

NS PLUS 2311

STARTING MANUAL

MAINTENANCE

DOSAGE

SPARE PARTS

Please read and follow this operating manual before putting the machine into operation.



SOLÁ seed drills and fertilizer spreaders are manufactured in a highly specialized environment and our factory has a vast customer-endorsed experience.

SOLÁ machines use highly advanced technology and are guaranteed to work without malfunctions in a great variety of conditions. They are provided with easy-to-use and efficient devices.

SOLÁ machines perform excellently with only minimum operator maintenance.

*This manual will help you use your **SOLÁ** product with the upmost efficiency.*



Certified quality system

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Specifications are subject to change or modification without notice.

The pictures included do not necessary show the standard version.

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1- INTRODUCTION

It is essential to read and follow the instructions and recommendations in this manual before operating the seed drill **NS PLUS 2311**. Careful reading enables maximum operator efficiency, prevents accidents and damage, and increases the seed drill's capacity and life expectancy. El manual deberá ser leído por toda persona que realice tareas de operación (incluyendo preparativos, reparación de averías en el campo y cuidado general de la máquina), mantenimiento (inspección y asistencia técnica) y transporte.

Please ensure that this manual has been read by any person involved in performing **operational tasks**, (including preparation, dealing with mechanical problems and supervising the machine), **maintenance** (inspection and technical assistance) and **transport**.

For your safety, please follow these technical safety instructions as **SOLÀ** will not be responsible for damages caused by not observing the information provided.

In the first chapters you will find the Technical Characteristics and Safety Instructions, as well as some essential sowing concepts. Basic concepts that are required to operate the machine are explained in the Starting and Maintenance sections.

The last part of this manual consists of Dosage Tables, detailed by seed type.



SOLÀ RETAINS THE RIGHT TO MODIFY ILLUSTRATIONS, TECHNICAL DATA AND WEIGHTS INDICATED IN THIS OPERATING MANUAL, IF THESE CHANGES HELP TO IMPROVE THE QUALITY OF THE SEED DRILLS.

In this operating manual you will find three different symbols relating to safety:



TO WORK MORE EASILY WITH THE SEED DRILL.



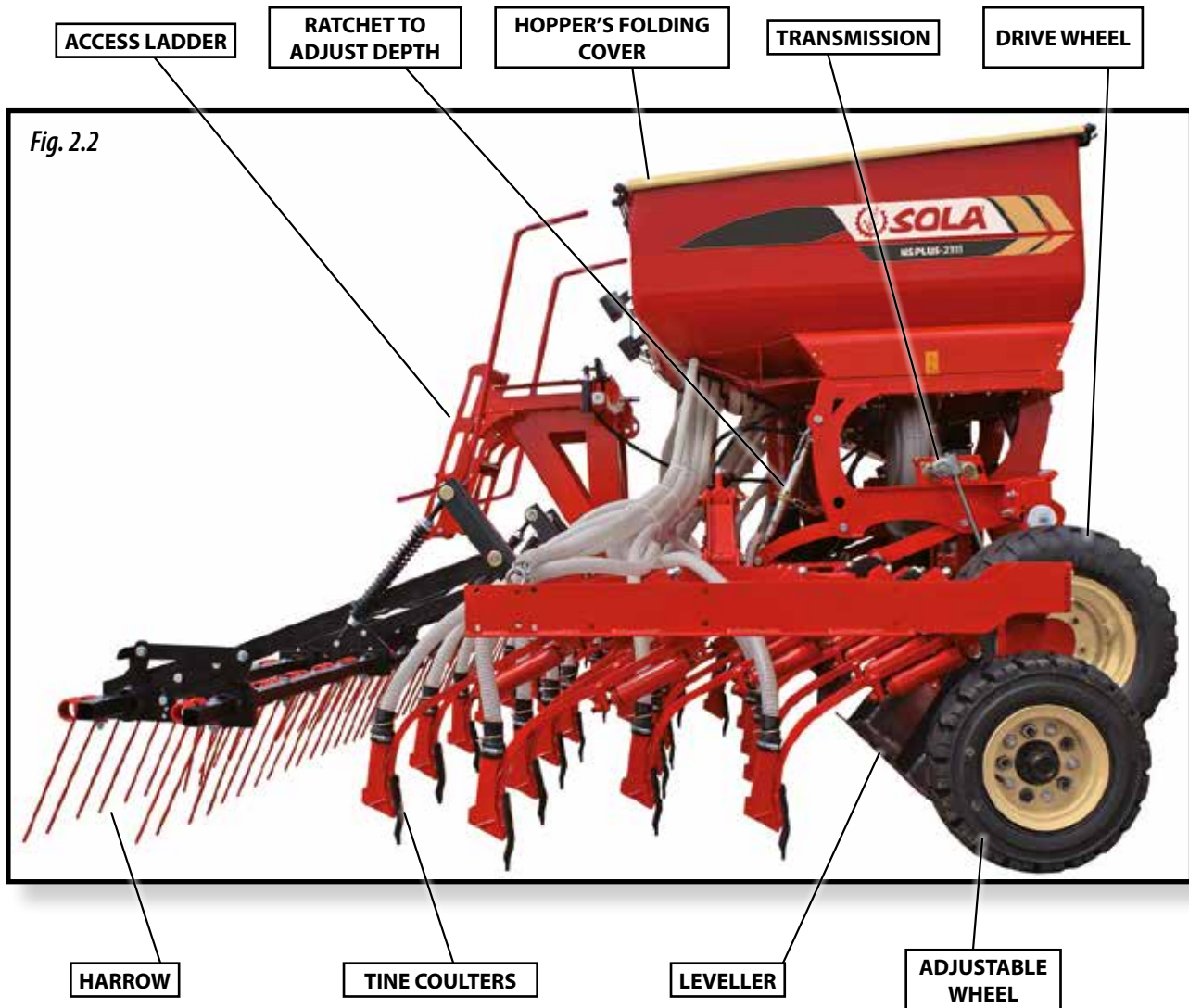
TO PREVENT DAMAGE TO THE SEED DRILL AND OPTIONAL EQUIPMENT.



TO PREVENT PHYSICAL INJURY.

2- TECHNICAL CHARACTERISTICS

2.1 OVERVIEW



2.2 TECHNICAL CHARACTERISTICS

TYPE / ROWS	ROWS SPACING	WORKING WIDTH	SEED HOPPER CAPACITY	TRANSPORT WIDTH	HEIGHT	WEIGHT WITH CULTIVATOR	WEIGHT WITH TRACK ERASERS
400 / 32	12,5 cm	4 m	1.600 l	3,05 m	2,5 m	1.950 kg	1.670 kg
450 / 36	12,5 cm	4,5 m	1.600 l	3,05 m	2,5 m	2.070 kg	1.770 kg
500 / 40	12,5 cm	5 m	1.600 l	3,05 m	2,5 m	2.180 kg	1.850 kg
600 / 40	15 cm	6 m	1.600 l	3,05 m	3 m	2.360 kg	2.080 kg
600 / 48	12,5 cm	6 m	1.600 l	3,05 m	3 m	2.410 kg	2.100 kg

2.3 CHARACTERISTICS OF MACHINES WITH HIGH CAPACITY HOPPERS

TYPE / ROWS	ROWS SPACING	WORKING WIDTH	SEED HOPPER CAPACITY	TRANSPORT WIDTH	HEIGHT	WEIGHT WITH CULTIVATOR	WEIGHT WITH TRACK ERASERS
400 / 32	12,5 cm	4 m	2.000 l	3,05 m	2,7 m	2.005 kg	1.715 kg
450 / 36	12,5 cm	4,5 m	2.000 l	3,05 m	2,7 m	2.125 kg	1.815 kg
500 / 40	12,5 cm	5 m	2.000 l	3,05 m	2,7 m	2.235 kg	1.905 kg
600 / 40	15 cm	6 m	2.000 l	3,05 m	3 m	2.415 kg	2.135 kg
600 / 48	12,5 cm	6 m	2.000 l	3,05 m	3 m	2.445 kg	2.155 kg

2.4 STANDARD EQUIPMENT

- Hopper of 1600-2000 litres capacity.
- Seed selecting sieve
- Scales, crank and seed counter.
- Track eraser.
- Independent hydraulic track markers – horizontal folding.
- Screen displaying fan's rpm, seed wheels's turning alarm, hopper's seed level sensor and hectare counter.
- Signalling light equipment
- Work lights.
- Hydraulic connection to operate a worm screw .
- Rear harrow with three sections.
- Mechanical fan with PTO shaft.
- Hydraulic fan provided in seed drills with front or integrated cultivator.
- Floating wheels 340/55-16, with scrapers.
- Depth adjustable wheels in the folding parts.
- Ladder to gain access to the hopper.
- Spindle to adjust sowing depth.
- Hopper's folding cover.

2.5 OPTIONAL EQUIPMENT

- Triple smooth or tines leveller.
- Front cultivator.
- Integrated cultivator.
- Hoppers and dosing system kit for microfertilizer.
- Total sowing shut-off.
- Shut-off mechanism for seed hoses in folding parts.
- Radar artemis
- Tramlines
- Preemergence track markers.
- Hydraulic fan

3. SAFETY INSTRUCTIONS

3.1 SAFETY SYMBOLS

On the machine you will find the following warning pictograms:



READ THE INSTRUCTIONS CAREFULLY AND OBSERVE THE SAFETY ADVICE GIVEN IN THE OPERATING MANUAL.



DURING THE COUPLING MANOEUVRE, STAY AWAY FROM THE REAR PART OF THE TRACTOR.
RISK OF SERIOUS PHYSICAL INJURY.



DANGER OF INFECTION FROM ESCAPING HYDRAULIC FLUID AT HIGH PRESSURE! THIS CAN INFLICT SERIOUS INJURIES WITH POTENTIALLY FATAL CONSEQUENCES IF IT PASSES THROUGH THE SKIN AND INTO THE BODY.
KEEP THE HOSE LINES IN GOOD CONDITION.
RISK OF SERIOUS PHYSICAL INJURY.



NEVER STAND UNDER THE SOWING EQUIPMENT OR SWIVEL AREA OF THE MACHINE'S EXTENSION TINE COULTERS.
RISK OF SERIOUS PHYSICAL INJURY.



WHILE MAINTAINING OR REPAIRING THE SEED DRILL, STOP THE TRACTOR'S ENGINE AND PREVENT IT FROM STARTING. THE IGNITION KEY MUST BE REMOVED.



IT IS FORBIDDEN TO RIDE ON THE MACHINE DURING OPERATION.
RISK OF SERIOUS PHYSICAL INJURIES.

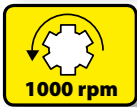


RISK OF BEING CRUSHED WHEN WORKING UNDER THE MACHINE, PLEASE SECURE THE MACHINE TO PREVENT THIS RISK.

RISK OF SERIOUS PHYSICAL INJURIES.



THE DIRECTION AND SPEED THAT THE PTO SHAFT TURNS (ONLY IN MACHINES EQUIPPED WITH MECHANICAL FAN).



NEVER STAND UNDER THE TRACK MARKERS NOR INSIDE THEIR ACTION AREA.

RISK OF SERIOUS PHYSICAL INJURIES.



COUPLING POINT FOR TRANSPORTATION BY CRANE.

3.2 USE ACCORDING TO DESIGN

- The Seed Drill **NS PLUS 2311** has been designed for cereal and other kind of grain seeds.
- If the machine is used in circumstances other than the above, the manufacturer will not be held responsible for any damage caused.
- The user must observe all regulations concerning safety, traffic and hygiene.
- If the machine is modified by the user, the manufacturer's warranty is cancelled. **SOLÁ** will not be held responsible for any damage caused.

3.3 GENERAL SAFETY INSTRUCTIONS



- BEFORE STARTING THE MACHINE, PLEASE CHECK THE MACHINE IS IN GOOD CONDITION FOR WORK AND IS SAFE FOR ROAD USE.



- CHECK THAT VISIBILITY IS CLEAR AROUND THE MACHINE AND THERE IS NO PERSON IN THE WORKING AREA.



- IN THOROUGHFARE, PLEASE OBSERVE TRAFFIC SIGNS AND REGULATIONS.



- IT IS FORBIDDEN TO RIDE ON THE MACHINE OR CLIMB INTO THE MACHINE WHEN IT IS RUNNING.



- BEFORE USING THE MACHINE, THE USER MUST BE FAMILIAR WITH ALL OPERATING ELEMENTS.



- PLEASE BE EXTREMELY CAREFUL WHEN COUPLING AND UNCOUPLING THE MACHINE TO THE TRACTOR.



- PLEASE CHECK THAT THE PTO SHAFT IS IN GOOD CONDITION AND WELL PROTECTED. PREVENT THE PROTECTIVE TUBE FROM TURNING BY HOLDING BOTH THE TUBE AND CHAIN PROVIDED FOR THIS PURPOSE.



- MOUNT THE PTO SHAFT'S TRANSMISSION ONLY WHEN THE TRACTOR'S ENGINE IS OFF.



- BEFORE CONNECTING THE PTO SHAFT, BE SURE THAT THE DANGER ZONE SURROUNDING THE MACHINE IS CLEAR.



- NEVER LEAVE THE TRACTOR'S DRIVER'S SEAT WHILE THE MACHINE IS IN OPERATION.



- DO NOT DEPOSIT EXTERNAL ELEMENTS INSIDE THE HOPPER.



- WHEN MAINTAINING THE HYDRAULIC SYSTEM OF THE SEED DRILL, MAKE SURE THAT IT IS DEPRESSURISED AND THE TRACTOR'S ENGINE IS OFF.



- PLEASE REGULARLY CHECK THE CONDITION OF THE TUBES AND HOSEPIPES IN THE HYDRAULIC SYSTEM. THESE PARTS AGE NATURALLY AND THEIR LIFE SHOULD NOT SURPASS 6 YEARS. PLEASE REPLACE WHEN NECESSARY.



- WHEN RAISING THE SEED DRILL, THE FRONT AXLE IS UNLOADED. ENSURE THAT THE MACHINE HAS ENOUGH LOAD TO PREVENT IT OVERTURNING. AT THIS TIME YOU MUST ENSURE THAT THE CONDITION OF BOTH THE STEERING AND THE BRAKES IS OPTIMAL.



- DURING TRANSIT WITH THE RAISED SEED DRILL, BLOCK THE LOWERING SWITCH. BEFORE LEAVING THE TRACTOR, LOWER THE SEED DRILL ONTO THE GROUND AND REMOVE THE TRACTOR'S STARTING KEY.



- ALWAYS USE ENOUGH SUPPORTING ELEMENTS WHEN MAINTAINING THE MACHINE IN A RAISED POSITION TO PREVENT THE MACHINE FROM LOWERING OR FALLING.

3.4 LOADING AND UNLOADING INSTRUCTIONS

Use a bridge crane to load and unload the truck. A specifically designed hook, as shown in figure 2, should be used to prevent damage caused by the weight of the machine itself. Tow ropes should be fastened to the machine's tripod as well as to the fasten points situated in the tine coulters' chassis.



Fig. 2

4- ESSENTIAL SOWING CONCEPTS

4.1 TERRAIN



THE BETTER THE SOIL CONDITION, THE BETTER THE SOWING QUALITY. WORK IS MORE DIFFICULT ON BIG CLOUDS OR UNEVEN FURROWS.

Although **SOLÀ** machines resist harsh conditions, if the seedbed does not satisfy appropriate conditions then the sowing quality will suffer.

4.2 THE SEED



IT IS ESSENTIAL THAT SEEDS ARE WELL MAINTAINED AND CLEAN. BARLEY SEEDS SHOULD BE TRIMMED.

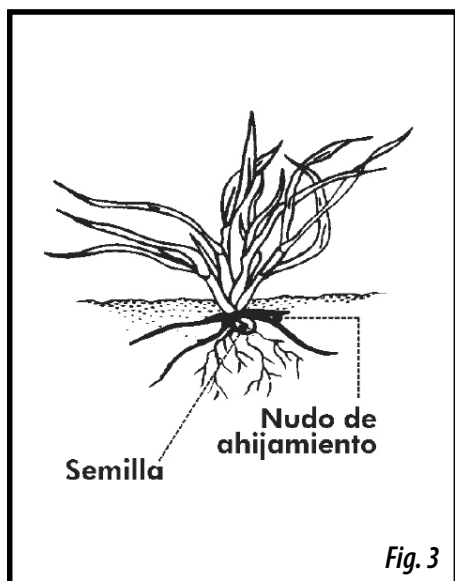
4.3 SEED PLANTING DEPTH



THE RECOMMENDED SEED PLANTING DEPTHS ARE FROM 3 TO 5 CENTIMETRES. PLANTING TOO DEEP CAUSES PROBLEMS AS RHIZOME CANNOT REACH THE SURFACE AND THE PLANT WILL DIE. IT DOES NOT MATTER THAT SOME GRAINS ARE VISIBLE BECAUSE THE HARROW'S TINES WILL COVER THEM EVENTUALLY.

The seed planting depth has consequences for tillering, as well as for the plant's strength and its ability to resist frostbite or drought. The parent shoot grows from 1 to 2 cm under the ground, whatever the depth of the seed.

Planting deeper does not necessarily mean getting deeper roots. Only a few roots grow from the lower part of the seed. Most of them grow from a parent shoot close to ground level.



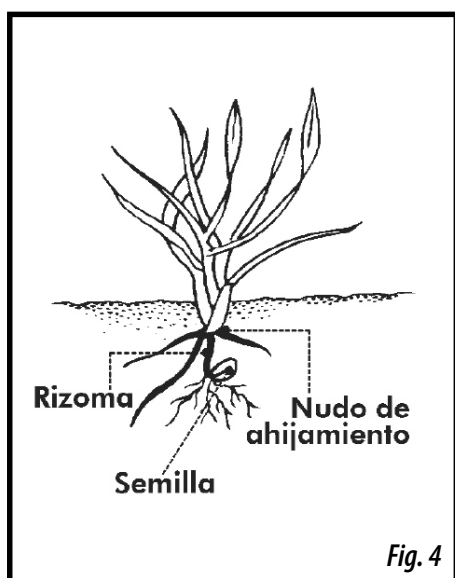
Normal Planting Depth: from 2 to 4 cm

Thick stem, short rhizome and resistant to frostbite.

Multiple tillering providing from 3 to 6 shoots and a lot of blades, from 6 to 10.

Deep and thick roots, approximately 5 cm in width and 10-12 cm in depth.

With less grains per sowing square metre, more ears are obtained.



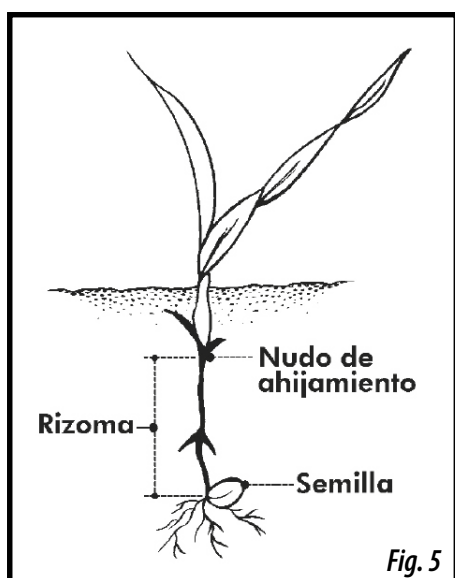
Deeper Planting: from 5 to 6 cm

Fine stem, rhizome exposed to frostbite.

Late and weak tillering, 1 or zero shoots and only a few blades, 3-4 aprox.

Medium quality roots of approximately 3 cm in width and 5 cm in depth.

More grains per sowing square metre are required to obtain the same number of ears as in the previous case.



Very deep planting: from 8 to 10 cm

Very fine stem. No tillering and only one blade.

Seed runs out of supplies by growing a long rhizome which frostbite can easily cut.

The plant takes weak roots, approximately 1 cm in width and 3 cm in depth.

Twice the number of grains per sowing metre are required to obtain the same number of ears as in the first case.

WARNING

IN VERY COLD PLACES, REPEATED FROSTBITE CAN HAVE A HONEYCOMB EFFECT ON THE GROUND'S MOST SUPERFICIAL LAYER. IN THIS CASE THE PLANT'S VERY FIRST ROOTS CAN LOOSEN AND THE PLANT WILL DIE. SLIGHTLY DEEPER PLANTING IS RECOMMENDED AND IF POSSIBLE, THE USE OF ROLLERS TO COMPACT THE EARTH TO BETTER PROTECT THE SEEDS.

IN ALL SOLA SEED DRILLS, THE RIGHT SIDE WHEEL ACTIVATES THE SEED DISTRIBUTOR'S MECHANICAL TRANSMISSION. CONSEQUENTLY, SHARP CURVES SHOULD BE PERFORMED TOWARDS THE LEFT SIDE, SINCE USING THE GROUND WHEEL DRIVE WOULD CAUSE A LESSER SEED DISTRIBUTION.



WHEN STARTING THE MACHINE, FURROWS WILL NOT CONTAIN ANY SEEDS FOR A METRE. WHEN STOPPING THE MACHINE, SEEDS WHICH WERE PREVIOUSLY INSIDE THE SEED HOSES, SLIDE FROM THE MACHINE AND END UP PILED ON THE GROUND. TAKE THIS INTO ACCOUNT WHEN STOPPING AND STARTING THE MACHINE IN ORDER TO ACHIEVE MORE ACCURACY.



ALWAYS WORK AT A UNIFORM SPEED AS SUDDEN ACCELERATING AND SLOWING DOWN WILL CAUSE AN IRREGULAR SEED DISTRIBUTION.

5. STARTING

5.1 COUPLING THE SEED DRILL

Seed drill **NS PLUS 2311** is supplied with a three-point linkage of category 3.



MAKE SURE THAT NO PERSON OR OBJECT IS EVER BETWEEN THE SEED DRILL AND THE TRACTOR WHEN COUPLING BOTH MACHINES.



TO COUPLE THE SEED DRILL AND THE TRACTOR, FOLLOW THESE STEPS:



Place the fast-locking balls in the two lower bolts (fig. 6).

Next, couple the fertilizer using the three-point linkage (fig. 7).



Once the seed drill is coupled with the tractor, **THE PTO SHAFT SHOULD BE ADAPTED:**

- 1- Dismount and insert one end into the tractor's universal joint shaft and the other end into the seed drill.
Look for the minimal movement length "L" (fig. 8) by raising and lowering the hydraulic lift.
- 2- Cut the spare plastic and metal into parts of the same length and remount the PTO shaft.
- 3- Operate the hydraulic lift and check that the PTO shaft's movement is correct.
- 4- Secure the PTO shaft using the chain.

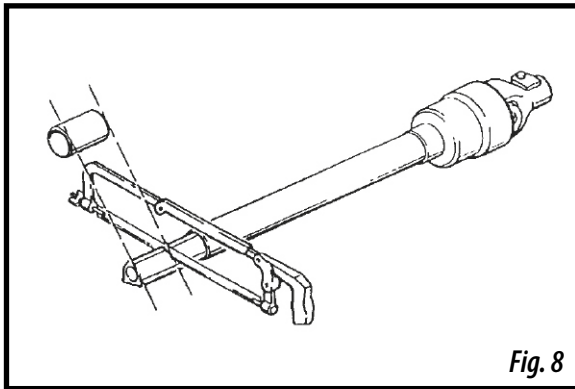


Fig. 8

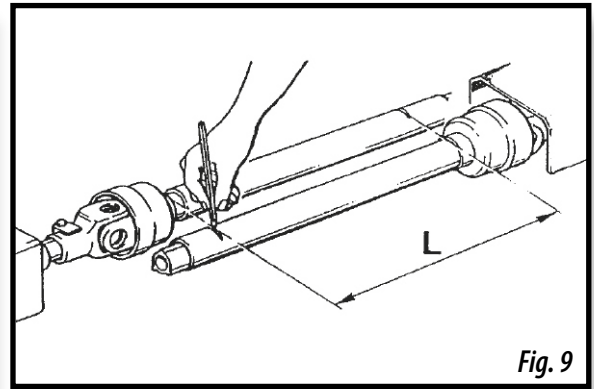


Fig. 9



WHEN OPERATING THE PTO SHAFT CHECK THAT THE ENGINE IS OFF. ALWAYS WORK WITH THE PTO SHAFT PROTECTED AND IN GOOD CONDITION. PREVENT THE PTO SHAFT'S TUBE FROM TURNING BY SECURING IT WITH THE CHAIN PROVIDED.

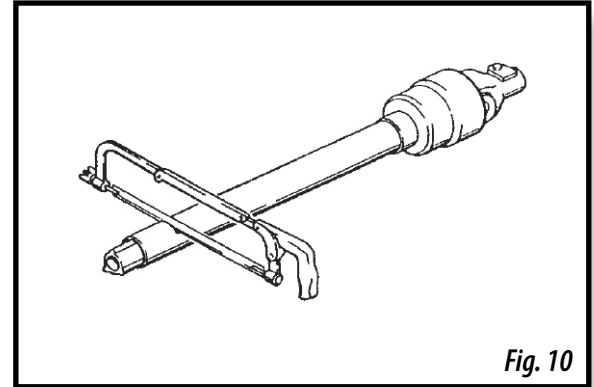


Fig. 10



WHEN LOWERING THE SEED DRILL TO THE GROUND, UNPLUG THE TRACTOR'S UNIVERSAL JOINT SHAFT SO THAT THE PTO SHAFT DOES NOT HAVE AN EXCESSIVE INCLINATION (MAX. 35°).



WHEN HOLDING THE TRACTOR UNIVERSAL JOINT SHAFT'S CLUTCH IN, PERFORM IT GENTLY. STARTING SUDDENLY COULD SERIOUSLY DAMAGE THE SEED DRILL.

5.2 HYDRAULIC CONNECTIONS

To use the machine's hydraulic connections you will need:

WHEN FOLDING AND UNFOLDING THE MACHINE (1, fig. 11):

- a double-acting connection.

WHEN FOLDING AND UNFOLDING THE TRACK MARKERS (2, fig. 11):

- a double-acting connection.

If the machine has **HYDRAULIC FAN**:

- an extra single-acting (connection) and a free return line.

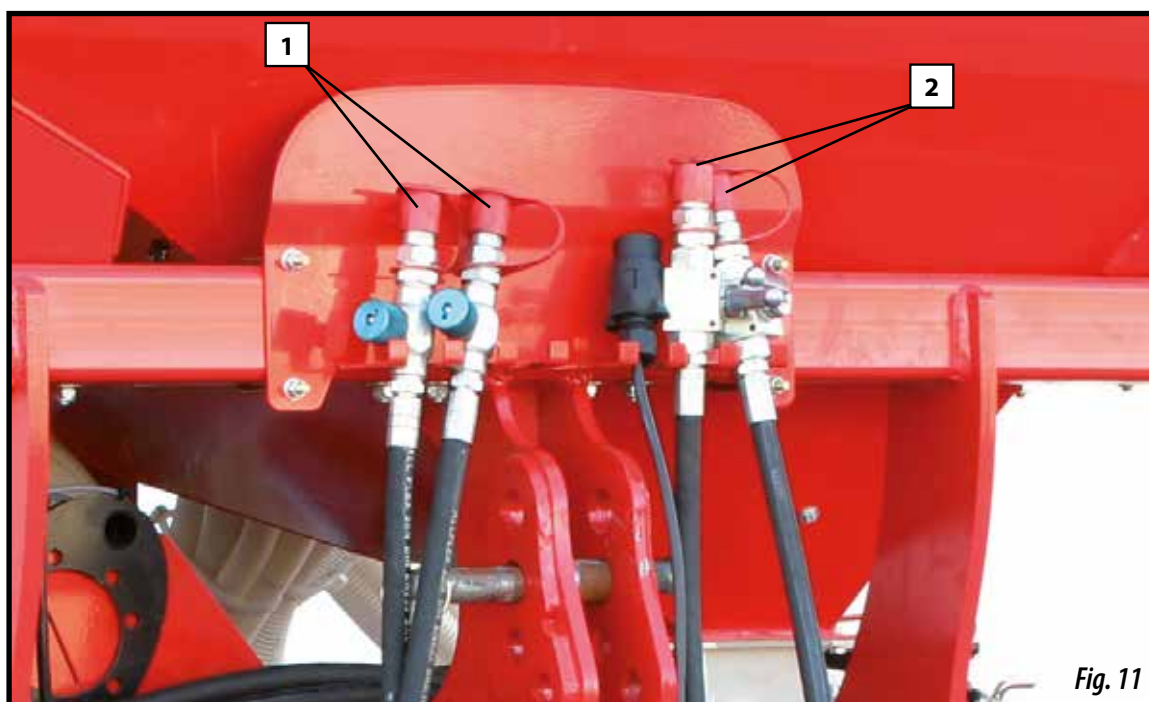


Fig. 11



FOR THE FREE RETURN LINE CONNECTION USE THE PLUG-ADAPTER PROVIDED (fig. 12).



Fig. 12

5.3 HYDRAULIC SYSTEM

FLOW REGULATORS

To smoothly hydraulically fold and unfold the seed drill, there are two flow regulators (fig. 14) that perform both actions respectively. They should be adjusted depending on the hydraulic flow supplied by the tractor.



Fig. 13



NEVER STAND UNDER THE MACHINE'S EXTENSION ARMS OR IN THEIR SWIVEL AREA(FIG. 13).

Starting with an almost completely closed flow regulator is recommended to prevent folding too fast, which could damage the seed drill.



Fig. 14

This is the POSITION OF THE TAPS of the hydraulic system to fold and unfold the folding parts:



This is the position of the taps of the hydraulic system to OPERATE the worm screw .



5.4 TRANSPORT POSITION

To set up the transport position, follow these steps:



Fig. 17



- 1-** Fold the TRACK MARKERS (fig. 18).
- 2-** Raise the machine until the TINE COULTERS are detached from the ground (fig. 19).
- 3-** Fold the INTEGRATED CULTIVATOR (optional equipment):
 - Fold the cultivator to its POSITION OF MINIMUM DEPTH.
 - Fold the 2 FOLDING PARTS of the machine.



Fig. 18



Fig. 19

- 4- Fold the 2 FOLDING PARTS of the machine and check that the 2 SAFETY TRIGGERS that secure the folding parts are correctly fastened. This will prevent the folding parts from falling during transit.
- 5- Check that the LADDER to gain access to the hopper and the hopper's folding cover are both folded and secured (see section 5.5).

Check that the SIGNAL LAMPS are working properly.

The machine is provided with 2 hydraulic safety triggers which must be used to secure the folding parts during transit.



Fig. 20



AFTER COUPLING THE SEED DRILL TO THE TRACTOR, CHECK THAT THE SAFETY TRIGGERS ARE CORRECTLY IN TRANSPORT POSITION.



PREVENT THE MOBILE PARTS FROM MOVING.



BEFORE STARTING TO SOW, MAKE SURE THE TRIGGERS HAVE BEEN UNFASTENED AND THE FOLDING PARTS ARE UNFOLDED.



Fig. 21

5.5 LOADING THE SEED DRILL MANUALLY

For access to the hopper, the access ladder should be unfolded.

Pull the trigger (1, fig. 22) to free the folding flight to the ground (fig. 23).

To fold, return the folding flight until the safety trigger is secured.

Remove the tension element (2 fig. 24) of the hopper's folding cover and fold it over to the left using the handle (3, fig. 24).



Fig. 22



Fig. 23

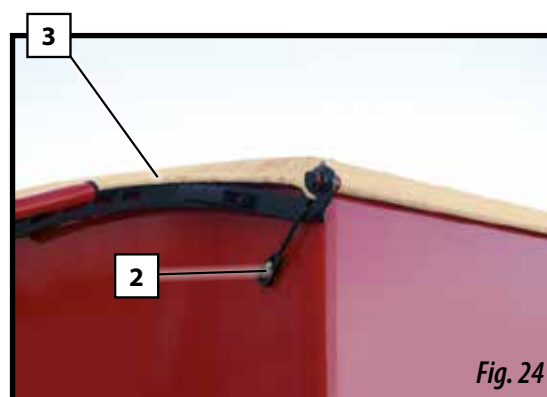


Fig. 24

5.6 LOADING THE SEED DRILL USING A WORM SCREW

The machine is provided with a connection (fig. 25) to load the hopper using a worm screw.

Set the position of the taps (fig. 26) as shown in the picture.



Fig. 25



Fig. 26

5.7 THE BUILT-IN SUPPORTING LEGS

The machine has two built-in supporting legs to prevent it from falling back during the uncoupling manoeuvre.

Before starting work with the machine, RAISE THESE SUPPORTS.



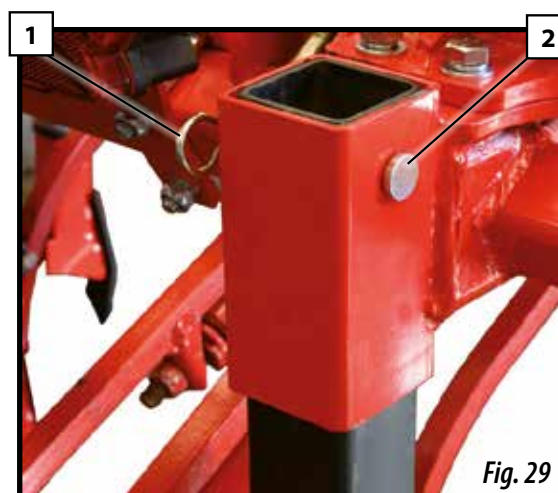
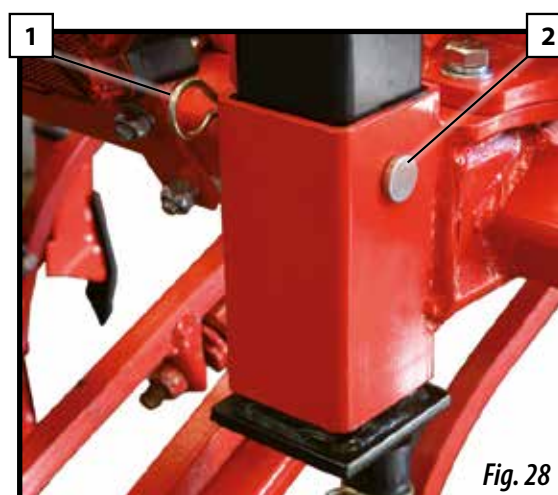
WORKING WHILE THE SUPPORTS ARE IN PLACE MAY CAUSE DAMAGES TO THE MACHINE.



BEFORE RAISING THE SUPPORTING LEGS, THE MACHINE MUST BE RAISED TO MAKE THE OPERATION EASIER AND PREVENT THE MACHINE FROM FALLING BACKWARDS.



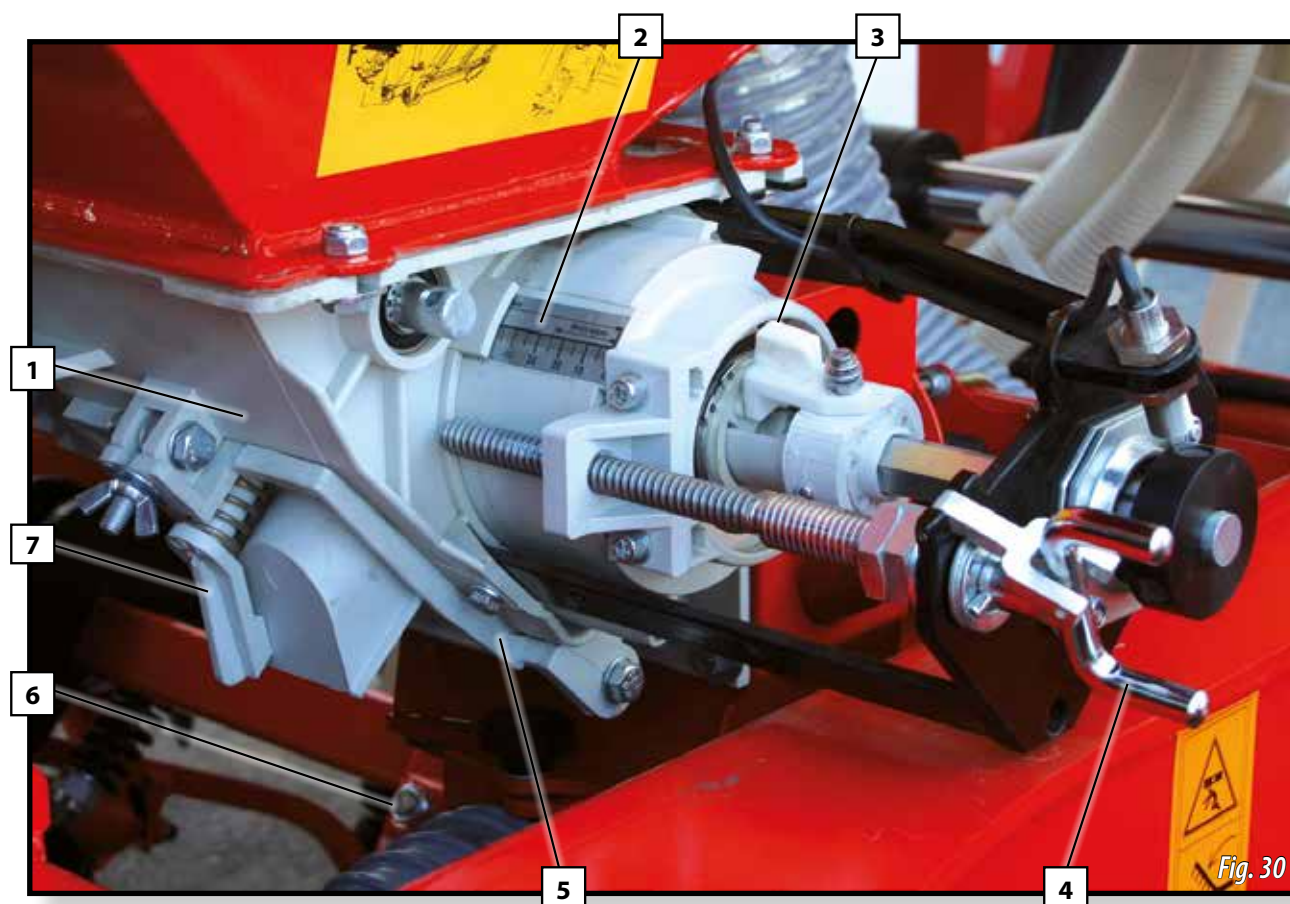
- 1- Remove the safety ring (1, fig. 28).
- 2- Remove the securing bolt (2, fig. 28).
- 3- Shift the support upwards.
- 4- Align the 2 holes and place the securing bolt (2, fig. 29).
- 5- Place the safety ring again. (1, fig. 29).



6. DOSAGE

There are two ways of dosing:

- for **REGULAR SEEDS**.
- for **FINE SEEDS** with minimum flow rate.



1- Seed distributor.

2- Dosing adjusting scale.

3- Bolt:

N = regular seed

F = fine or small seed

4- Spindle.

5- Trap-door to empty the hopper and the seed distributor.

6- Venturi injector sluice.

7- Quick emptying trap-door.

8*- Clip pin of the air outlet to fan *.

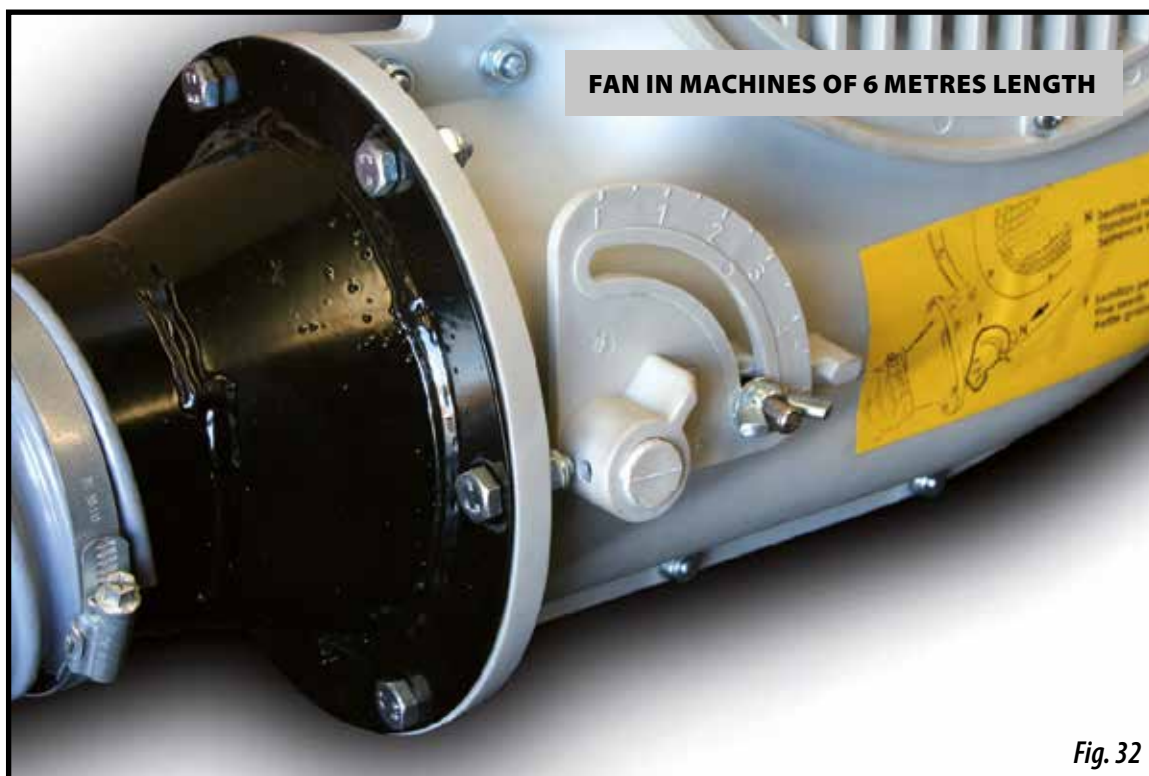
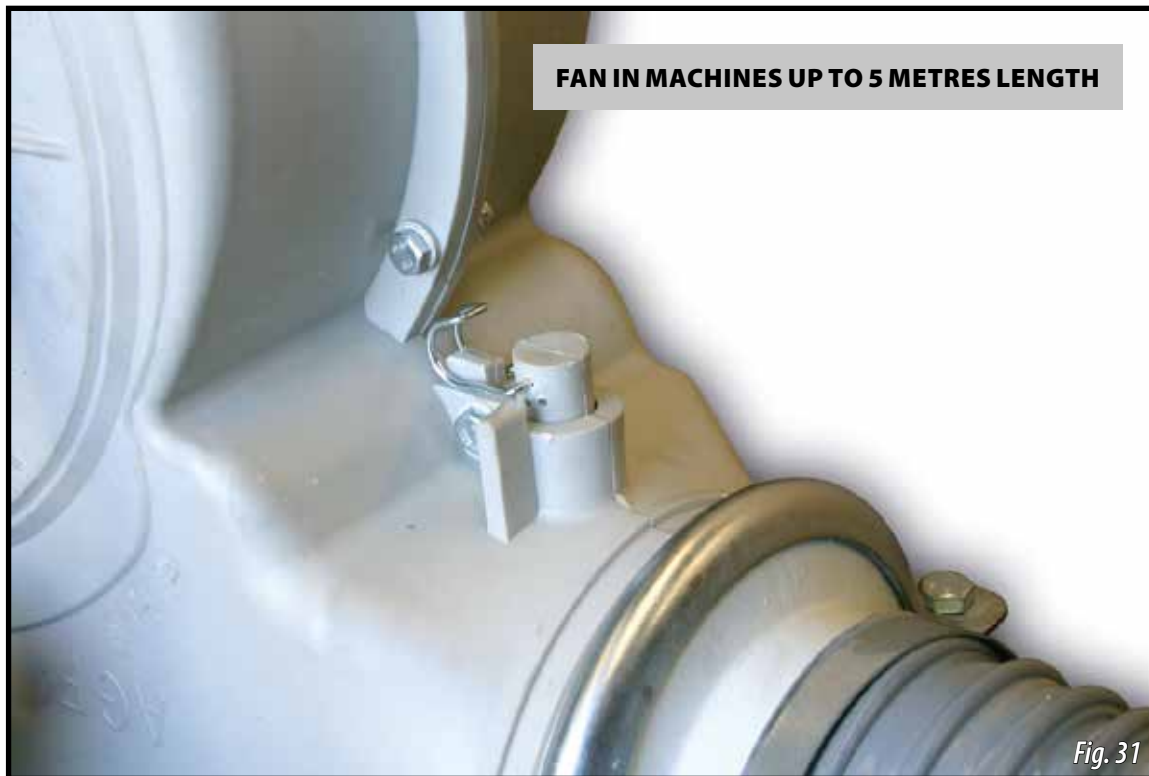
N = regular seed

F = fine or small seed

* (see next page)



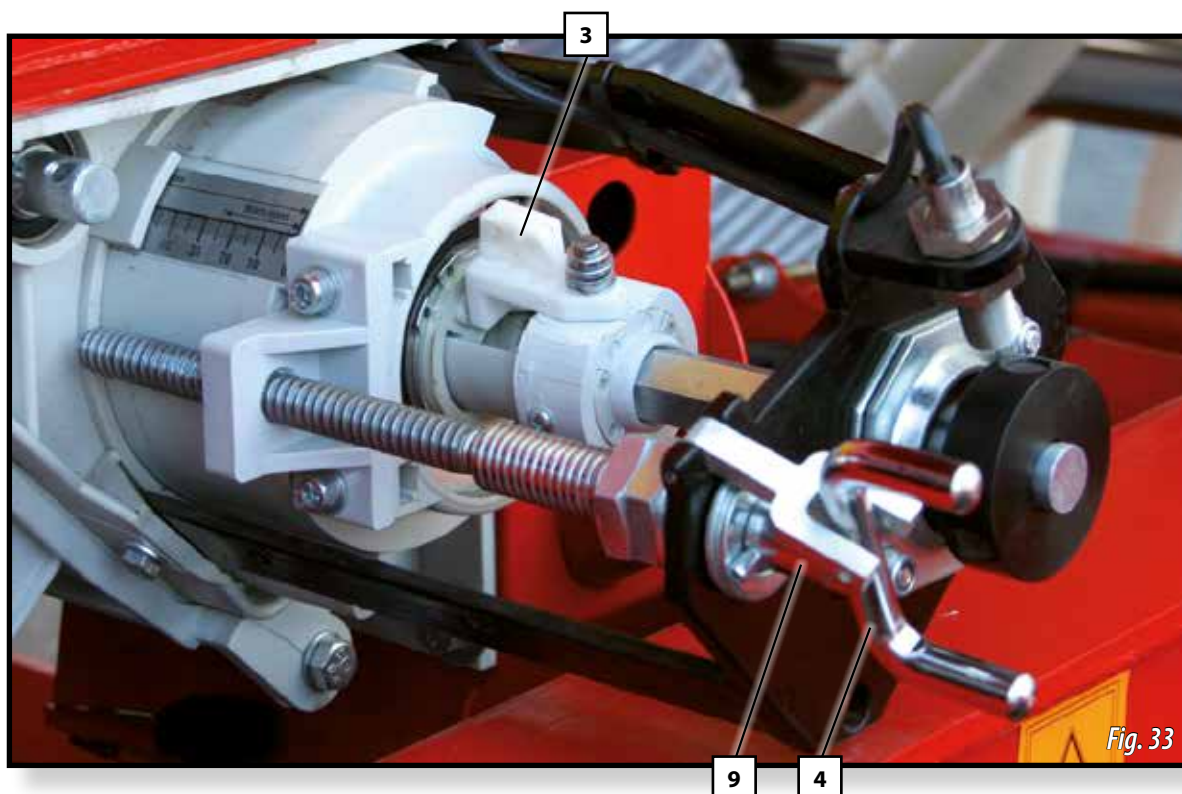
WHEN CHANGING THE BOLT'S POSITION (3) IT IS ESSENTIAL THAT THE SPINDLE (4) CAN TURN FREELY AND THE HOPPER IS EMPTY.



6.1 REGULAR SEEDS (position N)

When sowing using REGULAR SEEDS, proceed as following:

- 1- Remove the safety fork (9, fig. 33).
- 2- Keep the bolt (3, fig. 33) in the position as indicated in the figure.
- 3- Turn the spindle (4, fig. 33) to adjust dosing.



- 4- Place the clip pin of the air outlet to fan (8, fig. 34-35) at position N.

FAN IN MACHINES UP TO 5 METRES LENGTH.



FAN IN MACHINES OF 6 METRES LENGTH.



5- Pinion gear n°10 must be fit into pinion gear n°11, as shown in figure 36.

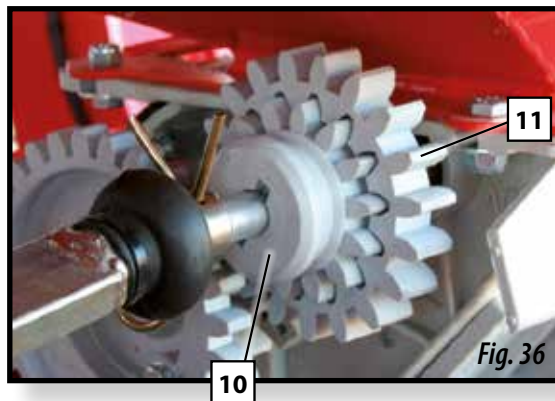


Fig. 36

6.2 FINE SEEDS (microdosing – Position F)

When sowing using FINE SEEDS, proceed as following:

- 1-** Remove the safety fork (9, fig. 37).
- 2-** Turn the spindle (4, fig. 37) to position 0 on the scale (2, fig. 37).
- 3-** Turn the bolt (3, fig. 37) until it is inserted into axle slot, like to the picture.

