



CENTRIFUGAL SALT SPREADER

Mod. P-PRO



OPERATOR'S MANUAL

Read the Operator's manual entirely before using the machine

INDEX

1	INTRODUCTION	3
2	GENERAL INFORMATION	3
2.1	USING THIS MANUAL	3
2.2	INFORMATION ON THE MACHINE	4
2.3	NAME PLATE	4
2.4	CHARACTERISTICS OF THE MACHINE	4
2.5	IDENTIFICATION OF COMPONENTS	5
2.6	TECHNICAL DETAIL	5
3	SAFETY INFORMATION	6
3.1	GENERAL ADVICES	6
3.2	CONNECTION OF THE MACHINE TO THE TRACTOR	8
3.3	OPERATION ON THE MACHINE	9
3.4	TRANSFER ON THE ROAD	10
4	SAFETY SIGNALS	10
5	ASSEMBLY AND SET-UP	12
5.1	TRACTOR REQUIREMENTS AND 3-POINT HOOK-UP	12
5.2	CONNECTION TO THE 3-POINT HITCH OF THE TRACTOR	13
5.3	DRIVELINE INSTALLATION	14
6	SALT SPREADER USE	15
6.1	RECCOMENDATIONS FOR A CORRECT DISTRIBUTION	15
6.2	ADJUSTMENTS	15
6.3	HOW TO ADJUST THE SPREADING VANES	16
6.4	SPREAD PATTERN	16
6.5	HOPPER LOAD	18
6.6	SPREADING WIDHT ADJUSTMENT	18
6.7	SPREADING CHART AND PROFESSIONAL LIMITER SPREADING ADJUSTMENT	20
7	SPREADING MISTAKES	21
7.1	MISTAKES OF USE	21
7.2	MISTAKES DUE TO SALT	21
7.3	MISTAKES DUE TO THE SPREADER	21
8	MAINTENANCE	21
8.1	LUBRIFICATION	23
8.2	REPLACMENT OF DISTRIBUTOR VANES	23
8.3	LONG-TERM STORAGE	24
8.4	SPARE PARTS	24
9	WARRANTY	24
10	PARTS BREAKDOWN	26
10.1	GENERAL VIEW	26
10.2	GEAR BOX – 322.029	28
10.3	SPREADER DISC WITH DISTRIBUTOR VANES – 610.119	29
10.4	SALT AGITATOR – 620.108	30
10.5	STANDARD LIMITER – 620.122	31
10.6	RIGHT LEVER – 618.026	32
10.7	LEFT LEVER – 618.027	33
11	OPTIONAL PARTS BREAKDOWN	34
11.1	GENERAL VIEW	34
11.2	WHEELS KIT – 613.301	35
11.3	LIGHTS AND SUPPORTS KIT – 620.187	36
11.4	STAINLESS PROGRESSIVE LIMITER KIT – 620.163	37
11.5	HYDRAULIC OPENING SYSTEM – 619.111	38
11.6	SHOVEL SUPPORT KIT – 613.350	39

1 INTRODUCTION

The SALT spreaders are machines used for the distribution of solid, in the field. They can be used whether with tractors of small/medium power.

It is recommended to carefully read this operator's manual of use and maintenance and follow the recommendations to help ensure safe and efficient operation with and on the machine.

This manual has been written, in order to give the customer all the information and safety rules on the machine, as well as use and maintenance instructions that let to make good use of the potentialities of the machine.

The manual must always be handy, so as to consult it, in order to check the operational cycle. If it gets lost or damaged, it will be necessary to ask for a substitutive copy.

In case of some difficulties of interpretation on texts or tables, or if the drawings/sketches are not clear enough, please get immediately in touch with the manufacturer or dealer of the machine for having all the clarifications through the experts in the working/maintenance or through the person who wrote the manual.

We are completely available for a real collaboration, in order to improve the understanding of the whole manual.

2 GENERAL INFORMATION

2.1 USING THIS MANUAL

This manual gives all the information for the use and maintenance of the machine. The good working and its life depends on the good maintenance and to the attention during the use.

Some pictures in this manual show details or accessories that could be different from those of your machine, some components could be removed, in order to assure the clearness of the pictures.

Some signal words are put on the machine and the operator shall see to keep them in a perfect visual condition, replacing them when they are not readable anymore.



The symbol on the left, joined to the words under shown:

DANGER!

ATTENTION!

WARNING!

is used in this manual to draw your attention on the safety and good work of the machine. Therefore, it is necessary to observe all the written rules.

2.2 INFORMATION ON THE MACHINE

The models introduced in this manual have been designed and made exclusively allowing the distribution of salt. The machine is not indicated for being used in different sectors from the agricultural one. These machines are usually used during the day. If it is required the nocturnal use or with poor visibility, it must use the lighting system of the tractor or of the equipment to which the machine is connected.

A different use, like the above mentioned one is considered improper.

Any arbitrary modification made to this machine relieve the manufacturer from any responsibility for damages or lesions, also serious, that can be caused to the operators, to third parties or to things.

We recommended to use the original spare parts and accessories. The not original parts, besides to decline the guarantee, could be dangerous reducing the length and the performances of the machine.

2.3 NAME PLATE

On the frame of every machine, a name plate is fixed showing the model, the number of series and the year of construction of the machine.

When some spare parts are required, it is always necessary to refer to the type of machine, to the serial number and to the manufacturing year.



2.4 CHARACTERISTICS OF THE MACHINE

The SALT spreaders series COSMO can rely on a huge range of models adaptable with tractors of any owner.

The strength of the welded steel frame, combined with the considerable durability of the stainless steel hopper, allows to obtain a very high overall quality level in the category to which the distributors of carried SALT spreader.

The SALT spreader P-PRO model has a distributor completely in stainless steel equipped with a spreader disc with four adjustable vanes in four different positions, in order to obtain the maximum spreading precision and uniformity in the distribution.

The feeding of the disc is by gravity through two opening, located on the side of the hopper, inside of which a mix/agitator is applied, in order to prevent the SALT lumps formation. The side discharge ensures greater uniformity of spreading as the SALT falling on disk is immediately hit by the vanes without dispersions and making sure that each pallet receive the same amount of SALT.

A sheet case is placed in front of the disc, in order to prevent the spreading in the front side of the machine.


The dosage of the product takes place by varying the section of the hopper openings by means of a split lever system so as to allow even spreading to the right or left with respect to the direction of progress.


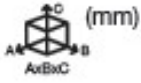


The SALT spreader is connected through a gear box (1:1) with gears module 17 in order to be resistant, absorbing possible power stress.

2.5 IDENTIFICATION OF COMPONENTS

A	Adjusting lever
B	Third hitch point
C	Rear shield
D	Hitch pin
E	PTO shaft hitch
F	Hopper
G	Steel frame
H	Vanes

2.6 TECHNICAL DETAIL

Mod.		P-PRO 180	P-PRO 300
CAPACITY		200/441/170	320/705/270

WEIGHT		54/119	58/128
DIMENSIONS (W/OUT PTO SHAFT)	 (mm)	950x950x950	1050x1050x1050
SPREADING WIDTH		1-14 m / 3.46 ft	
MINIMUM HP		20 CV/HP	

3 SAFETY INFORMATION

THE FOLLOWING SAFETY RECCOMENDATIONS ARE TO SAFEGUARD YOUR INCOLUMITY THEREFORE IT IS NECESSARY TO READ THEM CAREFULLY, MEMORIZING AND ALWAYS APPLYING THEM.

The present warnings in this manual regard exclusively the allowed uses and reasonably foreseeable.

All below instructions must be integrated by the common sense and by the experience of who works, indispensable measures to prevent accidents.

The machine must be used by a single operator. It is forbidden the use of the machine to under-ages. All the listed instructions must be carefully respected.

Possible changes on the machine, not preventively authorized by the manufacturer (by written copy), exclude his responsibility.

Check the correct functioning of the machine, before every employment.

3.1 GENERAL ADVICES

- Read carefully this manual before proceeding to start, operate, employ or maintenance on the machine.
- Watch, in addition to the warnings of this manual, all the safety, accident prevention rules and of general nature.

- The manual must always be handy , so as to consult it, in order to check working cycle and safety information. In case of loss or damage, it will be necessary to ask for a substitutive copy.



	<p>ATTENTION!</p> <p>Any work of maintenance, regulation and cleaning must be done with the machine on the ground (in stable conditions), turning off the tractor engine and removing the key.</p>
--	--

- Read carefully the safety signal words applied on the machine and follow the instructions. In case of wear and tear or insufficient readability of the safety signal words, clean them up or replace them, placing the signal words in the right position, as shown in paragraph 4.



<p>ATTENTION! WARNING!</p> <p>The operator, during the period of use, maintenance, repair, handling or storing of the machine, must wear accident-prevention shoes and safety gloves. Moreover, if it is necessary he must wear suitable hearing protections such as earmuffs or earplugs, dust masks and protective glasses</p>
--

- Keep the machine cleaned up from foreign bodies (detritus, tools, miscellaneous), as they could damage the operations or the operator. Generally the SALT are rather corrosive. For this reason, it is important that any particle of the SALT stay in the machine for a long period of time. Clean the hopper and the distributor after each use of the machine.



	<p>DANGER!</p> <p>It is forbidden to climb or to transport somebody when the machine is in motion. Do not let inside the hopper for any reason</p>
--	--

- If during cleaning operations it is used air or water with pressure, it is necessary to wear glasses and safety masks keeping away possible persons or animals from the machine.
- Before connecting the machine to the tractor or to other self-moving means check that this is in good conditions and that brakes work correctly, especially if you work on sloping grounds.
- Switch off the machine from tractor only on a compact and level ground (with empty hopper), checking that the machine is stable.



WARNING!

During transport operations, stocking and employment of the SALT, the operators must follow all the label indications and particularly to the content of the written risks and the precaution suggestions

THE MANUFACTURER DOES NOT ANSWER TO POSSIBLE DAMAGES CAUSED BY AN IMPROPER AND UNFORESEEN USE OF THE MACHINE

THE MANUFACTURER IS NOT RESPONSIBLE IN CASE OF:

IMPROPER USE OF THE MACHINE, USE BY NOT TRAINED STAFF, SERIOUS DEFICIENCIES IN THE FORESEEN MAINTENANCE, CHANGES OR NOT ALLOWED INTERVENTIONS, USE OF NOT ORIGINAL OR SPECIFIC SPARE PARTS, TOTAL OR PARTIAL INOBSERVANCE OF THE INSTRUCTIONS, INOBSERVANCE OF THE COMMON SAFETY RULES DURING WORK, UNUSUAL CASES.

3.2 CONNECTION OF THE MACHINE TO THE TRACTOR

- The third hitch point of the tractor and the SALT spreader must coincide or must be adapted.
- Make sure that the PTO shaft is engaged in right way after every linkage operation of the machine and that it does not come uncoupled when the machine is lowered in order to fill the hopped up.



ATTENTION! DANGER!

Check that the protections of the PTO shaft are complete and in good conditions.

- In case of breaking or deterioration of the PTO shaft protections, please replace them immediately.

- When the machine is not linked to the power unit, the PTO shaft must be placed on the appropriate support.
- The presence of the machine can influence the manoeuvrability of the tractor, in particular during transport.



	<p>ATTENTION! Do not come, for any reason, between the tractor and the SALT spreader when the engine is running and the power take-off is on.</p>
--	--

3.3 OPERATION ON THE MACHINE

- Make a check of the machine before switching it on. Start to work only if the machine is in perfect conditions.
- Before using the machine, please be sure that all the safety devices are correctly placed and in good state; in case of breakdowns or damages to the protections, please replace them immediately.



