



**BOSS**

**BOSS ENGINEERING PTD LTD**

# **OPERATOR MANUAL**

## **FOLD FORWARD FRAME**

Spare Parts Contact Number: **1300 564 144**

### **After Hours Contacts**

Rhys Anderson: **0438 430 089**

Dan O'Brien: **0488 024 197**

Dan Ryan: **0488 512 677**

Josh Palmer: **0418 208 251**

**spares@bosseng.com.au**

**BOSSAGRICULTURE.COM.AU**



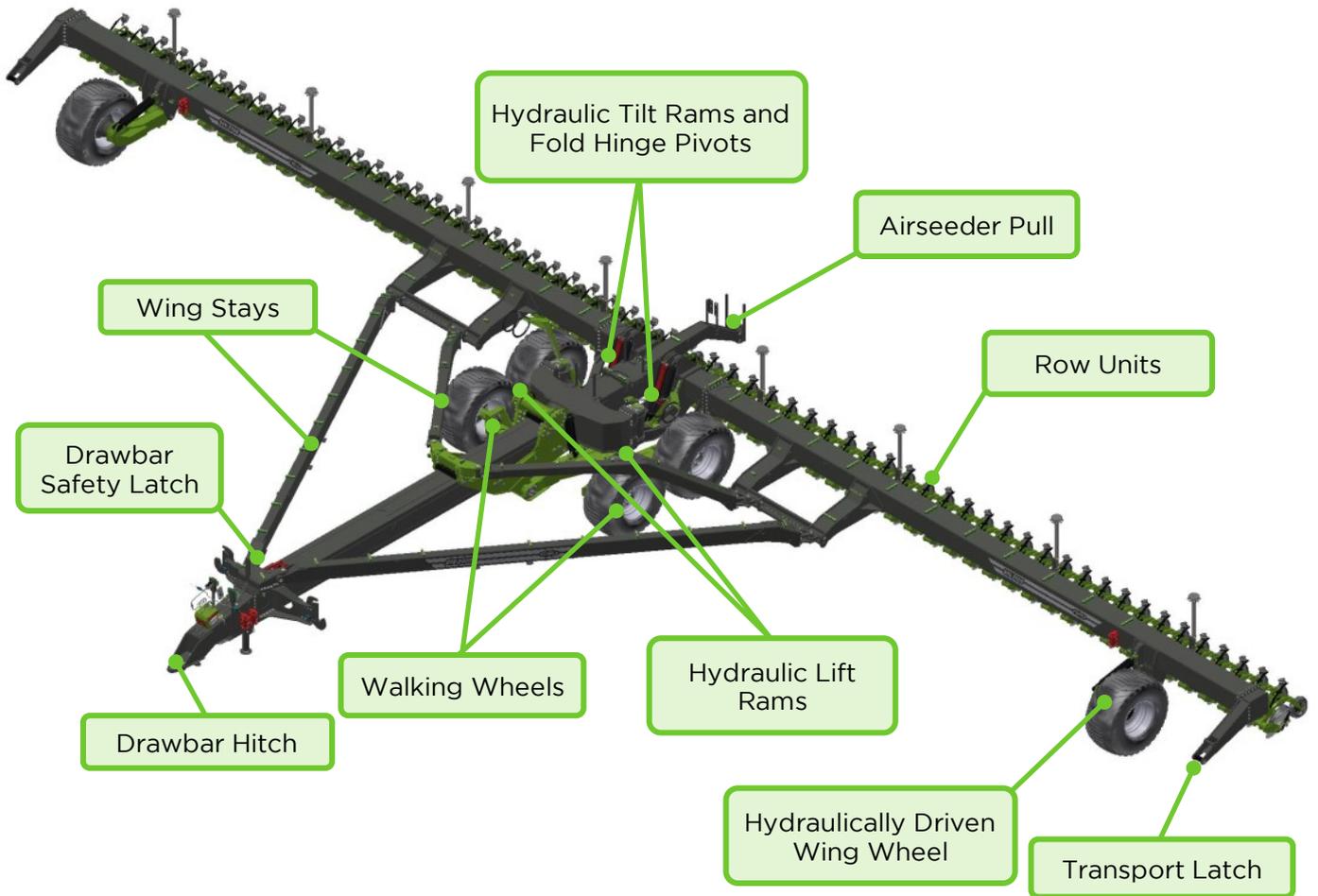
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## 1 - Planter Safety

