall be excluded.

The manufacturer takes no responsibility for third-party products not produced at the works of Kugelmann. However, we assign our claims against the supplier to the customer. No warranty will be given for machines purchased second-hand or used and modified or converted machines.

Claims have to be notified in writing after their occurrence without undue delay (after 30 days at the latest). The damaged parts are to be returned.

Kugelmann cannot be held liable for any personal injuries and damage to property that result from one of the following causes:

- operation of the three-point spreader with defective safety devices or with incorrectly mounted or non-functioning safety and protective devices
- non-observance of the danger notes and warning information in the operating instructions
- non-observance of important notes in the operating instructions as e.g. commissioning, operation and maintenance / care of the spreader
- insufficient monitoring of machine parts which are subject to wear
- in case of improperly executed repairs
- in case of acts of nature beyond control or catastrophes

EC Declaration of Conformity, test marks, copyrights



EC Declaration of Conformity:

Kugelmann e.K., Gewerbepark 1 – 3, 87675 Rettenbach, Germany, herewith declares that the three-point spreader Duplex complies with the respective EC Directives due to its design and type of construction.

The EC Directive

91/368 EEC

98/37/EC for machines

as well as the 93/68/EEC regarding identification are adhered to.

Also,

DIN EN 292-1

DIN EN 292-2

DIN EN 1553 are met.

The version supplied by us complies with all essential health and safety requirements.

The copyright of this technical documentation as well as all other copyrights and industrial property rights lie with the company Kugelmann e.K., 87675 Rettenbach.

Kugelmann accepts no liability for translation errors. Claims can only be made on the documentation in German language.

S. Kugelmann

Subject to modifications

Designation of symbols, general safety instructions and accident prevention regulations as well as safety instructions

Apart from the notes in these operation instructions, also observe the general regulations regarding safety and accident prevention!

The fitted warning and indicator plates give important hints for a safe operation. Follow these for your own safety!

All personnel driving the carrier vehicle must be familiar with the instructions in these operating instructions.

Designation of symbols



Safety symbol:

Danger! Danger to life and limb of the user!



ATTENTION

Warning! Possible danger to life and health!



Information

Useful information with respect to proper handling of the machine!



Tip

Suggestions for reduced workload!

Obligations of the operator



The user has to see to and ensure that only skilled personnel are responsible for the operation of the spreader. Before starting work, set out clearly the responsibilities of the personnel for installation, operation, maintenance and repair of the unit.



All persons dealing with commissioning, operation and maintenance of the system must have read and understood all the safety regulations.



The operating instructions must always be at hand at the place of use of the machine; in this case, in the driver's cabin of the carrier vehicle.

The operator has to observe the following:



The user has to see to and ensure that the vehicle is in a condition for safe operation and in a roadworthy condition! Works not complying with the requirements must be refused!



Before starting work, the driver must check the fixing of the spreader.



Direct unauthorized persons away from the vehicle / unit and its work and danger area.



The safety and danger instructions at the spreader must be complete and in legible condition.

By observing some simple safety rules, most accidents can be prevented.



In cases where people or the equipment are endangered, shut down the machine immediately and contact the customer service.
SWITCH OFF THE MOTOR AND REMOVE THE IGNITION KEY!!!



Do not execute any work with the machine operating!
SWITCH OFF THE MOTOR AND REMOVE THE IGNITION KEY!!!



Never work in the vicinity of the machine in loose clothing. It can get caught in moving parts!



Make sure that all protective devices are installed when operating the machine!



After switching off the machine, tooling/machine parts may continue running!



When working at the equipment, provide a slip-resistant climbing possibility.



The operating personnel must be provided with protective clothing and the personnel are obliged to wear it!



When loading the spreader, respect the admissible loads of the carrier vehicle! (Axle load, admissible total weight). Especially when using further attachments, make sure that the admissible axle loads are not exceeded.



Please adapt your driving behavior to operation with full load! In particular, this applies to driving on inclines and slippery roads!



Make sure that the spreading disc is not damaged when reversing. The same applies to driving on uneven ground. Please note that the spreading disc is located only 400 mm to 420 mm above the ground.

Safety rules concerning the handling of hydraulic lines, couplings and parts:

Please note that high pressures are created in the hydraulic lines. Gushing out hydraulic oil may cause injury or fire.



Remove pressure of pressure lines before coupling and uncoupling.