	<p>ATTENTION! During work, please be sure that for a radius of 50 meters there are not any person or animals. When you work in proximity of roads or public places, it is ABSOLUTELY OBLIGATORY to keep away persons and to increase the precautions.</p>
--	---

	<p>ATTENTION! Anybody who comes up to the machine in a danger area, therefore he becomes “AN EXPOSED PERSON”. The operator must prevent anybody to come into the danger area and to work with the maximum caution. If somebody comes up, please stop immediately the tractor engine.</p>
--	--

3.4 TRANSFER ON THE ROAD



ATTENTION!

Please follow scrupulously the Highway code in force in the Country of use. During transport on public roads, it is obligatory to empty the hopper.

- Remember that during moving on public roads, special attention must be done, besides to possible and special regulations noted on the registration book of the tractor, choosing an appropriate speed especially when the street is crowded, winding or sloping.
- If the spreader hides with its shape the back signalling lights of the tractor, it is necessary to put a lights bar and/or some back signalling signs.
- During the moving on the road, please clean tyres or the working mechanism, in order to avoid dirty the feather edge with earth or other material.



ATTENTION!

During the moving on the road, the warning flasher, yellow or orange, assembled on the tractor must always be in function also during the day.



ATTENTION!

During transport with raised machine, please always check that the control lever of the rear lifter is locked, in order to avoid the accidental lowering of the machine.

4 SAFETY SIGNALS










ATTENTION!

Be sure that the safety labels are readable. Clean them up using a cloth, water and soap. Replace the damaged labels placing them in the right position, as subsequently described.



The safety signals on the machine supply the most important indications: their observance helps your safeness.

	<p>ATTENTION! Before making any operation on the machine, stop the engine of the tractor or of the self- moving means, remove the key, put on the parking brake and read carefully the operator's manual.</p>		<p>ATTENTION! DANGER! of entangling and dragging. Do not put hands near the running gear box.</p>
	<p>ATTENTION! Check the sense of rotation and the number of revolutions (540 rpm) of the tractor power before placing the PTO shaft.</p>		<p>ATTENTION! DANGER! of crushing. Do not stop between the machine and tractor when the tractor engine is running.</p>
	<p>ATTENTION! DANGER! Possible throwing of material and/or objects, please do not stop or come up to the machine. Keep a safety distance of 50 meters, at least, from the machine.</p>		<p>ATTENTION! DANGER! of shearing. Do not approach limbs to the spreader disc when the machine is running.</p>
		<p>ATTENTION! Use the individual Protection Devices, as required.</p>	

5 ASSEMBLY AND SET-UP

Before coupling the machine to the 3-point hitch, positioning the safety devices to the tractor, so that it is not possible the involuntary and/or accidental raising and lowering of the arms.

The 3-point hitch of the tractor and of the machine must coincide or must be adapted.

In proximity of arms rods of the back lifter of the tractor, there is the danger of wounding, because of crushing and cutting points.

Do not use the external controls for the lifting of the machine. During transport position block the lateral stop of the rods.

5.1 TRACTOR REQUIREMENTS AND 3-POINT HOOK-UP



DANGER!

It is obligatory to check the raising ability and the stability of the tractor (before carrying out the connection with the machine) in order to avoid the overturning and/or the loss of wheels grip.

Before connecting the machine to the tractor is required to check the stability of the tractor machine system, in order to determine the ballast to apply to the front of the tractor, to ensure adequate distribution of the weight on the axles.

In order to assure the stability it is necessary that the following relations are verified (see table below for definitions):

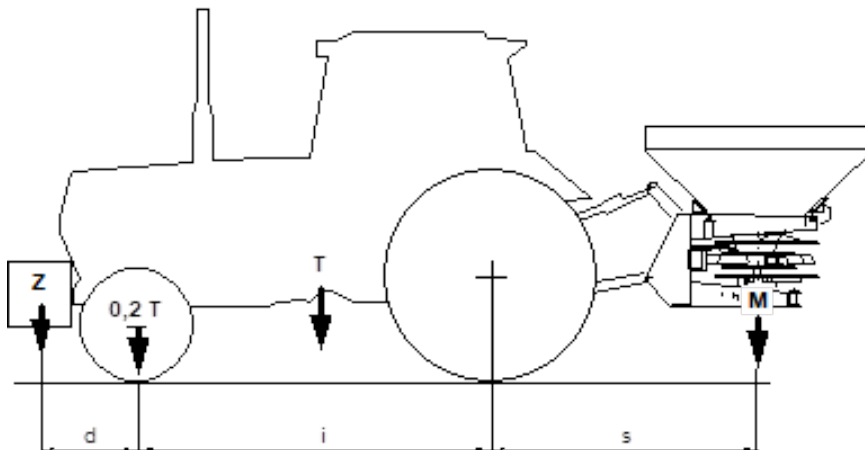
$$1) M \times s \leq 0.2 \times T \times i + Z \times (d+i)$$

$$2) M \leq 0.3T$$

Consequently, the minimum ballast required is:

$$Z_{\min} = (M \times s - 0.2 \times T \times i) / (d+i)$$

To determine the appropriate characteristics of the ballast, refer to the manual of the tractor.



- i** = Tractor wheelbase (cm)
- d** = Distance between front axle and ballast center of mass (cm)
- T** = Weight of tractor + operator (75 kg)
- Z** = Ballast weight (kg)
- M** = Spreader weight + roller weight (if included) (kg)
- s** = Distance between rear axle and implement center of mass

5.2 CONNECTION TO THE 3-POINT HITCH OF THE TRACTOR



ATTENTION!

Every time that somebody comes down from the tractor, it is necessary to disconnect the PTO shaft, stopping the engine and to put on the parking brake.

For the connection of the machine to the tractor, please operate in the following way:

- Step backwards with the tractor until arriving in proximity of the lower connections of the SALT spreader.
- Fix the lower connections of the tractor to the pins of the machine and lock them with the safety plugs.
- Connect the upper linkage of the machine to the 3-point hitch of the tractor putting the appropriate pin and block the anti-unscrewing device of the 3-point hitch;
- Raise the machine of some centimetres by the ground and operate on the lateral ties of the lifter bars and on the two turnbuckles, in order to block the lateral movement, so as to prevent excessive oscillations during the working phase.

The machine must be positioned, through the raising of the lower connections of the tractor, so that the land distance from the lower extremity of the distributor disc is approximately of 70 cm. To obtain a regular distribution, it is important that the distributor disc is in horizontal position compared to the land.

- After having made these operations, the PTO shaft must be linked to the splined shaft of the gearbox of the machine (covered by a safety cowling) and after to the tractor power take-off.



ATTENTION!

The PTO shaft must always be connected to at last to the power take off and disconnected at first, when you stop working.

5.3 DRIVELINE INSTALLATION

Before using the PTO shaft, please consult the use and maintenance manual attached to the pto shaft.


In case that the PTO shaft, supplied with the machine, is not used, please check that the cowlings of the machines and of tractors are overlapped to the PTO shaft's shield of 5 cm., at least.

For a correct and safe operation of the machine, please use exclusively PTO shafts with CE mark.

Please use PTO shafts with integral shields.

- Grease periodically, the PTO shaft following the instruction supplied by the PTO shaft manufacturer (see the use and maintenance manual of the PTO shaft).
- Observe the sense of assembly of the PTO shaft, as indicated by the manufacturer and shown on the outer cover of the shield (tractor drawing on the external tube of the PTO shaft towards the power take-off of the same tractor).
- Fasten the safety ant-rotation chains and make sure that the safety anti- removing block (push connecting ring nut) is correctly placed and blocked in the right lodging.



	<p>ATTENTION! Check the rotation sense and the speed regulation of the power take-off of the tractor to be at 540 rpm, as the machine is projected for this kind of speed.</p>
--	---

The length of the PTO shaft must be adapted to the type of used tractor.

When the PTO shaft is released from the power take-off of the tractor must ALWAYS be laid on the appropriate support.

THE MANUFACTURER IS NOT RESPONSIBLE FOR THE DAMAGES CAUSED BY AN INCORRECT ASSEMBLY AND USE OF THE PTO SHAFT.

6 SALT SPREADER USE



ATTENTION!

Before use, please check that gears are adequately greased.



ATTENTION!

During the use of the machine, please be sure that for a radius of 50 meters there are not any person or animals. If somebody comes up, please stop immediately the tractor engine.

6.1 RECCOMENDATIONS FOR A CORRECT DISTRIBUTION

- Please test always the kg/ha that you wish to spread before starting to work.
- Use a SALT in perfect conditions: a humid SALT could not be spread uniformly and correctly.
- Avoid to spread the SALT during windy days, in order to improve the uniformity of the distribution.
- Do not connect the power take-off that operates the spreading disc when the tractor is picked up; low RPM until it idles and afterwards speed up gradually till you can achieve a speed of 540 RPM.
- Open the SALT shutters only when the desired speed is achieved.

6.2 ADJUSTMENTS

It is not possible to have an exact spreading chart for equipment that make use of the centrifugal principle, given that the distributed quantity depends on the feed speed, on the radius of distribution, on the quality and humidity of the SALT and on the roughness of the land. The SALT must always be stored and conserved adequately, so as to keep its physical characteristics unchanged.

It is necessary to set the speed of the centrifugal spreader, before starting the operation of distribution, trying, in the possible limits, to keep it constant for all its duration.

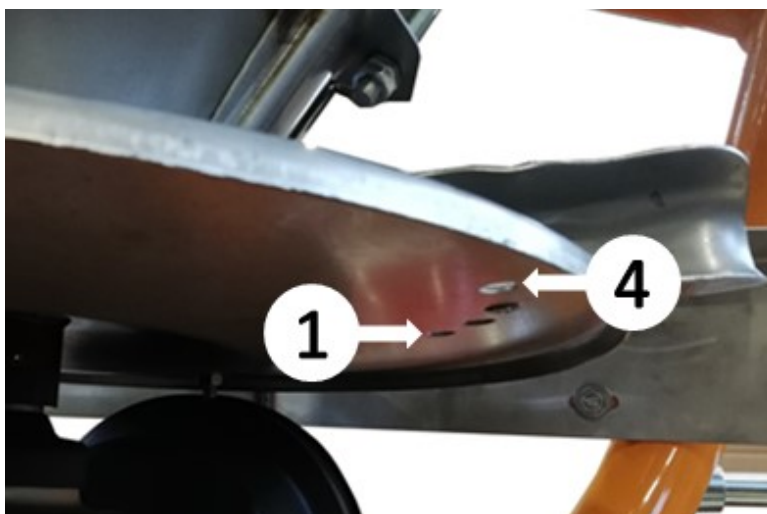
The spreading charts contain the indicative information, in order to determine the quantity to spread in the field; these must be completed by the experience and competence of the operator.

6.3 HOW TO ADJUST THE SPREADING VANES

In order to assure an homogenous distribution on both sides of the centrifugal spreader, depending on the different specific weight of the used SALT, the distributor vanes on the disc can have different positions.

When all the vanes are placed in position 1 (as shown in the picture), the distribution of the product is increased towards left, compared to the way of the tractor moving. On the contrary, if the vanes are put in hole 4, the distribution will be bigger towards right.

Moreover, moving the vanes from position 1 to position 4, at the same speed, there will be an increase of the distributing width of SALT distribution.

