

PREADMASTER®



TORNADO G-IV

OPERATING INSTRUCTIONS & SPARE PARTS MANUAL

Read carefully before operating machine

2015 Revision

Introduction

The Spreadmaster twin distribution disk fertiliser spreader, model TORNADO 1300 Generation IV, imported into New Zealand by Agriquip, was developed to distribute granulated fertilisers and seeds uniformly and precisely. In its development the manufacturers, the largest agricultural implement manufacturers in the Southern Hemisphere, sought to incorporate the following characteristics; load capacity compatible with medium-small tractors, high impact resistance, anticorrosive components, replaceable hopper, paints appropriate to the recommended use and outstanding spreading uniformity. To achieve this these quality spreaders have polyethylene, nylon, stainless steel and rubber components and tubular profiles. These construction materials together with zinc phosphate primers and a galvanised frame provides excellent impact characteristics and the superior corrosion resistance for contact with corrosive products such as fertilisers. To preserve all these advantages, it is necessary that the spreader is used correctly and adequately maintained. It is important that you read this instruction manual carefully, maintain the equipment in good condition and only use it in accordance with this manual. If unsure of the suitability of an application refer to the dealer from whom you purchased the machine.

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1 – MAIN COMPONENTS

The Tornado 1300 Generation-IV is made up of some basic components, as shown in Fig. 01:

- | | |
|-----------------------|------------------------|
| A- Reservoir | G- Proportional System |
| B- Chassis | H- Drive Shaft |
| C- Gearboxes | I- Protection Screen |
| D- Distribution Vanes | J- Protector Funnel |
| E- Vanes | K- Decals |
| F- Agitators | |

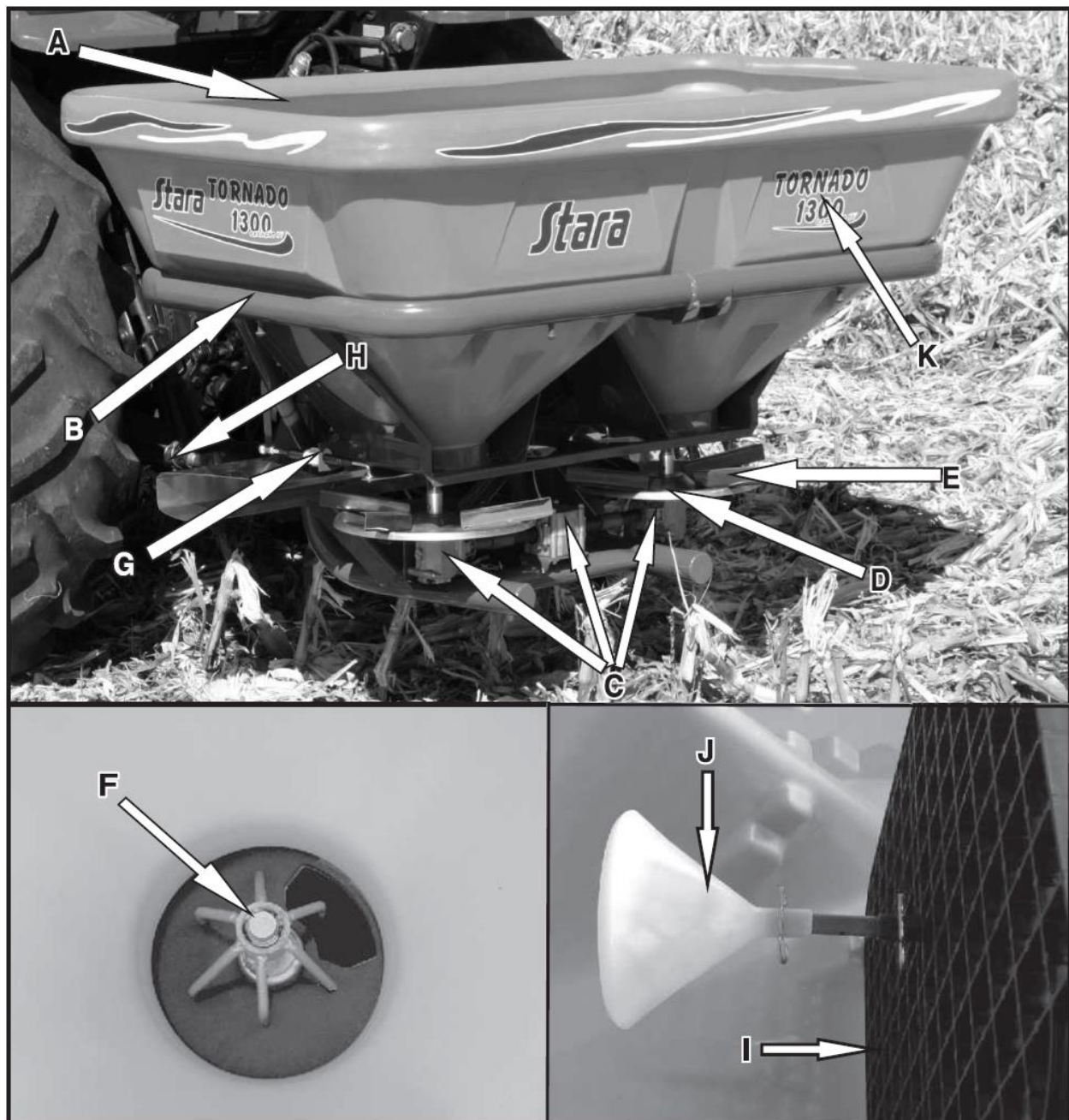


Fig. 01

2 - ID PLATE

The ID plate (Fig. 02) shows the model no. of the machine, weight, serial no., and also the date manufactured. This information is fundamental in the traceability of the machine during its life cycle. The ID plate is placed on the chassis of the implement.

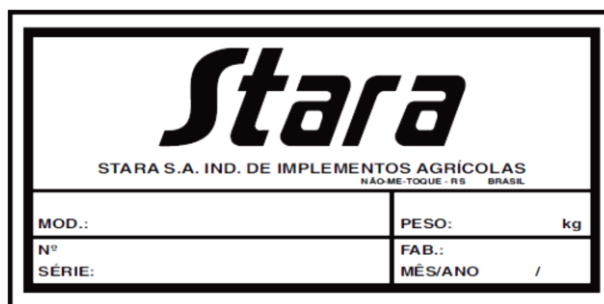


Fig. 02

3 - TECHNICAL SPECIFICATIONS

| | |
|-----------------------------|--|
| Volumetric Capacity..... | 1300 L |
| Load Capacity..... | 1340kg |
| Weight..... | 260kg |
| Height..... | 1.2m |
| Width..... | 2.3m |
| Length..... | 1.3m |
| Hook-up System..... | 3 Point Linkage/Cat. II |
| PTO Revolutions..... | 540rpm |
| Working Widths..... | See Distribution Tables |
| Tractor Recommendation..... | With Hyd. Lift Cylinder/Rated for 2.5 tons |

4 – FEATURES AND FUNCTIONS

Chassis: Tubular construction, hot dip galvanised finish

Hopper Base: Stainless Steel (Fig. 03).

Hopper/Reservoir: One piece 6mm thick rotary moulded polyethylene, easily removable for cleaning (Fig. 04) Inside the hopper you will find a protective screen which has a protection funnel, which is adjustable over the agitator (Fig. 05). These components reduce the loading on the agitator and prevents undesirable flows and foreign objects obstructing the exit flow.

Transmission: The transmission consists of a central gearbox which connects to each of the two side gearboxes by a splined or keyed coupling locked into position by a locking pin. Each gearbox has its own independent oil-bath lubrication. (Fig. 06)

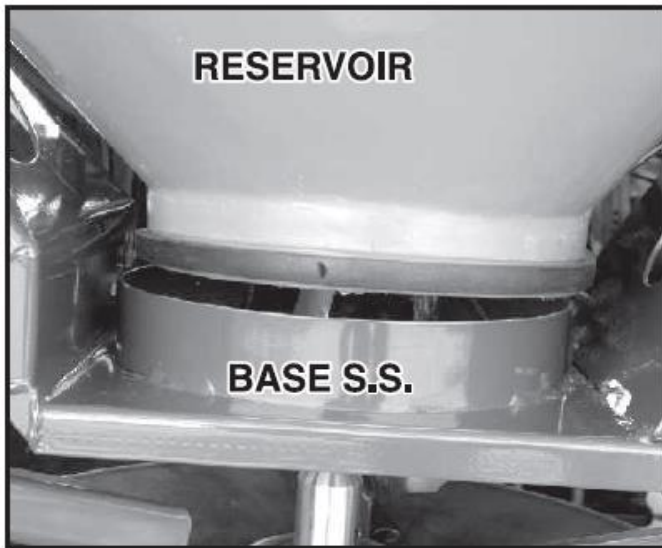


Fig. 03

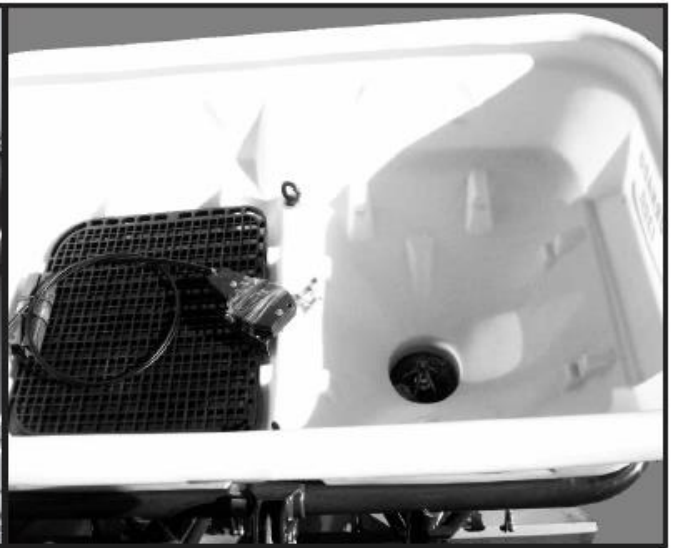


Fig. 04

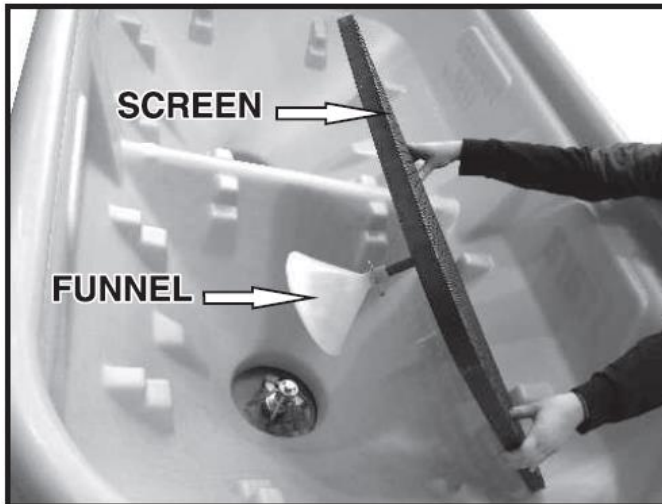


Fig. 05

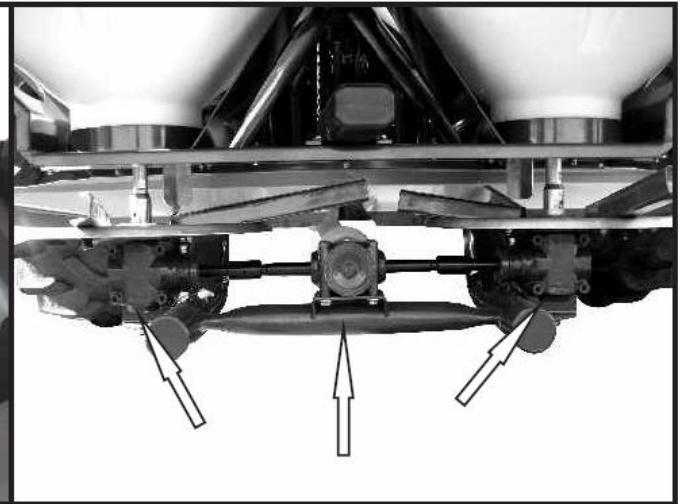


Fig. 06

Drive Control and Flow Regulation: The drive to the system is engaged through double manual push/pull controllers while fine flow regulation is effected by opening spindles and nylon adjustors (Fig. 09).

Position "A": When using products of higher densities and/or where application rate per hectare is not too high (Fig. 07). E.g. Urea, potassium Chloride, NPK fertilizer.

Position "B": Used on products with lower densities and/or where the application rate per hectare is very high (Fig. 08). E.g.: Chicken coop beds, Limestone.

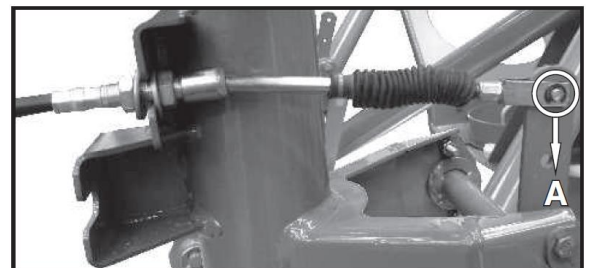


Fig. 07

Whenever possible, use the cable placement in the “A” position, thus making the slide-gate easier to operate. The proportional opening adjustment can be made using the plastic adjusting nut (Fig. 09), which allows for a finer rate adjustment.

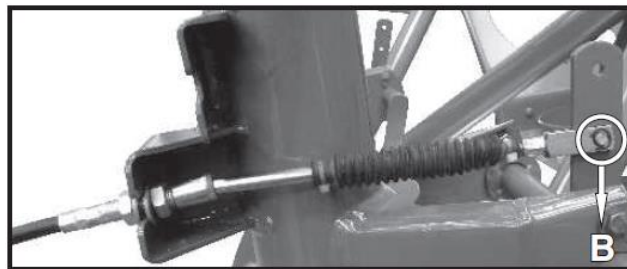


Fig. 08

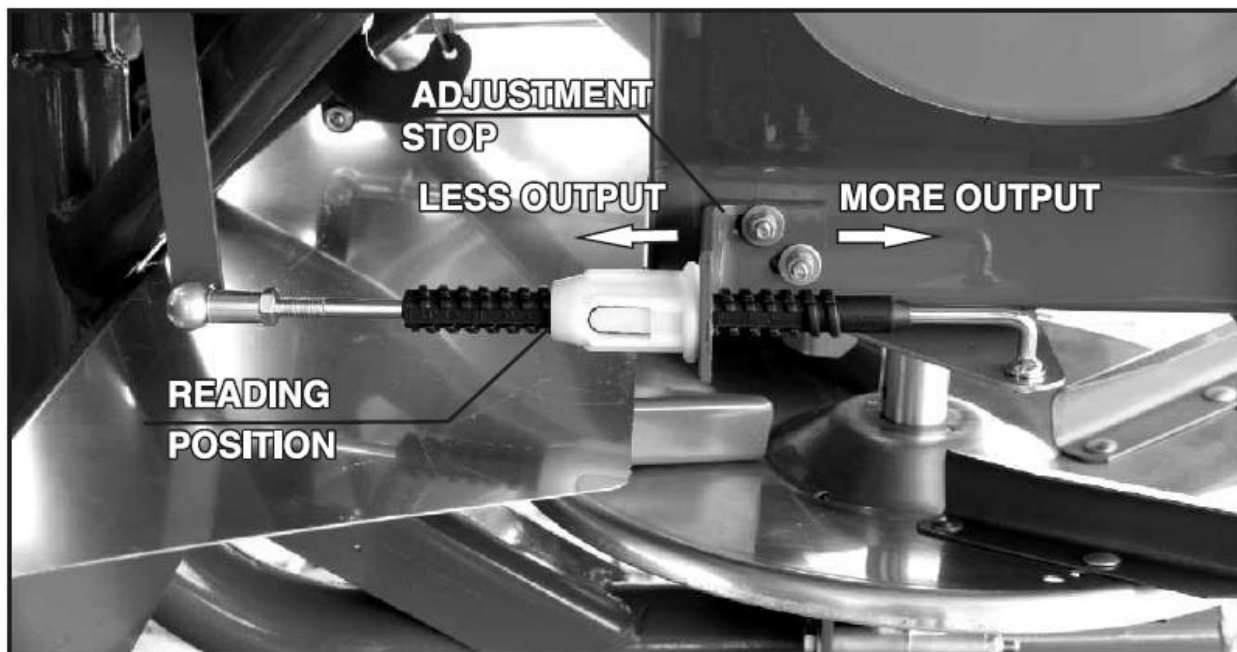


Fig. 09

Note! The sliding output gates overlap forming a variable diamond shape where the product can be deposited in one single spot, even if the amounts are small, guaranteeing excellent distribution performance with any dosage.

Agitators: The agitators work to maintain a continuous and uniform product flow on the discs. The agitators are a type of eccentric oscillator, which besides maintaining a uniform flow rate, does not damage the seeds, nor the fertiliser particles (Fig. 10).

Note: The Tornado 1300 agitators are sealed so they do not need periodic lubrication.



Figure 10

TECHNICAL SPECIFICATIONS

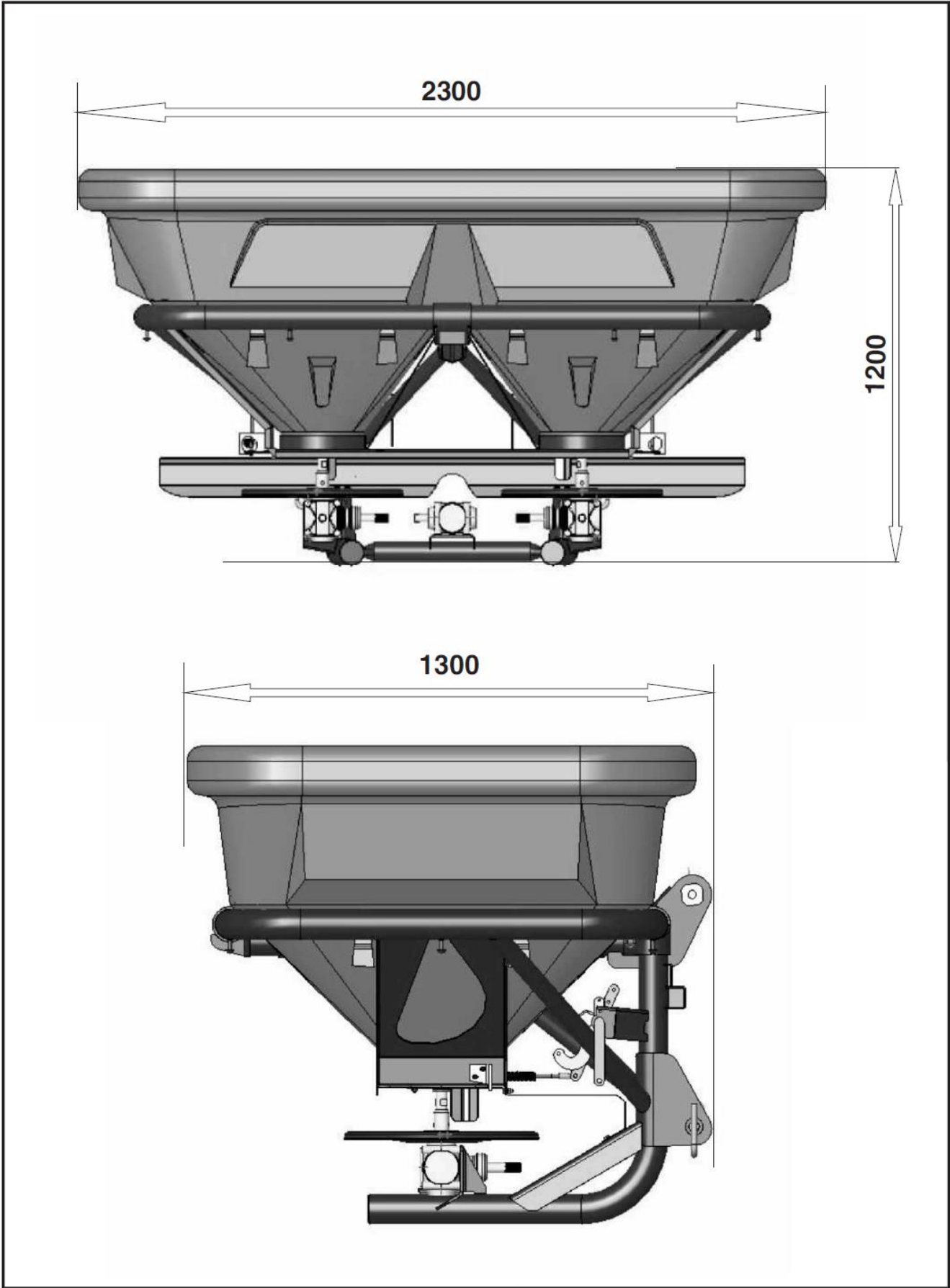


Fig. 11

5 – SAFETY PRECAUTIONS

The Tornado 1300 spreader is a relatively simple implement and does not pose any great risks to the operator, however it is important to observe some safety precautions, therefore observe the following measures:

- a) When connecting the implement be sure to place the retaining clips on the pins of the three-point linkage;
- b) Ensure the drive shaft is of the correct length (for adjustment see section 8.6.2);
- c) Only attach the drive shaft to the PTO when the tractor is off.
- d) Remain clear of the drive shaft when tractor is running;
- e) Never clear or disconnect the drive shaft when the engine is running;
- f) Never remove the drive shaft guards and ensure the retaining chain is adjusted so that it does not catch when the tractor is turning sharply;
- g) Keep people clear when operating the machinery;
- h) Check that the area around the tractor and spreader is clear of people, animals and obstacles before putting the tractor in motion;
- i) Do not cut power to the spreader when the flow shutters are open;
- j) Ensure the implement does not contact the PTO or that the drive shaft is at too acute an angle with the implement in the rest position;
- k) Keep people out of the spreading area whilst spreading;
- l) Keep foreign items away that may accidentally fall into the product that is to be spread;
- m) Ensure the tractor engine is off when lubricating, cleaning or maintaining;
- n) Ensure the tractor has sufficient lifting capacity and weight to ensure that the tractor/spreader remains stable;
- o) When towing trailers for transporting items behind the spreader use tandem axle trailers to prevent excess weight on the back of the implement;
- p) Never go beneath the spreader when only supported by the tractor hydraulics. Support the spreader with appropriate stands if it has to be raised to perform the required maintenance.

6 - MAINTENANCE

The Tornado 1300 spreader are manufactured with corrosion resistant components, especially in the areas which come in direct contact with fertilisers. However, to keep the spreader in optimum working condition and to guarantee a long useful life, lubricate when due, keep the machine clean and store out of the weather.