- Read & understand the operator's manual before using this equipment.
- Ensure safety retainers are in place before working on the machine.
- Ensure the tractor is shut down and the key removed before working on machine.
- Be aware of pinch points on the row units & planter frame.
- Ensure the machine is securely chocked when unhooking to prevent the machine from rolling.
- Do not disconnect hydraulic breakaway couplings while the hydraulic system is under pressure.
- Inspect for hydraulic leaks and replace hoses if required. **Do not inspect for oil leaks with bare hands**, as small invisible high pressure oil leaks can penetrate the skin & require treatment.
- Pressurised hydraulic oil can harm or kill.
- Never ride on machine when operating.
- Do not let children climb or play on machine.
- Ensure retainers are in place when the machine is in the folded position.
- Ensure the tractor is ballasted correctly for machine.
- Be aware of overhead powerlines when transporting a folded machine.
- Width and height restrictions may apply when travelling on public roads, consult your local transport regulator for specific requirements in your area.
- **Max travelling speed is 20km/h.**
- Ensure tyres are inflated to the correct pressure as recommended.
- Inspect the machine regularly for loose bolts, damaged or worn components and replace as required.
- Inspect and keep wheel studs tight.
- Do not stand between the tractor and implement while coupling the machine up.
- Ensure all safety signs are in place and replace if damaged.
- Ensure all safety guards are in place.
- No persons within 50 metres when the machine is operating.

## 2 - BOSS Forward Folding Frame



## 3 - Road & Field Travel

BOSS planters are designed primarily for **in-field** operation, this means tyre selection and position is for optimum in-field use. Continuous high speed road travel is not recommended as this is not the machines primary design function.

We understand road travel may be required from time to time, and as such certain steps/guidelines need to be considered for personal & public safety, and to avoid tyre damage.

- Always use an agricultural tractor large enough & with sufficient braking capacity to stop the combined unit quickly and safely.
- Make sure tyre pressures are correct as per operators manual or inflation stickers located on the rim.
- Ensure all wheel nuts are present and tight as per operators manual or wheel nut torque stickers located on the rim.
- Make sure connection pin & hitch components are in good order with no possibility of the machine coming unhooked.
- Travel speed should not exceed 20km per hour.
- Know the machines limitations when negotiating changes in road conditions. Reduce speed over uneven or rough terrain, & be aware of hazards such as bridges, trees, fences, power lines & other road users.
- Machines are often oversize & as such follow local laws regarding excess dimension transport requirements.
- Exercise caution when transporting BOSS Planters on public roads in poor visibility, or when road conditions are wet as stopping capability may be reduced.
- Be aware of overhead powerlines at all times.
- Do not allow anyone to ride on the machine at any time.
- High road temperatures significantly reduce tyre carrying capacity, stop and check tyres regularly and allow to cool before continuing.
- Ensure fold retainers are in place & any components fitted to the machine cannot fall off during transport.

It is important to remember that BOSS Planters are **NOT** designed for frequent, high speed or long distance road transport and as such BOSS Agriculture does **NOT** recommend on road travel other than necessary, infrequent, short distance road travel at a reduced speed following above guidelines.

## 4 - Hooking Up

Ensure no-one is at risk of being crushed or trapped before commencing to hook up the machine to the tractor. Reverse tractor close to drawbar.

Connect all hydraulic lines making sure all hydraulic fittings are clean prior to connection. **All hydraulic dump lines are required to be connected correctly to avoid damage to the machine, row units or air seeder.** BOSS dump lines are generally labelled, however, ensure you have an understanding of the machines operation and connect hydraulic lines accordingly.

Connect electrical wiring harnesses for planter fold functions.

Once hydraulics are connected turn the tap to Jack as indicated by the sticker on the machine, use the fold circuit SCV to raise and lower parking jack to correct drawbar height, reverse tractor and fit drawbar pin, once tractor is connected retract jack as far as possible, then pivot jack and pin in horizontal position. (When unhooking planter, tap must be turned back to fold circuit for long term storage).