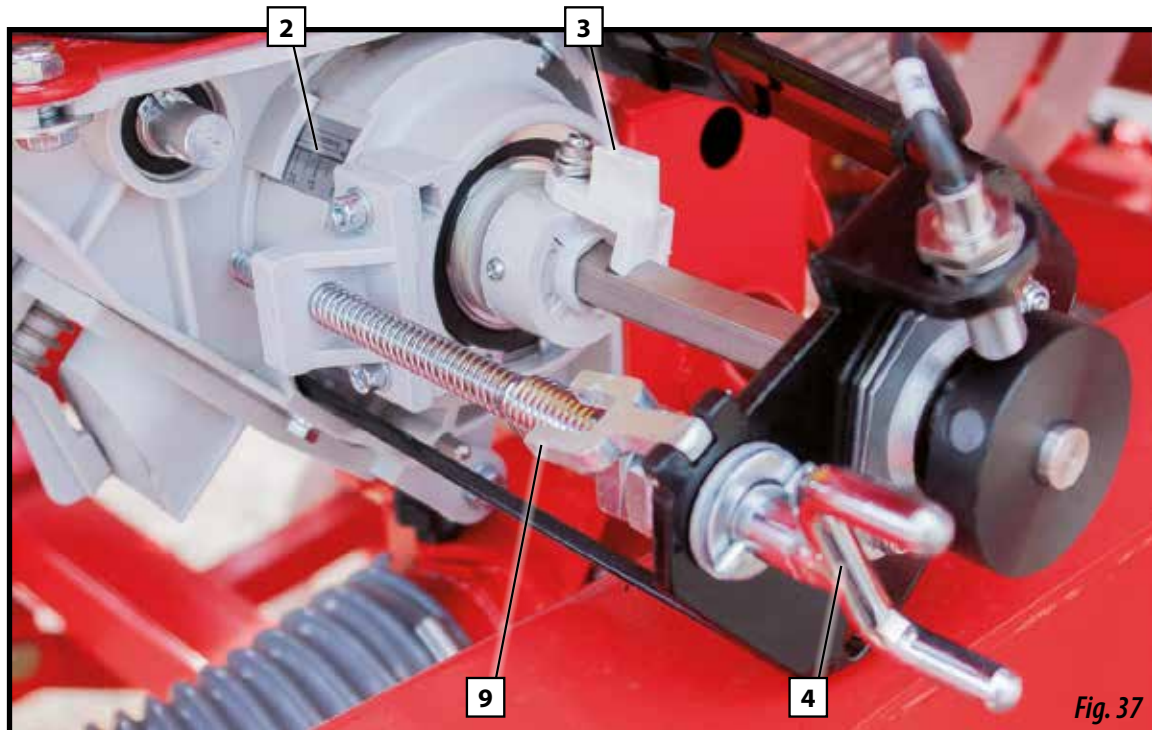
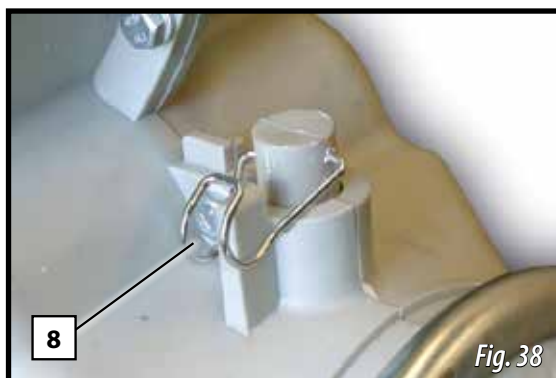


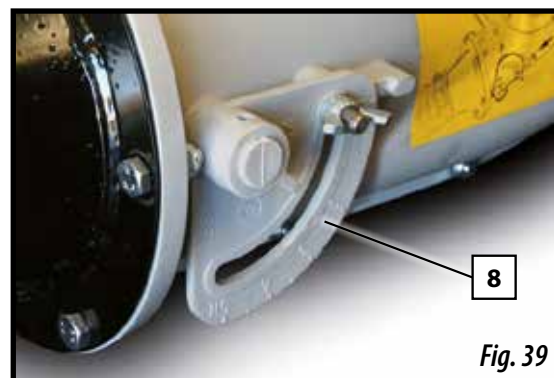
Fig. 37

4- Place the clip pin of the air outlet to fan (8, fig. 38-39) at **position F** (fine seed).

TURBINA MÁQUINAS HASTA 5 METROS.



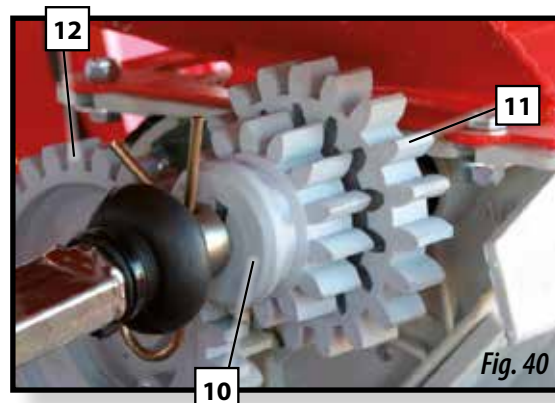
TURBINA MÁQUINAS HASTA 6 METROS.



5- Turn the spindle (4, fig. 37) to adjust dosing between 0 and 25.

6- Pull the pinion gear nº10 until it **is released** from the pinion gear nº11 and fit it into pinion gear nº12 (fig. 40).

7- Once the seed distributor is set in position F (microdosing), the ELECTRONICAL CONTROLLER needs to be configured (see page 54, working in micro mode).



THE AIM OF MICRODOSING IS TO BETTER DISTRIBUTE BOTH FINE AND REGULAR SEEDS IN SMALL NUMBERS.



THE CORRECT VALUE FOR USING MICRODOSING F-SYSTEM IN FINE SEEDS CAN BE FOUND IN THE DOSING TABLES (SEE SECTION 12 - DOSAGE TABLES).



CHECK THE CLEANING BRUSH IS IN GOOD CONDITION BEFORE BEGINING TO SOW FINE SEEDS.



WHEN MICRODOSING FINE SEEDS, DO NOT EXCEED NUMBER 25 IN ADJUSTING SCALE (2, FIG.37).

6.3 PREVIOUS FLOW TEST



IT IS ESSENTIAL THAT THE MACHINE, THE TRACTOR AND THE UNIVERSAL JOINT SHAFT ARE ALL SWITCHED OFF.

To perform the test, follow these instructions:

1- FILL THE HOPPER with seeds.



Fig. 41

2- COUPLE the machine to the tractor in a SLIGHTLY ELEVATED POSITION (wheels should not be in contact with the ground).



Fig. 42

3- Loosen the 2 knobs (1, fig. 43) that secure the venturi injector sluice.

Pull the venturi injector sluice into the machine.



Fig. 43

- 4-** Place the provided sack (2,fig. 44) or a container under the exit of the venturi injector sluice.



Fig. 44

- 5-** Next, place the crank (fig. 45) in the right wheel of the seed drill.

Turn it clockwise as many times as indicated below depending of the type of machine.



Fig. 45

TYPE OF MACHINE	WHEEL 340/55-16
400 / 32	26,5 Turns
450 / 35	23,5 Turns
500 / 40	21 Turns
600 / 48	17,6 Turns

- 6-** Accurately weigh the collected seeds.

- 7-** At a selected opening, you can obtain the kilograms per hectare distributed by the machine, by MULTIPLYING the weight by 40.



DO NOT TURN THE WHEEL WITH YOUR HANDS AS THE MUD SCRAPER CAN CAUSE INJURIES.



YOU MUST TURN THE WHEEL UNIFORMLY USING THE CRANK AT APPROXIMATELY ONE REVOLUTION PER SECOND.



THE NUMBER OF WHEEL TURNS TO BE PERFORMED DEPENDS ON THE LAND'S CHARACTERISTICS, TYRE MANUFACTURER AND TYRE PRESSURE. THEREFORE IT IS HIGHLY RECOMMENDED TO PERFORM A FIELD TEST AS DESCRIBED IN SECTION **6.4 - TEST TO DETERMINE THE NUMBER OF WHEEL TURNS.**



IF SEEDS SHOW EXCESS TREATMENT POWDER, FLOW CAN BE REDUCED, CONSEQUENTLY A SECOND CONTROL IS RECOMMENDED AFTER SOWING APPROXIMATELY THREE HOPPERS.

6.4 COMPLEMENTARY CHECKING TESTS

6.4.1 Test to determine the number of wheel turns.



IF DIFFERENCES EXIST BETWEEN THE TEST AND THE ACTUAL DOSE DISTRIBUTION (DUE TO A VERY UNEVEN OR LIGHT SOIL, LOW PRESSURISED TYRES, ETC.), AN EXPERIMENTAL TEST CAN BE PERFORMED.

- 1- First of all, the distance (in metres) as shown in the table below should be marked on the field's ground using a tape measure.

WORKING WIDTH / ROWS	METRES TO COVER
400 / 32	62,5 metres
450 / 35	55,6 metres
500 / 40	50,0 metres
600 / 48	41,7 metres



Fig. 48

2- By means of a mark made previously on the tyre, count the number of turns performed in the covered distance.

A good place whereby which to count could be the wheel's mud scraper.



3- Next, the seed drill in working position should cover that distance.



By following these steps we can obtain the actual number of turns performed in the seed dosing test. By performing the test using this obtained number of turns, we know the actual kilograms per hectare that will be distributed by the machine.

6.4.2 SEED DOSING ADJUSTMENTS

When using high quality certified seeds it is not enough to know the weight in kilograms distributed by the machine, as the final result of the harvest will depend on the number of plants which eventually ripen.

Every plant requires a certain amount of land from which nutrients will be absorbed. Therefore, both a low or an excessive plant density can be detrimental. To determine how many kilograms per hectare are to be sown, you should know the number of plants per square metre that are going to be planted.

As a guidance, the recommended number of plants per square metre when sowing wheat or barley in unirrigated land can be found in following table:

AUTUMN	SPRING
Premature sowing, 200 plants per m ²	Premature sowing, 310 plants per m ²
Late sowing: 265 plants per m ²	Late sowing: 445 plants per m ²

Please note that in spring there is less tillering so more seeds should be sown.



MAQUINARIA AGRÍCOLA SOLÀ, S.L., RECOMMENDS THAT THE FARMER SEEKS PROFESSIONAL ADVICE ABOUT THIS SUBJECT FROM A TECHNICAL SOWING CENTRE.

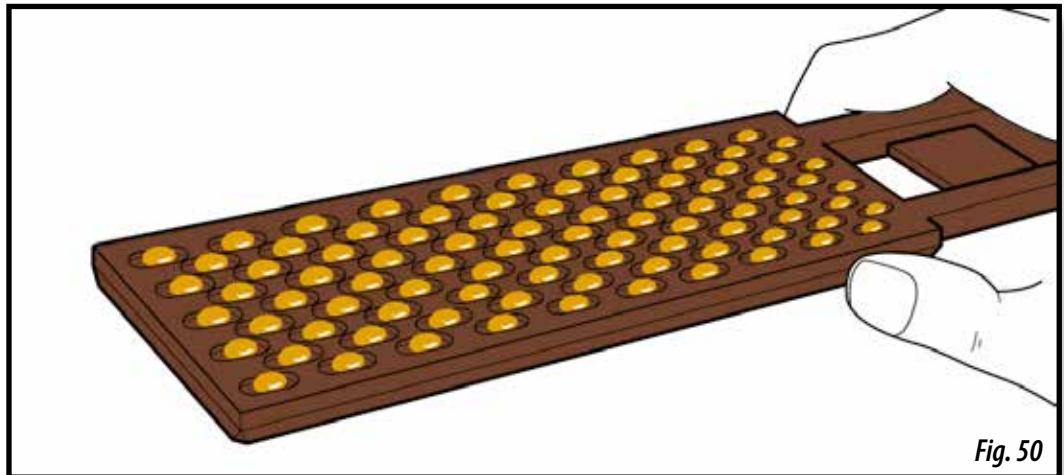


SEED DOSING SHOULD BE ADJUSTED TO EACH TERRAIN, DEPENDING ON THE: TEXTURE, FERTILIZING LEVEL, PLUVIOMETER RESULTS AND SOWING SEASON, GRAIN QUALITY, GERMINATING AND TILLERING POWER, ETC.

It should be taken into account that a seed's germinating power is variable and dependant on multiple factors. It can be experimentally calculated to be between 70% and 80%, which is practically equivalent to multiplying the number of grains to be sown by 1,43 or 1,25 respectively.

Next, we describe a practical method to determine the number of kilos per hectare to be distributed once we know how many plants per square metre we want to obtain.

- 1- Insert the "seed counter" (fig. 50) into the seed sack to fill it.
- 2- When taking the "seed counter" out, wipe the seed counter with your hand to make sure that there is only one grain per slot (100 grains in total).



- 3- Do the same 10 more times to obtain 1000 grains.
- 4- Weigh these 1000 grains with the precision scales.

We call the result the OPERATIVE WEIGHT (gr.).

Once we know how many seeds per square metre we are going to sow, we should adjust the following kilograms per hectare in the dosing control:

$$\text{kilograms per hectare} = (\text{grains per m}^2 \times \text{OPERATIVE WEIGHT}) / 100$$

7- ADJUSTING SEED PLANTING DEPTH



SEED DRILL SHOULD ALWAYS WORK HORIZONTALLY, WITH BOTH THE REAR AND FRONTAL TINE COULTERS EQUALLY PENETRATING THE LAND.



VERY IMPORTANT: THE TRACTOR'S CONTROLLER THAT MOVES THE FOLDING PARTS' CYLINDER MUST BE IN FLOTATION MODE, TO BETTER ADAPT TO THE GROUND.

7.1 ADJUSTING RATCHETS AND SPINDLES

There are two ratchets (fig. 51) in the machine's central body and two spindles in the side wheels (fig. 52). All of them have an adjusting scale to indicate their position.



THEIR ADJUSTMENT POSITIONS IN THE RESPECTIVE SCALES SHOULD BE THE SAME.

After adjustments, the control lever of the ratchet should be pulled back towards the inner part of the machine.



WHEN SOWING ON TILLED OR NON-COMPACT GROUND, TAKE THE PRECAUTION OF SELECTING ONE OR TWO POINTS LOWER IN THE ADJUSTING SCALE ON THE SIDE WHEELS IN ORDER TO AVOID SINKING INTO THE GROUND.

To adjust the side wheels, use the crank provided.

Steps to follow for the regulation of equipment:

- 1- To adjust the side wheels, use the crank provided.
- 2- Unlock using the securing knob (2, fig 53).
- 3- Turn the crank right or left as required (1, fig 53).
- 4- Use the scale (3, fig. 54) to reach the suitable height.



Fig. 53

Once the suitable height has been reached, secure it using the handle.



Fig. 54



Fig. 55

7.2 INCLINATION OF THE FOLDING PARTS

At the connection point between the folding parts and the central chassis, there are adjustable stops (two each side) which allow the inclination angle of the folding parts to change.

- 1- Loosen the 2 securing nuts.
- 2- Remove the 2 screws.
- 3- Place the stop in the desired position.
- 4- Insert the 2 screws and tighten them using the 2 securing nuts.



DURING NORMAL SOWING CONDITIONS, THE FOLDING PARTS SHOULD BE SLIGHTLY LOWER THAN USUAL TO ADAPT TO TERRAIN IRREGULARITIES.

IN VERY TILLED OR LOOSE LAND, AS WELL AS IN SOILS WITH HIGH HUMIDITY, THE FOLDING PARTS SHOULD BE LEVELLED TO STAY HORIZONTAL.



Fig. 56



Fig. 57

7.3 LEVELLER

The work of the leveller is essential to obtain a uniform seed planting depth.

The leveller can be adjusted by operating the spindles (1, fig. 57), which modify height and pressure of leveller's three sections.



EARTH DRAGGED BY THE LEVELLER SHOULD NOT PROTRUDE OVER THE PLATE.

To erase the seed drill's tracks, the height of the track erasers needs to be adjusted..



WHEN USING PNEUMATIC MACHINES, THE AIR PRESSURE ALONG WITH ABSENCE OF STOPS IN THE TINE COULTERS' SOWING SHOES WILL CAUSE A GREATER PLANTING DEPTH THAN ACHIEVED USING CONVENTIONAL MACHINES. AFTER SOME MINUTES WORKING, CHECK THAT THE PLANTING DEPTH IS ADEQUATE.



Fig. 58



Fig. 59

7.4 EQUIPMENTS WITH TINE COULTERS

Fixed tine coulters:

These tine coulters have a non-adjustable depth, but their pressure can be adjusted by using a nut placed in the lower part of the spring (1, fig. 60). Sowing depth will be determined by the adjustable central ratchets (see section 7.1).

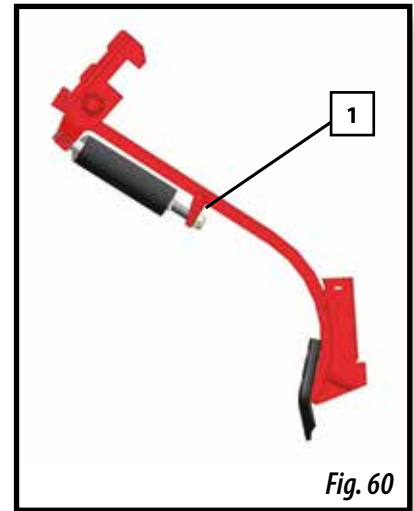


Fig. 60

Adjustable tine coulters:

These tine coulters are aligned with both the tractor's and the seed drill's wheels. They have 4 adjustable levels of depth (fig. 61) which allow the tine coulters to be lowered up to 4 cm:

- 1- Remove the safety pin.
- 2- Remove the bolt .
- 3- Place the tine coulter in the right position.
- 4- Place the bolt in the new position.
- 5- Replace the safety pin in the new position.

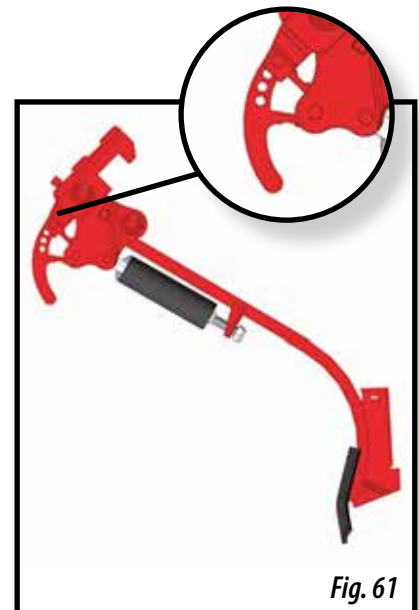


Fig. 61

7.5 EQUIPMENTS WITH DISC COULTERS

Disc coulters:

The pressure exerted onto the ground is adjustable by means of some spindles which raise or lower both the tine coulters placed in the folding parts and the ones placed in the central body independently.

Turn the spindle clockwise to increase the sowing depth.

Turn the spindle anticlockwise to decrease the sowing depth.

There is an optional equipment which consists of a wheel to adjust the sowing depth.

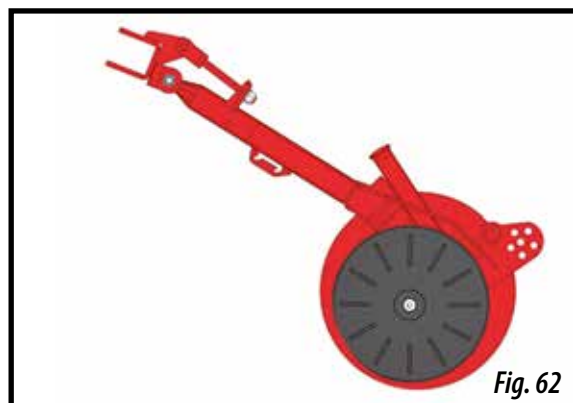


Fig. 62

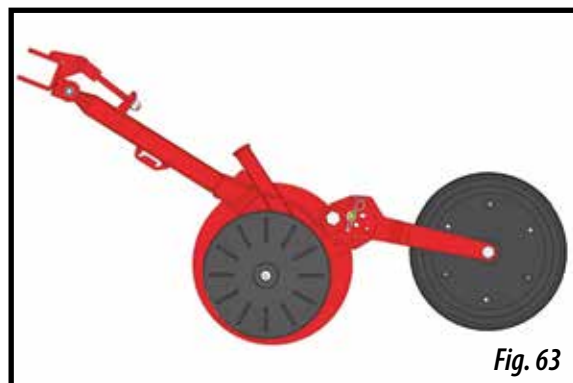


Fig. 63

Double disc coulters:

They have adjustable sowing depth and pressure. The wheel to control the sowing depth is adjusted by means of a cam (1, fig. 64), which provides 6 different positions:

- 1- Raise the cam (1, fig. 64).
- 2- Once raised, move it to the desired position and release it (1, fig. 64).

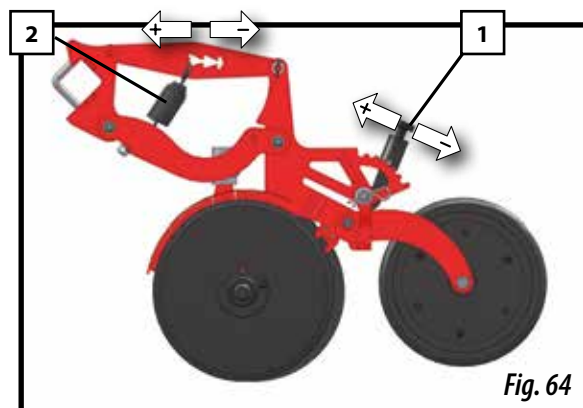


Fig. 64

Pressure is adjusted using a spring (2, fig. 64) which provides 3 different positions.

7.6 HARROW

Some adjustments can be performed on the harrow so that it can adapt to all types of ground:

HEIGHT ADJUSTMENT, by operating the lower nut (1, fig. 65).

PRESSURE ADJUSTMENT, by using the spindle's upper nut (2, fig. 65).

INCLINATION OF THE TINES, by operating the slide (3 and 4, fig. 65) which holds the tines' chassis.

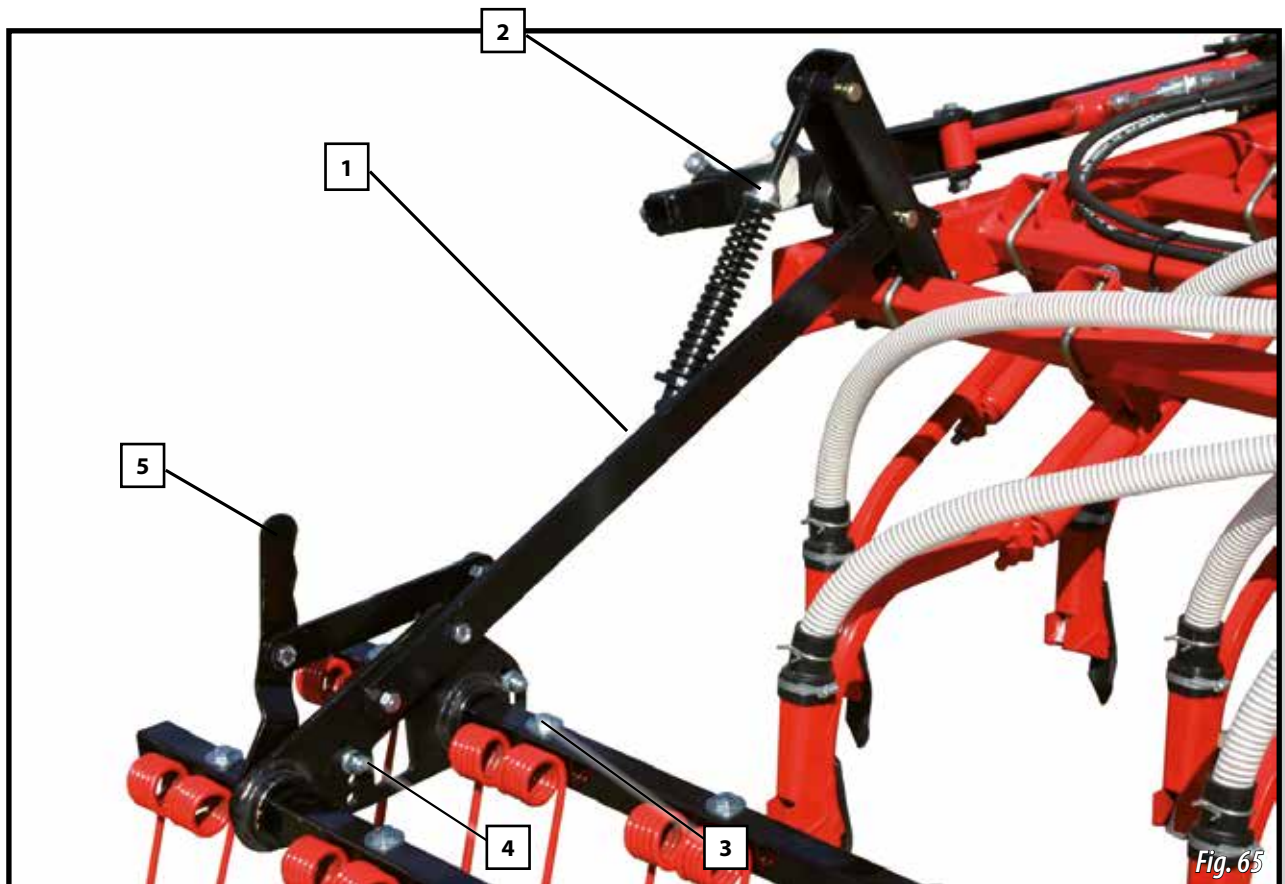


Fig. 65

To adjust harrow's inclination, follow these steps:

- 1- Loosen the nut (3, fig. 65).
- 2- Take out both the screw and the nut (4, fig. 65).
- 3- Pull back the bar (5, fig. 65) and place both the screw and the nut in the hole that is in the middle of the bar (4, fig. 65).

7.7 HYDRAULIC TRACK MARKERS

Track discs can be orientated to achieve the correct penetration angle and their supporters are extensible in order to be correctly adjusted.

LENGTH (horizontal spacing between disk and external element).

ORIENTATION (penetration angle).



Fig. 66



HIGH PRESSURE OIL MAY ESCAPE, PASS THROUGH THE SKIN AND INGRESS INTO THE BODY, CAUSING SERIOUS INJURIES. KEEP HYDRAULIC HOSE LINES IN GOOD CONDITION.



NEVER STAND UNDER THE TRACK DISCS OR WITHIN THEIR OPERATIONAL AREA.



IT IS ESSENTIAL TO FOLD THE TRACK MARKERS BEFORE FOLDING THE MACHINE FOR TRANSIT.

7.7.1 Adjusting track marker's LENGTH

To calculate the horizontal spacing between track discs and the last lateral tine coulters, use following formula:

$$B = \frac{A \times (\text{number of tine coulters} + 1) - C}{2}$$

A= distance between tine coulters

B= horizontal distance between track disc and the the last lateral tine coulters.

C= track width of the tractor.



PERFORM THE CALCULATION USING MEASUREMENTS IN CENTIMETRES.

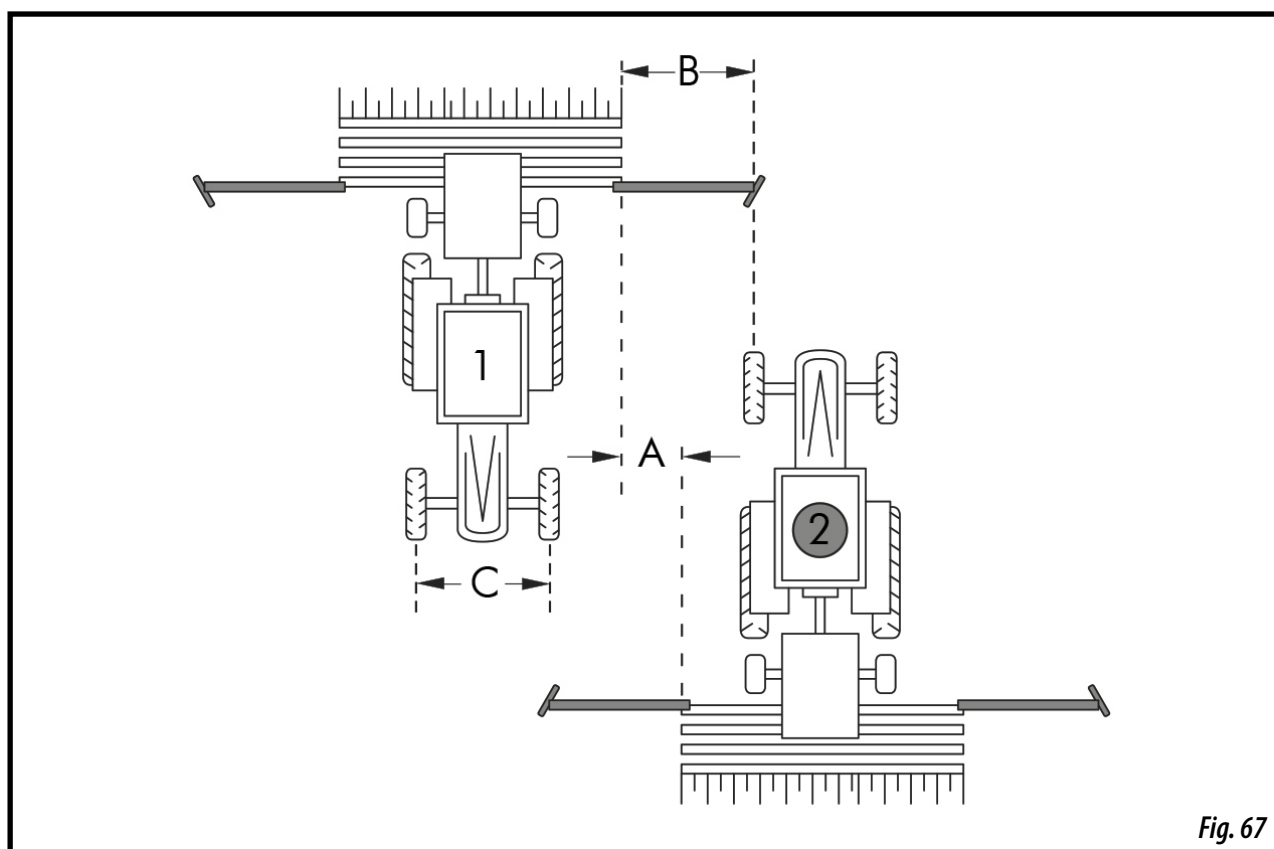


Fig. 67

To adjust the distance of the track disc, proceed as following:

- 1- Loosen the 2 nuts (1, fig. 68).
- 2- Place track disc at the distance B previously calculated.



B= DISTANCE BETWEEN THE TRACK DISC AND THE LAST LATERAL TINE COULTER.

- 3- Tight the 2 nuts (1, fig. 68) after finishing these operations.

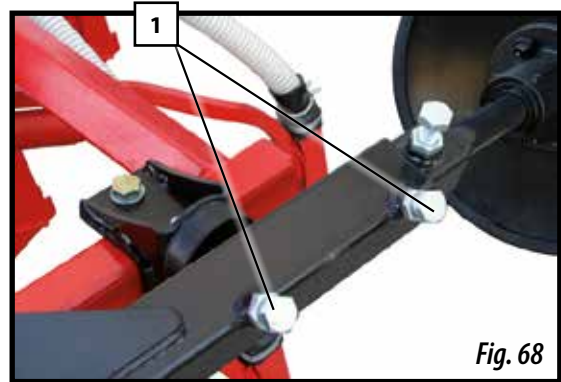


Fig. 68

7.7.2 Adjusting track marker's INCLINATION

To adjust the orientation of the track discs, proceed as following:

- 1- Loosen the nut (1, fig. 69)
- 2- Adjust track disc's inclination so the disc has the desirable impact on the ground.
- 3- Tight the nut (1, fig. 69) after finishing these operations.

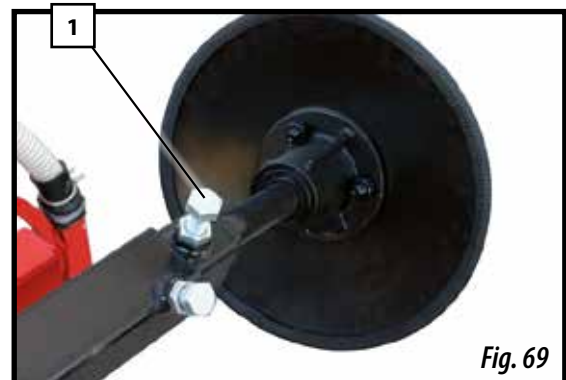


Fig. 69



IT IS NOT RECOMMENDED TO INCLINE THE TRACK DISCS TOO MUCH THUS PREVENTING SERIOUS DAMAGE TO THE MACHINE.

8- TYPES OF DISTRIBUTION

8.1 SEED DISTRIBUTION BY MECHANICAL FAN



TO ENSURE THAT SEEDS ARE SUPPLIED TO THE TINE COULTERS' SOWING SHOES, IT IS ESSENTIAL THAT THE FAN SPEED IS BETWEEN 4200 AND 4500 RPM. FOR THIS PURPOSE, THE PTO SHAFT MUST BE PLUGGED INTO THE 1000 RPM VENT.



IF THE TURNING SPEED IS LOWER THEN SOME SEEDS ARE LIKELY TO REMAIN IN THE SEED HOSES.



BEFORE THE WHEEL CONTROLLING THE DISTRIBUTOR'S TRANSMISSION STARTS TURNING, PLEASE ENSURE THAT THE FAN'S TURNING SPEED IS BETWEEN 4200 AND 4500. WHEN RAISING THE MACHINE, NEVER DECREASE THE FAN'S TURNING SPEED UNTIL THE WHEEL IS DETACHED FROM THE GROUND.



PLEASE NOTE THAT IF YOU WORK WITH THE MACHINE WHILE THE FAN IS OFF, SEEDS WILL BLOCK THE COLLECTING PIPE OF THE VENTURI INJECTOR SLUICE. IN CASE THIS HAPPENS, THE COLLECTOR SHOULD BE TAKEN OUT AND EMPTIED BEFORE USING THE SEED DRILL AGAIN.



IF THE FAN'S TURNING SPEED IS ABOVE OR BELOW 4200 AND 4500 RPM, THEN TURNING THE WHEEL THAT CONTROLS THE DISTRIBUTOR'S TRANSMISSION CAN CAUSE A BLOCKAGE INSIDE THE SEED HOSES.

8.2 SEED DISTRIBUTION BY HYDRAULIC FAN

MACHINE TYPE	HYDRAULIC MOTOR		OIL SUPPLY		
	ABSORBING CAPACITY (cm ³)	SPEED (rpm)	MINIMUM OUPUT PRESSURE (bares)	MAXIMUM RETURN PRESSURE (bares)	OIL FLOW (L/min)
400 / 450	8	4.200	130	10	36
500 / 600	8	4.500	160	10	40

CONNECTIONS

Connect the fan's small hydraulic hose line to a pressurised tractor control unit. The fan's 1/2" hydraulic hose line should be connected to a depressurised return tractor control unit.



IN THE RETURN LINE THE PRESSURE MUST BE A MAXIMUM OF 15 BAR. A HIGHER PRESSURE CAN CAUSE DAMAGE TO THE TRACTOR'S MOTOR.

ADJUSTMENT

The fan's rpm is adjusted by regulating the tractor control unit.

The fan's turning speed must be adjusted to 4200 rpm or to 4500 rpm as shown in table above.



IF OIL IS OVERHEATED DUE TO AN EXCESSIVE FLOW OR DUE TO LOW OIL SUPPLY, THEN AN ADDITIONAL OIL TANK WILL BE REQUIRED.



IF THE FLOW OF THE TRACTOR'S HYDRAULIC PUMP IS NOT HIGH ENOUGH IT WILL NOT BE ABLE TO POWER THE FAN'S MOTOR OR ACTIVATE THE OTHER ELEMENTS REQUIRED. IN THIS CASE AUXILIARY EQUIPMENT CONSISTING OF A HYDRAULIC PUMP FITTED ON THE TRACTOR'S UNIVERSAL JOINT SHAFT THAT DRIVES THE FAN'S HYDRAULIC MOTOR AS WELL AS A REFRIGERATED OIL TANK WILL BE REQUIRED.

9- OPTIONAL EQUIPMENT

Front cultivator.



Fig. 72

Seed hoses closing system in folding parts / tramlines



Fig. 73

Triple smooth or tines leveller.



Fig. 74

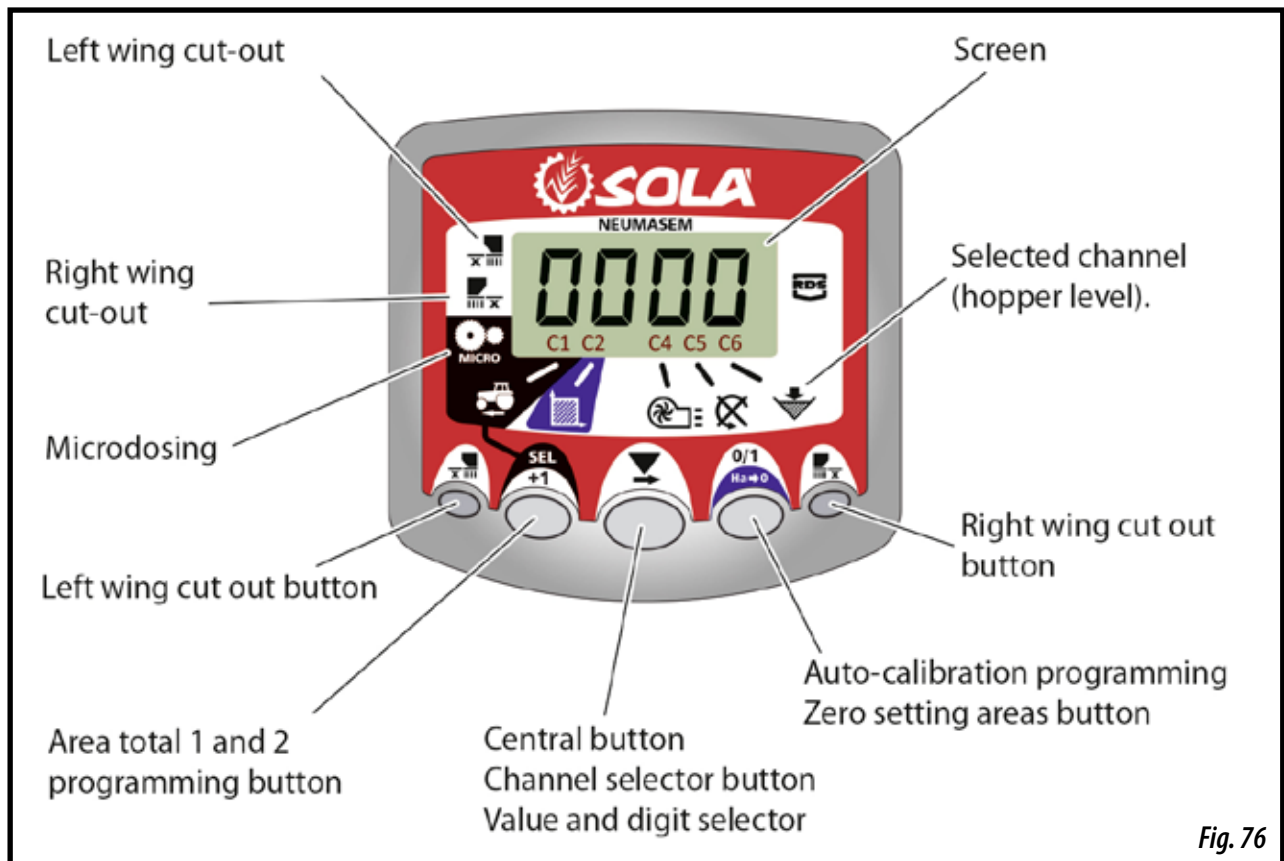
Hoppers and dosing system kit for microfertilizer.



Fig. 75

10- ELECTRONICAL CONTROLLER

10.1 FRONT PANEL DESCRIPTION



The monitor provided comes programmed especially for your model of seed drill. The user will only need to observe the displayed values and no extra programming is required.

The monitor shows 6 different channels or readings, as well as 3 different arrows showing the states.

C1 shows forward speed in m/sec.

C2 shows two different hectares (for example on partial and one total hectare).

C3 not in use.

C4 shows the fan's rpm.

C5 shows the turning speed of the distributor's axle's in rpm.

C6 shows if the hopper's seed level is too low.

By default the forward movement speed is displayed on the monitor. When some abnormal readings are shown, the screen will display "**Alarm**" intermitently, the alarm will sound and the corresponding malfunction channel will be activated. The alarm will not stop until the malfunction is fixed.

To display a desired reading, press the central button and scroll to the required channel. After 10 seconds, the reading will change back to C1 again.

10.2 FORWARD SPEED – C1



Select a channel by using the central button. The alarm is activated when the speed is under 2.6 km/h and can be turned off using programming mode 2.

Calibrating the speed sensor

Theoretical calibration is achieved by entering a calibration factor in programming mode 2, as indicated in the following table.

MODEL	4M	4.5M	5M	6M
CALIBRATION FACTOR	1,818	1,574	1,449	1,258




Selecting speed channel (C1)

- 1- Press  to switch to mode 1. While holding the button, press the central button  to modify the digit.
- 2- Hold the central button for some seconds to modify the flickering digit.
- 3- When the buttons are released, the monitor will return to its normal state.



PLEASE NOTE: THE IMPULSE NUMBER AUTO CALIBRATION MODE IS MORE ACCURATE AND A FIELD TEST PERFORMANCE IS REQUIRED.


Auto-calibrating the speed sensor

- 1- Mark 100 metres.
- 2- Select channel 1 (speed).
- 3- Press  and hold it while pressing . The screen will display "Auto". Release it.
- 4- Cover the 100 marked metres. The monitor will count the sensor's impulses.
- 5- After finishing, press  again. By doing this, the monitor retains the impulse number in the memory.



10.3 TOTAL AREA / SEED DRILL WIDTH – C2

Two independent total areas can be marked.


Displaying the total area

- 1- Select channel 2.
- 2- Press  to display total areas 1 and 2 on the screen. First, "tot. 1" will be displayed and immediately afterwards the value in Ha will be shown.


Setting to zero the total areas


- 1- Select channel 2.
- 2- Press  to display.
- 3- Press and hold  for more than 5 seconds..

Programming the working width

- 1- Select channel 2 of the area.
- 2- Press and hold  for more than 5 seconds until the width value is displayed and, without releasing it, press the central button to modify the flickering digit.
- 3- Press and hold the flickering digit for more than 5 seconds to modify its value.
- 4- Release all buttons to return to the normal state.

Working in micro mode

When working with the distributor in the micro-dosing mode (for small hoppers and minimal doses), press and hold  button for more than 3 seconds until the arrow indicating the micro mode is displayed. In this situation, the monitor will keep the speed and actual real working area.

Press and hold  for more than 5 seconds until the indicating arrow disappears to resume normal position.

10.4 PANEL DE CONTROL CON MARCADOR DE CAMINOS (OPTIONAL)

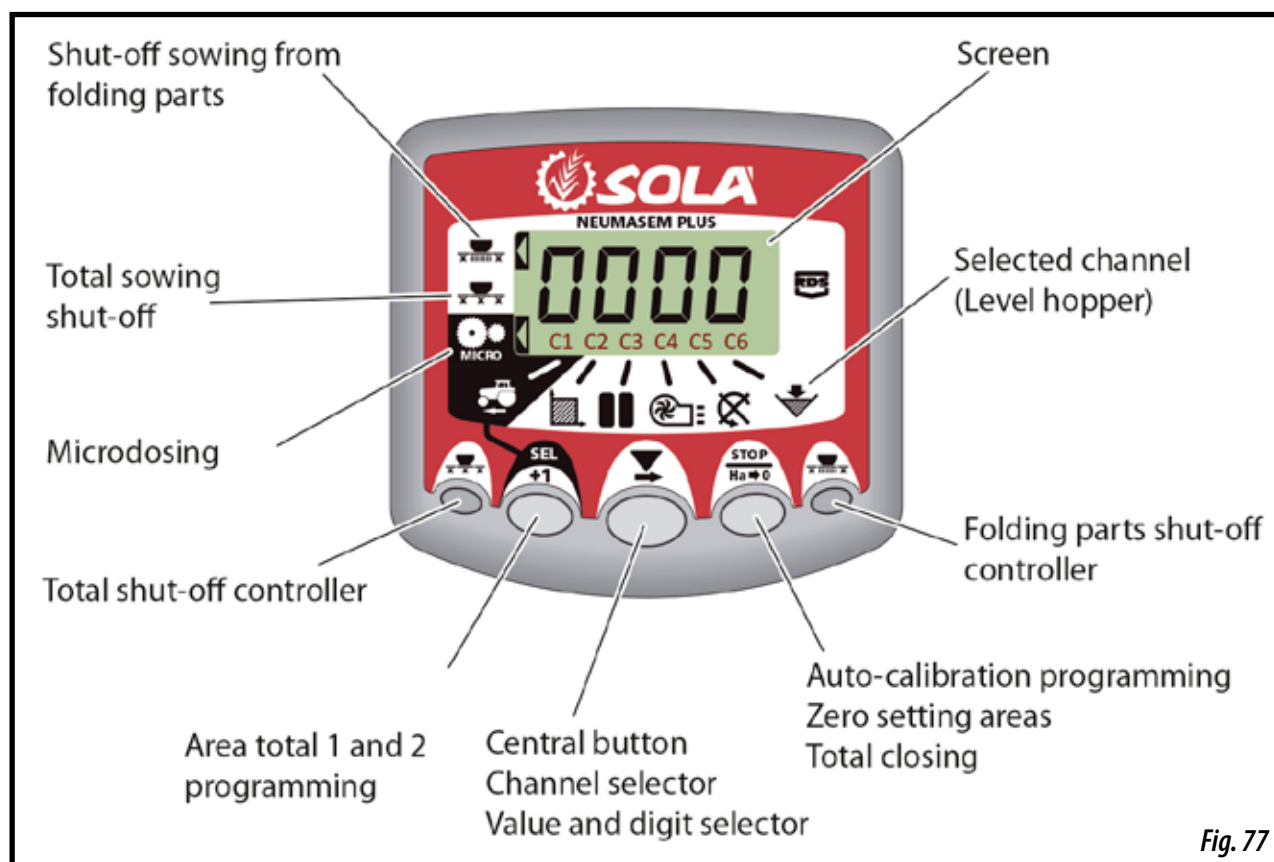


Fig. 77

The monitor provided comes programmed especially for your model of seed drill. The user will only need to observe the displayed values and no extra programming is required.

The monitor shows 6 different channels or readings, as well as 3 different arrows showing the states.

C1 shows forward speed in m/sec.

C2 shows two different hectares (for example on partial and one total hectare).


C3 tramlining.

C4 shows the fan's rpm.

C5 shows the turning speed of the distributor's axle's in rpm.

C6 shows if the hopper's seed level is too low.


10.4.1 TRAMLINING - C3

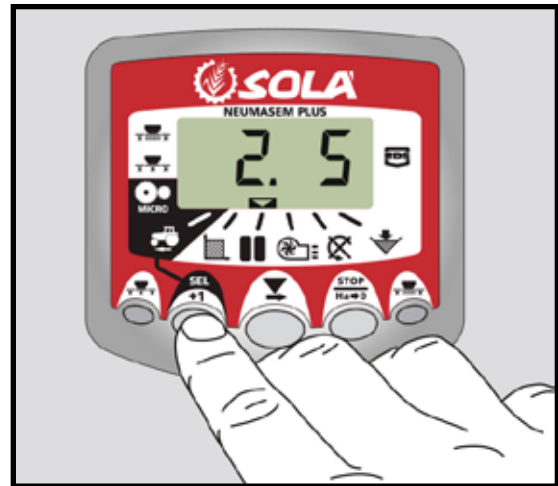
The displays defaults to the  channels after 10 seconds (unless the Area Total was selected).

There are five systems of tramlining - symmetric, asymmetric left, asymmetric right, 10 bout and 18 bout. The tramline bout is programmable from 1 to 15 in symmetric, asymmetric left and asymmetric right sequences.


Selection of asymmetric tramlining is denoted by a decimal point on the display between the current bout number on the left and the tramline bout number on the right. Left or right asymmetric tramlining is selected in the programming mode.

Manually advance the bout number


Press  to advance the current bout number by 1.

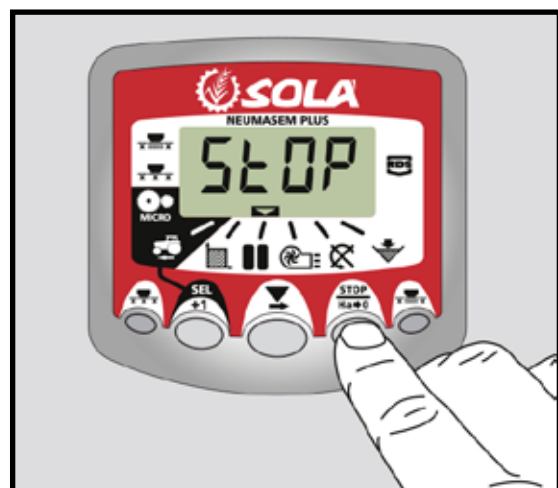


Hold the bout number

Press  to "hold" the current bout when the drill goes out of work.

The display will flash '**STOP**'.