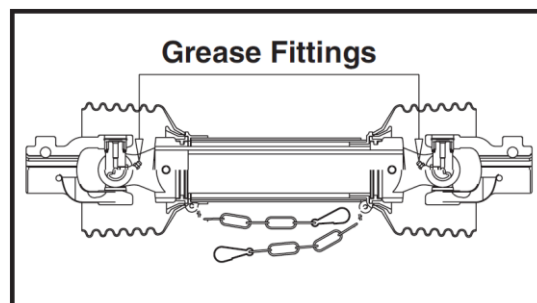


Fig. 12

6.1 – LUBRICATION AND DAILY INSPECTIONS

- Daily grease the drive shaft universal joints (Fig. 12) and check the level of the oil in the gearboxes.
- Observe the general operation of the implement and if you notice anything strange, find the problem and fix it before operating the spreader.

Recommended Greases

| | |
|---------|---------------------------|
| Shell | Alvania EP2 or Retinax LX |
| Caltex | Multipurpose MP2 |
| Castrol | Spheerol EPL 2 |

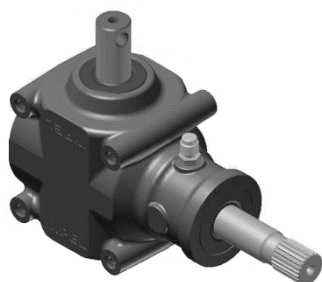
6.2 – GEARBOX MAINTENANCE

The first oil change should be done after the first 50 hours of operation, thereafter change the oil every 500 hours.

NOTE: Oil quantities will vary depending on the gearbox brand used on your Tornado 1300. 3 different brands of gearboxes have been used on the Tornado 1300, and the oil quantity in each will vary, as shown in the chart to the right:

| Model | Quantity |
|-------|-----------------------|
| INPEL | 0.24L |
| BPN | 0.5L |
| COMER | No oil change needed. |

Below are the 3 different brands of gearboxes used:



IMPEL



COMER



BPN

How to check the oil levels.

With the implement levelled, remove the oil plug on each gear case (Fig. 13). If the oil doesn't reach the hole then the oil level is low and will have to be topped up until it reaches the edge of the hole. Use only oil of the same make and grade.

IMPORTANT! Do not mix oils of different brands.

How to change the oil.

(This is best done after the implement has been operating so that the oil is still warm and flows easier, also any debris in the oil has not got time to settle). Remove the gearboxes from the spreader. Remove the drain plugs and drain the old oil (dispose of the old oil in accordance with local bylaws). Put the recommended quantity of new oil (See table at top of page) in each of the gearboxes and insert and tighten the drain plugs. Refit the gearboxes to the spreader.

Note: The gearboxes are filled with AGIP-BLASIA 150 oil at the factory.

Recommended Oils

| Specification | Manufacturer | | | | |
|---|--------------|------------|-----------|------------|------------------|
| DIN 51517 | CASTROL | AGIP | SHELL | CALTEX | MOBIL |
| Viscosity ISO VG 150 mm/s ² @ 40 °C | ILO SP150 | BLASIA 150 | OMALA 150 | MEROPA 150 | MOBILGEAR 629 |

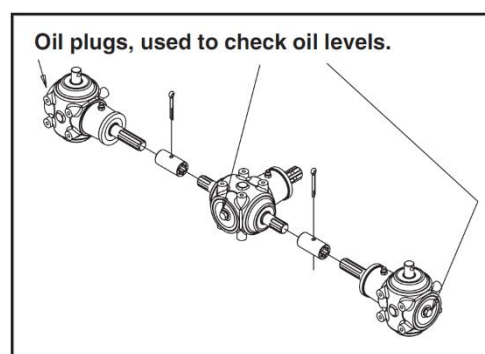


Fig. 13

6.3 – AGITATOR MAINTENANCE

The agitators have sealed bearings which self-lubricate. However, the units must be checked occasionally to ensure they are functioning correctly, that is slowly rotating during operation. If the agitators are not functioning properly, disassemble and check the bearings, circlips and seals for damage, replacing if necessary.

Before reassembling the agitator, clean and wash the parts with gasoline or mineral oil, then dry and reassemble again, greasing where indicated (Fig. 14).

Optional Fixed Agitator: Specific for hay-like seeds of low density which has the tendency to form a build-up or bunch-up. E.g. Rye Grass/Holly

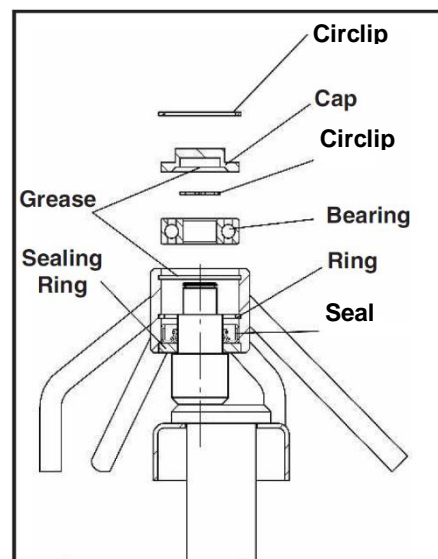


Fig. 14

6.4 - MAINTAINING AND STORING THE SPREADER

In the designing of the Tornado 1300 Gen. IV spreader, great care was taken in selecting highly corrosion resistant materials, especially in areas that come in direct contact with fertilisers. However, to keep the spreader in optimum working condition and to guarantee a long useful life, observe the following:

- Make sure the hopper is completely empty and thoroughly wash and dry the spreader as soon as possible after use.
- Wash down metallic parts with oil to reduce the risk of oxidation and seal components during down-time.
- Store the spreader dry and covered area.

Note: The condition of the spreader will quickly deteriorate if exposed to long periods of sun, rain and heat.

6.5 – ASSEMBLY AND REMOVAL OF DISTRIBUTION DISCS AND AGITATORS

In order to disassemble the discs, it is necessary to remove the agitators from shaft "A" (Fig. 15). To do so, secure disc "B" and loosen shaft "A" using an open-ended spanner (24mm). Note that the axle "A" to the left, has a left-handed thread and the on the right side has a right-handed thread. To assist in identifying these parts, note that these are marked "D" for left and "E" for right.

Reassemble by reversing the disassembly procedure. Apply grease to the threads on the agitators before reassembling.



Fig. 15

7 –FIELD ASSEMBLY

To reduce the spreaders shipping volume, the reservoir and the drive shaft can be removed from the chassis and shipped separately.

To reassemble to reservoir, place it on the chassis and install the reservoir sealing ring onto its rim shoulder and mount onto the chassis' base.

In sequence, install the eye-bolts in such a way that the reservoir will remain firmly secured to the chassis (Fig. 16).

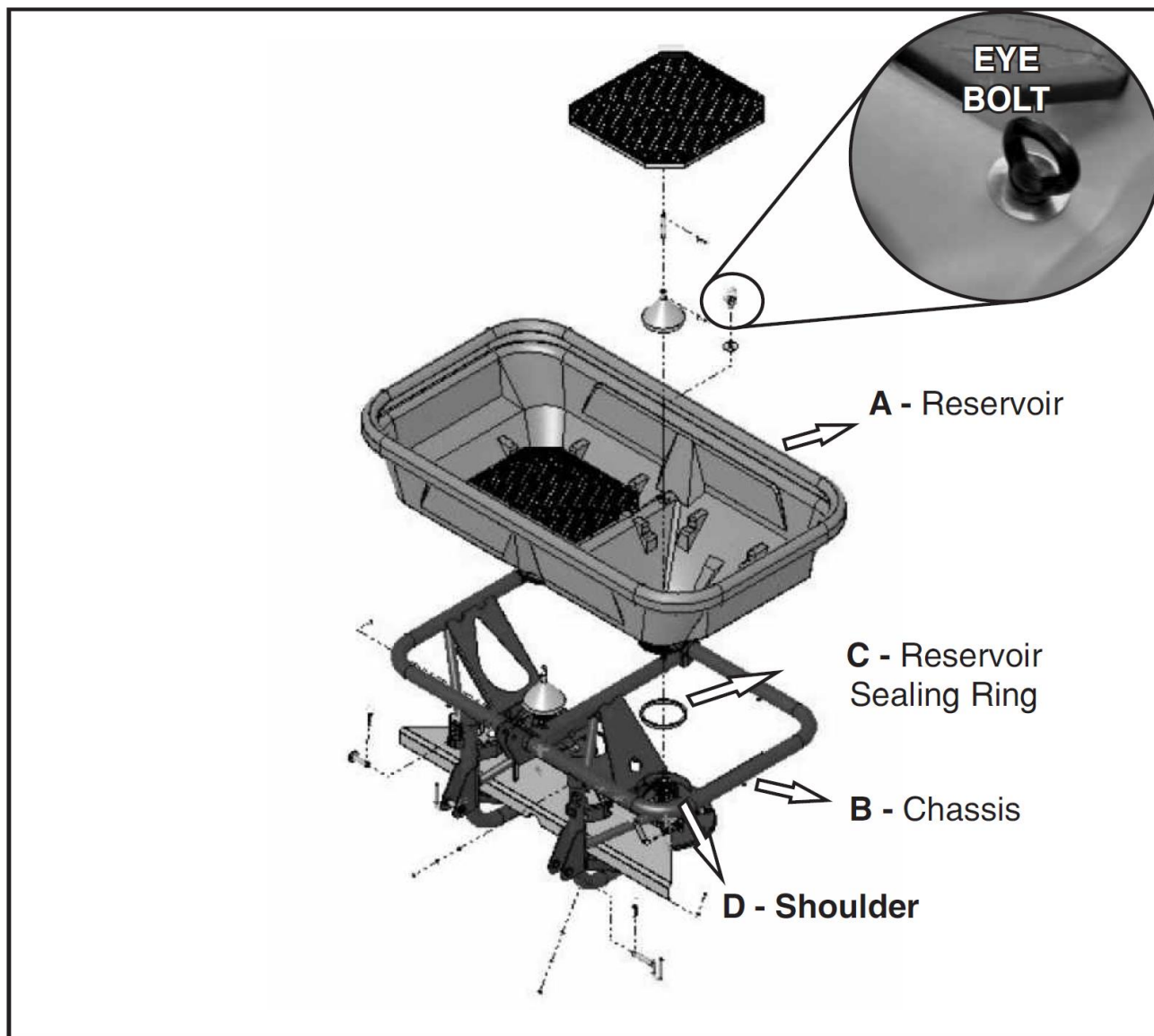


Fig. 16

Install the drive shaft onto the gearbox shaft. Before completing the assembly, adjust the drive shaft length according to the instructions on pages 14 and 15 of this manual.

8 – MOUNTING THE SPREADER AND ADJUSTMENTS

8.1 – Pre-operation Inspection

ATTENTION! Before operating the spreader follow these steps:

- Check that the reservoir is clean and clear of all foreign objects and remove if necessary.
- Remove plugs (A) from the gearboxes and replace them with breathers (Fig. 17).
- Check the oil level in the gearboxes. To do so, place the implement on a level surface and remove the oil plugs (B) to inspect. The gearboxes must be filled with oil to the level of the plugs (B).

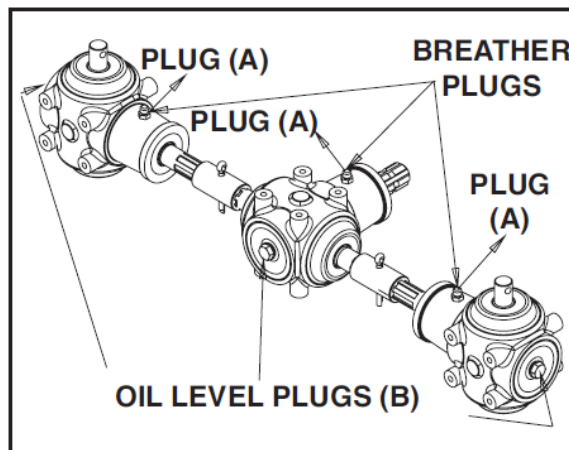


Fig. 17

The Tornado 1300 can be mounted to tractors which have a three point lifting hydraulic system that is capable of lifting loads of at least 2500kg. Weights may have to be mounted to the front of the tractor for added stability. To add counter weights to the tractor refer to the tractors instruction manual.

8.2 – Removal of the Draw Bar

The draw bar on the tractor must be moved to one side to leave free space for the drive shaft (Fig. 10).



Fig. 18

8.3 - Adjustment of the Tractor Lower 3-Point Linkage Arms

The lower side arms should be adjusted using the side stabilisers, leaving a small gap of 5cm to keep the arms from contacting the tractors tyres (Fig. 19).

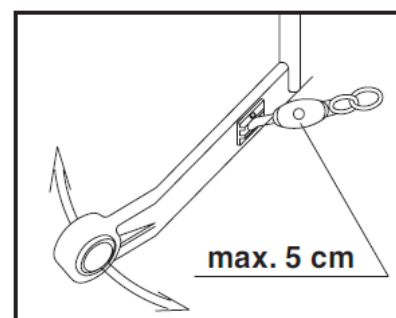


Fig. 19

8.4 - Hooking up the Tornado 1300 to the Tractor

The Tornado 1300 spreader is mounted on the tractor on the hydraulic three point linkage system, connecting the lower links first and lastly the third linkage point (Fig. 20).



Fig. 20

8.5 – Height Adjustment and Horizontal Levelling

The correct working height of the Tornado 1300 is 80cm measuring from the distribution discs to the ground when on flat ground. Once the correct height is established, adjust the top link until the spreader is level with ground, which can be check by looking at the spreader from both the side and the rear, then check again that the distance from the discs to the ground is correct (Fig. 21).

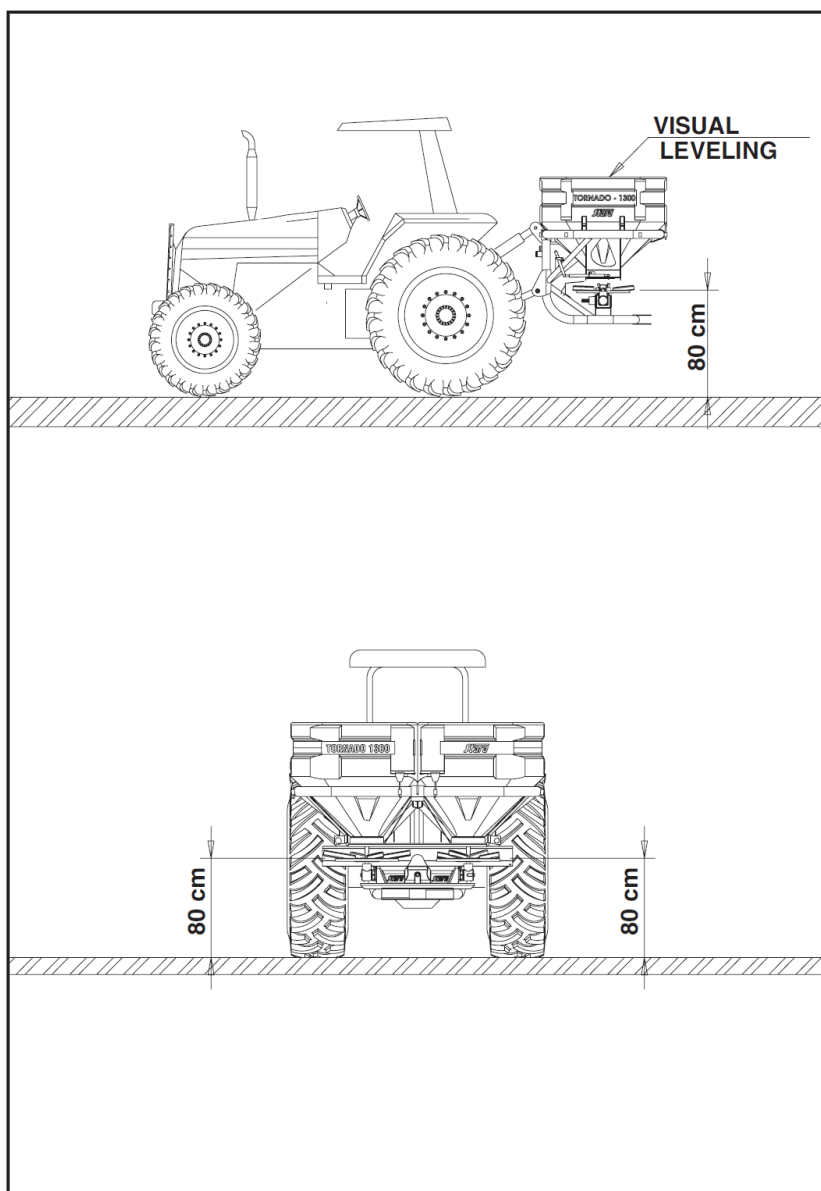


Fig. 21

8.6 – Drive Shaft

8.6.1 – Connecting

Before connecting the drive shaft, clean and grease the tractor PTO shaft spline, to make connection easier, and depress the quick connect pin and slide the drive shaft onto the tractor PTO output shaft (Fig. 22).

8.6.2 – Length Adjustment

Because of the many different makes and models of tractors, it is necessary to adjust the length of the drive shaft when connecting to the tractor for the first time. To do so, raise the spreader until the spreaders PTO input shaft is the same height as the tractors PTO output shaft.

Place one half of the drive shaft against the shaft on the spreader and the other half on the PTO on the tractor (Fig. 23). The two tubes (male and female) must have a minimum end-clearance of 2.5cm (Fig. 24).

If the drive shaft is too long reduce the length of both tubes by the same amount (Fig. 26). Remove any debris and burrs and apply grease to the outside of the inner tube.

Note: When the length of the drive shaft has been adjusted the plastic guard and its securing chain must also be shortened in the same ratio so that the guard does not turn with the drive shaft.



Fig. 22

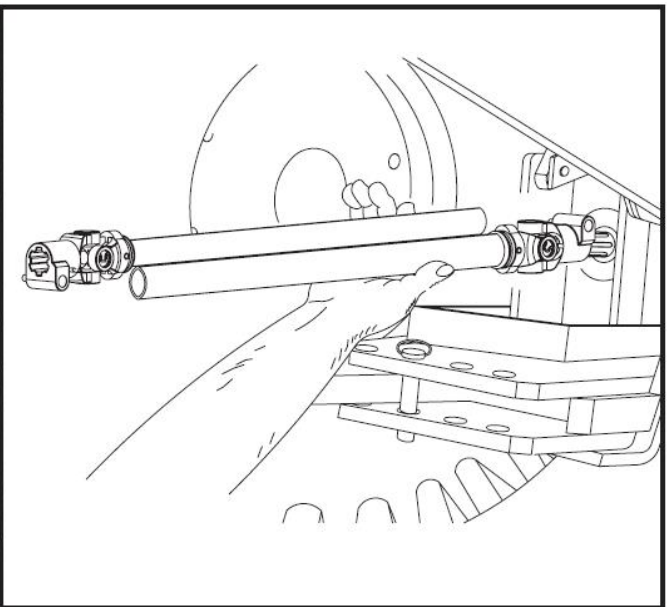


Fig. 23

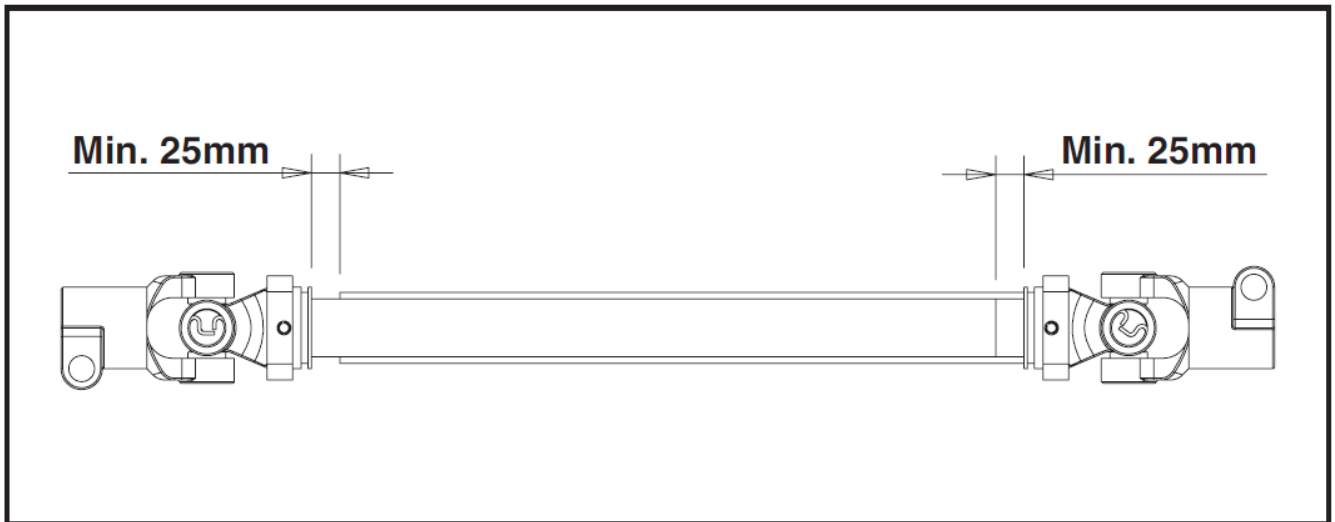


Fig. 24

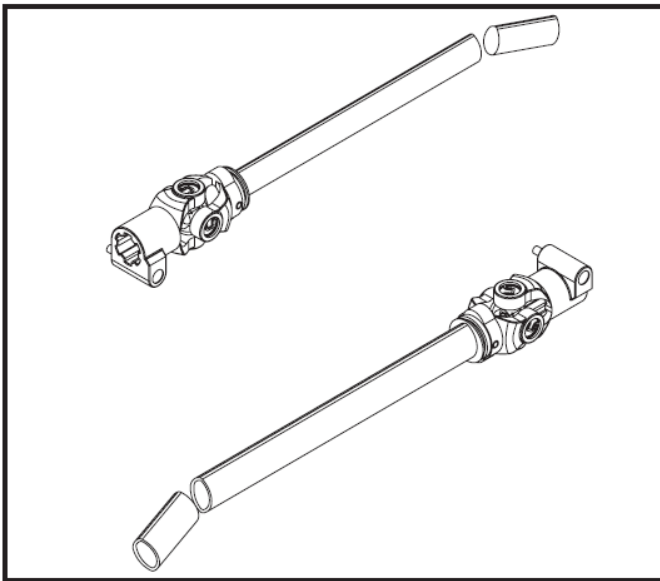


Fig. 25

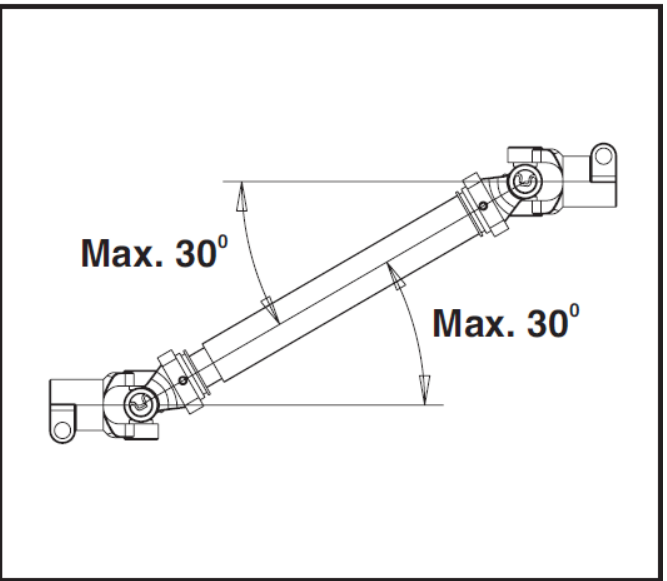


Fig. 26

Caution! The angle of the drive shaft must never exceed 30° when operating (Fig. 26).