Damaged hydraulic lines must be replaced immediately. After 6 years, the hydraulic lines must be replaced in any case.



Only personnel with special knowledge and experience in the field of hydraulics are allowed to work at the hydraulic equipment; better consult a specialist workshop.

CHAPTER 02



Labeling and warning notes



Marking "Winter maintenance"



Warning sign, Do not enter the danger zone of the machine. Prior to commissioning, read and observe operating and safety instructions!



Warning sign! Switch off motor and remove the ignition key during any work at the machine!



Reflecting warning signs at the rear of the spreader



Spreader type Duplex Inox,
stainless steel type V4A



CE mark corresponding to EC Declaration of Conformity



Manufacturer: Kugelmann

Kugelmann three-point spreader with labeling and warning notes, working headlight, rotating beacon.



Subject to modifications

Chapter 03



Technical data, equipment

Manufacturer

Kugelmann Maschinenbau, Gewerbepark 1-3, 87675 Rettenbach, Germany,
Tel. +49 (0)08860/9190-0 Fax: 08860/ 9190-19, is the manufacturer of the truck-mounted spreader "Duplex".

Machine data

The three-point spreader "Duplex" has a capacity of 0.35 up to 1.85 m³ for dry spreading material. The spreader has two chambers of the same size. Optionally, the spreading chambers can be partitioned asymmetrically.

The spreader can be equipped with brine equipment for pre-wetted salt spreading. The volume of the brine tanks reaches approx. 43% of the spreader volume.

The vehicle hydraulic serves for the drive as long as the performance of the hydraulic pump is sufficient. A pressure-free return at the carrier vehicle is necessary. Optionally, Kugelmann offers a PTO hydraulic pump if the hydraulic pump cannot reach the necessary feed rate. The spreader is completely made of V4A (designation Inox).

The control of the spreader is executed via MCSS 3/4 or via the k-tronic.

The following data or designations appear on the type plate

Type three-point spreader	Width of spreading chamber	Depth of spreading chamber	Height of spreading container in cm	Changing code	Volume of reservoir in liters
Typ: D DB	218 T	52 H	90	-01	Volumen: 750 l
AB Typ:					
Sole Typ:	Brine	Volumen:	334	l	
Baujahr:		Gewicht:		kg	
Fabr. Nr.:					
www.kugelmann.com D-87675 Reffenbach a.A. - Made in Germany					Kugelmann
Three-point spreader, here with brine tank					Volume of brine tank in liters

Work areas and possible applications

The Kugelmann three-point spreader can spread grit, spreading salt and brine solution in all variations. By means of the control system (MCSS 3/4 or k-tronic), highly accurate spreading of single components as well as two or even three components at the same time is possible. Depending on the type of spreading disc, the spreading image can also be shifted (infinitely variable) asymmetrically over the opposite lane or flush to the curb. You can mix your spreading material in any proportion. Adjust the driving speed to the spreading width and the spread quantity.

Requirements as regards the carrier vehicle

The hydraulic system must supply 40l/min. and a pressure of 200 bar. Moreover, it must dispose of a pressure-free return with a nominal I.D. of at least 18, better would be 22. An electronic drive signal at the carrier vehicle allows a simple connection to the control system. In case of a speedometer driven mechanically by means of a speedometer cable, a pulse generator must be mounted on site.

Hydraulic systems with a performance-dependent delivery volume (load sensing) must supply 160l/min. A PTO hydraulic pump can be supplied optionally if the carrier vehicle does not reach the necessary delivery volume or the operating pressure.

Standard equipment

A rotating beacon, working headlights, splash guard and a PVC folding roof are part of the standard equipment of the Kugelmann "Duplex" spreader.

Types of spreading discs

The spreading discs are made exclusively in stainless steel V4A. The standard disc to spread spreading salt and grit has shorter spreading blades as the spreading disc for pre-wetted salt.

Special equipment, additional equipment, options

The electrical adjustment of the spreading pattern makes operation more comfortable. From the cabin, the operator can adjust the spreading range more to the left or right side.

The pre-wetted salt equipment as additional device allows wetting of the spreading material with brine solution. This helps to save spreading material and to protect the environment.