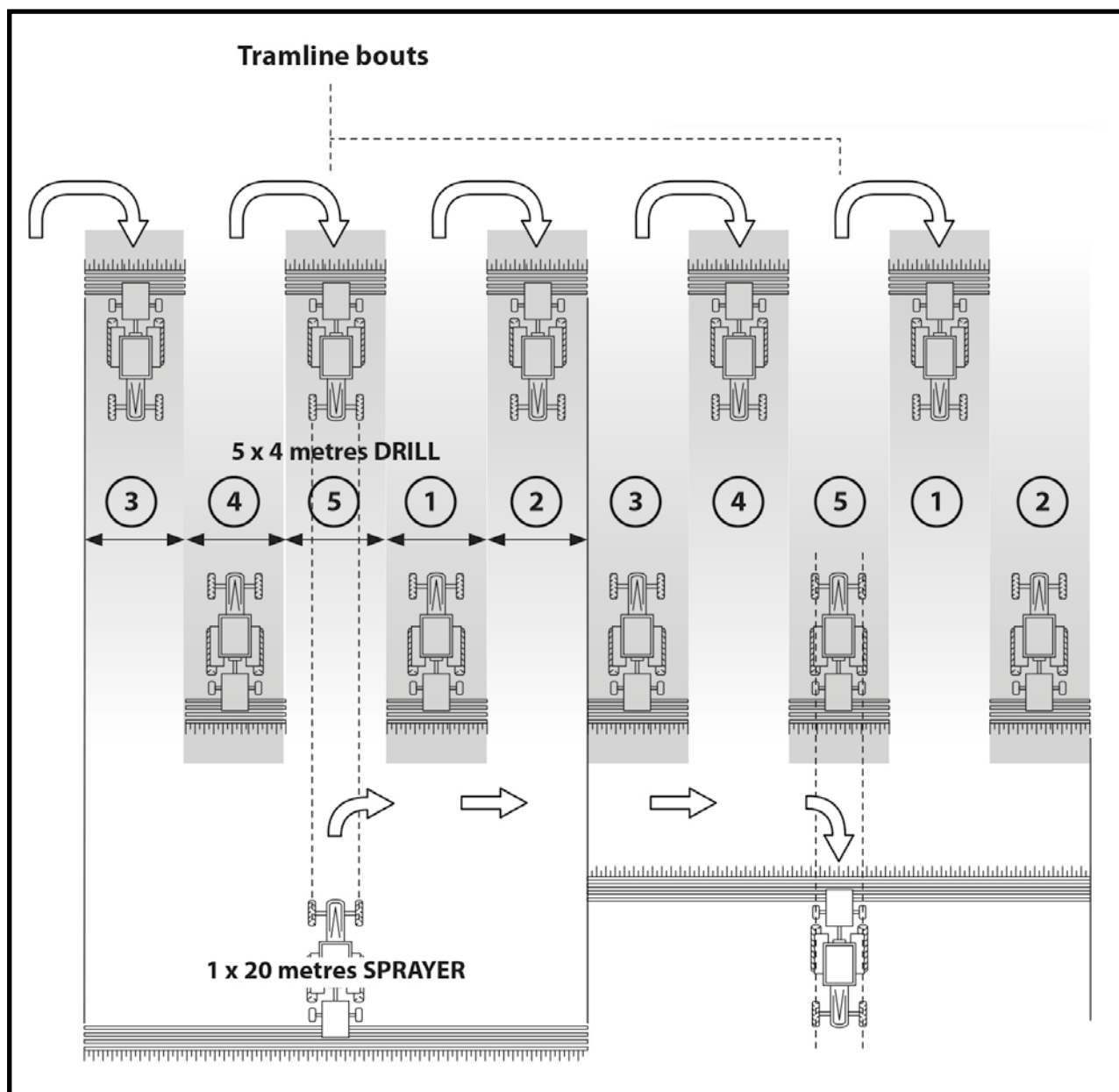
Press  againsts to resume the normal bout sequence.



Symmetric Tramlining Sequence

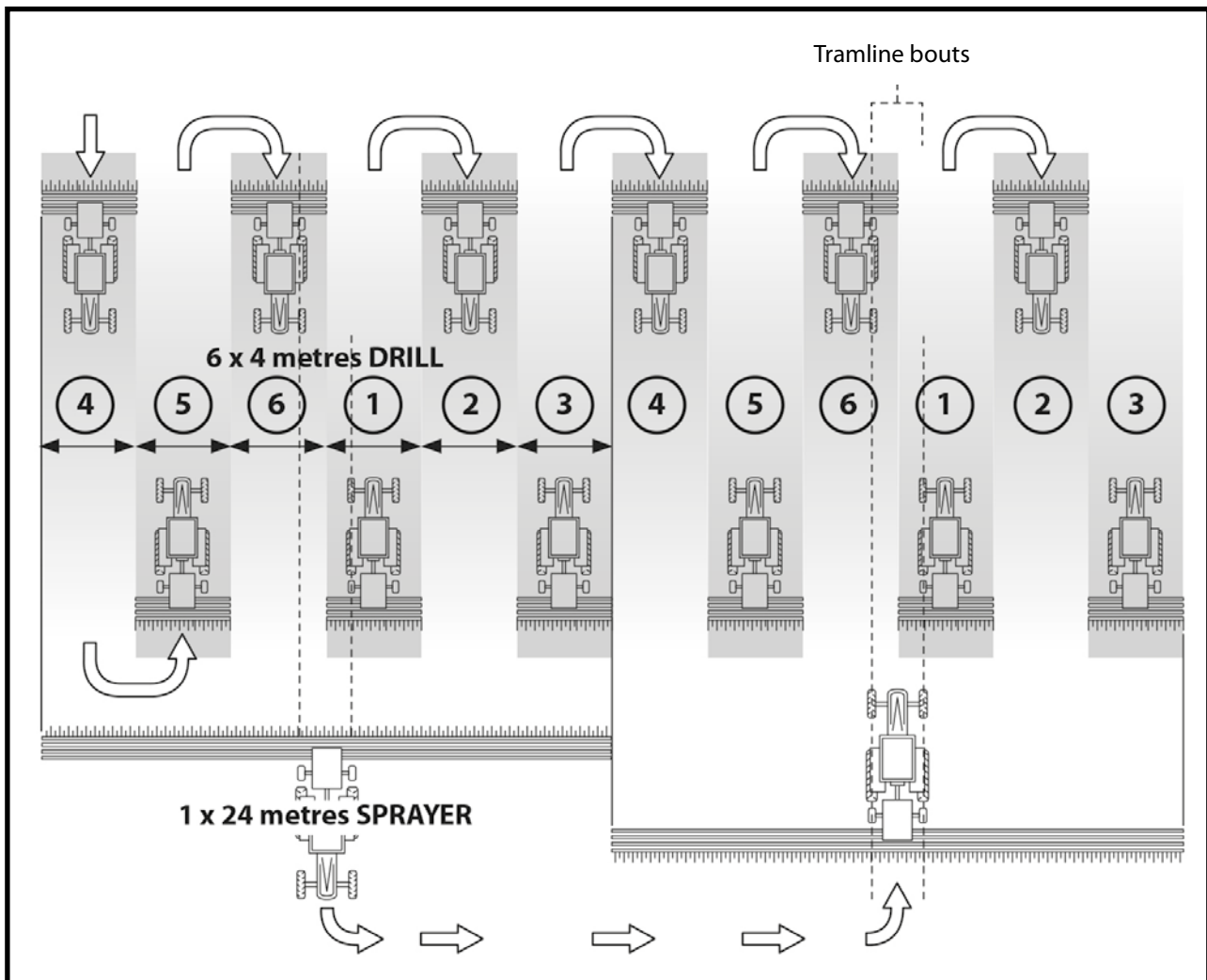
2+2 seed spouts are closed during the tramline bout.

The instrument will beep once the beginning of the tramline bout, and the display will continue flashing for the duration of the bout.



Asymmetric Left Tramlining Sequence

Two seed spouts are closed on the left hand side of the drill on the tramline bout. The instrument will beep once the beginning of each tramline bout, and the display will continue flashing for the duration of the bout.

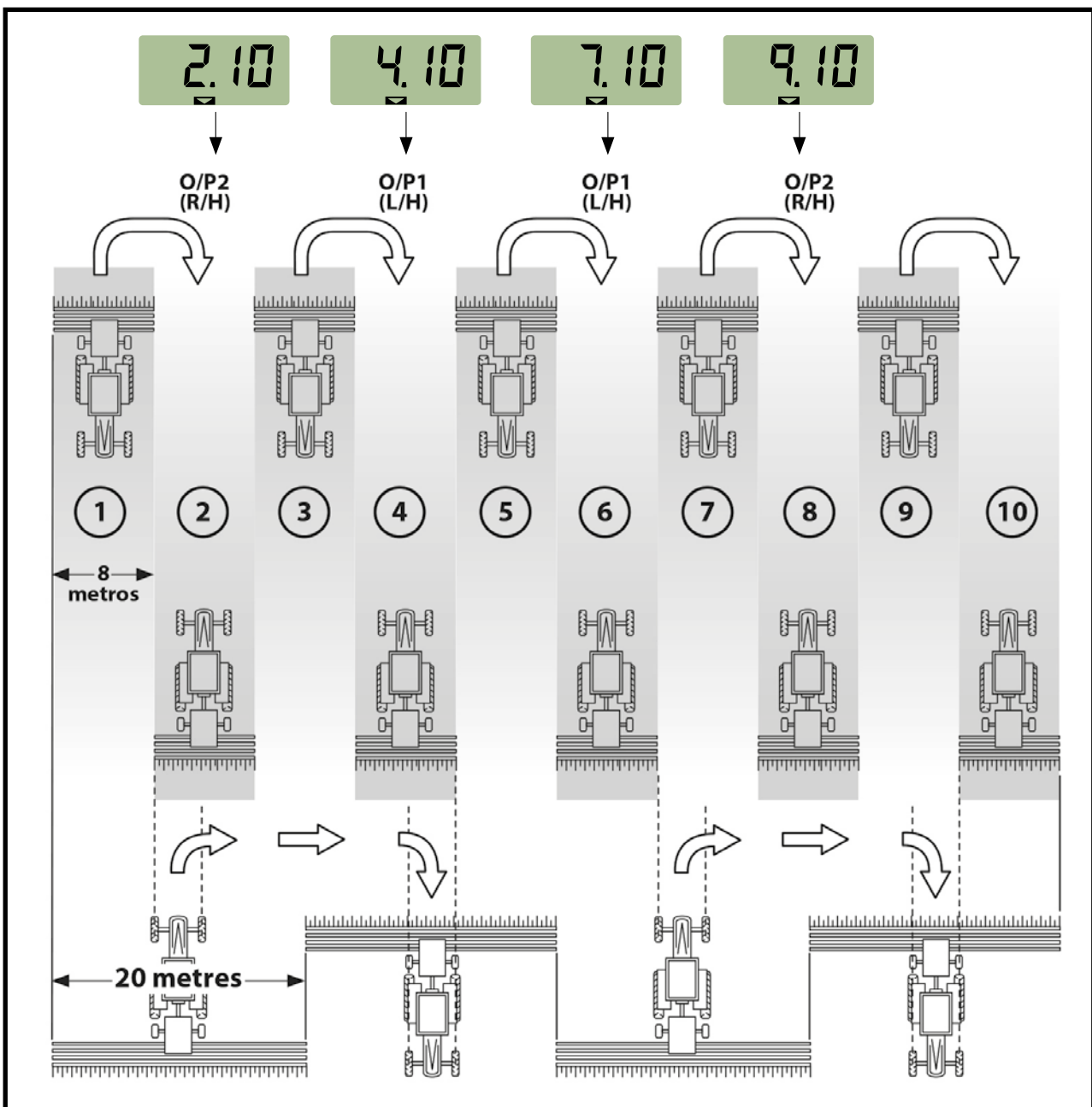


10 Bout Tramlining Sequence

For use with 4 metre drill/10 metre sprayer, or 8 metre drill/20 metre sprayer combinations. (2 x 2 left hand seed spouts are closed on bouts 4 and 7, and 2 x 2 right hand seed spouts closed on bouts 2 and 9). Starting on bout 1 requires turning RIGHT at the end of the first bout.



NOTE TO TURN LEFT AT THE END OF THE FIRST BOUT, ADVANCE THE BOUT NUMBER TO 6 BEFORE COMMENCING DRILLING.



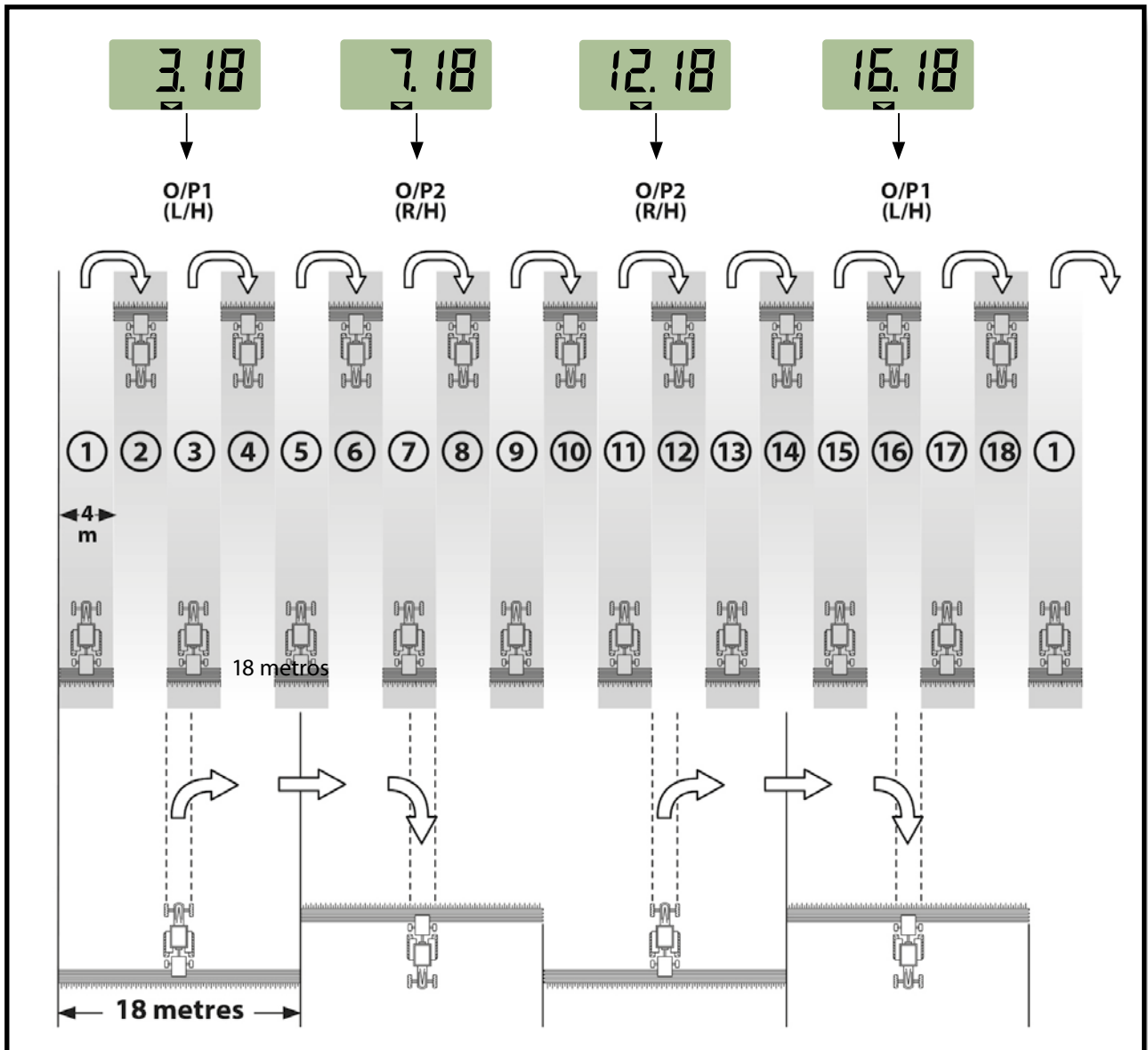
18 Bout Tramlining Sequence

For use with 4 metre drill and an 18 metre sprayer. (2 x 2 left hand seed spouts are closed on bouts 3 and 16, and 2 x 2 right hand seed spouts closed on bouts 7 and 12). Starting on bout 1 requires turning RIGHT at the end of the first bout.



NOTE: TO TURN LEFT AT THE END OF THE FIRST BOUT, ADVANCE THE BOUT NUMBER TO 10 BEFORE COMMENCING DRILLING.

The instrument will beep once the beginning of each tramline bout and the display will flash for the duration of the tramline bout.



Selecting the Tramline Sequence

1- Select the  channel.

2- Hold  to enter programme mode 1.

After 5 seconds the first two digits flash, indicating the tramline sequence currently set:



'SY' = Symmetric

'AL' = Asymmetric Left


'Ar' = Asymmetric Right

'AS' = Special Asymmetric sequence
e.g. 10 bout and 18 bout.




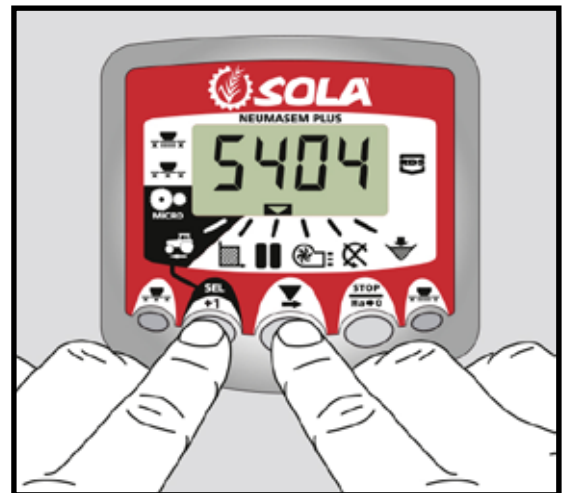
3- Continue holding the  button and press and HOLD the  button to select the required sequence.

Setting the Tramline Bout

1- PRESS and RELEASE the  button to toggle between the tramline sequence and tramline bout number display.


The 3rd and 4th digits flash indicating the tramline bout number currently set.

2- PRESS and RELEASE the  button to cycle the tramline bout from 1 to 15.



10.5 FAN RPM / FAN ALARMS – C4



To display the fan's speed in rpm

Select channel 4 using the central button .

Fan alarms

The fan's minimum turning speed can be programmed.
Under 2 Km/h these alarms will deactivate.






Fan's minimum speed

- 1- Select channel 4.
- 2- Press and hold  button for more than 5 seconds.
- 3- Hold it and press the  to change value and digits as explained in former cases.
Default speed is 3800 rpm.
- 4- Release all buttons to resume the normal position.


Selecting the fan's number of impulses per revolution (default value is set to 2).

PLEASE NOTE

FAN'S NUMBER OF IMPULSES PER REVOLUTION SHOULD ALWAYS BE 2. ONLY USE THIS PROGRAMMING MODE IN CASE OF MALFUNCTION.


- 1- TO SELECT PROGRAMMING MODE 2, PRESS  (MONITOR NEUMASEM) OR  (MONITOR NEUMASEM PLUS) BUTTON WHILE SWITCHING ON THE SCREEN USING REAR SWITCH.
- 2- PRESS  (MONITOR NEUMASEM) OR  (MONITOR NEUMASEM PLUS) TO CHANGE THE CHANNEL AND SELECT CHANNEL 4 (FAN).
- 3- PRESS AND HOLD THE  TO MODIFY THE FLICKERING DIGIT (IT SHOULD ALWAYS BE 2).
- 4- RELEASE THE BUTTON TO CHANGE BACK TO NORMAL POSITION.

10.6 SEED SHAFT RPM – C5

Select channel 5 using the central button .

40 seconds after the seed shaft stops turning, an alarm beeps 5 times consecutively. If it remains still, this alarm will repeat every 30 seconds.



To turn off the beeping, switch off the screen and switch it on again. This alarm will deactivate under 2 Km/h.

The seed shaft's alarm can be deactivated by pressing the button  for more than 5 seconds on the selected channel. The screen will display "Off". In this situation the alarm will not be activated even if the screen is switched off and on again.

10.7 HOPPER LOW LEVEL ALARM – C6


When the seed level is below the sensor, an alarm is activated and beeps 5 times consecutively. In this case the screen will display «**ALA**».


Activate and deactivate hopper level alarm

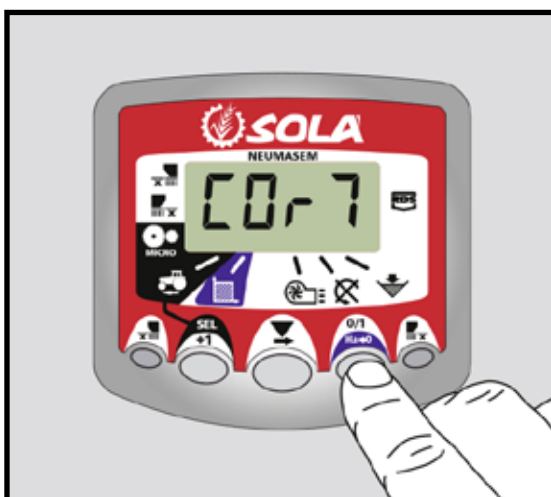
- 1- Select channel 6 using the central button .
- 2- Press and hold  button and...
- 3- Press the central button to select "0" (alarm is off) or "1" (alarm is on).
- 4- Release the buttons to change back to the normal position.



10.8 TOTAL SOWING SHUT-OFF (OPTIONAL)

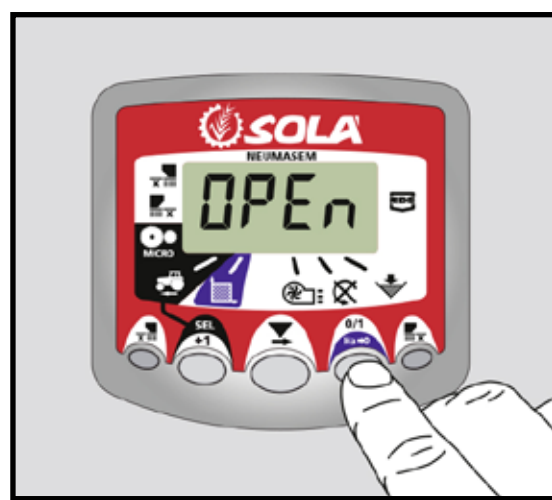
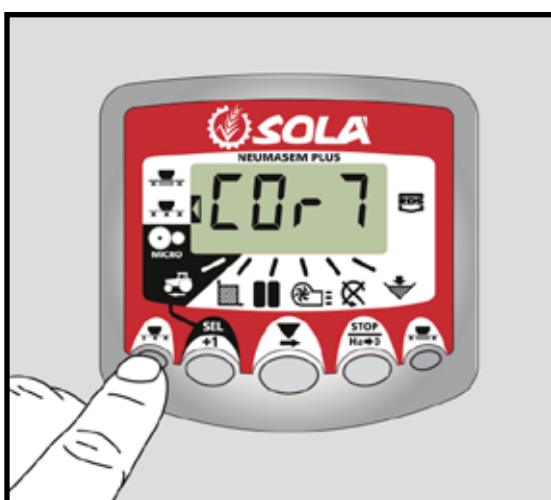
NEUMASEM electronic controller

Press  to **lock** the seed's exit. The screen will display the flickering text «**CORT**».

Press  again to **unlock** the seed's exit and return to a normal working position. The screen will display the flickering text «**OPEN**».


**NEUMASEM PLUS electronic controller**

Press  , to **lock** the seed's exit. The screen will display the indicating arrow and the text "CORT" will be displayed every 2 seconds «**CORT**». Press  again to **unlock** the seed's exit and return to a normal working position. The screen will display the flickering text «**OPEN**».

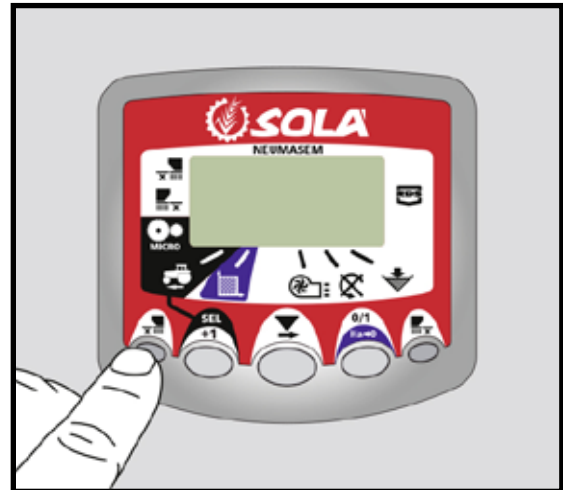
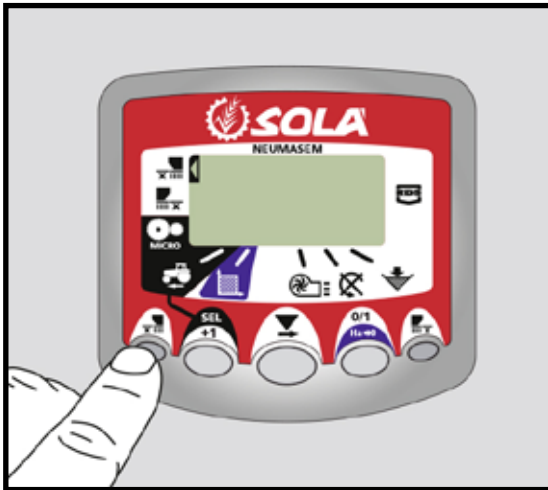


10.9 SHUT-OFF SOWING FROM FOLDING PARTS (OPTIONAL)



NEUMASEM electronic controller

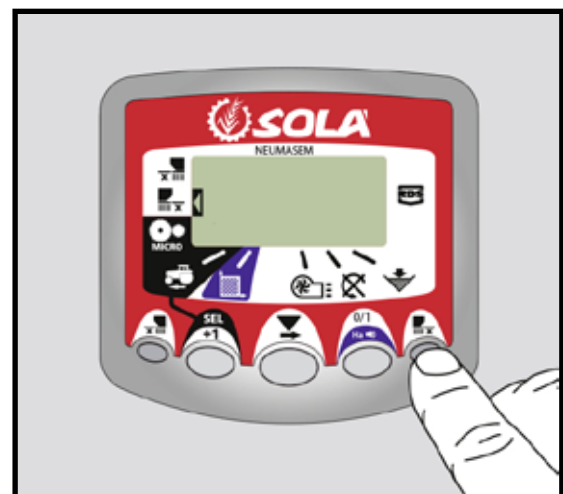
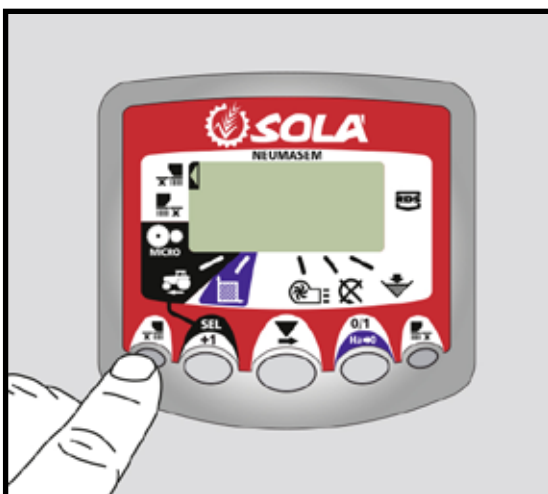
Press  to **lock** the seed's exit from the arms on the folding parts (exits on the left and right sides of the folding parts will lock). The screen will display the indicating arrow.



Press  again to **unlock** the seed's exit and change back to normal position.

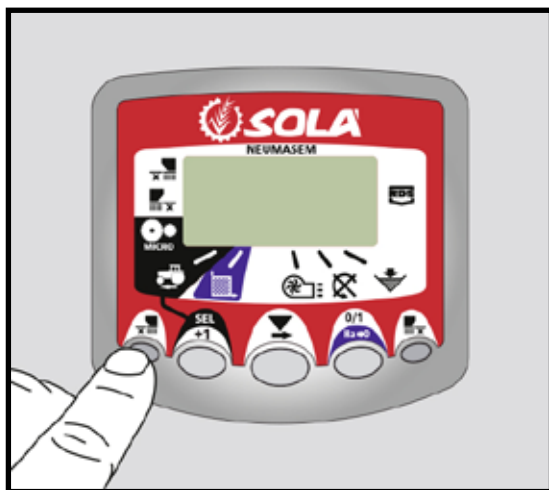


NEUMASEM electronic controller for independent folding parts


To **lock** the seed's exit from the arms on the folding parts, press  (to **lock** the left side in the driving direction) or  (to **lock** the right side in the driving direction). The screen will display the indicating arrow.




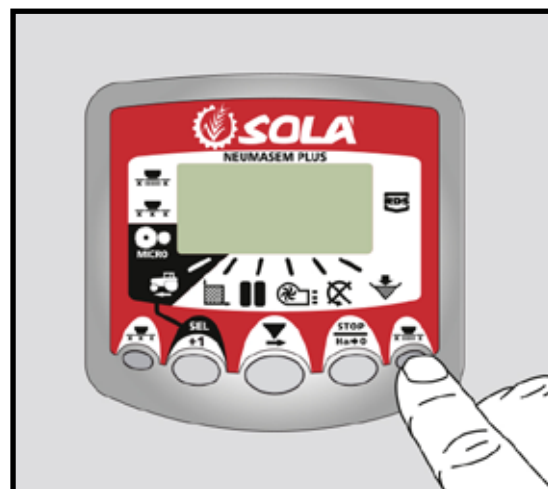
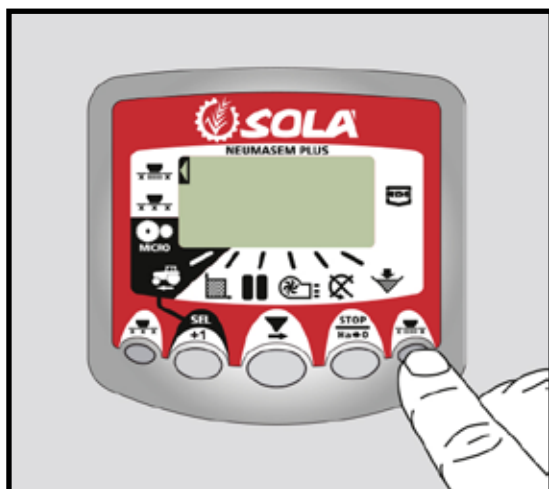
Press  or  again to **unlock** the seed's exit and change back to normal position.



NEUMASEM PLUS electronic controller

Press  to **lock** the seed's exit from the arms on the folding parts. The screen will display an arrow indicating the selected mode.

Press  again to **unlock** the seed's exit and change back to normal position.

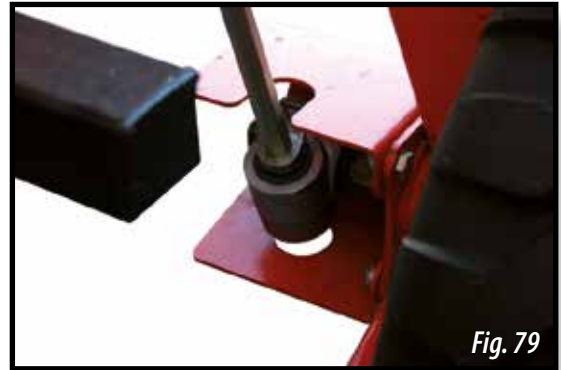


11- MAINTENANCE

11.1 LUBRICATION

The following parts should be lubricated with SOLID CALCIUM GREASE.

- All the joints of the cardan shaft should be greased, **daily**.
- The joints of the folding parts should be greased, **every 100 Ha.**
- Both the wheel's and transmission's bushings should be, **every 400 Ha.**



- Transmission chain should be greased, **once a year.**



AFTER FINISHING A SOWING SEASON, ALL CHAINS AND JOINTS SHOULD BE CLEANED AND GREASED.



11.2 TYRES PRESSURE

Indicated pressures are provided by the manufacturer, at maximum load.

In general use and especially when working on irregularly tilled terrains, it is recommended to use a slightly lower pressure to absorb the ground's irregularities and get a higher regularity in sowing.

Tyres:

340/55-16 — 3,75 kg/cm²

Side wheels:

18x7"- 8" 14PR — 9 kg/cm²



Fig. 82



Fig. 83

11.3 SCREWS

All the screws used in the seed drill are size 8.8.



Fig. 84



AFTER WORKING FOR SOME HOURS, ALL SCREWS SHOULD BE CHECKED AND TIGHTENED.

11.4 DISTRIBUTOR HEAD AND SEED HOSES

Before starting work, check that the distributor head and the seed hoses are not blocked. To perform the check, follow these steps:

- 1- Make sure that the fan is on and the hopper is full. Use then the crank provided to turn the wheel controlling the distributor's transmission a few times.
- 2- Check that the seeds are coming out from every tine coultter.



IF ANY ABNOMALITY SHOWS UP, DO AS FOLLOWS:

- 1- STOP the machine so that the fan is off.
- 2- Take apart the cap of the distributor's head.
- 3- Check that there are no foreign bodies inside.
- 4- Remove foreign bodies in the case that they exist.

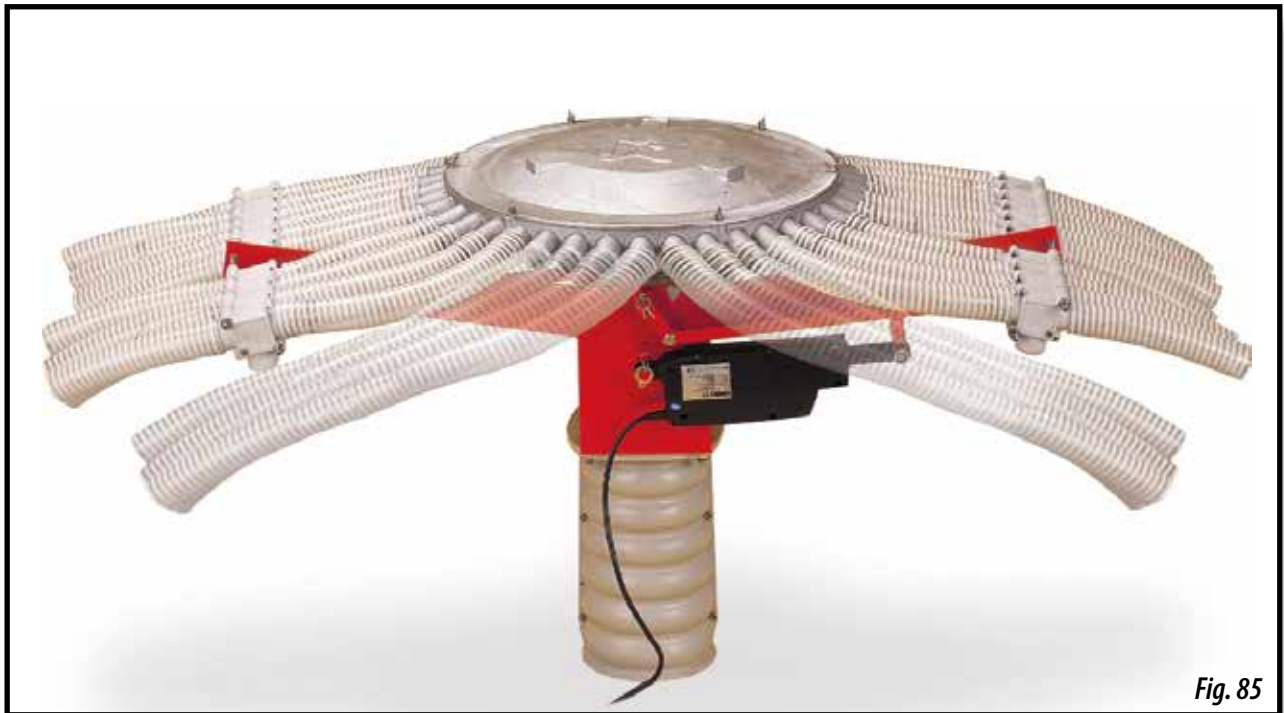


Fig. 85

12- DOSAGE TABLE



INDICATED QUANTITIES SHOWN IN THE FOLLOWING TABLE SHOULD BE CONSIDERED FOR GUIDANCE ONLY, FORESEEN FLOWS CAN VARY DEPENDING ON THE ACCIDENTAL PRESENCE OF DISINFECTING PRODUCTS, UNEVEN SEED SIZE, DENSITY, HUMIDITY, ETC.



FOR PRECISION SOWING, FOLLOW DOSING PROCESS DESCRIBED IN SECTION 6 OF THIS MANUAL.

	WHEAT	RYE	BARLEY	OATS	BEANS	PEAS	LUPIN	CAROB	CORN	CORN		RAPE	FIELD CLOVER	GRASS	TURNIPS					
Spec. weighth (kg/l)	0,77	0,74	0,68	0,5	0,85	0,81	0,76	0,83	0,79	0,36	Spec. weighth (kg/l)	0,65	0,77	0,39	0,7					
Adj. dosing scale value	Regular seeds kg/ha (Bolt in position N)										Adj. dosing scale value	Fine seeds kg/ha (Bolt in position F)								
10	31	31	29,8	22	21	19,8	26	29,8	7,44	-	2,5	1,98	0,99	2,11	1,07	-	-	2,36	1,12	
15	47,1	45,9	44,6	32	38,4	37,2	42,2	47,1	22,3	17,4	5	4,22	2,11	4,84	2,36	-	-	4,22	2,23	
20	64,5	62	59,5	43	57	54,6	57	64,5	43,4	23,6	7,5	6,32	3,1	7,94	3,97	2,6	1,3	6,94	3,43	
25	79,5	76,9	73,2	53	73,2	71,9	73,2	83,1	64,5	31	10	8,43	4,22	11,2	5,58	4,84	2,36	9,3	4,65	
30	96,7	93	88	66	90,5	90,5	89,3	100	85,6	38,4	12,5	10,5	5,33	14,3	7,07	6,7	3,35	11,7	5,83	
35	114	109	103	76	108	109	105	118	107	45,9	15	12,8	6,32	16,7	8,43	8,56	4,28	13,9	6,94	
40	130	124	118	87	125	126	120	135	128	-	17,5	14,8	7,32	19,7	9,8	10,4	5,21	16,2	8,13	
45	146	140	133	98	143	144	136	154	145	-	20	16,9	8,43	22,3	11,2	12,3	6,08	18,6	9,3	
50	161	156	148	109	160	161	153	171	162	-	22,5	19,1	9,55	24,7	12,3	13,9	6,94	20	9,99	
55	179	171	161	120	177	180	169	188	180	-	25	21,2	10,5	25,5	12,8	15,1	7,56	21,4	10,7	
60	195	186	177	131	195	198	184	206	197	-		N	F	N	F	N	F	N	F	
65	212	202	191	143	212	216	201	224	215	-	N= regular speed F= microdosing									
70	229	218	206	154	229	233	217	242	232	-	PREVIOUS FLOW TEST									
75	246	234	221	165	247	250	233	259	348	-	Seed drill		Turns							
80	262	250	234	176	263	268	249	277	265	-	400	26,5								
85	277	267	249	186	280	288	265	294	283	-	450	23,5								
90	294	280	264	197	298	305	280	312	300	-	500	21								
95	311	296	279	208	314	322	298	330	317	-	600	17,6								
100	327	312	294	219	331	340	312	347	335	-	Number of turns performed to the small wheel to simulate the sowing of 250m ² . Flow in kg/ha is obtained by multiplying collected weighth by 40.									
105	343	329	309	231	347	358	329	366	353	-										
110	360	345	324	242	366	376	345	383	370	-										

TABLE FOR **NS PLUS 2311** WITH FLOTATION WHEELS **340-50.16**

When the amounts to be sown are very small (dosing scale value <= 10), a more uniform sowing can be obtained using microdosing, even in the case of regular seeds (cereal and big seeds).

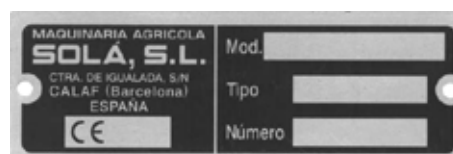
13- SPARE PARTS

The terms **RIGHT, LEFT, FRONT and REAR** refer to the machine in its starting direction (fig. 39).

When guidance describes parts that have a matching pair (symmetrical handles, wheels etc) only one will be demonstrated in the drawings shown. Please search for the distinguishing reference in the spare parts list.



The number and type of the machine can be found on the machine's **IDENTIFICATION PLATE**, on the front part of the frame.



BE CAREFUL WHEN MAINTAINING THE SEED DRILL, SHARP EDGES CAN CAUSE INJURY.

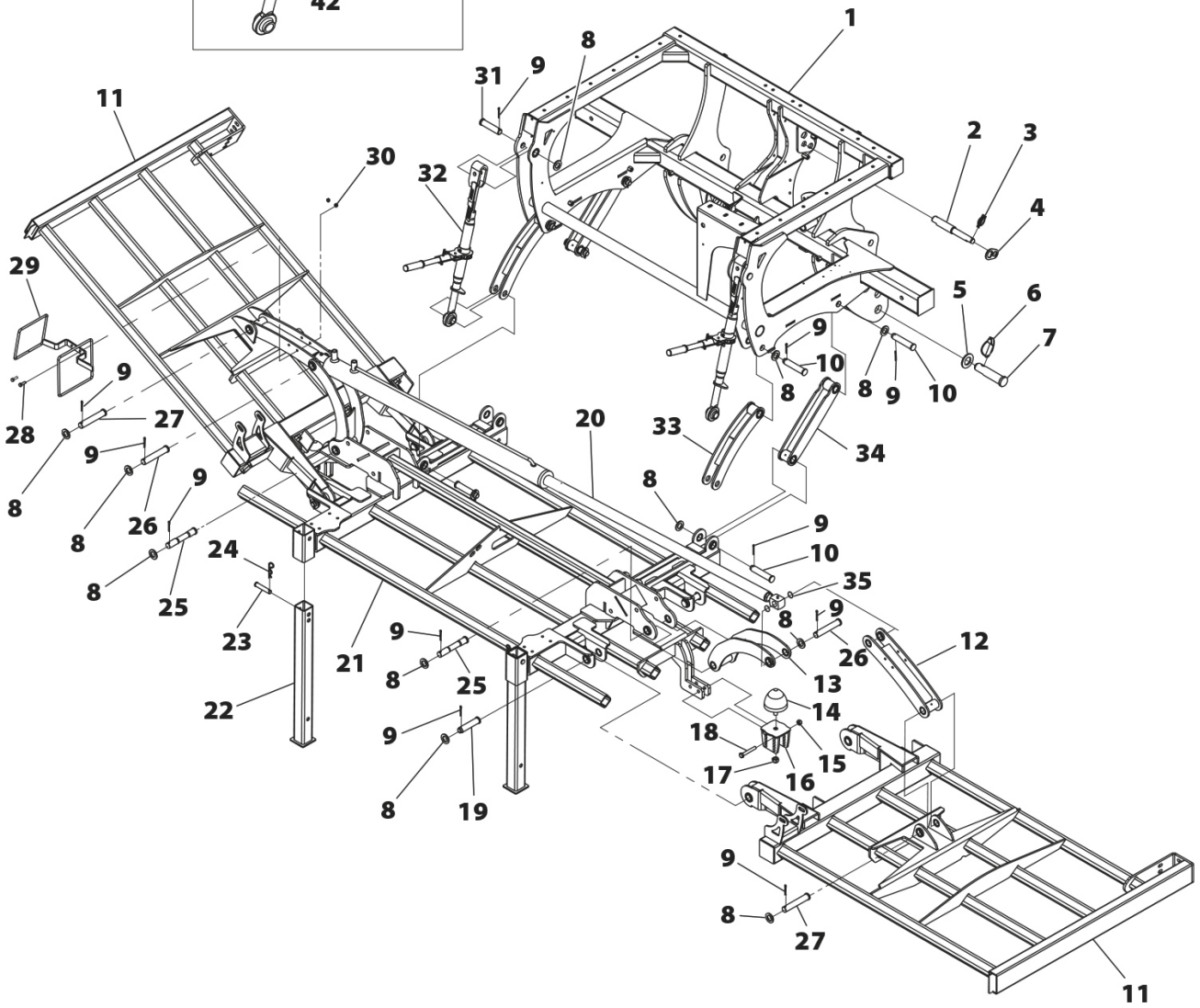
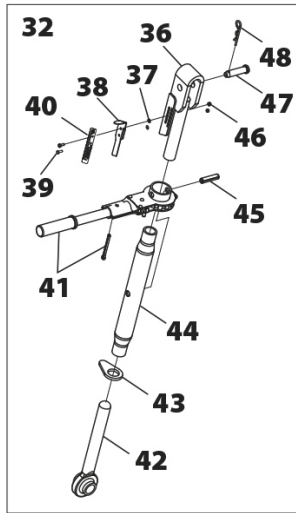


DO NOT WORK UNDER THE MACHINE WHEN IT IS RAISED. ALWAYS SECURE THE MACHINE PROPERLY TO PREVENT IT FROM COLLAPSING AS A PRESSURE LOSS IN THE TRACTOR CAN OCCUR.