Hydraulic hoses must be connected correctly; ensure they cannot become dislodged when turning.

The tractor drawbar pin should be the correct size for both the machine & the tractor (use as large a pin as possible). The pin should be undamaged & in good condition.



Hydraulic Parking Jack



## 5 - Unfolding and Folding Procedure

Unfolding procedure:

1. Before unfolding ensure machine is parked on level firm ground.
2. Raise planter to full height.
3. Remove Toolbar Rotate Safety Locks at rear of machine and pin them onto Mount-on Rotate Rams.



**Locked for Transport**



**Unlocked**

4. Remove Lift Cylinder Ram Stops and stow on red storage mounts.



5. Set Drawbar Slide Lock to Catch position as below.



**Catch**

## Unfolding and Folding Procedure Continued

- Engage Tractor SCV to supply constant oil flow to the fold circuit, start with SCV flow rate at around 50% and adjust as needed.
- Using in cab switch panel Rotate Toolbar down to stops, may need to raise or lower machine to keep whisker switches on front hooks engaged. If toolbar rotating stops unexpectedly try lowering machine to re-engage whisker switches.



- Raise Machine to Full Height using the lift circuit SCV. **Ensure fold braces do not contact tyres while unfolding, as damage to frame and tyres may occur.**



- Ensure no persons are within 50 metres of machine, Place tractor transmission in neutral, Using in cab switch panel, commence unfolding Wings. Tractor can be pulled rearwards as drawbar telescopes into itself.

10. Pin Drawbar Slide Lock in locked position.



**Locked (Working Position)**



- **Never let anybody get between the wings, wing braces and drawbar while folding and unfolding.**
- **Never get under the machine when safety locks and pins are removed.**

## Fold Procedure

1. Unpin drawbar slide, place lock pin in unlocked position.
2. Raise machine to full height.
3. Fold wings fully with tractor in neutral.

**Tractor will be pushed forward by planter as drawbar extends.**

4. Lower machine so transport latch is engaged into hooks to ensure whisker switch is activated.
5. Rotate toolbar up fully.
6. Install toolbar rotate safety locks at rear of machine.
7. Install lift cylinder ram stops.
8. Lower planter onto lift cylinder ram stops.



**Unlocked**



Unfolding procedure sticker is on drawbar of machine as well as on fold switch box in tractor cab.



**Lift Ram Stop**

## 6 - Setting Frame Operating Height

Frame operating height is set by adjusting the ram stops located on the in-frame centre section cylinders. Using a  $\frac{3}{4}$  spanner loosen ram stops and adjust all 4 stops (2 on each cylinder), to achieve the required under-bar operating height.

These stops **MUST be adjusted EVENLY**, a preferred method is to check with a ruler.

If they are not adjusted evenly the cylinder rod can become fatigued and break off. Once all stops are evenly adjusted tighten the locating bolts. The correct operating height is determined by the row unit that is fitted to the frame; refer to the row unit operating manual for instruction on frame height. Disc Units run at 620mm under bar height (remote bar).



Ram stops must be even to avoid damage to rams.



