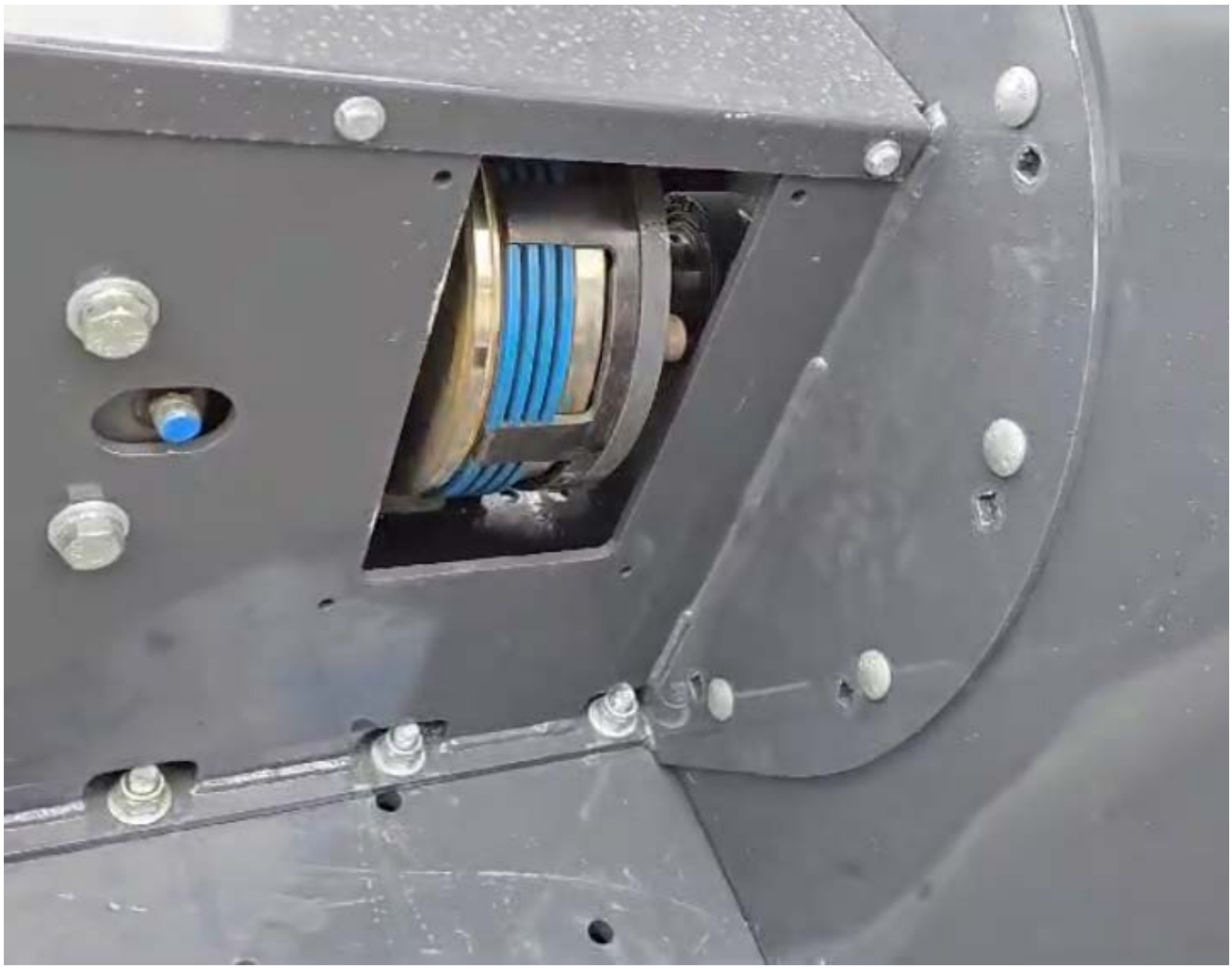
E-Clutch System: Operation, and Service Manual

Rev 1.1

04/2026



1 Safety Note:

Before starting any operation, maintenance or diagnostic tasks, always prioritize safety.

- Ensure the work area is clear of unauthorized personnel and children.
- Always use the appropriate tools for the job.
- Be aware that this machine contains many components capable of operating with high power. Mishandling or improper procedures can cause severe injury or be fatal.

None of the provided diagnostic procedures should be performed while the PTO is engaged, except when specifically carried out by authorized personnel. Always prioritize safety and follow proper protocols during maintenance and diagnostics.

When the clutch disengages, the unloaded sweep auger may continue to rotate for up to **50 seconds** before coming to a complete stop due to its rotational inertia. Even at low speeds, contact with the sweep auger or connected parts can cause serious injury or damage.

Ensure the encasement caps are properly attached back in place after any maintenance job and before operation. This is crucial for maintaining safety and preventing dirt, debris, or contaminants from entering the clutch system, which could affect its performance and longevity.

Note: During adjustments, maintenance procedures, and diagnostics, avoid using a hammer or any heavy objects.

2 Operation

The E-Clutch system allows for convenient engaging and disengaging of the sweep auger from the PTO using a switch. This functionality enhances the overall operation of the bin, providing greater control and flexibility during use.