Description, special features

The three-point spreader Duplex by Kugelmann works extremely efficient and accurate. With a large variety of types, you find the perfect three-point spreader for each carrier vehicle. The double chamber system (asymmetric or symmetric), additional brine tanks and the perfect infinite adjustment of the spreading pattern leave nothing to be desired. The Duplex Inox stainless steel type with high-quality special painting ensures a long machine life. The control system MCSS 3/4 or k-tronic allows a simple and precise operation of the spreader. Short changeover times and a low design provide comfortable conditions for the driver and a clear rear view. By means of the compact attachment at the tractor, the center of gravity is as close to the rear axis as possible.

CHAPTER 04



Installation and removal of spreader

Installation of three-point spreader

The three-point spreader is locked by means of the upper and lower link of the carrier vehicle. Several hole positions can be selected at the upper link shackle of the spreader. The spreading disc has to be positioned 400 mm to 420 mm above the ground. For this, the spreader should be in horizontal position. Check this by means of visual check or even better, with a spirit level. Depending on the length of the upper link, the hole position is resulting. Mostly, the pin for the upper link is inserted in the second or third hole from below.

Basically, the whole drive is connected with 2 hydraulic connections (with load sensing 3 hydraulic connections) as well as advance and reflux. The two hoses can not be confused; the return hose is always the thicker hose.

The lighting bar is connected with a 7-pole connector.

MCSS 3/4:

The control system MCSS 3/4 is connected to the spreader by means of 3 cables with socket connections. Two cables with socket connection are connected with the cables coming from the spreader - the sockets can not be confused. The third cable with 4-pole connector is the current supply with drive signal. This cable is connected at the built-in socket in the driver's cabin.

k-tronic:

With the type "Permanently installed spreader connections", the control unit (master) is inserted in the 19-pole connecting socket.

If the electrical spreader connections can be removed, as e.g. in case of overhung installation, proceed as follows:

➡ Mount the connection box (terminal box with sockets and connecting cable) in the driver's cabin.

➡ Connect master, connecting cable and current supply with the terminal box. ➡ connect current supply and drive signal at permanently installed connecting sockets in the driver's cabin.



Always couple the hose for the pressure-free return first!

Prerequisites for the hydraulic system (as described in Chapter 3): performance of hydraulic pump 40 l/min, pressure 200 bar and a pressure-free return.

If the performance of the hydraulic pump of the vehicle is not sufficient and a PTO shaft is available, the drive is carried out by an additional PTO hydraulic pump. When fitting the pump, push the wide retaining ring to the front. Check whether the pump has engaged. The PTO pump is locked at the carrier vehicle by means of a torque support. Hydraulic hoses connect the pump firmly with the hydraulic container.

Subject to modifications

Set the overpressure valve to a pressure of 180 bar. The PTO speed must be set to 540 1/min. When removing the spreader, the PTO hydraulic pump is mounted on a device installed for this purpose. The oil level at the pump has to be checked in regular intervals.

Remove the rear support legs before spreading; see Chapter 5 Operation of spreader.

Removal of spreader

The rear support legs must be mounted and in correct position. Lower the three-point spreader completely. The ground must be even and stable. Uncouple the hydraulic hoses, the hydraulic hose for the pressure-free return at the end. Disconnect the 7-pole connector of the lighting bar.

At the control system MCSS 3/4, disconnect the three socket connections (described at installation).

With the k-tronic and the fixed variant, disconnect the 19-pole connector from the socket.

k-tronic and removable spreader connections. Disconnect the socket connection for the master, the control cable and the current supply at the terminal box. Furthermore, disconnect the socket connections for the current supply and the drive signal at the permanently installed connecting sockets in the driver's cabin.

Installation ready for operation

Proceed as described in Chapter 4, page 2.

Use the documentation "Installation guide electrical system" for the electrical connection.