9 – ADJUSTMENTS

9.1 – Tractor Speed

The tractor working speed is influenced by the nature of the land. The more flat and even the land the faster the spreading operation can be performed.

The choice of speed influences the speed of the PTO, therefore you must adjust the speed of the tractor and engine so that the PTO is kept at 540rpm.

Check the tractors owner's manual, or decal, to determine the speed, gear, engine and PTO rpm's, consult the tractors owner's manual or read the decals on the tractor relating to this.

9.2 – PTO Speed

So that the product is applied correctly, it is necessary that the rpm's of the PTO is kept at a constant 540 rpm during the spreading operation. The tractor normally makes use of governors to maintain the PTO revolutions. If in doubt consult the tractor manual or check using a tachometer (Fig. 27).

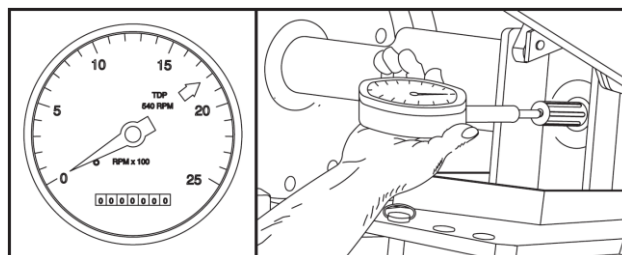


Fig. 27

9.3 – Setting the Vanes

The Tornado 1300 has two distribution discs with vanes, 365mm, 250mm, 235mm, and 205mm that can be combined in pairs on each distribution disc. Each vane has four positions it can be set on the disc which allows the path of the product to be advanced or delayed in exiting the discs. This facility is necessary to correct variations in the distribution profile. The settings used for fertilisers and seeds are given in the Distribution Tables in section 11.

Figure 28 below shows the direction of rotation of the distribution discs and the options for setting the vanes. Note the assembly order, the short and long vanes must be mounted alternatively on the disc and also in relation to the other disc.

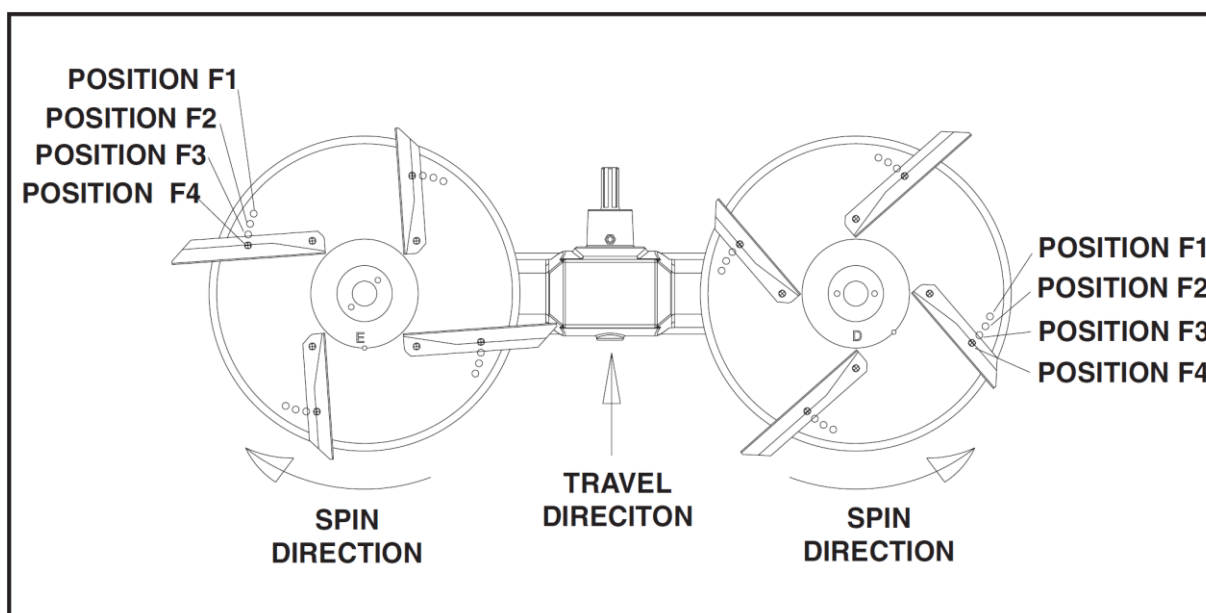


Fig. 28

9.4 – Defining Working Width

When spreading fertiliser and seeds there is always a lower concentration of product at the extremities of the working parameters (Fig. 29). To achieve uniform coverage you have to overlap successive passes so that the final concentration of product in this overlap zone is equal to the remainder of the work band, to compensate for the lower concentration of product on the edges of the spreading zone (Fig. 29).

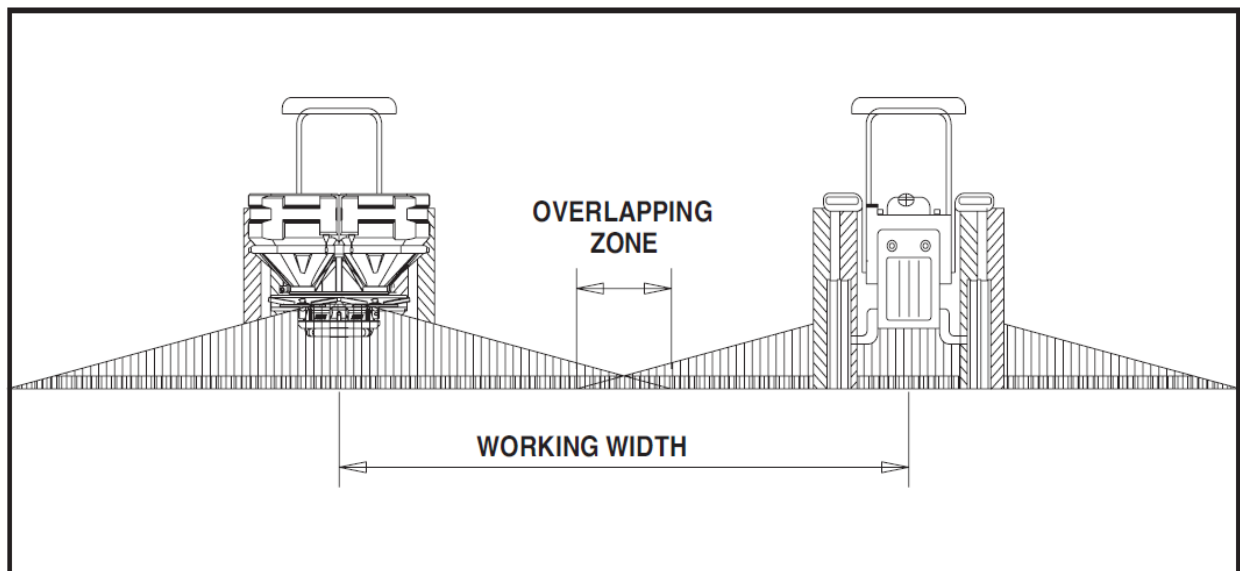


Fig. 29

9.5 – Marking Successive Passes

The spreading width of the Tornado 1300 spreader normally exceeds 12 metres making it difficult to see where the last pass was made. To overcome this, either use natural landmarks or insert pegs to achieve uniform coverage (Fig. 30).

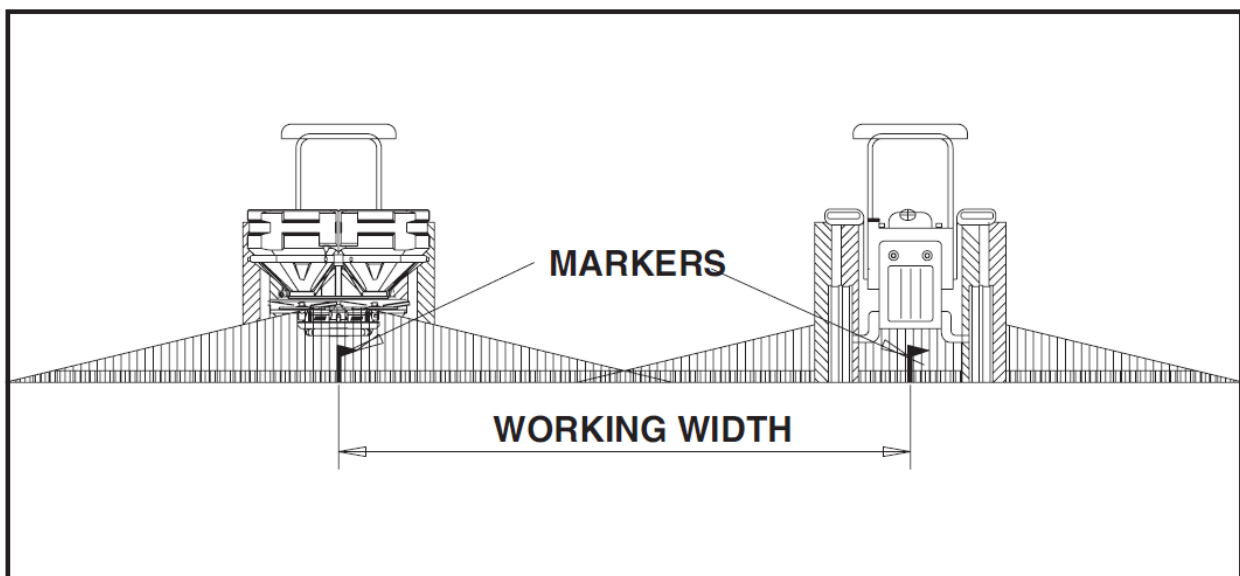


Fig. 30

9.6 – Finishing off an Area

When finishing spreading an area the last pass normally means that the product has to be applied in a strip narrower than the effective working width. To make this easy the Tornado 1300 spreader controls have independent drive so that only one side is spreading product (Fig. 31).

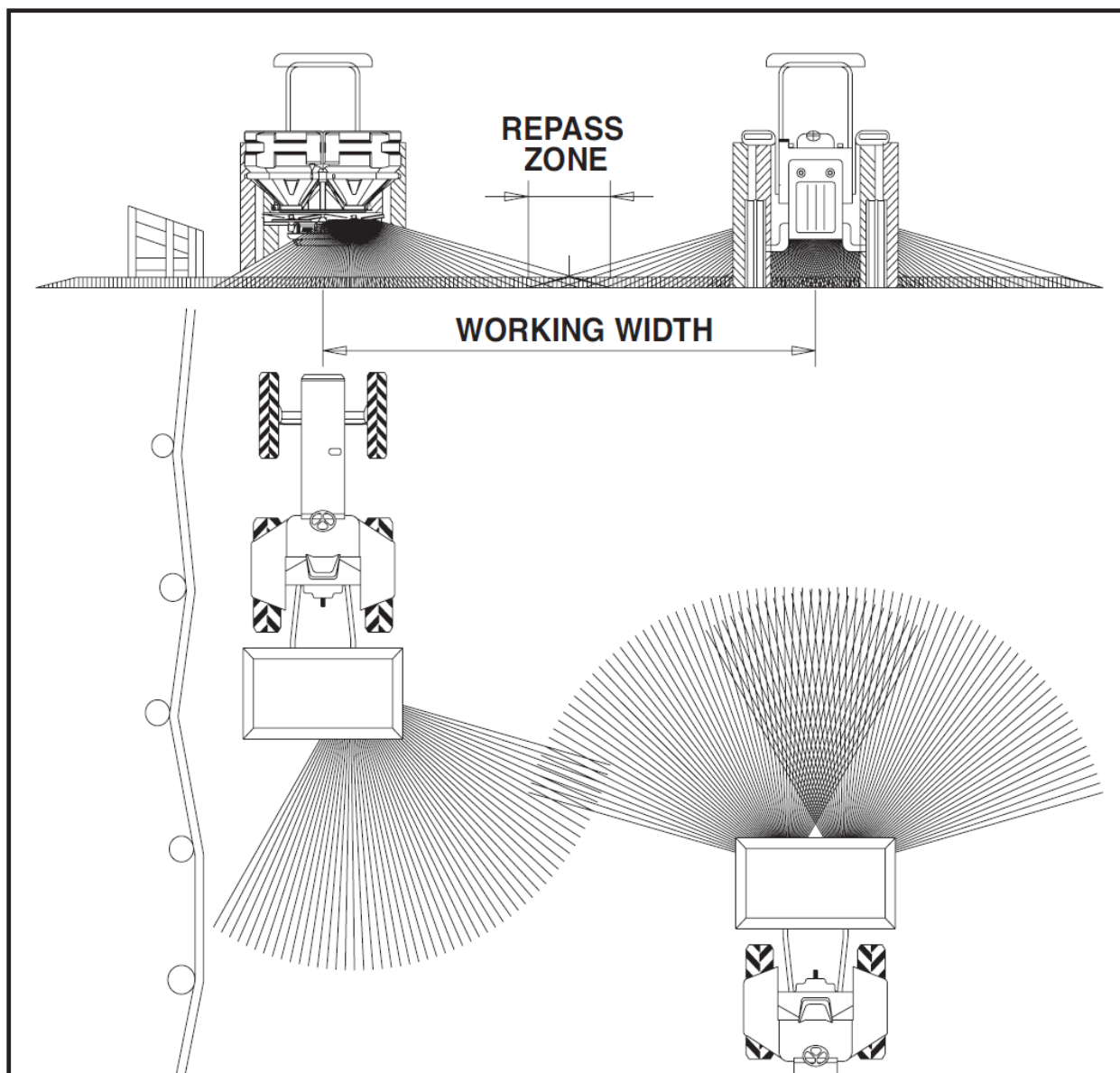


Fig. 31

9.7 – Procedure & Calculations for setting Machine Output (Recommended)

To assist you with the settings for the Tornado 1300 spreader, this manual includes tables for the more commonly found fertilisers and seeds. However, it may be necessary, because the product differs in formulation, density and/or granule size from those given in the tables, to make adjustments to the output of the spreader.

With the spreader connected to the tractor, perform the following steps:

- Remove the agitators (Refer to Section 6.5 of this manual);
- Remove the distribution discs;
- Refit the agitators without the discs (Fig. 32);
- Half fill the spreader with the product to be spread;
- Level the machine following the instructions in Section 8.5;
- Find the opening setting in the Application Table for the product that will be used for the desired application rate, and make the adjustment shown in Figure 09 in Section 4. Take note of the outflow given in the table, which is the total amount of product which must come out of the two exits in the hopper in one minute of operation;

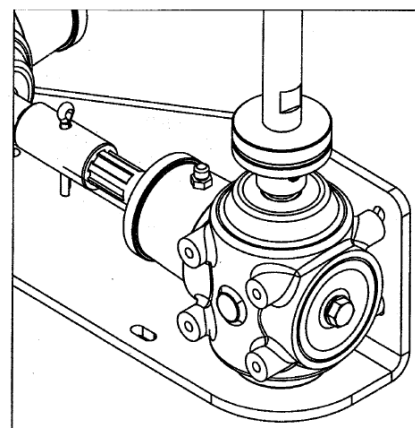


Fig. 32

- g) Place suitable containers under each hopper and start the spreader, with the PTO rotating at 540rpm;
- h) Open the shutters using the control levers for exactly one minute;
- i) Weigh the product that has come out of each of the hopper exits individually. The weight should match with that given in the table. If it differs, make the necessary adjustments and repeat the operation;
- j) If there is a difference in the amount of product that came out of each side of the hopper, adjust the adjustor as shown in Figure 09 in Section 4.

9.8 – Procedure & Calculations for Setting Machine Output (Field Trial)

To assist you with the settings for the Tornado 1300 spreader, this manual includes tables for the more commonly found fertilisers and seeds. However, it may be necessary, because the product differs in formulation, density and/or granule size from those given in the tables, to make adjustments to the output of the spreader.

To check the outflow use the following formula:

$$d = \frac{P \times 10,000}{Q \times I}$$

Where:

d= Distance travelled in metres

P= Weight of product placed in hopper

I= Effective working width

Q= Application rate in kg/Ha

Example: We want to apply 225kg/ha of urea. PTO speed is 540rpm

P= Amount of urea in hopper: 100kg

Q= Amount of urea to be applied = 225kg/ha

Consulting Application Table 11.1, we have:

I= Effective Working Width = 22m

Scale Opening: No° = 5.5

Spreading Speed = 12km/h

Position of the Vanes: Vane 250 – F2 and the 205 Vane – F3.

With this information we calculate the area to be covered in order to consume the 100kg of urea placed in the hopper.

$$d = \frac{100 \times 10,000}{225 \times 22}$$

d= 202 metres

Note: If before completing the 202 metres the product was consumed, then we must proportionally close the scale opening and test again. If there was product left in the hopper then we must proportionally open the scale opening and repeat the operation until the desired outflow.

10 – TROUBLESHOOTING

| Problem | Possible Causes | Solutions |
|---|--|--|
| Restricted outflow of product, or flow is inconsistent. | Scale opening is not adjusted correctly. | Adjust opening as per Section 9.7 & 9.8 |
| | Foreign objects in hopper obstructing flow. | Remove objects. |
| | Product build-up at the exits due to excessive humidity. | Dry the product or suspend the work until product has dried. |
| | | Adjust the height of the Protective Funnel to increase the flow of the product. |
| | Lumps in product. | Remove or break up the lumps. |
| | | If possible increase the speed of the tractor and increase the outflow to facilitate the passage of small lumps. |
| Distribution of product uneven. | Agitator not operating correctly. | Repair and/or replace damaged components. |
| | Spreader not level. | Level spreader as per Section 8.5. |
| | Incorrect PTO speed. | Adjust PTO to 540rpm. |
| Excessive vibration or noise. | The vanes are not set correctly for the product. | Check the Distribution Tables and adjust setting as necessary. |
| | Drive shaft universals worn. | Replace worn parts. |
| | Excessive play in the lower 3-point linkages. | Stabilise the lateral movement of the linkage. |
| Excessive dusting or damage to seeds. | Foreign objects in hopper. | Remove objects. |
| | Outflow too low. | Choose a higher speed which allows the aperture to open further. |
| | Agitator not operating correctly. | Repair and/or replace damaged components. |

Attention: For your safety and the proper functioning of the Tornado 1300, ensure the bolts securing the hopper are tight and that the protective funnels are installed.