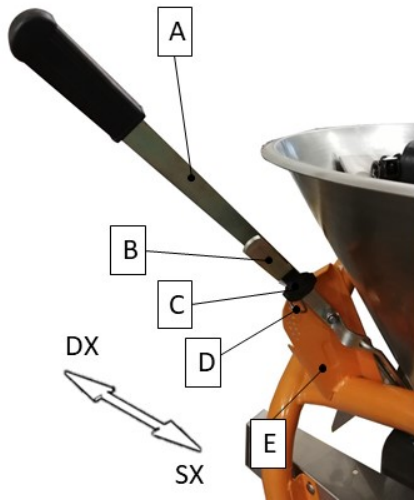


DISTRIBUTOR VANE ADJUSTMENT

6.4 SPREAD PATTERN

The SALT spreading is regulated through the regulation lever that moves the opening section on the bottom of the hopper.

In order to carry out the regulation, after having consulted the spreading table, according to the type of product to spread and to the spreader speed, it is necessary to move the lever "A" along the graduated scale "E" and blocking it in the chosen position with the pin "D". See the further table.

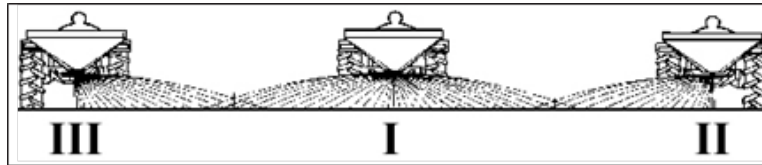


LARGHEZZA SPANDIMENTO m. ANCHO DE TRABAJO m. LARGUEUR DE TRAVAIL m.		VELOCITÀ TRATTORE km/h VELOCIDAD TRACTOR km/h VITESSE TRACTEUR km/h	QUANTITÀ IN kg/m ALLE DIVERSE APERTURE CANTIDAD kg/m - APERTURA DE LAS TRAMPILLAS QUANTITÉ kg/m - OUVRETTES SHUTTERS DEBIT en kg/m - OUVRETTURE DES TRAPPEL				
			4	5	6	7	8
GRANULARE 12-12-12	16	5	149	272	370	518	591
GRANULARE 12-12-12		8	96	222	296	411	478
GRANULARE 12-12-12		12	62	155	237	341	413
NITRATO DI AMMONIO	16	5	187	319	441	520	1119
AMMONIUM NITRATE		8	105	281	401	575	697
NITRATE D'AMMONIUM		12	70	174	267	383	464
UREA	12	5	223	307	405	526	7386
UREA		8	139	348	534	768	1029
UREA		12	92	232	356	511	679
CIANAMIDE GRANULARE	12	5	245	313	443	548	1026
CYANAMIDE GRANULADO		8	153	383	567	843	1021
CYANAMIDE GRANULARE		12	102	259	397	561	681

LARGHEZZA SPANDIMENTO m. ANCHO DE TRABAJO m. LARGUEUR DE TRAVAIL m.		VELOCITÀ TRATTORE km/h VELOCIDAD TRACTOR km/h VITESSE TRACTEUR km/h	QUANTITÀ IN kg/m ALLE DIVERSE APERTURE CANTIDAD kg/m - APERTURA DE LAS TRAMPILLAS QUANTITÉ kg/m - OUVRETTES SHUTTERS DEBIT en kg/m - OUVRETTURE DES TRAPPEL			
			5	6	7	8
GRANO	8	8	38	60	90	120
TRIGO		10	28	37	50	73
TRIGO		12	18	28	40	52
BLE	8	8	33	55	83	110
ORZO		10	20	33	49	65
CERADA		12	14	23	34	45
ORZE	8	8	78	130	195	260
ALFALFA		10	53	88	131	175
ALFALFA		12	38	63	94	125
LUZERNE CULTIVEE	8	8	80	135	200	270
KENTUR YA BERMUDA-GRASS		10	55	95	140	190
KENTUR YA BERMUDA-HERBE		12	40	70	100	135

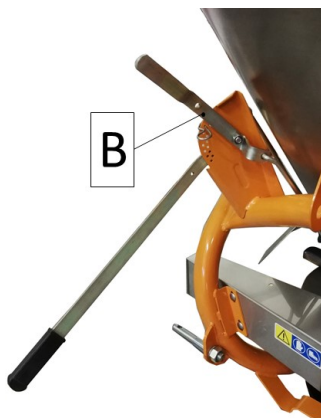
Before using the spreader make sure that the shutters could close the holes completely with lever in “closed” position. Otherwise adjust it through the nuts.

In order to spread from both sides (ref. I), “A” and “B” levers must be in the same position, connected through grip handle “C”.

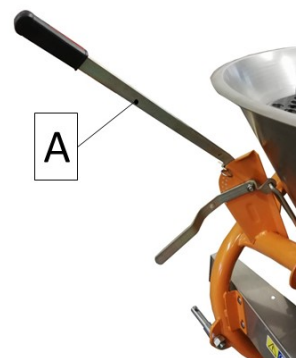


In order to carry out the spreading only through the left side (ref. II), it is necessary to disconnect the two levers removing the “C” grip handle, to set the lever “A” in the chosen position, given by the spreading chart, and to bring the lever “B” towards the higher part (position 1) in order to close the shutter of the right side.

In order to spread only on to the right side (ref. III) you have to move the lever “A” up, (in position 1) and regulate the quantity to spread with the lever “B”.



LEFT SIDE DISTRIBUTION (RIF. II)



RIGHT SIDE DISTRIBUTION (RIF. III)

6.5 HOPPER LOAD

It is advised not to carry out the hopper loading manually but using a lifter or suitable mechanical means.



ATTENTION!

The hopper must be loaded only after having hitched the spreader to the tractor.

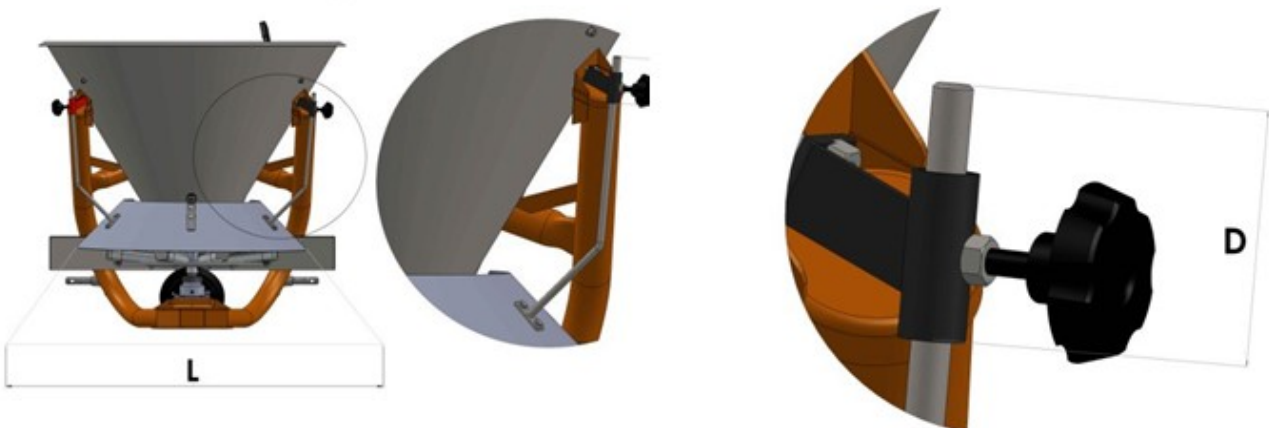
Do not drive for very long distances with a full load and do not put full bags on the fertiliser loaded in the hopper during the transport to the field or during the working, in order not to overload the capacity of the machine and to compress the SALT.



WARNING!

During the operations of transport, stock and use of SALTs, the operator must be behaved in compliance with the indications on the label of the product and in particular with the content of the sentences of risk and the precaution advices.

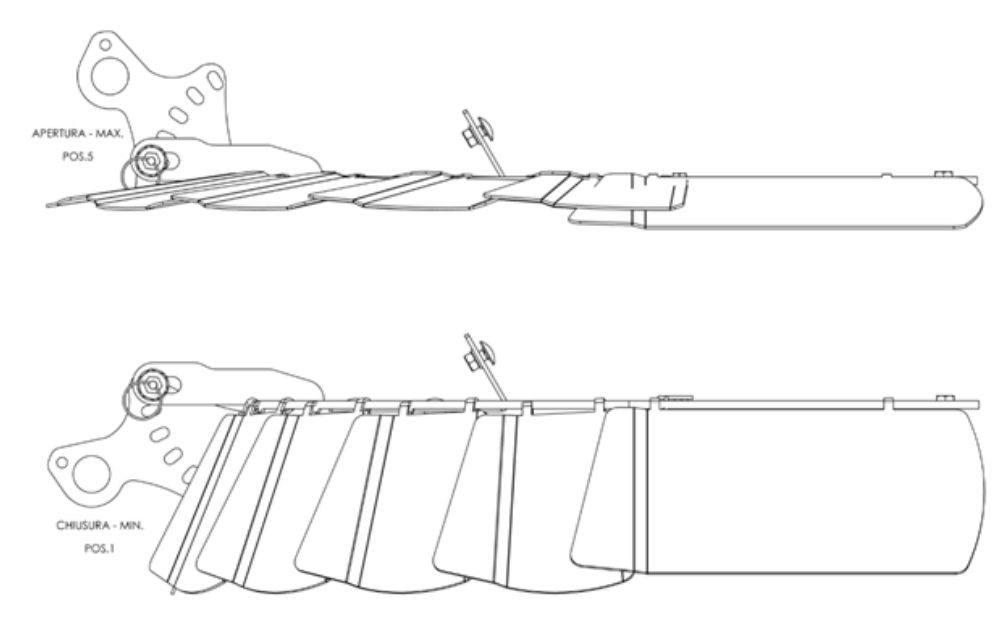
6.6 SPREADING WITH ADJUSTMENT



REGOLAZIONE POSIZIONE Position/Position/Posición/Position	LARGHEZZA SPAGLIO Spreading width/ Largeur d'épandage/ Ancho de trabajo/ Streubreite
mm.40	240 mm
mm.50	480 mm
mm.100	Tutto aperto/Full open/Tout ouvert/ Todo abierto/ voll geöffnet

APERTURA Opening lever position/ Ouverture sur levier/ Apertura en la palanca/ Öffnungshebel Position	Q.tà Kg/m Q.ty Kg/m Q.té Kg/m Cant. Kg/m Menge Kg/m	Q.tà Kg/m Q.ty Kg/m Q.té Kg/m Cant. Kg/m Menge Kg/m	Q.tà Kg/m Q.ty Kg/m Q.té Kg/m Cant. Kg/m Menge Kg/m
	6 km/h	8 km/h	12 km/h
4	0,148 (148 for Km)	0,111 (111 for Km)	0,74 (74 for Km)
6	0,576 (576 for Km)	0,432 (432 for Km)	0,288 (288 for Km)
8	0,984 (984 for Km)	0,738 (738 for Km)	0,492 (492 for Km)

6.7 SPREADING CHART AND PROFESSIONAL LIMITER SPREADING ADJUSTMENT



REGOLAZIONE POSIZIONE Position/Position/Posición/Position	LARGHEZZA SPAGLIO Spreading width/ Largeur d'épandage/ Ancho de trabajo/ Streubreite
POS.1	2,5 m
POS.2	3,5 m
POS.3	5,0 m
POS.4	8,0 m
POS.5	Tutto aperto/Full open/Tout ouvert/ Todo abierto/ voll geöffnet

APERTURA Opening lever position/ Ouverture sur levier/ Apertura en la palanca/ Öffnungshebel Position	Q.tà Kg/m	Q.tà Kg/m	Q.tà Kg/m
	Q.ty Kg/m Q.té Kg/m Cant. Kg/m Menge Kg/m	Q.ty Kg/m Q.té Kg/m Cant. Kg/m Menge Kg/m	Q.ty Kg/m Q.té Kg/m Cant. Kg/m Menge Kg/m
	6 km/h	8 km/h	12 km/h
4	0,148 (148 for Km)	0,111 (111 for Km)	0,74 (74 for Km)

6	0,576 (576 for Km)	0,432 (432 for Km)	0,288 (288 for Km)
8	0,984 (984 for Km)	0,738 (738 for Km)	0,492 (492 for Km)

7 SPREADING MISTAKES

7.1 MISTAKES OF USE

- Drive speed;
- Incorrect spreading width;
- The spreading disc is not in a horizontal position compared to the land;
- Drive speed is different to those suggested by the spreading tables, or however not suitable for that particular type of SALT;
- Drive mistakes (lack of superimposition of the spreading surfaces);
- Lack of cleaning of distributing discs and the gates opening;

7.2 MISTAKES DUE TO SALT

- SALT of poor quality. Wet or excessive humid SALT;
- Incorrect SALT composition or it does not correspond to what declared from the vendor;
- Presence of excessive SALT lumps or with particular great dimensions that influence negatively on the yield of the spreading;
- Foreign body in the SALT.