CHAPTER 05



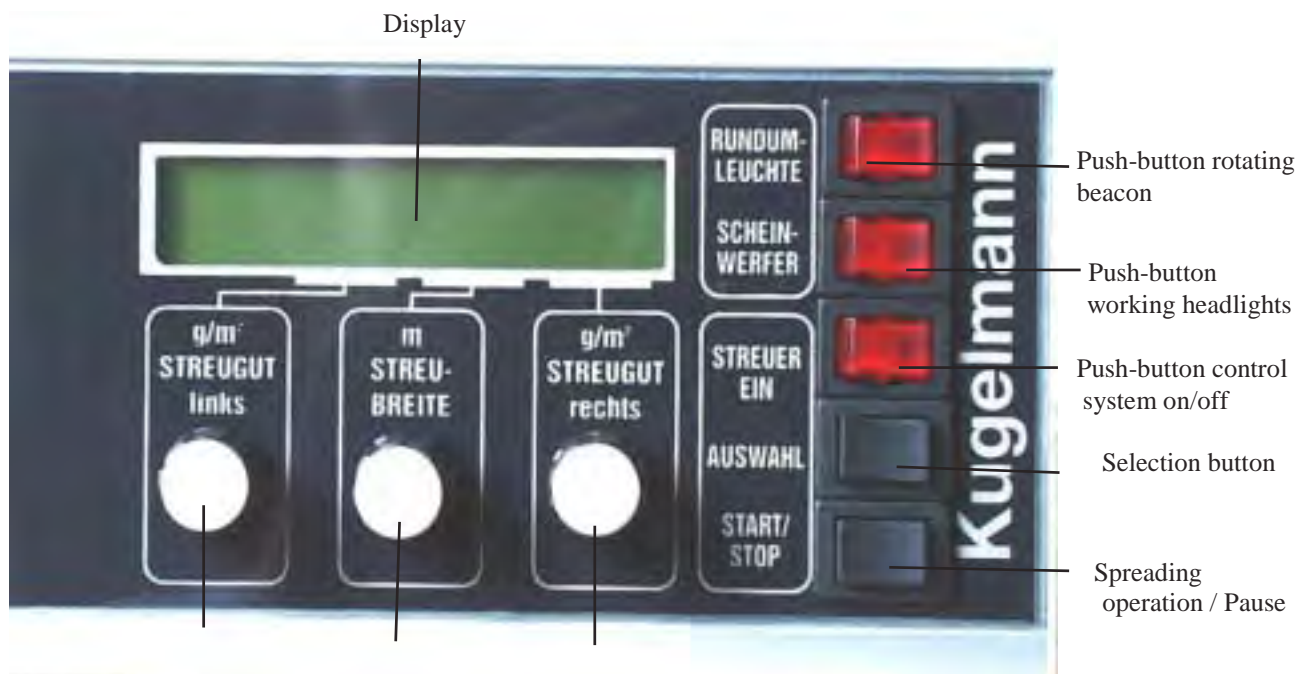
Operation of spreader

Control system

Two types can be chosen, MCSS 3/4 and k-tronic. A separate instruction for the control system gives you further details. Here, only operating elements are described.

MCSS 3/4

Switch on the rotating beacon, the headlights and the spreader by means of the red toggle switches. Set the values for automatic operation of the spreader and manual operation and go to the setting menu in the selection mode. For details, see the operating instructions for the control system.