11 – PRODUCT APPLICATION TABLES

11.1 – Urea (45-00-00) 750kg/m³ ø2mm

| Scale opening | Rate kg/min | Tractor Speed km/h | | | | | | | work width (m) | Vane Positions (mm) | | | | | | | | | |
|---------------|-------------|--------------------|-----|-----|-----|-----|-----|------|----------------|---------------------|-----|-----|-----|----|--|----|--|----|----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 365 | 250 | 235 | 205 | | | | | | |
| 2,0 | 12.0 | 75 | 64 | 56 | 50 | 45 | 41 | 37,5 | 16 | | | F4 | | | | | | | |
| 2,5 | 22.5 | 141 | 120 | 105 | 94 | 84 | 77 | 70 | | | | | | | | | | | |
| 3,0 | 33.5 | 209 | 179 | 157 | 140 | 126 | 114 | 105 | | | | | | | | | | | |
| 3,5 | 44.5 | 278 | 238 | 209 | 185 | 167 | 152 | 139 | | | | | | | | | | | |
| 4,0 | 59.5 | 372 | 319 | 279 | 248 | 223 | 203 | 186 | | | | | | | | | | | |
| 4,5 | 72.0 | 450 | 386 | 337 | 300 | 270 | 245 | 225 | | | | | | | | | | | |
| 2,0 | 12.0 | 67 | 57 | 50 | 44 | 40 | 36 | 33 | 18 | | | | | F3 | | | | | |
| 2,5 | 22.5 | 125 | 107 | 94 | 83 | 75 | 68 | 63 | | | | | | | | | | | |
| 3,0 | 33.5 | 186 | 160 | 140 | 124 | 112 | 102 | 93 | | | | | | | | | | | |
| 3,5 | 44.5 | 247 | 212 | 185 | 165 | 148 | 135 | 124 | | | | | | | | | | | |
| 4,0 | 59.5 | 331 | 283 | 248 | 220 | 198 | 180 | 165 | | | | | | | | | | | |
| 4,5 | 72.0 | 400 | 343 | 300 | 267 | 240 | 218 | 200 | | | | | | | | | | | |
| 5,0 | 84.0 | 467 | 400 | 350 | 311 | 280 | 255 | 233 | 20 | | | | | | | F2 | | | |
| 5,5 | 99.0 | 550 | 471 | 412 | 367 | 330 | 300 | 275 | | | | | | | | | | | |
| 2,0 | 12.0 | 60 | 51 | 45 | 40 | 36 | 33 | 30 | | | | | | | | | | | |
| 2,5 | 22.5 | 112 | 96 | 84 | 75 | 67 | 61 | 56 | | | | | | | | | | | |
| 3,0 | 33.5 | 167 | 144 | 126 | 112 | 100 | 91 | 84 | | | | | | | | | | | |
| 3,5 | 44.5 | 222 | 191 | 167 | 148 | 133 | 121 | 111 | | | | | | | | | | | |
| 4,0 | 59.5 | 298 | 255 | 223 | 198 | 179 | 162 | 149 | 22 | | | | | | | | | F3 | |
| 4,5 | 72.0 | 360 | 309 | 270 | 240 | 216 | 196 | 180 | | | | | | | | | | | |
| 5,0 | 84.0 | 420 | 360 | 315 | 280 | 252 | 229 | 210 | | | | | | | | | | | |
| 2,0 | 12.0 | 55 | 47 | 41 | 36 | 33 | 30 | 27 | | | | | | | | | | | |
| 2,5 | 22.5 | 102 | 88 | 77 | 68 | 61 | 56 | 51 | | | | | | | | | | | |
| 3,0 | 33.5 | 152 | 131 | 114 | 102 | 91 | 83 | 76 | | | | | | | | | | | |
| 3,5 | 44.5 | 202 | 173 | 152 | 135 | 121 | 110 | 101 | 22 | | | | | | | | | | F3 |
| 4,0 | 59.5 | 271 | 232 | 203 | 180 | 162 | 147 | 135 | | | | | | | | | | | |
| 4,5 | 72.0 | 327 | 280 | 245 | 218 | 196 | 179 | 164 | | | | | | | | | | | |
| 5,0 | 84.0 | 382 | 327 | 286 | 255 | 229 | 208 | 191 | | | | | | | | | | | |
| 5,5 | 99.0 | 450 | 386 | 337 | 300 | 270 | 245 | 225 | | | | | | | | | | | |
| 6,0 | 113.0 | 514 | 440 | 385 | 342 | 308 | 280 | 257 | | | | | | | | | | | |
| | | Kg/ha | | | | | | | | | | | | | | | | | |

11.1 – Urea (45-00-00) 750kg/m³ ø2mm (continued)

| Scale Opening | Rate Kg/min | Tractor Speeds km/h | | | | | | | Work Width (m) | Vane Positions(mm) | | | |
|---------------|-------------|---------------------|-----|-----|-----|-----|-----|-----|----------------|--------------------|-----|-----|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 365 | 250 | 235 | 205 |
| 2 | 12 | 50 | 43 | 38 | 33 | 30 | 27 | 25 | 24 | F4 | | F3 | |
| 2,5 | 22.5 | 94 | 80 | 70 | 63 | 56 | 51 | 47 | | | | | |
| 3 | 33.5 | 140 | 120 | 105 | 93 | 84 | 76 | 70 | | | | | |
| 3,5 | 44.5 | 185 | 159 | 139 | 124 | 111 | 101 | 93 | | | | | |
| 4 | 59.5 | 248 | 213 | 186 | 165 | 149 | 135 | 124 | | | | | |
| 4,5 | 72 | 300 | 275 | 225 | 200 | 180 | 164 | 150 | | | | | |
| 2 | 12 | 46 | 40 | 35 | 31 | 28 | 25 | 23 | 26 | | F1 | F3 | |
| 2,5 | 22.5 | 87 | 74 | 65 | 58 | 52 | 47 | 43 | | | | | |
| 3 | 33.5 | 129 | 110 | 97 | 86 | 77 | 70 | 64 | | | | | |
| 3,5 | 44.5 | 171 | 148 | 128 | 114 | 103 | 93 | 86 | | | | | |
| 4 | 59.5 | 229 | 196 | 172 | 153 | 137 | 125 | 114 | | | | | |
| 4,5 | 72 | 277 | 237 | 208 | 185 | 166 | 151 | 138 | | | | | |
| 5 | 84 | 323 | 277 | 242 | 215 | 194 | 176 | 161 | 28 | F3 | | F3 | |
| 3 | 33.5 | 120 | 103 | 90 | 80 | 72 | 65 | 60 | | | | | |
| 3,5 | 44.5 | 159 | 136 | 119 | 106 | 95 | 87 | 79 | | | | | |
| 4 | 59.5 | 213 | 182 | 159 | 142 | 128 | 116 | 106 | | | | | |
| 4,5 | 72 | 257 | 220 | 193 | 171 | 154 | 140 | 129 | | | | | |
| 5 | 84 | 300 | 257 | 225 | 200 | 180 | 164 | 150 | | | | | |
| 2 | 12 | 40 | 34 | 30 | 27 | 24 | 22 | 20 | 30 | F2 | | F3 | |
| 2,5 | 22.5 | 75 | 64 | 56 | 50 | 45 | 41 | 38 | | | | | |
| 3 | 33.5 | 112 | 96 | 84 | 74 | 67 | 61 | 56 | | | | | |
| 3,5 | 44.5 | 148 | 127 | 111 | 99 | 89 | 81 | 74 | | | | | |
| 4 | 59.5 | 198 | 170 | 149 | 132 | 119 | 108 | 99 | | | | | |
| 4,5 | 72 | 240 | 206 | 180 | 160 | 144 | 131 | 120 | | | | | |
| 5 | 84 | 280 | 240 | 210 | 187 | 168 | 153 | 140 | | | | | |
| 5,5 | 99 | 330 | 283 | 248 | 220 | 198 | 180 | 165 | | | | | |

11.2 – Potassium Chloride (00-00-60) 1120kg/m³

| Scale Opening | Rate kg/min | Tractor Speeds km/h | | | | | | | Work Width (m) | Vane Positions (mm) | | | |
|------------------|----------------|---------------------|-----|-----|-----|-----|-----|-----|----------------------|------------------------|-----|----|--|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 | | |
| 2,0 | 10.0 | 56 | 48 | 42 | 37 | 33 | 30 | 28 | 18 | F4 | | | |
| 2,5 | 21.0 | 117 | 100 | 88 | 78 | 70 | 64 | 58 | | | | | |
| 3,0 | 32,5 | 181 | 155 | 135 | 120 | 108 | 98 | 90 | | | | | |
| 3,5 | 46.0 | 256 | 219 | 192 | 170 | 153 | 138 | 128 | | | | | |
| 4,0 | 58.0 | 322 | 276 | 242 | 215 | 193 | 176 | 161 | | | | | |
| 4,5 | 72.0 | 400 | 343 | 300 | 267 | 240 | 218 | 200 | | | | | |
| 5,0 | 83.0 | 461 | 395 | 346 | 307 | 277 | 252 | 230 | | | | | |
| 5,5 | 102.0 | 567 | 486 | 425 | 378 | 340 | 309 | 283 | | | | | |
| 6,0 | 115.0 | 639 | 548 | 479 | 426 | 383 | 348 | 319 | | | | | |
| 6,5 | 128.0 | 711 | 609 | 533 | 474 | 427 | 388 | 356 | | | | | |
| 2,0 | 10.0 | 50 | 43 | 37 | 33 | 30 | 27 | 25 | 20 | | | F3 | |
| 2,5 | 21.0 | 105 | 90 | 79 | 70 | 63 | 57 | 52 | | | | | |
| 3,0 | 32.5 | 163 | 139 | 122 | 108 | 98 | 89 | 81 | | | | | |
| 3,5 | 46.0 | 230 | 197 | 173 | 153 | 138 | 125 | 115 | | | | | |
| 4,0 | 58.0 | 290 | 249 | 217 | 193 | 174 | 158 | 145 | | | | | |
| 4,5 | 72.0 | 360 | 309 | 270 | 240 | 216 | 196 | 180 | | | | | |
| 5,0 | 83.0 | 415 | 356 | 311 | 277 | 249 | 226 | 208 | | | | | |
| 5,5 | 102.0 | 510 | 437 | 382 | 340 | 306 | 278 | 255 | | | | | |
| 6,0 | 115.0 | 575 | 493 | 431 | 383 | 345 | 314 | 287 | | | | | |
| 6,5 | 128.0 | 640 | 549 | 480 | 427 | 384 | 349 | 320 | | | | | |
| 3,0 | 32.5 | 148 | 127 | 111 | 98 | 89 | 81 | 74 | 22 | F4 | | | |
| 3,5 | 46.0 | 209 | 179 | 157 | 139 | 125 | 114 | 105 | | | | | |
| 4,0 | 58.0 | 264 | 226 | 198 | 176 | 158 | 144 | 132 | | | | | |
| 4,5 | 72.0 | 327 | 280 | 245 | 218 | 196 | 178 | 164 | | | | | |
| 5,0 | 83.0 | 377 | 323 | 283 | 251 | 226 | 206 | 189 | | | | | |
| 5,5 | 102.0 | 464 | 397 | 348 | 309 | 278 | 253 | 232 | | | | | |
| 6,0 | 115.0 | 523 | 448 | 392 | 348 | 314 | 285 | 261 | | | | | |
| 6,5 | 128.0 | 582 | 499 | 436 | 389 | 349 | 317 | 291 | | | | | |
| 7,0 | 150.0 | 682 | 584 | 511 | 455 | 409 | 372 | 341 | | | | | |
| 2,0 | 10.0 | 42 | 36 | 31 | 28 | 25 | 23 | 21 | 24 | F3 | F4 | | |
| 2,5 | 21.0 | 87 | 75 | 66 | 58 | 52 | 48 | 44 | | | | | |
| 3,0 | 32.5 | 135 | 116 | 102 | 90 | 81 | 74 | 68 | | | | | |
| 3,5 | 46.0 | 192 | 164 | 144 | 128 | 115 | 105 | 96 | | | | | |
| 4,0 | 58.0 | 242 | 207 | 181 | 161 | 145 | 132 | 121 | | | | | |
| 4,5 | 72.0 | 300 | 257 | 225 | 200 | 180 | 164 | 150 | | | | | |
| 5,0 | 83.0 | 346 | 296 | 259 | 230 | 207 | 189 | 173 | | | | | |
| 5,5 | 102.0 | 425 | 364 | 319 | 283 | 255 | 232 | 212 | | | | | |
| 6,0 | 115.0 | 479 | 411 | 359 | 319 | 287 | 261 | 239 | | | | | |
| 6,5 | 128.0 | 533 | 457 | 400 | 355 | 320 | 291 | 267 | | | | | |
| 7,0 | 150.0 | 625 | 536 | 469 | 417 | 375 | 341 | 313 | | | | | |

11.3 – Super Phosphate (0-42-0) 1000kg/m³

| Scale Opening | Rate kg/min | Tractor Speeds km/h | | | | | | | Work width (m) | Vane Positions (mm) | | | |
|---------------|-------------|---------------------|-----|-----|-----|-----|-----|------|----------------|---------------------|-----|-----|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 365 | 250 | 235 | 205 |
| 2,0 | 10.5 | 35 | 30 | 26 | 23 | 21 | 19 | 17,5 | 30 | | F2 | | F3 |
| 2,5 | 18.0 | 60 | 51 | 45 | 40 | 36 | 33 | 30 | | | | | |
| 3,0 | 32.0 | 107 | 91 | 80 | 71 | 64 | 58 | 53 | | | | | |
| 3,5 | 41.0 | 137 | 117 | 102 | 91 | 82 | 75 | 68 | | | | | |
| 4,0 | 55.5 | 185 | 159 | 139 | 123 | 111 | 101 | 92 | | | | | |
| 4,5 | 64.0 | 213 | 183 | 160 | 142 | 128 | 116 | 107 | | | | | |
| 5,0 | 81.0 | 270 | 231 | 202 | 180 | 162 | 147 | 135 | | | | | |
| 5,5 | 97.0 | 323 | 277 | 242 | 215 | 194 | 176 | 162 | | | | | |
| 6,0 | 130.0 | 433 | 371 | 325 | 289 | 260 | 236 | 217 | | | | | |
| 6,5 | 150.0 | 500 | 429 | 375 | 333 | 300 | 273 | 250 | | | | | |
| 7,0 | 173.0 | 577 | 494 | 433 | 384 | 346 | 315 | 288 | | | | | |
| 7,5 | 196.0 | 653 | 560 | 490 | 435 | 392 | 356 | 327 | | | | | |
| 8,0 | 220.0 | 733 | 629 | 550 | 489 | 440 | 400 | 367 | | | | | |
| 8,5 | 250.0 | 833 | 714 | 625 | 555 | 500 | 455 | 416 | | | | | |
| 2 | 10.5 | 31 | 26 | 23 | 21 | 19 | 17 | 15 | 34 | F2 | | F3 | |
| 2,5 | 18 | 53 | 45 | 40 | 35 | 32 | 29 | 26 | | | | | |
| 3 | 32 | 94 | 81 | 71 | 63 | 56 | 51 | 47 | | | | | |
| 3,5 | 41 | 121 | 103 | 90 | 80 | 72 | 66 | 60 | | | | | |
| 4 | 55.5 | 163 | 140 | 122 | 109 | 98 | 89 | 82 | | | | | |
| 4,5 | 64 | 188 | 161 | 141 | 125 | 113 | 103 | 94 | | | | | |
| 5 | 81 | 238 | 204 | 179 | 159 | 143 | 130 | 120 | | | | | |
| 5,5 | 97 | 285 | 245 | 214 | 190 | 171 | 156 | 143 | | | | | |
| 4 | 55.5 | 154 | 132 | 116 | 103 | 93 | 84 | 77 | 36 | F2 | | F3 | |
| 4,5 | 64 | 178 | 152 | 133 | 119 | 107 | 97 | 89 | | | | | |
| 5 | 81 | 225 | 193 | 169 | 150 | 135 | 123 | 113 | | | | | |
| 5,5 | 97 | 270 | 231 | 202 | 180 | 162 | 147 | 135 | | | | | |
| 6 | 130 | 361 | 310 | 271 | 241 | 217 | 197 | 181 | | F1 | | F3 | |
| 6,5 | 150 | 417 | 357 | 313 | 278 | 250 | 227 | 208 | | | | | |
| 7 | 173 | 481 | 412 | 360 | 320 | 288 | 262 | 240 | | F2 | | F4 | |
| 7,5 | 196 | 544 | 467 | 408 | 363 | 327 | 297 | 272 | | | | | |
| 8 | 220 | 611 | 524 | 458 | 407 | 367 | 333 | 306 | | | | | |
| 8,5 | 250 | 694 | 595 | 521 | 463 | 417 | 379 | 347 | | | | | |

Average lateral overlapping 7m

11.4 – Ammonium Sulphate (21-00-00 + 5) 1005kg/m³

| Scale Opening | Rate kg/min | Tractor Speeds km/h | | | | | | | Work width (m) | Vane Positions (mm) | |
|---------------|-------------|---------------------|-----|-----|-----|-----|-----|-----|----------------|---------------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 1,5 | 7,0 | 29 | 25 | 22 | 19 | 17 | 16 | 15 | 24 | F2 | F3 |
| 2,0 | 12,0 | 50 | 43 | 37 | 33 | 30 | 27 | 25 | | | |
| 2,5 | 26,0 | 108 | 93 | 81 | 72 | 65 | 59 | 54 | | | |
| 3,0 | 39,0 | 162 | 139 | 122 | 108 | 97 | 89 | 81 | | | |
| 3,5 | 54,0 | 225 | 193 | 169 | 150 | 135 | 123 | 113 | | | |
| 4,0 | 66,0 | 275 | 236 | 206 | 183 | 165 | 150 | 138 | | | |
| 4,5 | 78,0 | 325 | 279 | 244 | 217 | 195 | 177 | 163 | | | |
| 5,0 | 94,0 | 392 | 336 | 294 | 261 | 235 | 214 | 196 | | | |
| 5,5 | 103,0 | 429 | 368 | 322 | 286 | 257 | 234 | 215 | | | |
| 6,0 | 128,0 | 533 | 457 | 400 | 356 | 320 | 291 | 267 | | | |

Average lateral overlapping 6m

11.5 – Ammonium Nitrate Granules (32-0-2) 960kg/m³

| Scale Opening | Rates kg/min | Tractor Speeds km/h | | | | | | | Job Wd (m) | Vane Positions(mm) | | | |
|---------------|--------------|---------------------|-----|-----|-----|-----|-----|------|------------|--------------------|-----|-----|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 365 | 250 | 235 | 205 |
| 1,5 | 6.5 | 27 | 23 | 20 | 18 | 16 | 15 | 13,5 | 24 | | F2 | | F3 |
| 2,0 | 14.5 | 60 | 52 | 45 | 40 | 36 | 33 | 30 | | | | | |
| 2,5 | 27.0 | 112 | 96 | 84 | 75 | 67 | 61 | 56 | | | | | |
| 3,0 | 39.5 | 165 | 141 | 123 | 110 | 99 | 90 | 82 | | | | | |
| 3,5 | 54.5 | 227 | 195 | 170 | 151 | 136 | 124 | 114 | | | | | |
| 4,0 | 73.0 | 304 | 261 | 228 | 203 | 183 | 166 | 152 | | | | | |
| 4,5 | 88.0 | 367 | 314 | 275 | 244 | 220 | 200 | 183 | | | | | |
| 5,0 | 102.0 | 425 | 364 | 319 | 283 | 255 | 232 | 212 | | | | | |
| 5,5 | 120.0 | 500 | 429 | 375 | 333 | 300 | 273 | 250 | | | | | |
| 6,0 | 138.0 | 575 | 493 | 431 | 383 | 345 | 313 | 287 | | | | | |
| 2 | 14.5 | 48 | 41 | 36 | 32 | 29 | 26 | 34 | 30 | F2 | | F3 | |
| 2,5 | 27 | 90 | 77 | 68 | 60 | 54 | 49 | 45 | | | | | |
| 3 | 39.5 | 132 | 113 | 99 | 88 | 79 | 72 | 66 | | | | | |
| 3,5 | 54.5 | 182 | 156 | 136 | 121 | 109 | 99 | 91 | | | | | |
| 4 | 73 | 243 | 209 | 183 | 162 | 146 | 133 | 122 | | | | | |
| 4,5 | 88 | 293 | 251 | 220 | 196 | 176 | 160 | 147 | | | | | |
| 5 | 102 | 340 | 291 | 255 | 227 | 204 | 185 | 170 | | | | | |
| 2 | 14.5 | 43 | 37 | 32 | 28 | 26 | 23 | 21 | 34 | F2 | F3 | | |
| 2,5 | 27 | 79 | 68 | 60 | 53 | 48 | 43 | 40 | | | | | |
| 3 | 39.5 | 116 | 100 | 87 | 77 | 70 | 63 | 58 | | | | | |
| 3,5 | 54.5 | 160 | 137 | 120 | 107 | 96 | 87 | 80 | | F2 | F4 | | |
| 4 | 73 | 215 | 184 | 161 | 143 | 129 | 117 | 107 | | | | | |
| 4,5 | 88 | 259 | 222 | 194 | 173 | 155 | 141 | 130 | | | | | |
| 5 | 102 | 300 | 257 | 225 | 200 | 180 | 164 | 150 | | | | | |
| 5,5 | 120 | 353 | 303 | 265 | 235 | 212 | 193 | 176 | | | | | |
| 6 | 138 | 406 | 348 | 304 | 271 | 244 | 221 | 203 | | | | | |

Average lateral overlapping 5m

11.6 – NPK Supreme (10-18-24) 1040kg/m³

| Scale Opening | Rate kg/min | Tractor Speeds km/h | | | | | | | Work width (m) | Vane Positions | |
|---------------|-------------|---------------------|-----|-----|-----|-----|------|------|----------------|----------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 2,0 | 13.5 | 45 | 39 | 34 | 30 | 27 | 24,5 | 22,5 | 30 | F2 | F3 |
| 2,5 | 24.5 | 82 | 70 | 61 | 54 | 49 | 44,5 | 41 | | | |
| 3,0 | 37.5 | 125 | 107 | 94 | 83 | 75 | 68 | 62,5 | | | |
| 3,5 | 53.0 | 177 | 151 | 132 | 118 | 106 | 96 | 88 | | | |
| 4,0 | 68.0 | 227 | 194 | 170 | 151 | 136 | 124 | 113 | | | |
| 4,5 | 82.0 | 273 | 234 | 205 | 182 | 164 | 149 | 137 | | | |
| 5,0 | 94.0 | 313 | 269 | 235 | 209 | 188 | 171 | 157 | | | |
| 5,5 | 106.0 | 353 | 303 | 265 | 235 | 212 | 193 | 177 | | | |
| 6,0 | 123.0 | 410 | 351 | 307 | 273 | 246 | 224 | 205 | | | |
| 6,5 | 140.0 | 467 | 400 | 350 | 311 | 280 | 255 | 233 | | | |
| 7,0 | 156.0 | 520 | 446 | 390 | 347 | 312 | 284 | 260 | | | |
| 7,5 | 173.0 | 577 | 494 | 433 | 385 | 346 | 315 | 288 | | | |
| 8,0 | 190.0 | 633 | 543 | 475 | 422 | 380 | 346 | 317 | | | |
| 8,5 | 208.0 | 694 | 594 | 520 | 462 | 416 | 378 | 347 | | | |

Average lateral overlapping 5m

11.7 – NPK Mixture (08-18-28) 1010kg/m³

| Scale Opening | Rate kg/min | Tractor Speeds (km/h) | | | | | | | Work width (m) | Vane Positions(mm) | | | |
|---------------|-------------|-----------------------|-----|------|-----|-----|-----|-----|----------------|--------------------|-----|-----|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 365 | 250 | 235 | 205 |
| 2,0 | 12.0 | 50 | 43 | 37,5 | 33 | 30 | 27 | 25 | 24 | F3 | | | F3 |
| 2,5 | 24.5 | 102 | 88 | 77 | 68 | 61 | 56 | 51 | | | | | |
| 3,0 | 37.0 | 154 | 132 | 116 | 103 | 93 | 84 | 77 | | | | | |
| 3,5 | 47.0 | 196 | 168 | 147 | 131 | 118 | 107 | 98 | | | | | |
| 4,0 | 65.5 | 273 | 234 | 205 | 182 | 164 | 149 | 137 | | | | | |
| 4,5 | 82.0 | 342 | 293 | 256 | 228 | 205 | 186 | 171 | | | | | |
| 5,0 | 97.0 | 404 | 346 | 303 | 269 | 242 | 221 | 202 | | | | | |
| 5,5 | 112.0 | 467 | 400 | 350 | 311 | 280 | 255 | 233 | | | | | |
| 6,0 | 127.0 | 529 | 454 | 397 | 353 | 317 | 289 | 265 | | | | | |
| 6,5 | 144.0 | 600 | 514 | 450 | 400 | 360 | 327 | 300 | | | | | |
| 7,0 | 161.0 | 670 | 575 | 503 | 447 | 402 | 366 | 335 | | | | | |
| 7,5 | 178 | 742 | 636 | 556 | 494 | 445 | 405 | 371 | | | | | |
| 8,0 | 195 | 812 | 696 | 609 | 542 | 487 | 443 | 406 | | | | | |
| 8,5 | 213 | 887 | 761 | 666 | 592 | 532 | 484 | 444 | | | | | |
| 2,5 | 24.5 | 88 | 75 | 66 | 58 | 53 | 48 | 44 | 28 | F1 | | F4 | |
| 3 | 37 | 132 | 113 | 99 | 88 | 79 | 72 | 66 | | | | | |
| 3,5 | 47 | 168 | 144 | 126 | 112 | 101 | 92 | 84 | | | | | |
| 4 | 65.5 | 234 | 201 | 175 | 156 | 140 | 128 | 117 | | | | | |
| 4,5 | 82 | 293 | 251 | 220 | 195 | 176 | 160 | 146 | | | | | |
| 5 | 97 | 346 | 297 | 260 | 231 | 208 | 189 | 173 | | F1 | | | F4 |
| 5,5 | 112 | 400 | 343 | 300 | 267 | 240 | 218 | 200 | | | | | |
| 6 | 127 | 454 | 389 | 340 | 302 | 272 | 247 | 227 | | | | | |
| 6,5 | 144 | 514 | 441 | 386 | 343 | 309 | 281 | 257 | | | | | |
| 7 | 161 | 575 | 493 | 431 | 383 | 345 | 314 | 288 | | | | | |
| 4 | 65.5 | 218 | 187 | 164 | 146 | 131 | 119 | 109 | 30 | F1 | | | F4 |
| 4,5 | 82 | 273 | 234 | 205 | 182 | 164 | 149 | 137 | | | | | |
| 5 | 97 | 323 | 277 | 243 | 216 | 194 | 176 | 162 | | | | | |
| 5,5 | 112 | 373 | 320 | 280 | 249 | 224 | 204 | 187 | | | | | |
| 6 | 127 | 423 | 363 | 318 | 282 | 254 | 231 | 212 | | | | | |
| 6,5 | 144 | 480 | 411 | 360 | 320 | 288 | 262 | 240 | | | | | |
| 7 | 161 | 537 | 460 | 403 | 358 | 322 | 293 | 268 | | | | | |
| 7,5 | 178 | 593 | 509 | 445 | 396 | 356 | 324 | 297 | | | | | |