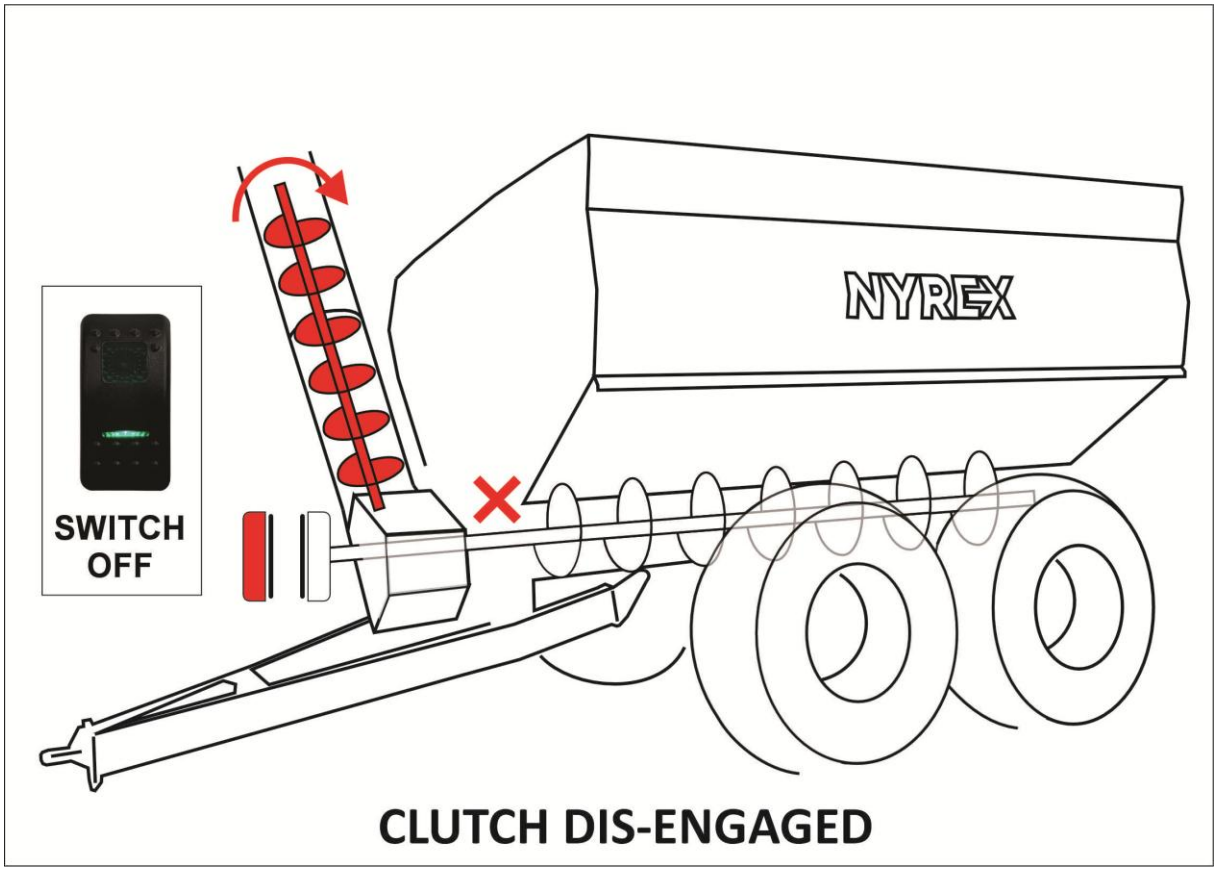
Key Features of Operation:

- The clutch can be engaged or disengaged on-demand with the switch, adapting to the operational needs of the bin.
- The system is designed to engage under the load, enabling smooth operation even when the grain doors are open, and the sweep auger is actively loaded with grain.

This advanced feature streamlines bin management and ensures efficient handling of the operation.

2.1 Operation Details:

- The **sweep auger** can be fully controlled using the E-Clutch system. Engaging and disengaging it as needed allows precise flow control of the grains.
- The **discharge auger**, however, will rotate continuously as long as the bin is powered by the PTO, regardless of the sweep auger's status (Figure 1).
- If in emergency or in the case the clutch fails, it can be fully wound in and locked up to act as a coupling until repairs can be made.