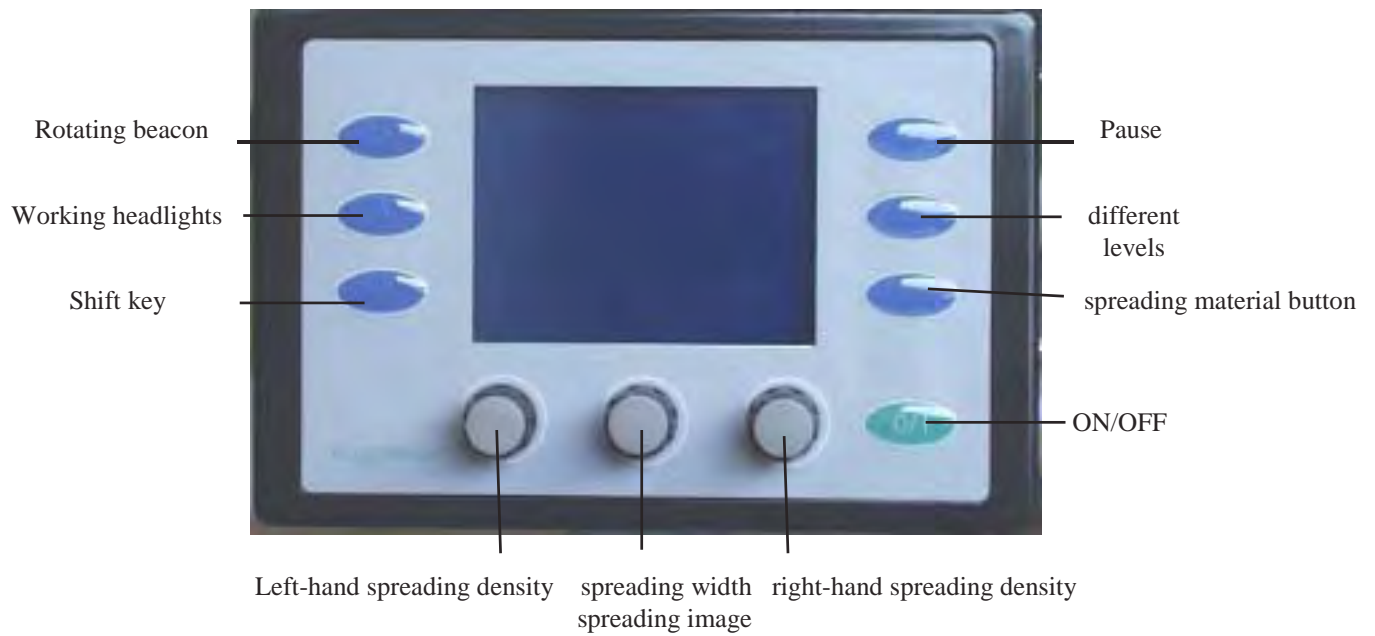


Left turning knob (left spreading density) middle turning knob (spreading width) right turning knob (right spreading density)

See manual MCSS

Subject to modifications

k-tronic



See manual control system k-tronic, operating instructions.

Operation of spreader

Filling of spreader

Both spreading chambers are protected against moisture ingress by means of a PVC top.

Grit and spreading salt is filled into the chambers by means of an appropriate loader/device or via silos. Observe the axle loads and the admissible total weight. Weigh the vehicle with full load and with all attachments. Determine the weight with lifted and lowered front device.

If the spreader is overloaded, you must attach a filling mark. As grit has a higher density than spreading salt, weighing grit is sufficient.

The grid of the spreading container must never be removed during operation. Only if the spreader is switched off completely, the grid can be removed for a short time to repair any malfunctions.



If refined salt is filled in, the screw covers must be removed; otherwise, disturbances during material transport are possible.

Option brine tanks: the brine solution is filled into the tanks with a filling system via C-pipe connection. A float switch finishes this procedure as soon as the tanks are full. Before that, the switch must be connected to the filling system via a cable. Determine the axle loads, the admissible total weight with full brine tanks (filled with brine solution (higher weight)) and all attachments in lifted and lowered state.

The brine tanks may also be partially filled to save weight.

The shutdown for the filling pump would be set lower in this case. Make sure that the float switch is installed correctly. The push-button may be positioned on top, in the middle or at the bottom. The arrow on the side of the hexagon must point upward; otherwise, the push-button does not work.



upper float switch position

middle float switch position

lower float switch position

Subject to modifications

Commissioning of spreader

Check all fixtures again. Is the spreader mounted in the right position? Are all pins inserted and secured correctly?

The rear support legs must be turned upwards or must be removed. The spreading image would deteriorate; furthermore, it is possible that the support legs touch the ground in case of uneven ground.



Basically, the operation of the machine, the responsibility for care, maintenance and reconditioning is restricted to skilled personnel.



Never work in the vicinity of the machine in loose clothing. It can get caught in moving parts.



Do not execute any work with the machine operating!
SWITCH OFF THE MOTOR AND REMOVE THE IGNITION KEY!!!



After switching off the machine, tooling/machine parts may continue running!



Do not execute any work between the spreader and the carrier vehicle! Lower the spreader, switch off the motor and remove the ignition key!

Hand wheel for mechanical adjustment of the spreading pattern



Hand wheel to secure the setting

Adjusting spindle (horizontal setting of spreading disc)

At the factory, the spreading disc is set horizontally via the two spindles.

Set the spreading quantity via the control system and check it according to the operating instructions for the k-tronic.



When changing the spreading material, we recommend to check the settings in any case.

First setting of spreader

Refined salt and rock salt with standard density are stored in the control system and must be dry. All safety rules are observed. Spreading salt has been filled into the chambers, the spreader is ready for operation. The hydraulic drive or the respective other drive as well as the rotating beacon have been switched on.

Subject to modifications



Sometimes, the spreading image depends a lot on the quality of the spreading material.



If the height of the spreading disc changes, also spreading width and spreading image change.

This can be caused e.g. by bigger wheels or a higher flatbed.

Adjustment of quantity to be spread

By means of the hand wheel for the adjustment of the spreading pattern, the spreading disc must be adjusted via the spindle completely to the back. With electrical adjustment of spreading pattern, the spreading disc is brought into this position by means of the control system k-tronic.