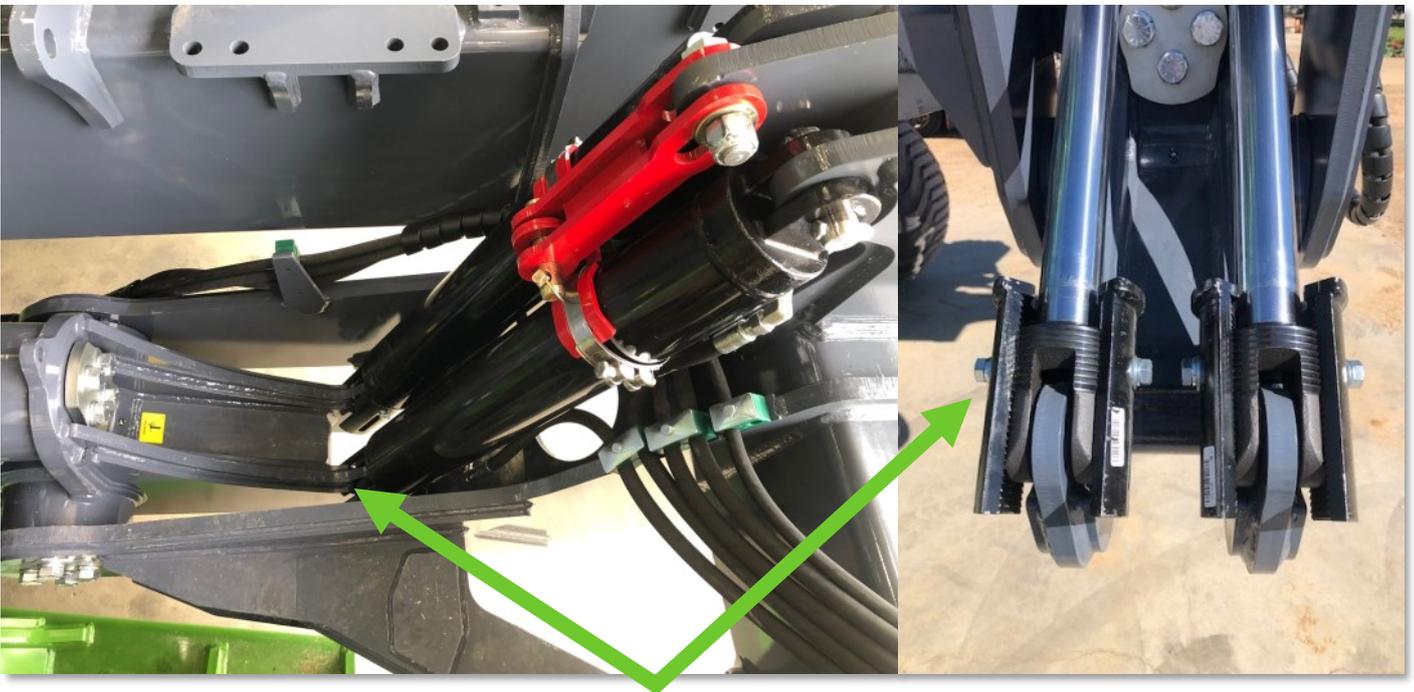
Ram stop location on each side

Using a  $\frac{3}{4}$ " spanner, loosen the ram stop bolts and adjust both stops **equally**. The safest way is to use a ruler so all 4 stops (2 on each cylinder on the centre in-frame lift wheels) are even.

## 7 - Leveling Frame

Toolbar working angle is factory set, but if for any reason the toolbar working angle needs to be changed, such as changing tractors with vastly different drawbar height. The steps are below to assist in the setting.

1. Ensure planter is fully unfolded as per section 5.
2. Activate toolbar roll override switch on front of planter.
3. Rotate toolbar up to allow access and to remove weight from roll ram stoppers.
4. Adjust stoppers as necessary in small increments, ensuring the stops are at the exact same heights (2 pairs on each side of planter).
5. Rotate toolbar back down onto stops and inspect toolbar and row units for level or desired working angle.
6. Repeat steps above if necessary and ensure ram stopper bolts are tight and the stopper teeth are seated into the ram clevis teeth.



Ram Stops

## 8 - Hydraulic Drive Wing Wheels

BOSS Forward Fold planters use a hydraulic drive wheel on the wings to actuate folding, these wheel hubs are fitted with a unique hydrostatic drive motor that folds the wings in and out by driving both directions but free wheels when planting.

**Warning:** These wheels cannot be used to push the planter while planting with the drawbar slide latch locked.

**Maintenance:** There are two grease nipples on opposing sides of each wheel drive motor, these lubricate the wheel motor seals, purge these via the two grease nipples daily each side.