13.2 CHASSIS TINE COULTERS 400-450-500-600

N°	REFERENCE
1	PS-011315
1	PS-011316
2	BU-012801
3	FE-610008
4	PX-072804
5	125 36 BI
6	FE-610011
7	BU-012802
8	125 25 BI
9	94 5X40 BI
10	BU-052802
11	PS-051393-D
11	PS-051393-I
11	PS-051395-D
11	PS-051395-I

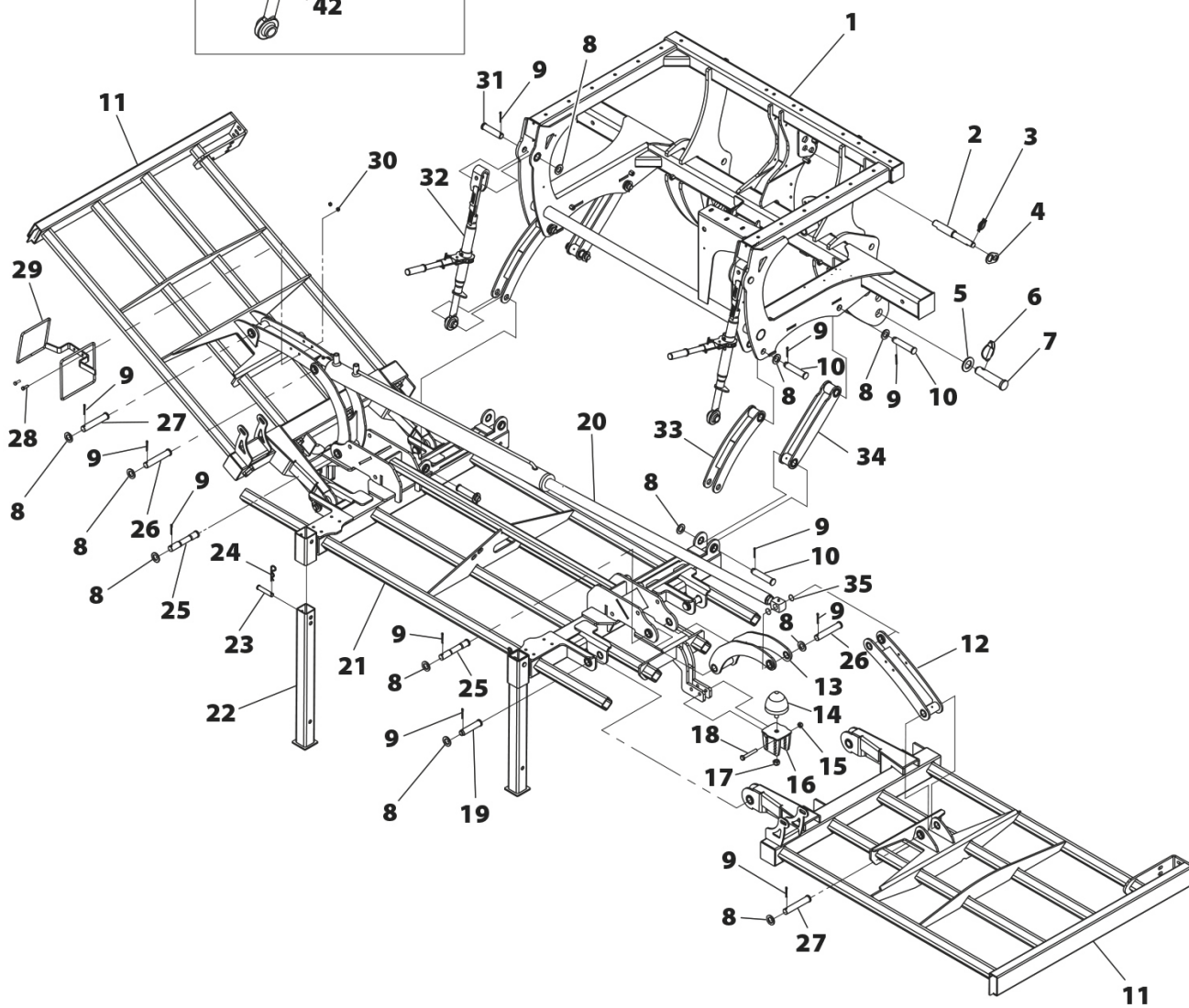
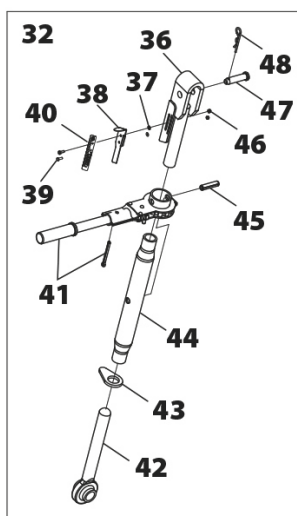
N°	REFERENCE
11	PS-051396-D
11	PS-051396-I
11	PS-051397-D
11	PS-051397-I
12	PS-052821
13	PS-051394
14	FE-660014
15	985 12
16	PS-052835
17	985 16
18	931 12X80 8.8B
19	BU-052801
20	CO-052802
21	PS-051392
22	PS-071333



13.2 CHASSIS TINE COULTERS 400-450-500-600

N°	REFERENCE
23	BU-072800
24	FE-610003
25	BU-052800
26	BU-052805
27	BU-051301
28	933 8X25 8.8 B
29	PS-201300-D
29	PS-201300-I
30	985 8
31	BU-052804
32	MO-052808
33	PS-012803
34	PS-012802
35	CT-052851

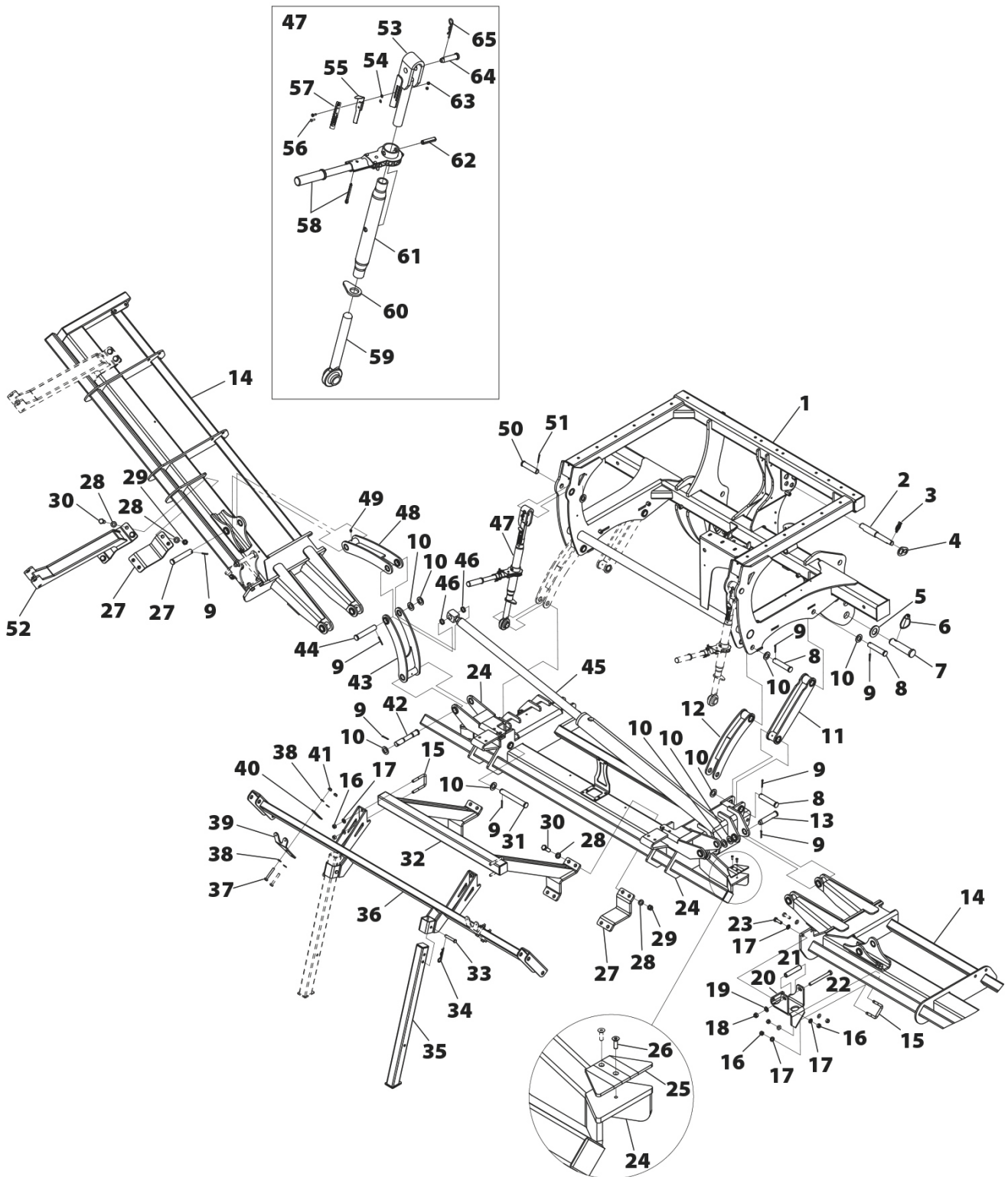
N°	REFERENCE
36	PS-052819
37	125 4 BI
38	PX-052854
39	933 4X12 8,8B
40	AD-052800
41	FE-613011
42	FE-613020
43	FE-613019
44	FE-613018
45	1481 12X50 BI
46	985 4
47	BU-052803
48	FE-610002



13.3 CHASSIS DOUBLE DISCS 400-450-500-600

N°	REFERENCE
1	PS-011315
1	PS-011316
2	BU-012801
3	FE-610008
4	PX-072804
5	125 36 BI
6	FE-610011
7	BU-012802
8	BU-061302
9	94 5X35 BI
10	125 25 BI
11	PS-012802
12	PS-012803
13	BU-052802
14	PS-151316-D

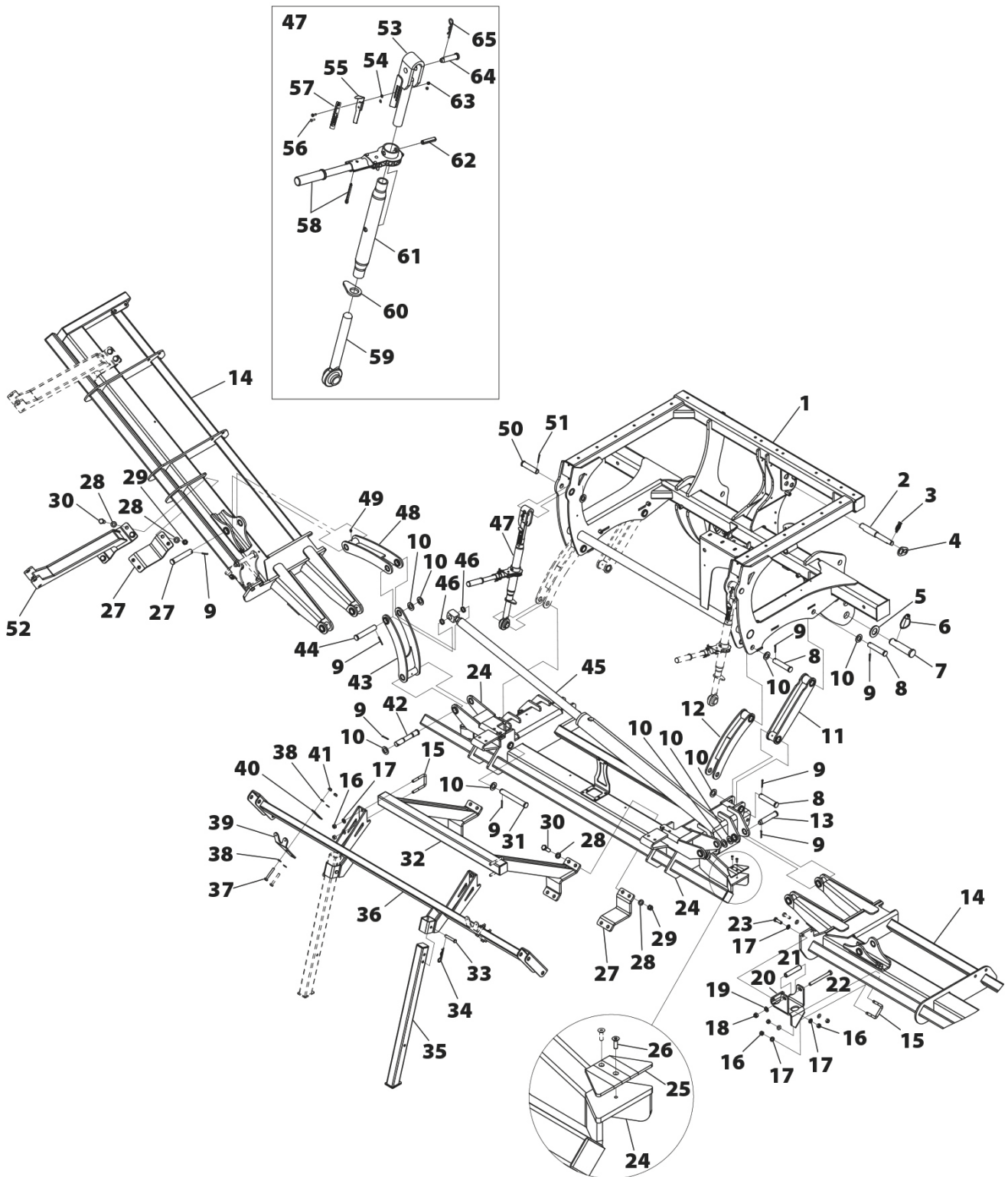
N°	REFERENCE
14	PS-151316-I
14	PS-151322-D
14	PS-151322-I
14	PS-151323-D
14	PS-151323-I
15	EE-053110
16	985 12
17	125 12 BI
18	985 14
19	125 14 BI
20	PX-151356-D
20	PX-151356-I
21	ME-072805
22	931 14X150 8.8B
23	933 12X40 8.8 B



13.3 CHASSIS DOUBLE DISCS 400-450-500-600

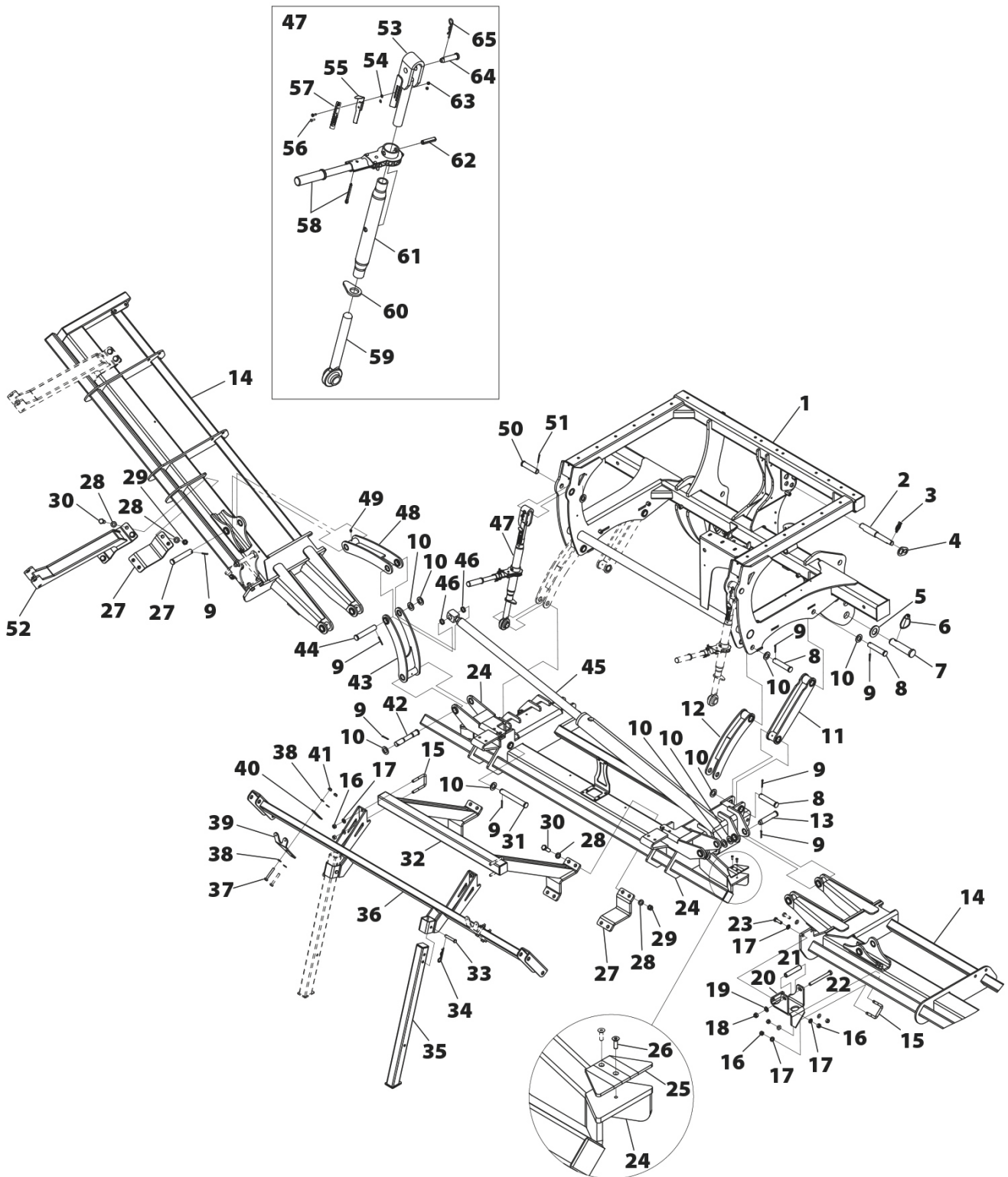
N°	REFERENCE
24	PS-151315
25	PL-051713
26	7991 6X20 BI
27	PX-081311
28	125 16 BI
29	985 16
30	933 16X50 8.8 B
31	BU-051310
32	PS-151306
33	BU-051312
34	FE-610003
35	PS-151317
36	PS-151310
37	931 10X70 8.8 B
38	125 10 BI

N°	REFERENCE
39	PX-201344
40	PX-201345
41	985 10
42	BU-052800
43	PS-151307
44	BU-052805
45	CO-051308
46	CT-052851
47	MO-052808
48	PS-151308
49	FE-603001
50	BU-052804
51	94 5x40 BI
52	PS-151309
53	PS-052819



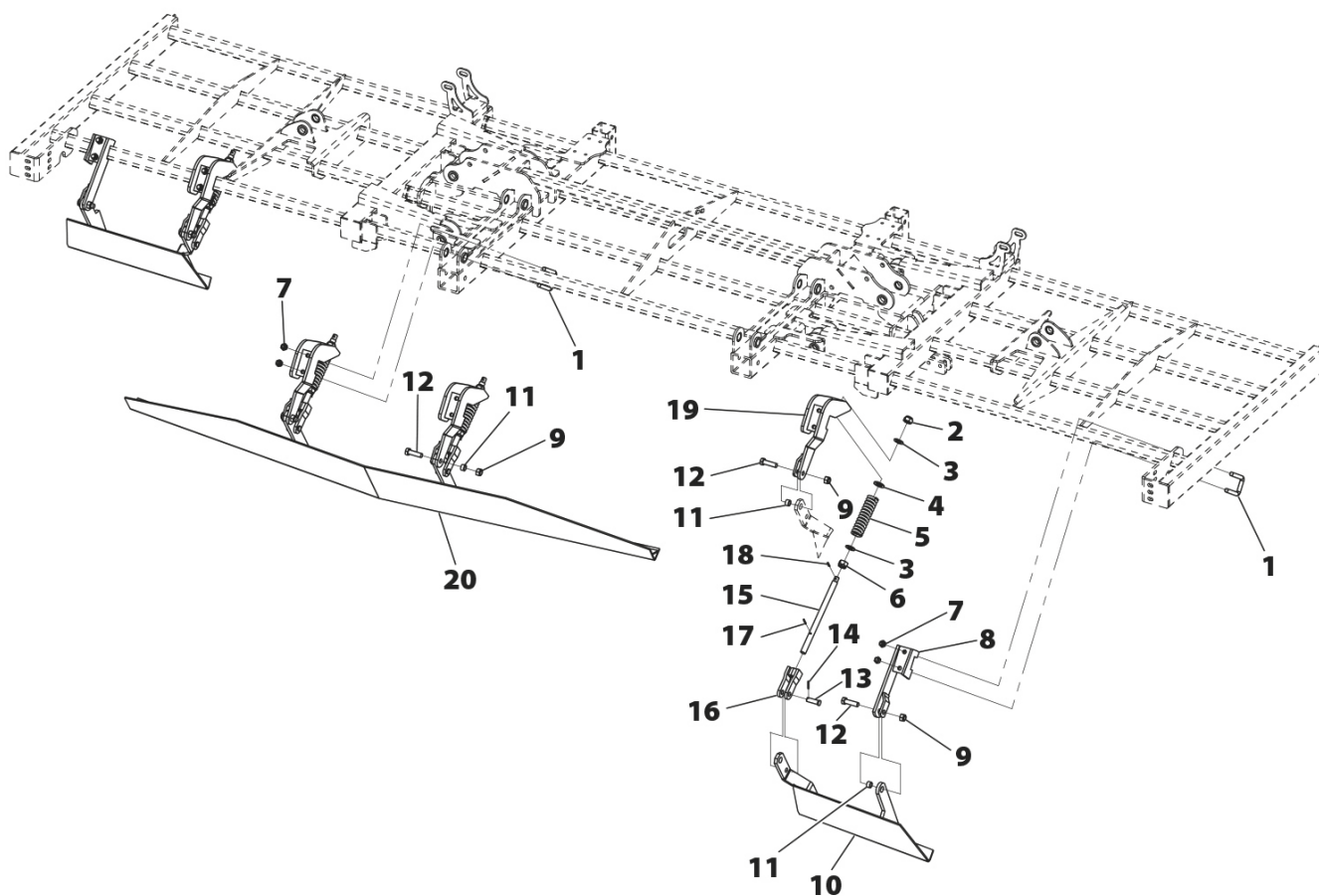
13.3 CHASSIS DOUBLE DISCS 400-450-500-600

N°	REFERENCE
54	125 4 BI
55	PX-052854
56	933 4X12 8,8B
57	AD-052800
58	FE-613011
59	FE-613020
60	FE-613019
61	FE-613018
62	1481 12X50 BI
63	985 4
64	BU-052803
65	FE-610002



13.4 LEVELLER

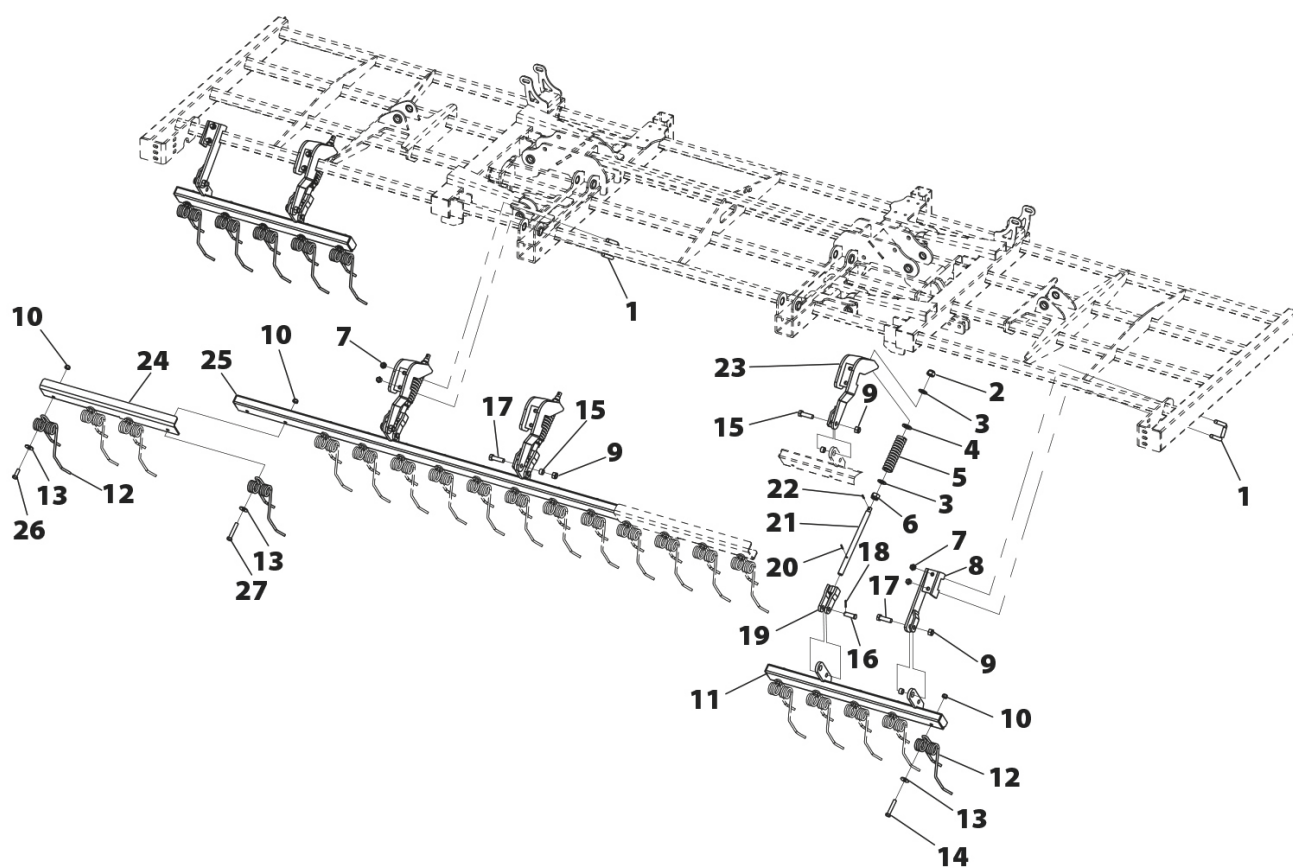
N°	REFERENCE
1	EE-050314
2	985 20
3	125 20 BI
4	ME-061303
5	ML-050300
6	935 20 BI
7	985 14
8	PS-061305-I
8	PS-061305-D
8	PS-161316
9	985 16
10	PS-061384-I
10	PS-061384-D
11	ME-061301
12	931 16x55 8.8 BI
13	BU-050303
14	94 5x25 BI
15	ME-061305
16	PS-061318
17	94 4X32 BI
18	1481 5X30 BI
19	PS-061352
19	PS-161315
20	PS-061382



13.5 DOUBLE SPRING TINES LEVELLER FOR TINE COULTERS

N°	REFERENCE
1	EE-050314
2	985 20
3	125 20 BI
4	ME-061303
5	ML-050300
6	935 20 BI
7	985 14
8	PS-061305-I
8	PS-061305-D
9	985 16
10	985 12
11	PS-061390-I
11	PS-061390-D
12	M01-51/B
13	9021 12 BI

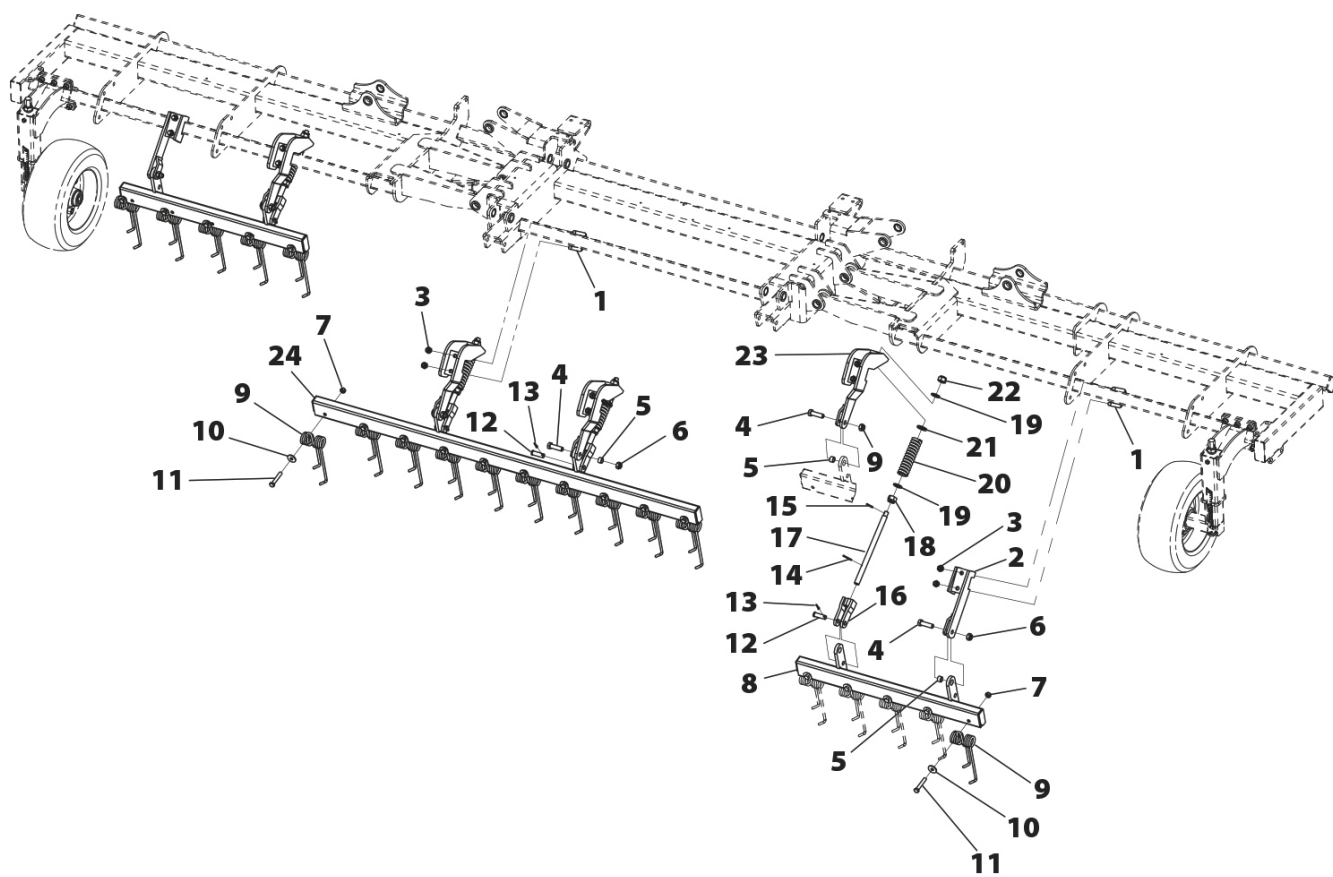
N°	REFERENCE
14	931 12X70 8.8 B
15	ME-061301
16	BU-050303
17	931 16x55 8.8 BI
18	94 5x25 BI
19	PS-061318
20	94 4X32 BI
21	ME-061305
22	1481 5X30 BI
23	PS-061352
24	PX-061366-I
24	PX-061366-D
25	PS-061388
26	931 12X35 8.8 BI
27	931 12X75 8.8 B



13.6 DOUBLE SPRING TINE LEVELLER FOR DOUBLE DISC

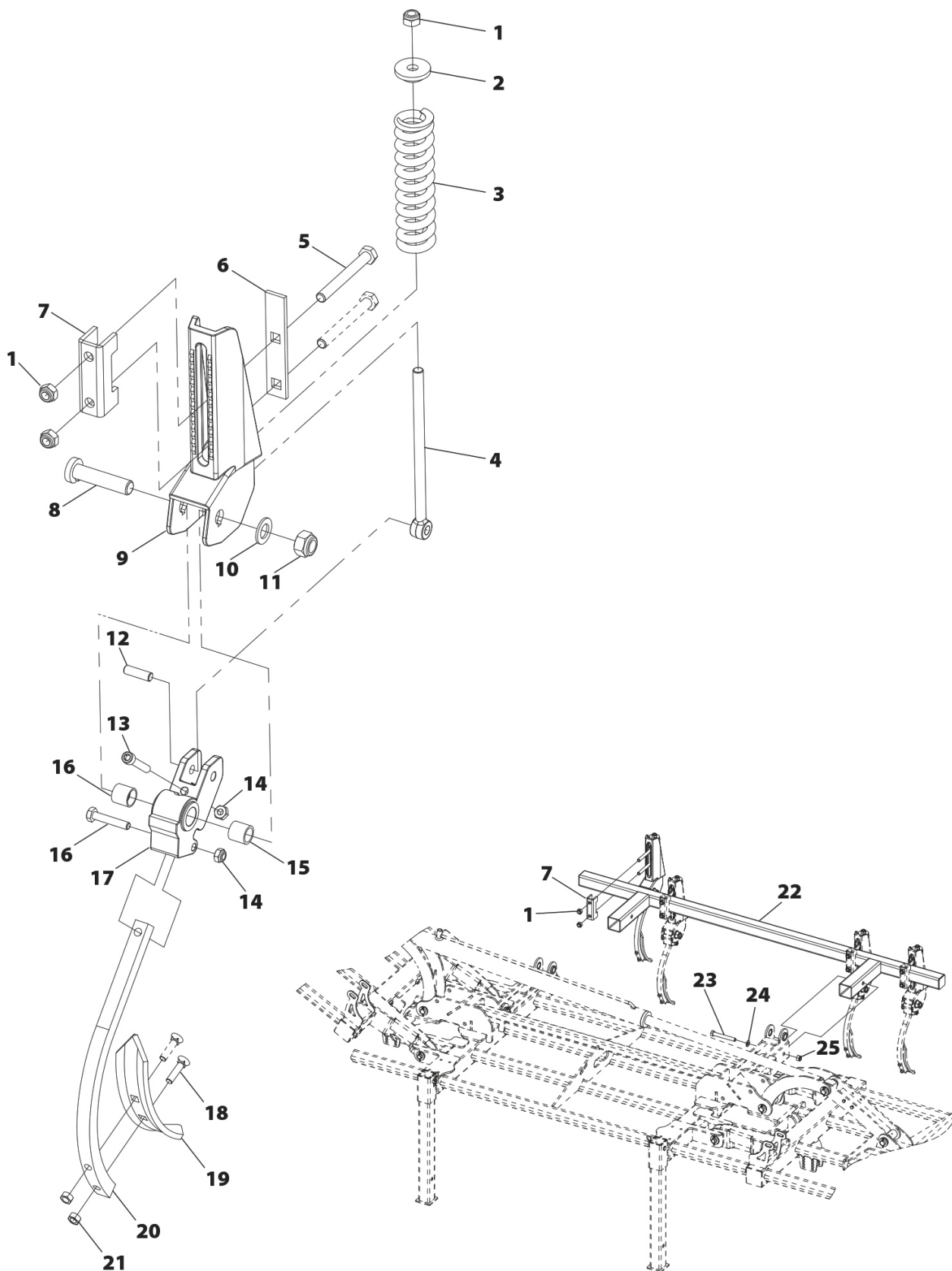
N°	REFERENCE
1	EE-050314
2	PS-161316
3	985 14
4	931 16X55 8.8 B
5	ME-061301
6	985 16
7	985 12
8	PS-161313-I
8	PS-161313-D
9	M01-51/B
10	9021 12 BI
11	931 12X70 8.8 B
12	BU-050303

N°	REFERENCE
13	94 5X25 BI
14	94 4X32 BI
15	1481 5X30 BI
16	PS-061318
17	ME-061305
18	935 20 BI
19	125 20 BI
20	ML-050300
21	ME-061303
22	985 20
23	PS-161315
24	PS-161312



13.7 TRACK ERASERS TINE COULTERS

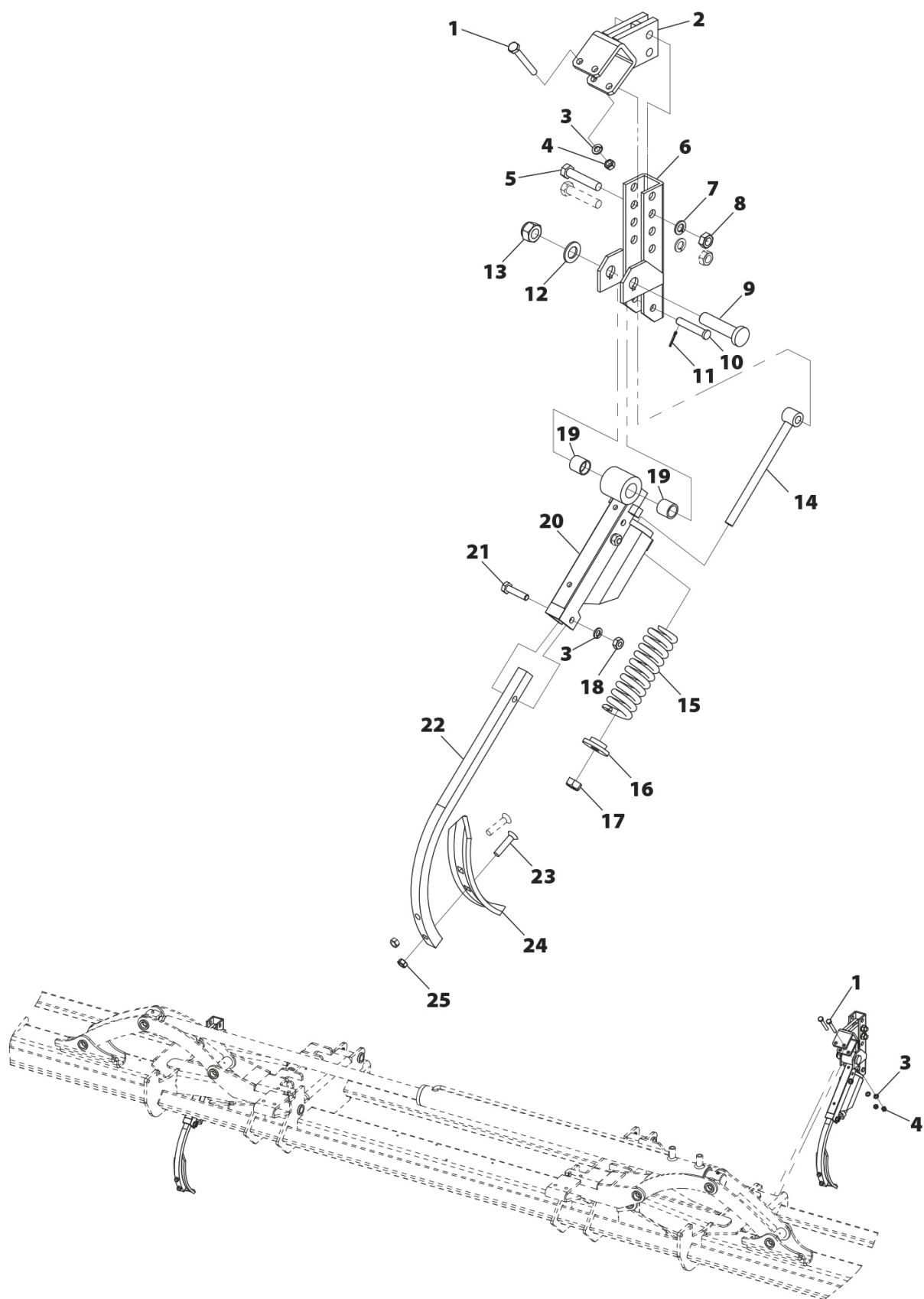
N°	REFERENCE
1	985 14
2	ME-052812
3	ML-062100
4	FO-062100
5	931 14X120 8.8 B
6	PX-061325
7	PX-062105
8	TS-052801
9	PS-062101
10	125 20 BI
11	985 20-150
12	CT-062102
13	912 10X60 8.8 B
14	985 10
15	PL-050302
16	931 10X55 8.8 B
17	PS-062100
18	608 9x40 BI
19	FO-060300
20	FO-061303
21	934 9 BI
22	PS-051392
23	931 16X120 8.8B
24	125 16
25	985 16



13.8 TRACK ERASERS DOUBLE DISCS

Nº	REFERENCE
1	931 10x80 8.8 B
2	PS-061322
3	127 10 BI
4	934 10 BI
5	931 14x70 8.8 B
6	PS-061330
7	127 14 BI
8	934 14 BI
9	TS-052801
10	BU-060300
11	94 3,5X20 BI
12	125 20 BI
13	985 20

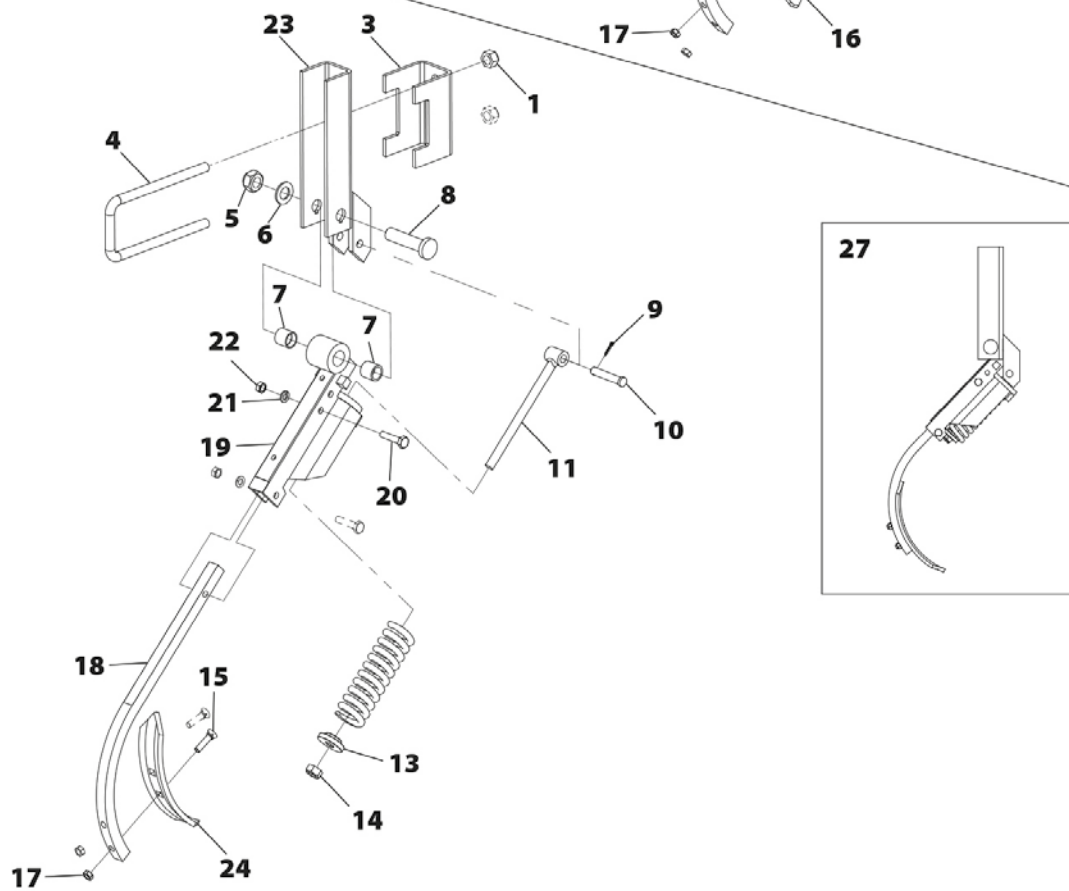
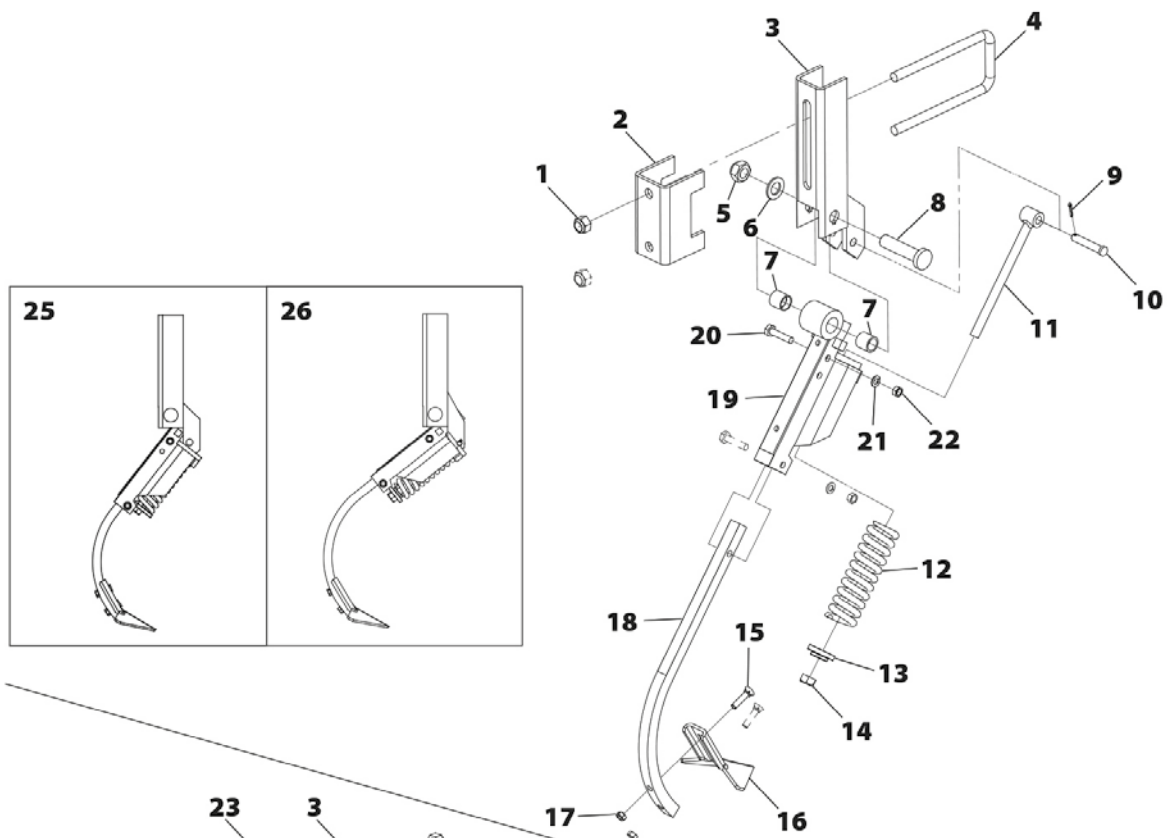
Nº	REFERENCE
14	FO-060202
15	ML-060300
16	ME-052812
17	980 14 BI
18	934 10 BI
19	PL-050302
20	PS-1120
21	931 10X45 8.8 B
22	FO-060302
23	608 9X40
24	FO-060300
25	934 9 BI



13.9 TRACK ERASER FOR FLOATING CULTIVATOR

N°	REFERENCE
1	985 16
2	R01-117
3	PS-061320
3	PS-1117
4	EE-060230
5	985 20-150
6	125 20 BI
7	PL-050302
8	TS-052801
9	94 3,5x20 BI
10	BU-060300
11	FO-060202
12	ML-060300
13	ME-052812
14	980 14 BI

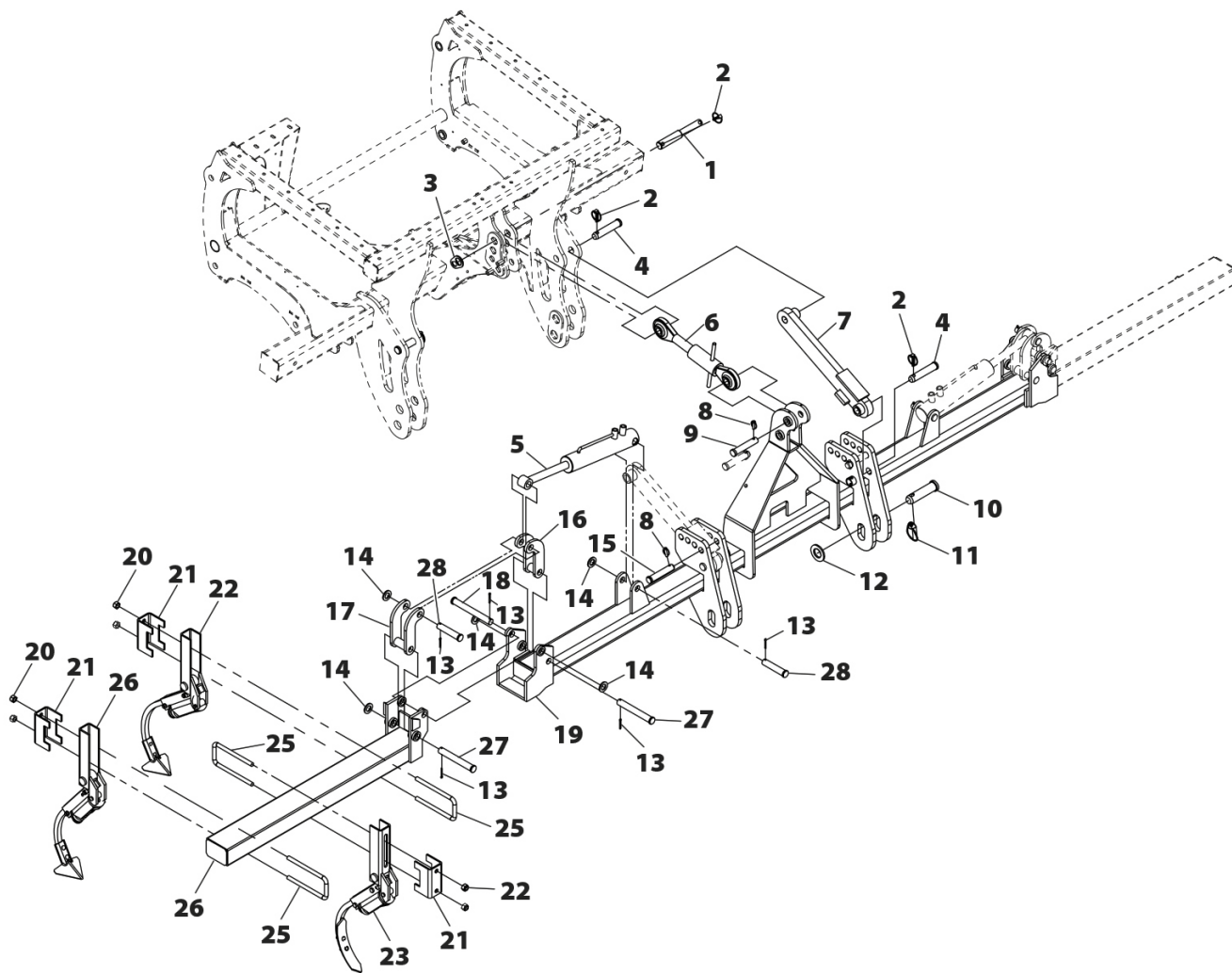
N°	REFERENCE
15	608 9x40 BI
16	R08-05
17	934 9 BI
18	FO-060302
18	FO-060303
19	PS-1120
19	PS-1121
20	931 10x45 8.8 B
21	127 10 BI
22	934 10 BI
23	PS-1113
24	FO-060300
25	MO-061310
26	MO-0720-B
27	MO-0719-B



13.10 FLOATING CULTIVATOR

N°	REFERENCE
1	BU-012801
2	FE-610008
3	PX-072804
4	BU-061308
5	SC-57
6	FE-613022
7	PS-161307-I
7	PS-161307-D
8	FE-610007
9	B03-132
10	ME-012000
11	FE-610011
12	125 39 BI
13	BU-061302
14	94 5X36 BI
15	BU-061301

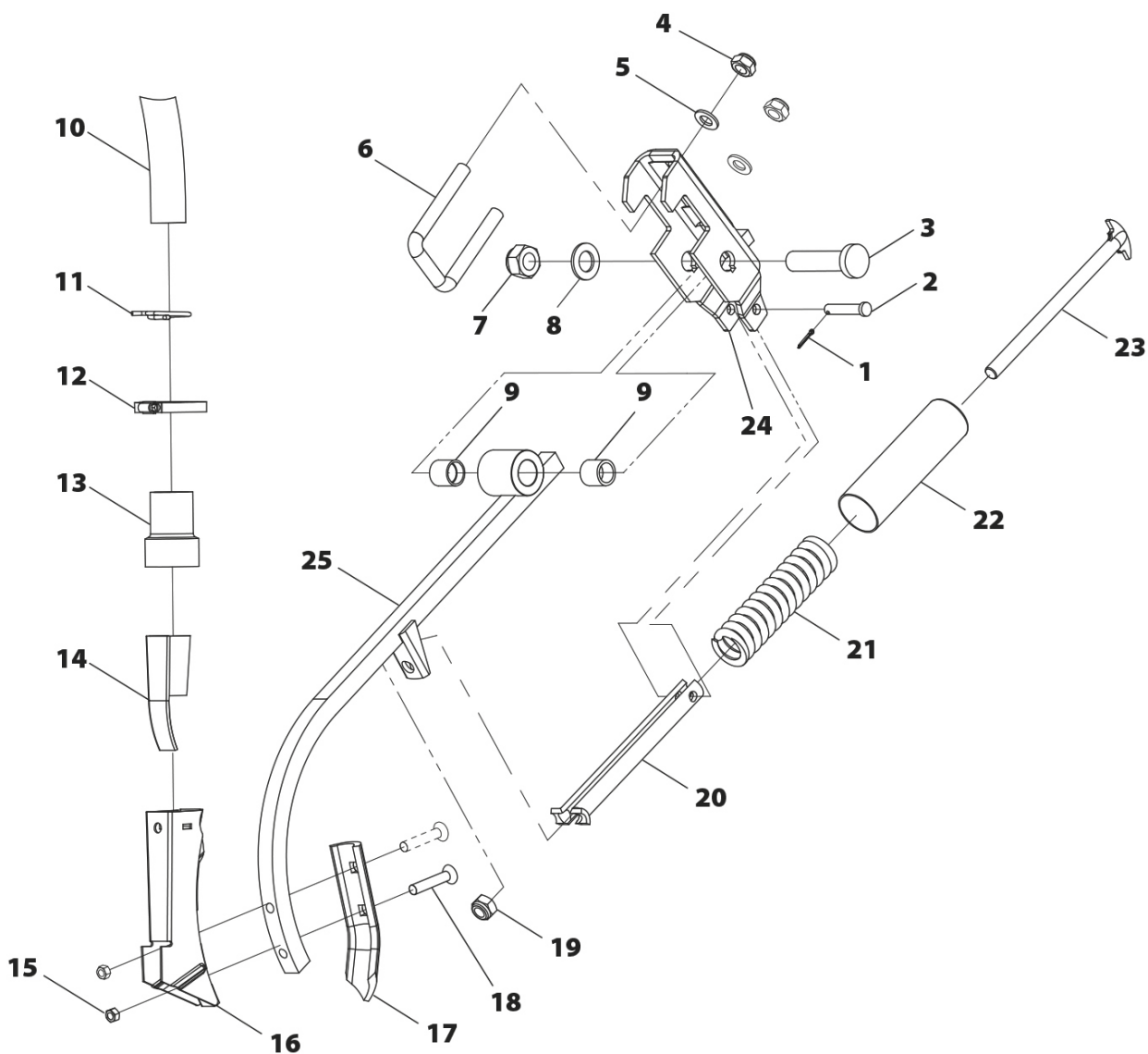
N°	REFERENCE
16	125 25 BI
17	BU-061307
18	PS-061303
19	PS-061302
20	BU-061300
21	PS-061340
22	985 16
23	R01-117
24	MO-0720/B
25	MO-0719/B
26	MO-061310
27	EE-060230
28	PS-061313
28	PS-061312
28	PS-061311



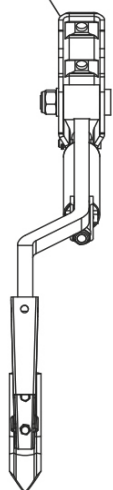
13.11 FIXED TINE COULTER

N°	REFERENCE
1	94 3,5X20 BI
2	B03-202
3	TS-052801
4	985 14
5	125 14 BI
6	EE-050314
7	985 20
8	125 20 BI
9	PL-050302
10	MP-907018
11	ML-051301
12	FE-606003
13	PL-051300
14	PL-050303

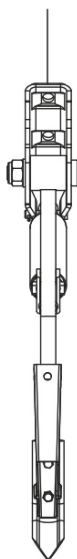
N°	REFERENCE
15	934 9 BI
16	CO-051302
17	R08-11
18	608 9X45
19	985 14
20	EE-050301
21	ML-050300
22	EE-050310
23	FO-050303
24	CO-050302
25	PS-2611
25	PS-2611-I
25	PS-2611-D