Average lateral overlapping 5m

11.8 – Phosmag (5-6-7)

| Scale Opening | Rate Kg/min | Tractor Speeds km/h | | | | | | | Work width (m) | Vane Positions (mm) | | | |
|---------------|-------------|---------------------|------|-----|-----|-----|-----|-----|----------------|---------------------|-----|-----|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 365 | 250 | 235 | 205 |
| 2 | 16 | 114 | 98 | 86 | 76 | 69 | 62 | 57 | 14 | | | F1 | F4 |
| 2,5 | 29 | 207 | 178 | 155 | 138 | 124 | 113 | 104 | | | | | |
| 3 | 46 | 329 | 281 | 246 | 219 | 197 | 179 | 164 | | | | | |
| 3,5 | 65 | 464 | 398 | 348 | 310 | 279 | 253 | 232 | | | | | |
| 4 | 82 | 586 | 502 | 439 | 390 | 351 | 319 | 293 | | | | | |
| 4,5 | 102.5 | 732 | 628 | 549 | 488 | 439 | 399 | 366 | | | | | |
| 5 | 130 | 929 | 796 | 696 | 619 | 557 | 506 | 464 | | | | | |
| 5,5 | 146 | 1043 | 894 | 782 | 695 | 626 | 569 | 521 | | | | | |
| 6 | 166.5 | 1189 | 1019 | 892 | 793 | 714 | 649 | 595 | | | | | |

11.9 - Dry Rice 610kg/m³

| Scale Opening | Rate kg/min | Tractor Speeds km/h | | | | | | | Work width (m) | Vane positions (mm) | |
|---------------|-------------|---------------------|-----|-----|-----|-----|-----|------|----------------|---------------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 3,0 | 5.5 | 31 | 26 | 23 | 20 | 18 | 17 | 15 | 18 | F2 | F3 |
| 3,5 | 8.0 | 44 | 38 | 33 | 30 | 27 | 24 | 22 | 18 | | |
| 4,0 | 15.0 | 75 | 64 | 56 | 50 | 45 | 41 | 37,5 | 20 | | |
| 4,5 | 21.0 | 105 | 90 | 79 | 70 | 63 | 57 | 53 | 20 | | |
| 5,0 | 27.5 | 138 | 118 | 103 | 92 | 83 | 75 | 69 | 20 | | |
| 5,5 | 34.0 | 170 | 146 | 128 | 113 | 102 | 93 | 85 | 20 | | |
| 6,0 | 43.0 | 215 | 184 | 161 | 143 | 129 | 117 | 108 | 20 | | |
| 6,5 | 51.0 | 255 | 219 | 191 | 170 | 153 | 139 | 128 | 20 | | |

Average lateral overlapping 5m

11.10 – Rice/Pre-Germinated IRGA-410 600kg/m³-dry

| Scale Opening | Rate kg/min | Tractor Speed Km/h | | | | | | | Work width (m) | Vane positions (mm) | |
|---------------|-------------|--------------------|-----|-----|-----|-----|-----|-----|----------------|---------------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 6,5 | 12.0 | 66 | 57 | 50 | 44 | 40 | 36 | 33 | 18 | F2 | F3 |
| 7,0 | 18.0 | 100 | 86 | 75 | 66 | 60 | 54 | 50 | | | |
| 7,5 | 25.5 | 142 | 121 | 106 | 94 | 85 | 77 | 71 | | | |
| 8,0 | 33.0 | 183 | 157 | 137 | 122 | 110 | 100 | 92 | | | |
| 8,5 | 39.0 | 216 | 185 | 162 | 144 | 130 | 118 | 108 | | | |
| 9,0 | 46.0 | 255 | 219 | 191 | 170 | 153 | 139 | 128 | | | |
| 9,5 | 50.0 | 278 | 238 | 208 | 185 | 167 | 151 | 139 | | | |
| 10,0 | 54.5 | 303 | 259 | 227 | 202 | 181 | 165 | 151 | | | |

NOTE: Place the seed protective cap on the #2 hole (highest hole).

11.11 – Black Oats 555kg/m³

| Scale Opening | Rate kg/min | Tractor Speed Km/h | | | | | | | Work width (m) | Vane positions (mm) | |
|---------------|-------------|--------------------|------|------|------|-----|-----|------|----------------|---------------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 2,5 | 1.80 | 10 | 8,6 | 7,5 | 6,7 | 6 | 5,5 | 5 | 18 | F1 | F3 |
| 3,0 | 4.0 | 22 | 19 | 16,5 | 15 | 13 | 12 | 11 | 18 | | |
| 3,5 | 8.5 | 47 | 40,5 | 35,5 | 31,5 | 28 | 26 | 23,5 | 18 | | |
| 4,0 | 14.5 | 80 | 69 | 60 | 54 | 48 | 44 | 40 | 18 | | F4 |
| 4,5 | 22.3 | 115 | 98 | 86 | 77 | 69 | 63 | 58 | 20 | | |
| 5,0 | 28.0 | 140 | 120 | 105 | 93 | 84 | 76 | 70 | 20 | | |
| 5,5 | 34.5 | 172 | 148 | 129 | 115 | 103 | 94 | 86 | 20 | | |
| 6,0 | 43.0 | 215 | 184 | 161 | 143 | 129 | 117 | 108 | 20 | | |

Average lateral overlapping 6m

11.12 – Barley 695kg/m³

| Scale Opening | Rate kg/min | Tractor Speed km/hr | | | | | | | Work width (m) | Vane positions (mm) | |
|---------------|-------------|---------------------|-----|-----|-----|-----|-----|-----|----------------|---------------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 2,0 | 6.0 | 27 | 23 | 20 | 18 | 16 | 15 | 14 | 22 | F2 | F2 |
| 2,5 | 11.5 | 52 | 45 | 39 | 35 | 31 | 29 | 26 | 22 | | |
| 3,0 | 22.0 | 100 | 86 | 75 | 67 | 60 | 55 | 50 | 22 | | |
| 3,5 | 30.0 | 136 | 117 | 102 | 91 | 82 | 74 | 68 | 22 | | |
| 4,0 | 39.0 | 163 | 139 | 122 | 108 | 97 | 88 | 81 | 24 | | |
| 4,5 | 50.0 | 208 | 179 | 156 | 139 | 125 | 114 | 104 | 24 | | |
| 5,0 | 60.0 | 250 | 214 | 187 | 167 | 150 | 136 | 125 | 24 | | |

11.13 – Millet 810kg/m³

| Scale Opening | Rate kg/min | Tractor Speeds (km/h) | | | | | | | Work width (m) | Vane positions (mm) | |
|---------------|-------------|-----------------------|-----|------|------|------|------|------|----------------|---------------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 0,5 | 0.6 | 3,8 | 3,2 | 2,8 | 2,5 | 2,3 | 2,0 | 1,9 | 16 | F1 | F2 |
| 0,75 | 1.8 | 11,3 | 9,5 | 8,5 | 7,5 | 6,8 | 6 | 5,5 | 16 | | |
| 1,0 | 3.5 | 19 | 17 | 14,6 | 13 | 11,7 | 10,6 | 9,7 | 18 | | |
| 1,25 | 5.0 | 28 | 24 | 21 | 18,5 | 17 | 15 | 14 | 18 | | F3 |
| 1,50 | 7.0 | 39 | 33 | 29 | 26 | 23 | 21 | 19,5 | 18 | | |
| 1,75 | 11.0 | 55 | 47 | 41 | 37 | 33 | 30 | 27,5 | 20 | | |
| 2,0 | 14.0 | 70 | 60 | 52,5 | 47 | 42 | 38 | 35 | 20 | | |
| 2,25 | 20.0 | 100 | 86 | 75 | 67 | 60 | 55 | 50 | 20 | | |

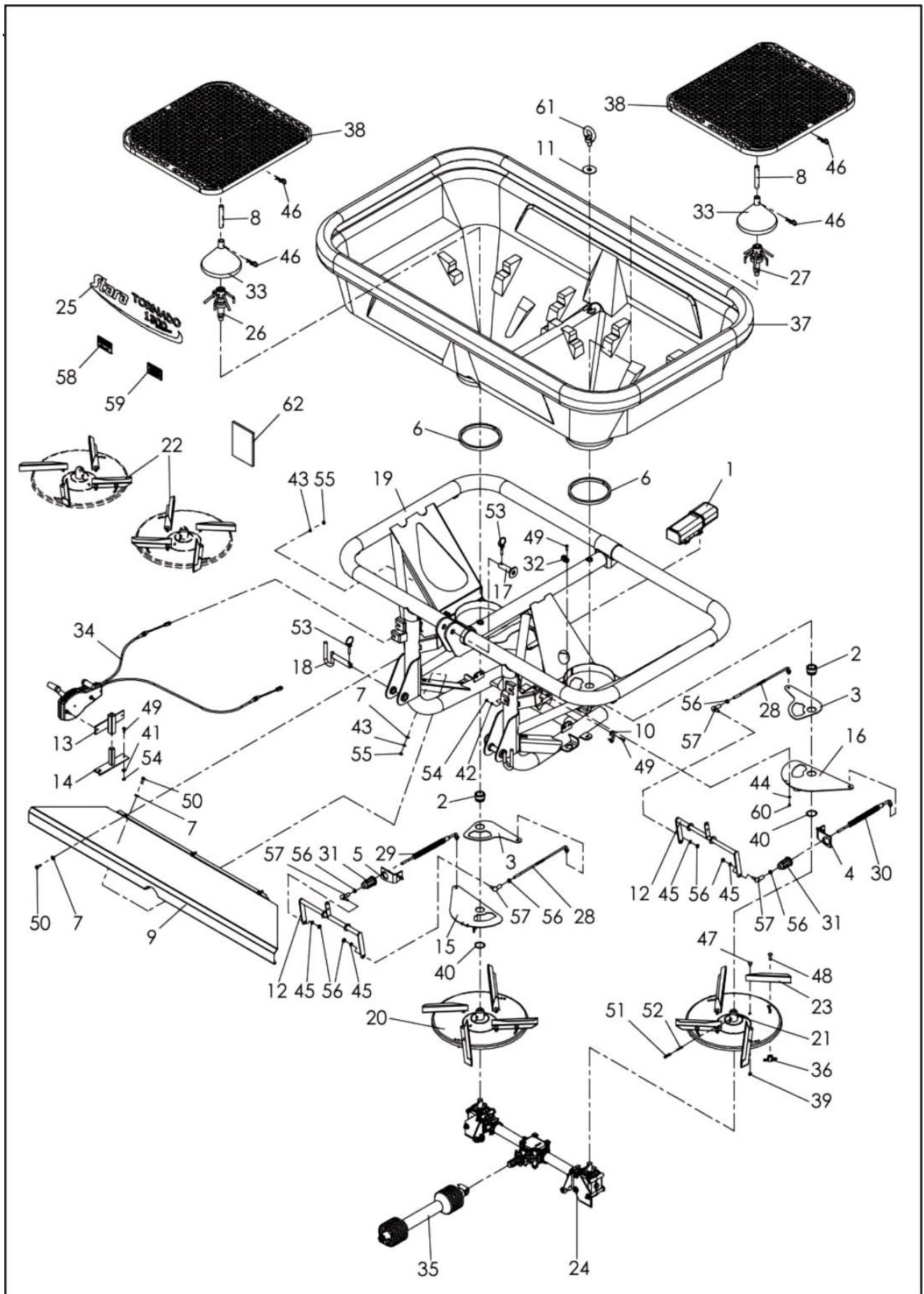
11.14 – Wheat 810kg/m³

| Scale Opening | Rate kg/min | Tractor Speeds (km/h) | | | | | | | Work width (m) | Vane Positions (mm) | |
|---------------|-------------|-----------------------|-----|-----|-----|-----|-----|-----|----------------|---------------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 1,5 | 4.5 | 23 | 19 | 17 | 15 | 13 | 12 | 11 | 20 | F2 | F2 |
| 2,0 | 9.0 | 45 | 39 | 34 | 30 | 27 | 25 | 23 | 20 | | |
| 2,5 | 19.0 | 79 | 68 | 59 | 53 | 48 | 43 | 40 | 24 | | |
| 3,0 | 26.0 | 108 | 93 | 81 | 72 | 65 | 59 | 54 | 24 | | |
| 3,5 | 33.0 | 127 | 109 | 95 | 85 | 76 | 69 | 64 | 26 | | |
| 4,0 | 45.0 | 173 | 148 | 130 | 115 | 104 | 94 | 87 | 26 | | |
| 4,5 | 61.0 | 235 | 201 | 176 | 156 | 140 | 128 | 117 | 26 | | |
| 5,0 | 77.0 | 296 | 254 | 222 | 197 | 178 | 162 | 148 | 26 | | |

11.15 – Rye Grass 400kg/m³

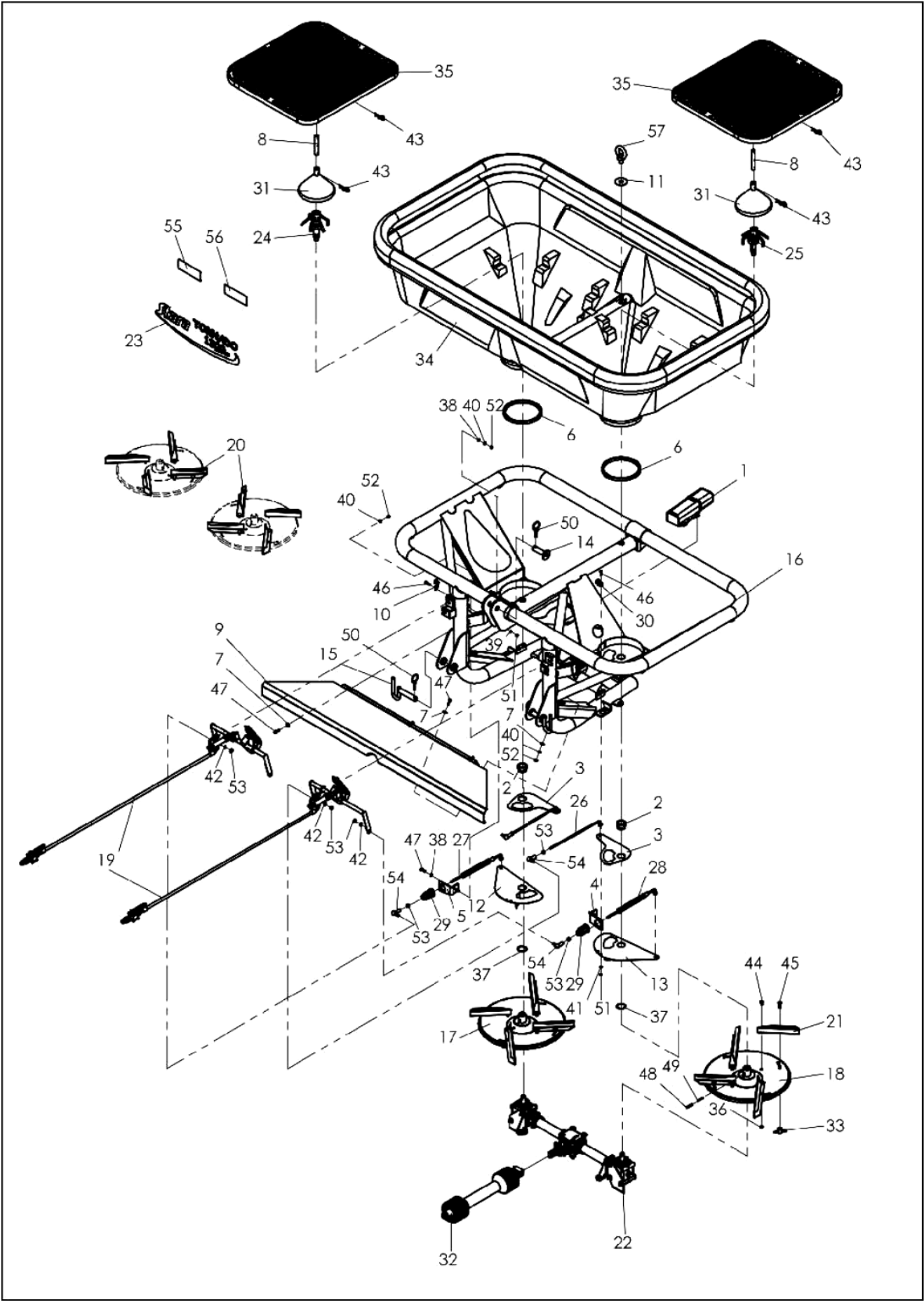
| Scale Opening | Rate kg/min | Tractor Speeds (km/h) | | | | | | | Work width (m) | Vane positions (mm) | |
|---------------|-------------|-----------------------|------|-------|------|------|-------|-------|----------------|---------------------|-----|
| | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | 250 | 205 |
| 1,5 | 2,00 | 25 | 21,4 | 18,75 | 16,7 | 15 | 13,6 | 12,5 | 8 | F1 | F2 |
| 1,75 | 3,63 | 45,4 | 38,9 | 34 | 30,2 | 27,2 | 24,75 | 22,7 | | | |
| 2,00 | 5,16 | 64,5 | 55,3 | 48,3 | 43 | 38,7 | 35,18 | 32,25 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

This seed requires the use of the fixed agitator.