7.3 MISTAKES DUE TO THE SPREADER

- Spreading exits clogged.
- Parts of the spreading disc worn away or damaged.

8 MAINTENANCE

The ordinary maintenance criteria we suggest, are based on the company experience and on the advices and suggestions from our customers.

Such criteria are not exhaustive can be further integrated also with the collaboration of the customers that we thanks in advance.

A good ordinary maintenance keeps the operating costs of the machine low and provide an integral exploitation of its potentialities.



	<p>ATTENTION!</p> <p>Whichever work of maintenance, regulation and cleaning must be carried out with the machine on the ground (in stable conditions), engine turned off, handbrake set, key of ignition off and removed from the ignition board.</p>
--	--

In damage case, the operator must stop the machine immediately, assess the entity of the problem and proceed with eventual actions on the machine.

If pressure water or compressed air is used for the cleaning of the machine, it is necessary to protect oneself with proper glasses or protection masks and to remove eventual persons or animals near the machine. Do not use inflammable fluids.



	<p>ATTENTION!</p> <p>For the maintenance operations, always use the fit Individual Protection Devices (accident-prevention footwear and gloves) and to prepare all the accident- prevention steps for the type of operation in course.</p>
--	---

Every 8 hours of effective job, control the tightness of all nuts and bolts.

In case of anomalous vibrations, verify the status of wear of the vanes of the spreading disc, the corrected tightness of all the nuts and bolts and the lubrication of the gear box.

The excessive vibration of the machine, besides the specific annoyance, is dangerous and damaging for the entire structure subjecting the mechanical parts to more and more stress cycles compared to the advice pictures.

As regards particular actions that the user does not know or regarding broken parts replacing which are not shown in this manual, it is necessary to consult specialised personnel, making use of the Assistance service by the manufacturer or its distributors.

8.1 LUBRIFICATION

Before every use and after every 8 hours of effective work, carry out the greasing of the machine.

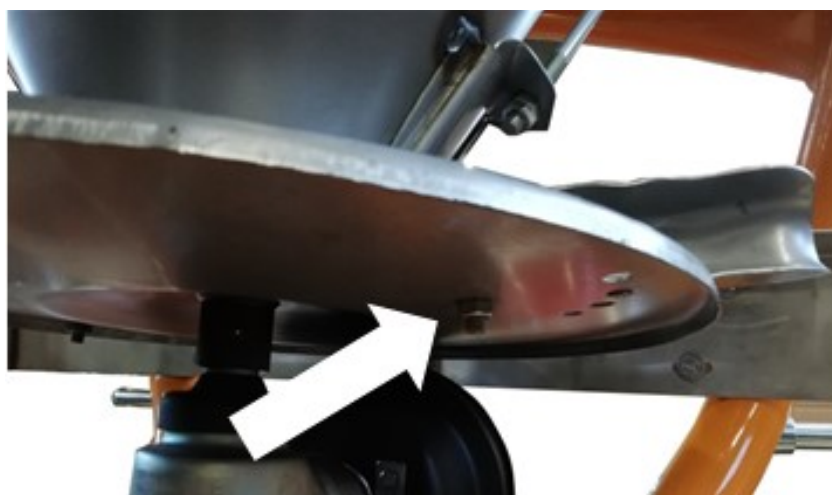
It is a good use that the greasing nipples are well cleaned up from mud or other residuals before using them for inject lubricating grease.

Lubricate with lithium grease the points, shown in the picture.



8.2 REPLACEMENT OF DISTRIBUTOR VANES

In case the spreading vanes are broken or damaged, it is necessary to substitute them with new ones.



Unscrew the nut and replace the damaged vane.

The fixing items (nuts and bolts) must be the same type of those prescribed by the manufacturer.

8.3 LONG-TERM STORAGE

It is a good use not to wait for using the machine to carry out repairing and maintenance. To repair and to replace the parts that are broken or damaged before the storage, in order to have always the machine ready for being used.

To store the machine in a sheltered place away from atmospheric agents and protect it in order to avoid deteriorations.

The SALTs are generally corrosive. For this reason it is important that no particles of fertiliser remains on the machine for long period of time.

Before storing the machine for long periods, it is opportune to operate as follows:

- wash accurately the machine and the inside of the hopper;
- to carry out a general control by sight of the machine in order to check eventual structural damages, to find eventual deep abrasions on the paint;
- to check that the safety signals are presents in their positions, that they are integral and readable, and in case they are deteriorated or unreadable, carry out immediately their substitution;
- to grease all the mechanical parts;
- to store, if possible, the machine in a sheltered place.

8.4 SPARE PARTS

For the replacement of parts of the centrifugal spreader Mod. P-PL, the customer must use just original parts, ordering them directly to the manufacturer of the machine to authorized dealers.

Carrying out the order, it is necessary to specify what the identification label brings, in particular:

- serial number;
- model;
- manufacturing year;
- number of frame.

9 WARRANTY

All the manufactured machines, shown in this manual, are sold with one warranty valid for a year from the delivery date, subjected to the following clauses:

- In case a defect in a part is found (or in some parts) during a period of a year from the delivery date of the machine to the customer, the dealer commits himself to verify the defective part and, in case in the course of this verification it is assessed a defect which is due to the materials or to the manufacturing, he will repair the defective part or, to his discretion, to replace it free of charge.

- The customer, at the delivery, must control that the machine has not got damages during the transport, that is in compliance with the one ordered and that is complete with all the accessories got from the purchase contract. On the contrary, he must send a written claim within 8 days from its reception.

- The warranty is not applied in the following cases:

- a) normal wear;

- b) breaches or breaks deriving from negligence or due to the use of the machine in different conditions of the ones permitted;

- c) in case the machine has got unauthorized modifications (in written document) from the manufacturer or if unoriginal spare parts and accessories were mounted;

- d) when the serial number of the machine has been modified, removed or cancelled.

In any case, purchaser has to face the wearable parts substitution, the labour, transport costs, the eventual customs costs and the value-added tax.

Every responsibility for direct or indirect damages is declined when they are due to breaks or to the wear of the parts, the less for those deriving from the proper or improper use of themselves.

- Defects that are not clearly attributable to the material or to the manufacturing, will be checked by our Technical Attendance Centre or by our warehouse. If the claim would turn out unjustified, all the repair costs and/or substitution of the damaged parts will be debited to the purchaser.

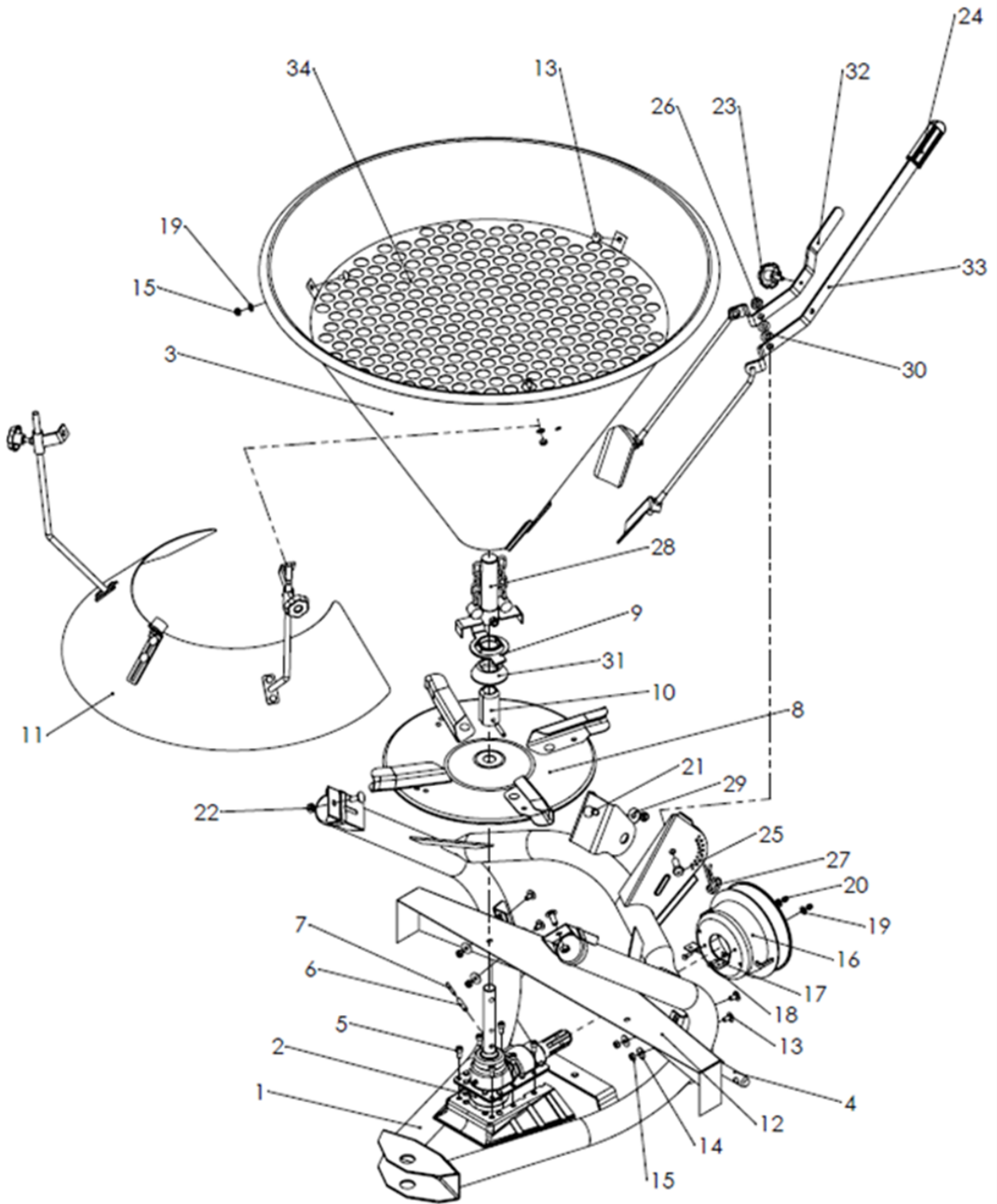
- All the parts will be billed at the shipment time and at the eventual acknowledgment of the guarantees (previous receipt and check of the damaged parts). This will give the right to get the credit.

