

Trade Mark



COSMO s.r.l.

Via Laghi di Avigliana, 117

12022 BUSCA - Cuneo - ITALY

Tel. +39 0171 946654/946655

Fax +39 0171 946723

www.cosmosrl.com imcosmo@cosmosrl.com

PENDULAR SPREADER

PDC 400



OWNER'S MANUAL

📖 Read the Operator's manual entirely before using the machine 📖



INDEX

1. INTRODUCTION.....	4
2. GENERAL INFORMATION	4
2.1. USING THIS MANUAL	4
2.2. INFORMATION ON THE MACHINE	5
2.2.1. Name plate	5
2.2.2. Characteristics of the machine	5
2.2.4. Terminology	7
2.2.4. Technical Data.....	7
3. IMPORTANT SAFETY INFORMATION	8
3.1. SAFETY SIGNALS	12
4. ASSEMBLING AND CONNECTIONS	13
4.1. CHECK THE RAISING ABILITY OF THE TRACTOR.....	13
4.2. CONNECTION TO THE 3-POINT HITCH OF THE TRACTOR	14
4.3. DRIVELINE INSTALLATION	15
4.4. HYDRAULIC SYSTEM INSTALLATION (OPTIONAL).....	15
5. FERTILIZER SPREADER USE.....	16
5.1. ADJUSTMENTS.....	16
5.1.1. Spreading width adjustment	16
5.1.2. Spreading rate adjustment.....	17
5.1.3. Easy setting of the application rate	19
5.1.4. Spreading charts.....	20
5.2. HOPPER LOAD	21
5.3. SPREADING OF THE FERTILIZER IN THE FIELD.....	21
5.3.1. Spreading mistakes	22
6. GENERAL MAINTENANCE	23
6.1. LUBRICATION.....	24
6.2. PENDULUM REPLACEMENT	24
6.3. STORAGE	25
6.4. SPARE PARTS	25
7. WARRANTY	26
8. PARTS BREAKDOWN	27

COPYRIGHT BY COSMO

The technical information of this manual are ownership of Cosmo S.r.l. and must be considered strictly reserved.

It is forbidden text and illustration's reproduction.



Trade Mark



COSMO s.r.l.

Via Laghi di Avigliana, 117

12022 BUSCA - Cuneo - ITALY

Tel. +39 0171 946654/946655

Fax +39 0171 946723

www.cosmosrl.com imcosmo@cosmosrl.com

CLAIM OF CONFORMITY



The company **COSMO s.r.l.**

based in Busca, via Laghi di Avigliana, 117 – CUNEO - ITALY

CLAIMS UNDER ITS OWN LIABILITY THAT THE MACHINE:

TYPE: **PENDULAR SPREADER**

MODEL:

SERIAL NUMBER:

YEAR OF MANUFACTURING:

is in conformity with the European Directive 98/37/CE (abrogating and including the Directives 89/392/CEE, 91/368/CEE, 93/44/CEE and 93/68/CEE)

For the adjustment of the machine, the following Harmonized Regulations have been adopted:

UNI EN 1553 – UNI EN ISO 4254-1 - ISO 4254-8 - UNI EN 14017

as well as the technical specification:

ISO 11684

Busca (CN), on the (date)

The owner: _____



1. INTRODUCTION

The pendular spreaders are machines used for the distribution of solid, granular fertilizers and seeds 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 INFORMTION

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..



SAFETY SIGNALS

This symbol 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 in order to prevent any accident or damages.

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..



2.2. INFORMATION ON THE MACHINE

The models introduced in this manual have been designed and made exclusively allowing the distribution of solid, granular fertilizers and of seeds in the field. 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.

2.2.1.. NAME PLATE

On the hopper 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.



Location of the name plate on the machine

2.2.2. CHARACTERISTICS OF THE MACHINE

The great spreading precision of these kind of fertilizer spreaders lets them to be used in different applications, both for specific cultivations and in golf courses.

The Cosmo series of pendular spreaders can rely on a huge range of models adaptable with tractors of any power.

The upper parts of the gear box are made in polyethylene in order to increase its long life to the corrosion.

The standard spout allows to get a spreading width from 8 m to 14 m that can be modified according to the needs and the type of fertilizer used.

The gear box can be set to 3 reduction spreading patterns (see par. 5.1.1) by turning the width adjustment key.



Beside the standard spout, several pendulum items are available for different applications, such as for the salt spreading where the spreading width is min. 2 m until max. 4 m, or for using in vineyards, orchards or in parks.



Spreading spout



Width adjustment key

The hopper in reinforced plastic cannot rust nor be damaged.

The painting of the frame, as for all Cosmo products, is made by a water base varnish with successive backing at 150° with the application of the primer bath, assuring a great protection and long life of the machine.

The feeding of the disc is by gravity through the exits, located on the bottom of the hopper, that can be opened or closed by a mechanical or hydraulic system (optional). The dosage of the fertilizer is made by operating on the opening section by a dosing rod that slides on a threaded pin with a graduate scale.



Standard agitator

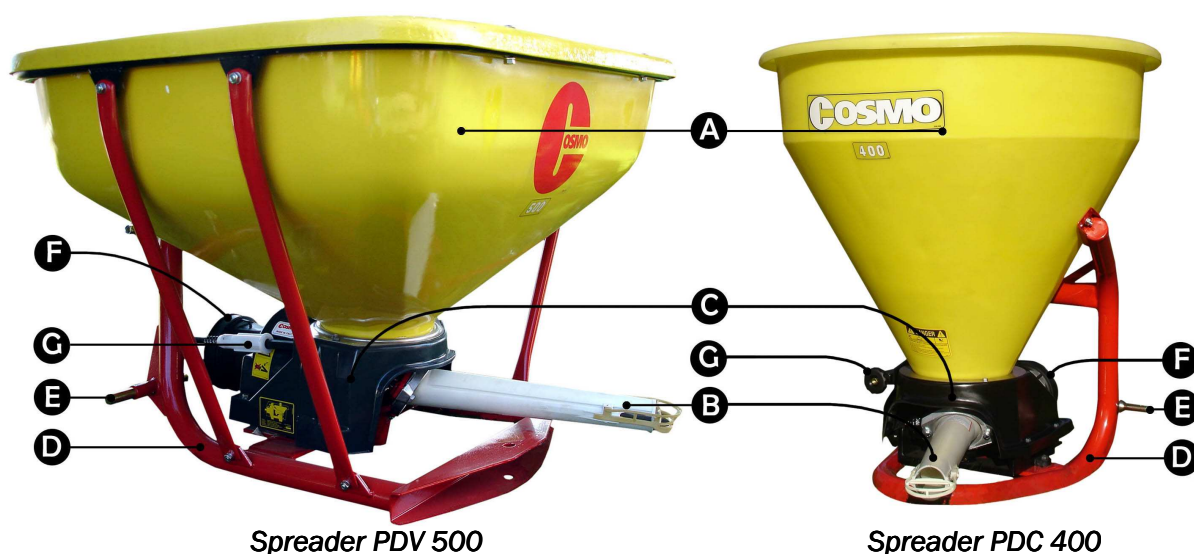


Opening lever

For the PDC 400 models the 3-point hitch is only of category I.



2.2.3. TERMINOLOGY



- | | |
|-------------|-------------------------------|
| A. Hopper | E. Lower link pin |
| B. Spout | F. Protection cover Pto shaft |
| C. Gear box | G. Dosing rod |
| D. Frame | |

2.2.4. TECHNICAL DATA

TECHNICAL CHARACTERISTICS						
	PDC 400	PDV 500	PDV 600	PDHV 800	PDHV 1000	PDHV 1250
Hopper capacity (litres /gallons) (Kg/lbs)	386/102 420/925	480/127 523/1153	580/153 632/1393	850/224 926/2042	1050/277 1144/2522	1250/330 1360/2998
Weight of the machine (kg/lbs)	100/221	130/287	142/313	170/375	180/397	195/430
Loading height (cm/inches)	117/46	90/35.5	100/39	97/38	107/42	120/47
Working height (cm/inches)	75/29.5	75/29.5	75/29.5	75/29.5	75/29.5	75/29.5
Spreading width min-max (meters/ft)	8-15/ 27-50	8-15/ 27-50	8-15/ 27-50	8-15/ 27-50	8-15/ 27-50	8-15/ 27-50
Transmission	1:1	1:1	1:1	1:1	1:1	1:1
Power required at 540 rpm/min (HP/kW)	6/4.4	6/4.4	6/4.4	6/4.4	6/4.4	6/4.4
Hydraulic opening system	optional	optional	optional	optional	optional	optional



3. IMPORTANT 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.

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.



ATTENTION!

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

- 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 3.1.



ATTENTION! - WARNING!

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.

- During loading phase, there is the danger of powders inhalation produced by fertilizer mixing. It is suggested to use tractors with filters on the ventilation system of the cabin, to use suitable safety systems of breathing, like powder masks or masks with filter.



- The machine is designed for being used by a single operator who, during the use, must always stay in the stationing control on the tractor.
- Never work with this machine if you are tired, sick or after having took drinks, drugs or medicines.