**Please see next page.**





**BOSS ENGINEERING Pty Ltd**  
A.B.N. 50 061 299 413 A.C.N 128834 551

Rev: A

## Agriculture - Fold Forward Frame FF36A Axle Drive B260 Assy A LH

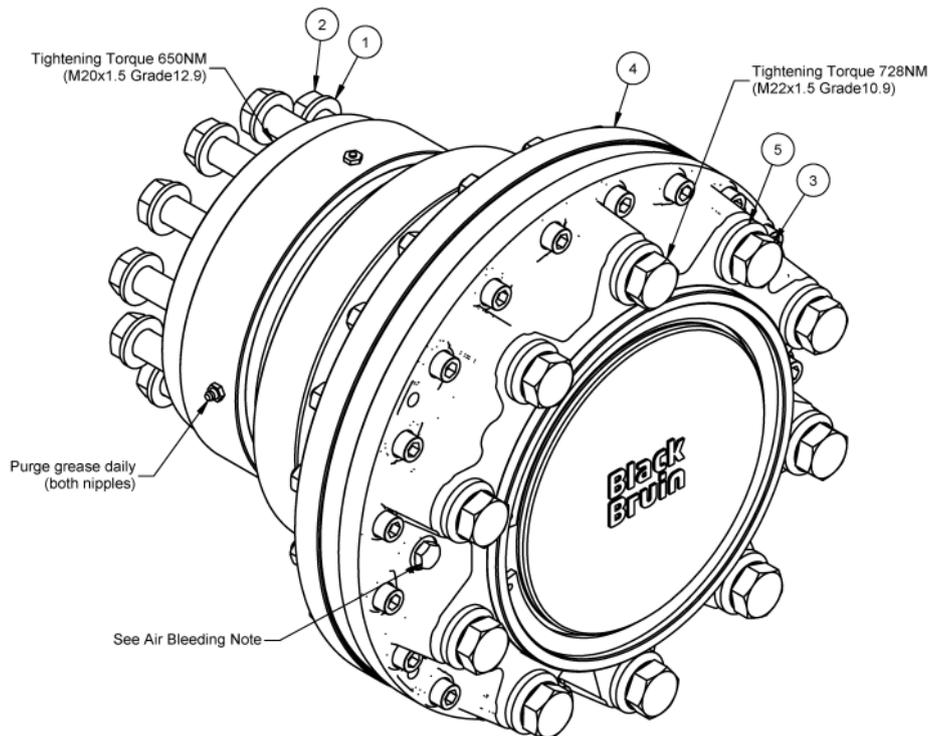
Part Number: **423-538 LH**

Parts List

Item	Qty	Part Number	Rev	Description	Comments	Supplier	~kg
1	12	901-594		3/4 - Gr8- Z/P Flat Washer		KB / WG	0.0
2	12	906-890		M20 x 70x1.5p G12.9 ZP Cap Screw		KB / WG	0.2
3	10	903-472		M22 x 55x1.5p G10.9 ZP Hex Head Bolt		KB / WG	0.3
4	1	926-055 LH	A	Wheel Motor Black Bruin B260 LH	B260-0315-2N0L-GZ	WG	150.0
5	10	926-056	A	Wheel Motor Rim Washer M20		WG	0.1

The letter L or R after the P/no. indicates whether the part is left or right handed. R/hand is a mirror of L/hand.

Note - Read Black Bruin General instructions before installing or operating this motor for the first time.



- Air Bleeding Procedure (only required at initial start up or if hub has been drained)**  
Air bleeding procedure is carried out to fill the housing of the motor completely with hydraulic fluid. Air is removed from the housing with air bleeding screws as follows:
- Locate the top most air bleeding screw.
  - Make sure the drain line of the motor is connected.
  - Feed hydraulic fluid into the motor with low pressure throughout the procedure.
  - Unscrew the bleeding screw by half a turn and let air escape from the housing.
  - Close the screw when only hydraulic fluid is pouring through it.
  - Tighten the screw to a torque of 39NM.

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Rev	Description	Author	Date

# 9 - Important Bolts To Check

## Drawbar Bolts



## All Wheel Nuts



## Airseeder Pull Bolts



Grade 8 Bolt Torque Settings (Coarse Thread)			
Bolt Size	Socket Size	Lb-ft	NM
3/8"	9/16"	33	44
1/2"	3/4"	80	108
5/8"	15/16"	159	215
3/4"	1-1/8"	282	382
7/8"	1-1/4"	454	615
1-1/4"	1-7/8"	1120	1518
M20 (Gr 12.9)	30mm	479	650
M22 (Gr10.9)	32mm	536	728

## **10 - Maintenance**



**SHUT OFF THE TRACTOR ENGINE, REMOVE THE KEY FROM THE IGNITION AND BE CERTAIN THAT ALL MOVING PARTS HAVE STOPPED BEFORE SERVICING.**

**BEFORE SERVICING MAKE SURE ALL SAFETY STANDS AND SAFETY PINS ARE IN PLACE. NEVER PLACE HANDS OR FEET UNDER ROW UNITS AS THE IMPLEMENT COULD LOWER UNEXPECTEDLY.**

Your BOSS Forward Folding Frame requires minimal maintenance to keep in good shape. Below is a guide to maintain your Forward Folding Frame, all maintenance procedures may vary depending on ground/soil conditions & the amount of use your machine does both in-field & on-road.