The manufacturer or its retailer will not be responsible of the loss, neither of the damage, whichever it is and in whichever way it happened during the transport.

The aforementioned commitment refers to the person of the customer and it cannot be yielded or be transmitted to others.

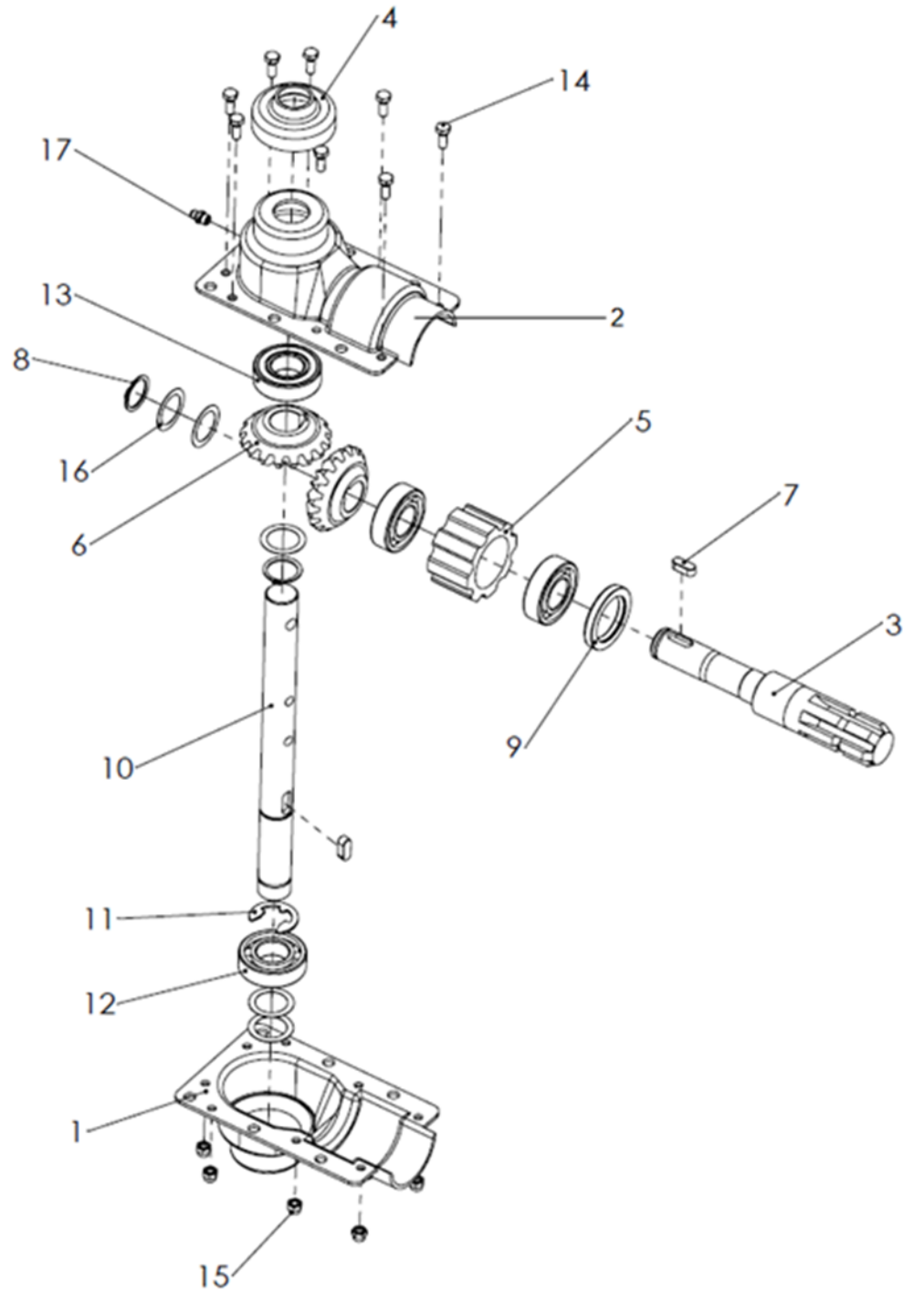
10 PARTS BREAKDOWN

10.1 GENERAL VIEW



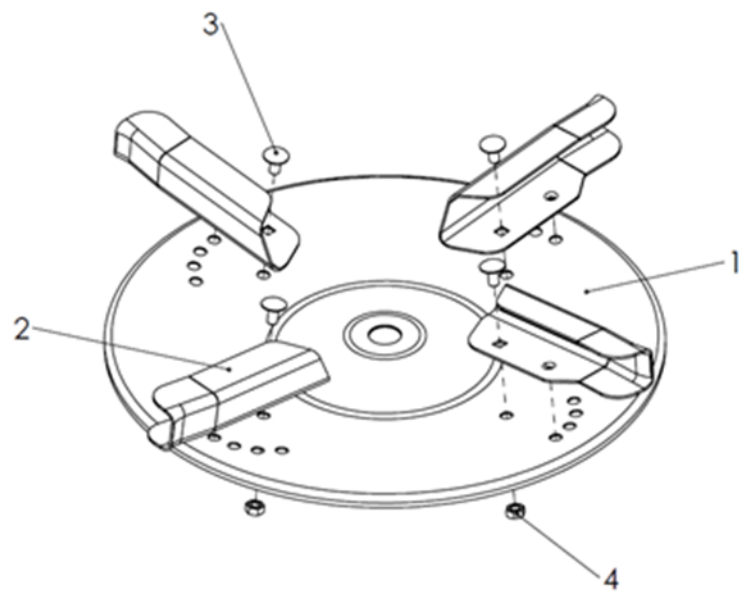
POS	QTY	CODE	DESCRIPTION
1	1	613.090	FRAME MOD. P-PRO
2	1	322.029	GEARBOX
3	1	609.100	STAINLESS HOPPER 180
3	1	609.101	STAINLESS HOPPER 300
4	2	633.001	LIFTING PIN
5	6	300.183	STAINLESS HEXAGON SOCKET HEAD CAP SCREW M8X16 ISO 4762
6	2	305.001	HEAVY DUTY SPRING PIN 8X40 ISO 8752
7	1	305.003	HEAVY DUTY SPRING PIN 5X40 UNI 8752
8	1	610.119	STAINLESS STEEL SPREADER DISC WITH DISTRIBUTOR VANES
9	1	619.002.19	LOWER AGITATOR
10	1	330.007	ALUMINUM DRIVER
11	1	620.122	STANDARD LIMITER
12	1	639.029	REAR CASING
13	7	300.107	STAINLESS CARRIAGE BOLT M8X16 ISO 8677
14	4	303.051	WIDE FLAT WASHER 8X24 ISO 7093
15	7	301.064	STAINLESS HEX NUT M8 ISO 4032
16	1	304.006	CE SHIELD
17	2	606.012	BRACKET FOR GEARBOX
18	2	300.120	STAINLESS FULL THREAD HEXAGON HEAD SCREW M6X16 ISO 4017
19	7	303.056	STAINLESS FLAT WASHER 8X17 ISO 7089
20	2	301.109	STAINLESS NYLON INSERT HIGH HEX LOCK NUTS M6 ISO 7040
21	3	300.096	STAINLESS CARRIAGE BOLT M10X25 ISO 8677
22	3	301.067	STAINLESS HEX NUT M10 ISO 4032
23	1	302.003	LOBE KNOB
24	1	304.008	RUBBER GRIP
25	1	300.124	STAINLESS FULL THREAD HEXAGON HEAD SCREW M12X35 ISO 4017
26	1	301.087	STAINLESS NYLON INSERT HIGH HEX LOCK NUTS M12 ISO 7040
27	1	307.004	STAINLESS R-CLIP 4 MM
28	1	620.108	SALT AGITATOR
29	1	303.053	STAINLESS WIDE FLAT WASHER 10X30 ISO 7093
30	2	303.060	FLAT WASHER 12X24 ISO 7089
31	1	304.013	GUM RING
32	1	618.026	RIGHT LEVER
33	1	618.027	LEFT LEVER
34	1	642.032	STAINLESS PROTECTIVE GRID

10.2 GEAR BOX – 322.029



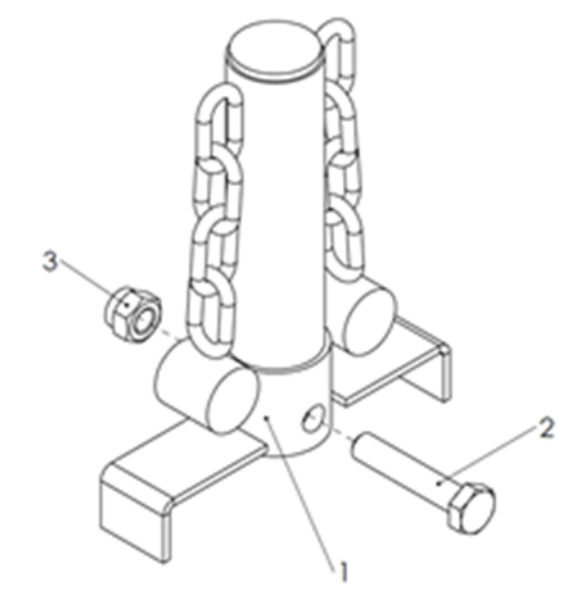
POS	QTY	CODE	DESCRIPTION
1	1	314.001	LOWER SHELL
2	1	314.002	UPPER SHELL
3	1	323.008	INPUT SHAFT
4	1	304.002	OUTPUT SHAFT COWLING
5	1	329.011	SPACER
6	2	316.003	BEVEL GEAR
7	2	326.003	PARALLEL KEY FORM A 8X7X20 DIN 6885
8	2	313.011	RETAINING RING FOR SHAFT 25X1.2 DIN 471
9	1	309.001	OIL SEAL
10	1	323.010	OUTPUT SHAFT
11	1	313.010	RADIAL CIRCLIP FOR SHAFT
12	3	310.002	BALL BEARING 6205
13	1	310.001	BALL BEARING 6205 2RS
14	8	300.120	STAINLESS FULL THREAD HEXAGON HEAD SCREW M6X16 ISO 4017
15	8	301.109	STAINLESS NYLON INSERT HIGH HEX LOCK NUT M6 ISO 7040
16	5	303.011	SHIM RING 25X35X0.5 DIN 988
17	1	306.002	GREASE FITTING M8