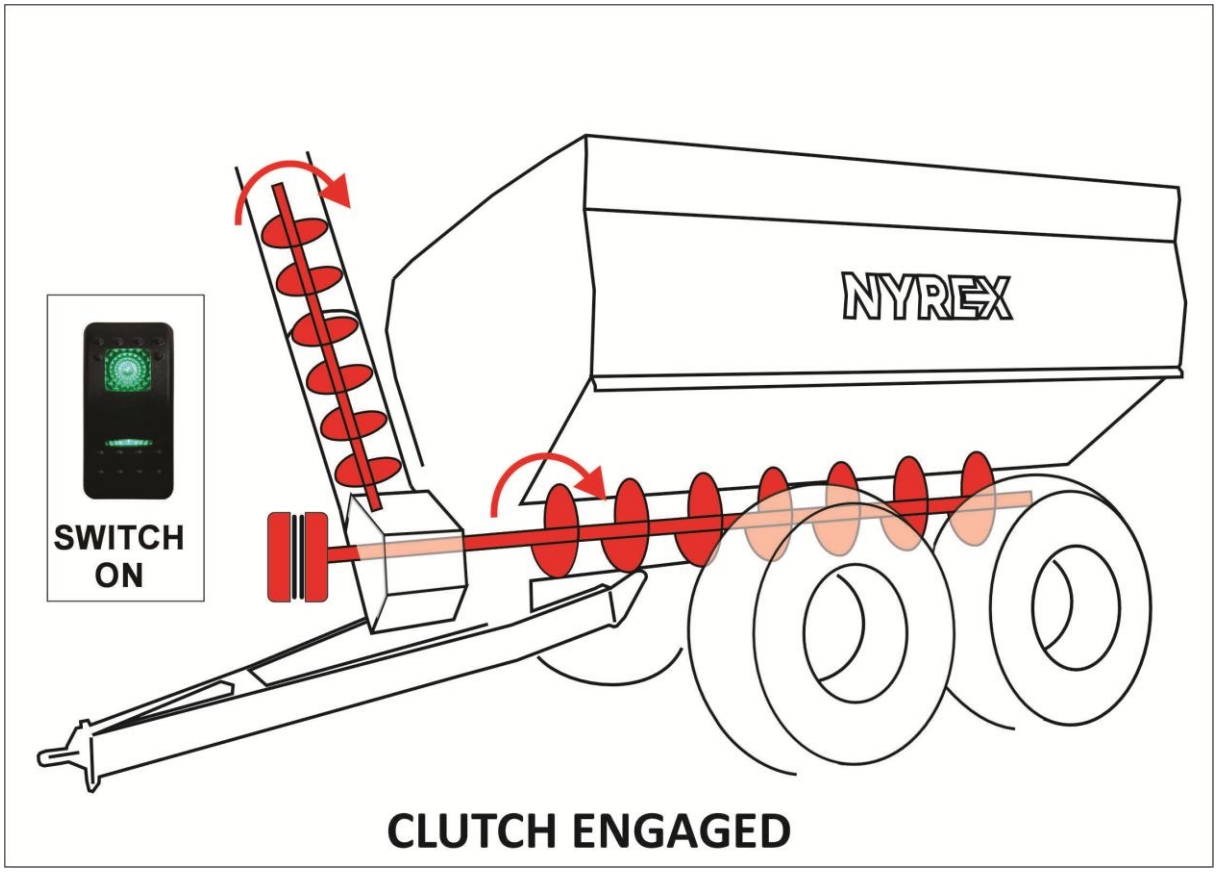


Figure 1

DO NOT OPERATE THE CLUTCH UNDER 600 PTO RPM

Clutch engagement time (s)*	0.5
Clutch disengagement time (s)*	0.12
Rated voltage D.C V	12
Engage/disengage MAX allowed frequency (1/min)	6

*The indicative values represent the clutch armature action response.

3 Gap Adjustment:

Note: This adjustment procedure can be performed without disassembling the clutch system. All steps can be completed with the system in place, saving time and effort. Ensure proper access to the adjustment points and follow the instructions carefully.