DANGER!

**It is forbidden to climb or to transport somebody when the machine is in motion.
Do not let inside the hopper for any reason.**

- Keep the machine cleaned up from foreign bodies (detritus, tools, miscellaneous), as they could damage the operations or the operator. **Generally the fertilizers are rather corrosive. For this reason, it is important that any particle of the fertilizer stay in the machine for a long period of time. Clean the hopper and the distributor after each use of the machine.**
- 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 fertilizers, the operators must follow all the label indications and particularly to the content of the written risks and the precaution suggestions.



ATTENTION!

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..



Connection of the machine to the tractor

- The third hitch point of the tractor and the fertilizer 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! WARNING!

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.



ATTENTION!

Do not come, for any reason, between the tractor and the fertilizer spreader when the engine is running and the power take-off is on.

Operation of 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.



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.



ATTENTION!

Anybody who comes up to the machine is 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.

- Before every use of the centrifugal spreader, please always check the wear of the vanes and of the spreader disc. Check that all the fixing components (screws, bolts etc.) are in and fixed.
- The machine must never be unattended when it is moving..
- Keep always the machine in good operating conditions and make regularly the maintenance.



Transfer on the road



ATTENTION!

Please follow scrupulously the Highway code in force in the country of use.
During moves 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 to 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.



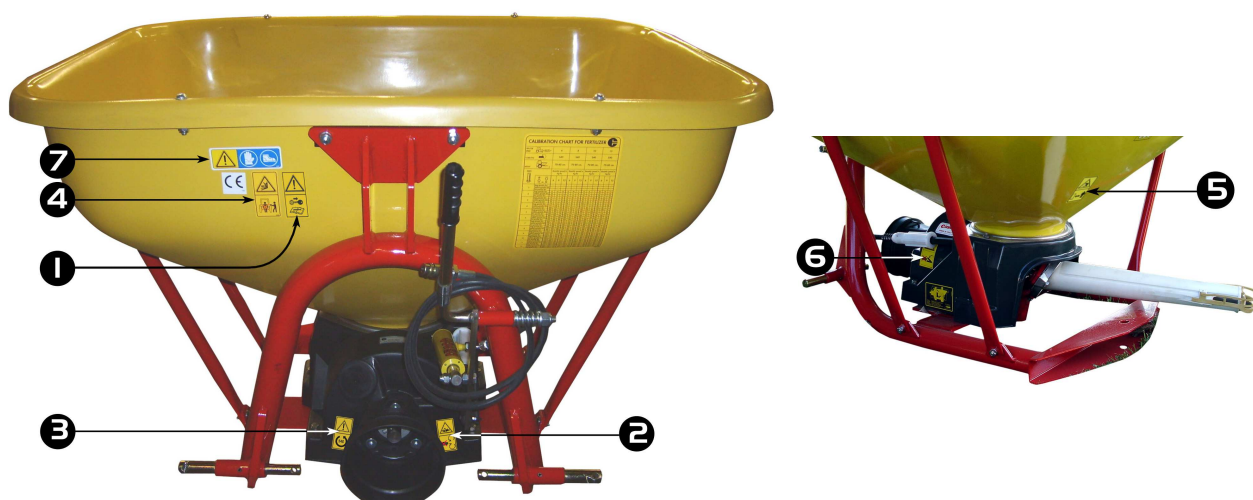
3.1. SAFETY SIGNALS

	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 signs on the machine supply the most important indications: their observance helps your safeness.

 	1. 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.	 	2. ATTENTION! DANGER of entangling and dragging. Do not put hands near the running gear box.
 	3. ATTENTION! Check the sense of rotation and the number of revolutions (540 rpm) of the tractor power before placing the PTO shaft.	 	4. ATTENTION! DANGER of crushing. Do not stop between the machine and tractor when the tractor engine is running.
 	5. ATTENTION! – DANGER! Possible throwing of material and/or objects, please do not stop or come up to the machine. Keep a safety distance of 30 meters, at least, from the machine.	 	6. ATTENTION! DANGER of shearing. Do not approach limbs to the spreader disc when the machine is running.
 	7. ATTENTION! Use the individual Protection Devices, as required.		

Where placing the safety signals on the machine





4. CONNECTIONS

The machine can be delivered all assembled or not (in this case follow the assembling instructions enclosed). In both cases, before using the spreader it is necessary to control that all the fixing elements (screws, nuts, washers) are well locked and make sure that all the safety devices are located at their right position.

Verify that the gear box is fixed to the machine frame by 4 screws: two longer (Hexagonal head 12x50) in the front part, at the Pto shaft connection side, and two shorter (hexagonal head 12x40) back, at the pendulum side.


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.

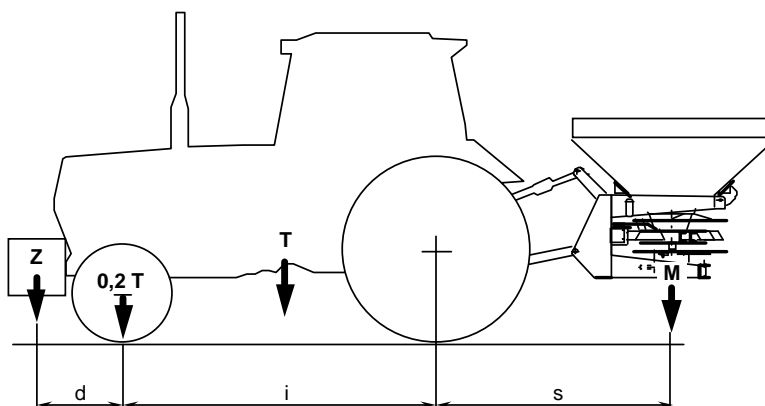
Do not use the external controls for the lifting of the machine. During transport position block the lateral stop of the rods.

4.1. CHECK THE RAISING ABILITY OF THE TRACTOR



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

Check the raising ability and the stability of the tractor through the following formula and if it is necessary please apply some ballasts on the back.



$$M s \leq 0,2 T i + Z (d + i)$$
$$M \leq 0,3 T$$

i	=	Wheels base of the tractor
d	=	Distance of load ballast back axle
s	=	Bounce of the machine rear axle
T	=	Tractor load + 75 kg (operator)
Z	=	Load ballast
M	=	Machine load



4.2. 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 fertilizer 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 smooth 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 at last to the tractor power take off and disconnected at first, when you stop working.



4.3. 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 after making sure that the connection between the pto shaft and the gear box is well locked. Use for this connection an hexagonal head screw 8.8 10x70 UNI 5737 with the relative nut.



ATTENZIONE!

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.

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

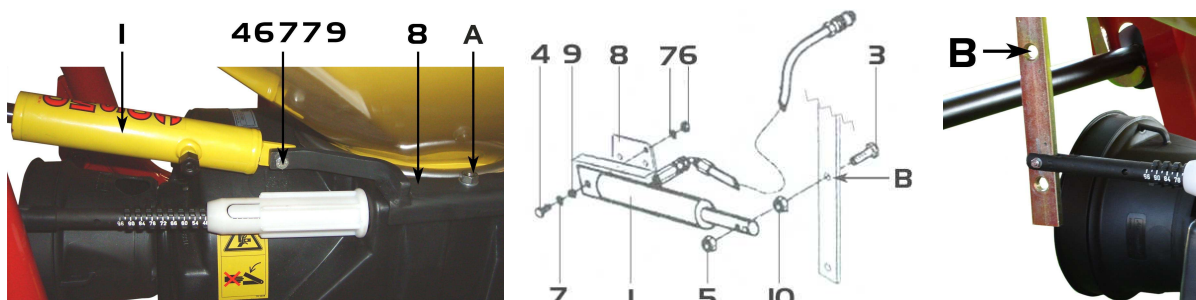
When the pto shaft is released from the power take-off of the tractor must ALWAYS be laid on the appropriate support.

COSMO Company is not responsible for the damages caused by an incorrect assembly and use of the pto shaft.

4.4. HYDRAULIC SYSTEM INSTALLATION (OPTIONAL)

In order to recognize the element used, please refer to the tables 08 and 09 of the chapter 8 (Parts breakdown).

1. Assemble the connection plate for hydraulic opening system (ref. 8) on the gear box by using the screw and the nut (C) already on the gear box.
2. Fixing the hydraulic cylinder (ref. 1) to the connection plate (ref. 8) by using the screw (ref. 4) hexagonal head 8x30 (mod. PDC 400) or hexagonal head 8x25, the self-locking nut M8 (ref. 6), the two washers 8x17 (ref. 7) and the bushing 13x8x7 (ref. 9).
3. The hydraulic cylinder stem must be connected to the lever plate in the hole B. Insert the screw hexagonal head 12x60 (ref. 3) in the hole B, screw up the nut M12 (ref. 10) insert the screw in one of the two cylinder holes and fix it by the self-locking nut M12 (ref. 5)





5. FERTILIZER SPREADER USE



ATTENTION!

Before use, please check that gears are adequately greased (see paragraph 6.1).