10.3 SPREADER DISC WITH DISTRIBUTOR VANES – 610.119



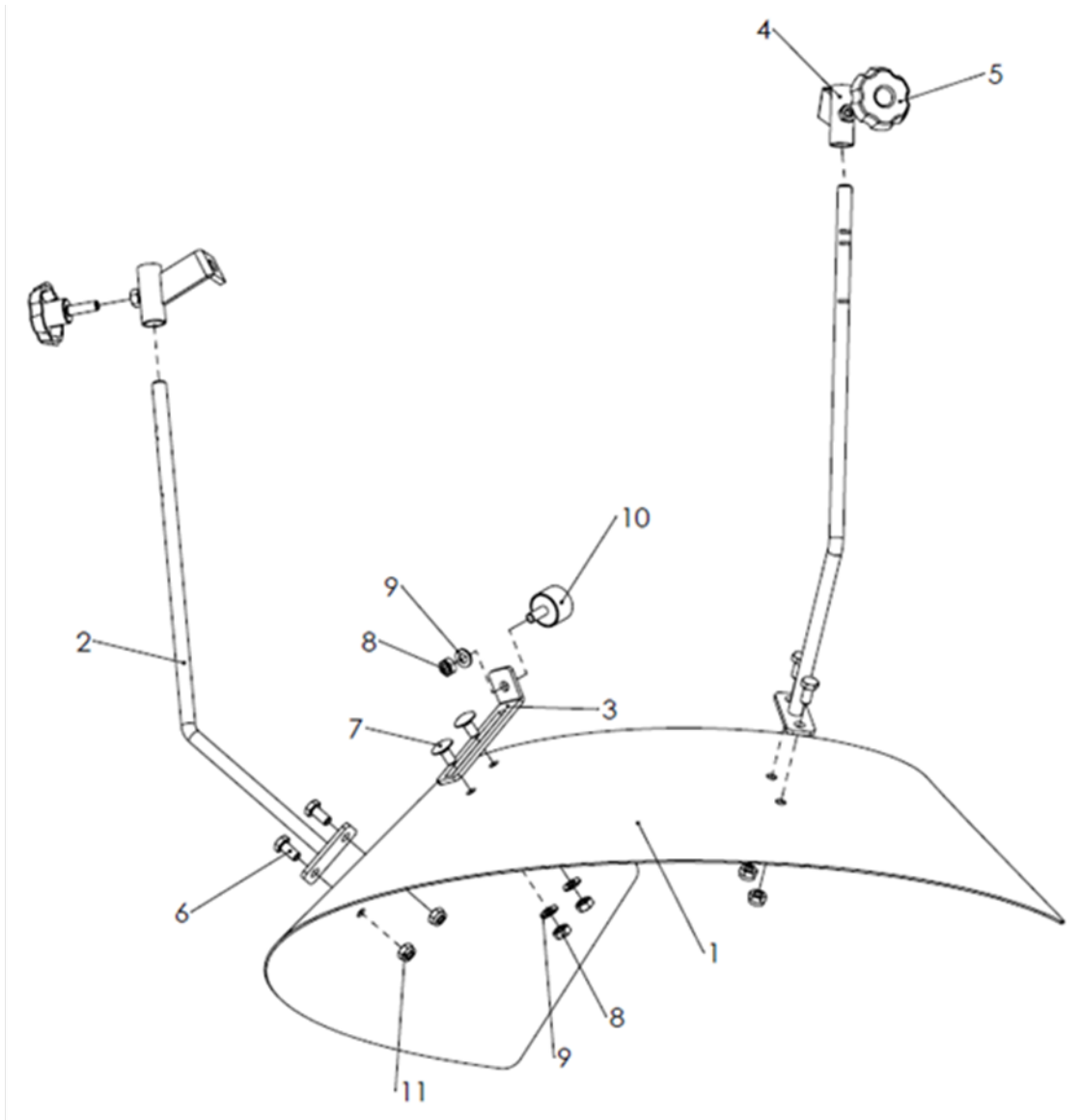
POS	QTY	CODE	DESCRIPTION
1	1	610.013	SPREADER DISC
2	4	601.002	DISTRIBUTOR VANE
3	4	300.107	ZINC CARRIAGE BOLT M8X16 ISO 8677
4	4	301.064	STAINLESS HEX NUT M8 ISO 4032

10.4 SALT AGITATOR – 620.108



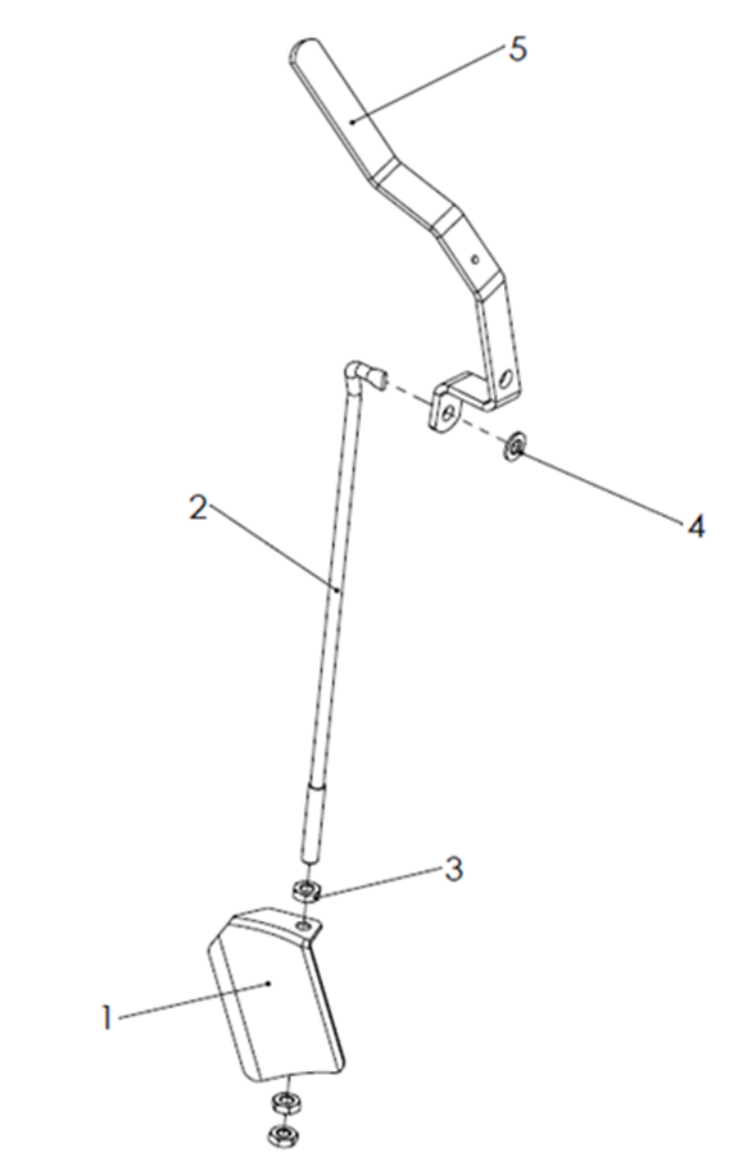
POS	QTY	CODE	DESCRIPTION
1	1	619.018	AGITATOR
2	1	300.106	STAINLESS FULL THREAD HEXAGON HEAD SCREW M10X50 ISO 4017
3	1	301.077	STAINLESS NYLON INSERT HIGH HEX LOCK NUT M10 ISO 7040

10.5 STANDARD LIMITER – 620.122



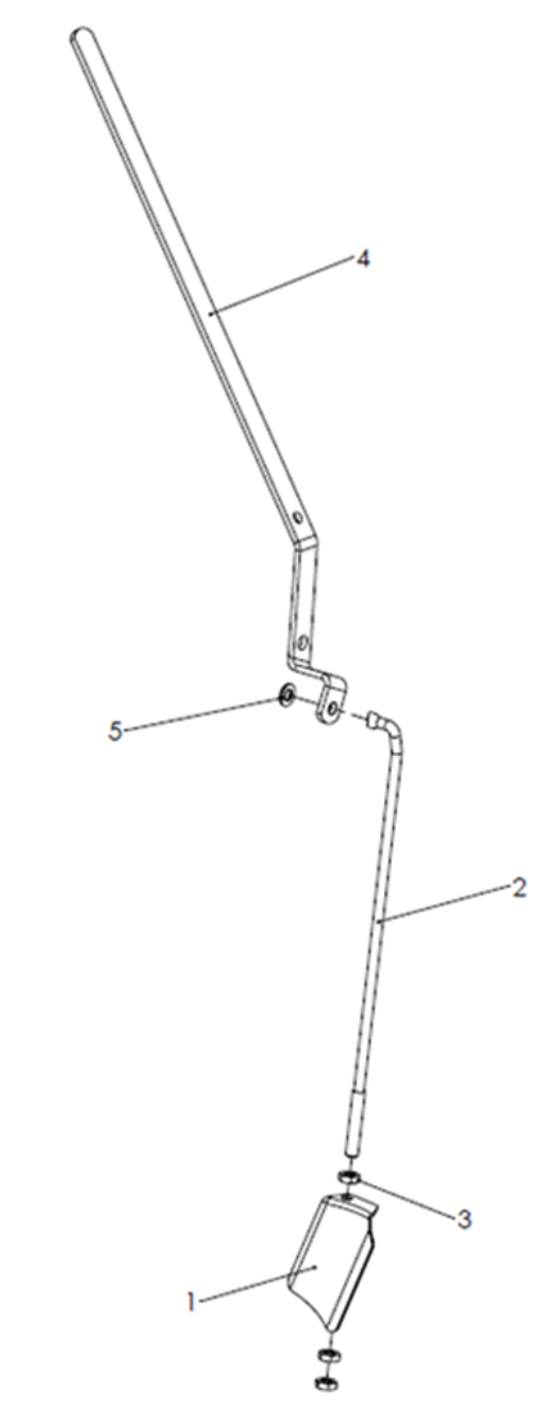
POS	QTY	CODE	DESCRIPTION
1	1	620.065	SALT STANDARD LIMITER
2	2	620.176	ADJUSTMENT BRACKET
3	1	620.072	ADDITIONAL LIMITER BRACKET
4	2	620.177	BRACKET SUPPORT
5	2	302.003	LOBE KNOB
6	4	300.092	STAINLESS FULL THREAD HEXAGON HEAD SCREW M8X16 ISO 4017
7	2	300.107	STAINLESS CARRIAGE BOLT M8X16 ISO 8677
8	3	301.064	STAINLESS HEX NUT M8 ISO 4032
9	3	303.056	STAINLESS FLAT WASHER 8X17 ISO 7089
10	1	329.013	VIBRATION DAMPING ELEMENT
11	4	301.065	STAINLESS NYLON INSERT THIN HEX LOCK NUTS M8 ISO 10511

10.6 RIGHT LEVER – 618.026



POS	QTY	CODE	DESCRIPTION
1	1	605.005	RIGHT SHUTTER
2	1	602.001	RIGHT TIE ROD
3	3	301.017	ZINC THIN HEX NUT M10 ISO 4035
4	1	303.015	ZINC FLAT WASHER 10X20 ISO 7089
5	1	604.005	RIGHT LEVER