### **Forward Fold Frame - Wheel Nut Torque**

10 Stud	500ft-lb
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### **Fold Forward Frame - Recommended Tyre Pressure**

600/55 x 22.5	2.5 Bar / 36 psi
750/45 x 22.5	4 Bar / 58 psi

#### **After first 5 hours, check:**

- All wheel nuts.
- Drawbar mounting bolts through to the front hitch.
- Air Seeder pull bolts.
- Wheel bearing preload.
- Hydraulic leaks.
- Clean and wash the machine down touching up any areas where paint has been removed.

## **10.1 Daily Maintenance:**

Periodically check all wheel nut tension throughout the first days after delivery until wheel nut tension is maintained.

(See wheel nut torque chart)

Grease wing fold hinge & wing stay pivots with 1-2 pumps of grease.

Grease drive wheel motor seals – purge with grease.

Grease walking wheel pivots 1-2 pumps of grease.

Grease main lift pivot pin (single centre grease nipple) .

Check for hydraulic leaks.

Check tyres are inflated correctly. (See tyre inflation chart on page 18) .

Check hydraulic pins are secure with end clips in place.

Check ram depth stoppers are seated and not damaged.

## **10.2 Weekly Maintenance:**

Check all wheel nut tension. (See wheel nut torque chart on page 18)

Check for any loose or damaged bolts & replace if necessary.

Check for hydraulic leaks & repair if necessary.

Check tyres are inflated correctly. (See tyre inflation chart on page 18)

Check drawbar mounting bolts through to the front hitch bolts are tight.

Check Air Seeder pull bolts are tight.

Check hydraulic fold rams & lifting rams are in good condition with all mounting pins secure with safety clips or end bolts in place.

Check safety ram stoppers & safety decals are in place.

Visually check bearings and thrust washers in wing stay pivots

Check main frame wheel axle retaining bolts are tight and the axle has not moved.

Visually check centre frame rollers

## 10.3 Annual Maintenance:

Check all wheel nut tension. (See wheel nut torque chart on page 18)).

Check for any loose or damaged bolts & tighten or replace if necessary.

Check for hydraulic leaks & repair if necessary.

Check hydraulic hoses are in good condition & replace if necessary.

Grease wheel bearings. (bearings are fitted with purge seals however always ensure the seal is seated correctly after greasing).

Check wheel bearing preload & adjust as necessary.

Check tyres are in good operating condition.

Check tyres are inflated correctly. (See tyre inflation chart on page 18)).

Check drawbar tongue mounting bolts are tight.

Check Air Seeder pull bolts are tight.

Grease all daily grease points.

Check hydraulic lift rams are in good condition with all mounting pins secure with safety clips or end bolts in place.

Check safety stands & safety decals are in place.

Visually check bearings in fold pivots, ensure the circlips are in place & bearings are retained properly in the housing.