12.1 - Tornado 1300/Main Assy/Cable Controls**4810-3052**

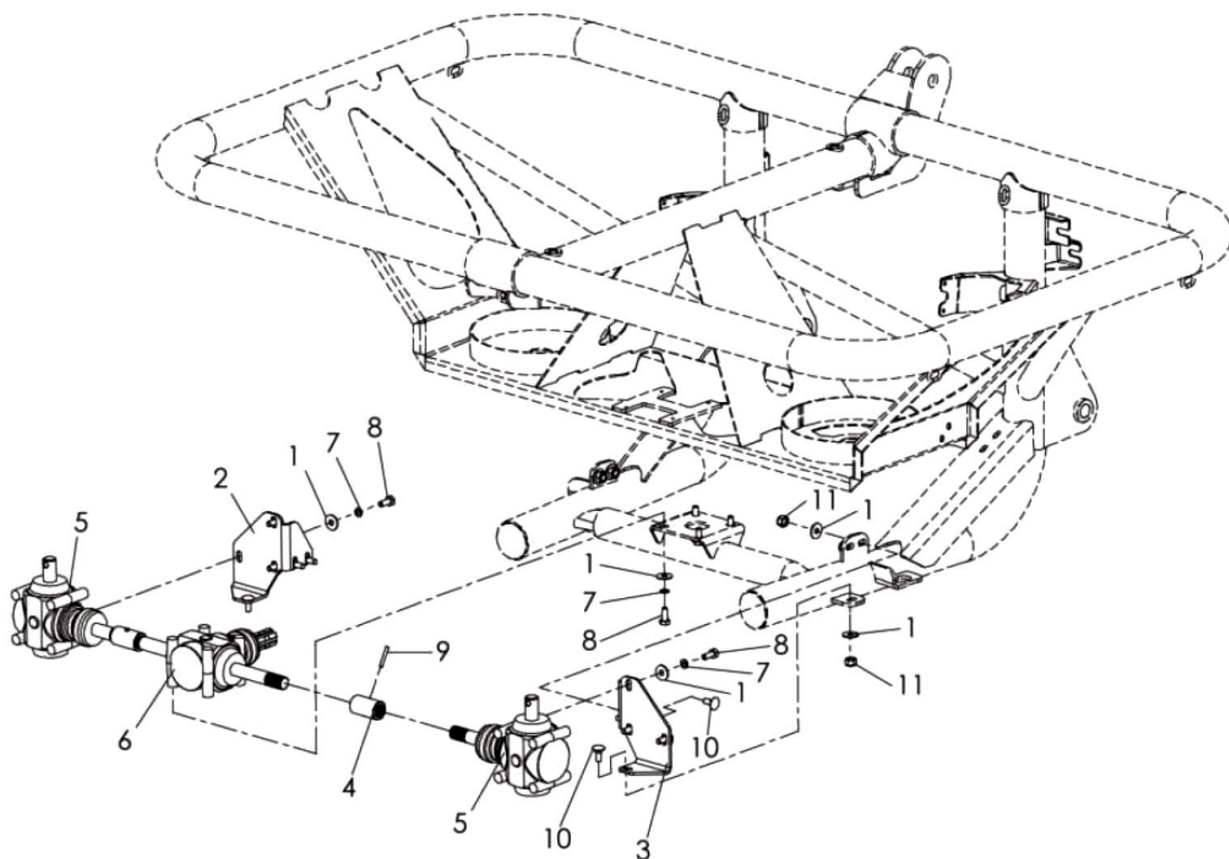
| ITEM NO. | PART NO. | DESCRIPTION | QTY. |
|----------|---------------|---|------|
| 1 | 1072-3096 | Manual Holder | 1 |
| 2 | 4810-1114 | Central Bushing | 2 |
| 3 | 4810-1152 | Regulator – Flow Control Cover | 2 |
| 4 | 4810-1161 | Regulator Stop Bracket - Left | 1 |
| 5 | 4810-1162 | Regulator Stop Bracket - Right | 1 |
| 6 | 4810-1180 | Seal Ring | 2 |
| 7 | 4810-1202 | Flat Washer M8 (8.5x22x2) | 19 |
| 8 | 4810-1233 | Tube - Funnel Support | 2 |
| 9 | 4810-1234 | Guard | 1 |
| 10 | 4810-1259 | Restrictor | 4 |
| 11 | 4810-1262 | Washer 21x70x3 | 2 |
| 12 | 4810-2003 | Control Lever | 2 |
| 13 | 4810-2007 | Control Case Support Bracket | 1 |
| 14 | 4810-2008 | Attachment Base | 1 |
| 15 | 4810-2011 | Regulator – Right | 1 |
| 16 | 4810-2012 | Regulator - Left | 1 |
| 17 | 4810-2013 | Pin – 25.4 x 80 C/CAB | 1 |
| 18 | 4810-2026 | Pin – Lower Link | 2 |
| 19 | 4810-2036 | Chassis Tornado 1300 G-IV | 1 |
| 20 | 4810-2038 | Disc - Left | 1 |
| 21 | 4810-2039 | Disc – Right | 1 |
| 22 | 4810-3045 | Vane Kit – (Short) | 1 |
| 23 | 4810-3046 | Vane Kit – (Long) | 1 |
| 24 | 4810-3050 | Gearbox Module | 1 |
| 25 | 4810-3055 | Decal – Tornado 1300 G IV | 1 |
| 26 | 4810-3057 | Agitator Assembly – Left (See page 10 for breakdown) | 1 |
| 27 | 4810-3058 | Agitator Assembly - Right (See page 10 for breakdown) | 1 |
| 28 | 4810-4101 | Rod | 2 |
| 29 | 4810-4102 | Left Agitator Adjusting Rod | 1 |
| 30 | 4810-4103 | Right Agitator Adjusting Rod | 1 |
| 31 | 4810-4104 | Regulator | 2 |
| 32 | 4810-4105 | Support | 2 |
| 33 | 4810-4108 | Funnel | 2 |
| 34 | 4810-4114 | Cable Control Assembly | 1 |
| 35 | 4810-4115 | PTO Shaft Assembly – CW1001/20P S1000W | 1 |
| 36 | 4810-4151 | Wingnut | 8 |
| 37 | 4810-4153 | Hopper Tornado 1300 G IV | 1 |
| 38 | 4810-4163 | Plastic Protector Screen | 2 |
| 39 | 7110-4143 | Self-Locking Nut S/S M8 | 8 |
| 40 | 9100-0212 | Circlip 45mm Ext. | 2 |
| 41 | 9100-0468 | Flat Washer M6 S/S | 2 |
| 42 | 9100-0496 | Spring Washer 1/4" S/S | 8 |
| 43 | 9100-0501 | Spring Washer M8 S/S | 11 |
| 44 | 9100-0546 | Spring Washer M6 S/S | 4 |
| 45 | 9100-0551 | Spring Washer M10 S/S | 4 |
| 46 | 9100-0665 | R-Clip 3.8 x 28.5 | 4 |
| 47 | 9100-1159 | Bolt M8x16 S/S | 8 |
| 48 | 9100-1161 | Bolt M8x35 S/S | 8 |
| 49 | 9100-1411 | Bolt M6x25 S/S | 14 |
| 50 | 9100-1441 | Bolt M8x25 S/S | 11 |
| 51 | 9100-2503 | Roll Pin 10x40 | 2 |
| 52 | 9100-2504 | Roll Pin 6x40 | 2 |
| 53 | 9100-2590 | Linch Pin 7/16" x 2" | 3 |
| 54 | 9100-2801 | Nut M6 S/S | 10 |
| 55 | 9100-2891 | Nut M8 S/S | 11 |
| 56 | 9100-2904 | Nut M10 S/S | 8 |
| 57 | 9100-3411 | Rod End M10x1.5 | 4 |
| 58 | 9100-3580 | Decal – PTO Shaft Adjustment | 1 |
| 59 | 9100-3587 | Decal - Attention | 1 |
| 60 | 9100-3752 | Nut M6 S/S | 4 |
| 61 | 9100-3854 | Eye Bolts | 2 |
| 62 | MANU-4810-GIV | Manual Tornado 1300 Generation IV | 1 |



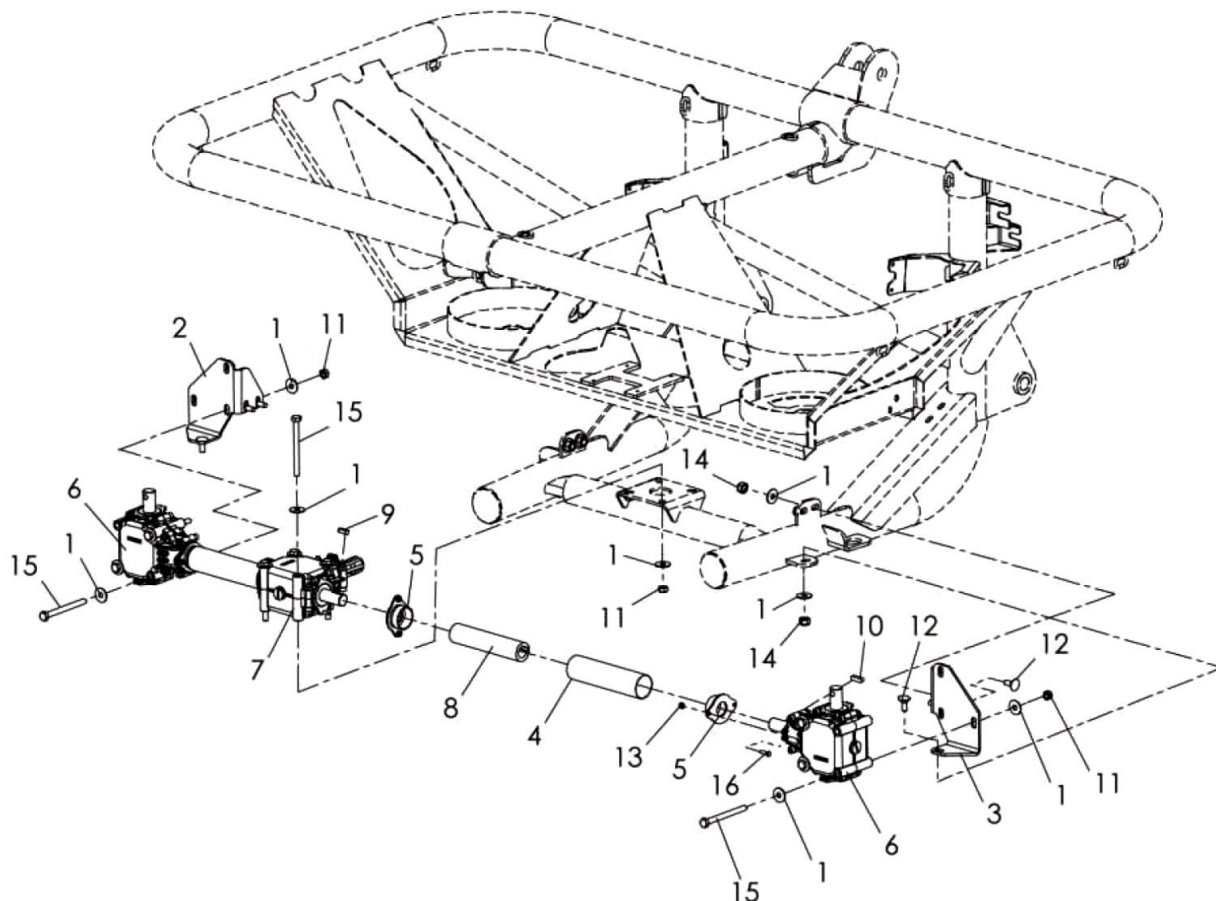
12.2 – Tornado 1300/Main Assy/Hydraulic Controls

4810-3053

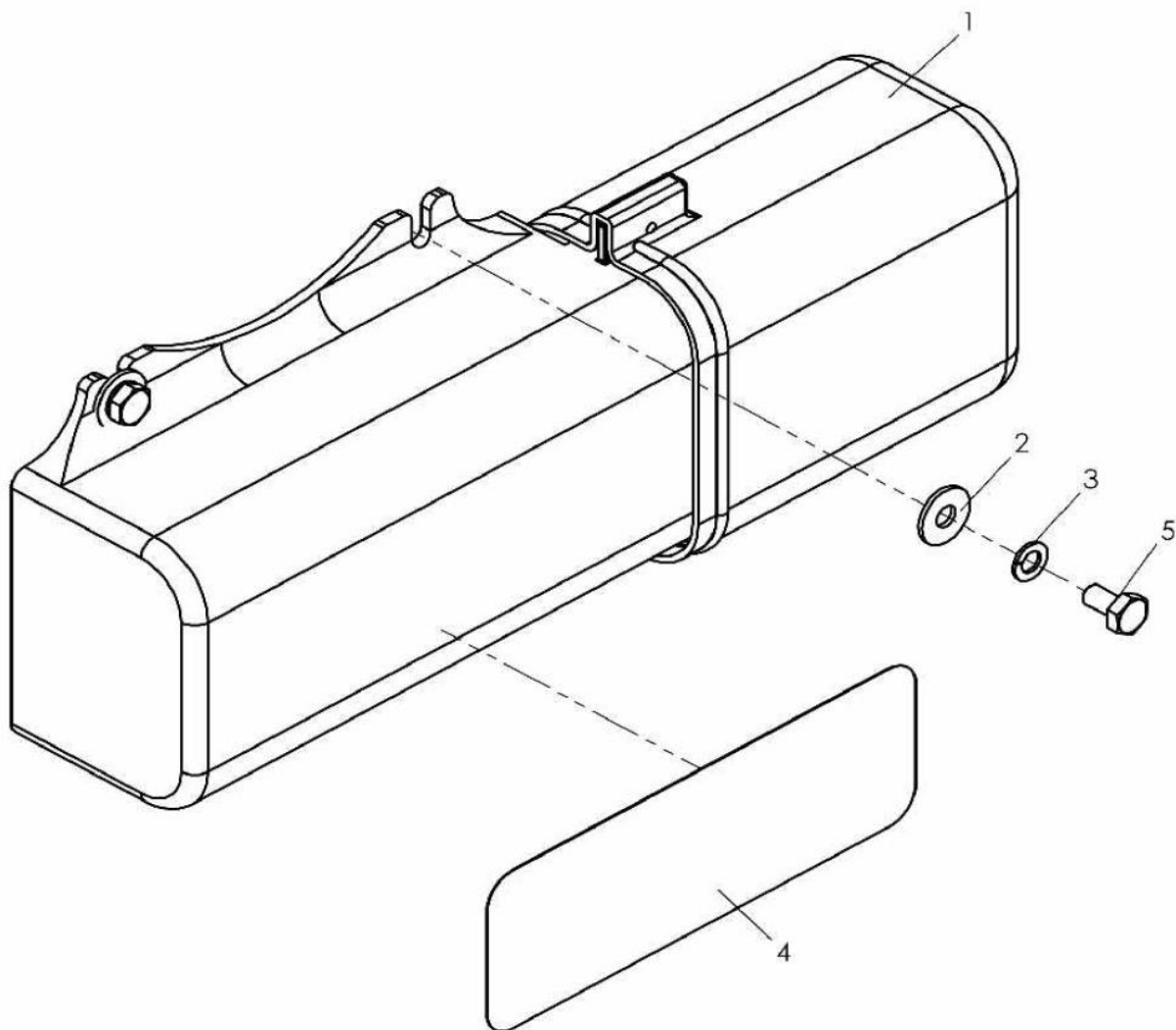
| ITEM NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|--|------|
| 1 | 1072-3096 | Manual Holder | 1 |
| 2 | 4810-1114 | Central Bushing | 2 |
| 3 | 4810-1152 | Regulator – Flow Control Cover | 2 |
| 4 | 4810-1161 | Regulator Stop Bracket - Left | 1 |
| 5 | 4810-1162 | Regulator Stop Bracket - Right | 1 |
| 6 | 4810-1180 | Seal Ring | 2 |
| 7 | 4810-1202 | Flat Washer M8 (8.5x22x2) | 11 |
| 8 | 4810-1233 | Tube - Funnel Support | 2 |
| 9 | 4810-1234 | Guard | 1 |
| 10 | 4810-1259 | Restrictor | 4 |
| 11 | 4810-1262 | Washer 21x70x3 | 2 |
| 12 | 4810-2011 | Regulator – Right | 1 |
| 13 | 4810-2012 | Regulator - Left | 1 |
| 14 | 4810-2013 | Pin – 25.4 x 80 C/CAB | 1 |
| 15 | 4810-2026 | Pin – Lower Link | 2 |
| 16 | 4810-2036 | Chassis Tornado 1300 G-IV | 1 |
| 17 | 4810-2038 | Disc - Left | 1 |
| 18 | 4810-2039 | Disc – Right | 1 |
| 19 | 4810-3017 | Hydraulic Control Assembly (See page 11 for breakdown) | 1 |
| 20 | 4810-3045 | Vane Kit – (Short) | 1 |
| 21 | 4810-3046 | Vane Kit – (Long) | 1 |
| 22 | 4810-3050 | Gearbox Module | 1 |
| 23 | 4810-3055 | Decal – Tornado 1300 G IV | 1 |
| 24 | 4810-3057 | Agitator Assembly – Left (See page 10 for breakdown) | 1 |
| 25 | 4810-3058 | Agitator Assembly - Right (See page 10 for breakdown) | 1 |
| 26 | 4810-4101 | Rod | 2 |
| 27 | 4810-4102 | Left Agitator Adjusting Rod | 1 |
| 28 | 4810-4103 | Right Agitator Adjusting Rod | 1 |
| 29 | 4810-4104 | Regulator | 2 |
| 30 | 4810-4105 | Support | 2 |
| 31 | 4810-4108 | Funnel | 2 |
| 32 | 4810-4115 | PTO Shaft Assembly – CW1001/20P S1000W | 1 |
| 33 | 4810-4151 | Wingnut | 8 |
| 34 | 4810-4153 | Hopper Tornado 1300 G IV | 1 |
| 35 | 4810-4163 | Plastic Protector Screen | 2 |
| 36 | 7110-4143 | Self-Locking Nut S/S M8 | 8 |
| 37 | 9100-0212 | Circlip 45mm Ext. | 2 |
| 38 | 9100-0436 | Flat Washer 8x16x1.6 S/S | 8 |
| 39 | 9100-0496 | Spring Washer 1/4" S/S | 8 |
| 40 | 9100-0501 | Spring Washer M8 S/S | 11 |
| 41 | 9100-0546 | Spring Washer M6 S/S | 4 |
| 42 | 9100-0551 | Spring Washer M10 S/S | 4 |
| 43 | 9100-0665 | R-Clip 3.8 x 28.5 | 4 |
| 44 | 9100-1159 | Bolt M8x16 S/S | 8 |
| 45 | 9100-1161 | Bolt M8x35 S/S | 8 |
| 46 | 9100-1411 | Bolt M6x25 S/S | 12 |
| 47 | 9100-1441 | Bolt M8x25 S/S | 11 |
| 48 | 9100-2503 | Roll Pin 10x40 | 2 |
| 49 | 9100-2504 | Roll Pin 6x40 | 2 |
| 50 | 9100-2590 | Linch Pin 7/16" x 2" | 3 |
| 51 | 9100-2801 | Nut M6 S/S | 12 |
| 52 | 9100-2891 | Nut M8 S/S | 11 |
| 53 | 9100-2904 | Nut M10 S/S | 8 |
| 54 | 9100-3411 | Rod End M10x1.5 | 4 |
| 55 | 9100-3580 | Decal PTO Shaft Adjustment | 1 |
| 56 | 9100-3587 | Decal – Attention | 1 |
| 57 | 9100-3854 | Eye Bolt | 2 |



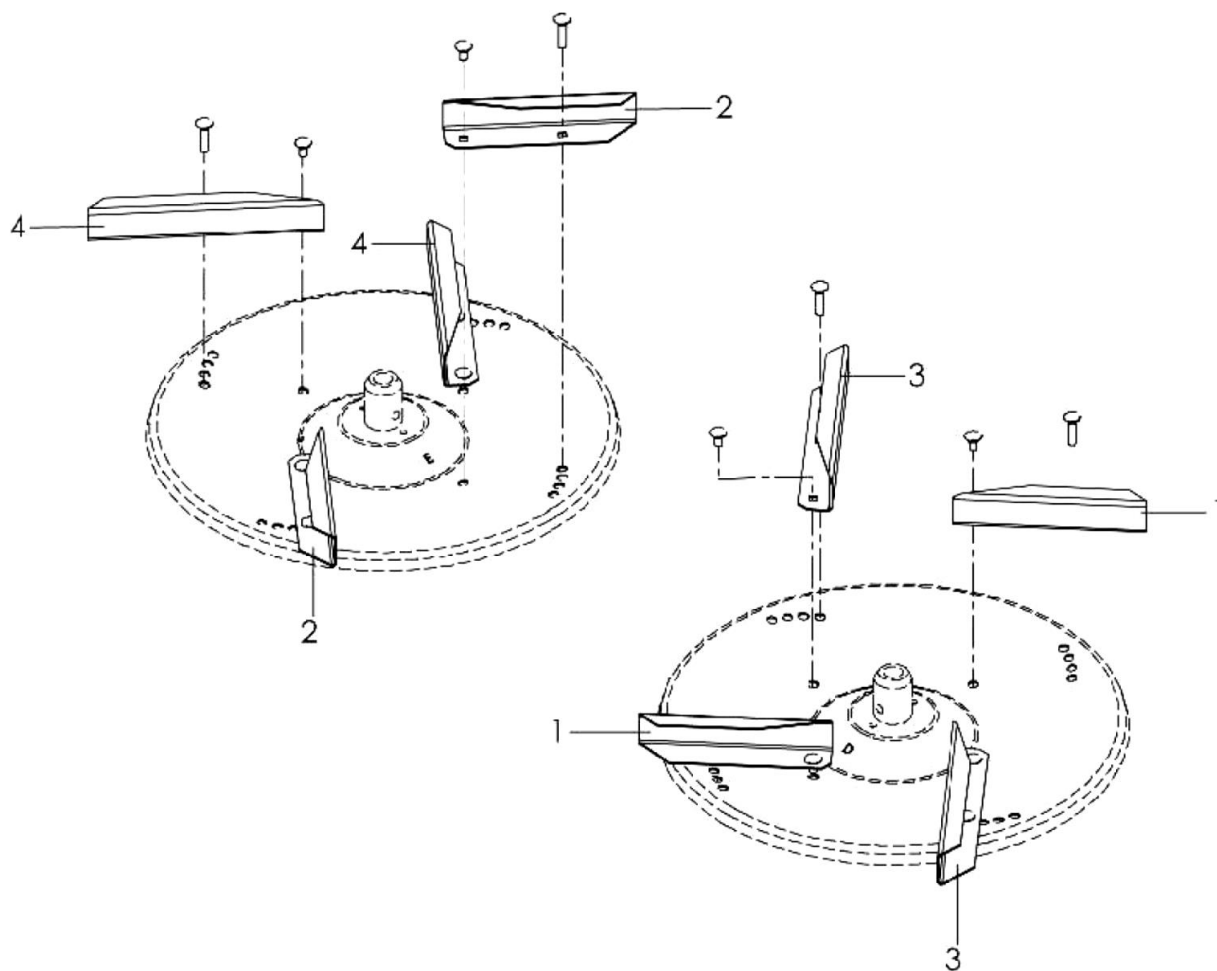
| ITEM NO. | PART NO. | DESCRIPTION | INPEL | BPN |
|----------|-----------|----------------------------------|-------|-----|
| 1 | 4810-1201 | Flat Washer M10 (10.5x30x2) S/S | 16 | 16 |
| 2 | 4810-1275 | Gearbox Mounting Bracket - Right | 1 | 1 |
| 3 | 4810-1278 | Gearbox Support Bracket - Left | 1 | 1 |
| 4 | 4810-4162 | Coupling Bush (Inpel) | 2 | - |
| 4 | 4810-4169 | Coupling Bush (BPN) | - | 2 |
| 5 | 4810-4167 | Gearbox – Side (BPN) | - | 2 |
| 5 | 4810-4170 | Gearbox – Side (Inpel) CT7001-ZH | 2 | - |
| 6 | 4810-4168 | Gearbox – Centre (BPN) | - | 1 |
| 6 | 4810-4171 | Gearbox – Centre (Inpel) | 1 | - |
| 7 | 9100-0551 | Spring Washer M10 S/S | 10 | 10 |
| 8 | 9100-2324 | Bolt M10x25 S/S | 10 | 10 |
| 9 | 9100-2504 | Roll Pin 6x40 | 2 | 2 |
| 10 | 9100-3750 | Cup Head SQ Bolt M10x25 S/S | 6 | 6 |
| 11 | 9100-3781 | Nyloc Nut M12 S/S | 7 | 7 |



| ITEM NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|----------------------------------|------|
| 1 | 4810-1201 | Flat Washer M10 (10.5x30x2) S/S | 26 |
| 2 | 4810-1275 | Gearbox Mounting Bracket - Right | 1 |
| 3 | 4810-1278 | Gearbox Support Bracket - Left | 1 |
| 4 | 4810-1286 | Tube PVC 50x188mm | 2 |
| 5 | 4810-2046 | Tube Mounting Bracket | 4 |
| 6 | 4810-4164 | Gearbox – Side (Comer) | 2 |
| 7 | 4810-4165 | Gearbox – Centre (Comer) | 1 |
| 8 | 4810-4166 | Coupling Bush | 2 |
| 9 | 7210-4125 | Key 8x7x25 | 2 |
| 10 | 9100-0625 | Key 8x7x30 | 2 |
| 11 | 9100-2906 | Nyloc Nut M10 S/S | 10 |
| 12 | 9100-3750 | Cup Head SQ Bolt M10x25 S/S | 6 |
| 13 | 9100-3752 | Nyloc Nut M6 S/S | 8 |
| 14 | 9100-3781 | Nyloc Nut M12 S/S | 7 |
| 15 | 9100-3979 | Bolt M10x125mm S/S | 10 |
| 16 | 9100-6140 | Bolt M6x20 S/S | 8 |