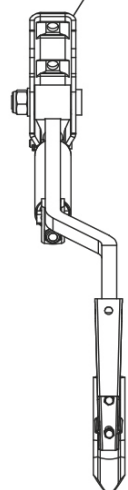
Brazo desplazado izquierdo



Brazo recto



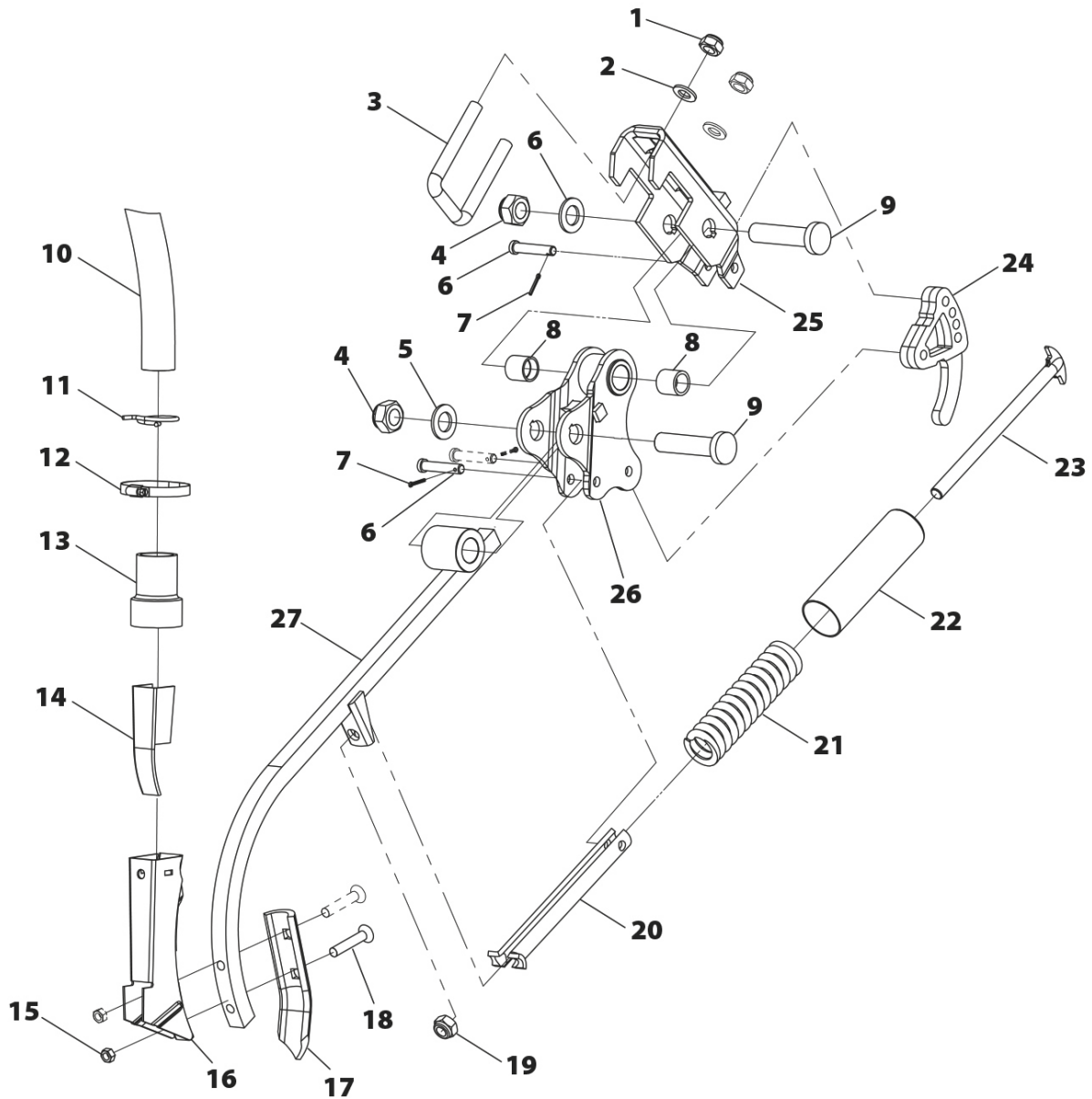
Brazo desplazado derecho



13.12 REGULABLE TINE COULTER

N°	REFERENCE
1	985 14
2	125 14 BI
3	EE-050314
4	985 20
5	125 20 BI
6	B03-202
7	94 3,5X20 BI
8	PL-050302
9	TS-052801
10	MP-907018
11	ML-051301
12	FE-606003
13	PL-051300
14	PL-050303
15	934 9

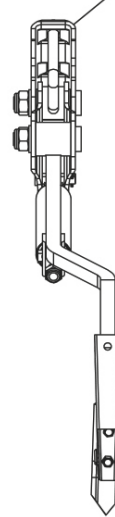
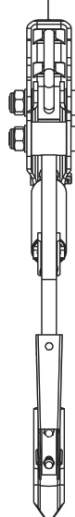
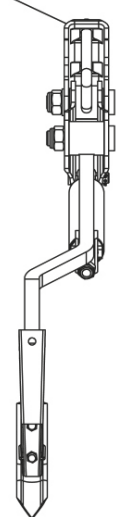
N°	REFERENCE
16	CO-051302
17	R08-11
18	608 9X45
19	985 14
20	EE-050301
21	ML-050300
22	EE-050310
23	FO-050303
24	PS-051391
25	CO-050302
26	PS-051390
27	PS-2611
27	PS-2611-I
27	PS-2611-D



Brazo desplazado izquierdo

Brazo recto

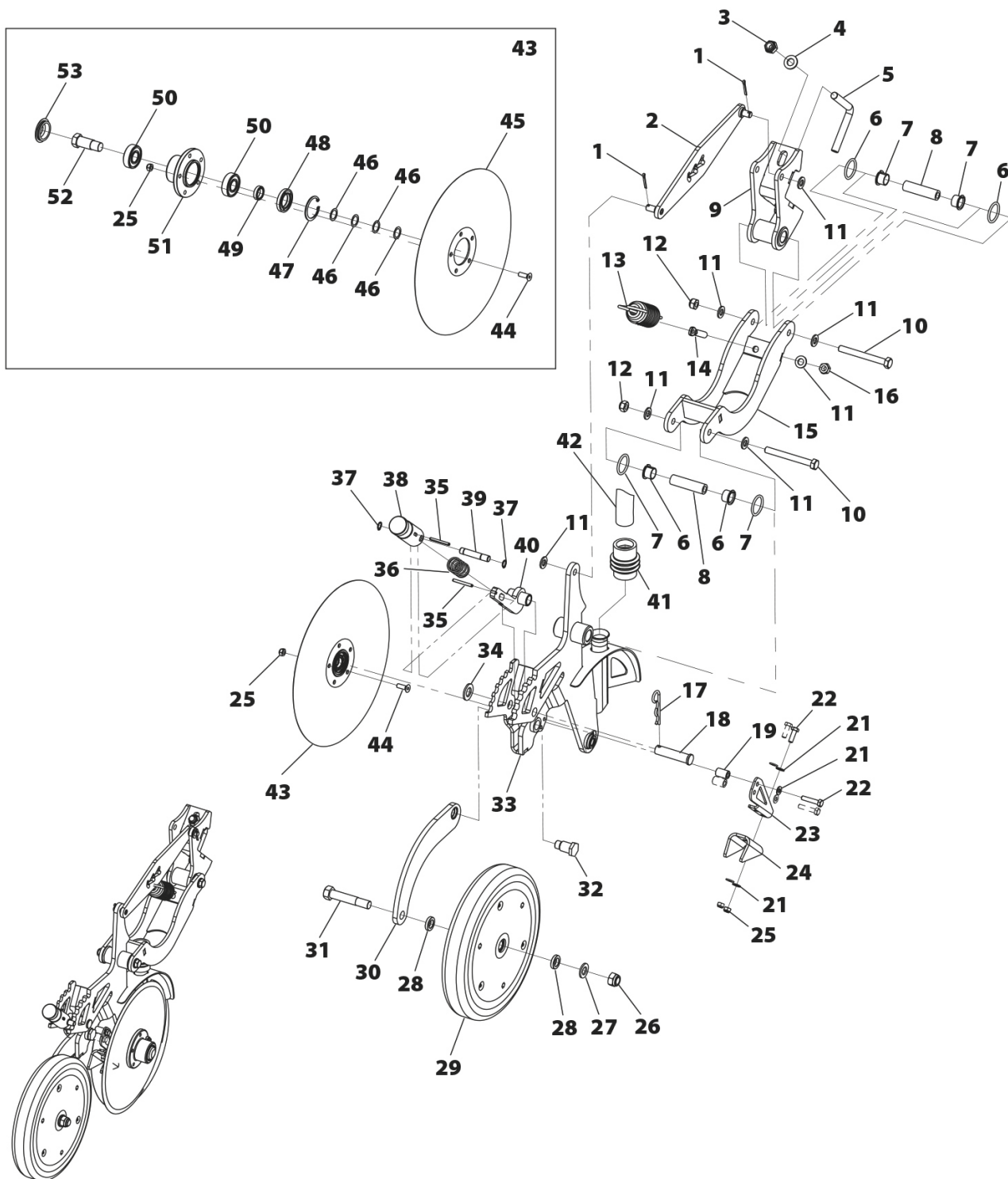
Brazo desplazado derecho



13.13 DOUBLE DISCS, SHORT ARM

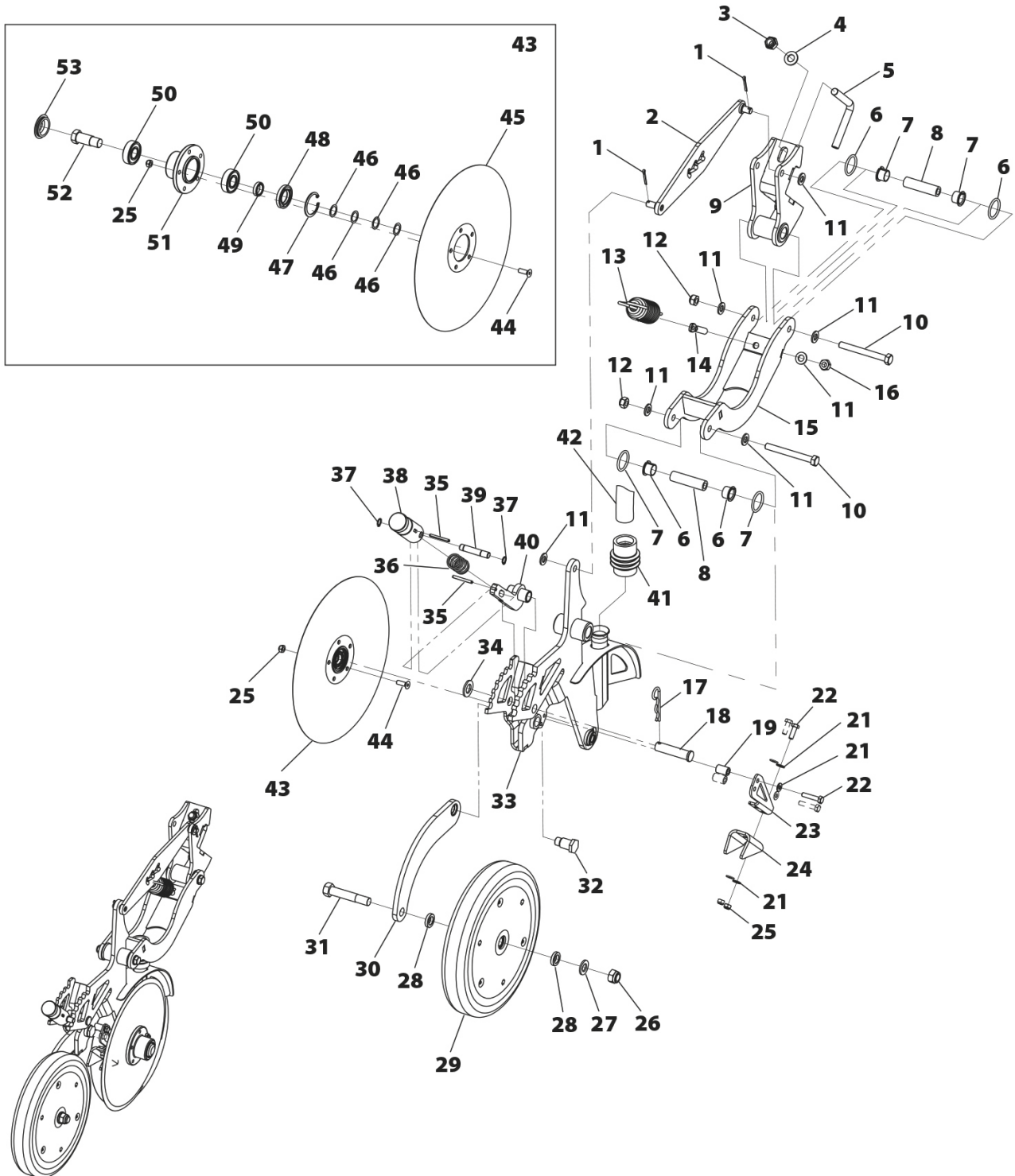
N°	REFERENCE
1	94 4X30 BI
2	PS-051650
3	985 14
4	125 14 BI
5	EE-051353
6	FE-601081
7	FE-600066
8	ME-051322
9	PS-051652
10	931 12X110 8.8B
11	125 12 BI
12	985 12
13	ML-051604
14	T05-01
15	PS-051651

N°	REFERENCE
16	985 12-150
17	FE-610003
18	ME-051624
19	ME-051617
20	933 8X25 8.8 B
21	125 8 BI
22	931 8X40 8.8 B
23	PX-051680
24	PL-051713
25	985 8
26	985 16-150
27	125 16 BI
28	ME-051756
29	CO-051619
30	PS-051659



13.13 DOUBLE DISCS, SHORT ARM

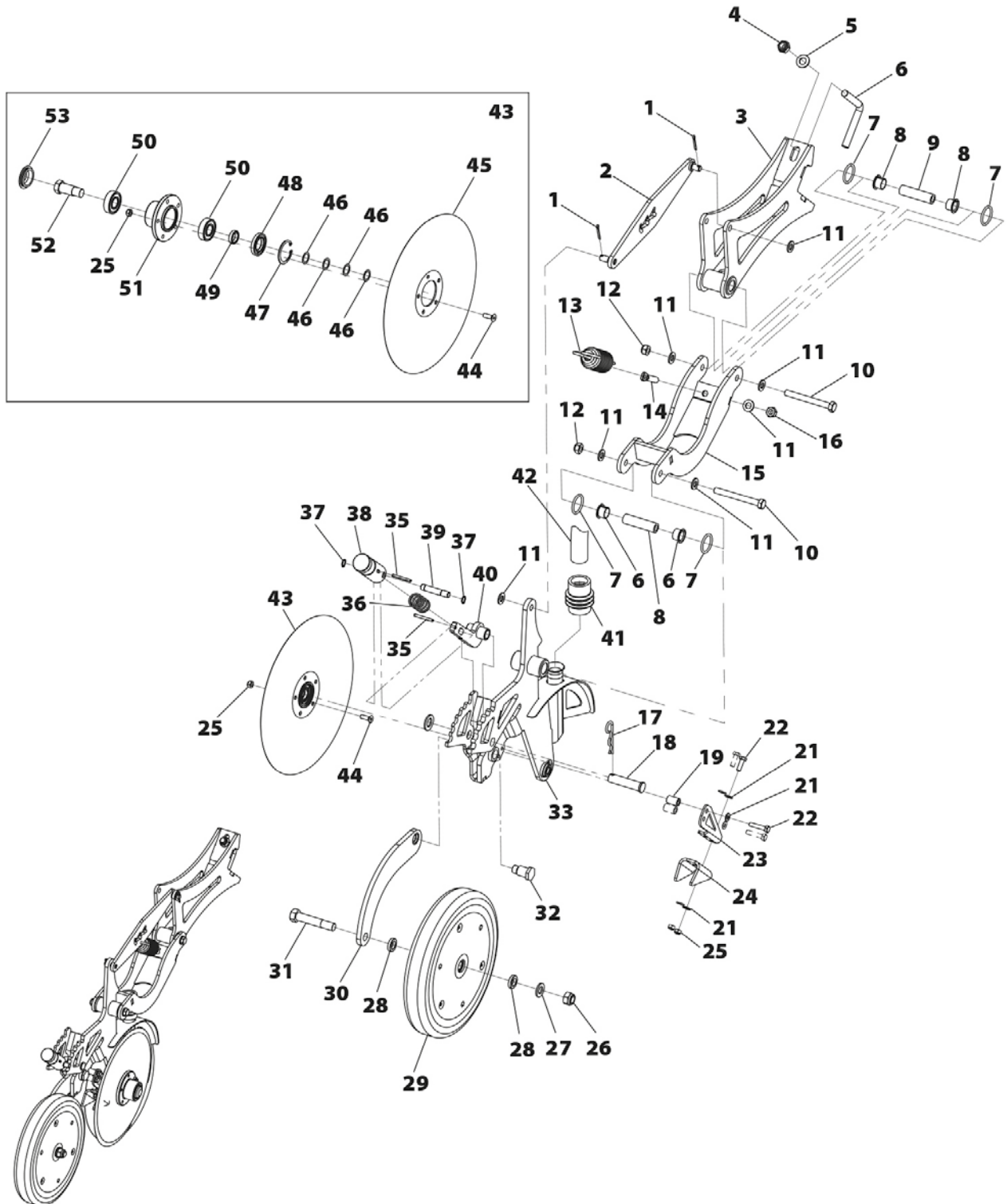
N°	REFERENCE
31	ME-051753
32	ME-051606
33	PS-051661
34	125 18 BI
35	1481 5X45 BI
36	ML-051622
37	471 12
38	ME-051626
39	ME-051625
40	PS-051660
41	PL-051302
42	MP-907018
43	CO-051706
44	7991 8X25 10 BI
45	EE-051722
46	988 18X25X0.5
47	472 47
48	FE-601037
49	ME-051703
50	FE-600028
51	ME-051773
52	ME-051729
53	EE-051703



13.14 DOUBLE DISCS, LONG ARM

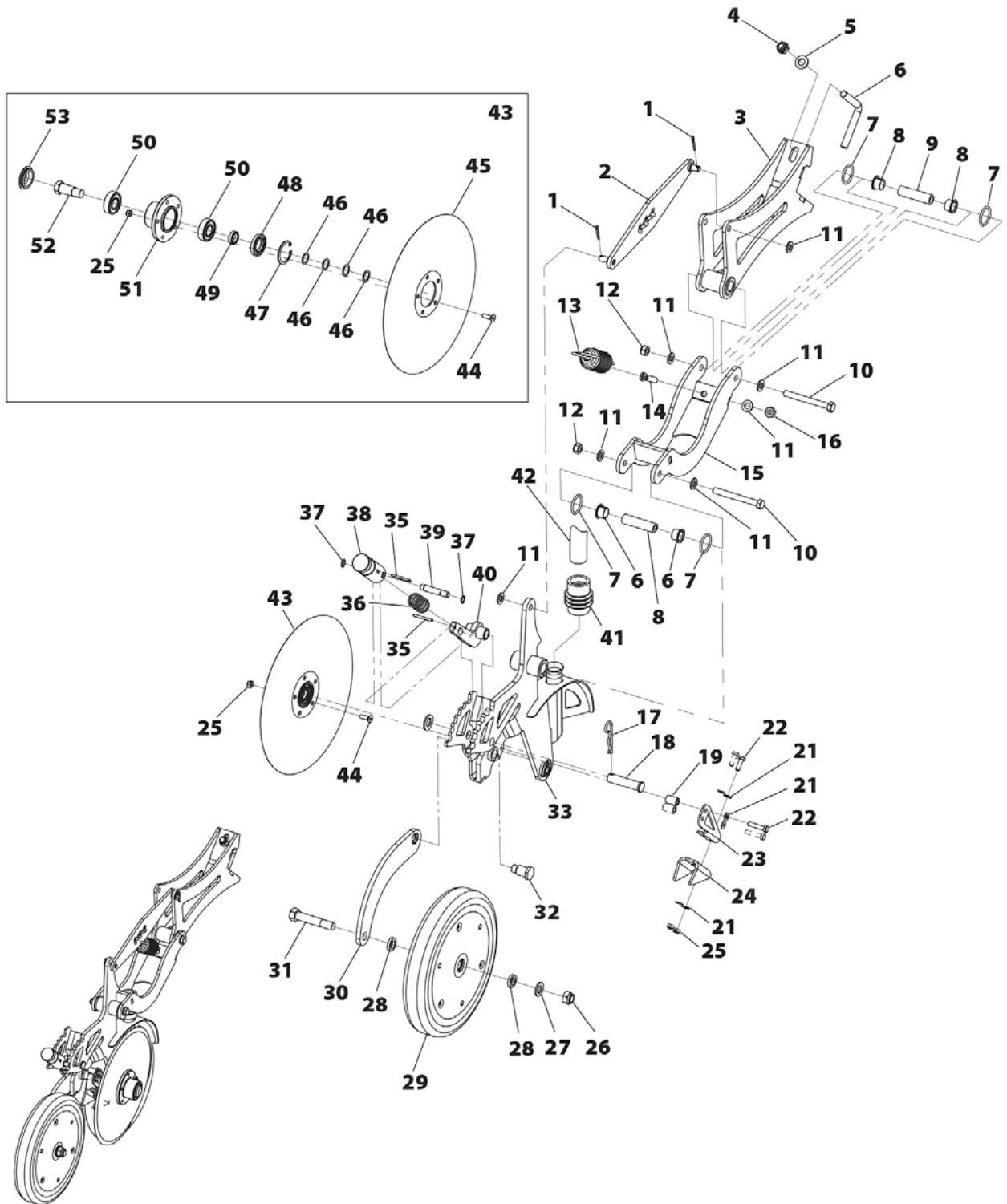
N°	REFERENCE
1	94 4X30 BI
2	PS-051650
3	PS-051649
4	985 14
5	125 14 BI
6	EE-051353
7	FE-601081
8	FE-600066
9	ME-051322
10	931 12X110 8.8B
11	125 12 BI
12	985 12
13	ML-051604
14	T05-01
15	PS-051651

N°	REFERENCE
16	985 12-150
17	FE-610003
18	ME-051624
19	ME-051617
20	933 8X25 8.8 B
21	125 8 BI
22	931 8X40 8.8 B
23	PX-051680
24	PL-051713
25	985 8
26	985 16-150
27	125 16 BI
28	ME-051756
29	CO-051619
30	PS-051659



13.14 DOUBLE DISCS, LONG ARM

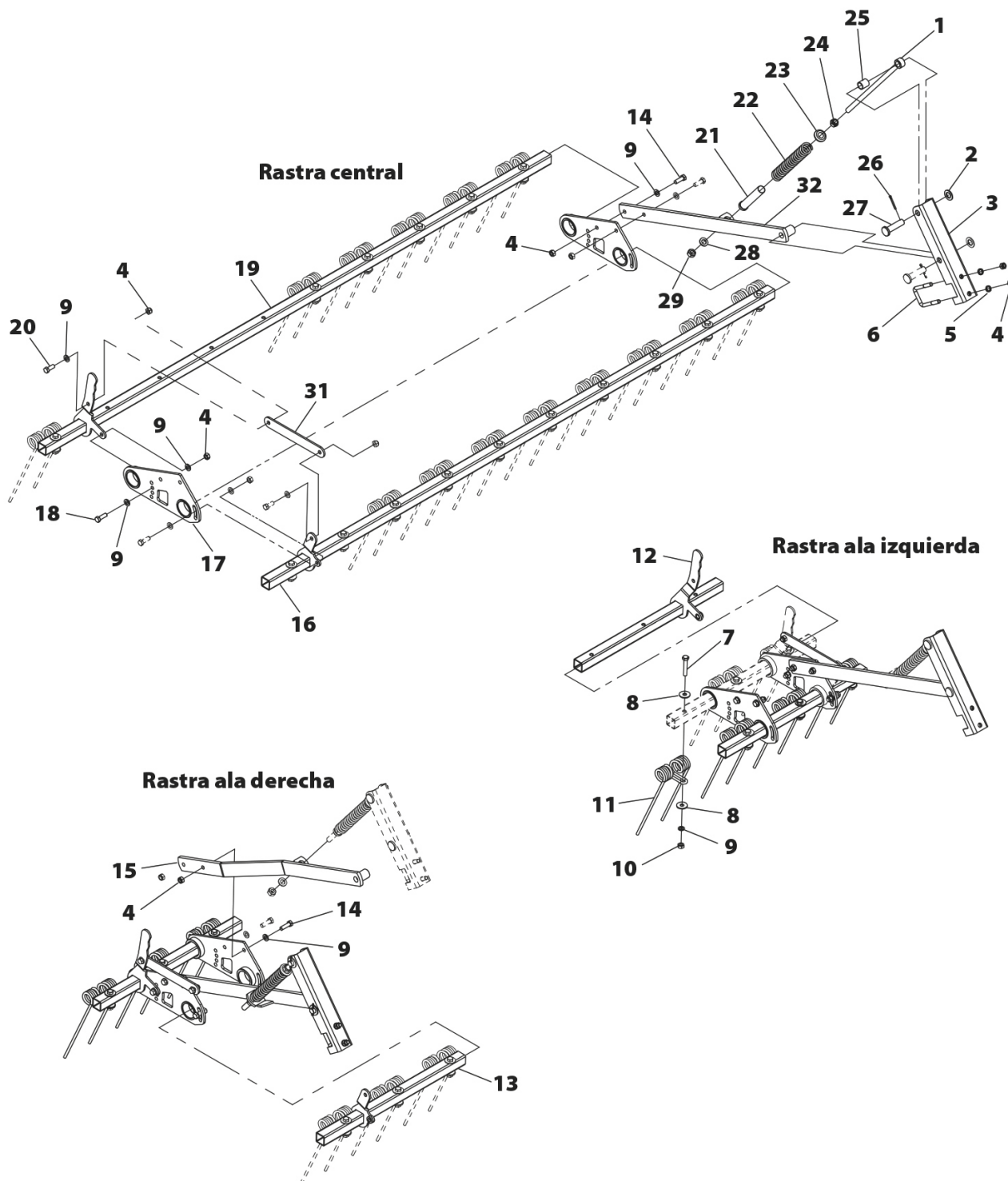
N°	REFERENCE
31	ME-051753
32	ME-051606
33	PS-051661
34	125 18 BI
35	1481 5X45 BI
36	ML-051622
37	471 12
38	ME-051626
39	ME-051625
40	PS-051660
41	PL-051302
42	MP-907018
43	CO-051706
44	7991 8X25 10 BI
45	EE-051722
46	988 18X25X0.5
47	472 47
48	FE-601037
49	ME-051703
50	FE-600028
51	ME-051773
52	ME-051729
53	EE-051703



13.15 HARROW

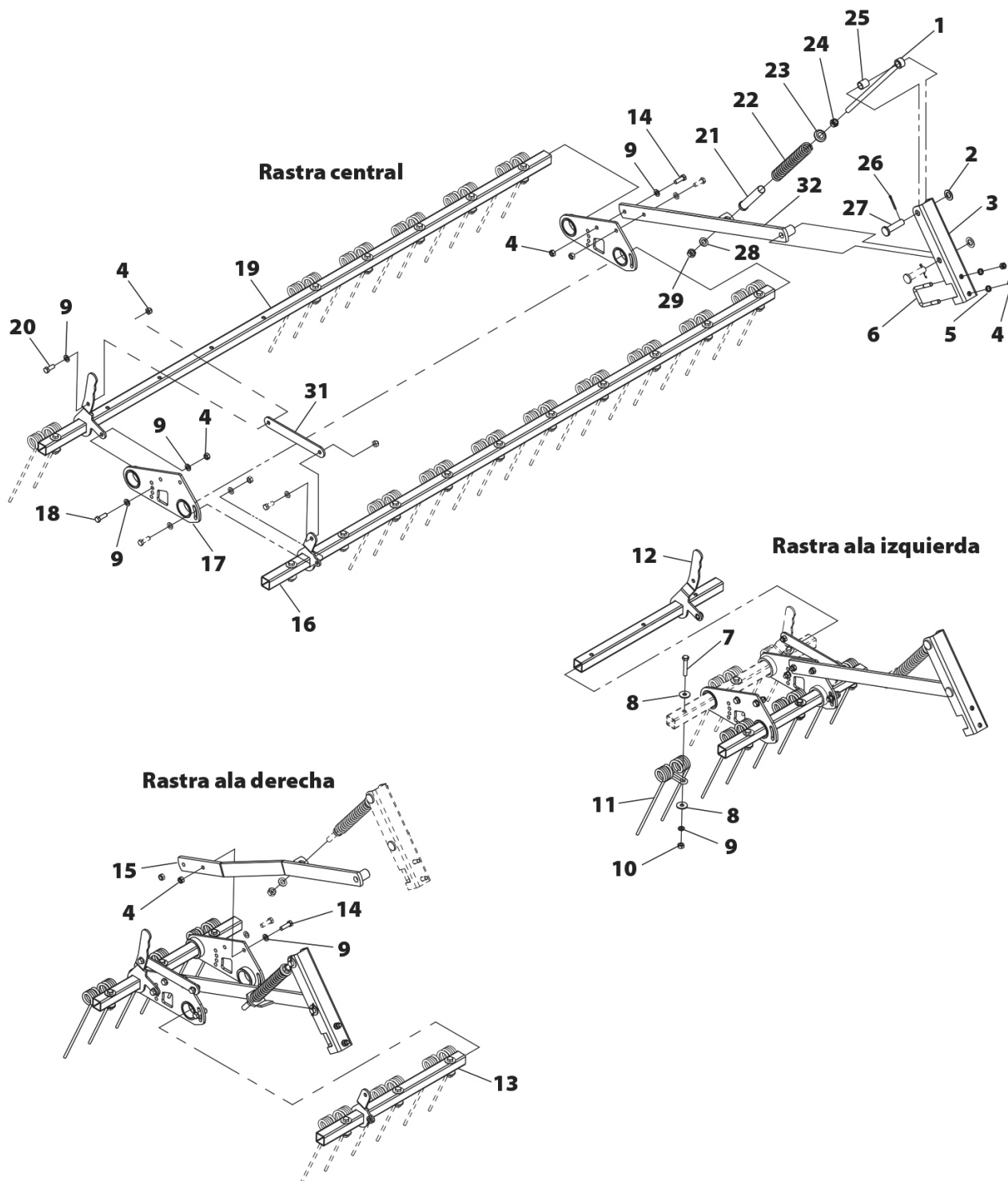
Nº	REFERENCE
1	ME-080302
2	125 20 BI
3	PS-081310
4	985 12
5	7980 14 BI
6	EE-053702
7	931 12X70 8.8 B
8	9021 12 BI
9	127 12 BI
10	934 12 BI
11	M01-83
12	PS-081329
12	PS-081331
12	PS-081332
12	PS-081334

Nº	REFERENCE
12	PS-081336
12	PS-081338
12	PS-081340
12	PS-081343
13	PS-081328
13	PS-081330
13	PS-081333
13	PS-081335
13	PS-081337
13	PS-081339
13	PS-081341
13	PS-081342
14	933 12X40 8.8 B
15	PS-081323-D
15	PS-081323-I



13.15 HARROW

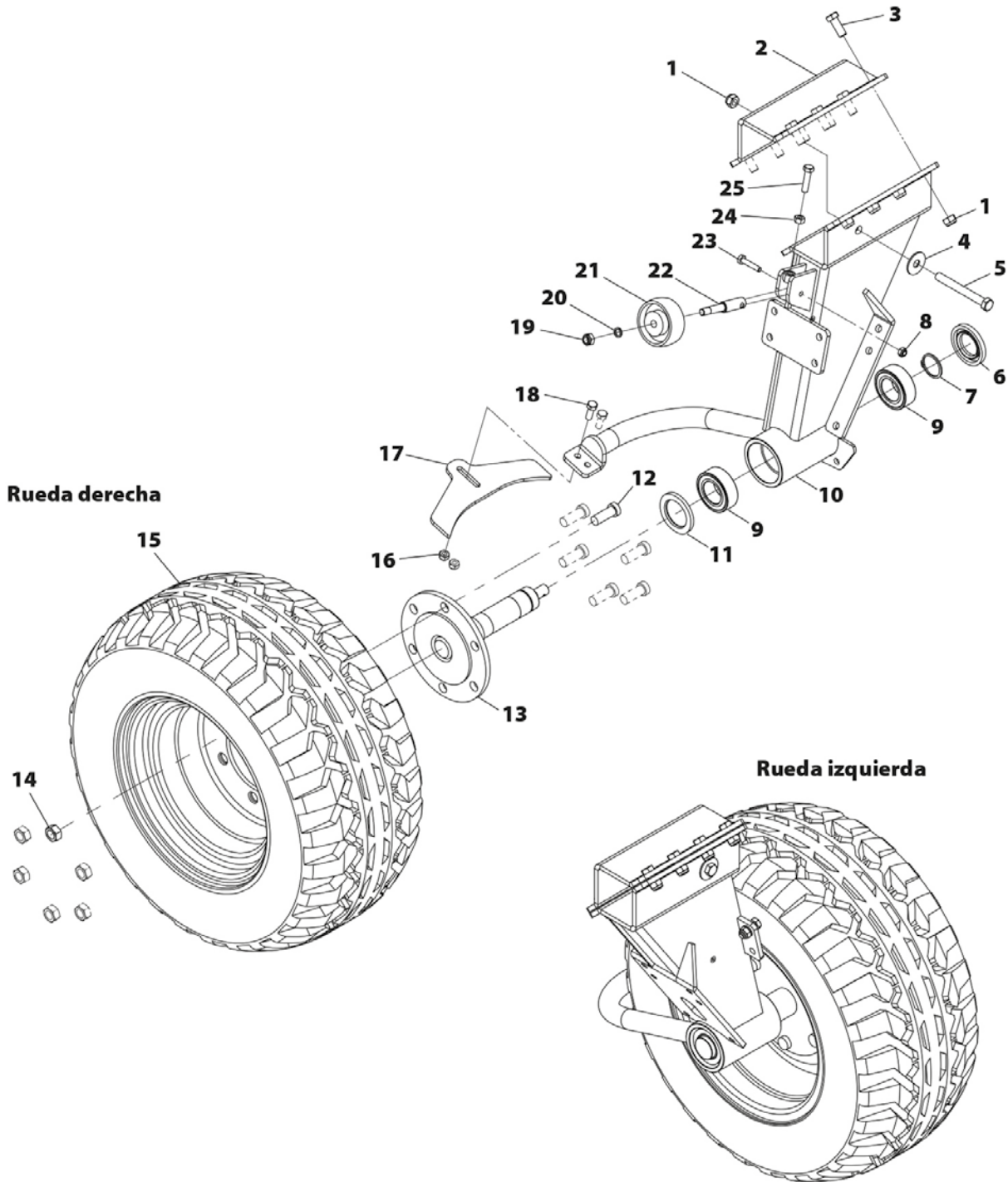
N°	REFERENCE
16	PS-081326
17	PS-081320-D
17	PS-081320-I
18	933 12X45 8.8 B
19	PS-081327
20	933 12X30 8.8 B
21	PS-1735
22	ML-080104
23	T08-23
24	985 16
25	CT-081305
26	94 5X40 BI
27	B03-177
28	125 16 BI
29	934 16 BI
30	PX-081309
31	PS-081311-I
32	PS-081311-D



13.16 WHEEL FLOATING

N°	REFERENCE
1	985 16
2	PX-041388-D
2	PX-041388-I
3	933 16X40 8.8B
4	9021 16 BI
5	931 16X140 8.8B
6	FE-601085
7	471 50X3
8	985 10
9	FE-600619
10	PS-041385-D
10	PS-041385-I
11	FE-601086
12	FE-610020

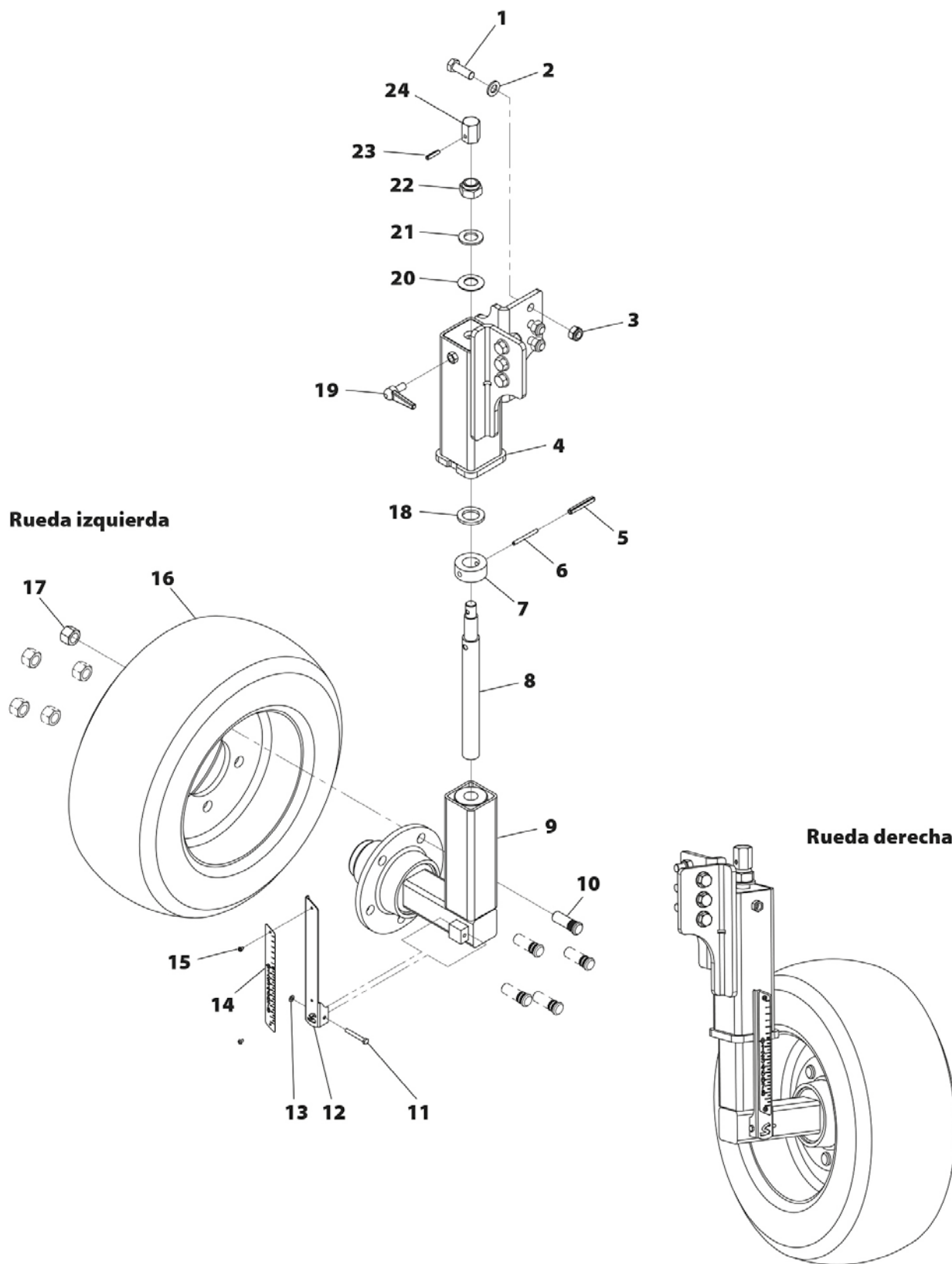
N°	REFERENCE
13	ME-042816-D
13	ME-042816-I
14	917 20-150 BI
15	CO-041300
16	985 12
17	PX-041338
18	931 12X35 8.8B
19	985 14
20	PX-042808
21	CN-850070
22	ME-042810
23	931 10X50 8.8B
24	934 12 BI
25	933 12X50 8.8B



13.17 SIDE WHEEL FOR TINE COULTERS

N°	REFERENCE
1	933 12X35 8.8 B
2	125 12 BI
3	985 12
4	PS-101384/I
4	PS-101384/D
5	1481 8X50 BI
6	1481 5x50 BI
7	T06-35
8	ME-102800
9	PS-102820
10	FE-614000
11	931 5X40 8.8 BI
12	PX-102809

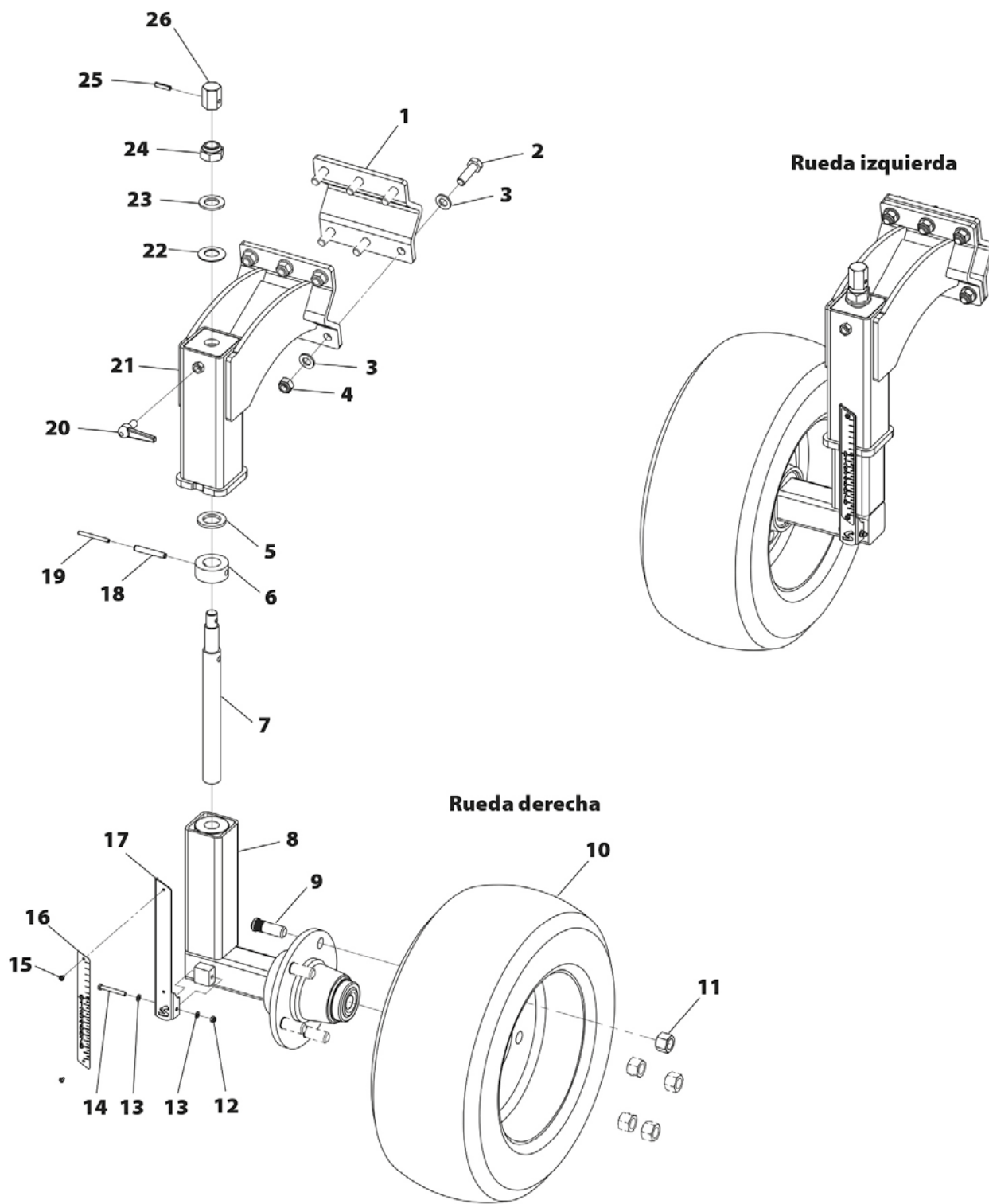
N°	REFERENCE
13	125 5 BI
14	AD-102800
15	FE-602001
16	CO-102801
17	917 16-150 BI
18	A02-27
19	FE-614016
20	2093 40X20,4X1
21	125 20 BI
22	985 20-150
23	1481 6x25 BI
24	ME-102801



13.18 SIDE WHEEL FOR DOUBLE DISCS

N°	REFERENCE
1	PX-101370
2	933 12X40 8.8 B
3	125 12 BI
4	985 12
5	A02-27
6	T06-35
7	ME-102800
8	PS-102820
9	FE-614000
10	CO-102801
11	917 16-150 BI
12	985 5
13	125 5 BI

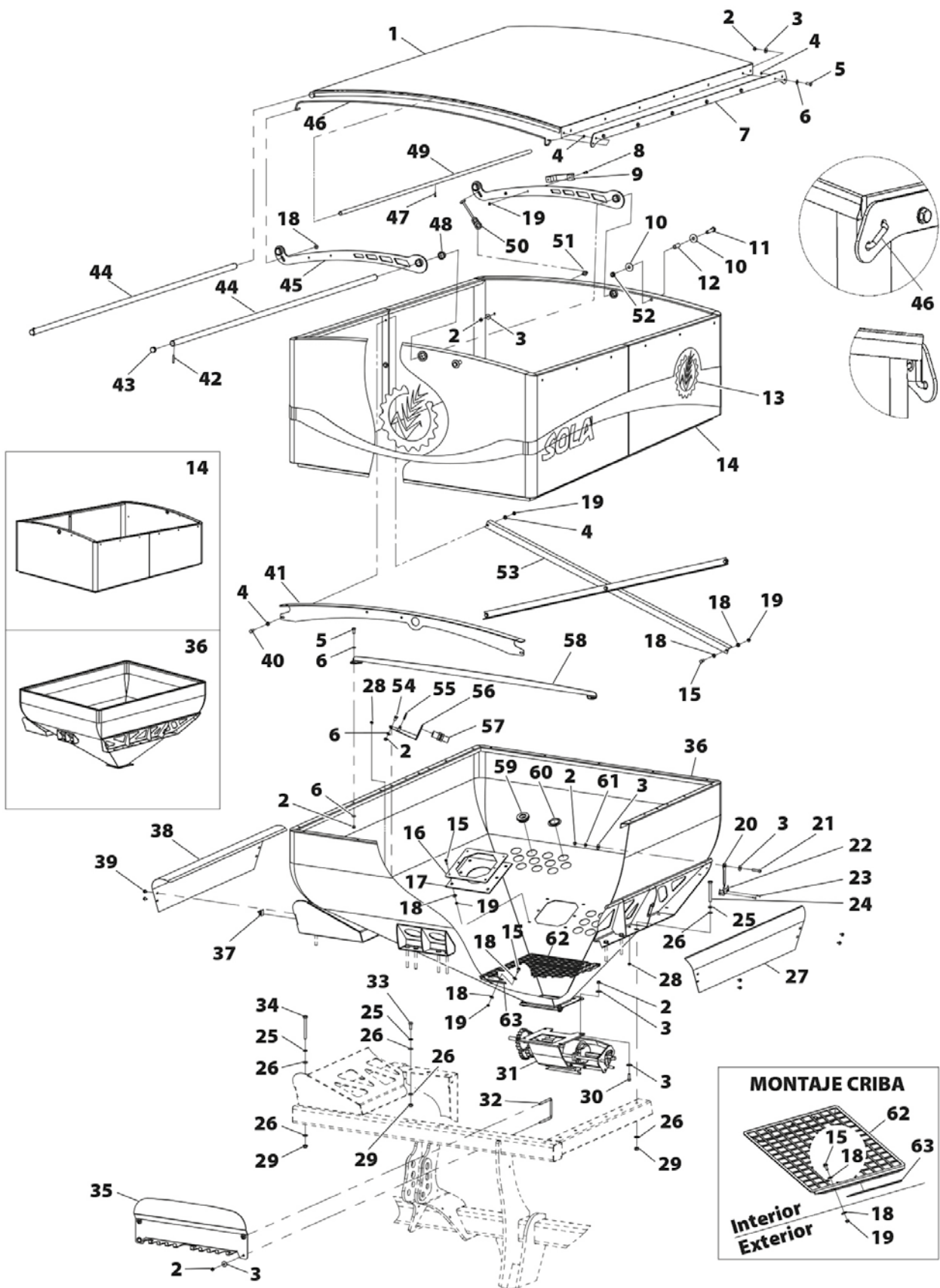
N°	REFERENCE
14	931 5X40 8.8 BI
15	FE-602001
16	AD-102800
17	PX-102809
18	1481 8X50 BI
19	1481 5x50 BI
20	FE-614016
21	PS-201327
22	2093 40X20,4X1
23	125 20 BI
24	985 20-150
25	1481 6x25 BI
26	ME-102801



13.19 HOPPER

N°	REFERENCE
1	MV-032800
2	985 8
3	9021 8 BI
4	125 6 BI
5	933 8X20 8.8 B
6	125 8 BI
7	PX-022835
8	912 6X20 8.8 B
9	FE-614044
10	9021 12 BI
11	933 12X60 8.8 BI
12	CT-032801
13	AD-071312
14	PS-022801
14	PS-021309