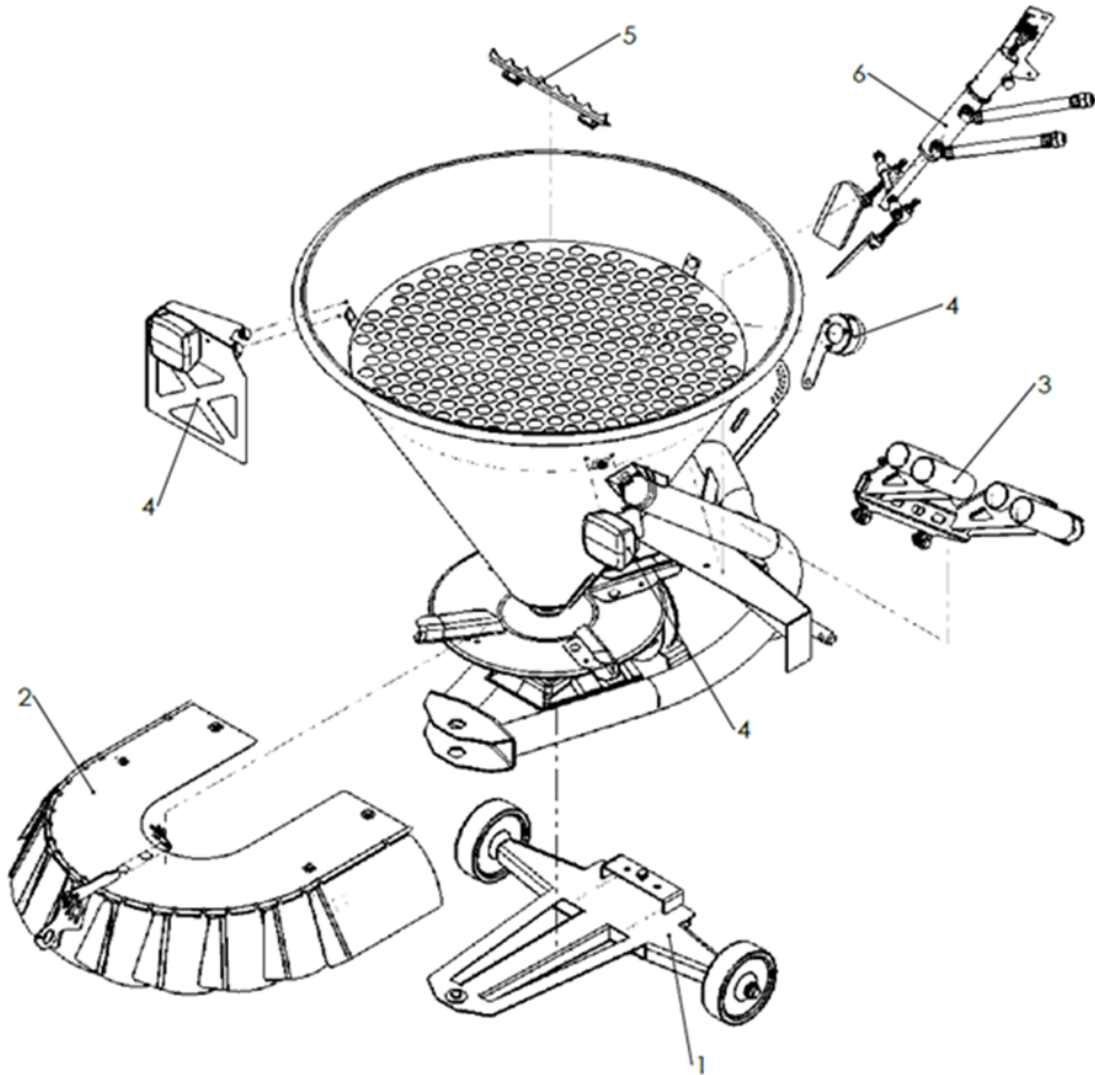
10.7 LEFT LEVER – 618.027



POS	QTY	CODE	DESCRIPTION
1	1	605.006	LEFT SHUTTER
2	1	602.002	LEFT TIE ROD
3	3	301.017	ZINC THIN HEX NUT M10 ISO 4035
4	1	604.006	LEFT LEVER
5	1	303.015	ZINC FLAT WASHER 10X20 ISO 7089

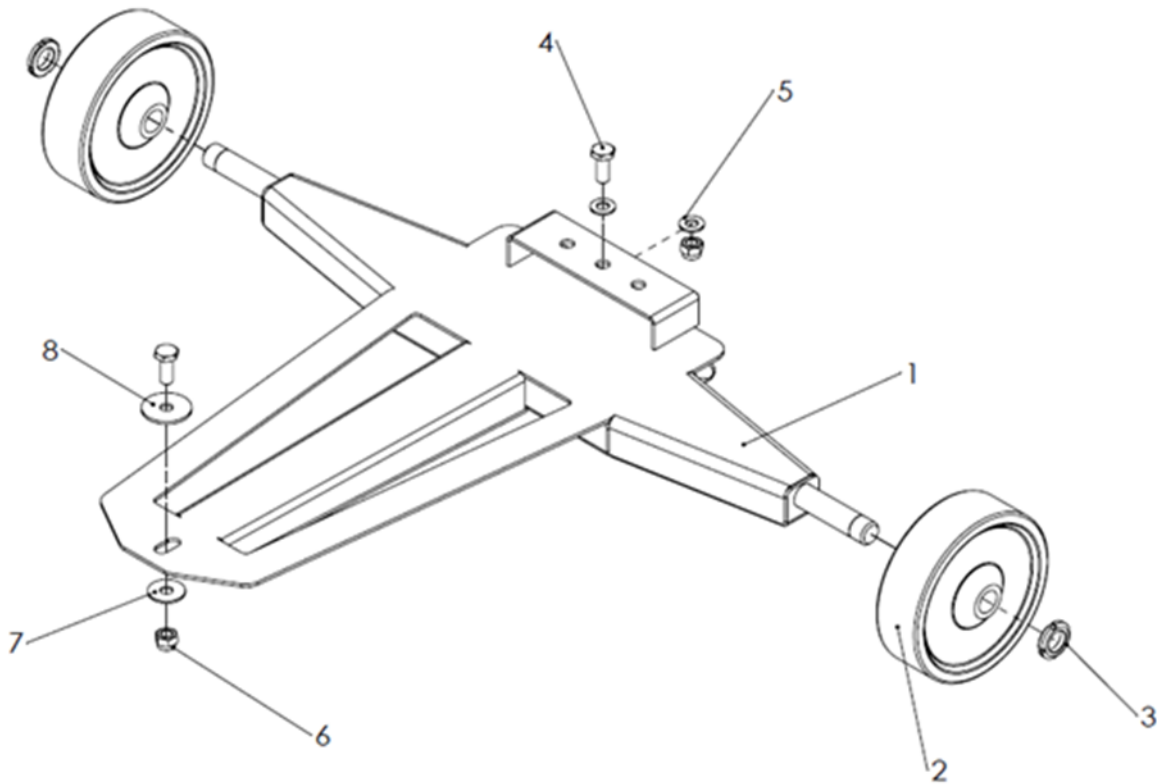
11 OPTIONAL PARTS BREAKDOWN

11.1 GENERAL VIEW



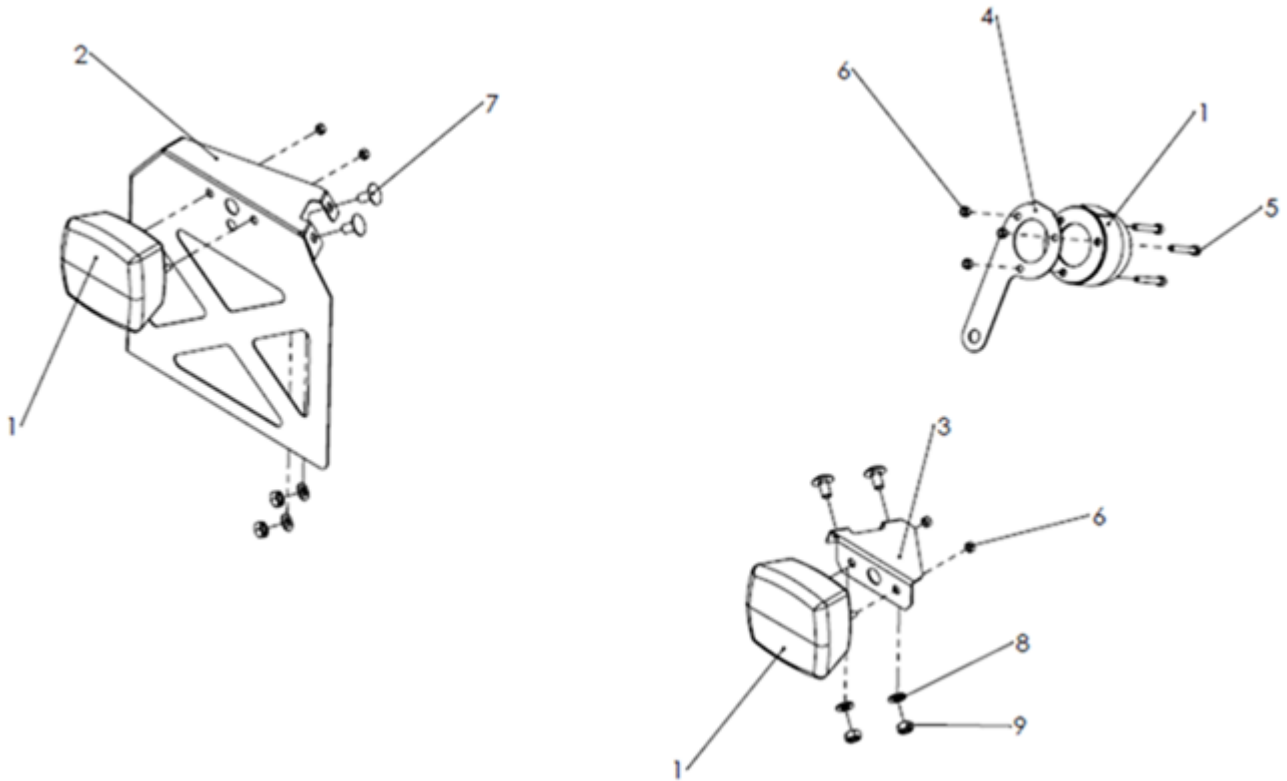
POS	QTY	CODE	DESCRIPTION
1	1	613.301	WHEELS KIT
2	1	620.163	STAINLESS PROGRESSIVE LIMITER KIT
3	1	613.350	SHOVEL SUPPORT KIT
4	1	620.187	LIGHTS AND SUPPORTS KIT
5	1	642.040	BLADE FOR CUTTING BAG
6	1	619.111	HYDRAULIC OPENING SYSTEM