Switch on the k-tronic → press button at bottom left and hold it pressed → press button at bottom right → Emptying appears, release buttons → push button at bottom right → Adjustment of spreading position automatically reaches maximum position → Exit menu

Do not reach into the metering screws - danger of severe injury.

Place an empty bucket with a capacity of at least 30 liters below the respective outlet of the metering screws. Furthermore, a scale is necessary to weigh the spread quantity of salt exactly.

Remove the brine hose from the spreading disc and hold it into a separate collecting vessel (bucket). Proceed analogously to the procedure described for the conveyor screw.

The spreading rate must be set for each outlet and for each used spreading material. The conveyor screws must be filled completely with spreading material. With manual operation, move the conveyor screws via the flow divider block until spreading material is drawn evenly. Empty the bucket and position it.



The adjustment of the spreading material is described in the detailed description "Control system k-tronic for the distributor".

Timing chart overview

On the k-Tronic → Details menu → Spreading materials → Salt, grit or brine

- ➔ Pulses/kg teach-in left or right (each conveyor screw separately)
- ➔ Press left-hand turning knob as long as at least 1800 pulses are reached
- ➔ set the weighed net weight at the middle turning knob
- ➔ save the value by means of the right-hand turning knob with "OK"

Setting of spreading image

Let the vehicle run in neutral gear at an appropriate place with the spreading material container possibly half filled. If no hydraulic system with performance-dependent delivery volume (load sensing) is available, switch on hydraulic system at the vehicle.



Never work in the vicinity of the machine in loose clothing. It can get caught in moving parts.



Do not execute any work with the machine operating!
SWITCH OFF THE MOTOR AND REMOVE THE IGNITION KEY!!!



After switching off the machine, tooling/machine parts may continue running!

Manual operation with k-tronic: ➔ Press button at bottom left and hold it pressed ➔ press button at top right
➔ release both buttons ➔ press button at top right again (spreading operation) ➔ screws and spreading disc are rotating

After a few seconds, switch off the hydraulic drive and the vehicle.

Observe the above-mentioned safety instructions. The spreading image can be evaluated by means of the distribution of the spreading material on the ground.

The distribution of spreading material has to be executed according to the requirements and test methods for the distribution of spreading material (TLG B3).

Subject to modifications

Spreading pattern adjustment

Kugelmann offers a mechanical and electrical adjustment of the spreading pattern.

With the mechanical adjustment of the spreading pattern, the spreading disc can be moved back and forth by means of the hand wheel. The more the spreading material is transported to the center, the more the spreading image is adjusted to the left.

The electrical adjustment of the spreading pattern is executed via the control system k-tronic.

Switch on k-tronic → press middle turning knob and turn to the left or to the right, the arrow on the display moves to the left or to the right correspondingly → Press button on the top right Start

If the arrow on the display is located left from the center, the spreading image shifts to the left correspondingly. Similarly, the spreading image shifts to the right side if the arrow on the display can be seen right from the center.

Manual operation via flow divider block

By means of the flow divider block, it is possible to operate the spreader manually in case of emergency. For safety reasons, remove the spreader for the operation of the flow divider block. Set the rear support legs to parking position, see Chapter 4. After the settings have been made for the hand wheels at the flow divider block, refit the spreader. Turn over the support legs.



Do not execute any work between the spreader and the carrier vehicle! Remove spreader!

The starting position of the three hand wheels (with option brine four hand wheels) is always zero; otherwise, the electrical control system would be overlaid by the mechanical control.

Setting of the screw speed of the right-hand chamber by means of the left, black hand wheel (see images next page). Similarly, the other half of the spreading chamber is set with the right hand wheel. The middle hand wheel moves the spreading disc in manual emergency operation. With the option brine tanks, another hand wheel is placed on the far left.

To have malfunctions rectified at the conveyor screws, please proceed as follows: By opening it a bit, start movement of respective conveyor screw via the hand wheel. Press push-button to reverse the screw (see image on next page) at the slave to change the direction of rotation of the conveyor screw. This requires utmost caution. First, check whether the chute is free.

At the control system MCSS 3/4, the conveyor screw is reversed via a toggle switch. The rotating beacon must be switched on.

If screws do not transport or if they are tight:

Let the screw run in reverse mode for a short time (in manual mode). Act with utmost caution, the conveyor screws may be tight.