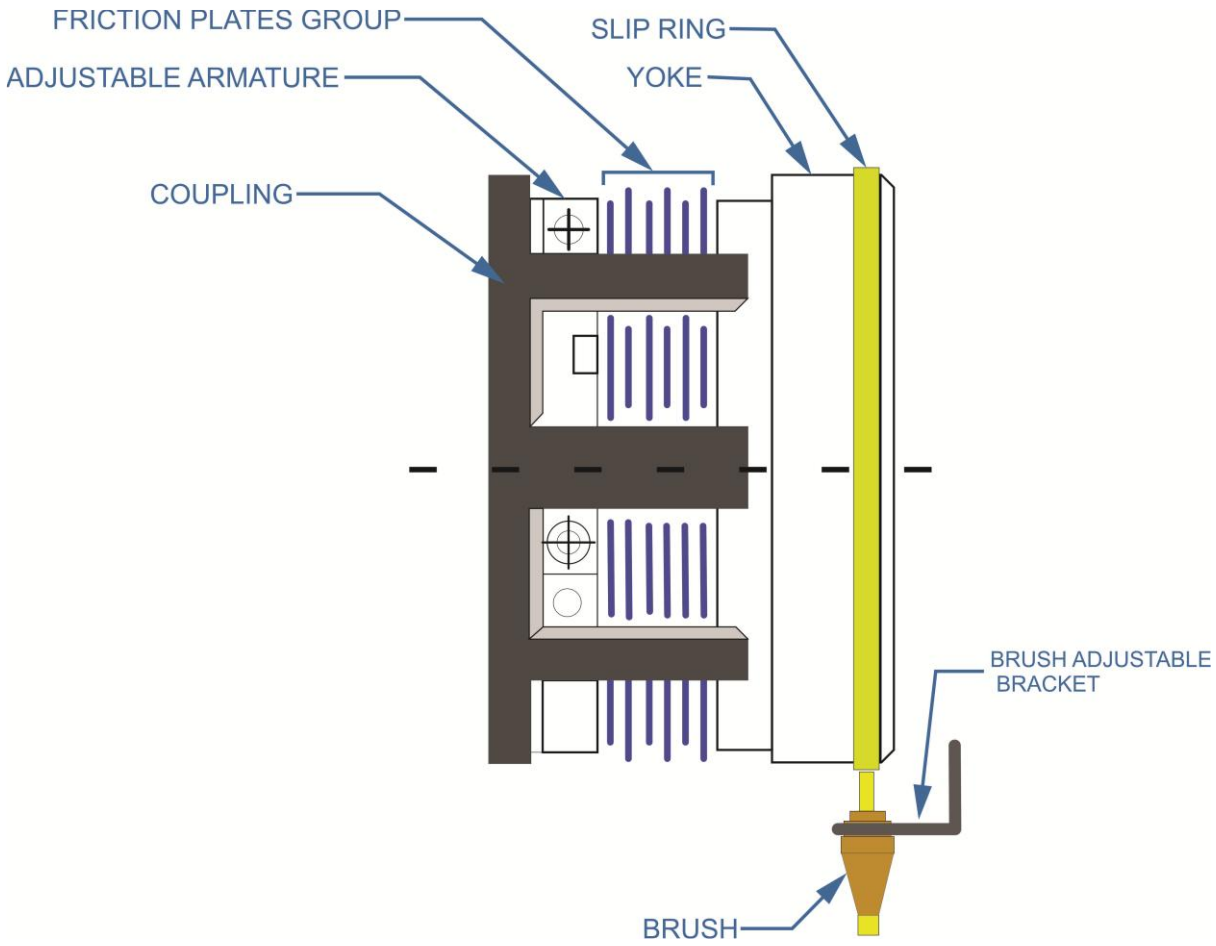


Figure 2

During use, the friction plate will wear out. When the torque drops to a certain extent, the working air gap needs to be adjusted with the following steps:

3.1 Detach PTO:

Detach the bin from the PTO.

3.2 Energize the clutch:

Apply power to the clutch to engage it.
Depending on the model, this can be done using either the switch box or the joystick control.

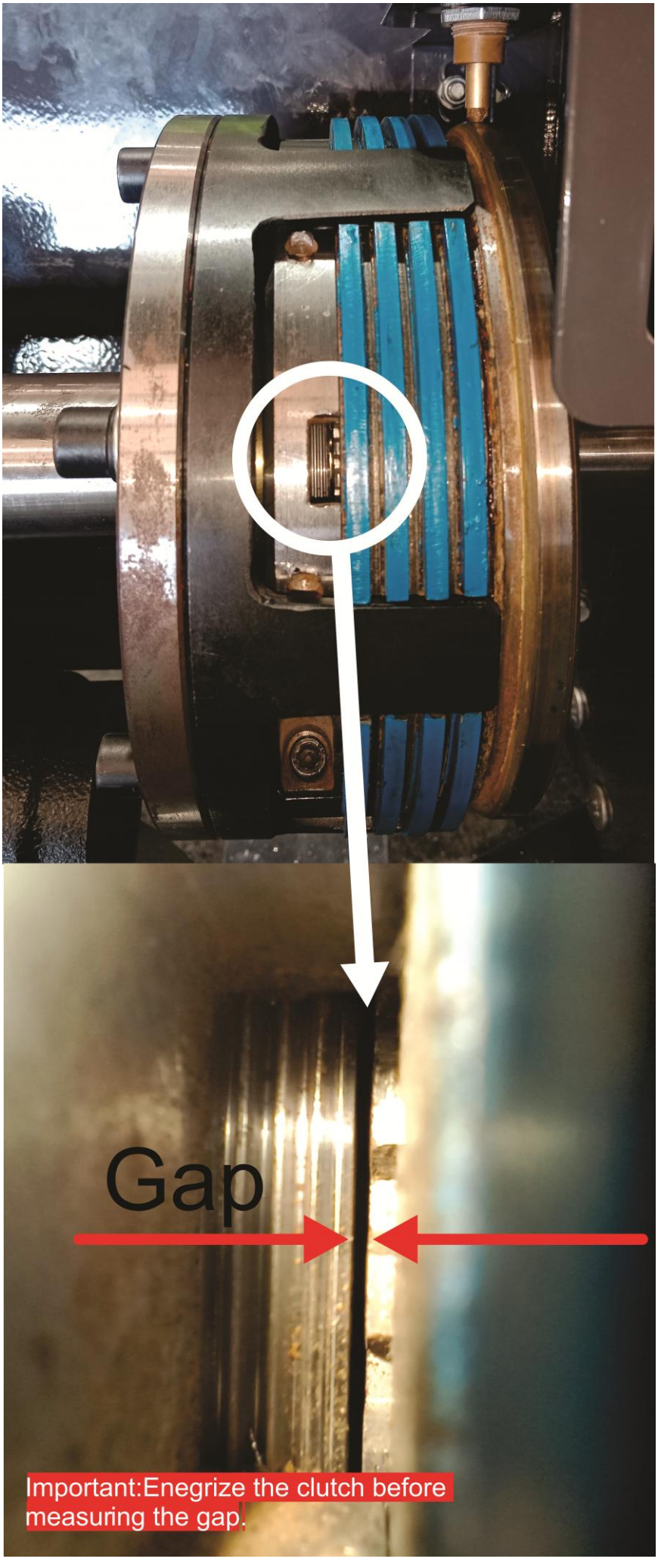
When the clutch is energised, a distinct clicking sound should be heard, and the armature will move toward the slip ring.

A red light will show up on the front of the barrel box indicating whether the clutch is engaged or disengaged.