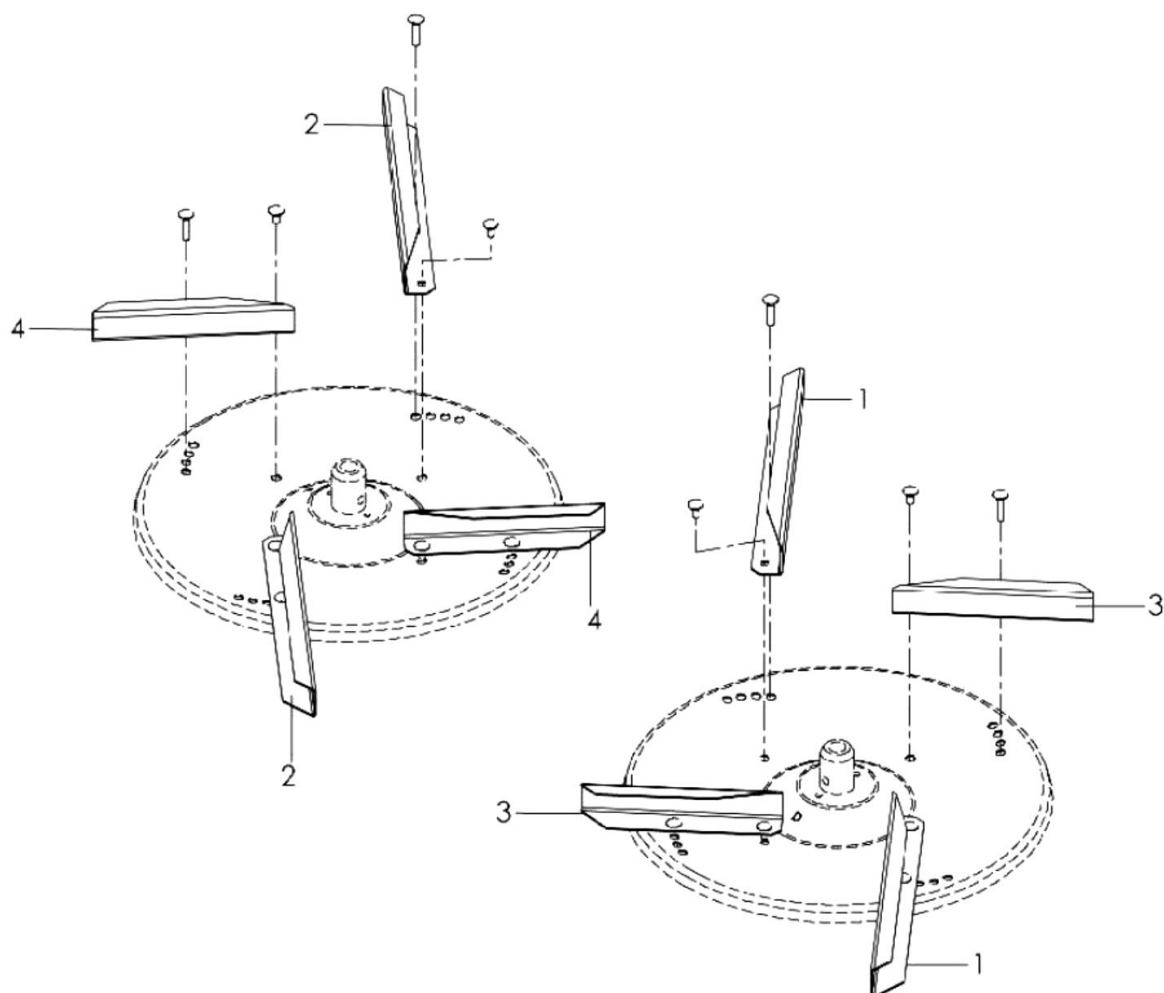
| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-----------|------------------|-----|
| 1 | 6117-4193 | Manual Holder | 1 |
| 2 | 9100-0468 | Flat Washer M6 | 4 |
| 3 | 9100-0546 | Spring Washer M6 | 4 |
| 4 | 9100-4614 | Decal – Manuals | 1 |
| 5 | 9100-6138 | Bolt M6x12 S/S | 4 |



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-----------|-----------------------|-----|
| 1 | 4810-1264 | Vane – Right H. 205mm | 2 |
| 2 | 4810-1265 | Vane – Left H. 205mm | 2 |
| 3 | 4810-1266 | Vane – Right H. 250mm | 2 |
| 4 | 4810-1267 | Vane – Left H. 250mm | 2 |

12.7 – Vane Kit, 30-36, Long

4810-3046

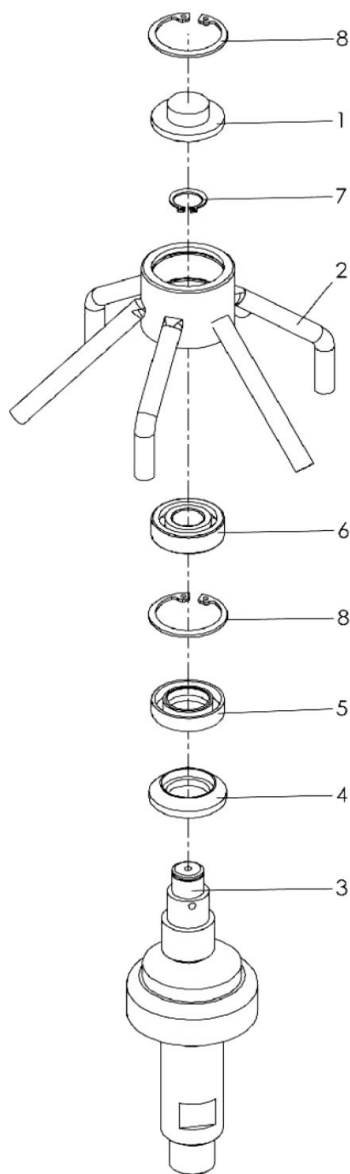


| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-----------|-----------------------|-----|
| 1 | 4810-1268 | Vane – Right H. 365mm | 2 |
| 2 | 4810-1269 | Vane – Left H. 365mm | 2 |
| 3 | 4810-1270 | Vane – Right H. 235mm | 2 |
| 4 | 4810-1271 | Vane – Left H. 235mm | 2 |

12.8 – Agitator Assembly, Left
Agitator Assembly, Right

4810-3057

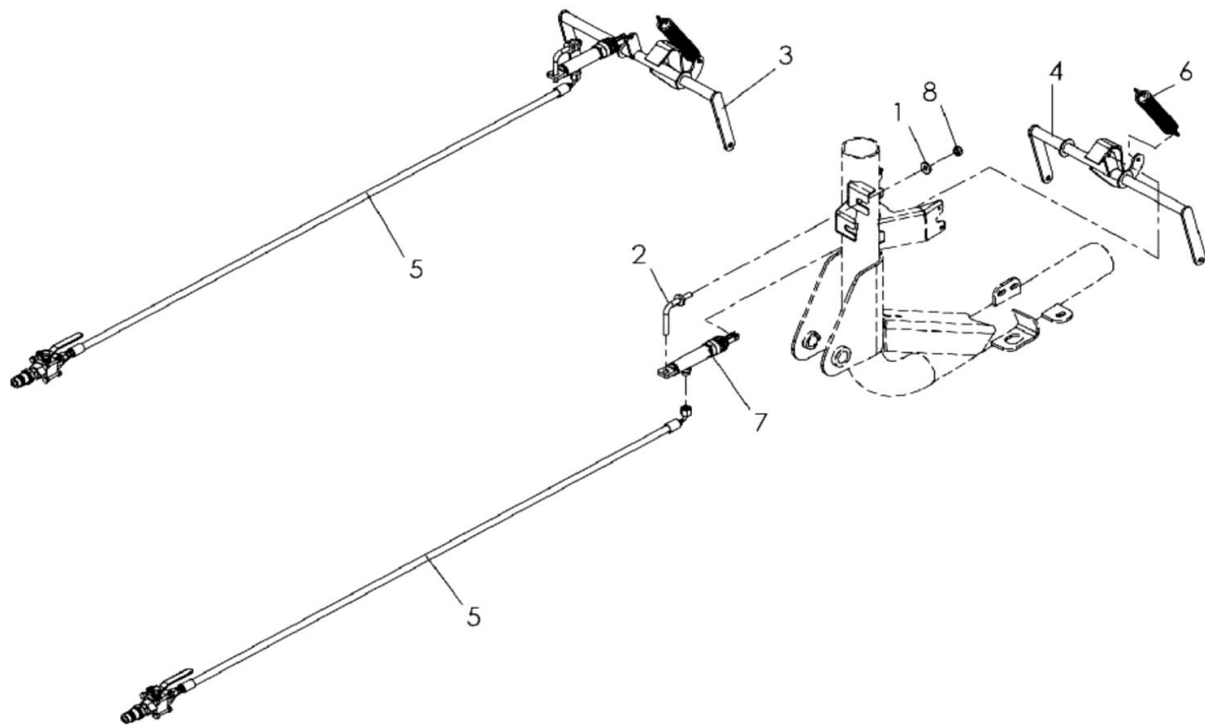
4810-3058



| ITEM NO. | PART NO. | DESCRIPTION | 4810-3057 | 4810-3058 |
|----------|-----------|---------------------------|-----------|-----------|
| 1 | 4810-1108 | Cover | 1 | 1 |
| 2 | 4810-2002 | Agitator Tip | 1 | 1 |
| 3 | 4810-2044 | Agitator Shaft – Left H. | 1 | - |
| 3 | 4810-2045 | Agitator Shaft – Right H. | - | 1 |
| 4 | 4810-4107 | Seal Ring | 1 | 1 |
| 5 | 9100-3161 | Seal 20x35x8 | 1 | 1 |
| 6 | 9100-3282 | Ball Bearing 6202-2RS | 1 | 1 |
| 7 | 9100-3576 | Circlip | 1 | 1 |
| 8 | 9100-3577 | Circlip | 2 | 2 |

12.9 – Hydraulic Control Assembly

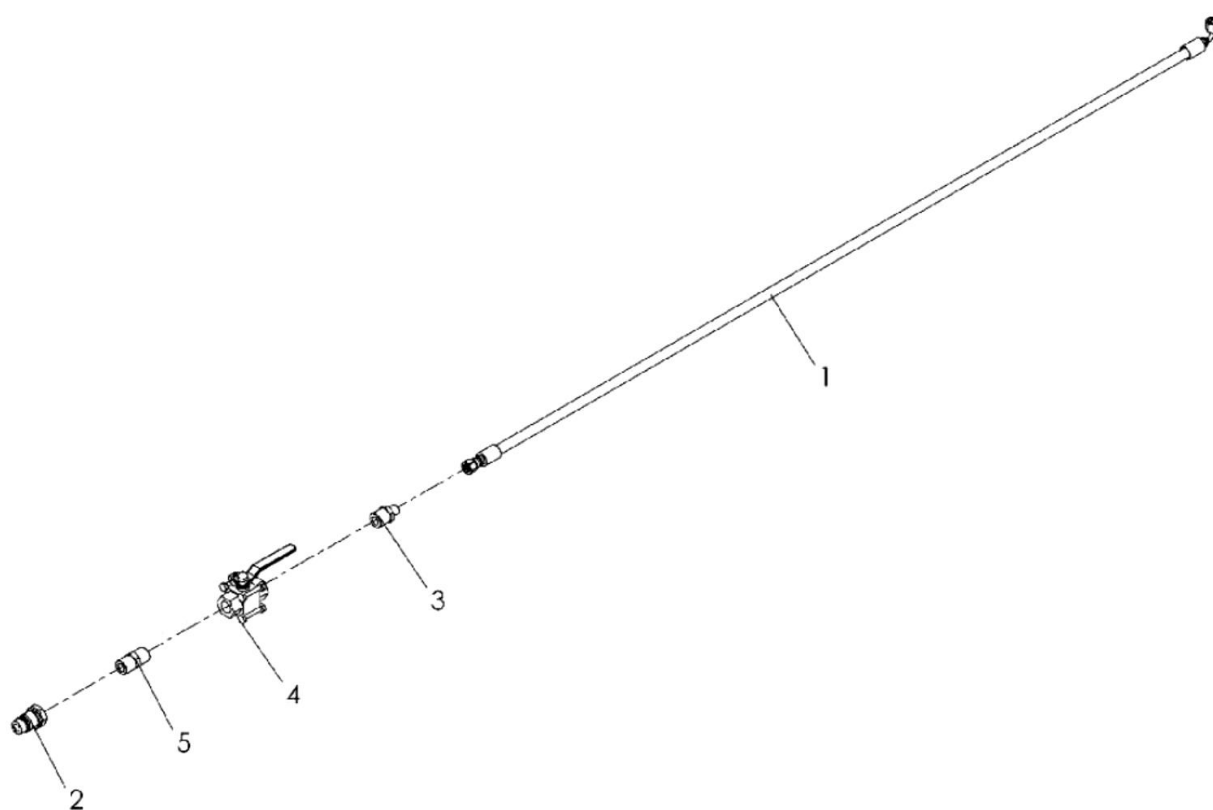
4810-3017



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-----------|---------------------------------------|-----|
| 1 | 4810-1200 | Washer | 2 |
| 2 | 4810-2018 | Latch | 2 |
| 3 | 4810-2028 | Control Lever – Right H. | 1 |
| 4 | 4810-2029 | Control Lever – Left H. | 1 |
| 5 | 4810-3009 | Hose Assy (See page 12 for breakdown) | 2 |
| 6 | 4810-4119 | Spring | 2 |
| 7 | 4810-4901 | Hydraulic Cylinder | 2 |
| 8 | 9100-2906 | Nyloc Nut M10 S/S | 2 |

12.10 – Hose Assy

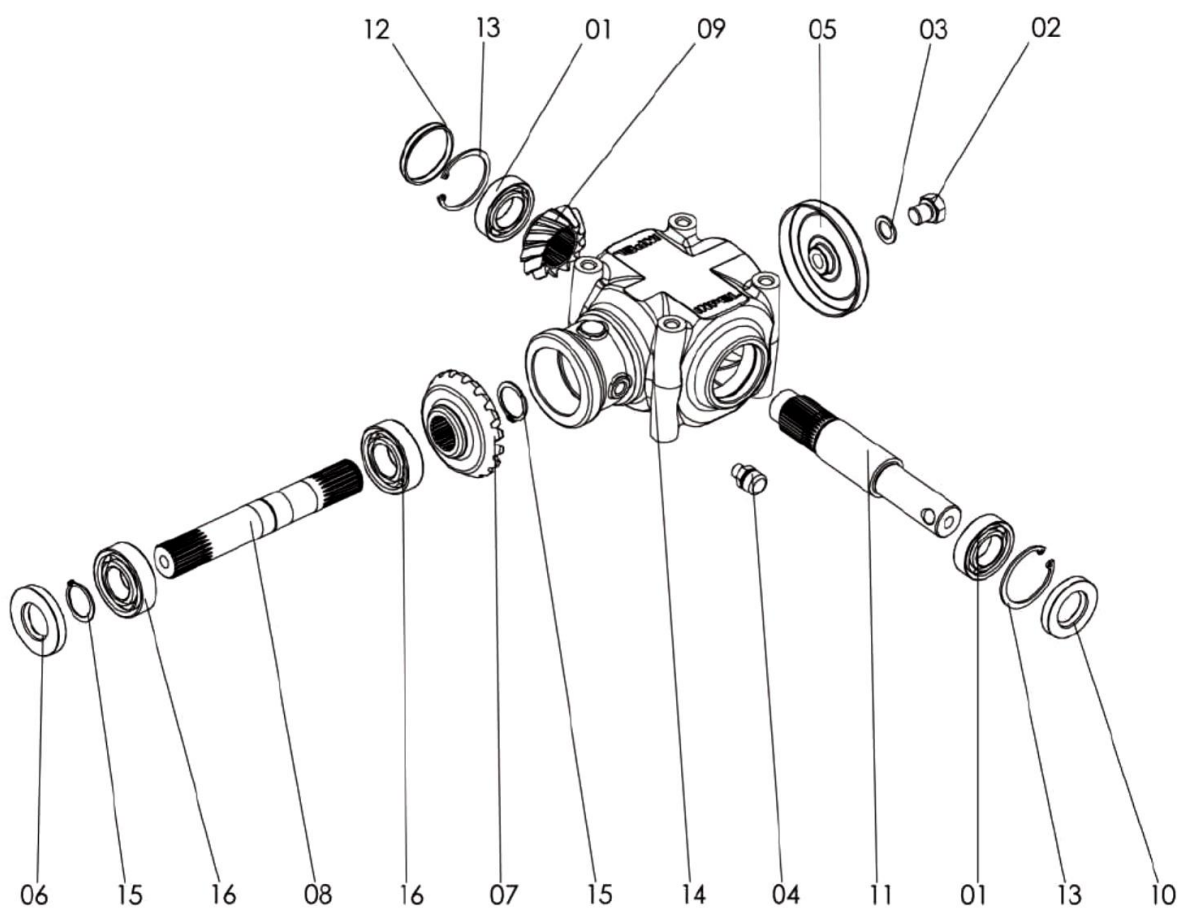
4810-3009



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-----------|------------------|-----|
| 1 | 4810-3016 | Hose | 1 |
| 2 | 9100-0790 | Quick Connection | 1 |
| 3 | 9100-1045 | Adapter | 1 |
| 4 | 9100-4901 | Valve | 1 |
| 5 | 9100-3609 | Adapter | 1 |

12.11 – Gearbox Assy – Side, INPEL CT7001-ZH

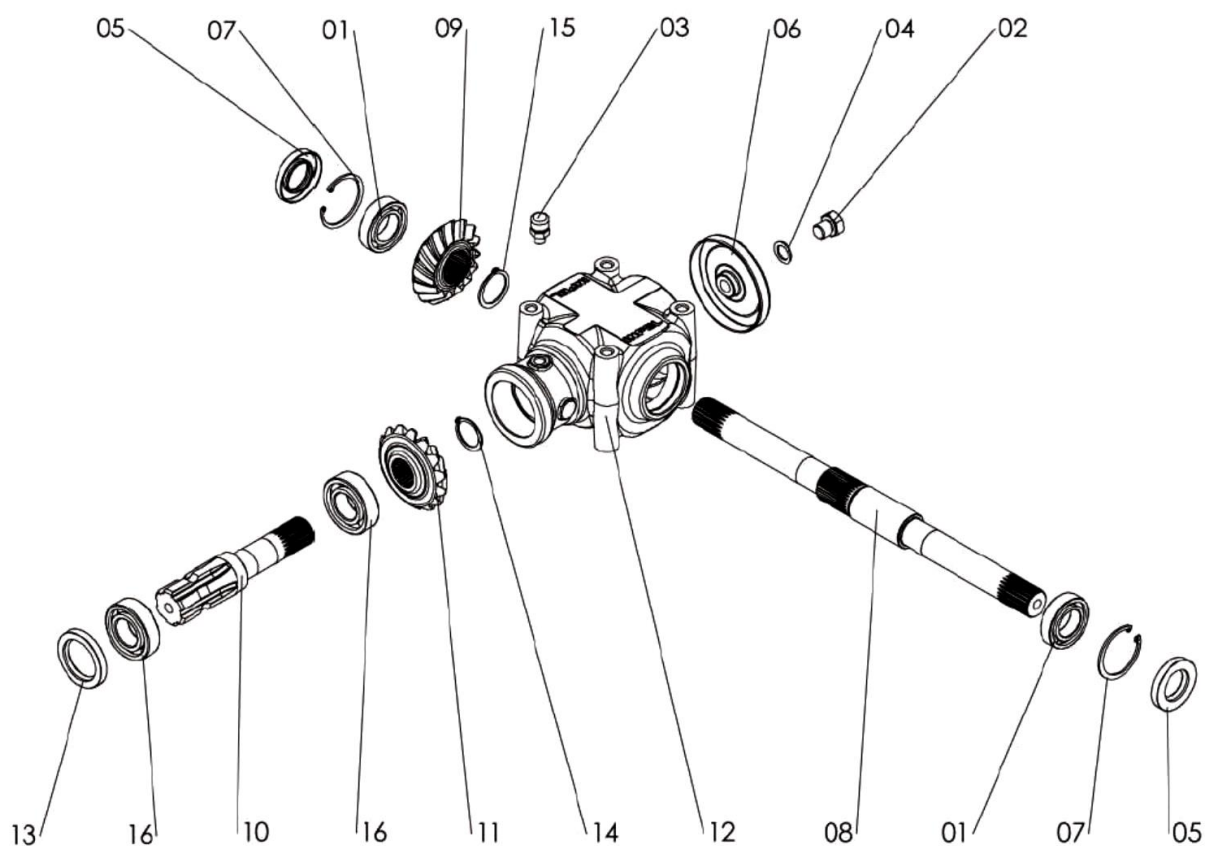
4810-4160



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|---------------|-----------------------|-----|
| 1 | 4210-4165 | Ball Bearing 6005-2RS | 2 |
| 2 | 4810-4111-TM | Drain Plug | 1 |
| 3 | 4810-4111-JT1 | Dowty Washer | 1 |
| 4 | 4810-4112-RP | Breather | 1 |
| 5 | 4810-4160-T1 | Cover | 1 |
| 6 | 4810-4160-RT1 | Seal 25x52x7 | 1 |
| 7 | 4810-4160-EN1 | Gear | 1 |
| 8 | 4810-4160-E1 | Shaft | 1 |
| 9 | 4810-4160-EN2 | Gear | 1 |
| 10 | 4810-4160-RT2 | Seal 25x47x7 | 1 |
| 11 | 4810-4160-E2 | Shaft | 1 |
| 12 | 4810-4160-T2 | Cap | 1 |
| 13 | 4810-4160-AE | Circlip | 2 |
| 14 | 4810-4160-CA | Gearbox Casing | 1 |
| 15 | 9100-0199 | Circlip | 2 |
| 16 | 9100-3289 | Ball Bearing 6205 | 2 |