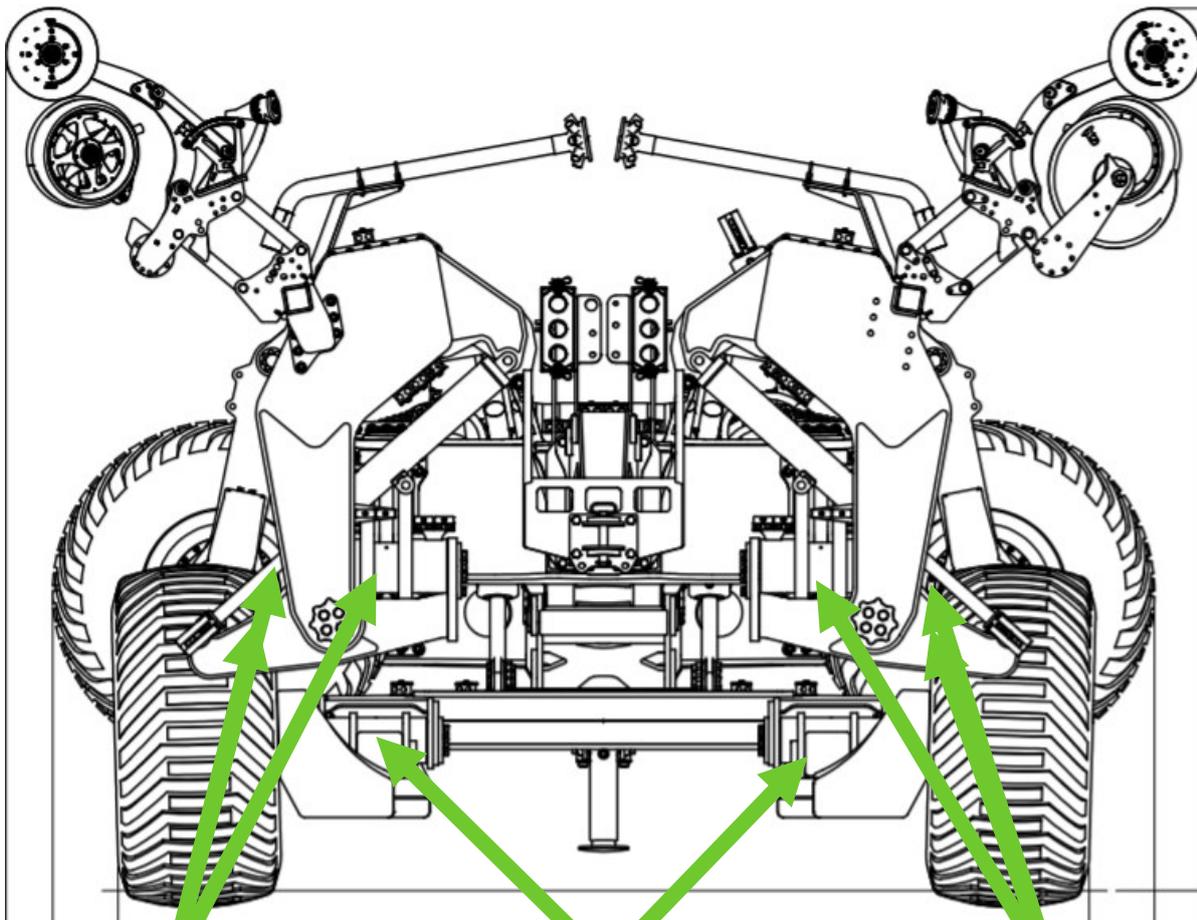
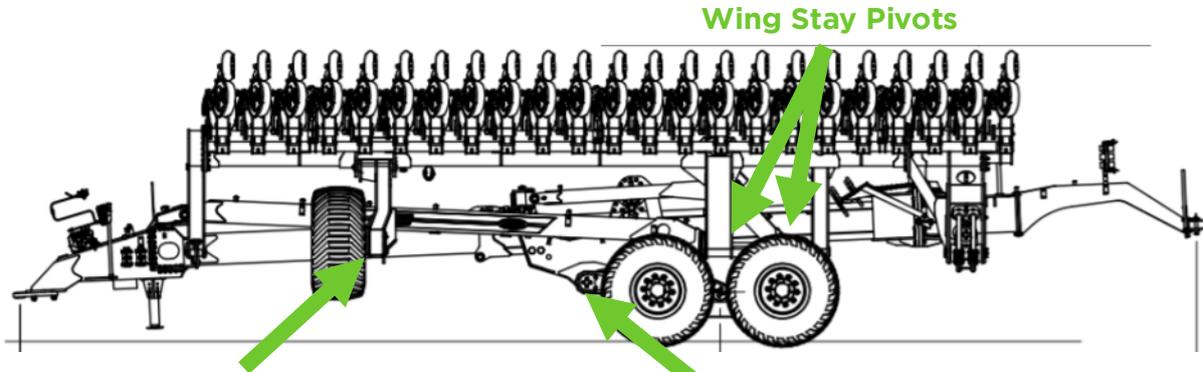
Check frame wheel axle retaining bolts are tight and the axle has not moved.