Important: The clutch must be energised before proceeding to the next step. Failure to do so will result in an incorrect air gap setting.

3.3 Locate the adjustment hole:

Locate the adjustment hole on the armature. The hole is square-shaped and positioned on the armature surface. Carefully inspect inside the hole; this is the interface where the armature inner ring meets the yoke.

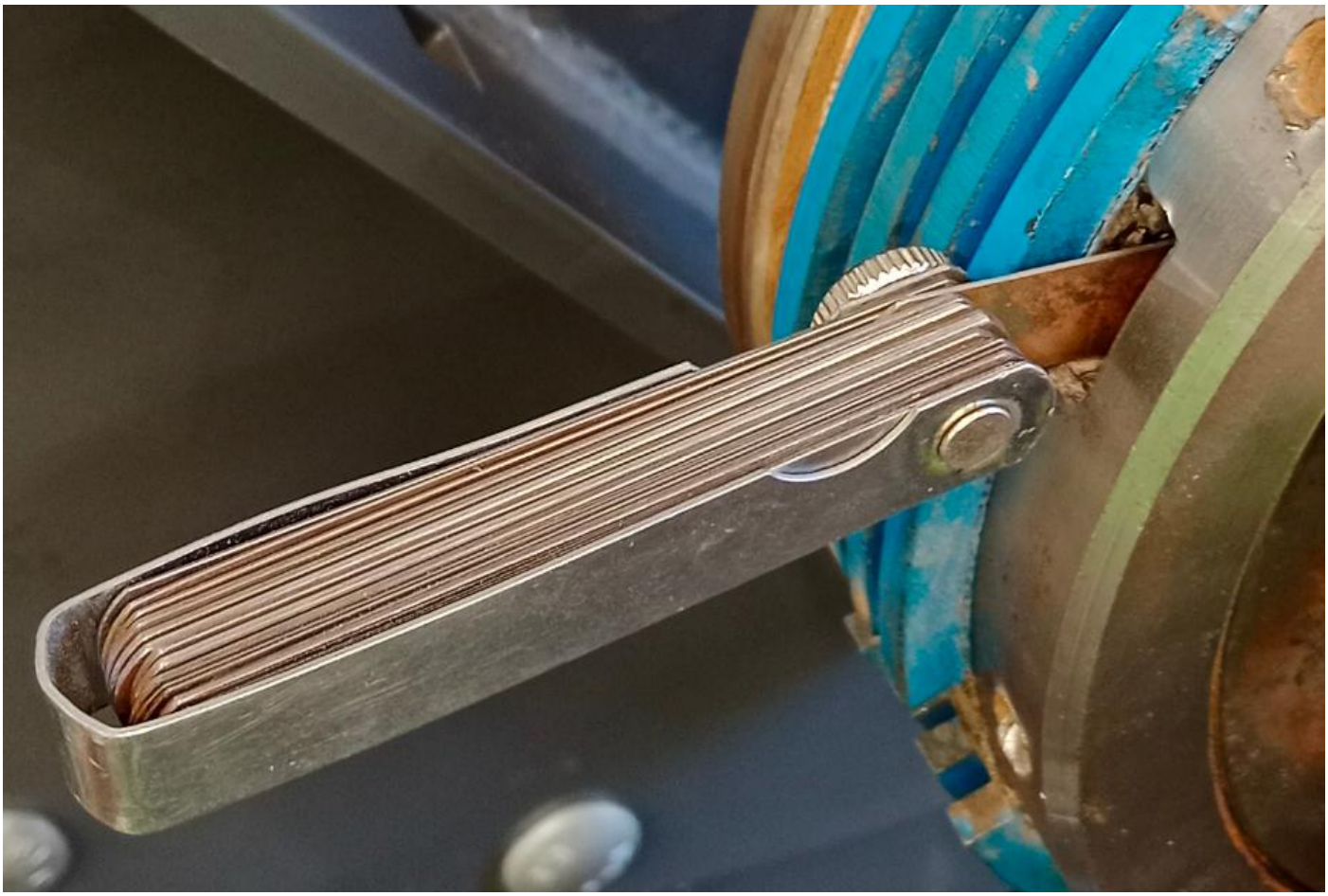

Gap
Important:Enegrize the clutch before measuring the gap.

3.4 Step 3:

Use a blade feeler gauge and carefully insert it into the rectangular hole on the armature ring. Measure the air gap between the armature and the friction plate.

Clutch Size	Air Gap Size
63A	0.6 mm
160A	0.8 mm

Ensure the gauge slides in smoothly without forcing it and confirm the measurement matches the desired value.



If this gap is more than or less than advised air gap, the clutch will not engage properly and the friction pads may overheat and burn.