ATTENTION!

During the use of the machine, please be sure that for a radius of 30 meters there are not any person or animals. If somebody comes up, please stop immediately the tractor engine.

Recommendations for a correct distribution

- Please test always the kg/ha that you wish to spread before starting to work.
- Do not insert the pto shaft when the tractor is in acceleration, because it will start the pendulum spreading. Lower the engine revolutions at the minimum and after that speed up gradually till obtaining a speed of 540 r.p.m.
- Open exits only when the right speed is achieved.
- Avoid to spread the fertilizer in windy days, in order to improve the uniformity of the distribution.

5.1. ADJUSTMENTS

It is not possible to have an exact spreading chart for equipments 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 fertilizer and on the roughness of the land.

The fertilizer must always be stored and conserved adequately, so as to keep its physical characteristics unchanged.

It is necessary to set the speed of the pendular 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.



5.1.1. SPREADING WIDTH ADJUSTMENT

With the available adjustable key you can easily adjust the gear box on 3 different spreading widths: LARGE, MEDIUM, LOW.

These measures can be achieved only by using the standard pendulum and any changes will depend on the kind of product to spread. (see on spreading charts paragraph 5.1.4).

Insert the key in the gear box device, as shown in the picture, and push it slightly till the end of the tracks. You can insert the key in any way because the mechanism allows to put the key on a slot different from the spreading setting.

The adjustment key turns in a clockwise and anti-clockwise direction indifferently. When the arrow is in LARGE position, you can achieve a spreading width from 10 to 12 meters;

to get 8 - 10 meters turn the key towards "LOW" setting.



Once you have chosen the spreading width pattern, pull out the key from the adjustment device.

To get lower or specific spreading widths, use the proper spout (when available) or reduce the revolutions of the PTO.

5.1.2. SPREADING QUANTITY ADJUSTMENT

The fertilizer spreading is regulated by a **metering rod** that operates on the opening width of the exits on the bottom of the hopper.

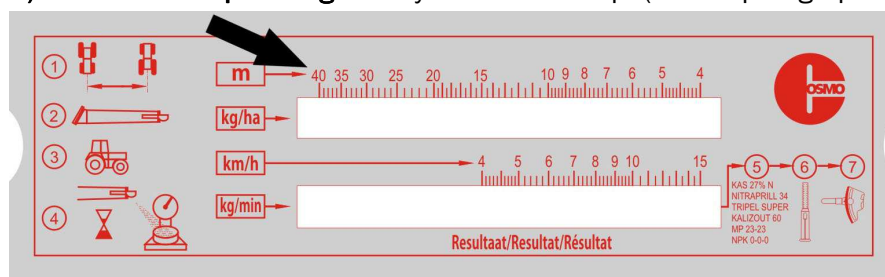
In order to adjust the fertilizer quantity to spread, follow the slide ruler carefully (attached to this manual) and the spreading chart (stuck on the hopper and located in the manual itself, see on paragraph 5.1.3).

The recorded data will be kept only if:

- 1) a standard pendulum is used;
- 2) the distance between the ground and the pendulum end is about 75 cm (working height)
- 3) the rotation speed of the power take-off is 540 r.p.m.

In order to achieve a right adjustment follow the instructions below:

- 1) Establish the **spreading width** you want to adopt (see on paragraph 5.1.1.).



EXAMPLE 1: Spreading width chosen = 12 meters

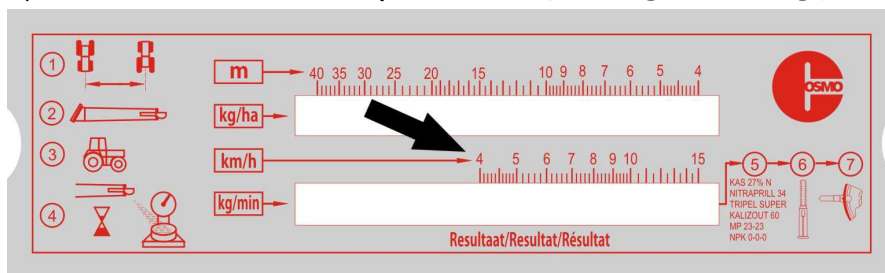
- 2) Establish the **quantity of the product** you want to spread for a surface unit (kg/ha or lbs/acre), by moving the inner part of the slide ruler.



EXAMPLE 2: quantity spread for hectare 200 kg

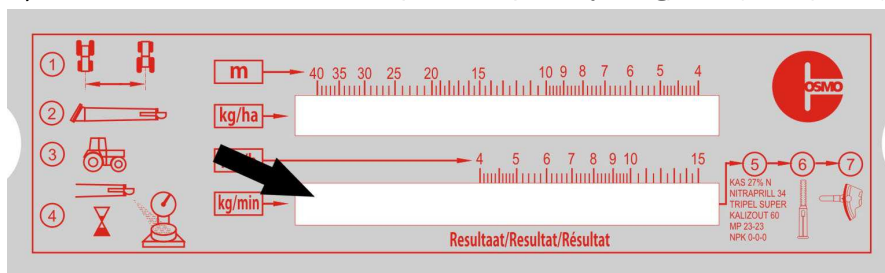


3) Establish the **feed motion speed** to be kept during the working (from 4km/h to 15 km/h).



EXAMPLE 3: feed motion speed = 6 km/h

4) Control on the slide ruler the product quantity in kg/min (or lbs/ min) that will be spread.



EXAMPLE 4: Product quantity to be spread = 24 kg/min

5) see the **Spreading Chart** label affixed on the hopper and shown on next paragraph (5.1.3).

According to the type of fertiliser (or product) used and to the product quantity in kg/min established on the point mentioned above, get from the first line of the chart the value to which the dosing rod, located on the spreader, should be positioned.

EXAMPLE : Fertilizer used = Magnatrox
Table in Kg/min= 23,4
Dosing rod setting = 24



Dosing rod

5.1.3. SPREADING CHARTS

Metrical measures

Imperial measures

TABELLA SPAGLIO COSMO COSMO STREUUNGS TABELLE TABELLE D'EPANDAGE COSMO TABLA DE DISTRIBUCION COSMO COSMO SPREADING CHART										
Posizionamento barra - Regulierungsstange - Barre de régulation Ajuste de la barilla - Regulation bar										
	18	24	30	36	42	48	54	60	66	
	Risultato kg/min - Resultat kg/min - Resultat kg/min Resultado kg/min - Result Kg/min									
Fertilizzante / Dünger / Engrais / Abono / Fertilizer	18	24	30	36	42	48	54	60	66	
Scorie Basiche			57,9	75,1	108,9	136,2	164,3			
Betrox		16,5	24,6	36	49,5	68,8	84,5	112,8	138,6	
Alghie calcificate	8,1	12,3	19,8	29,4	41,2	59,2	76,6	101,4	120	15
C.A.N 27% N		20,1	30,3	41,7	55,2	72	92	120	148,8	15
Extran 33,5 % N	14,5	25,1	35,7	46,3	62,9	81,1	100,8	124,3	147,8	15
Fagioli di campo		8,7	12,9	20,1	28	36,4	47,6			10,5
Composto granulare	10,5	15	22,8	32,7	46	60,4	82,4	105,2	130,8	15
Magnatrox		23,4	32,4	44,7	59,6	79,2	100	131,2	158,8	
Cloruro di Potassio		21,9	31,2	42	56,8	74,4	96	119,6	145,2	8-12
Pallini Azotati 34,5% N	23,5	37,1	50,7	64,4	71,4	78,2	84,8	132,9	181	8-12
Gesso Azotato		18,6	26,4	36,6	48,2	65,2	82,4	104	131,2	10-12
NP 18,46	14,2	23,9	33,6	43,3	55,1	69,2	85,6	106	126,4	8-12
NPK 20,10,10		18,6	28,2	37,5	50	65,2	84	106,4	139,2	8-12
Composto organico	5,4	11,4	17,4	24,9	36,9	48,8	66,4	92,4	108,4	9-12
PL 25,25	12,9	19,2	29,1	39,9	53,1	74,4	93,2	118,4	148	8-12
Urea 46% N (granulare)	12,7	21,1	29,6	38	48,3	60,3	73,8	92	110,2	8-12
Urea 46% N (pallini)	17,2	26,9	36,6	46,3	58,5	73,8	92,2	114	135,8	8-12
Frismento		14,4	24	32,7	46,8	60,5				12
Posizionamenti minori - Niedrige Regulierungen - Petites réglations - Pequeños ajustes - Smaller setting										
	6	9	12	15	18	21	24	30	36	
Semi di Colza-Cavolo-Rapa	0,3	0,6	1,5	2,4	3,4	4,1	5	7,7	10,2	12
Segala		1,2	2	2,8	4	5,2	8,7			4-5