Please absolutely respect the danger instructions, switch off the motor and remove the ignition key!
If no spreading material leaves the chute, the spreading material container must be emptied by means of a shovel. Possibly, spreading material may have been frozen over the conveyor screw or foreign material could have dropped into the screw channel.



Hand wheel right-hand conveyor screw Hand wheel for emergency operation of spreading disc Hand wheel for left-hand conveyor screw

Push-button for reversing of conveyor screws at k-tronic or toggle switch for MCSS 3/4 not visible on this image.



The grid of the spreading container must never be removed during operation. Switch off the motor and remove the ignition key!



Manual operation is only provided for emergency situation. Defective parts must be repaired immediately, consult your distributor or a specialist workshop.

Subject to modifications



In cases where people or the equipment are endangered, shut down the machine immediately and contact the customer service.

SWITCH OFF THE MOTOR AND REMOVE THE IGNITION KEY!!!



The user has to see to and ensure that the vehicle is in a condition for safe operation and in a roadworthy condition! Works not complying with the requirements must be refused!



Never work in the vicinity of the machine in loose clothing. It can get caught in moving parts.



Make sure that all protective devices are installed when operating the machine!

Emptying of spreading chambers after termination of work

Never leave the spreader full or partially loaded for a longer period of time.

The spreading material should not freeze overnight; park the vehicle in frost-free premises. The spreading disc must be adjusted via the spindle completely to the back by means of the hand wheel for the adjustment of the spreading pattern. With electrical adjustment of spreading pattern, the spreading disc is brought into this position by means of the control system k-tronic.

Switch on the k-tronic → press button at bottom left and hold it pressed → press button at bottom right
 Emptying appears, release buttons → push button at bottom right → Adjustment of spreading
 position automatically reaches maximum position → Exit menu

Now, the spreading chambers can be emptied via the control system. An appropriate storage location should be found for that.



Do not reach into the metering screws - danger of severe injury.

On the contrary, the brine tanks can remain filled.

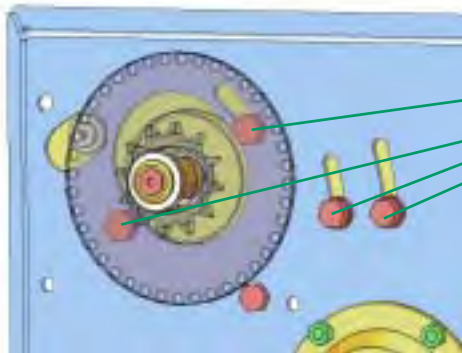
CHAPTER 06



Maintenance and care, wear parts

Maintenance and care

The Kugelmann three-point spreader is maintenance-free to a large extent. Laterally under the protective cover, the bearings of the conveyor screws are equipped with one lubricating nipple each. The chain tension (drive of conveyor screws) should be checked monthly and corrected, if necessary. At each hydraulic drive motor, slacken 4 screws, position the hydraulic motor anew and fasten the screws again.



These 4 screws must be slackened and fastened again after the drive chain has been tightened.

Spreader with electrical adjustment of the spreading pattern

At spreaders with electrical adjustment of the spreading pattern, make sure that the piston rod is clean. The piston rod moves the spreading disc forth and back and has to be cleaned regularly.

Spreader with drive via PTO pump

Secure the PTO pump against rotation after every operation. The transmission oil level can be seen at the sight glass on the side. Transmission oil SAE 80 or 90, approx. 0.5 l, fill up until sight glass level. Replace transmission oil and hydraulic oil with filter regularly.

Spreader with brine tanks

Before removing the spreader after the end of the season, clean the brine tanks with clear water. Connect C pipe and rinse tanks thoroughly. Do not let the feed pump for brine run dry. Fill it with Glysantin during summer.

Replacing the sensors at the conveyor screws and at the spreading disc

If no feedback arrives at the control system, the respective sensor may be defective. Check the oil supply and check whether the conveyor screws are blocked.

Slacken fixture, turn out sensor and separate from cable. Mount new sensor, solder cable or clamp at slave.



Replace defective sensors immediately. Danger from rotating tooling! Switch off the vehicle and remove the ignition key!

Wear parts

Wear parts are:

- the spreading disc
- both conveyor screws, the chain and the chain wheels
- the bearings of the spreading disc and conveyor screws, all light bulbs
- all oil and water filters
- all hydraulic hoses are to be replaced every 6 years
- all hoses and collars
- Tarpaulin cover and splash guard at rear face



Observe the safety rules concerning the handling of hydraulic lines, couplings and parts in Chapter 1. Damaged hydraulic hoses must not be repaired, they must be replaced immediately.