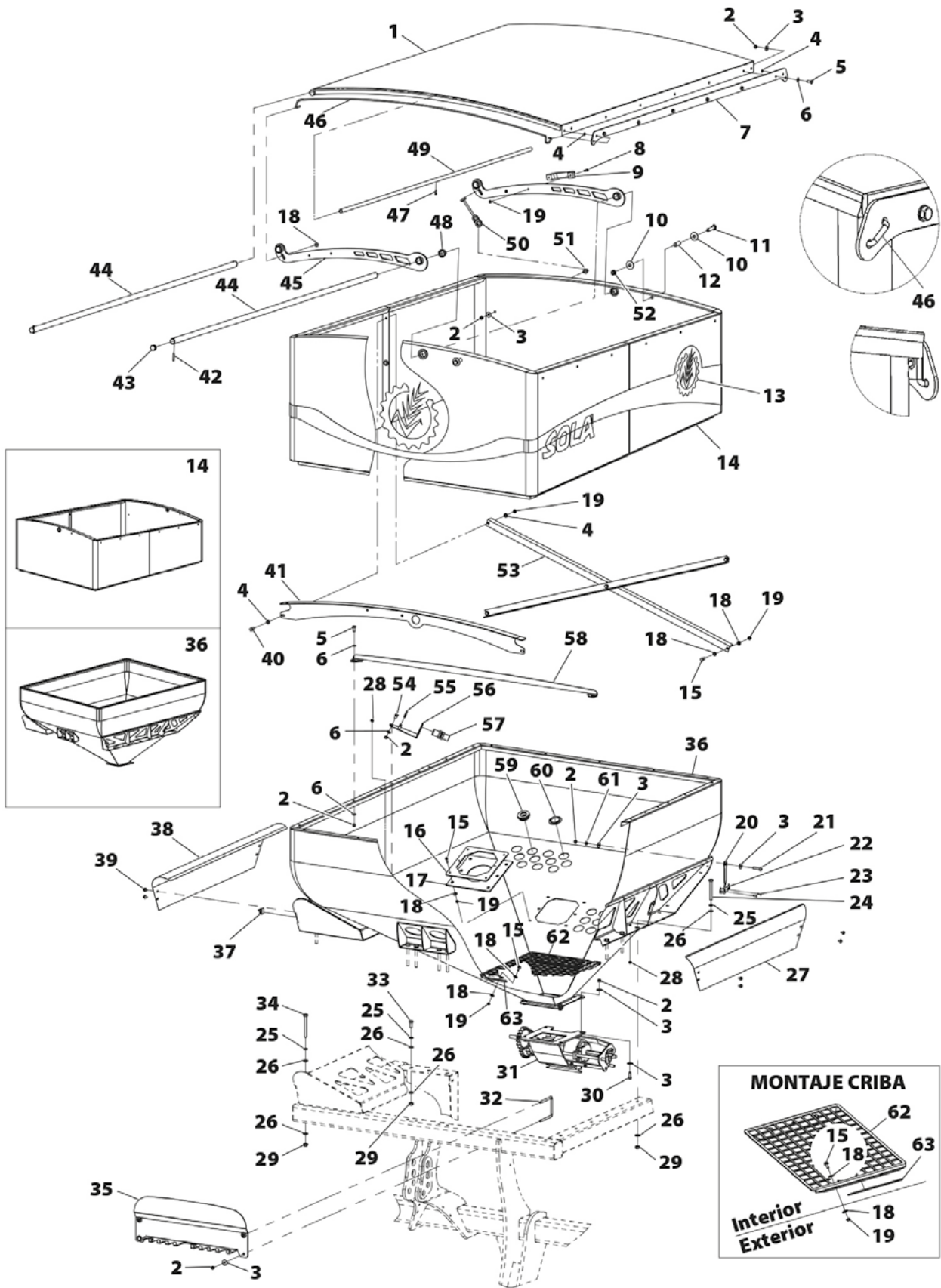
N°	REFERENCE
15	933 6X20 8.8 B
16	PX-022830
17	PL-022800
18	9021 6 BI
19	985 6
20	PX-072802
21	912 8X35 8.8 BI
22	PX-072820
23	FE-602013
24	931 10X90 8.8 B
25	127 10 BI
26	125 10 BI
27	PX-072816
28	CN-803290
29	985 10



13.19 HOPPER

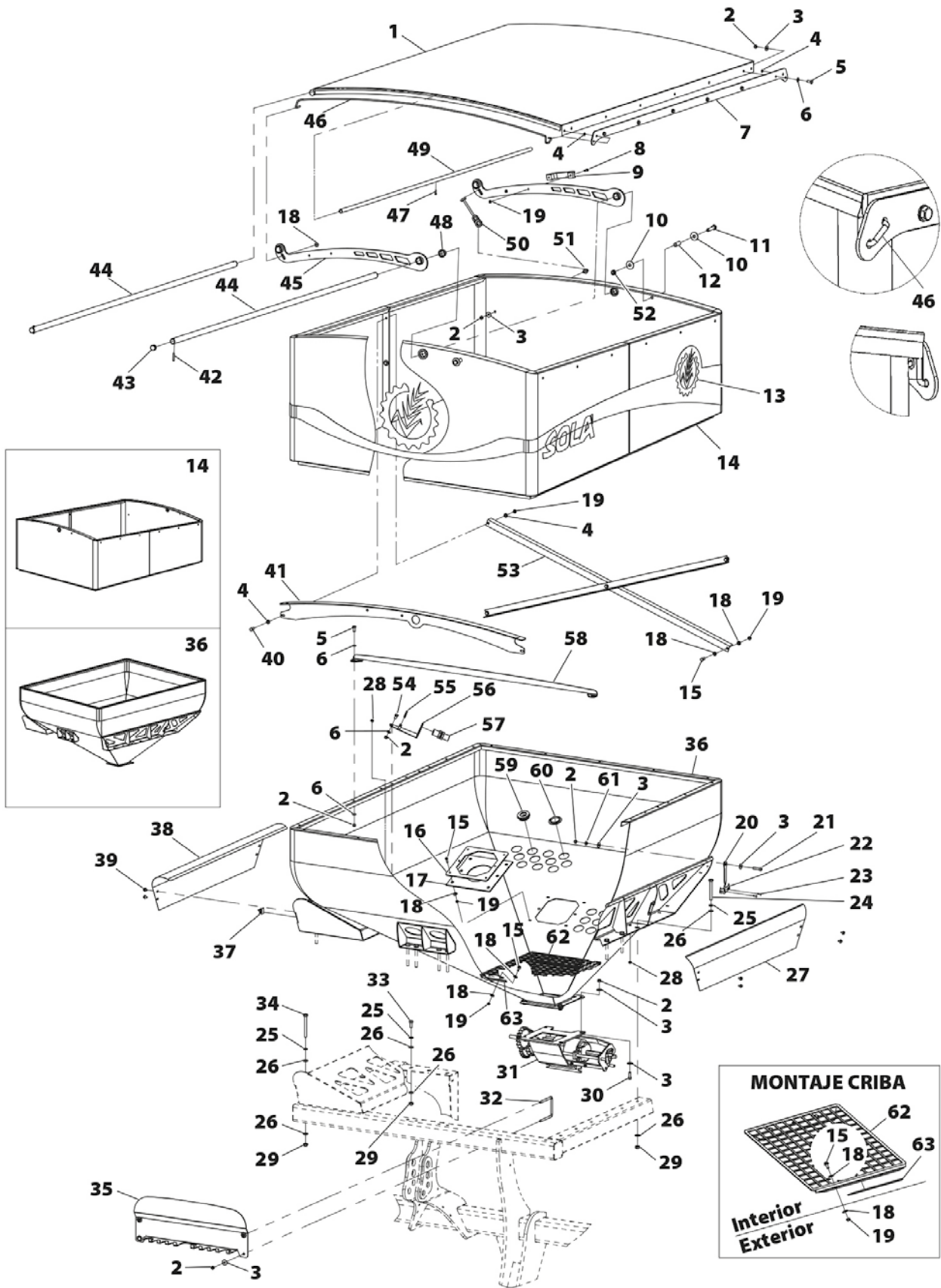
N°	REFERENCE
30	933 8x25 8.8 B
31	CT-042806
32	EE-071700
33	933 10x25 8.8 B
34	931 10X100 8.8B
35	PX-072814
36	PS-022800
37	FE-606007
38	PX-072815
39	6921 6X10 8.8 B
40	933 6X25 8.8 B
41	PS-022802
42	1481 6X35 BI
43	FE-611018
44	TA-032800

N°	REFERENCE
45	PS-032801
46	VA-032802
47	FE-602013
48	FE-600018
49	TA-022807
50	PL-031300
51	ME-021702
52	985 12
53	TA-022810
54	933 8X16 8.8 B
55	FE-606013
56	PX-101358
57	FE-650026
58	PX-022812
59	PL-021301



13.19 HOPPER

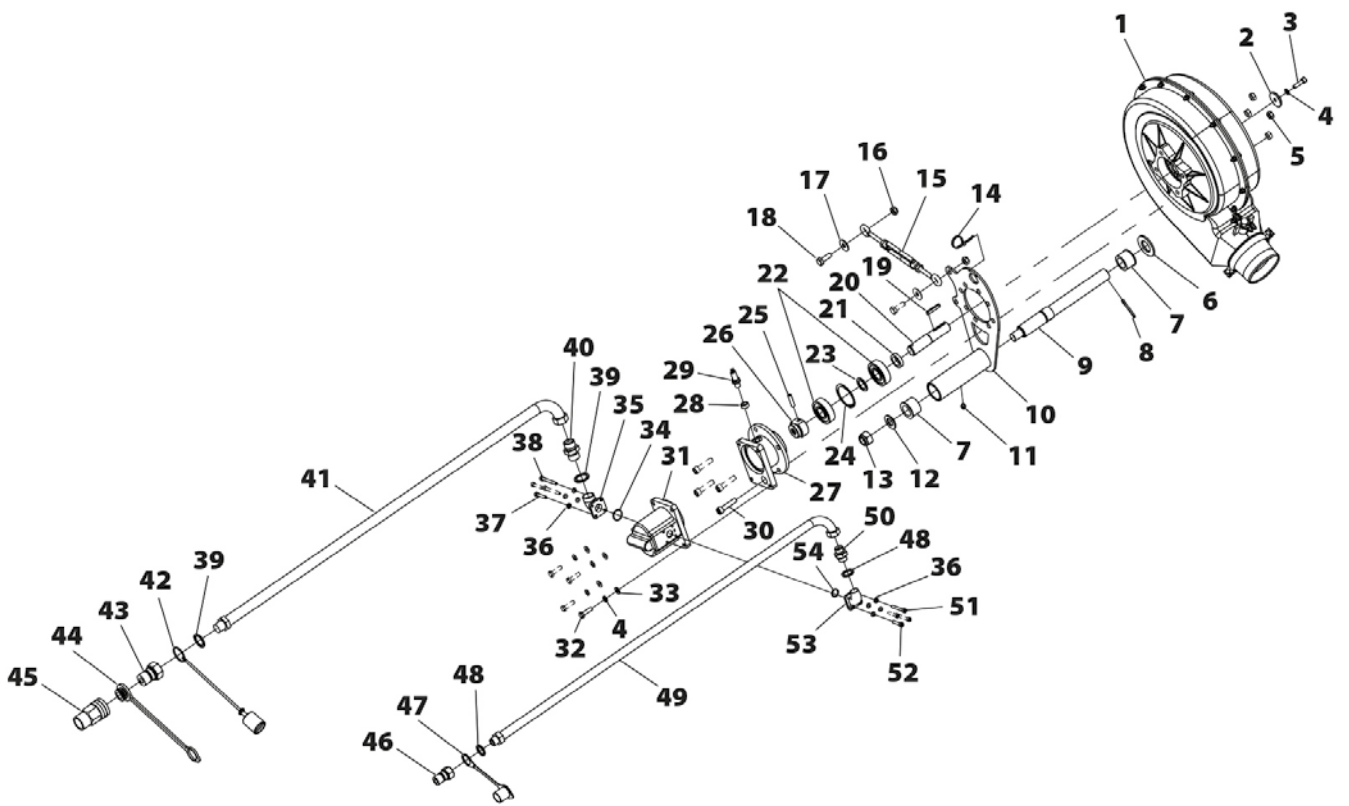
N°	REFERENCE
60	PL-021300
61	PL-072800
62	PX-022832
63	VA-032800



13.20 SMALL HYDRAULIC FAN

N°	REFERENCE
1	CO-041502
2	ME-041351
3	912 8X25 BI
4	127 8 BI
5	985 10
6	125 30 BI
7	PL-041306
8	94 5X40 BI
9	ME-042801
10	PS-042802
11	FE-603001
12	125 20 BI
13	985 20
14	FE-606013
15	FE-613015

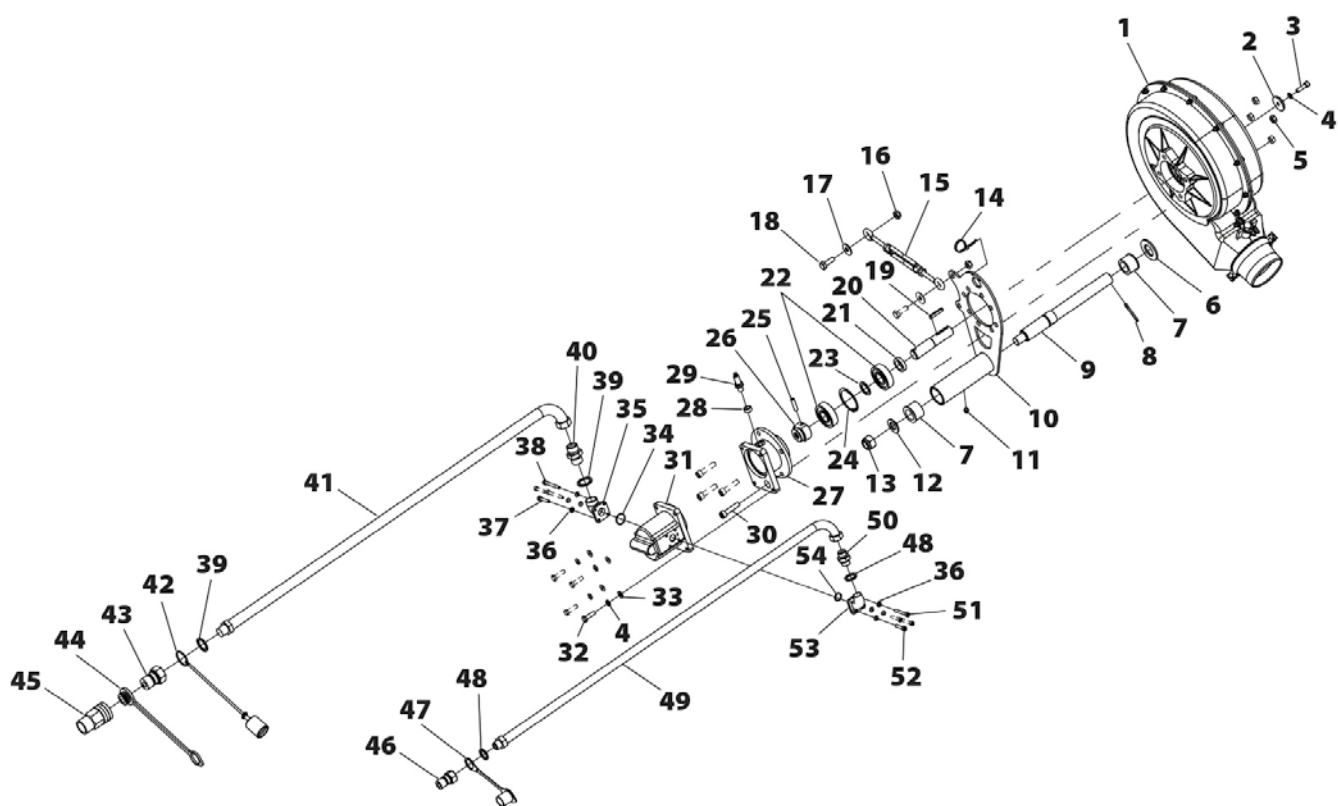
N°	REFERENCE
16	985 10
17	9021 10 BI
18	933 10X30 8.8 B
19	6885-A 6X6X35
20	ME-041360
21	ME-041350
22	FE-600078
23	ME-041349
24	472 62
25	7343 8X32
26	ME-041347
27	ME-041346
28	ME-041335
29	FE-650025
30	912 10X45 8.8 B



13.20 SMALL HYDRAULIC FAN

N°	REFERENCE
31	HI-708055
32	933 8X30 8.8 B
33	125 8 BI
34	FE-601092
35	HI-708057
36	127 6 BI
37	912 6X35 8.8 BI
38	912 6X55 8.8 BI
39	HI-705004
40	HI-704012
41	HI-700152
42	HI-707011

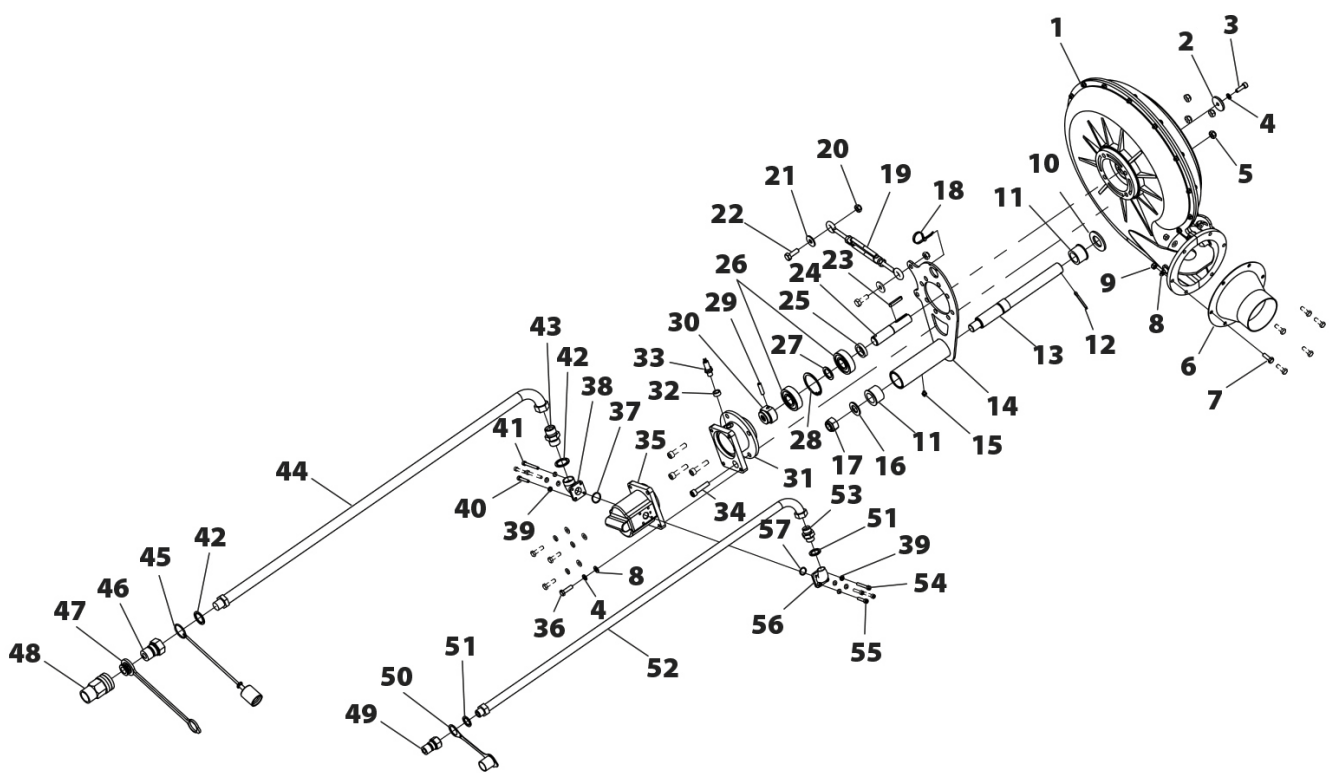
N°	REFERENCE
43	HI-701014
44	HI-707010
45	HI-701015
46	HI-701000
47	HI-707001
48	HI-705002
49	HI-700151
50	HI-704004
51	912 6X45 8.8 BI
52	912 6X30 BI
53	HI-708056
54	FE-601091



13.21 BIG HYDRAULIC FAN

N°	REFERENCE
1	CO-041502
2	ME-041351
3	912 8X25 BI
4	127 8 BI
5	985 10
6	PS-041335
7	933 8X25 8.8 B
8	125 8 BI
9	985 8
10	125 30 BI
11	PL-041306
12	94 5X40 BI
13	ME-042801
14	PS-042802
15	FE-603001

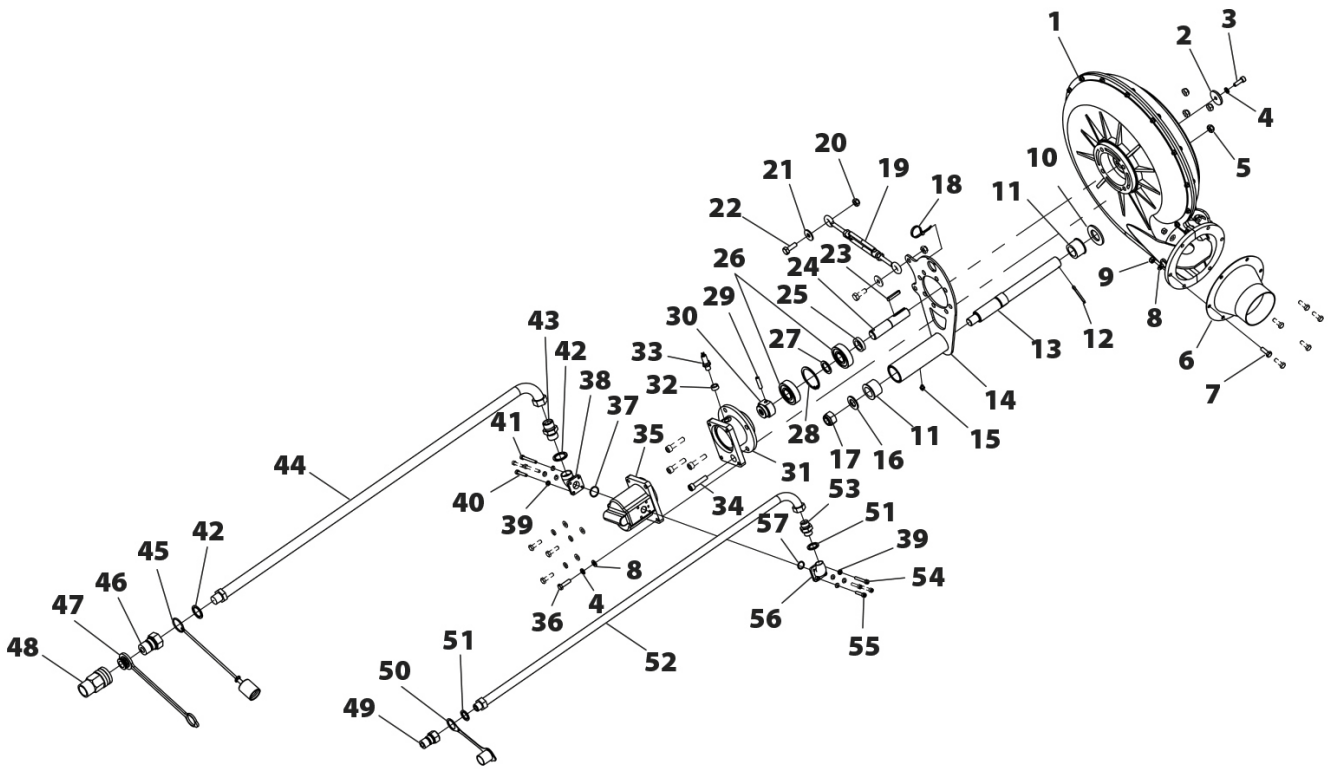
N°	REFERENCE
16	125 20 BI
17	985 20
18	FE-606013
19	FE-613015
20	985 10
21	9021 10 BI
22	933 10X30 8.8 B
23	6885-A 6X6X35
24	ME-041360
25	ME-041350
26	FE-600078
27	ME-041349
28	472 62
29	7343 8X32
30	ME-041347



13.21 BIG HYDRAULIC FAN

N°	REFERENCE
31	ME-041346
32	ME-041335
33	FE-650025
34	912 10X45 8.8 B
35	HI-708055
36	933 8X30 8.8 B
37	FE-601092
38	HI-708057
39	127 6 BI
40	912 6X35 8.8 BI
41	912 6X55 8.8 BI
42	HI-705004
43	HI-704012
44	HI-700152

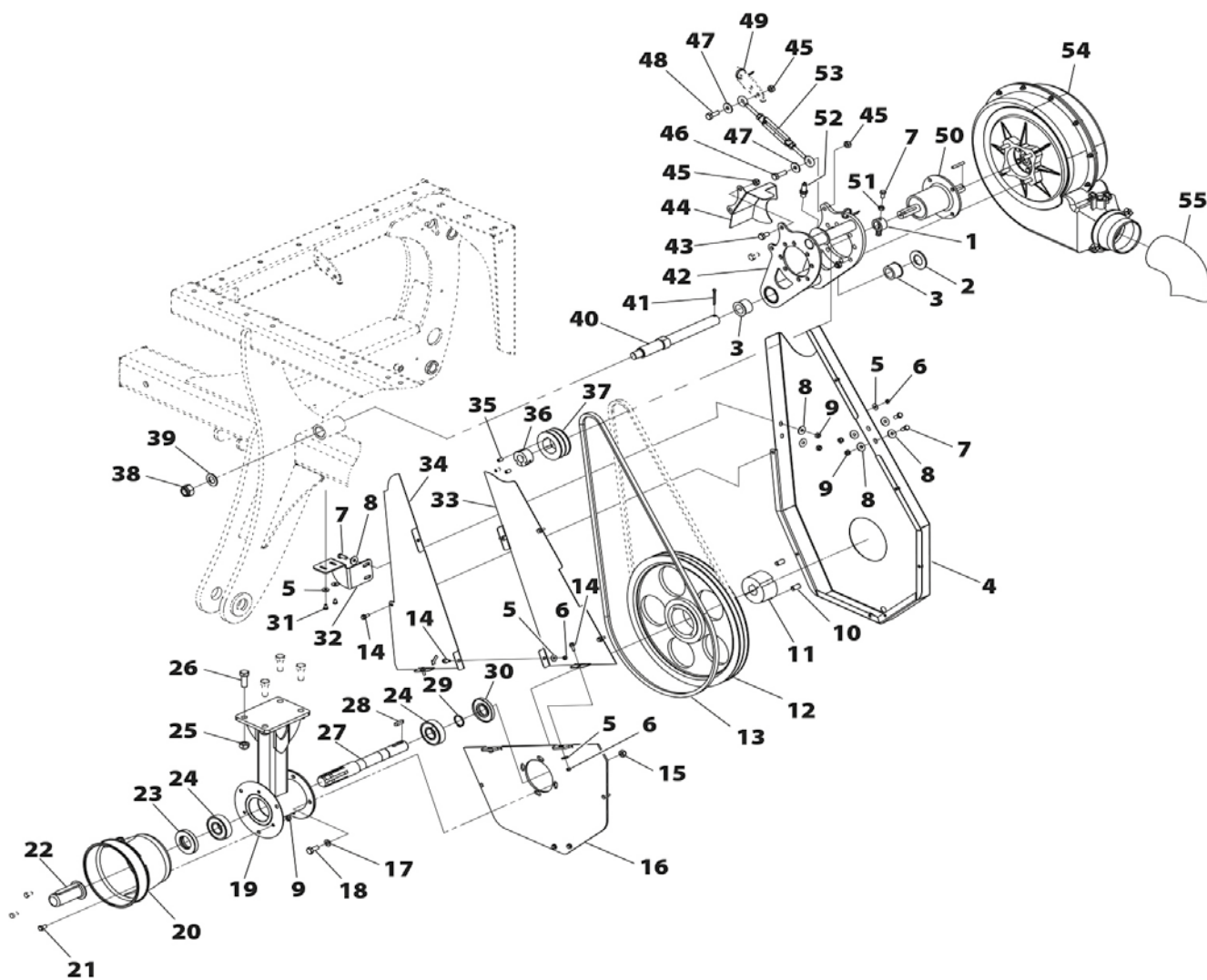
N°	REFERENCE
45	HI-707011
46	HI-701014
47	HI-707010
48	HI-701015
49	HI-701000
50	HI-707001
51	HI-705002
52	HI-700151
53	HI-704004
54	912 6X45 8.8 BI
55	912 6X30 BI
56	HI-708056
57	FE-601091



13.22 SMALL MECHANICAL FAN

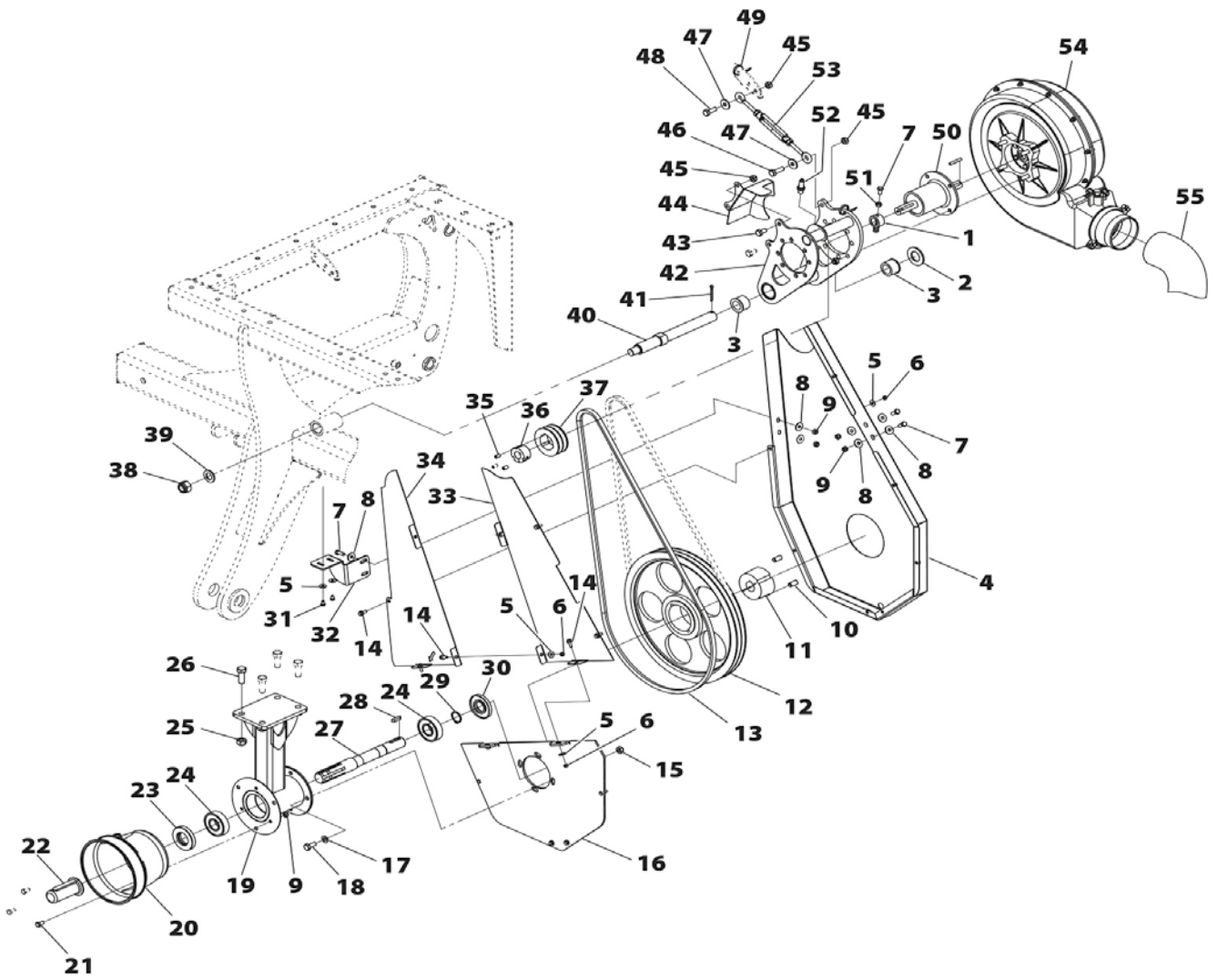
N°	REFERENCE
1	ME-041334
2	125 30 BI
3	PL-041306
4	PX-042813
5	9021 6 BI
6	985 6
7	933 8X20 8.8 B
8	9021 8 BI
9	985 8
10	913 12X25 BI
11	FE-604019
12	FE-604016
13	FE-604055
14	6921 6X16 8.8B
15	985 10

N°	REFERENCE
16	PX-042843
17	125 10 BI
18	933 10X25 8.8 B
19	PS-042800
20	TA-041306
21	933 8X16 8.8 B
22	CN-817016
23	FE-601041
24	FE-600051
25	985 14
26	933 14X40 8.8 B
27	ME-041332
28	6885-A 8X7X30
29	471 30
30	FE-601042



13.22 SMALL MECHANICAL FAN

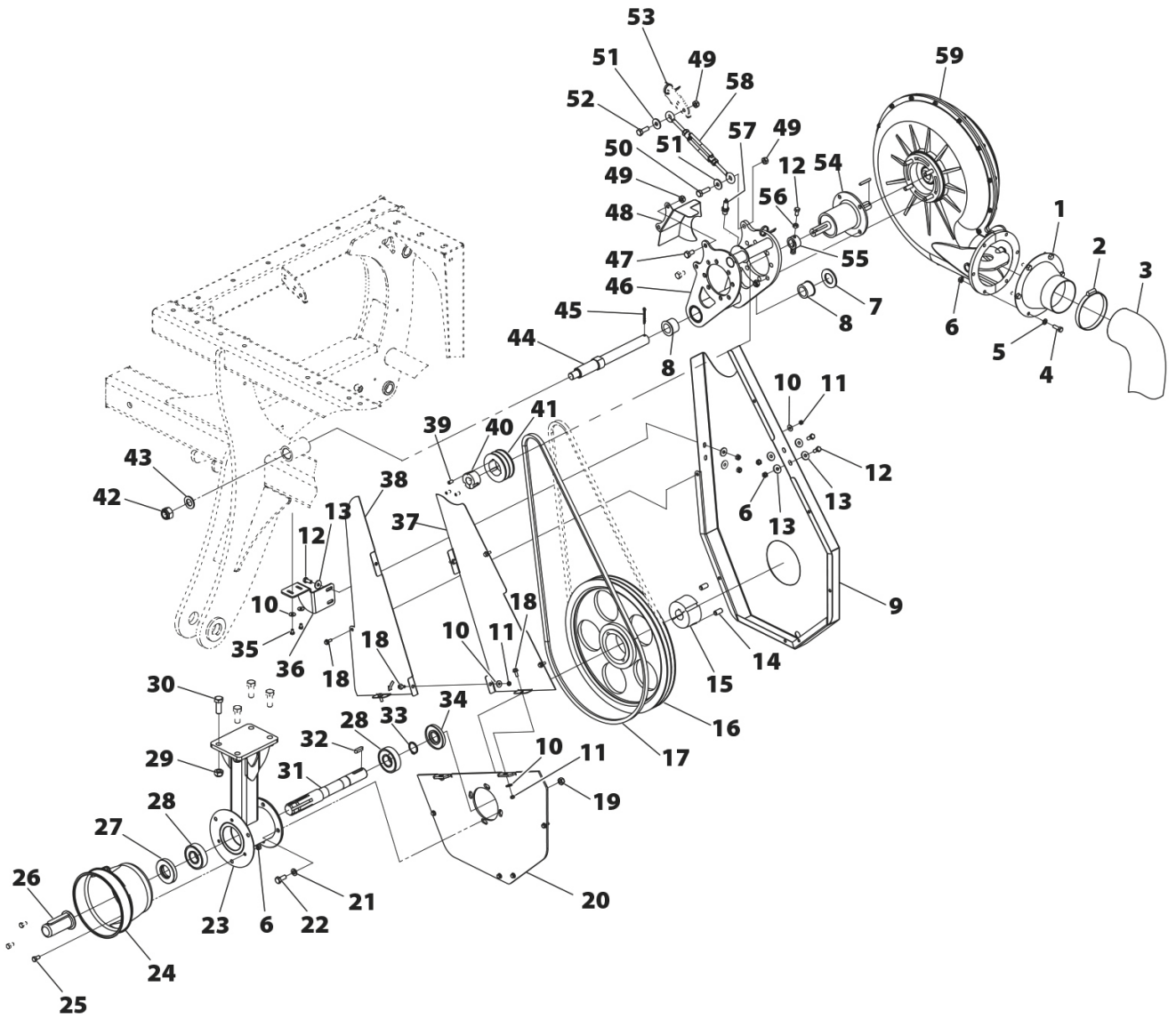
N°	REFERENCE
31	933 6X10 8.8 B
32	PX-042816
33	PX-042846
34	PX-042845
35	913 8X15 BI
36	FE-604020
37	FE-604017
38	985 20
39	125 20 BI
40	ME-042801
41	94 5X40 BI
42	PS-042802
43	933 10X20 8.8
44	PX-042825
45	985 10
46	933 10X35 8.8 B
47	9021 10 BI
48	933 10X30 8.8 B
49	FE-606013
50	CO-041313
51	934 8 BI
52	FE-650025
53	FE-613015
54	CO-041310
55	VA-042802



13.23 BIG MECHANICAL FAN

N°	REFERENCE
1	PS-041335
2	FE-606008
3	VA-042802
4	933 8X25 8.8 B
5	125 8 BI
6	985 8
7	125 30 BI
8	PL-041306
9	PX-042813
10	9021 6 BI
11	985 6
12	933 8X20 8.8 B
13	9021 8 BI
14	913 12X25 BI
15	FE-604019

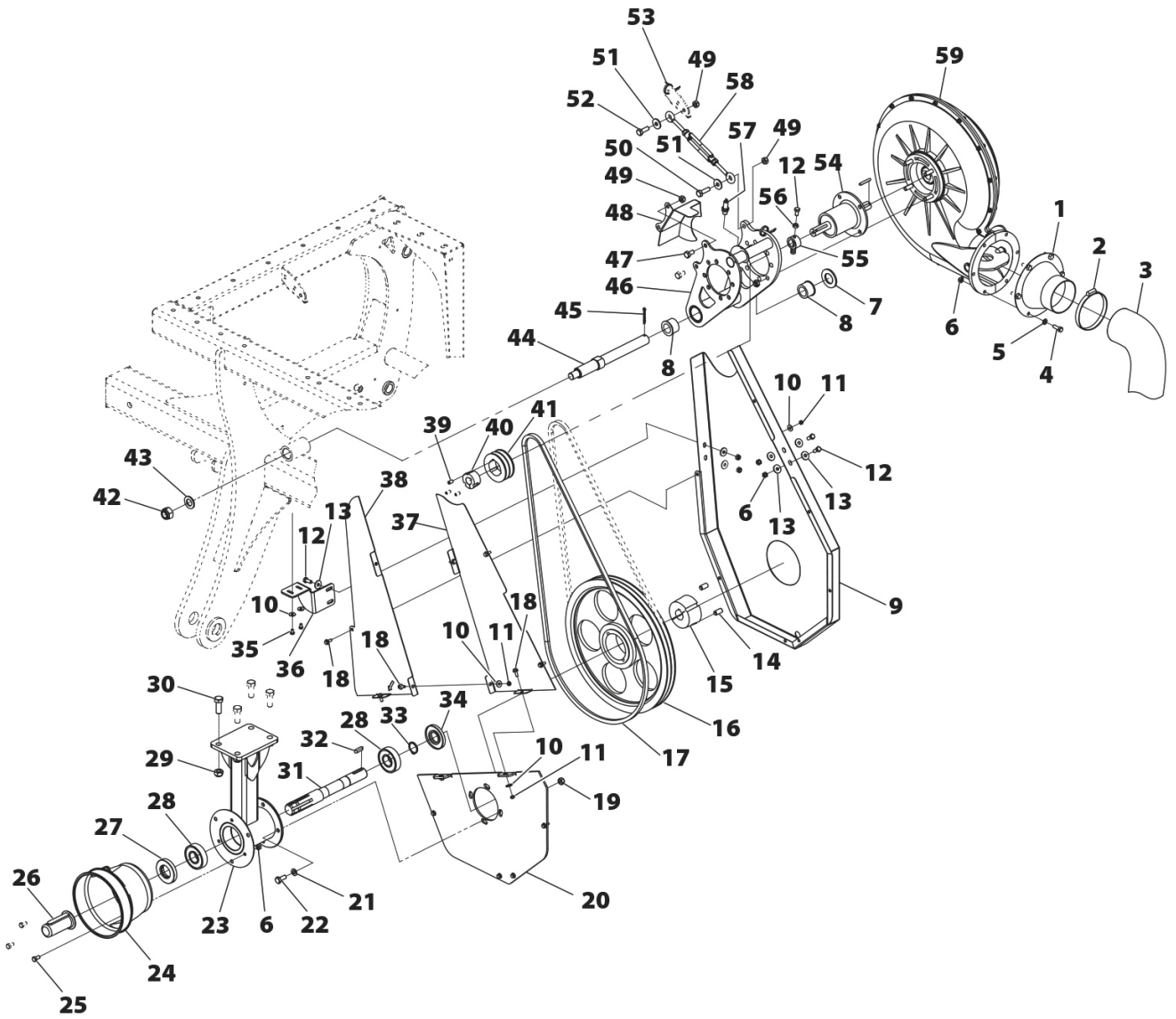
N°	REFERENCE
16	FE-604016
17	FE-604055
18	6921 6X16 8.8 B
19	985 10
20	PX-042843
21	125 10 BI
22	933 10X25 8.8 B
23	PS-042800
24	TA-041306
25	933 8X16 8.8 B
26	CN-817016
27	FE-601041
28	FE-600051
29	985 14
30	933 14X40 8.8 B



13.23 BIG MECHANICAL FAN

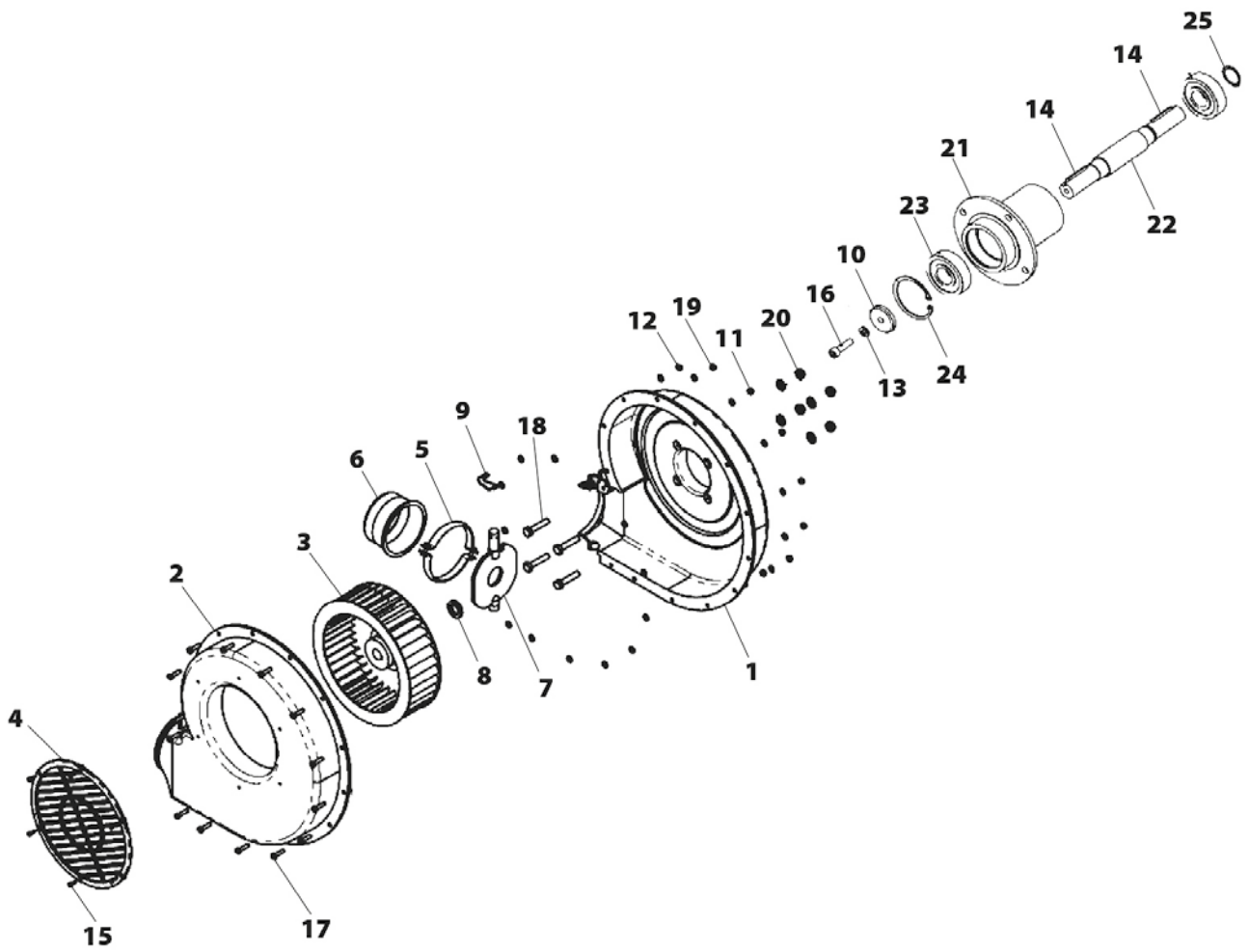
N°	REFERENCE
31	ME-041332
32	6885-A 8X7X30
33	471 30
34	FE-601042
35	933 6X10 8.8 B
36	PX-042816
37	PX-042846
38	PX-042845
39	913 8X15 BI
40	FE-604020
41	FE-604017
42	985 20
43	125 20 BI
44	ME-042801
45	94 5X40 BI

N°	REFERENCE
46	PS-042802
47	933 10X20 8.8
48	PX-042825
49	985 10
50	933 10X35 8.8 B
51	9021 10 BI
52	933 10X30 8.8 B
53	FE-606013
54	CO-041313
55	ME-041334
56	934 8 BI
57	FE-650025
58	FE-613015
59	CO-041502



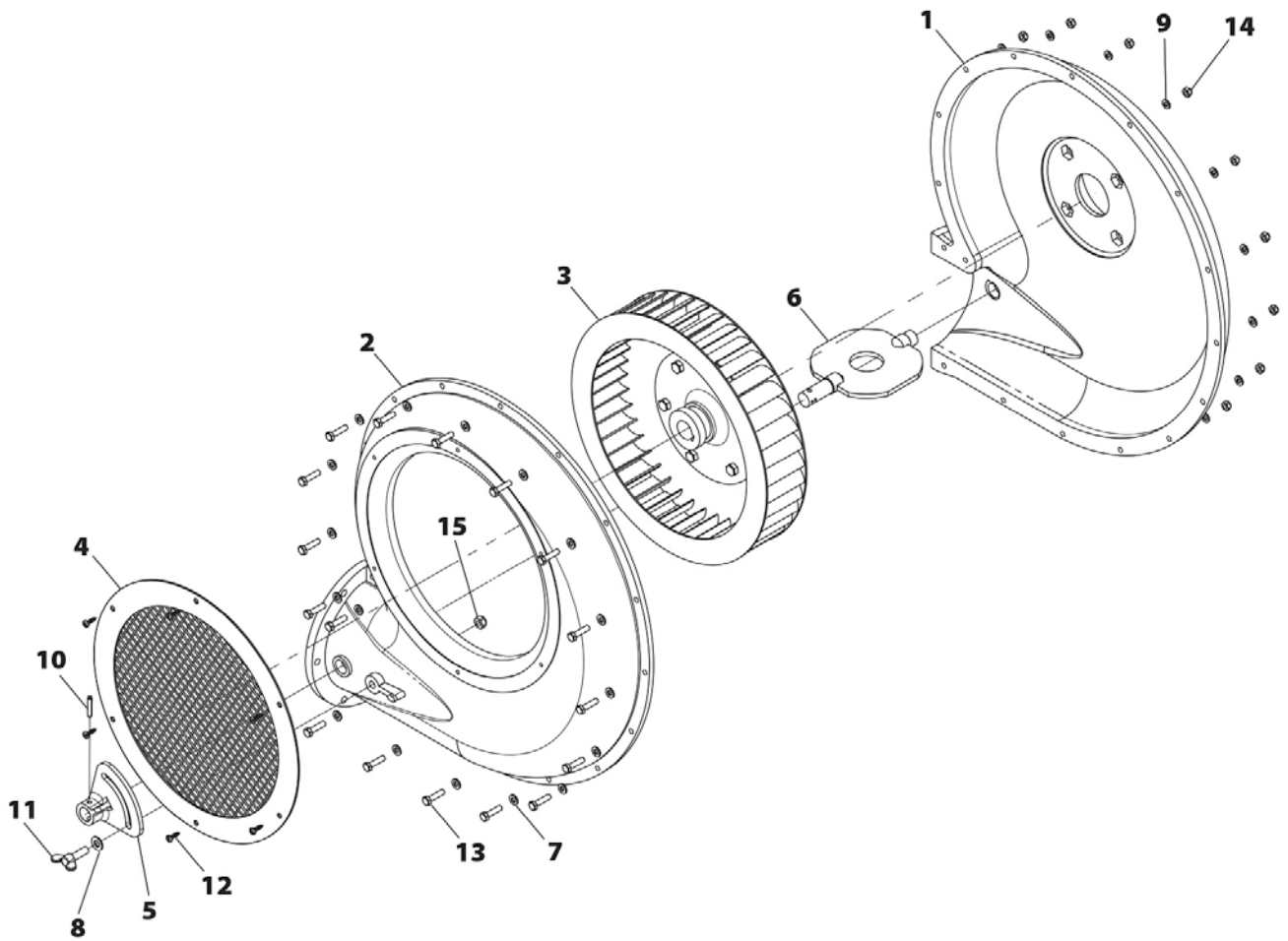
13.24 SMALL FAN WITH WHEEL HUB

N°	REFERENCE
1	CO-041310/01
2	CO-041310/02
3	CO-041310/03
4	CO-041310/04
5	CO-041310/05
6	CO-041310/06
7	CO-041310/07
8	CO-041310/08
9	CO-041310/09
10	ME-041351
11	125 10 BI
12	125 6 BI
13	127 8 BI
14	6885-A 6X6X35
15	7971 4,2X16 B
16	912 8X30 8.8
17	933 6X25 8.8 B
18	933 10X50 8.8 B
19	985 6
20	985 10
21	CO-041313/01
22	CO-041313/02
23	FE-600078
24	472 62
25	471 25