Imperial measure

COSMO SPREADING CHART											
Fertiliser	Regulation bar							540 RPM		620 RPM	
	18	24	30	36	42	48	54	60	66	Spreading width (ft)	Spreading width (ft)
Result lb/min											
Ammoniumnitrate 33.5% N	52,3	71,5	97,3	126,2	158,9	208,6	258,2	304,6	49		
Extran 33,5% N	32	55,4	78,8	102,2	138,8	179	222,5	174,3	326,2	26-40	49
Muriate of Potash 40	28	48,8	69,3	90	122,5	158,7	199,1	250	301,3	26-40	49
Muriate of Potash 60	48,3	68,8	92,7	125,3	164,2	211,9	263,9	320,5	26-40		
Nitraprill 34,5% N	51,9	81,9	111,9	142,1	157,6	187,1	293,3	399,5	26-40		
NK 9.36	23,8	43,7	72,1	93,3	131	179,9	226,6	262,8	340,4	40	49
NP 10.50	25,1	40,3	56,9	82,7	106,5	150,8	195,8	248,7	291,9	40	49
NP 18.46	31,3	52,7	74,1	95,6	121,6	152,7	188,9	233,9	279	26-40	49
NPK 6.24.24	28,4	47	64,8	89,9	123,7	165,8	223,1	279,5	346,6	40	49
NPK 8.32.16	26,5	45	63,5	88,6	119,7	155,4	205,5	255,7	322,8	40	49
NPK 10.10.10	34,8	56,7	76,1	93,9	124,3	164,9	210,8	277,8	343	40	49
NPK 15.15.15	21,8	39	58,2	80,2	111,1	144,6	189,6	246,9	310,4	40	49
Urea 46% N (granular)	28	46,6	65,3	83,9	106,6	133,1	162,9	203	243,2	26-40	49
Urea 46% N (prilled)	38	59,4	80,8	102,2	129,1	162,9	203,5	251,6	299,7	26-40	
Wheat	26,5	31,1	47	64,8	89,1	119,9	159,4	197,8	232,6	40	49
Smaller setting											
Alfalfa	12	15	18	21	24	27	30	36	42		
Climax Thimothy	4,3	6,3	8,3	10,8	13	15,8	18,6	25,1	31,9	30	
Red Clover	3,8	5,8	8,1	10,3	12,9	15,7	18,7	25,4	32,8	26	
Trefoilseed	4,6	6,7	9,3	12	15,1	18,7	22,5	29,8	37,2	32	
	4,1	6,2	9	11,9	14,6	18	21,3	28,8	37	32	



5.2. 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.

During loading the Pto shaft must be disconnected, the tractor engine stopped, the control board key must be removed and the parking brake put on.

Do not activate the pendulum when the exits are closed, because the fertilizer could be crushed compromising the right machine working and causing breakings on the dosing system and on the gear box.

During the hopper loading phase, if the machine needs to be lowered above the limit allowed by the PTO shaft, disconnect it before lowering the machine further more.

Do not drive for very long distances with a full load and do not put full bags on the fertilizer 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 fertilizer.



WARNING!

During the operations of transport, stock and use of fertilizers, 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.

5.3. SPREADING OF THE FERTILIZER ON THE FIELD

ATTENTION! - WARNING!



The operator, during the period of use, maintenance, repair, transport or storing of the machine, must wear accident-prevention shoes and gloves of security. If it is necessary, he will have, moreover, to wear headset, mask and glasses.

After having connected the machine to the tractor and after the necessary regulations, it is possible to begin to work.

The exits opening on the bottom of the hopper is made by operating on the distribution lever, located on the front of the machine.



Do not connect the Pto shaft when the tractor is in the acceleration phase.

When using the power take-off lever of the tractor avoid any sudden and inappropriate movements; hold the lever until the Pto shaft will begin turning and after that release the lever slowly.

Recommended working height: 75 cm.

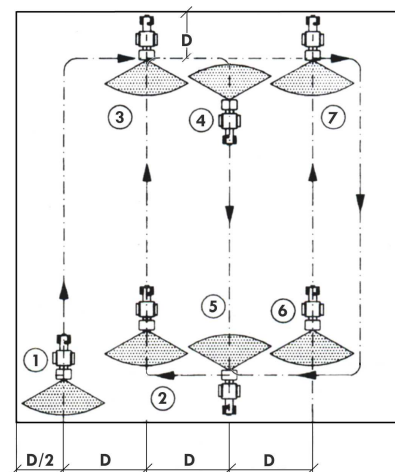


ATTENTION!

Before getting off from the spreader and before every operation of maintenance and regulation, set in action the parking brake, turn off the engine, remove the ignition key from the dashboard and await the stop of all the moving parts.

Various ways there are to spread the fertilizer in the field. One of the simplest methods is, as follows:

- Position the spreader at the beginning of the field you intend to fertilise, to a distance ($D/2$) that is the half of the working width that is used (point 1);
- Drive in the field, distributing the fertilizer on all the perimeter;
- Stop the tractor at one distance (D) from the point 1, equivalent to the set working width (point 2);
- Begin the spreading by opening the exits and proceeding in line, straight to point 3.
- Turn the tractor and drive a D distance, equal to the working width (point 4);
- Repeat such procedure until all the plot will be covered.



5.3.1. SPREADING MISTAKES

Mistakes of use

- Wrong rpm of the Pto shaft.
- Inadequate 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 fertilizer.
- Drive mistakes (lack of superimposition of the spreading surfaces).
- Lack of cleaning of distributing discs and the gates opening.

Mistakes due to the fertilizer

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

Mistakes due to the spreader

- Spreading exits clogged.
- Parts of the pendulum deteriorated or damaged.



6. GENERAL 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.



ATTENTION!

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.

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.



ATTENTION!

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.

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

In case of anomalous vibrations, verify 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.

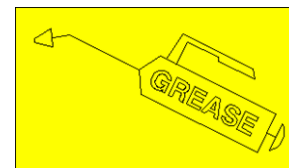


6.1. LUBRICATION

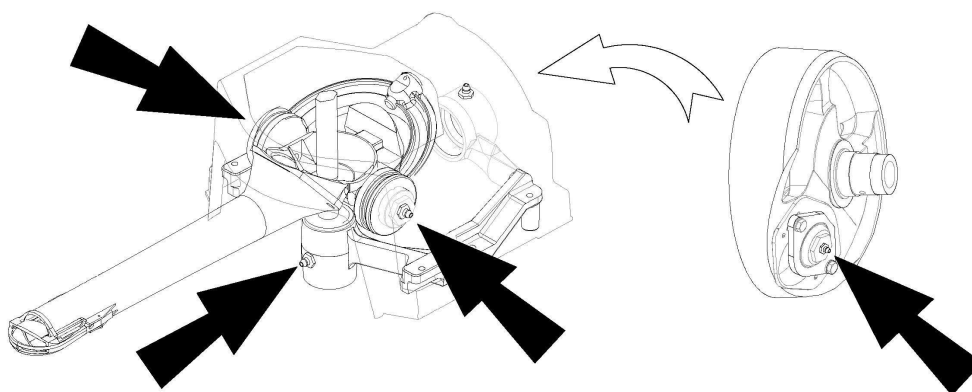
Before every use and after every 8 hours of effective work, carry out the greasing of the gear box.

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 different 5 points, shown in the picture.



IMPORTANT



One of the grease nipples is located behind the capsule for the closing of the protecting cap of the lubricating mechanism:

- Take off the capsule for the closing of the distribution mechanism.
- Move the oscillating tube until you can reach the grease nipple from the opening of the protecting cap.
- Lubricate all the nipples 1 or 2 times.

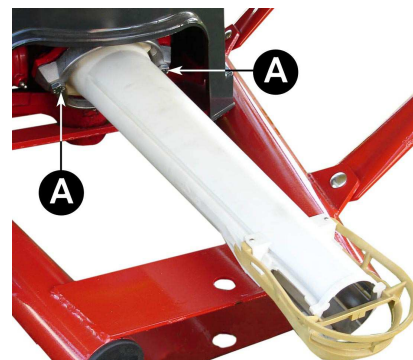


6.2. PENDULUM REPLACEMENT

In case the pendulum breaks or gets damaged, it will be necessary to replace it with an original one supplied by the Manufacturer.

Insert the aluminium flange on the pendulum base, insert the fixing screws (A) and the relative nuts, one by side, and screw up them with two wrenches.

All the fixing devices (screws and nuts) must be the same the Manufacturer prescribed.



6.3. 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 fertilizers 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 (see par. 3.1);
- to grease all the mechanical parts;
- to store, if possible, the machine in a sheltered place.

6.4. SPARE PARTS

For the replacement of parts of the pendular spreader, 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
- frame number



7. 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.