Corrections at painting



During painting works, there is a risk of fire (cf. to the regulation on combustible liquids)!
Risk of poisoning during painting works!
Risk of injury during grinding work with rotating tools!

After the winter season, it makes sense to remove damages to the paintwork. Please respect the danger instructions! The respective varnish can be purchased at Kugelmann, Rettenbach.

Welding operations at spreader

During welding operations at the spreader, please make sure that the control system is branched off. Otherwise, errors at the electronic system and a failure of the control system can possibly result.

Error diagnosis

If the error "sensor disc defective" appears, this may have several causes.

The spreader gets no oil. Hydraulic connections not properly connected.

Conveyor screws are blocked.

Sensor defective, cable torn off.

Check sensor by means of sensor adjustment in service menu. See description k-tronic.

Error "Undersupply disc".

The hydraulic system does not supply enough oil.

Error "Oversupply disc"

Hand wheel at flow divider block open.

"Undersupply conveyor screw"

The hydraulic system does not supply enough oil.

"Oversupply conveyor screw"

Hand wheel at flow divider block open.

"Low voltage"

Check the board voltage of the carrier vehicle.

„Dry run of brine pump“

- brine tank empty
- stopcock of brine system not open
- lid of metal filter mesh not screwed down firmly

Error message “Brine sensor defective”

- Feed pump for brine stuck
- Sensor defective or set incorrectly

Check sensor by means of sensor adjustment in service menu. See description k-tronic.

If the screws do not supply, it is possible that the spreading material has been frozen or foreign material could have dropped into the spreading container. Move the screws backward by means of the toggle switch or the reversing push-button at the slave housing. Switch off the spreading disc at the control system. Press the toggle switch or the reversing push-button very briefly to rectify a possible error caused by the formation of clumps. Manual operation is only provided for emergency situation.



In cases where people or the equipment are endangered, shut down the machine immediately and contact the customer service.

The conveyor screws do not supply enough spreading material in case inappropriate spreading material is filled in which does not continue to run. Remove the protective cover above the conveyor screws; afterwards, immediately mount the protective cover again. Mechanic causes are rare; the drive chains of the conveyor screws or the hydraulic drive motors may be defective



Do not execute any work with the machine operating!
SWITCH OFF THE MOTOR AND REMOVE THE IGNITION KEY!!!

Brine system does not work. Check by means of the emergency manual override at the flow divider block whether the error is an electrical or a hydraulic error. If the brine pump is running in manual mode, an electrical error is the cause. Check entered values at the k-tronic. Is the control valve provided with electricity? If the hydraulic motor with gear pump does not move, check whether the oil supply at the gear pump is enough. Very rarely, the gear pump or the hydraulic motor is defective or the nozzle is blocked.

If the spread quantity or the spreading width does not correspond with the desired nominal value, check the settings on the k-tronic. See Chapter 5 “First setting of spreader”

We recommend checking the settings before the beginning of the season and having them corrected, if necessary.

Maintenance schedule for three-point spreader



Do not execute any work with the machine operating!

SWITCH OFF THE MOTOR AND REMOVE THE IGNITION KEY!!!

Wartungs- und Pflegearbeiten, Übersichtsplan	taglich	wochentlich	monatlich	jahrlich	nach Saisonende	nach Betriebsstunden
Sichtprufung Schutte, Streukammern , Streuaggregat, Soleanlage und ges. Anbau des Streuaggregates	x					
Olstande an Motor und Hydraulik	x					
Drehmomentstutze an Aufsteckhydraulikpumpe	x					
Sichtprufung Hydraulikschlauche		x				
Kettenspannung Antrieb Forderschnecken		x 1. Monat	x			
Lager Forderschnecken abschmieren			x			
samtliche Verschleißteile uberprufen			x			
Soleanlage auf Dichtigkeit uberprufen			x			
Uberprufung des ganzen Aufbaureis durch einen Sachkundigen				x		
Behebung von Lackschaden					x	
Soletanks spulen und Solepumpe mit Glysantin spulen und befüllen					x	
Olwechsel mit Filter am Fahrzeug						siehe Betriebsanleitung Motor
Olwechsel mit Filter an der Hydraulikanlage						nach Herstellangaben.