13.25 BIG MECHANICAL FAN D320

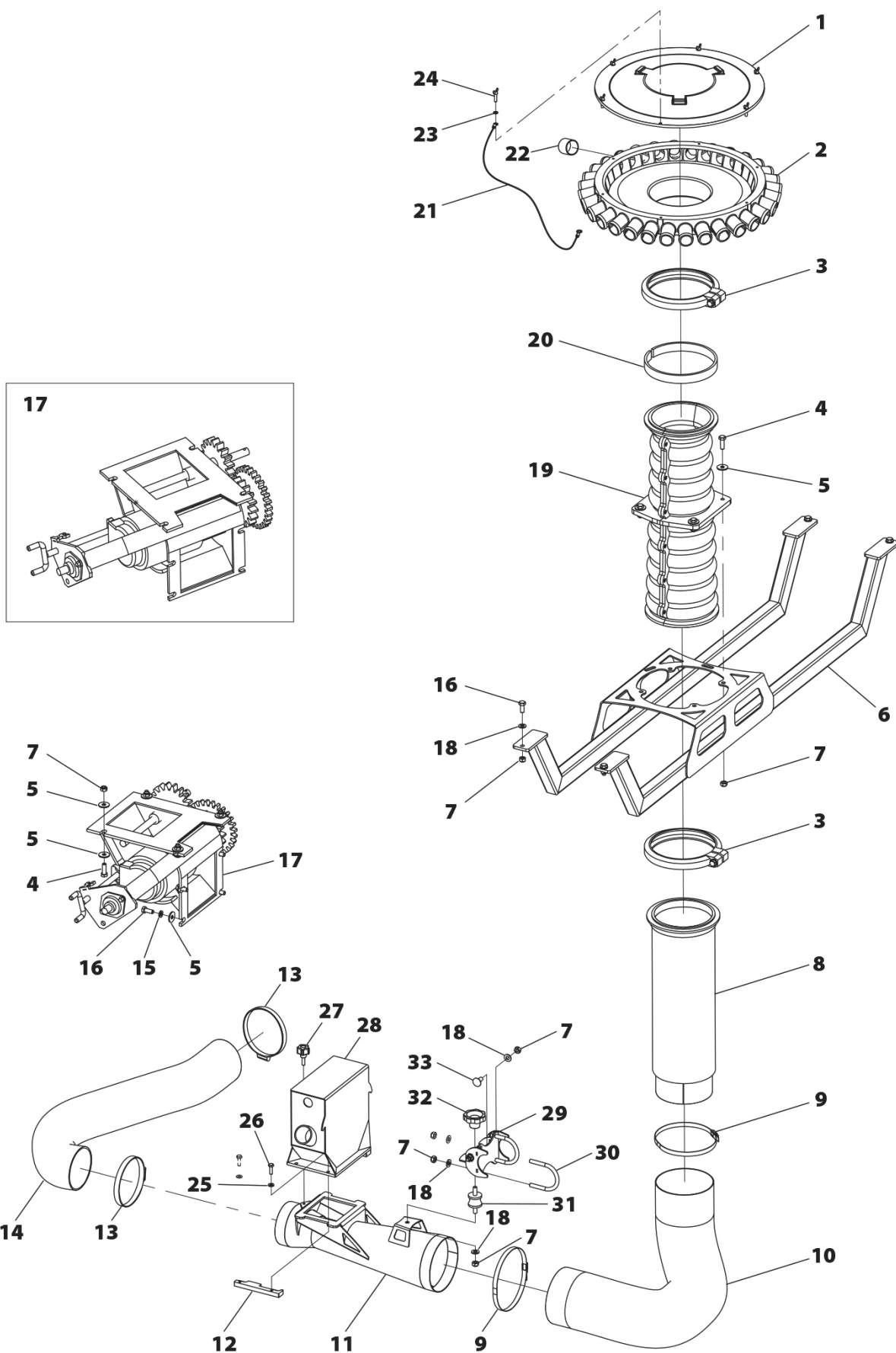
N°	REFERENCE
1	CO-041502-00
2	CO-041502-01
3	CO-041502-02
4	CO-041502-03
5	CO-041502-04
6	CO-041502-05
7	125 6 BI
8	125 8 BI
9	127 6 BI
10	1481 5X28 BI
11	316 8x25 BI
12	7971 4,2X16 BI
13	933 6X25 8.8B
14	985 6
15	985 8



13.26 NEUMATIC DISTRIBUTION

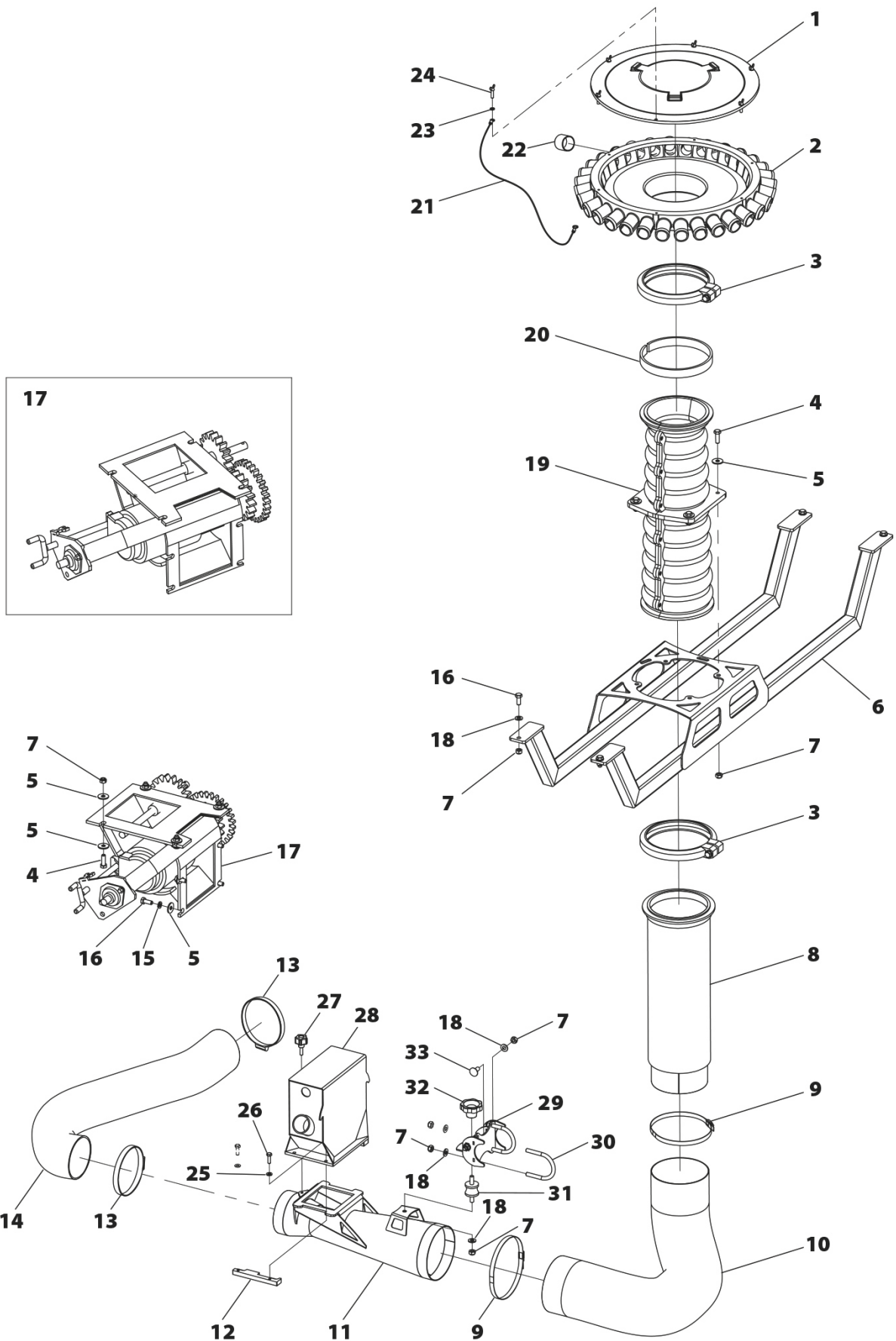
N°	REFERENCE
1	ME-041353
1	ME-041355
1	ME-041329
2	ME-041352
2	ME-041354
2	ME-041328
3	PL-041302
4	933 8X25 8.8 B
5	9021 8 BI
6	PS-022807
6	PS-021310
7	985 8
8	PS-042803
8	PS-041383
9	FE-606019

N°	REFERENCE
10	VA-042801
11	PS-042816
12	ME-042812
13	FE-606008
14	VA-042802
15	127 8 BI
16	933 8X20 8.8 B
17	CT-042806
18	125 8 BI
19	PL-041303
20	VA-022800
21	RE-041313
22	CN-817040
23	125 5 BI
24	316 5X20 BI



13.26 NEUMATIC DISTRIBUTION

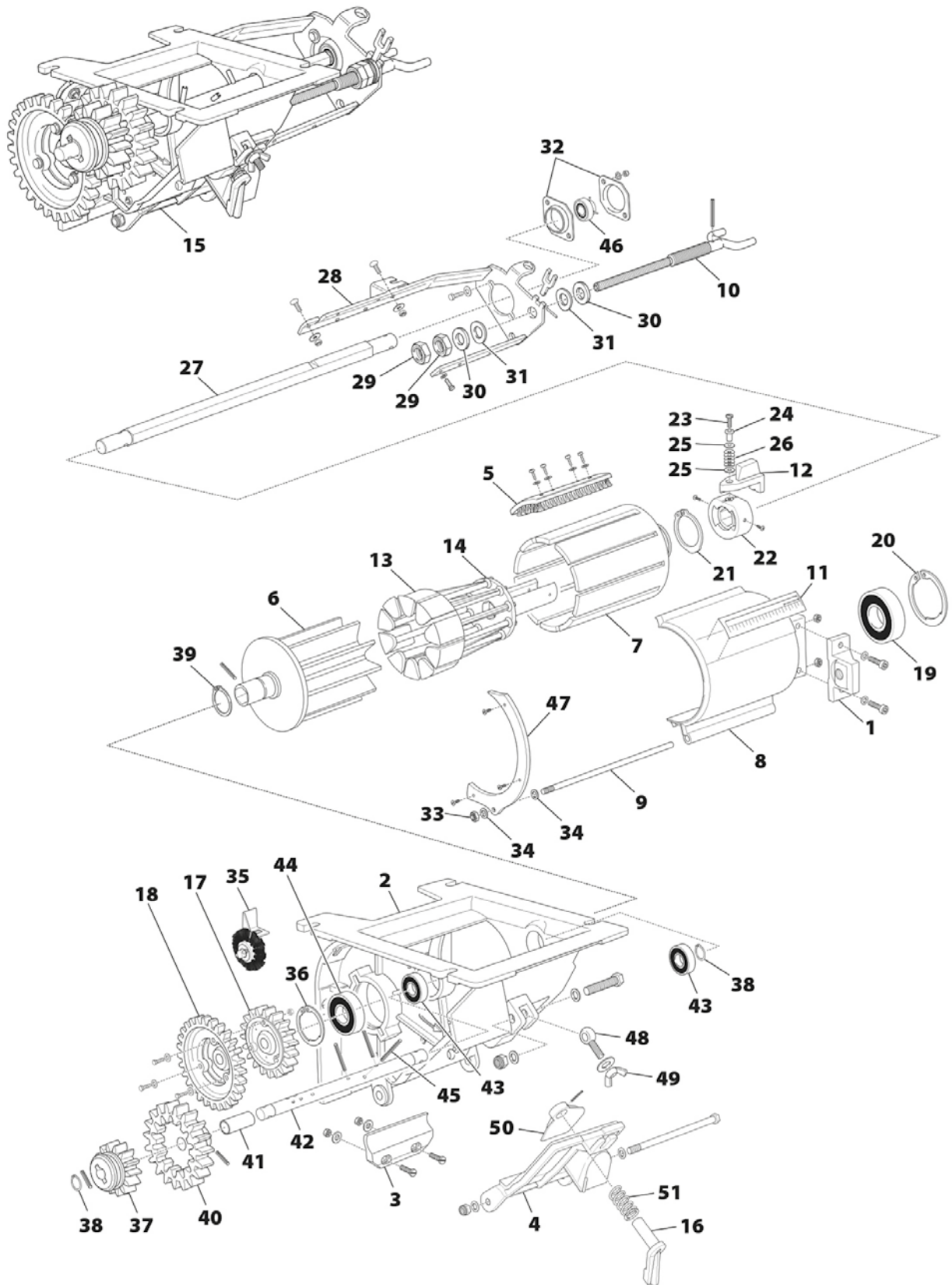
N°	REFERENCE
25	125 6 BI
26	933 6X20 8.8 B
27	FE-614069
28	PS-042817
29	PS-042818
30	EE-042802
31	FE-660023
32	PL-101700
33	603 8X20 8.8 BI



13.27 DISTRIBUTOR

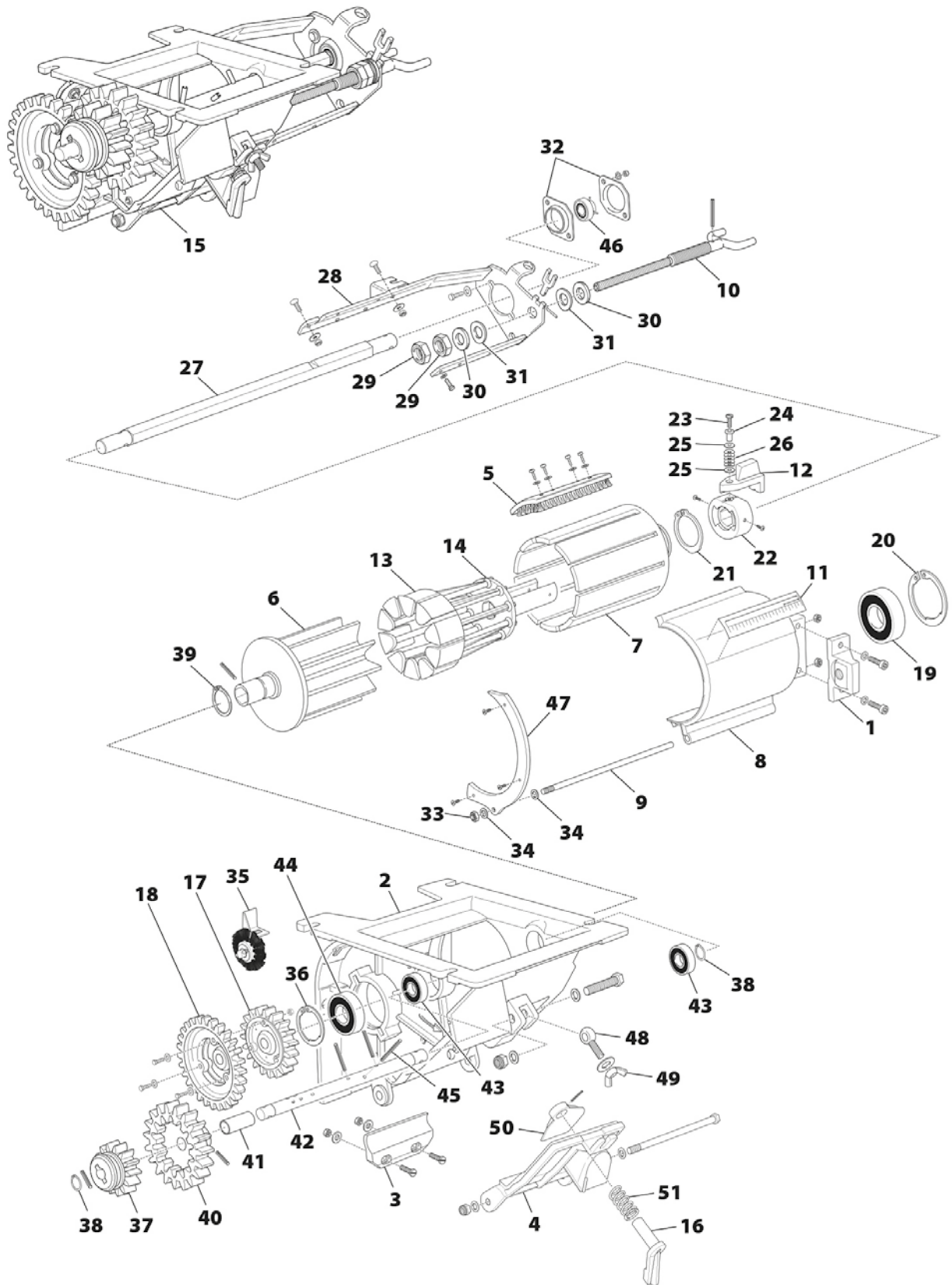
N°	REFERENCE
1	AG-041300
2	AG-041340
3	AG-041302
4	AG-041341
5	AG-041304
6	AG-041305
7	AG-041306
8	AG-041307
9	AG-041308
10	AG-041309
11	AG-041310
12	AG-041315
13	AG-041316
14	AG-041317
15	CO-041305

N°	REFERENCE
16	AG-041342
17	AG-041319
18	AG-041320
19	FE-600064
20	472 75
21	471 45
22	AG-041321
23	920 4X20 BI
24	AG-041322
25	125 6 BI
26	137B 6
27	AG-041323
28	AG-041324
29	AG-041336
30	125 18 BI



13.27 DISTRIBUTOR

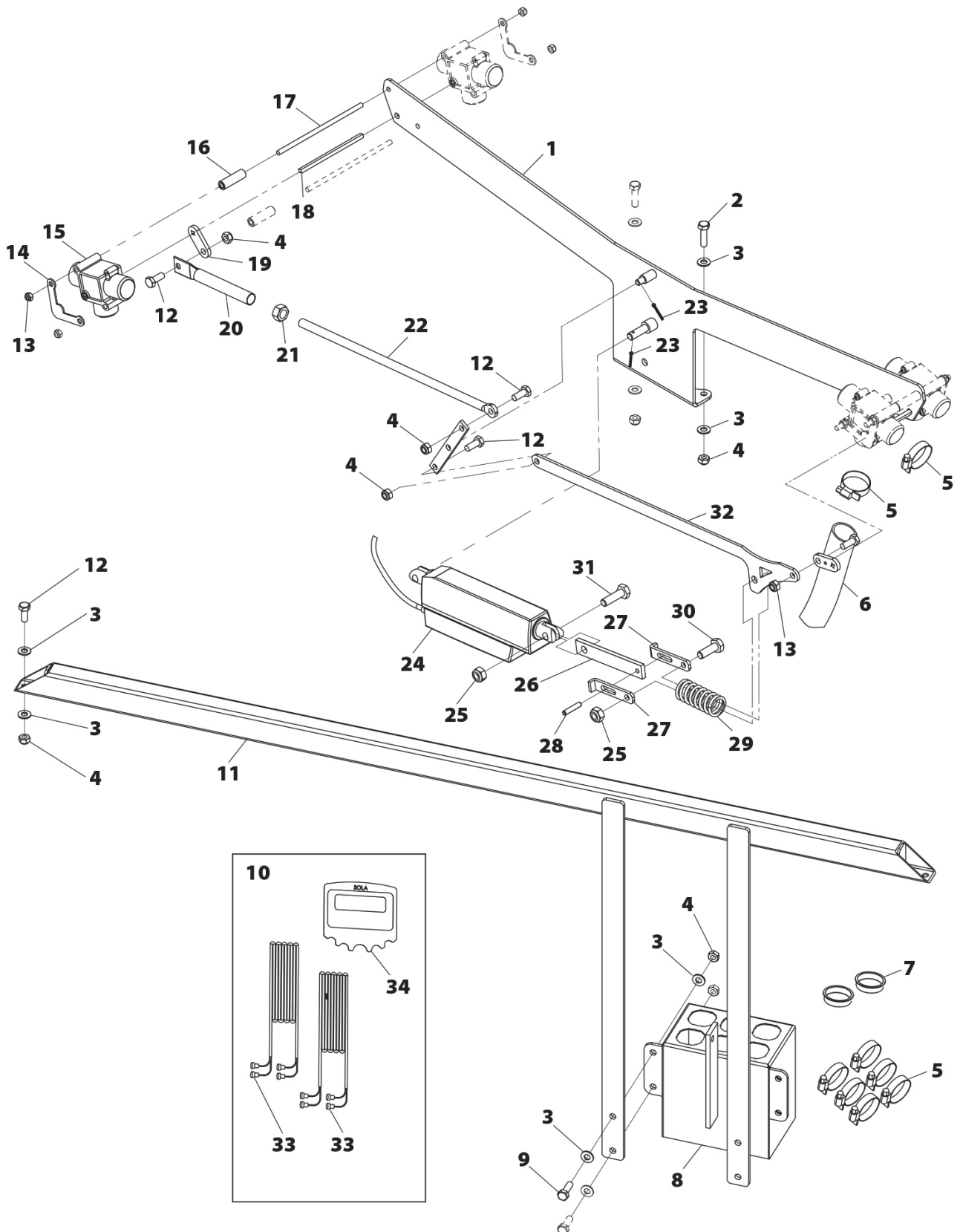
N°	REFERENCE
31	137B 18
32	AG-041325
33	934 5 BI
34	125 5 BI
35	AG-041326
36	472 47
37	AG-041328
38	471 15
39	471 25
40	AG-041331
41	AG-041332
42	AG-041333
43	CO-042404/11
44	FE-600047
45	1481 5X50 BI
46	AG-041334
47	AG-041335
48	444 8X35 BI
49	315 8 BI
50	AG-041343
51	AG-041344



13.28 TRAMLINES

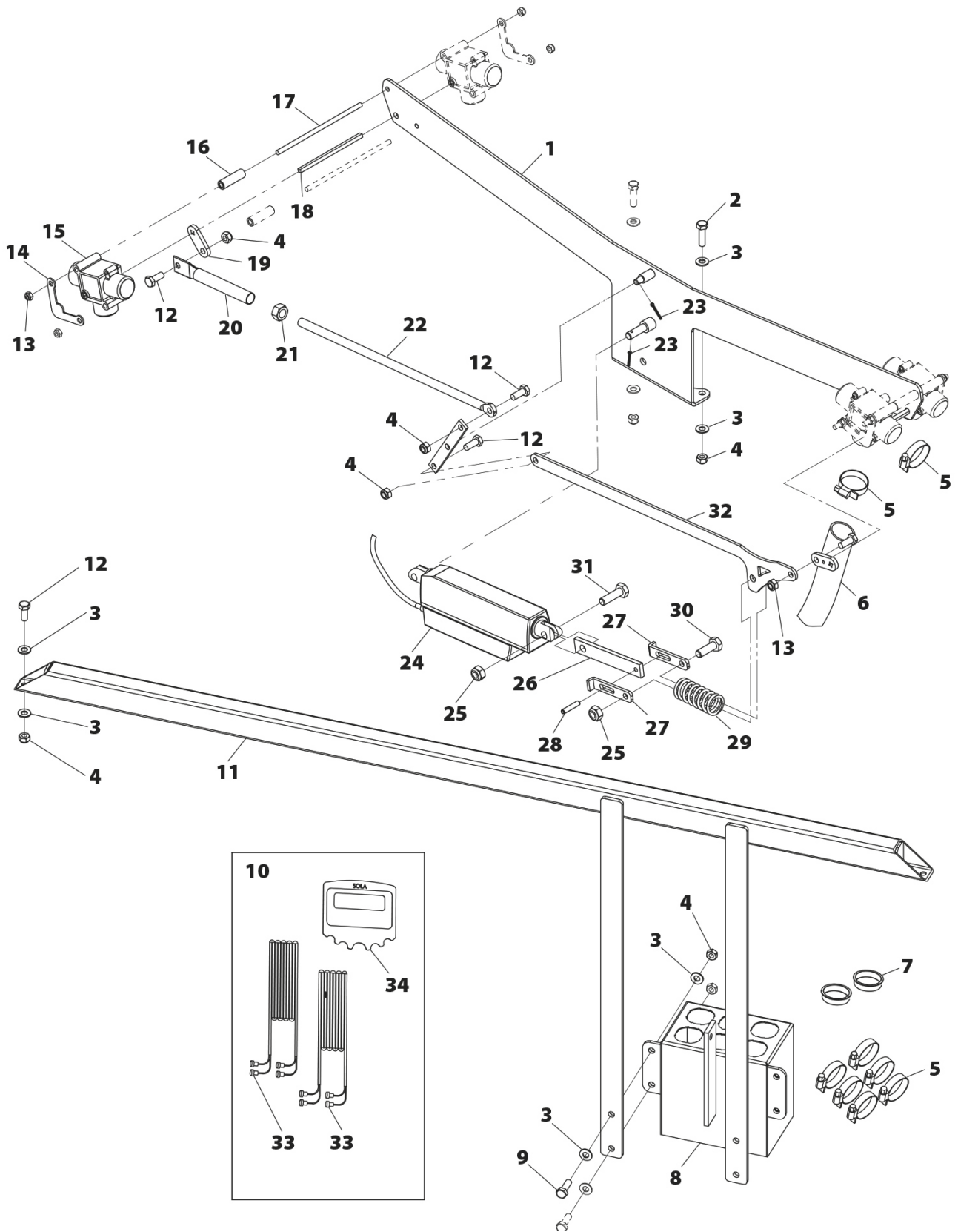
N°	REFERENCE
1	PS-101309
2	933 8X30 8.8 B
3	125 8 BI
4	985 8
5	FE-606023
6	MP-907018
7	FE-611024
8	PS-101347
9	933 8X25 8.8 B
10	MV-101336
11	PS-201315
12	933 8X20 8.8 B
13	985 6
14	PX-102832
15	MO-041305

N°	REFERENCE
16	ME-102815
17	CT-101370
18	CT-101371
19	PX-102834
20	EE-101318
21	934 12
22	EE-101337
23	94 3x20 BI
24	CO-101301
25	985 10
26	EE-101325
27	PX-101318
28	1481 6X30 BI
29	ML-101301
30	933 10x30 8.8 B



13.28 TRAMLINES

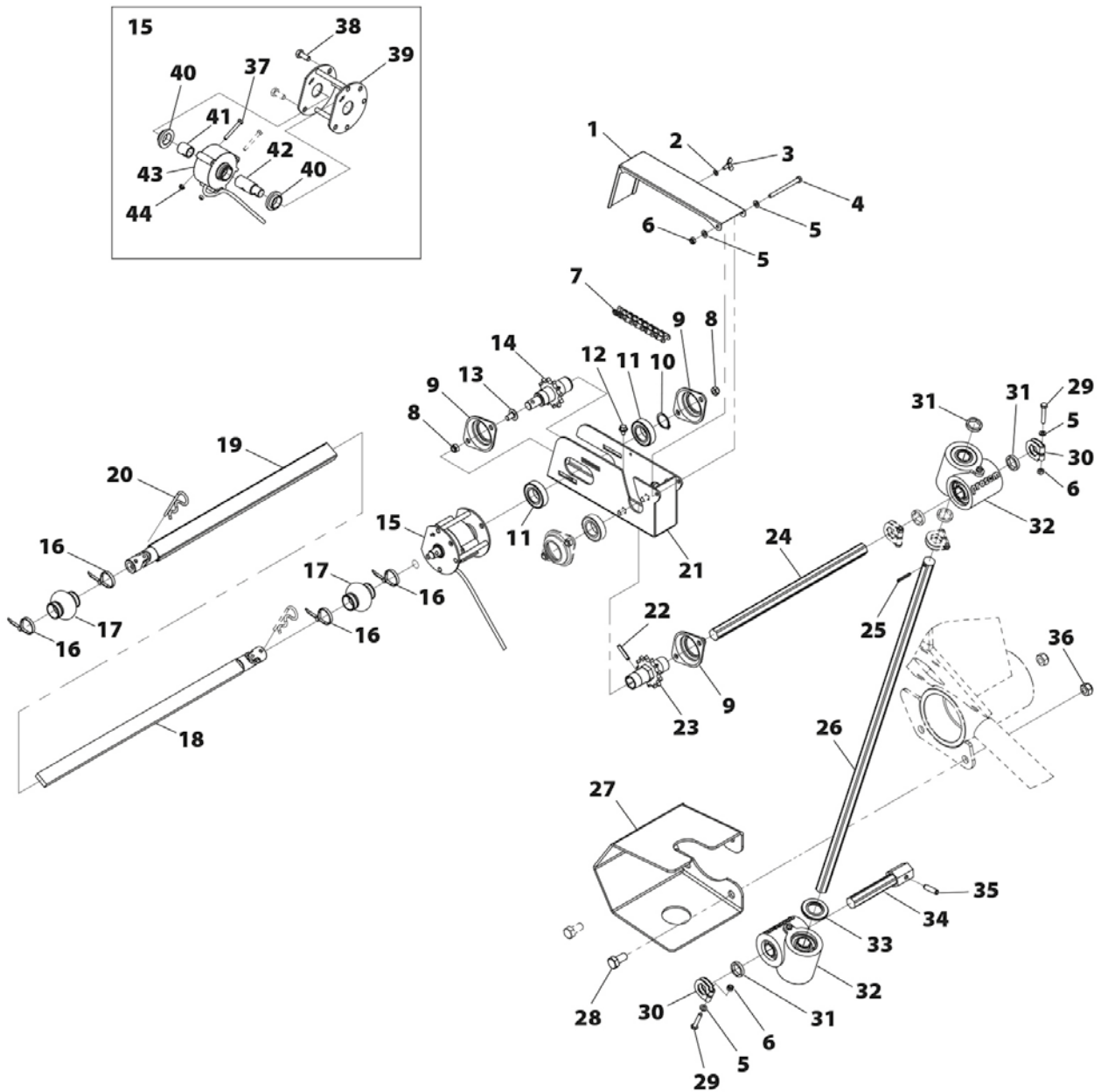
N°	REFERENCE
31	933 10X35 8.8 B
32	PX-102833
33	MV-101336-01
34	MV-101336-02



13.29 MECHANICAL TRANSMISSION

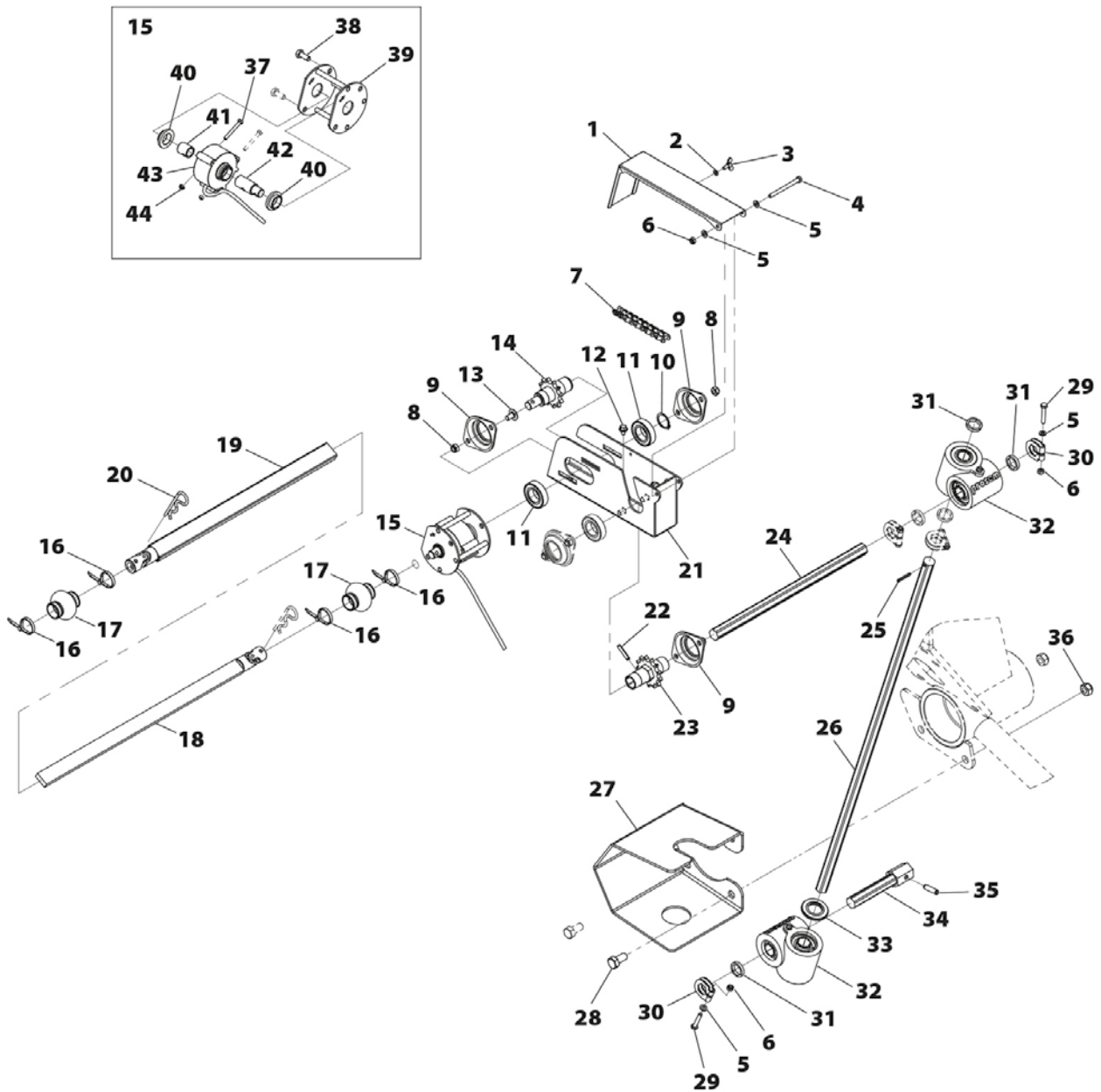
N°	REFERENCE
1	PX-042805
2	125 5 BI
3	316 5x10 BI
4	931 6X70 8.8 B
5	125 6 BI
6	985 6
7	FE-605107
8	985 8
9	EE-041701
10	471 25
11	FE-600047
12	6921 6X10 8.8 B
13	603 8X15 BI C-C
14	PS-042810
14	PS-042811

N°	REFERENCE
15	EO-102802
16	FE-606013
17	PL-041714
18	PS-041324
19	PS-041325
20	FE-610003
21	PX-042803
22	1481 6X30 BI
23	PS-042809
23	PS-042805
23	PS-042804
24	TA-042800
25	1481 4X30 BI
26	TA-041313
27	PX-012840



13.29 MECHANICAL TRANSMISSION

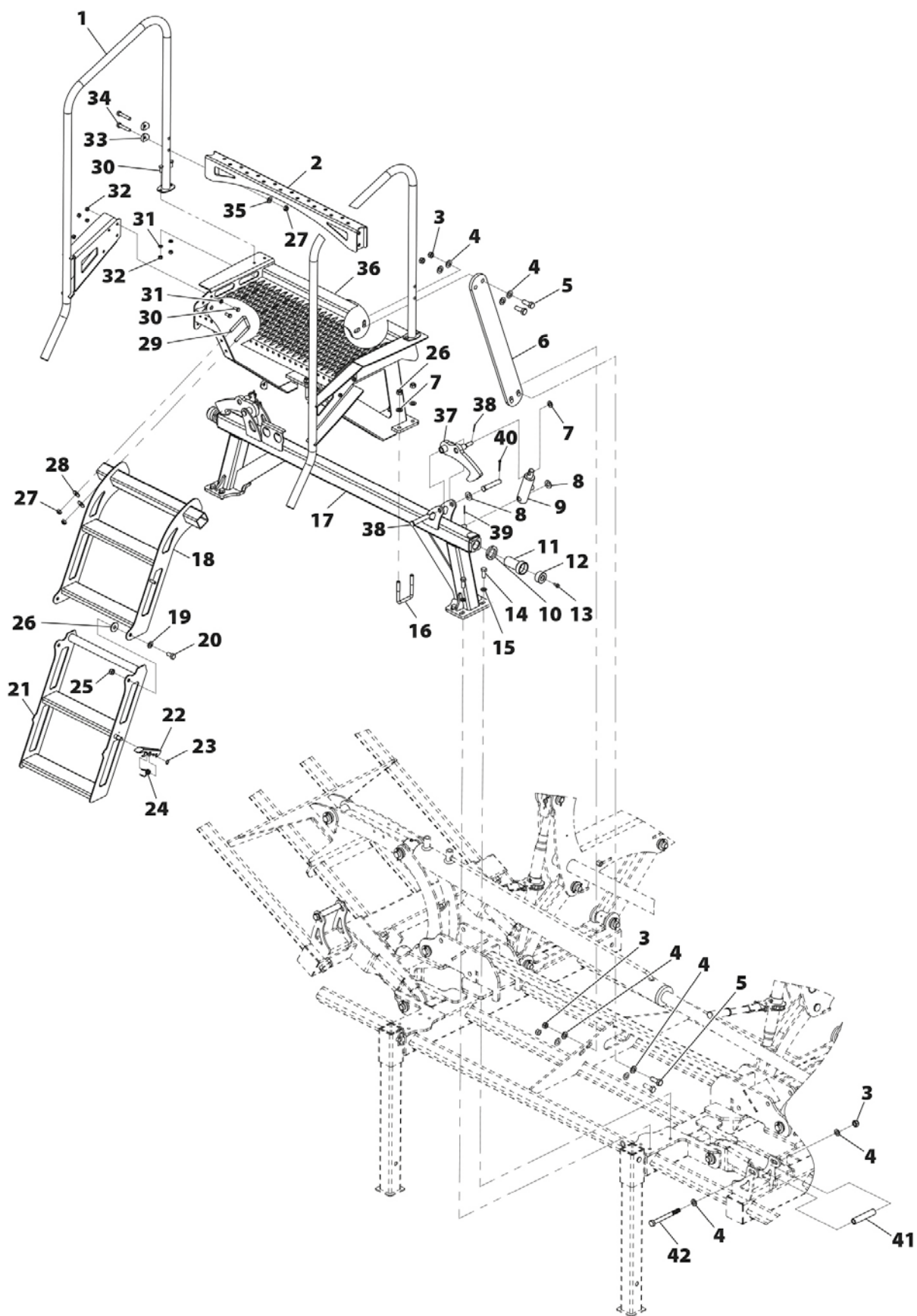
N°	REFERENCE
28	933 12X25 8.8 B
29	931 6X35 8.8 B
30	PX-141726
31	PX-042820
32	CO-141736
33	FE-601074
34	PS-042806
35	1481 8X30 BI
36	985 12
37	931 5X40 8.8 BI
38	933 8X20 8.8 B
39	PS-042812
40	PL-020204
41	ME-102802
42	ME-101333
43	MV-100603
44	985 5



13.30 STAIR FOR TINE COULTERS

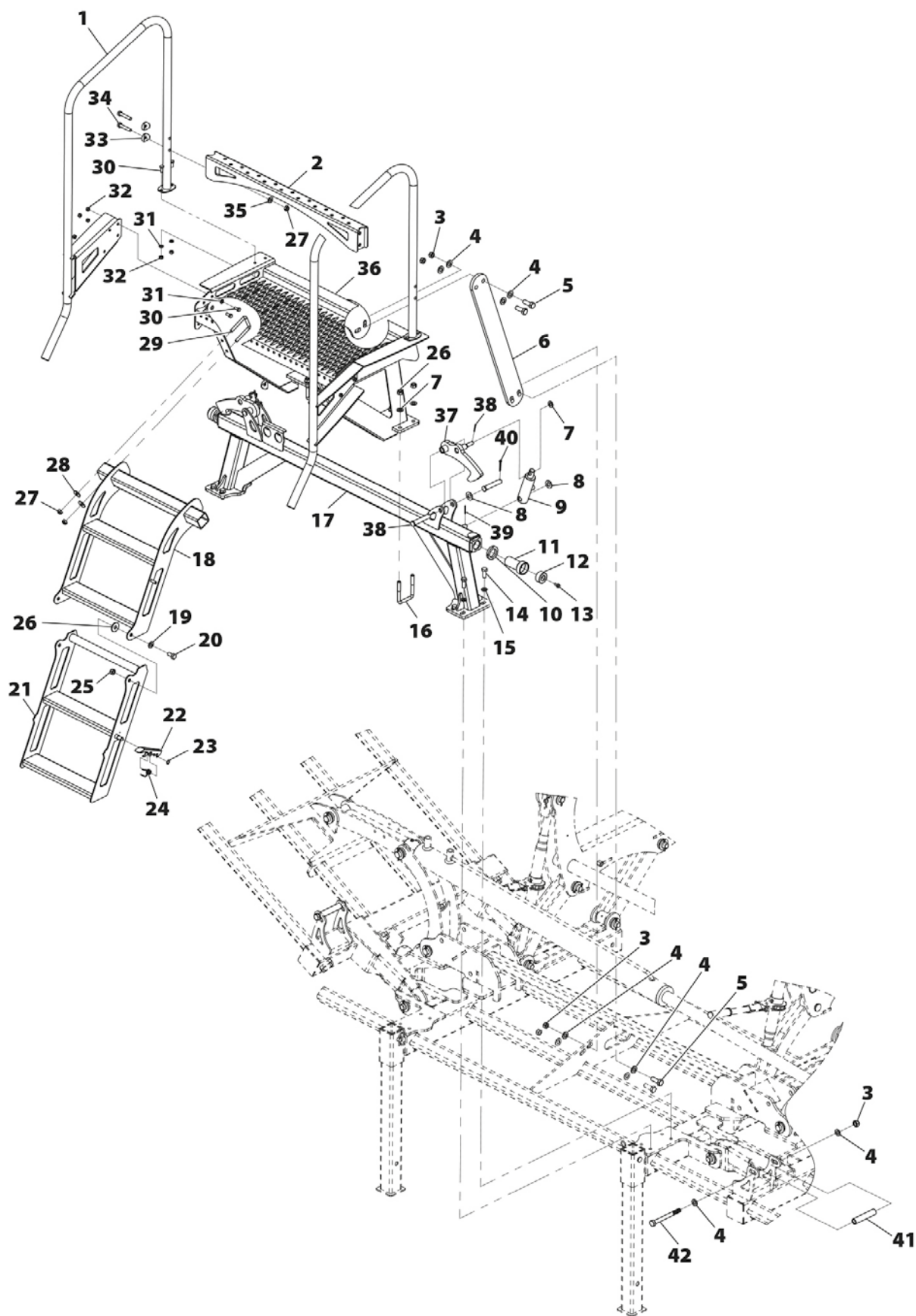
N°	REFERENCE
1	PS-071330-D
1	PS-071330-I
2	PS-072816
3	985 14
4	125 14
5	933 14X40 8.8 B
6	PX-071315
7	125 12 BI
8	125 16 BI
9	CO-072800
10	981 35-150 BI
11	ME-072804
12	PL-072801
13	6921 6X16 8.8 B
14	933 12X30 8.8 B

N°	REFERENCE
15	127 12 BI
16	EE-053110
17	PS-071334
18	PS-071332
19	125 12
20	933 12X25 8.8 B
21	PS-071331
22	PX-072835
23	471 12
24	ML-072800
25	985 12
26	9021 12 BI
27	985 10
28	9021 12 BI
29	EE-101717



13.30 STAIR FOR TINE COULTERS

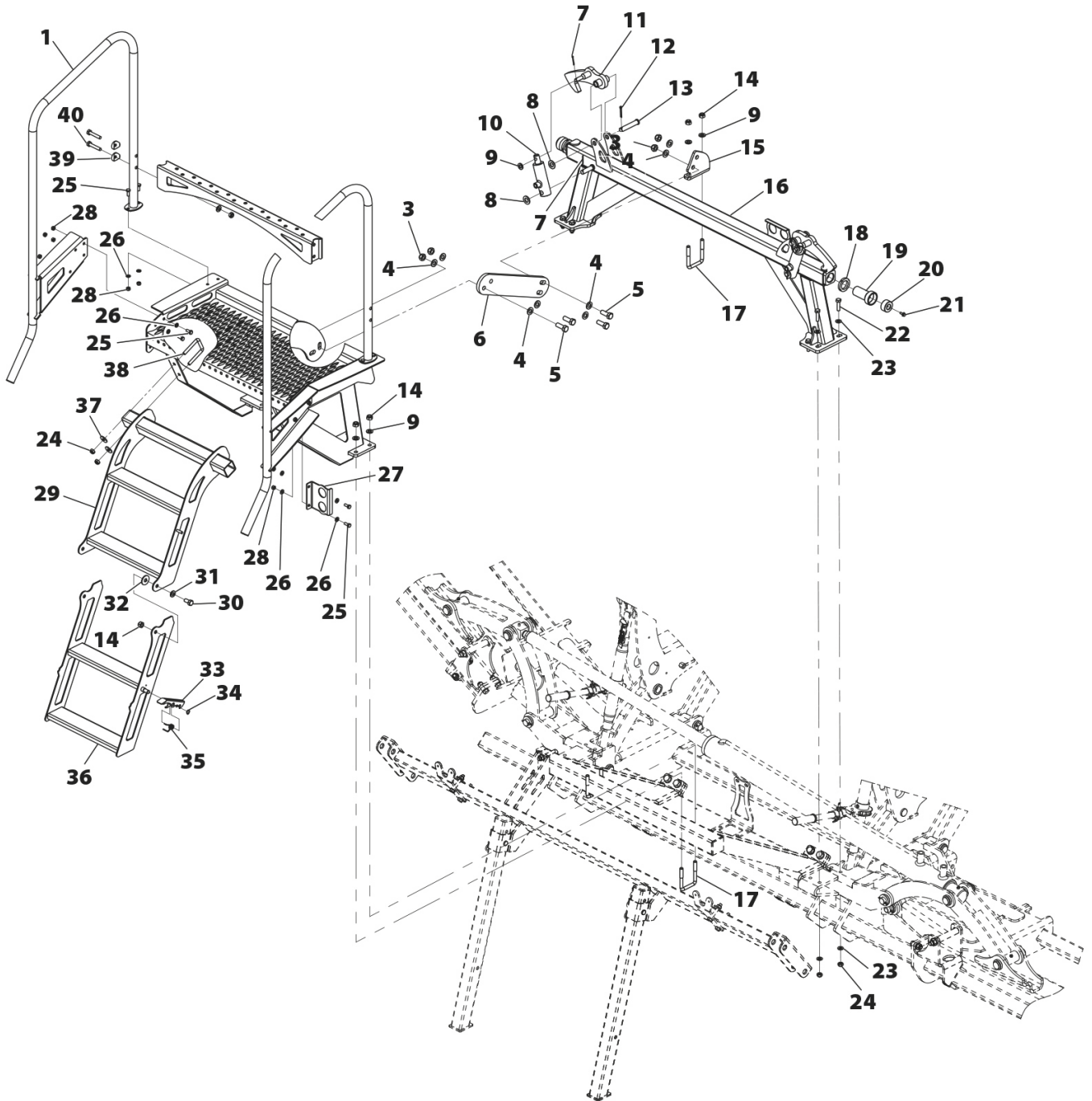
N°	REFERENCE
30	933 8X20 8.8 B
31	125 8 BI
32	985 8
33	PL-072802
34	931 10X55 B
35	125 11 BI
36	PS-071329
36	PS-071335-D
37	PS-071335-I
38	94 3,5X28 BI
39	BU-050203
40	94 5X35 BI
41	ME-072805
42	931 14X140 8.8 BI



13.31 STAIR FOR DOUBLE DISCS

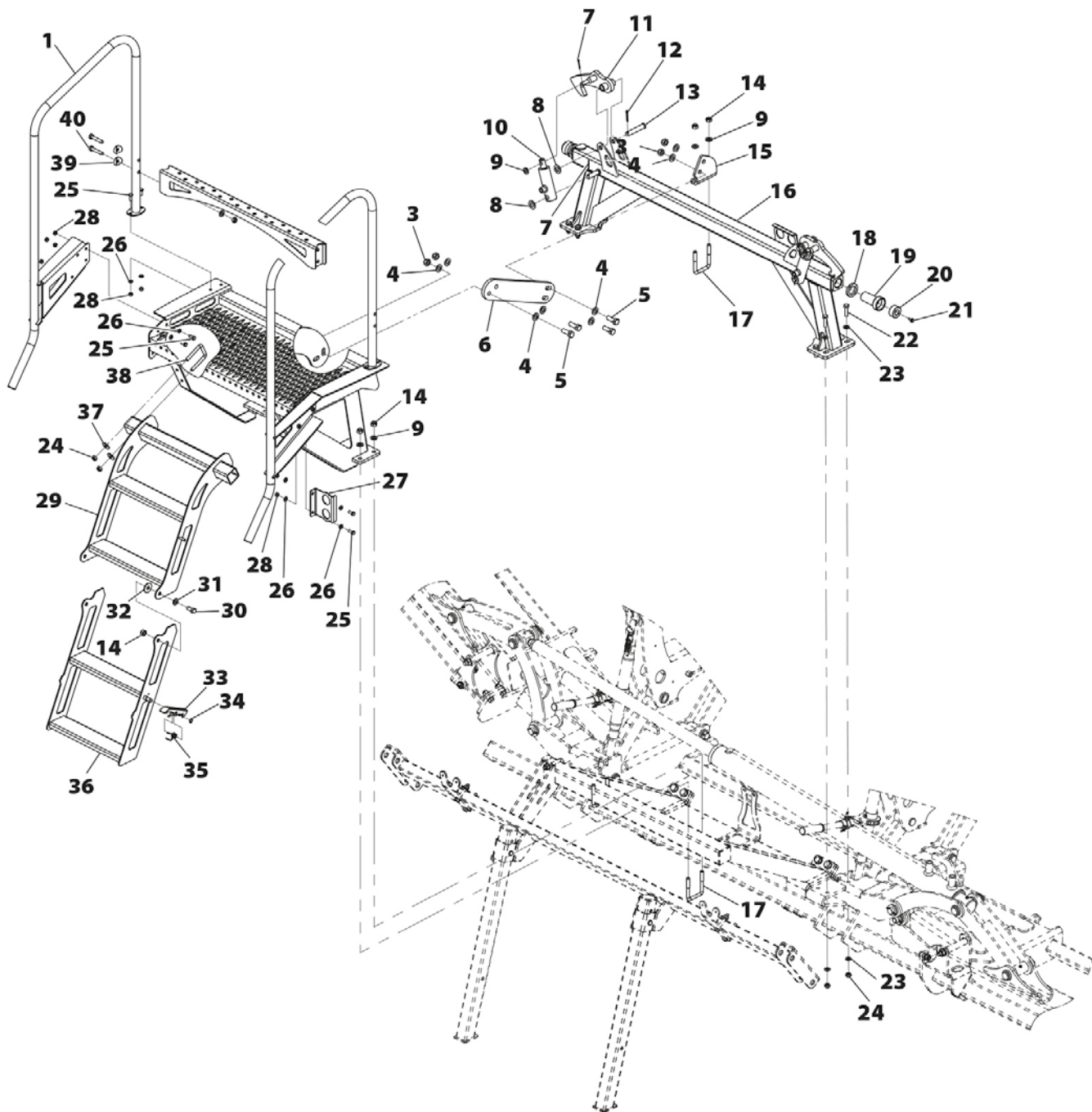
N°	REFERENCE
1	PS-071330-I
1	PS-071330-D
2	PS-072816
3	985 14
4	125 14 BI
5	931 14X40 8.8 B
6	PX-151345
7	94 3,5X28 BI
8	125 16 BI
9	125 12 BI
10	CO-072800
11	PS-071335-D
11	PS-071335-I
12	94 5X35 BI
13	BU-050203