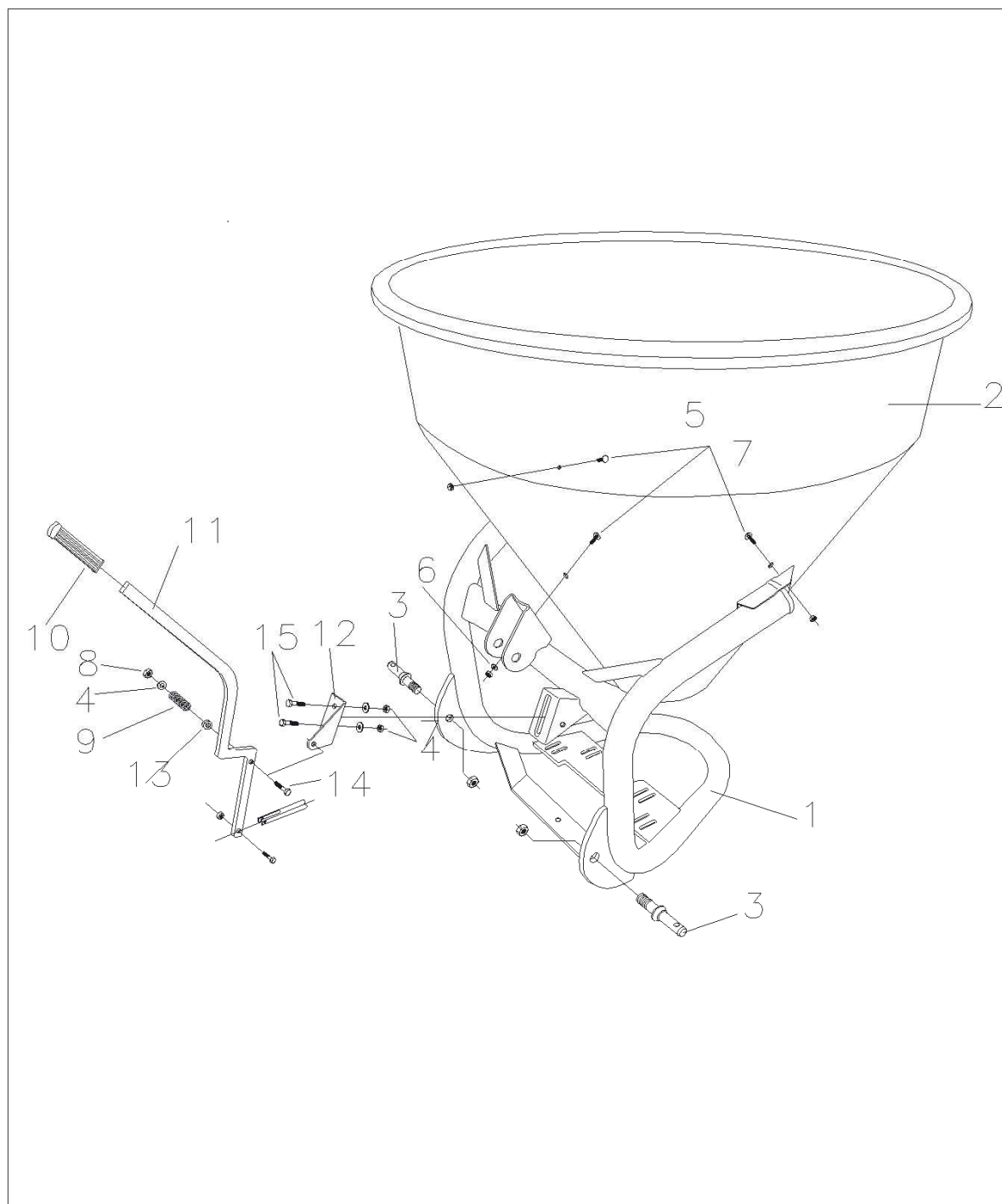
The before mentioned commitment refers to the person of the customer and it cannot be yielded or be transmitted to others.



8. PARTS BREAKDOWN

Table 01

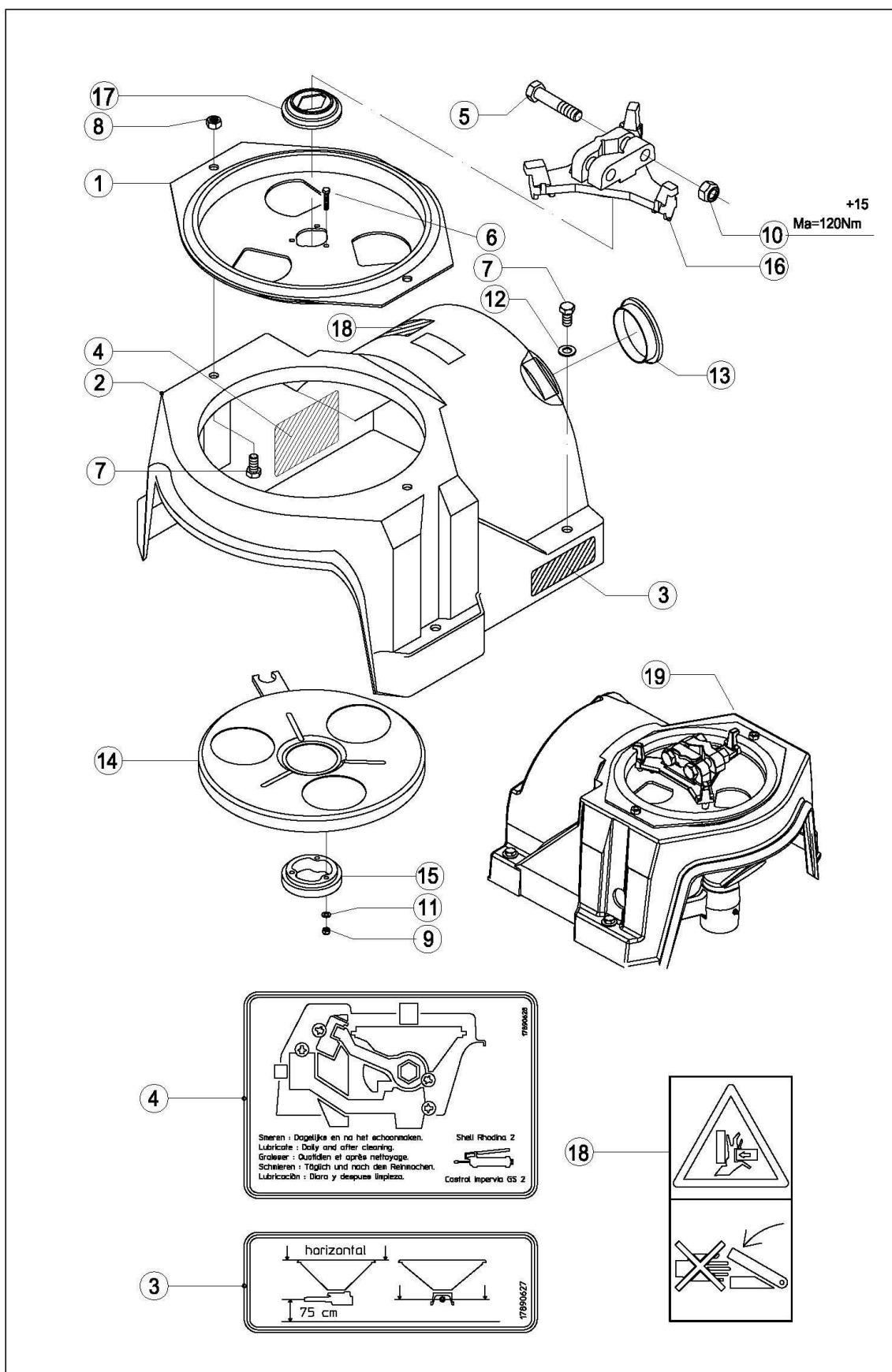
TELAIO + TRAMOGGIA PDC 400	TAV.1





MOD. PDC 400 TELAIO			MOD. PDC 400 COMPLETE FRAME	
Codice Code	QT.	REF.	DESCRIZIONE	DESCRIPTION
613.014	1	1	Telaio completo mod.PDC400	Complete frame PDC400 model
609.015	1	2	Tramoggia PDC400	Hopper PDC400
633.001	2	3	Perno sollevamento	Link pin
303.025	1	4	Rondella 10x30	Washer 10x30
300.044	3	5	Vite TTQST 10x30	Round-Head screw 10x30
303.015	3	6	Rondella 12x24	Washer 12x24
301.010	3	7	Dado medio M10	Nut M10
301.000	4	8	Dado medio M12	Nut M12
301.013	1	9	Molla 40x20x10 zb	Spring 40x20x10
304.028	1	10	Impugnatura gomma 20x10	Rubber handle 20x10
618.010	1	11	Leva completa PDC400	Complete lever
606.087	1	12	Staffa supporto leva	Lever support
301.010	1	13	Dado medio M10	Nut M10
300.015	1	14	Vite te 10x80 uni5739 zb	Hex. Head screw 10x80 uni5739
300.003	2	15	Vite te 10x25 uni5739 zb	Hex. Head screw 10x25 uni5739