12.12 – Gearbox Assy – Centre, INPEL CT7201-ZH

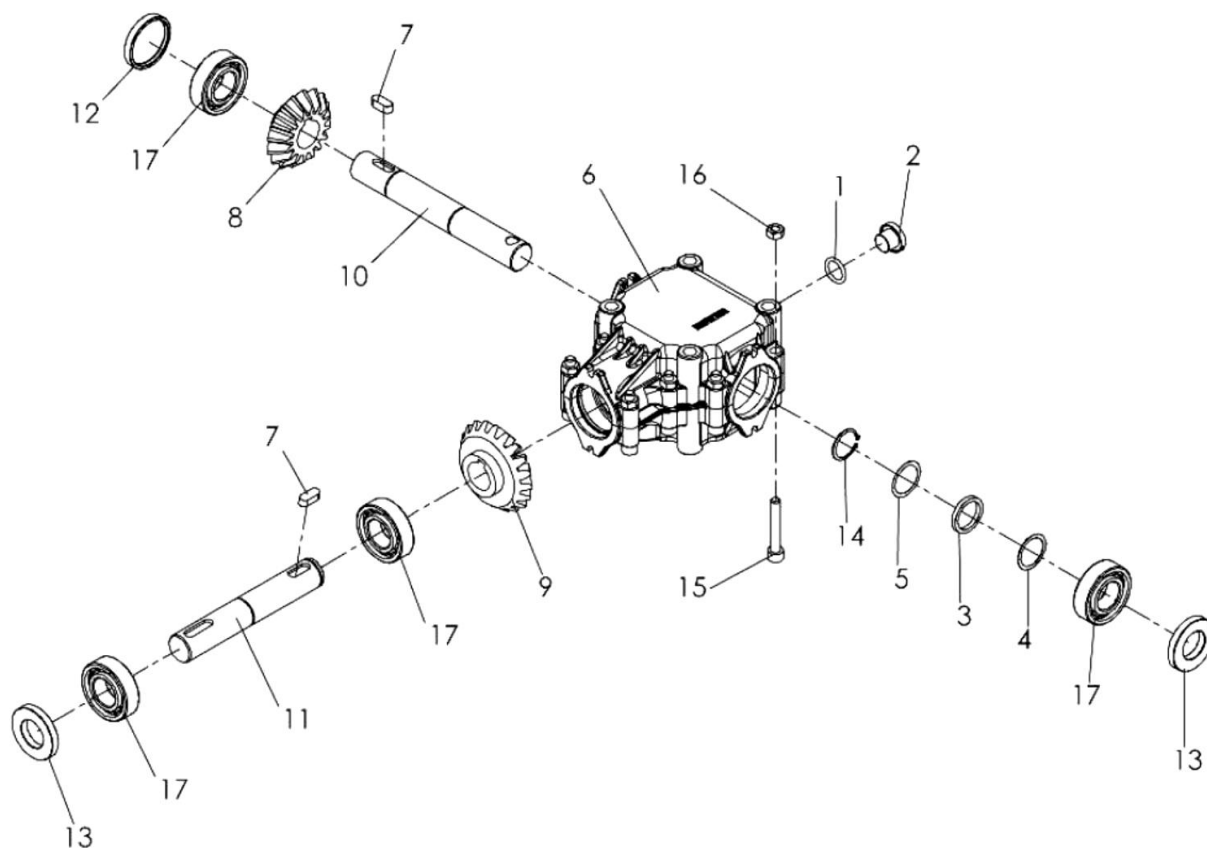
4810-4161



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|---------------|-------------------|-----|
| 1 | 4210-4165 | Ball Bearing 6005 | 2 |
| 2 | 4810-4111-TM | Drain Plug | 1 |
| 3 | 4810-4112-RP | Breather | 1 |
| 4 | 4810-4111-JT1 | Drain Plug Washer | 1 |
| 5 | 4810-4160-RT2 | Seal 25x52x7 | 2 |
| 6 | 4810-4160-T1 | Cover | 1 |
| 7 | 4810-4160-AE | Circlip | 2 |
| 8 | 4810-4161-E1 | Shaft | 1 |
| 9 | 4810-4161-EN1 | Gear | 1 |
| 10 | 4810-4161-EN2 | Shaft | 1 |
| 11 | 4810-4161-EN3 | Gear | 1 |
| 12 | 4810-4160-CA | Gearbox Casing | 1 |
| 13 | 4810-4161-RT | Seal 35x52x7 | 2 |
| 14 | 9100-0199 | Circlip | 1 |
| 15 | 9100-3646 | Circlip | 1 |
| 16 | 9100-3289 | Ball Bearing 6205 | 2 |

12.13 – Gearbox Assy – Side, Comer

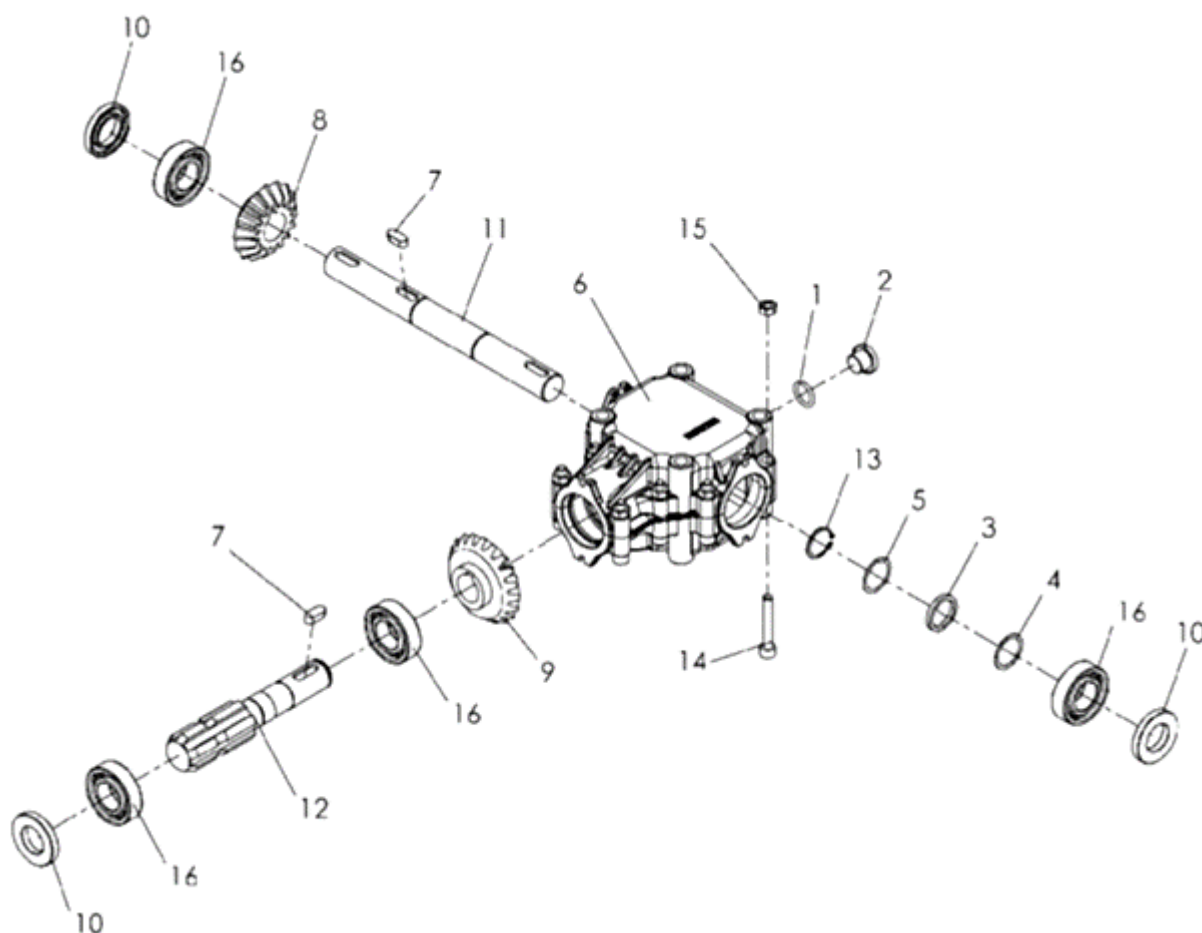
4810-4164



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|---------------|-------------------|-----|
| 1 | 4810-4164-CAV | Dowty Washer | 1 |
| 2 | 4810-4164-CB | Drain Plug 3/8" | 1 |
| 3 | 4810-4164CC1 | Shim 4mm | 1 |
| 4 | 4810-4164-CC2 | Shim 0.5mm | 1 |
| 5 | 4810-4164-CC3 | Shim 0.2mm | 1 |
| 6 | 4810-4164-CCA | Gearbox Casing | 2 |
| 7 | 4810-4164-CCH | Key 8x7x20 | 2 |
| 8 | 4810-4164-CE1 | Gear Z16 M4 | 1 |
| 9 | 4810-4164-CE2 | Gear Z20 M4 | 1 |
| 10 | 4810-4164-CEI | Shaft – Output | 1 |
| 11 | 4810-4164-CEX | Shaft – Input | 1 |
| 12 | 4810-4164-CR1 | Cap | 1 |
| 13 | 4810-4164-CR2 | Seal 25x47x7 | 2 |
| 14 | 9100-0199 | Circlip | 1 |
| 15 | 9100-1114 | Capscrew M8x50 ZP | 8 |
| 16 | 9100-2899 | Nut M8 | 8 |
| 17 | 9100-3289 | Ball Bearing 6205 | 4 |

12.14 – Gearbox Assy – Centre, Comer

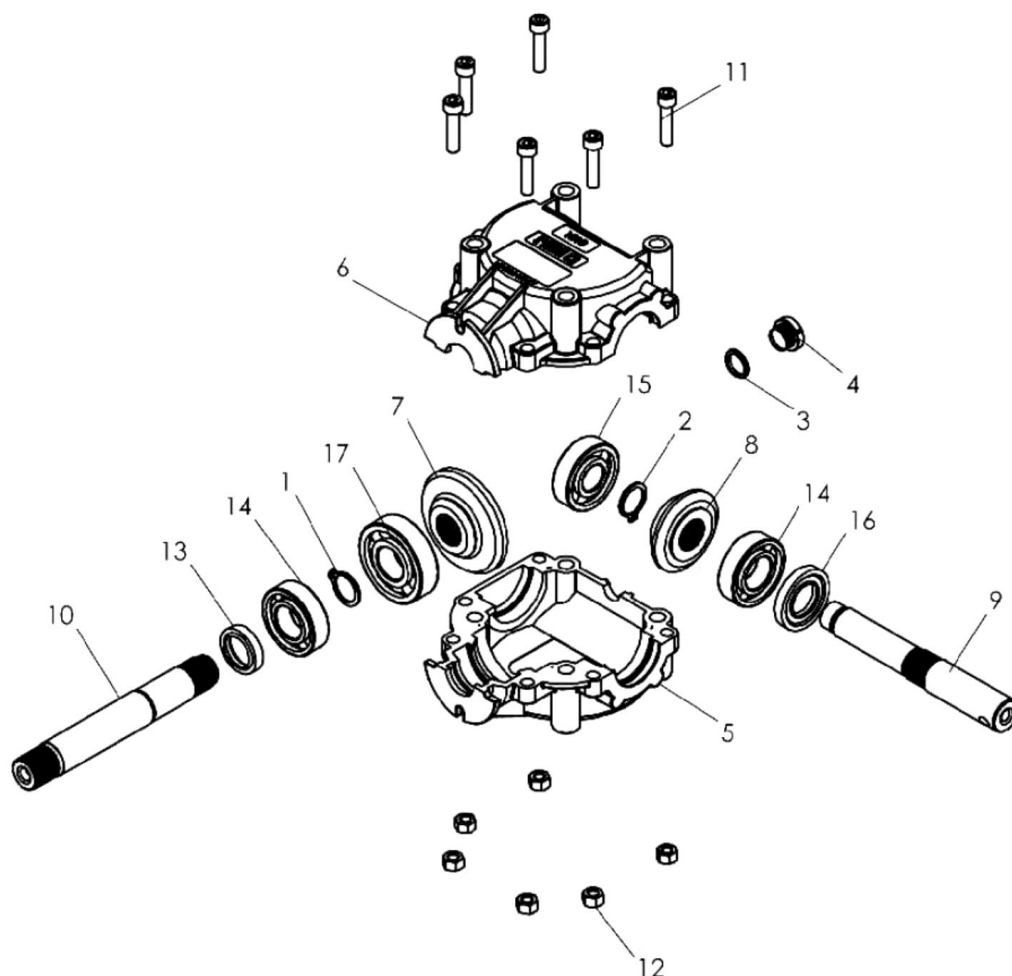
4810-4165



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|---------------|-----------------------|-----|
| 1 | 4810-4164-CAV | Dowty Seal | 1 |
| 2 | 4810-4164-CB | Drain Plug 3/8" | 1 |
| 3 | 4810-4164-CC1 | Shim 4mm | 1 |
| 4 | 4810-4164-CC2 | Shim 0.5mm | 1 |
| 5 | 4810-4164-CC3 | Shim 0.2mm | 1 |
| 6 | 4810-4164-CCA | Gearbox Casing | 2 |
| 7 | 4810-4164-CCH | Key 8x7x20 | 2 |
| 8 | 4810-4164-CE1 | Gear | 1 |
| 9 | 4810-4164-CE2 | Gear | 1 |
| 10 | 4810-4164-CR2 | Seal 25x47x7 | 3 |
| 11 | 4810-4165-CEI | Shaft 25mm | 1 |
| 12 | 4810-4165-CEX | Shaft – Input 6 Spine | 1 |
| 13 | 9100-0199 | Circlip | 1 |
| 14 | 9100-1114 | Capscrew M8x50 ZP | 8 |
| 15 | 9100-2899 | Nut M8 | 8 |
| 16 | 9100-3289 | Ball Bearing 6205 | 4 |

12.15 – Gearbox Assy – Side, BPN-1020

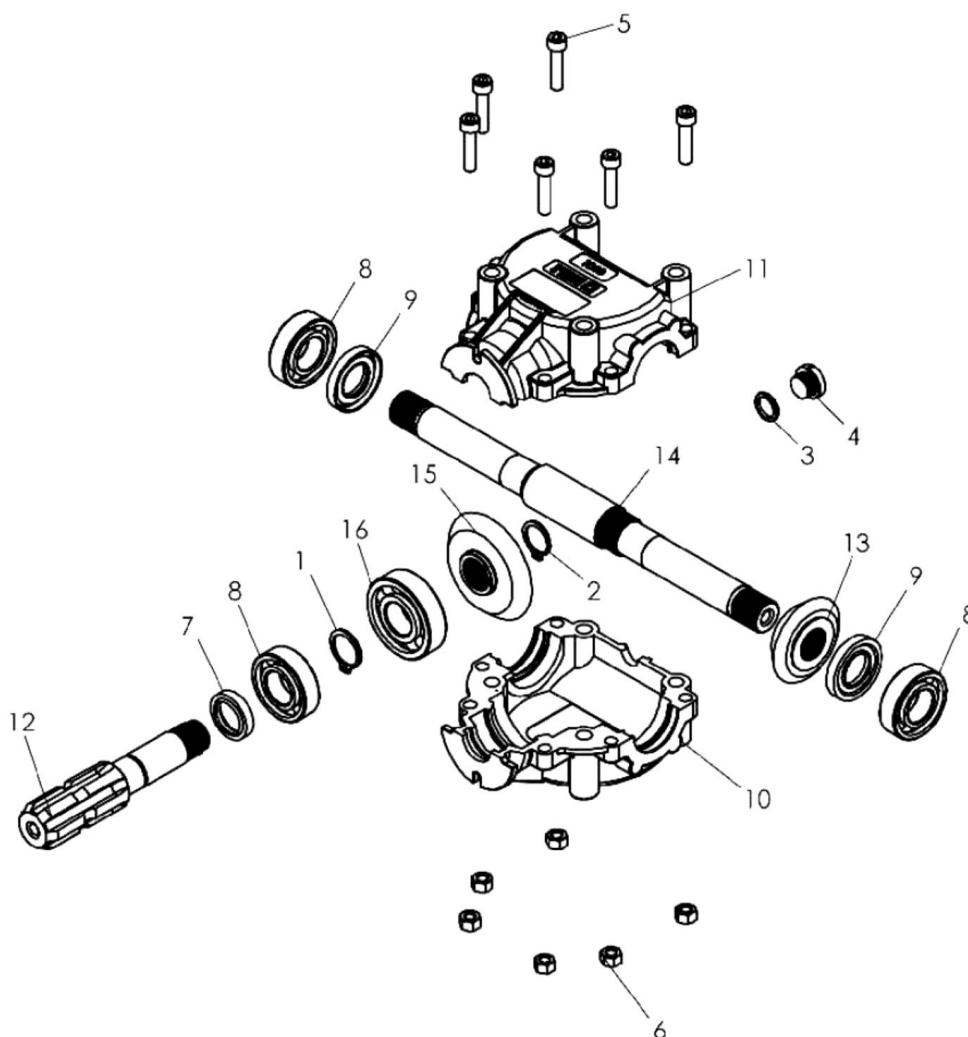
4810-4167



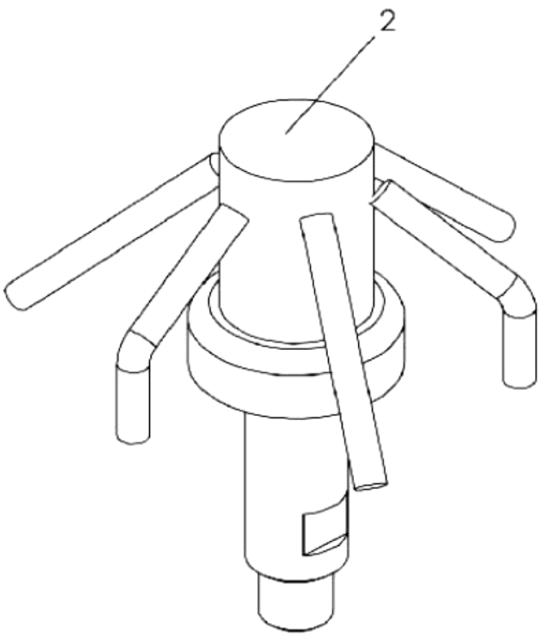
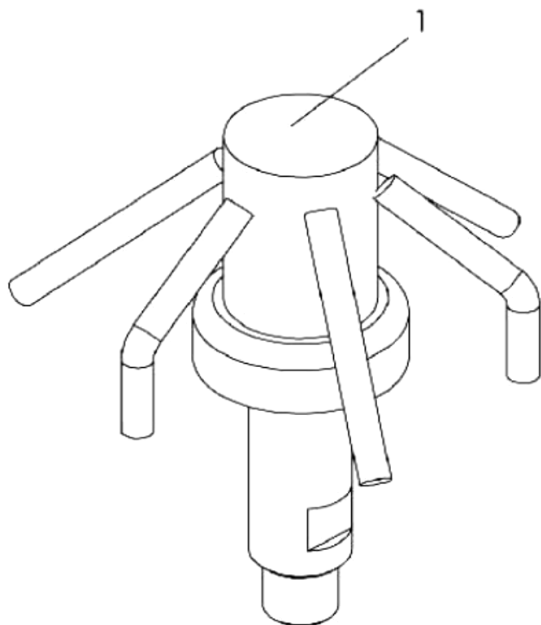
| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|---------------|--------------------------|-----|
| 1 | 4810-4167-BA | Circlip Ext 25x2.0mm | 2 |
| 2 | 4810-4167-BAE | Circlip Ext 22x2.0mm | 1 |
| 3 | 4810-4167-BAN | Dowty Seal 16x21.5x2.5mm | 1 |
| 4 | 4810-4167-BB | Drain Plug 3/8" | 1 |
| 5 | 4810-4167-BC | Gearbox Casing ½ | 1 |
| 6 | 4810-4167-BC1 | Gearbox Casing ½ | 1 |
| 7 | 4810-4167-BE2 | Gear | 1 |
| 8 | 4810-4167-BE3 | Gear | 1 |
| 9 | 4810-4167-BES | Shaft | 1 |
| 10 | 4810-4167-BEX | Shaft | 1 |
| 11 | 4810-4167-BPA | Capscrew – M8x35 | 6 |
| 12 | 4810-4167-BPO | Nut M8 | 6 |
| 13 | 4810-4167-BR | Seal 25x35x7 | 1 |
| 14 | 4810-4167-BR1 | Ball Bearing 6205 | 2 |
| 15 | 4810-4167-BR3 | Ball Bearing 6304 | 1 |
| 16 | 4810-4167-BRE | Seal 25x47x7 | 1 |
| 17 | 9100-3324 | Ball Bearing 6305 | 1 |

12.16 – Gearbox Assy – Centre, BPN-1020

4810-4168



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|---------------|--------------------------|-----|
| 1 | 4810-4167-BA | Circlip Ext 25x2.0mm | 1 |
| 2 | 4810-4167-BAE | Circlip Ext 22x2.0mm | 1 |
| 3 | 4810-4167-BAN | Dowty Seal 16x21.5x2.5mm | 1 |
| 4 | 4810-4167-BB | Drain Plug 3/8" | 1 |
| 5 | 4810-4167-BPA | Capscrew M8x35 | 6 |
| 6 | 4810-4167-BPO | Hex Nut M8 | 6 |
| 7 | 4810-4167-BR | Seal 25x35x7 | 1 |
| 8 | 4810-4167-BR1 | Bearing 6205 | 3 |
| 9 | 4810-4167-BRE | Seal 25x47x7 | 2 |
| 10 | 4810-4168-BC2 | Gearbox Casing ½ | 1 |
| 11 | 4810-4168-BC3 | Gearbox Casing ½ | 1 |
| 12 | 4810-4168-BE | Shaft - Input 6 Spline | 1 |
| 13 | 4810-4168-BE1 | Gear | 1 |
| 14 | 4810-4168-BE1 | Shaft | 1 |
| 15 | 4810-4168-BEN | Gear | 1 |
| 16 | 9100-3324 | Ball Bearing 6305 | 1 |



| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-----------|---------------------------|-----|
| 1 | 4810-2042 | Agitator – Fixed Left H. | 1 |
| 2 | 4810-2043 | Agitator – Fixed Right H. | 1 |

1



2

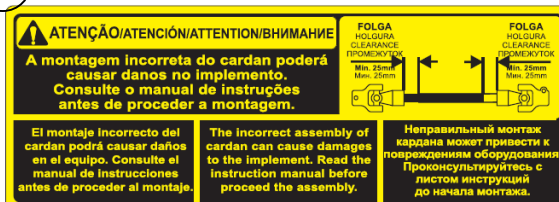


3

PORTA MANUAIS
PORTA MANUALES/ MANUAL HOLDER
 MANTENHA O LADO DA TAMPA INCLINADO PARA CIMA
 MANTENGA EL LADO DE LA TAPA INCLINADO PARA ARRIBA
 KEEP THE LID TILTED TO THE TOP-SIDE

9100-4614

4



5



9100-3587

| ITEM NO. | PART NO. | DESCRIPTION | QTY |
|----------|-----------|----------------------------------|-----|
| 2 | 9100-3981 | Decal, TORNADO 1300 G-IV 350x160 | 2 |
| 3 | 9100-3982 | Decal, TORNADO 1300 G-IV 550x190 | 2 |
| 4 | 9100-4614 | Decal, Manual Holder | 1 |
| 5 | 9100-3580 | Decal, Drive Shaft Adjustment | 1 |
| 6 | 9100-3587 | Decal, Attention! PTO | 1 |



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