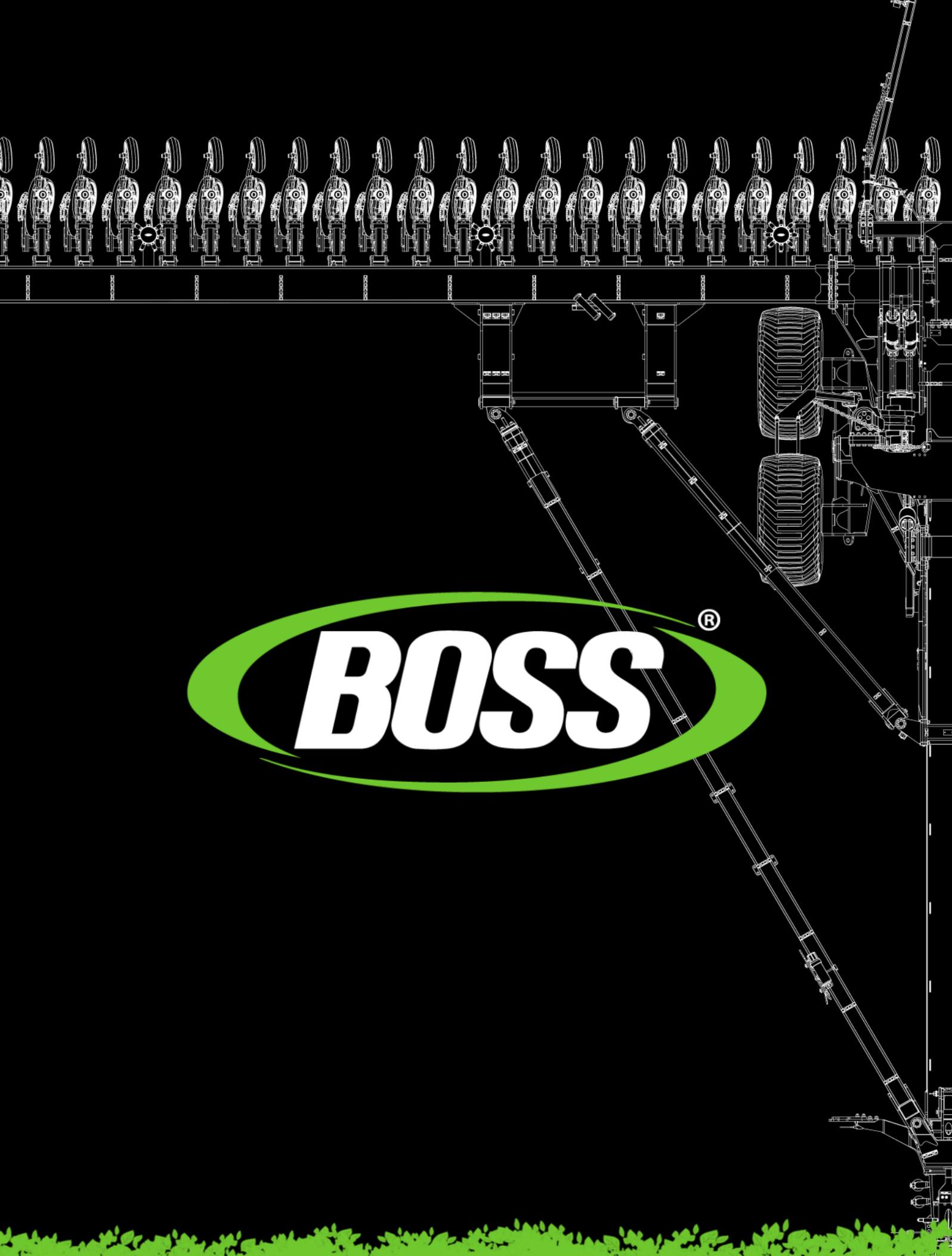
Check all pins and bushes for wear and replace as required.

Visually check centre frame rollers.

**Some hydraulic components such as hydraulic cylinders depend on oil residue for rust protection, so ensure you avoid using any harsh cleaning products during wash-down.**

# 11 - Grease Points - (17 in total)





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