If the gap is not the desired value, follow these steps to correct it:

3.5 Locking screw:

Find the Socket head locking screw on the outer ring of the armature. insert a suitable small round rod into the small hole on the outer ring of the armature and turn it in the circumferential direction

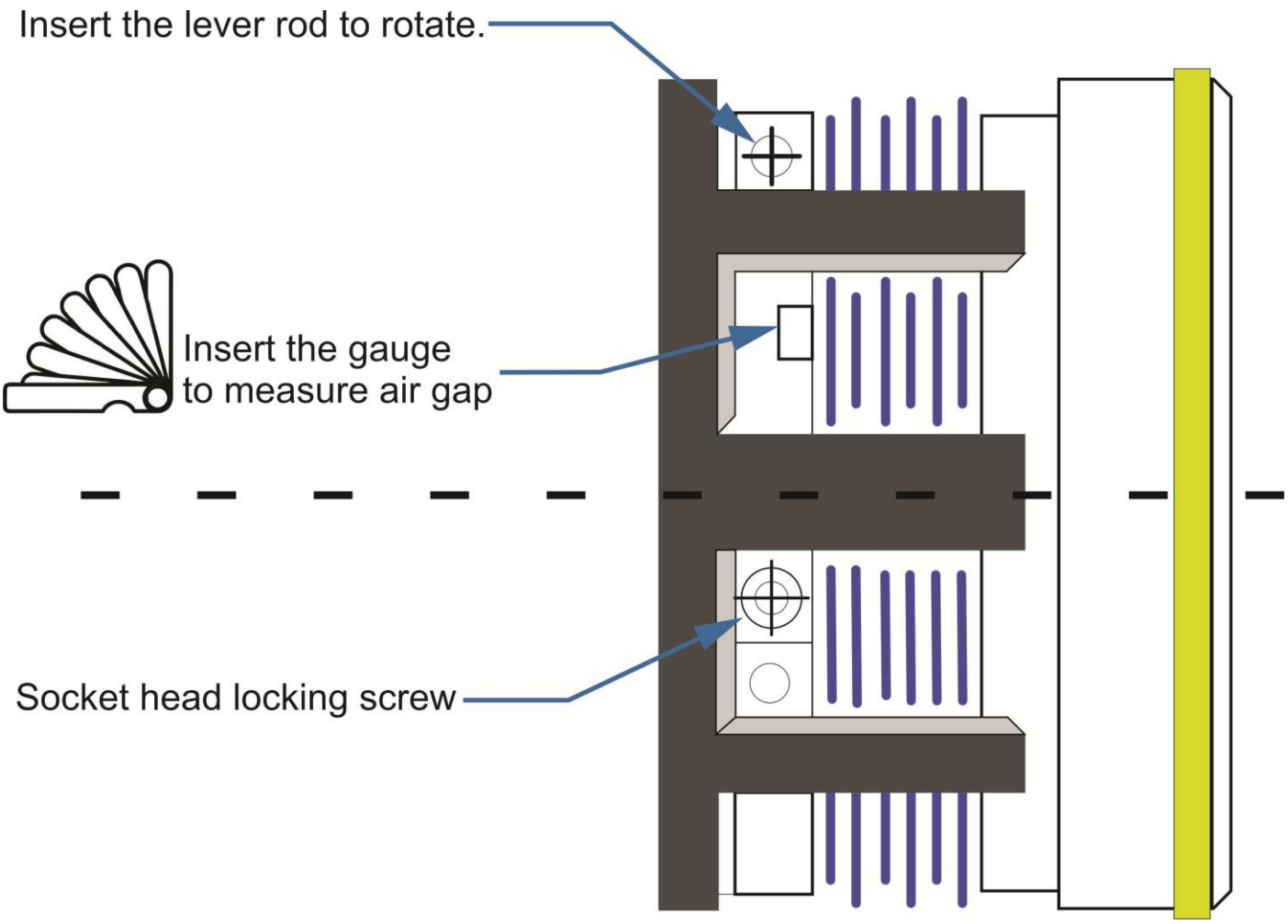


Figure 3

3.6 Step 4:

Ensure the yoke and coupling are securely fixed to prevent rotation. Hold them firmly in place during the adjustment process.

Follow the Figure 4 ,and:

- If the clearance gap is **large**, carefully rotate the armature disk in the **CW** (**CLOCKWISE)** direction.
- If the clearance gap is **small**, rotate the armature disk in the **CCW** (**COUNTERCLOCKWISE)** direction.

Make small, controlled rotations, and recheck the gap frequently using the blade feeler gauge to avoid over-adjustment.