Table 03

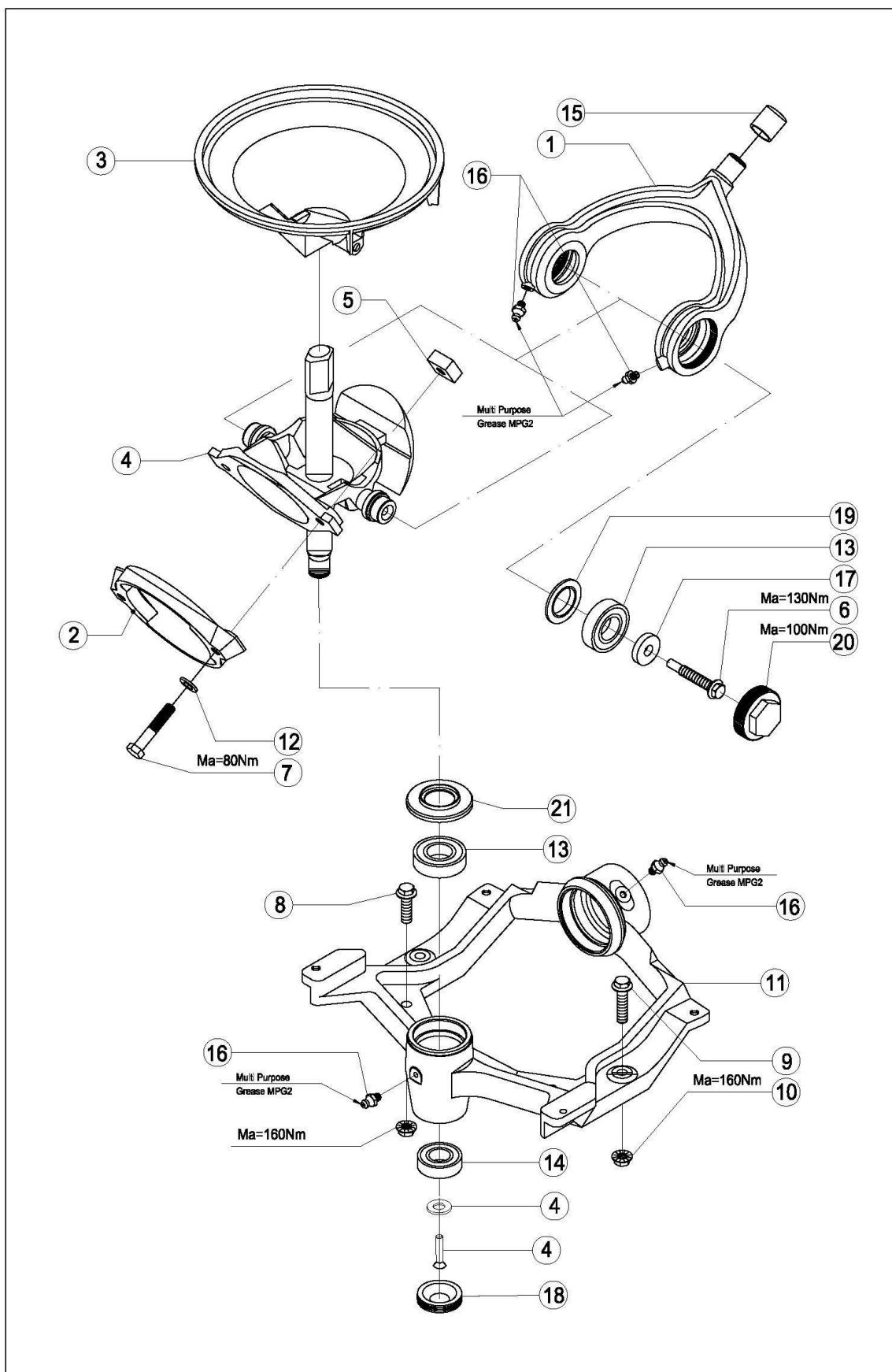




RIDUTTORE MOD. PDC		GEARBOX PDC MODEL	
Codice Code	REF.	DESCRIZIONE	DESCRIPTION
610.018	1	Piastra fissa di dosaggio	Fixed dosing plate
304.037	2	Scatola protezione riduttore	Cover unit
308.002	3	Adesivo orizzontale lato	Lateral decal
308.003	4	Adesivo ingrassaggio	Grease decal
300.033	5	Vite testa esagonale 8.8-M14x65/DM	Hexagonal head screw 8.8-M14x65/DM
300.034	6	Vite testa esagonale M5x25/rvs	Hexagonal head screw M5x25/rvs
300.035	7	Vite testa esagonale M10x20/rvs	Hexagonal head screw M10x20/rvs
301.046	8	Dado m10/rvs	Nut m10/rvs
301.045	9	Dado m5/rvs/nylon	Nut m5/rvs/nylon
301.044	10	Dado m14/rvs/nylon	Nut m14/rvs/nylon
303.004	11	Rondella 5,3/rvs	Washer 5,3/rvs
303.003	12	Rondella 10,5/rvs	Washer 10,5/rvs
304.040	13	Coperchio foro chiave	Cap adjust. hole
610.017	14	Disco di dosaggio	Dosing plate adjust.
304.039	15	Anello disco di dosaggio	Ring dosing plate
619.022	16	Agitatore	Agitator
304.038	17	Cappuccio asse	Cap of agitator axle
308.004	18	Adesivo di sicurezza	Safety decal
322.090	19	Riduttore completo	Complete gear box