N°	REFERENCE
14	985 12
15	PX-151349
16	PS-071334
17	EE-053110
18	981 35-150
19	ME-072804
20	PL-072801
21	6921 6X16 8.8 B
22	931 10X40 8.8 B
23	125 10 BI
24	985 10
25	933 8X20 8.8 B
26	125 8 BI
27	PX-071332
28	985 8



13.31 STAIR FOR DOUBLE DISCS

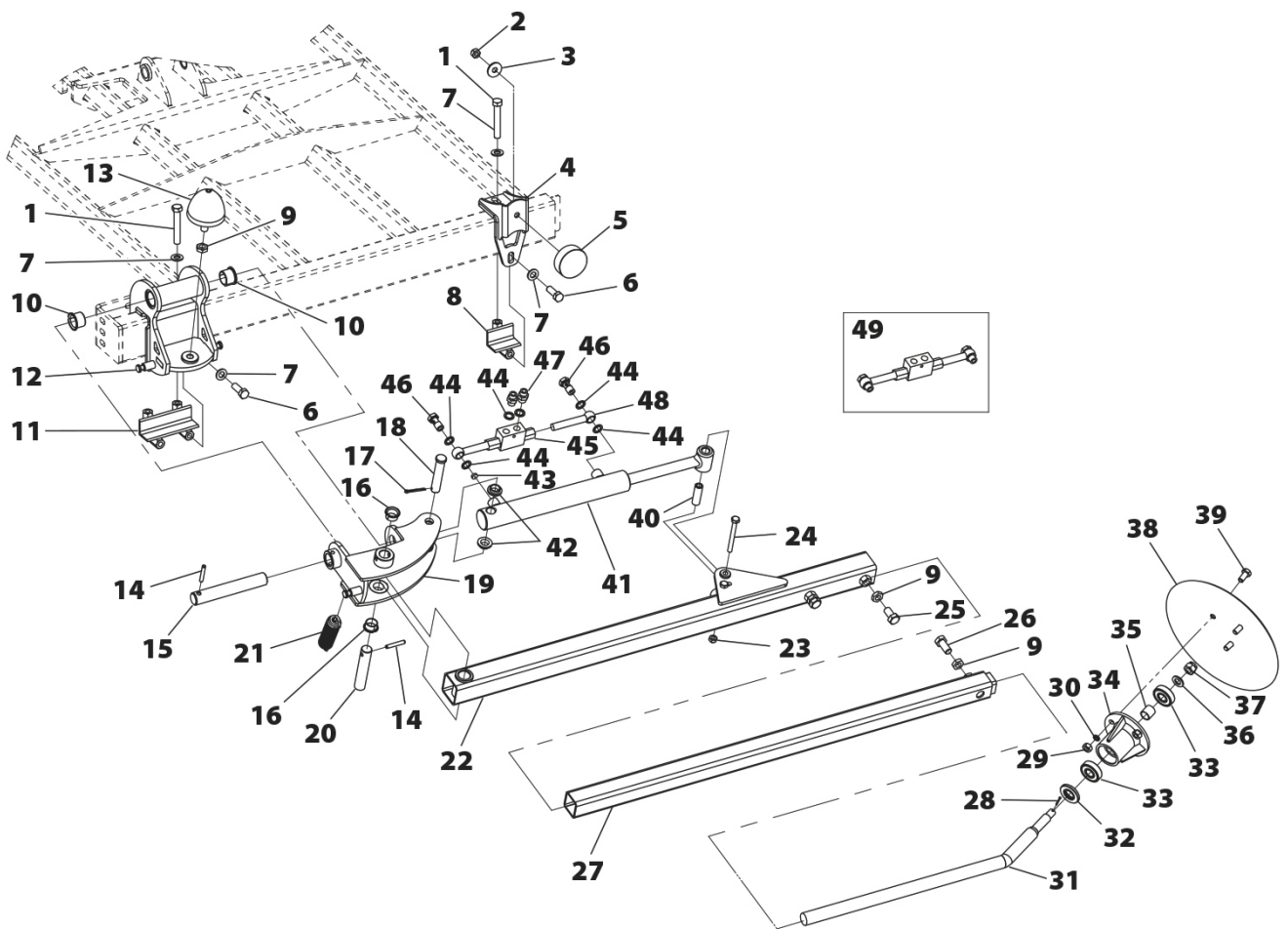
N°	REFERENCE
29	PS-071332
30	933 12X25 8.8 B
31	125 12
32	9021 12 PA
33	PX-072835
34	471 12
35	ML-072800
36	PS-071331
37	9021 10 BI
38	EE-101717
39	PL-072802
40	931 10X55 8.8 B
41	PS-071329



13.32 TRACK MARKER FOR TINE COULTERS

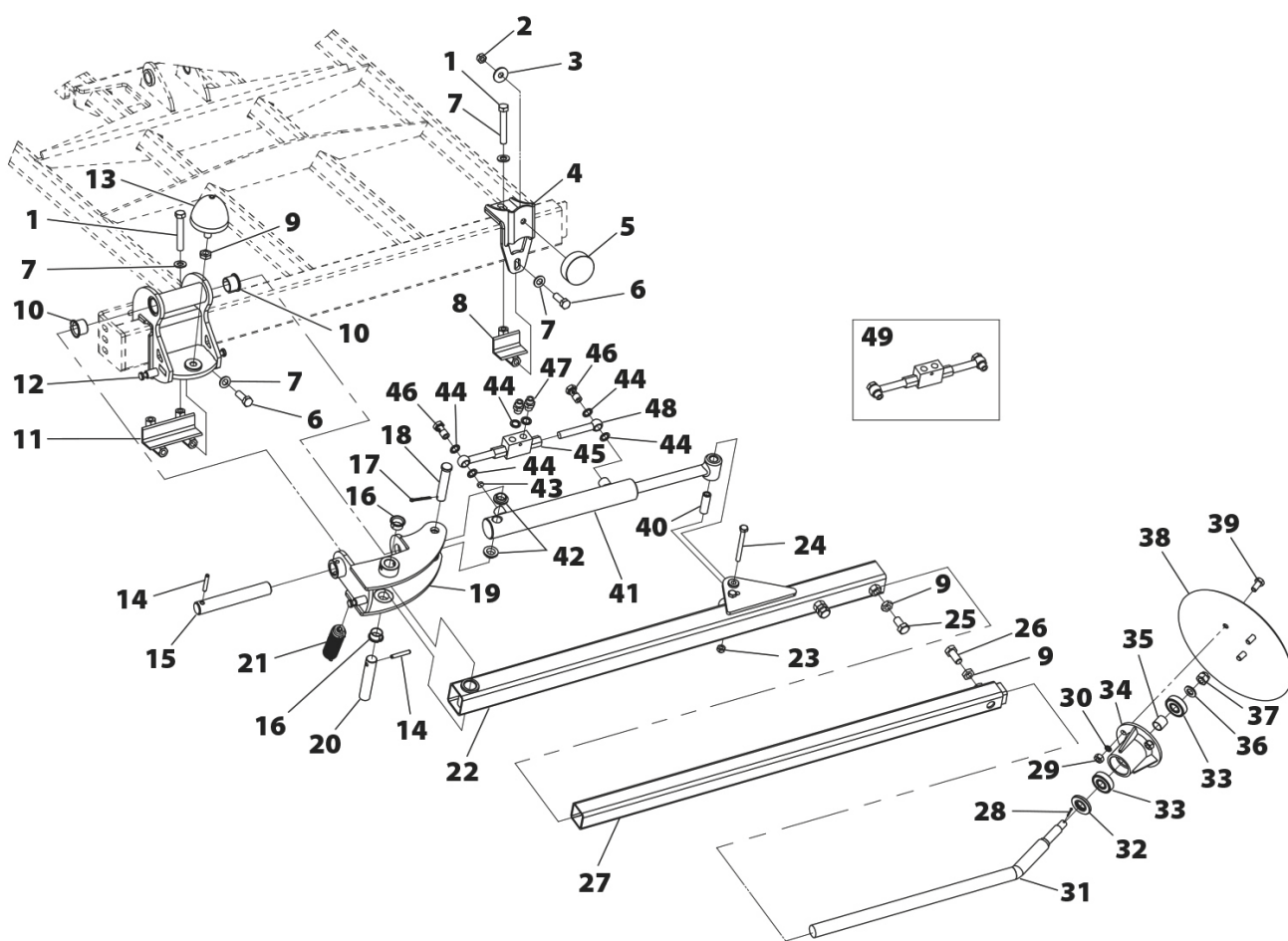
N°	REFERENCE
1	931 14X90 BI
2	985 12
3	9021 12 BI
4	PS-102817
5	FE-660009
6	933 14X40 8.8 B
7	125 14 BI
8	PS-102818
9	936 16 BI
10	FE-600129
11	PS-102802
12	PS-102828
13	FE-660030
14	1481 8X50 BI
15	BU-102800

N°	REFERENCE
16	FE-600018
17	94 5X40 BI
18	BU-051303
19	PS-102832
20	BU-102804
21	ML-042800
22	PS-102807
23	985 10
24	931 10X100 8.8 B
25	933 16X30 8.8 B
26	933 16X35 8.8 B
27	PS-102808
28	94 3,5X28 BI
29	934 12 BI
30	7980 10 I



13.32 TRACK MARKER FOR TINE COULTERS

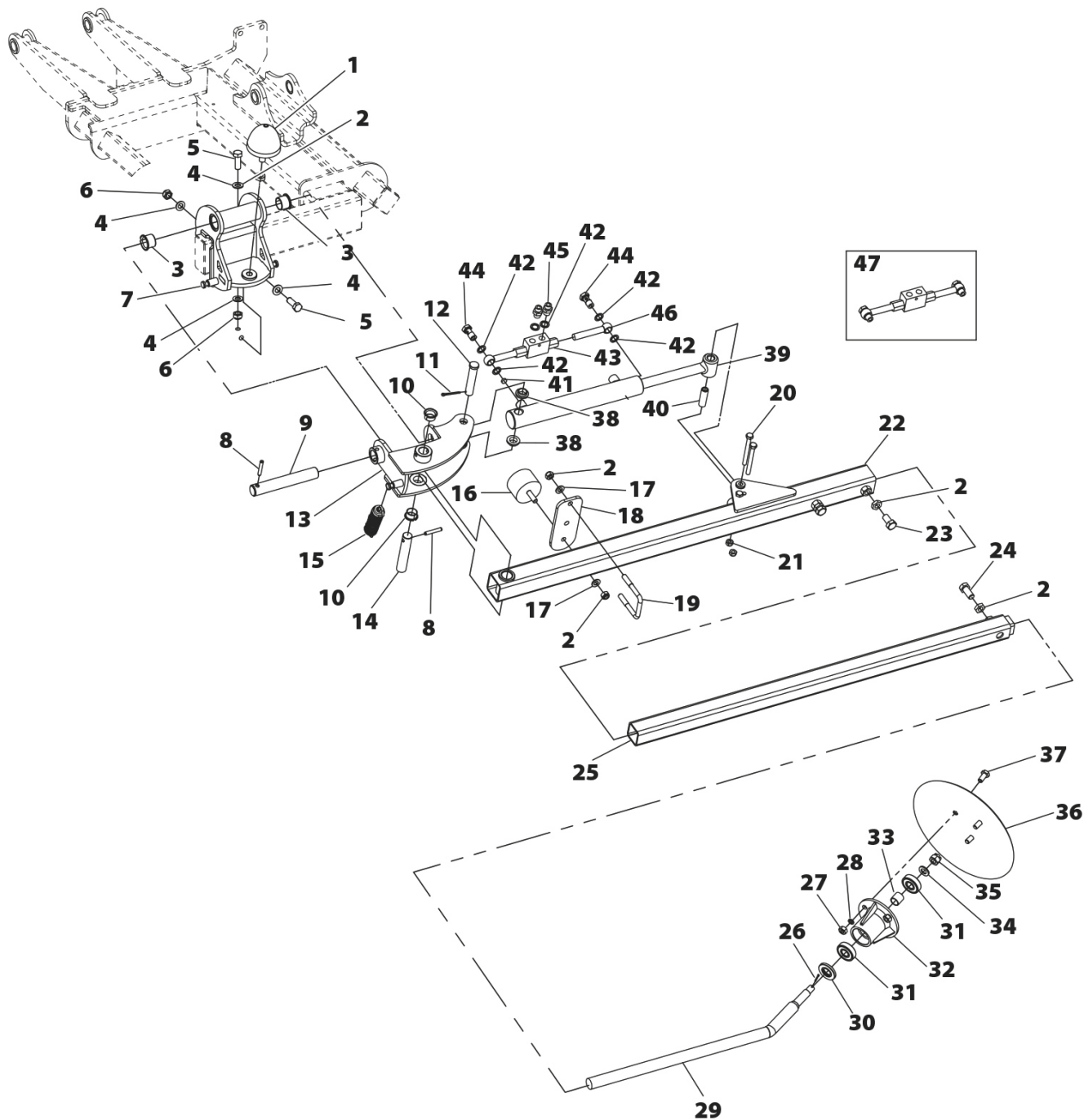
N°	REFERENCE
31	PR-100201
32	FE-601000
33	FE-600005
34	B07-30
35	CT-100800
36	125 16 BI
37	935 16 BI
38	EE-100217
39	933 12X25 8.8 B
40	ME-102811
41	CO-052801
42	PL-040207
43	ME-102816
44	HI-705003
45	HI-706001
46	HI-702001
47	HI-704007
48	H-ESFERICO 3/8
49	HI-706031



13.33 TRACK MARKER FOR DOUBLE DISCS

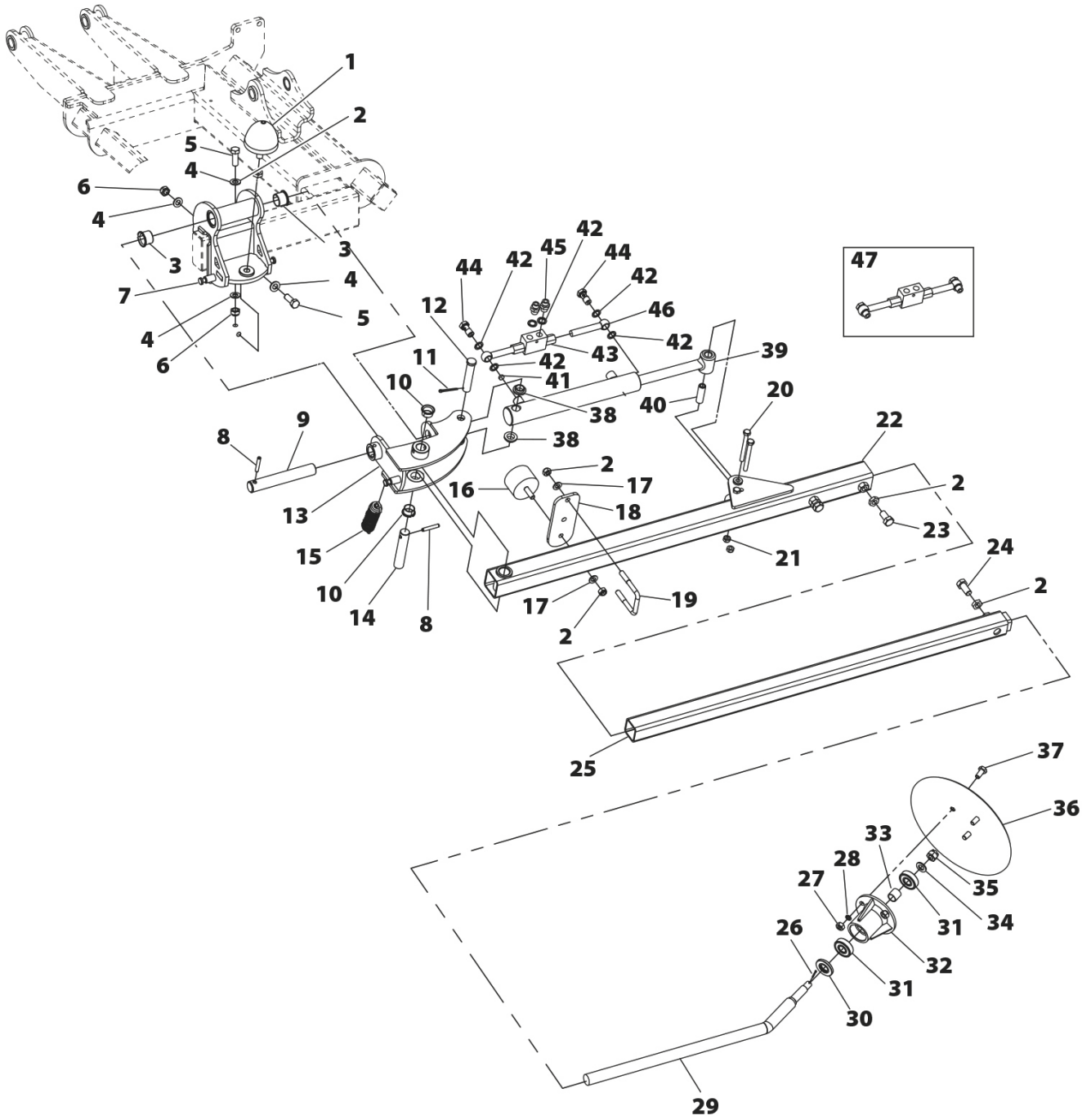
N°	REFERENCE
1	FE-660030
2	936 16 BI
3	FE-600129
4	125 14 BI
5	933 14X40 8.8 B
6	985 14
7	PS-102828
8	1481 8X50 BI
9	BU-102800
10	FE-600018
11	94 5X40 BI
12	BU-051303
13	PS-102832
14	BU-102804
15	ML-042800

N°	REFERENCE
16	FE-660008
17	125 12 BI
18	PX-201367
19	EE-053110
20	931 10X100 8.8 B
21	985 10
22	PS-061381
23	933 16X30 8.8 B
24	933 16X35 8.8 B
25	PS-102808
26	94 3,5X28 BI
27	934 12 BI
28	7980 10 I
29	PR-100201
30	FE-601000



13.33 TRACK MARKER FOR DOUBLE DISCS

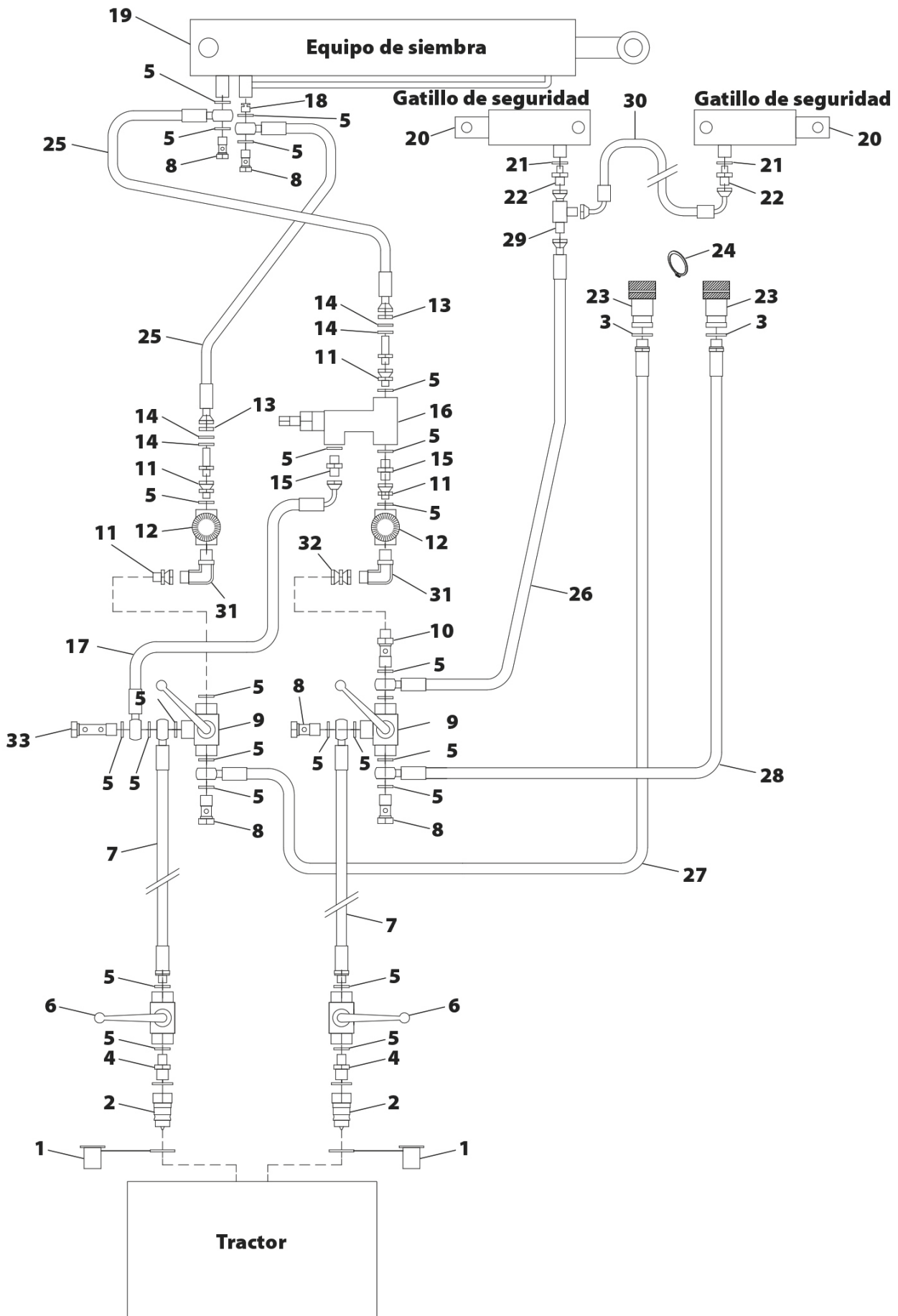
N°	REFERENCE
31	FE-600005
32	B07-30
33	CT-100800
34	125 16 BI
35	935 16 BI
36	EE-100217
37	933 12X25 8.8 B
38	PL-040207
39	CO-052801
40	ME-102811
41	ME-102816
42	HI-705003
43	HI-706001
44	HI-702001
45	HI-704007
46	H-ESFERICO 3/8
47	HI-706031



13.34 HYDRAULIC SEEDING EQUIPAMENT

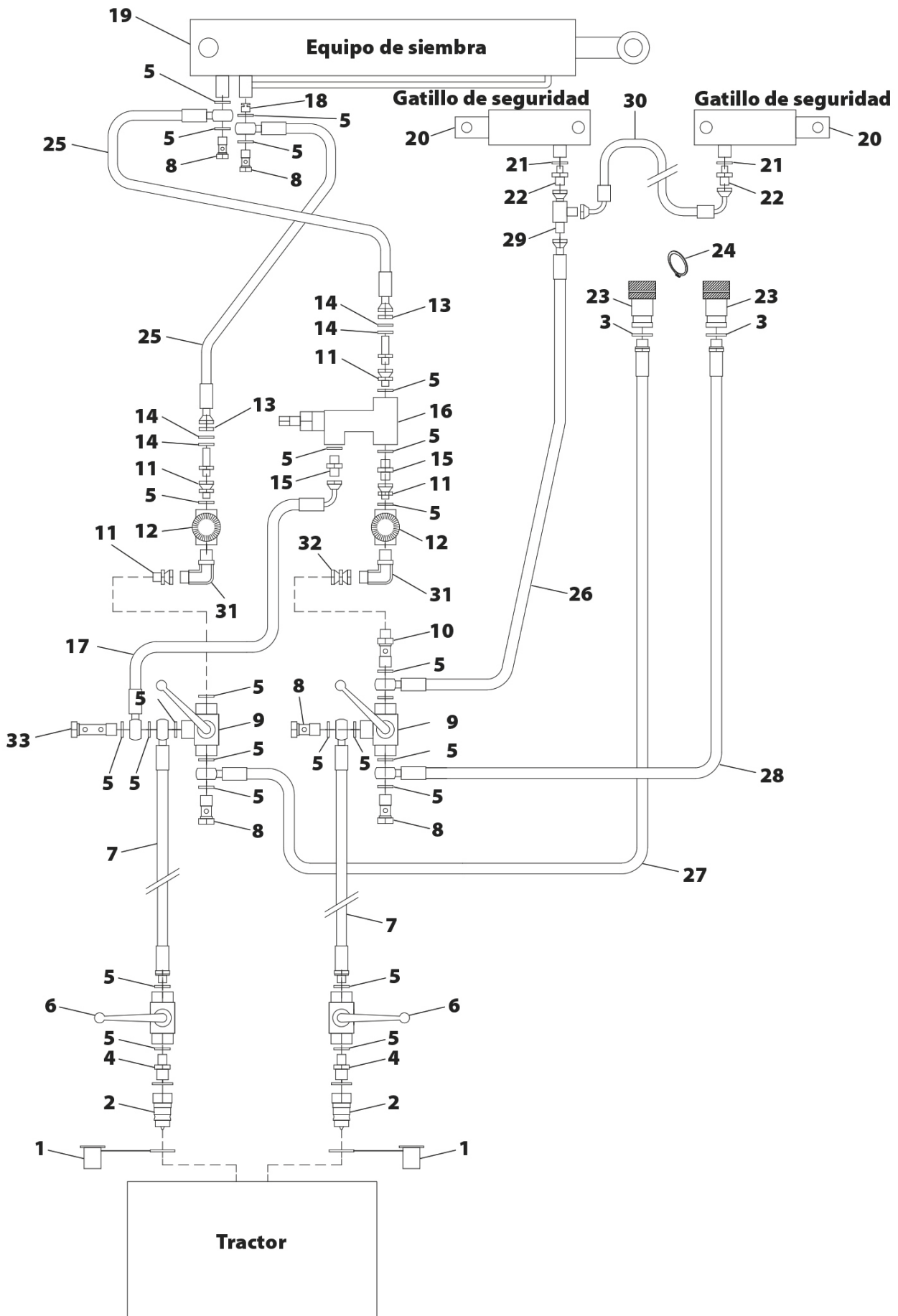
Nº	REFERENCE
1	HI-707001
2	HI-701000
3	HI-705002
4	HI-704006
5	HI-705003
6	HI-706008
7	HI-700228
8	HI-702001
9	HI-706007
10	HI-702004
11	HI-704017
12	HI-706002
13	HI-704028
14	125 16 BI
15	HI-704007

Nº	REFERENCE
16	HI-706029
17	HI-700244
18	HI-706003
19	CO-052802
19	CO-051308
20	CO-072800
21	HI-705001
22	HI-704029
23	HI-701002
24	471 38
25	HI-700150
26	HI-700289
27	HI-700307
28	HI-700306
29	HI-703005



13.34 HYDRAULIC SEEDING EQUIPAMENT

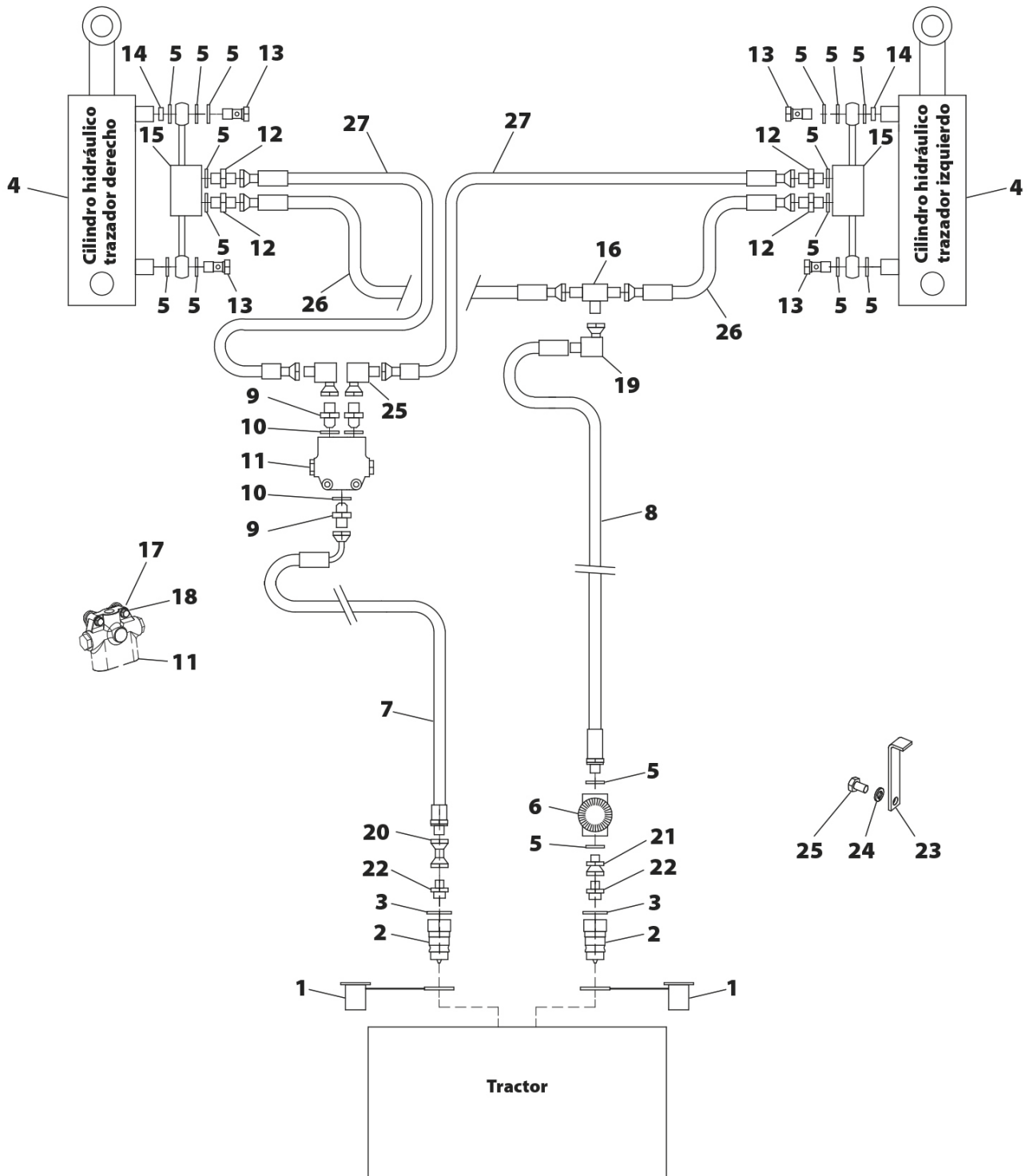
N°	REFERENCE
30	HI-700295
31	HI-704005
32	HI-704019
33	HI-702002



13.35 HYDRAULIC TRACK MARKERS FOR TINE COULTERS

N°	REFERENCE
1	HI-707001
2	HI-701000
3	HI-705002
4	CO-052801
5	HI-705003
6	HI-706002
7	HI-700071
8	HI-700188
9	HI-704030
10	3770 14X2.5
11	HI-706013
12	HI-704007
13	HI-702001
14	ME-102816
15	HI-706031

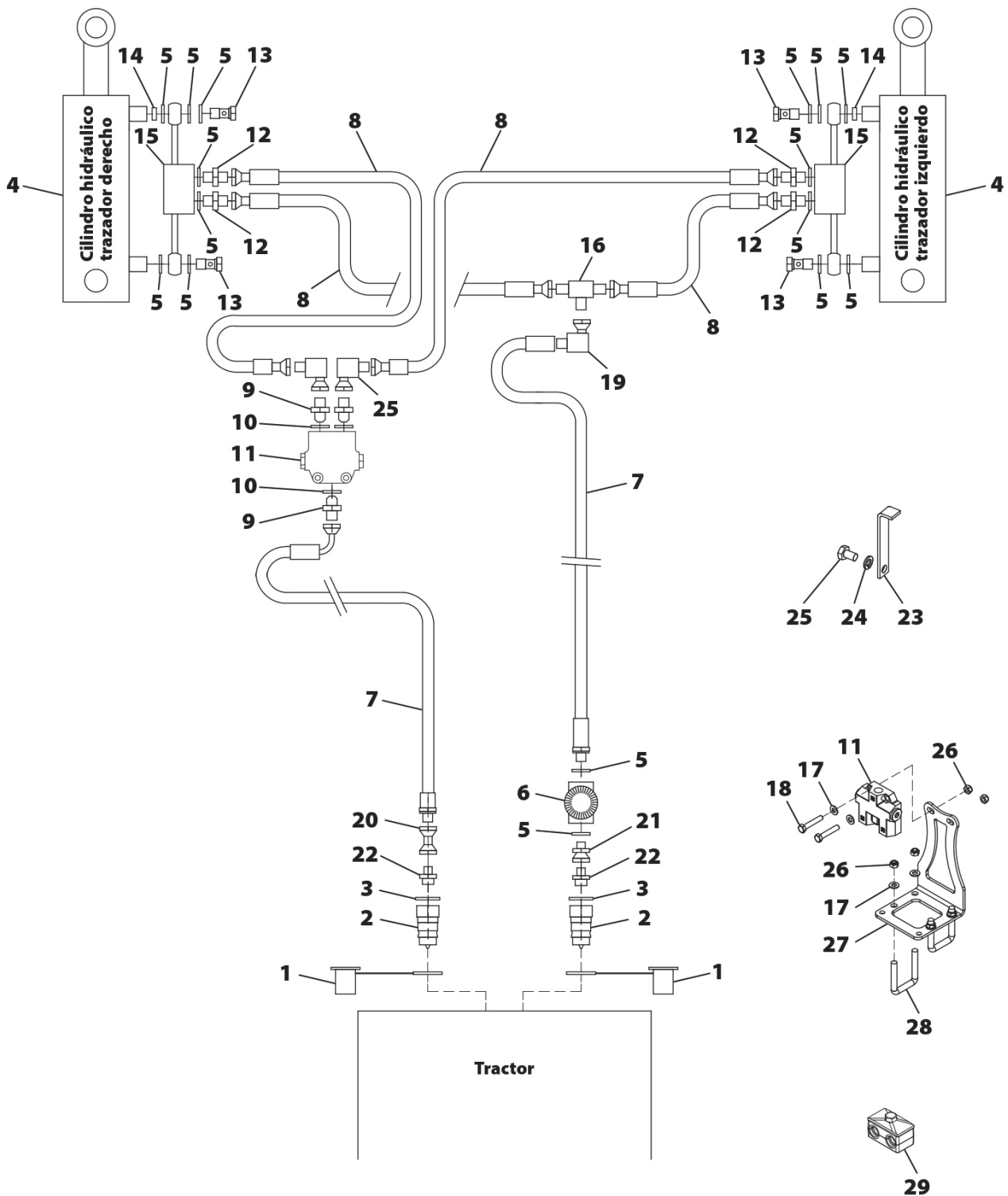
N°	REFERENCE
16	HI-703006
17	127 8 BI
18	933 8X50 8.8 B
19	HI-704082
20	HI-704019
21	HI-704017
22	HI-704006
23	EE-071315
24	127 10 BI
25	933 10X15 8.8 B
26	HI-700186
26	HI-700232
27	HI-700233
27	HI-700231



13.36 HYDRAULIC TRACK MARKERS FOR DOUBLE DISCS

N°	REFERENCE
1	HI-707001
2	HI-701000
3	HI-705002
4	CO-052801
5	HI-705003
6	HI-706002
7	HI-700188
8	HI-700094
8	HI-700085
8	HI-700089
9	HI-704030
10	3770 14X2.5
11	HI-706013
12	HI-704007
13	HI-702001
14	ME-102816

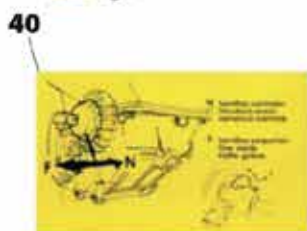
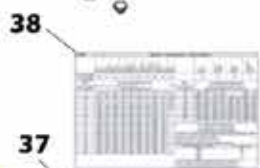
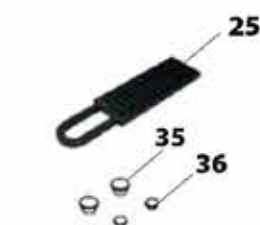
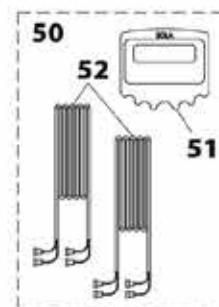
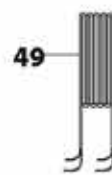
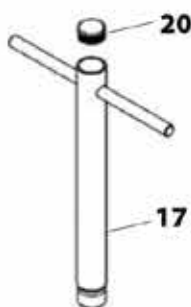
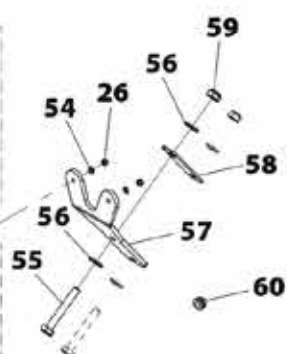
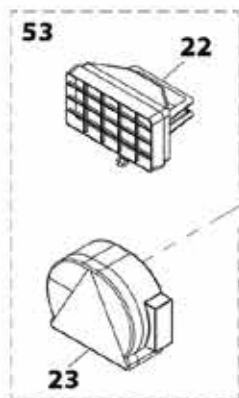
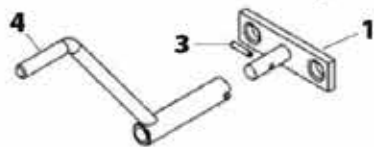
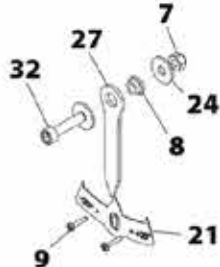
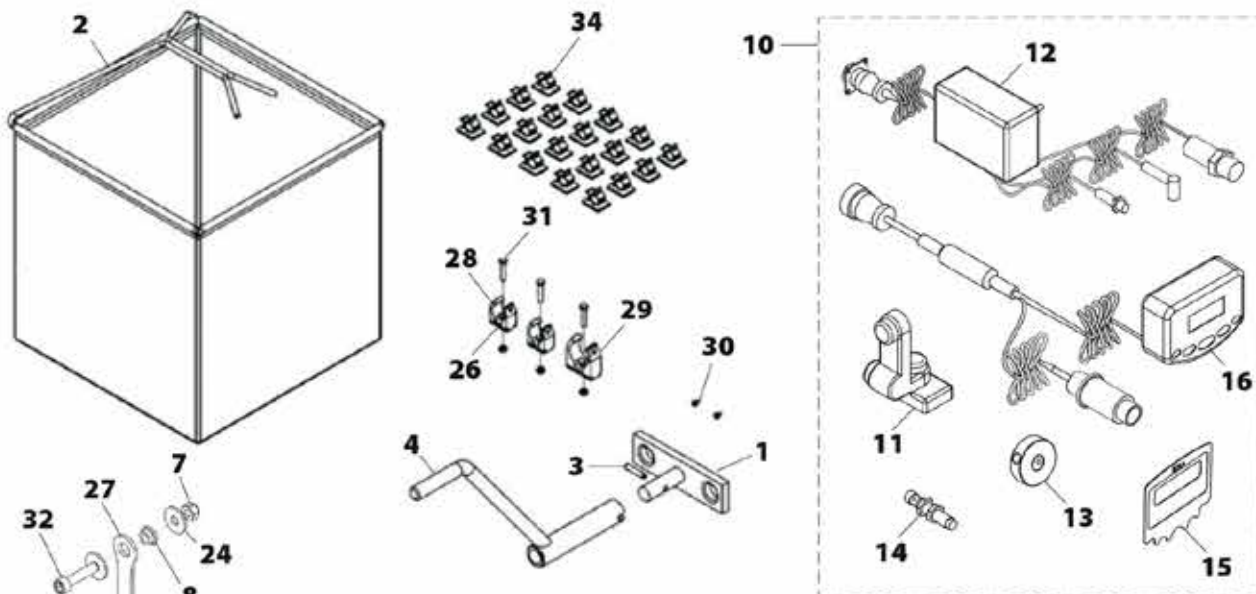
N°	REFERENCE
15	HI-706031
16	HI-703006
17	125 8
18	933 8X45 8.8 B
19	HI-704082
20	HI-704019
21	HI-704017
22	HI-704006
23	EE-071315
24	127 10 BI
25	933 10X15 8.8 B
26	985 8
27	PX-103803
28	EE-072807
29	HI-708001



13.37 FINISHES

N°	REFERENCE
1	PS-041312
2	MO-072812
3	1481 6X30 BI
4	CO-070300
5	AD-070215
6	AD-075104
7	985 8
8	PL-072800
9	FE-602013
10	MV-101334
11	MV-101334-06
12	MV-101334-03
13	MV-101334-04
14	MV-101334-05
15	MV-101334-02

N°	REFERENCE
16	MV-101334-01
17	PS-102806
18	FE-608006
19	CN-811067
19	CN-811067/GB
19	CN-811067/FR
20	FE-611012
21	PX-072805
22	MV-071301
23	MV-071306-03
23	MV-071306-01
24	9021 8 BI
25	PL-100204
26	985 5
27	PX-072802



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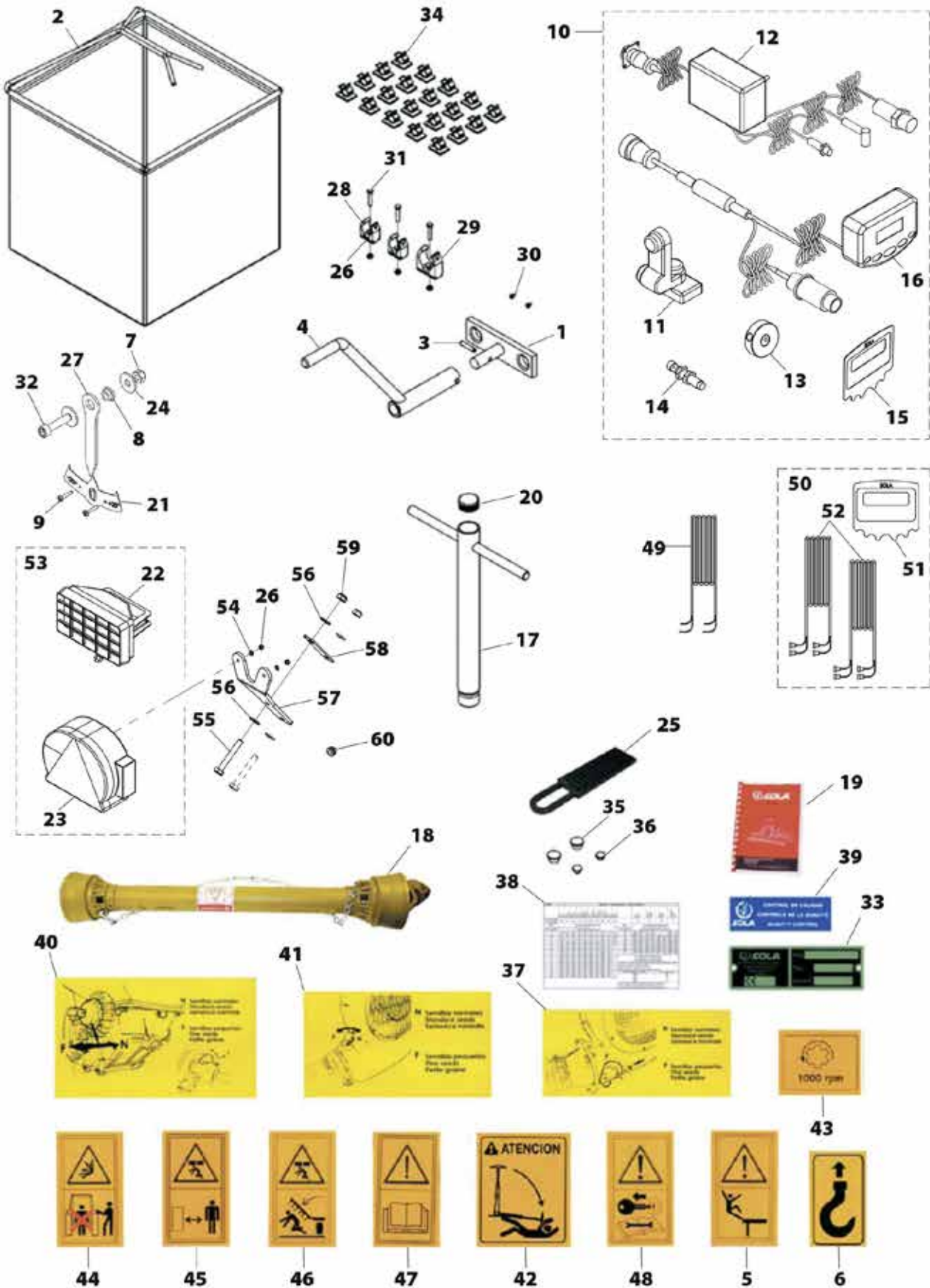
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13.37 FINISHES

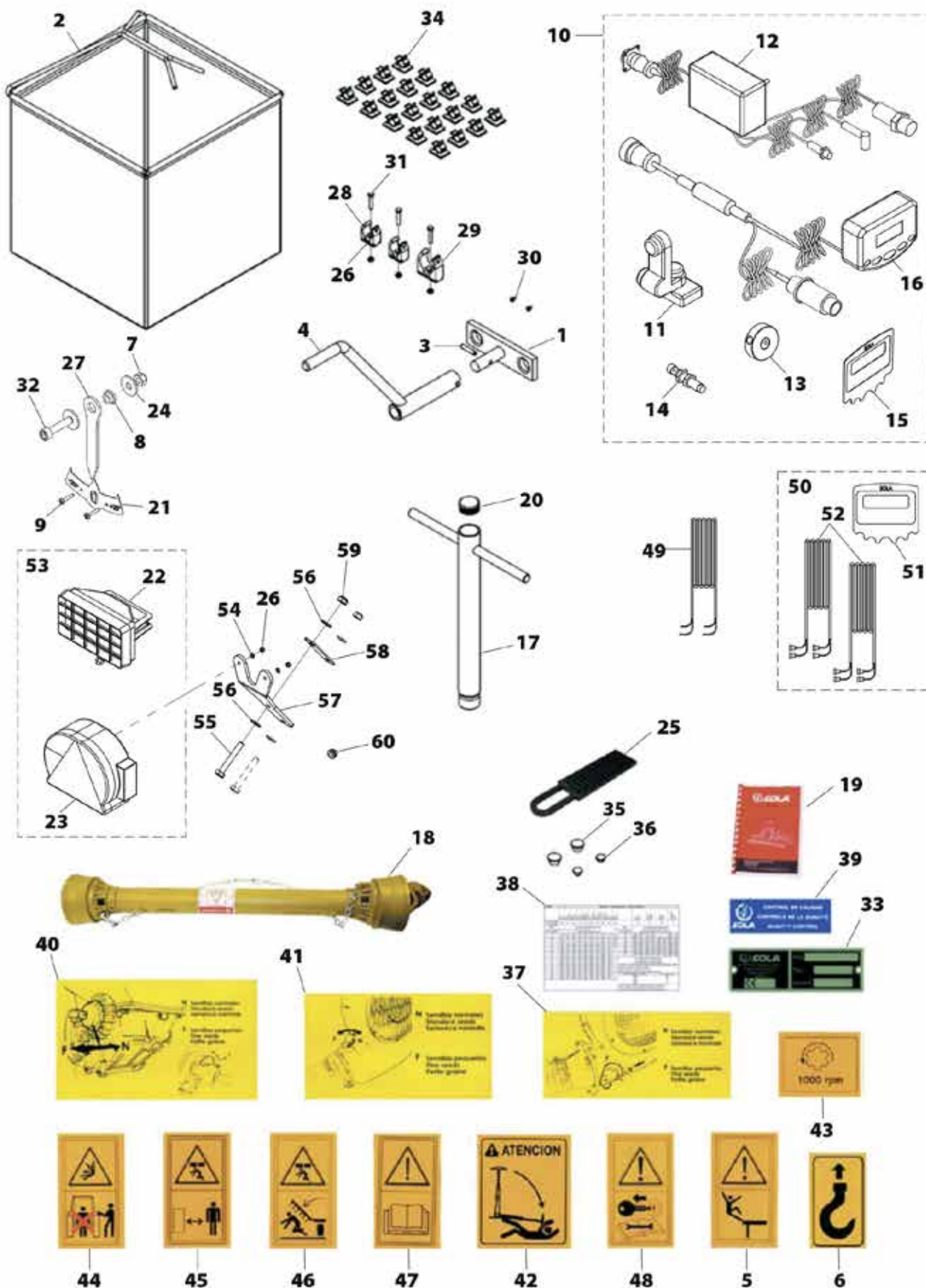
Nº	REFERENCE
28	FE-611015
29	FE-611014
30	FE-602001
31	933 5X25 8.8 BI
32	912 8X35 8.8 B
33	AD-070217
34	FE-606007
35	FE-611013
36	PL-021303
37	AD-041303
38	AD-072810
39	AD-070211
40	AD-041304
41	AD-041302
42	AD-100200

Nº	REFERENCE
43	AD-071307
44	AD-070214
45	AD-070207
46	AD-071302
47	AD-070206
48	AD-070227
49	MV-101335
50	MV-101336
51	MV-101336-01
52	MV-101336-02
53	MV-071306
54	125 5 BI
55	931 10X70 8.8 B
56	125 10 BI
57	PX-201344



13.37 FINISHES

N°	REFERENCE
58	PX-201345
59	985 10
60	MV-071306-02



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