11.2 WHEELS KIT – 613.301



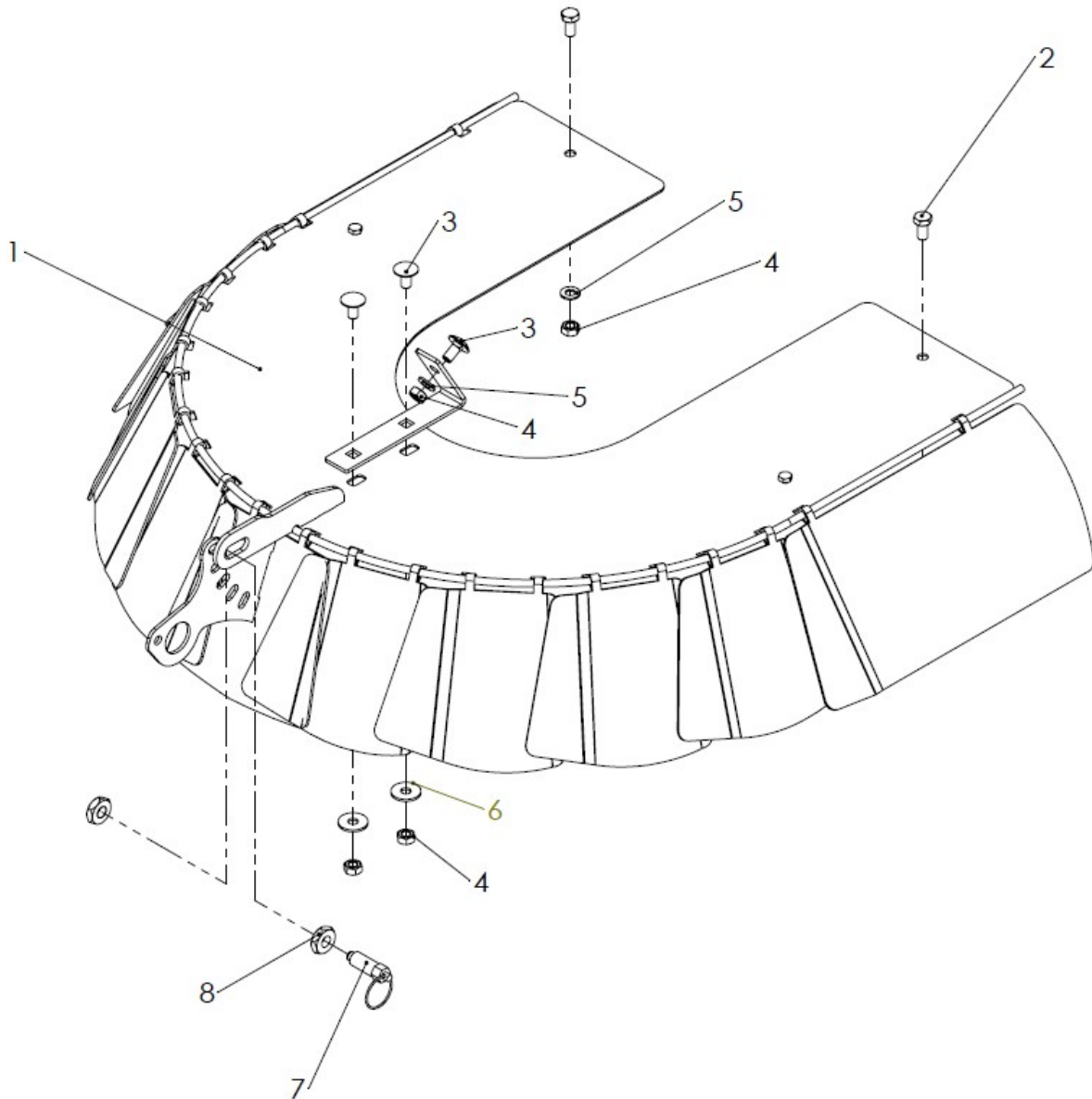
POS	QTY	CODE	DESCRIPTION
1	1	613.300	CART STRUCTURE
2	2	304.058	NYLON WHEEL
3	2	301.092	SLOTTED ROUND LOCKING NUT GUK 04 M20X1
4	2	300.089	STAINLESS FULL THREAD HEXAGON HEAD SCREW M10X25 ISO 4017
5	2	303.052	STAINLESS FLAT WASHER 10X20 ISO 7089
6	2	301.077	STAINLESS NYLON INSERT HIGH HEX LOCK NUT M10 ISO 7040
7	1	303.053	STAINLESS WIDE FLAT WASHER 10X30 ISO 7093
8	1	303.116	STAINLESS WIDE FLAT WASHER 10X40 ISO 7093

11.3 LIGHTS AND SUPPORTS KIT – 620.187



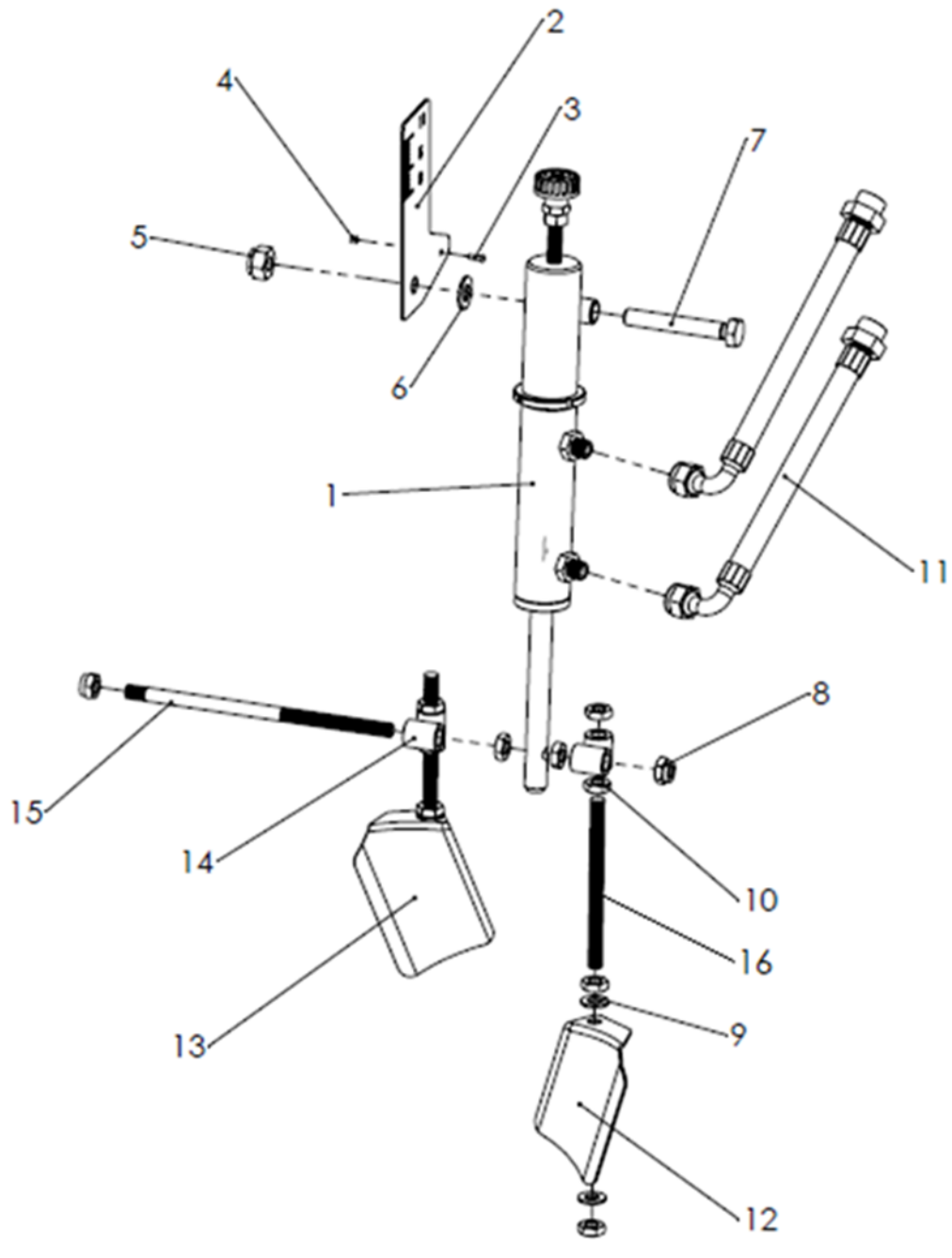
POS	QTY	CODE	DESCRIPTION
1	1	620.119	LIGHTS KIT
2	1	613.320	SUPPORT PLATE
3	1	620.048	RIGHT LIGHT SUPPORT
4	1	620.166	7P SOCKET SUPPORT
5	3	300.140	STAINLESS HEXAGON SOCKET HEAD CAP SCREW M5X35 ISO 4762
6	7	301.104	STAINLESS HEX NUT M5 ISO 4032
7	4	300.107	STAINLESS CARRIAGE BOLT M8X16 ISO 8677
8	4	303.056	STAINLESS FLAT WASHER 8X17 ISO 7089
9	4	301.064	STAINLESS HEX NUT M8 ISO 4032

11.4 STAINLESS PROGRESSIVE LIMITER KIT – 620.163



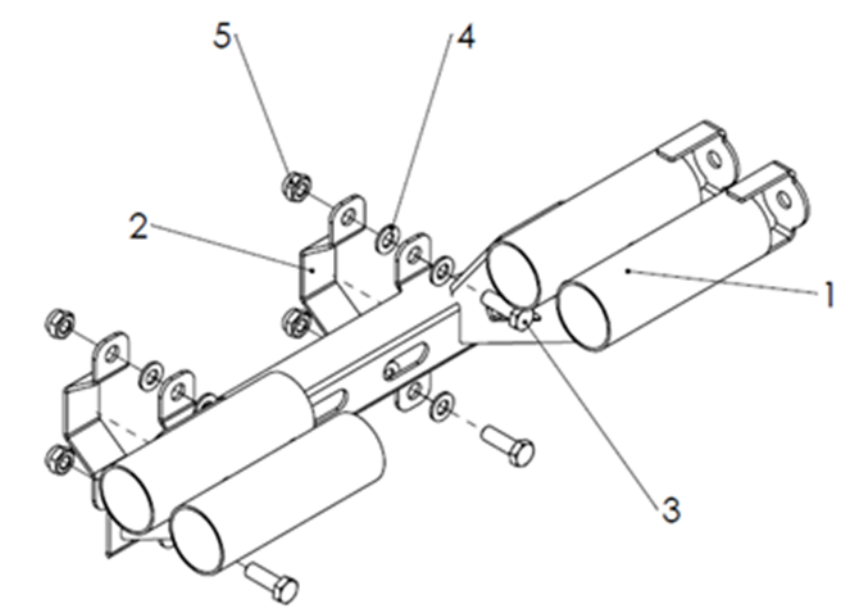
POS	QTY	CODE	DESCRIPTION
1	1	620.153	STAINLESS PROGRESSIVE LIMITER
2	2	300.092	STAINLESS FULL THREAD HEXAGON HEAD SCREW M8X16 ISO 4017
3	3	300.107	STAINLESS CARRIAGE BOLT M8X16 ISO 8677
4	4	301.064	STAINLESS HEX NUT M8 ISO 4032
5	3	303.056	STAINLESS WIDE FLAT WASHER 8X17 ISO 7093
6	2	303.051	STAINLESS FLAT WASHER 8X24 ISO 7089
7	1	302.014	INDEXING PLUNGER
8	2	301.102	STAINLESS THIN HEX NUT M10 ISO 4035

11.5 HYDRAULIC OPENING SYSTEM – 619.111



POS	QTY	CODE	DESCRIPTION
1	1	623.021	DOUBLE EFFECT HYDRAULIC CYLINDER
2	1	620.278	GRADUATED RULER
3	1	300.179	STAINLESS HEXAGON SOCKET BUTTON HEAD SCREW M3X10 ISO 7380
4	1	301.103	STAINLESS NYLON INSERT HIGH HEX LOCK NUT M3 ISO 7040
5	1	301.087	STAINLESS NYLON INSERT HIGH HEX LOCK NUT M12 ISO 7040
6	1	303.060	STAINLESS FLAT WASHER 12X24 ISO 7089
7	1	300.119	STAINLESS FULL THREAD HEXAGON HEAD SCREW M2X80 ISO 4017
8	2	301.068	STAINLESS NYLON INSERT THIN HEX LOCK NUTS M10 ISO 10511
9	4	303.052	STAINLESS FLAT WASHER 10X20 ISO 7089
10	10	301.066	STAINLESS THIN HEX NUT M10 ISO 4035
11	2	304.060	HYDRAULIC HOSE
12	1	605.006	LEFT SHUTTER
13	1	605.005	RIGHT SHUTTER
14	2	325.080	TIE ROD BUSHING
15	1	602.040	TIE ROD OF ADJUSTING
16	2	602.052	VERTICAL TIE ROD

11.6 SHOVEL SUPPORT KIT – 613.350



POS	QTY	CODE	DESCRIPTION
1	1	613.321	SHOVEL SUPPORT
2	2	613.317	BRACKET
3	4	300.104	STAINLESS FULL THREAD HEXAGON HEAD SCREW M10X30 ISO 4017
4	8	303.052	STAINLESS FLAT WASHER 10X20 ISO 7089
5	4	301.077	STAINLESS NYLON INSERT HIGH HEX LOCK NUT M10 ISO 7040



Via Laghi di Avigliana 117 - Busca 12022 - CN - Italy

Phone +39 0171 946654 - fax +39 0171 946723

E-mail: imcosmo@cosmosrl.com - www.cosmosrl.com