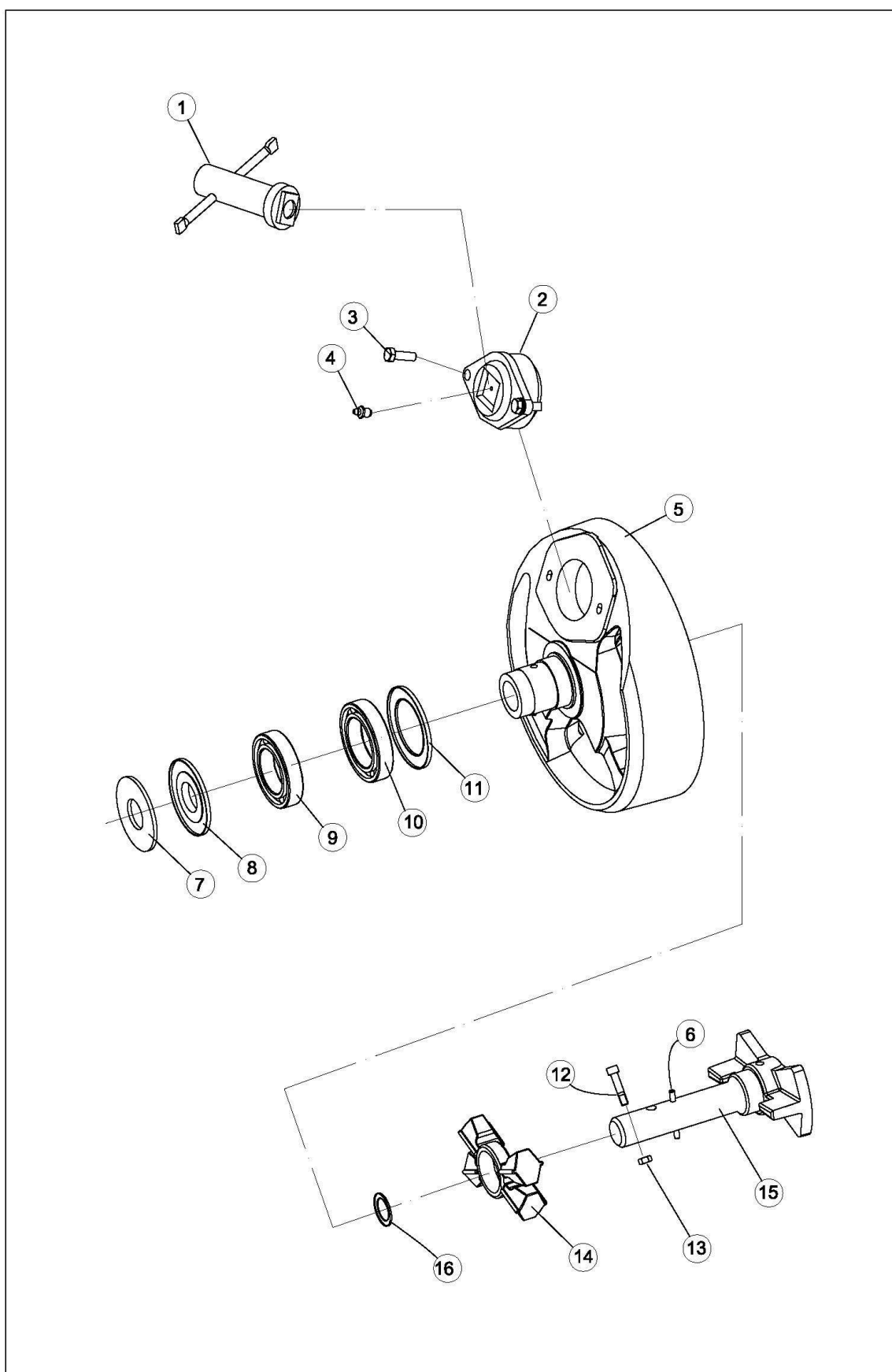
Table 04





RIDUTTORE MOD. PDC		GEARBOX PDC MODEL	
Codice Code	REF.	DESCRIZIONE	DESCRIPTION
332.005	1	Forcella (assemblata)	Yoke (assembly)
304.110	2	Flangia pendolo (corto o lungo) 03	Flange spout (long or short) 03
600.003	3	Vasca superiore	Spreading basin
600.005	4	Asse centrale con vite e rondella	Centre axle with screw and washer
301.047	5	Dado speciale flangia	Special nut spout
300.061	6	Bullone speciale per cuscinetti	Special bolt yoke bearings
300.060	7	Bullone 10,9-M12x65/DM	Bolt 10,9-M12x65/DM
300.063	8	Bullone k100-M12x40/DM	Bolt k100-M12x40/DM
300.062	9	Bullone k100-M12x50/DM	Bolt k100-M12x50/DM
301.048	10	Dado k10/M12/DM	Nut k10/M12/DM
321.002	11	Telaio base	Mainframe
303.002	12	Rondella 13/rvs	Washer 13/rvs
310.011	13	Cuscinetto 6206-z	Bearing 6206-z
310.013	14	Cuscinetto 6205-2lc	Bearing 6205-2lc
310.012	15	Cuscinetto forcella	Bearing yoke
306.009	16	Ingrassatore M8x1,25	Grease nipple M8x1,25
303.001	17	Rondella cuscinetto forcella	Washer bearing yoke
304.041	18	Tappo cuscinetto inferiore	Cap bottom bearing
299.006	19	Guarnizione	Seal
299.005	20	Tappo cuscinetto	Bearing cap
299.007	21	Guarnizione	Seal

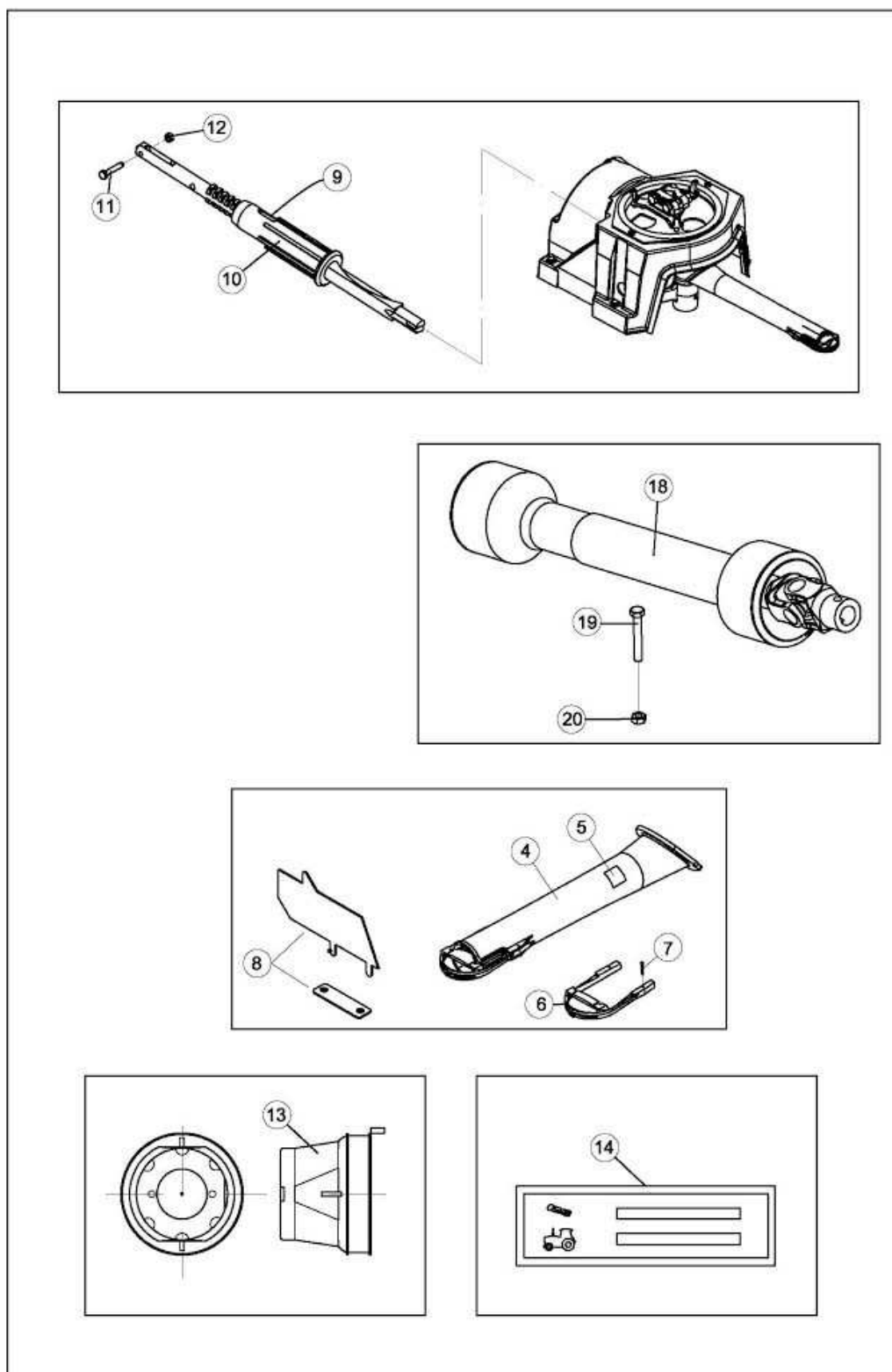
Table 05





RIDUTTORE MOD. PDC		GEARBOX PDC MODEL	
Codice Code	REF.	DESCRIZIONE	DESCRIPTION
618.719	1	Chiave regolazione	Adjusting key
618.720	2	Sistema regolazione ampiezza	Width adjusting system
300.065	3	Vite k100-m8x25/Dm	Bolt k100-m8x25/Dm
306.009	4	Ingrassatore M8x1,25	Grease nipple M8x1,25
599.002	5	Volano	Fly wheel
305.009	6	Spina elastica 10x55 Dm	Spring pin 10x55 Dm
303.037	7	Rondella	Washer
304.042	8	Cappuccio cuscinetto	Bearing cap
310.015	9	Cuscinetto 6009-2Z-C3	Bearing 6009-2Z-C3
310.014	10	Cuscinetto 6010-ZRS-C3	Bearing 6010-ZRS-C3
303.036	11	Rondella	Washer
300.020	12	Vite TE 10 x 70	Hexagonal head screw 10 x 70
301.049	13	Dado M10/rvs/Dm	Nut M10/rvs/Dm
327.002	14	Ammortizzatore in gomma	Rubber shock absorber
323.014	15	Asse per cardano	PTO axle
303.032	16	Rondella	Washer

Table 06

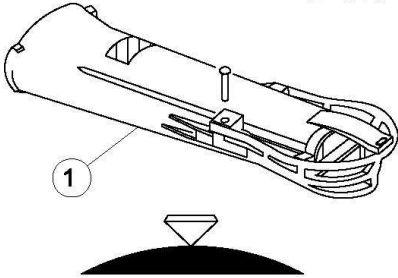
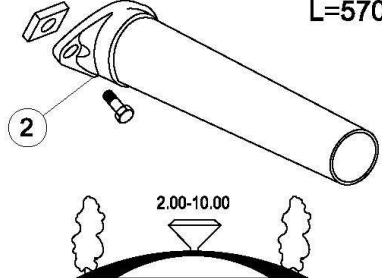
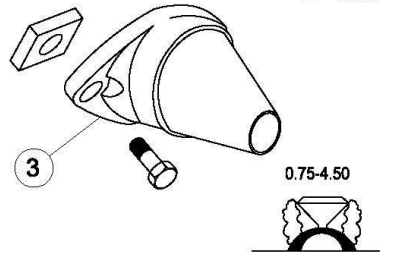
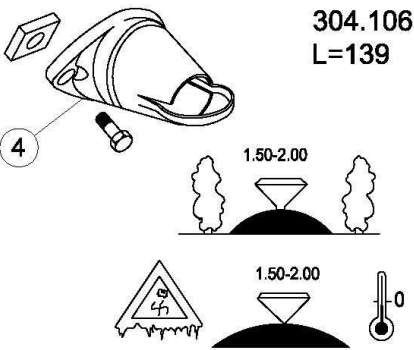
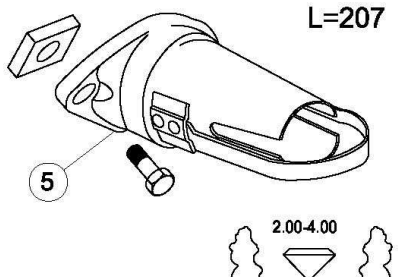
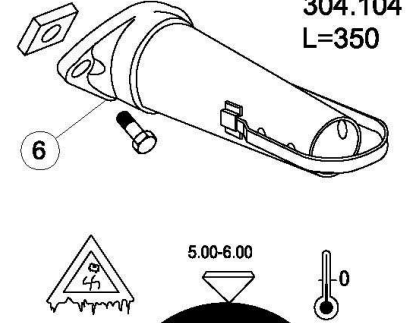