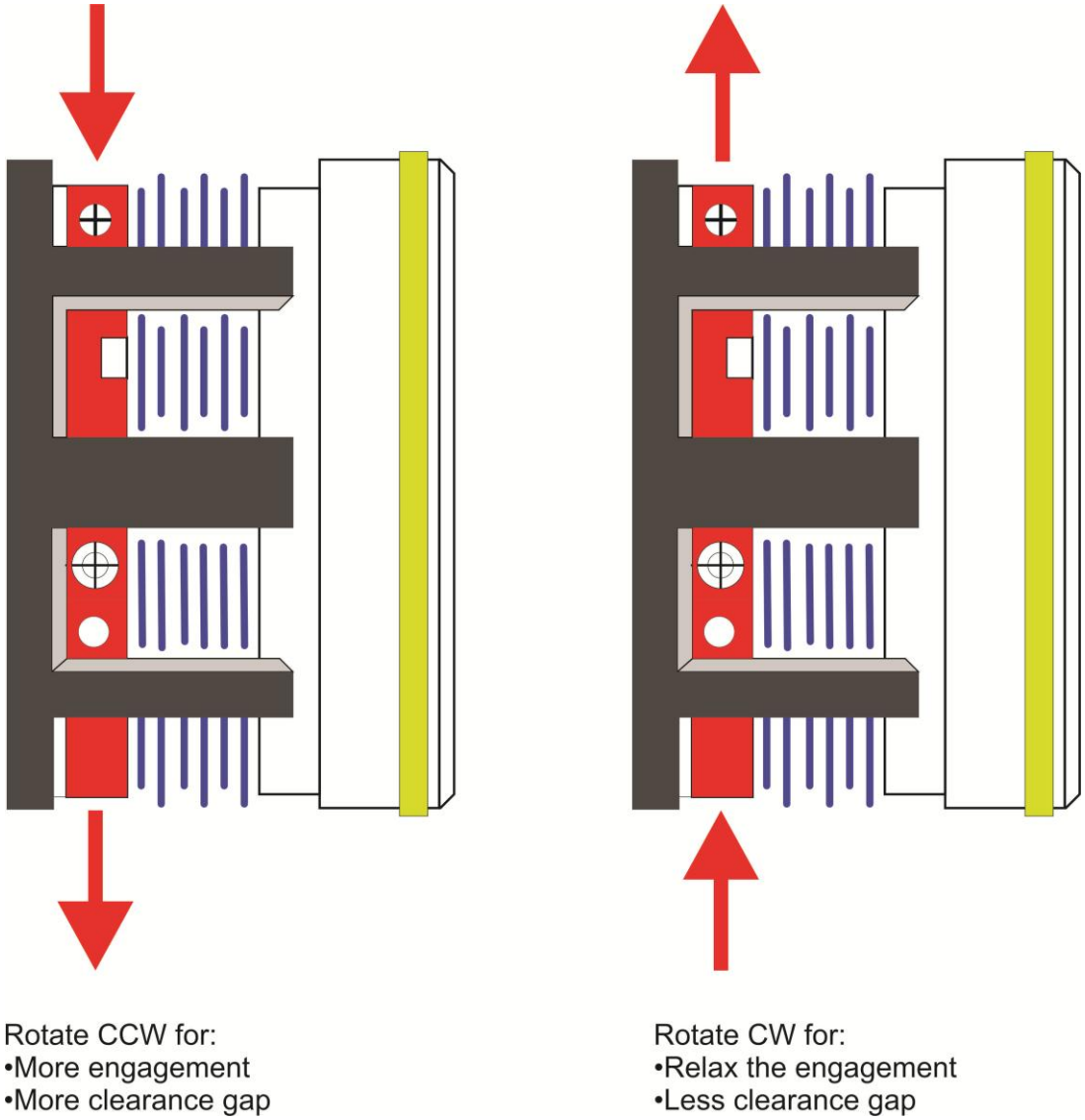


Figure 4

3.7 Step 5:

Once the desired clearance gap is achieved, tighten the socket head screw from Step 3 to a torque specification of **25 N·m**. Ensure the screw is tightened evenly and firmly to maintain the correct adjustment.

Double-check the clearance gap after tightening to confirm it remains at the desired value.

3.8 Step 6:

Ensure the lever rod is removed before reattaching the PTO. Double-check that all components are properly aligned and secure to avoid interference during operation.

4 Brush adjustment:

Visually inspect the slip ring to ensure proper contact with the brush tip.

- Verify that the brush tip is rubbing evenly against the slip ring surface.
- The brush has a spring-loaded tip, ensuring a firm and consistent connection with the slip ring. Confirm that the brush tip is compressed against the slip ring with a preload range of **2–3 mm**, which ensures consistent

and reliable contact during operation. This compression is maintained by the back spring-loaded mechanism of the brush. To achieve this range, adjust the BRUSH ADJUSTABLE BRACKET position (Figure 2)

- Note that over time, due to normal operation, the brush tip may wear down and reduce in length.
- Note that the brush should be installed in line with the centre line of the slip ring, and the radial and axial inclination relative to the slip ring should not exceed **2°.**

If the brush tip is excessively worn or not making proper contact, consider replacing it to ensure reliable performance.