RIDUTTORE MOD. PDC		GEARBOX PDC MODEL	
Codice Code	REF.	DESCRIZIONE	DESCRIPTION
619.041	1	Gruppo agitatore extra	Complete crown agitator
617.012	2	Molla fissaggio agitatore extra	Agitator spring
619.042	3	Corona agitatore extra	Agitator crown
304.100	4	Pendolo lungo plastica l=558	Spout plastic long 03
308.267	5	Adesivo pendolo	Spout label
304.046	6	Fascia pendolo grigia 03	Band grey 03 long
305.007	7	Spinotto fascia 3x40	Pin 3x40
304.047	8	Piastra media pendolo lungo	Middle plate (long spout)
618.016	9	Barra regolatrice	Dosing rod
618.017	10	Dado barra regolatrice	Dosing rod nut
300.066	11	Vite M6x25/rvs	Bolt M6x25/rvs
301.051	12	Dado M6/rvs/nylon	Nut M6/rvs/nylon
304.019	13	Cuffia protezione cardano	Protection cover pto
900.201	14	Regolo	Slide ruler
311.009	18	Cardano TX2 710/896	PTO shaft PDC/PDV/PDHV 710/896
300.020	19	Vite TE M10 x 70	Hexagonal head screw M10 x 70
301.010	20	Dado medio M10	Nut M10

Fix the Protection cover PTO (72) using 3 Conical Head Screws 4.8X19 and 3 Washers 5X20.

Table 07

<p>304.101 L=370</p>  <p>1</p> <p>Diagram showing the pendular spreader 304.101 (L=370) with a callout '1' pointing to the main body. Below the main view is a smaller view of the spreader's discharge mechanism.</p>	<p>304.105 L=570</p>  <p>2</p> <p>2.00-10.00</p> <p>Diagram showing the pendular spreader 304.105 (L=570) with a callout '2' pointing to a component. Below the main view is a smaller view of the spreader's discharge mechanism with a range of 2.00-10.00.</p>
<p>304.102 L=155</p>  <p>3</p> <p>0.75-4.50</p> <p>Diagram showing the pendular spreader 304.102 (L=155) with a callout '3' pointing to a component. Below the main view is a smaller view of the spreader's discharge mechanism with a range of 0.75-4.50.</p>	<p>304.106 L=139</p>  <p>4</p> <p>1.50-2.00</p> <p>1.50-2.00</p> <p>Diagram showing the pendular spreader 304.106 (L=139) with a callout '4' pointing to a component. Below the main view is a smaller view of the spreader's discharge mechanism with a range of 1.50-2.00. To the right is a temperature gauge icon with '0' below it.</p>
<p>304.103 L=207</p>  <p>5</p> <p>2.00-4.00</p> <p>Diagram showing the pendular spreader 304.103 (L=207) with a callout '5' pointing to a component. Below the main view is a smaller view of the spreader's discharge mechanism with a range of 2.00-4.00.</p>	<p>304.104 L=350</p>  <p>6</p> <p>5.00-6.00</p> <p>Diagram showing the pendular spreader 304.104 (L=350) with a callout '6' pointing to a component. Below the main view is a smaller view of the spreader's discharge mechanism with a range of 5.00-6.00. To the right is a temperature gauge icon with '0' below it.</p>

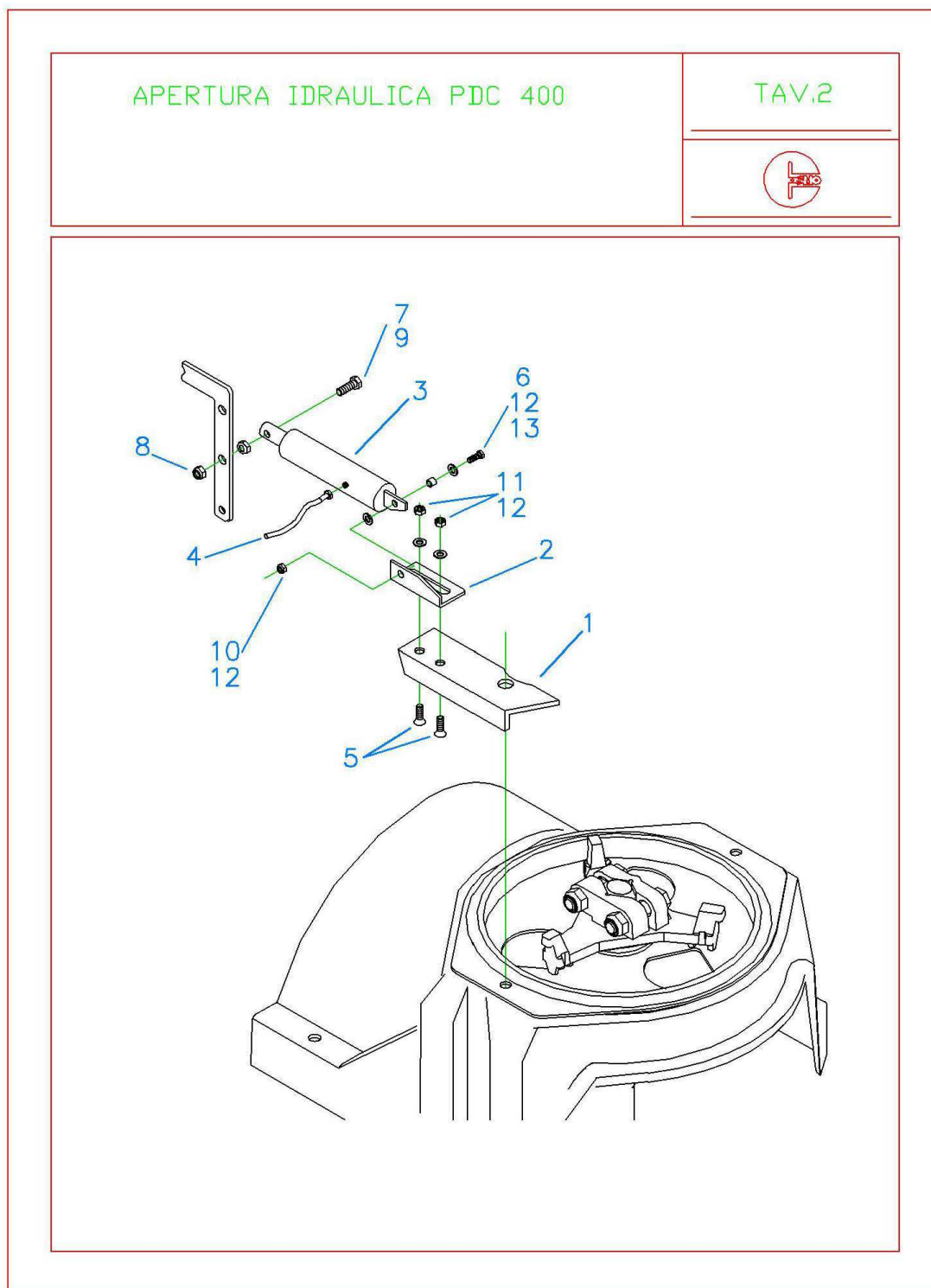


PENDOLO MOD. PDC		SPOUT PDC MODEL	
Codice Code	REF.	DESCRIZIONE	DESCRIPTION
304.101	1	Pendolo plastica corto - L=370	Spout plastic short-L=370
304.105	2	Pendolo acciaio inox - L=570	Spout L=570
304.102	3	Pendolo acciaio inox - L=155	Spout L=155
304.106	4	Pendolo acciaio inox - L=139	Spout L=139
304.103	5	Pendolo acciaio inox - L=207	Spout L=207
304.104	6	Pendolo acciaio inox corto - L=350	Spout L=350

For any unavailable codes you have to wait for confirmation of the date of the products availability.



Table 08



**APERTURA IDRAULICA MOD. PDC 400****HYDRAULIC OPENING KIT PDC 400 model****CODICE/ CODE 619.037**

Codice Code	QT.	REF.	DESCRIZIONE	DESCRIPTION
606.129	1	1	Piastra supp. cilindro	Hydraulic system supporting plate
606.085	1	2	Piastra att.apertura idraulica	Connection plate for hydraulic opening system
623.005	1	3	Cilindro idraulico	Hydraulic cylinder
304.023	1	4	Gomma idraulica	Hydraulic tube
300.040	2	5	Vite TSEI 8x20 uni5933 zb	Hex. sock. countersunk head cap screw 8x20
300.050	1	6	Vite TE 8x25 uni 5739 zb	Hex.head screw 8x25
300.055	1	7	Vite TE 12x60	Hex. Head screw 12x60
301.008	1	8	Dado aut.alto M12	Self locking nut M12
301.000	1	9	Dado medio M12	Nut M12
301.001	1	10	Dado aut.alto M8	Self locking nut M8
301.001	2	11	Dado medio M8 zb	Nut M8
303.007	3	12	Rondella 8x17	Washer 8x17
325.012	1	13	Boccola 13x8x8	Bushing 13x8x8