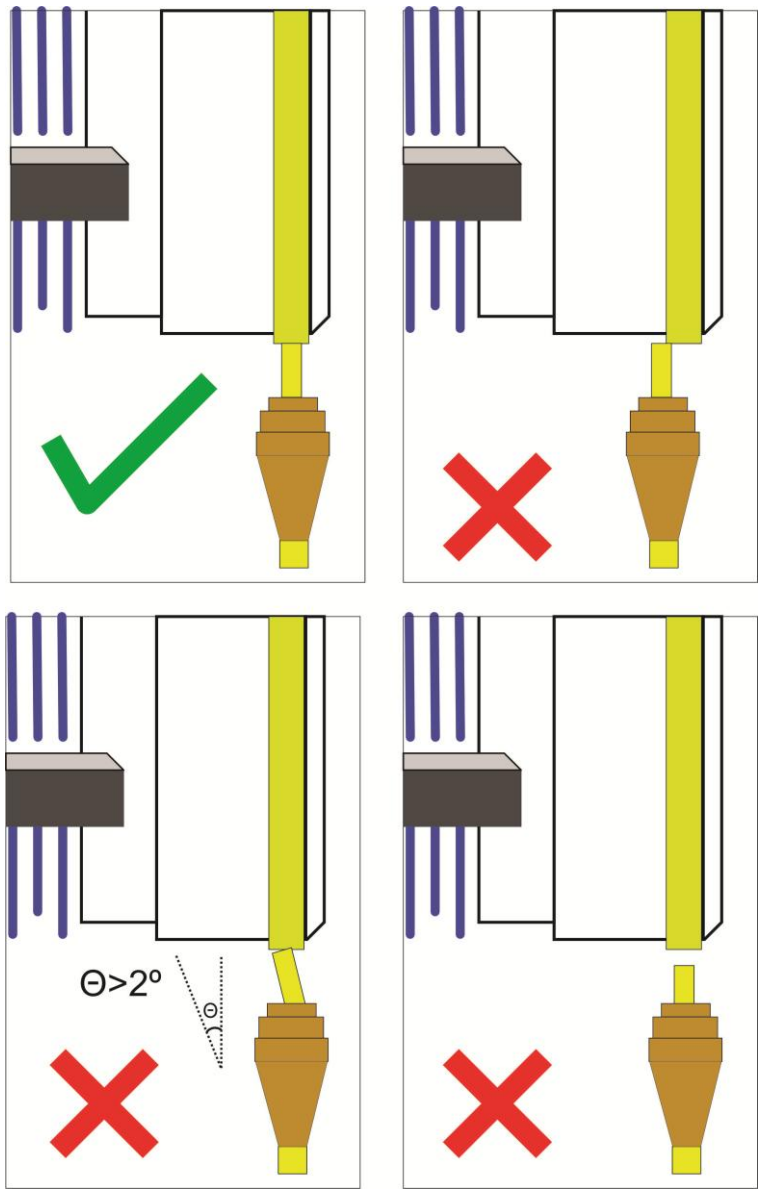


Figure 5

5 Maintenance:

Maintenance Task	Interval/Timing
Clearance Gap Inspection	Every **200 hours of operation**
Brush Inspection	Every **100 hours of operation**
Brush Replacement	Every **1,800 hours of operation**
Friction pads replacement	Once the maximum clearance gap has reached

Locate the slip ring and thoroughly inspect it. Ensure it is clean and free from any dirt, dust, oil, grease, rust, or deep dents and scratches (Figure 6). If necessary, clean the slip ring using a lint-free cloth and a suitable cleaning agent. Avoid using abrasive materials that could damage the surface. A clean and smooth slip ring is essential for optimal performance.

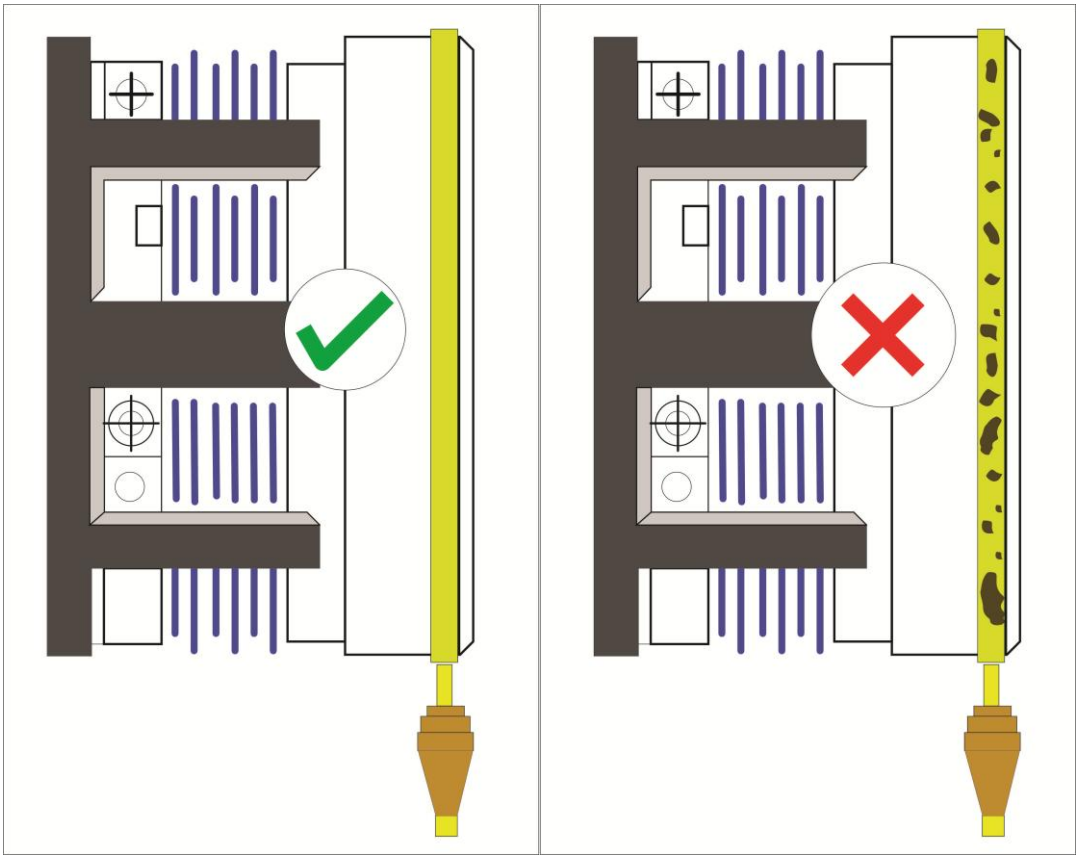


Figure 6

6 Wiring

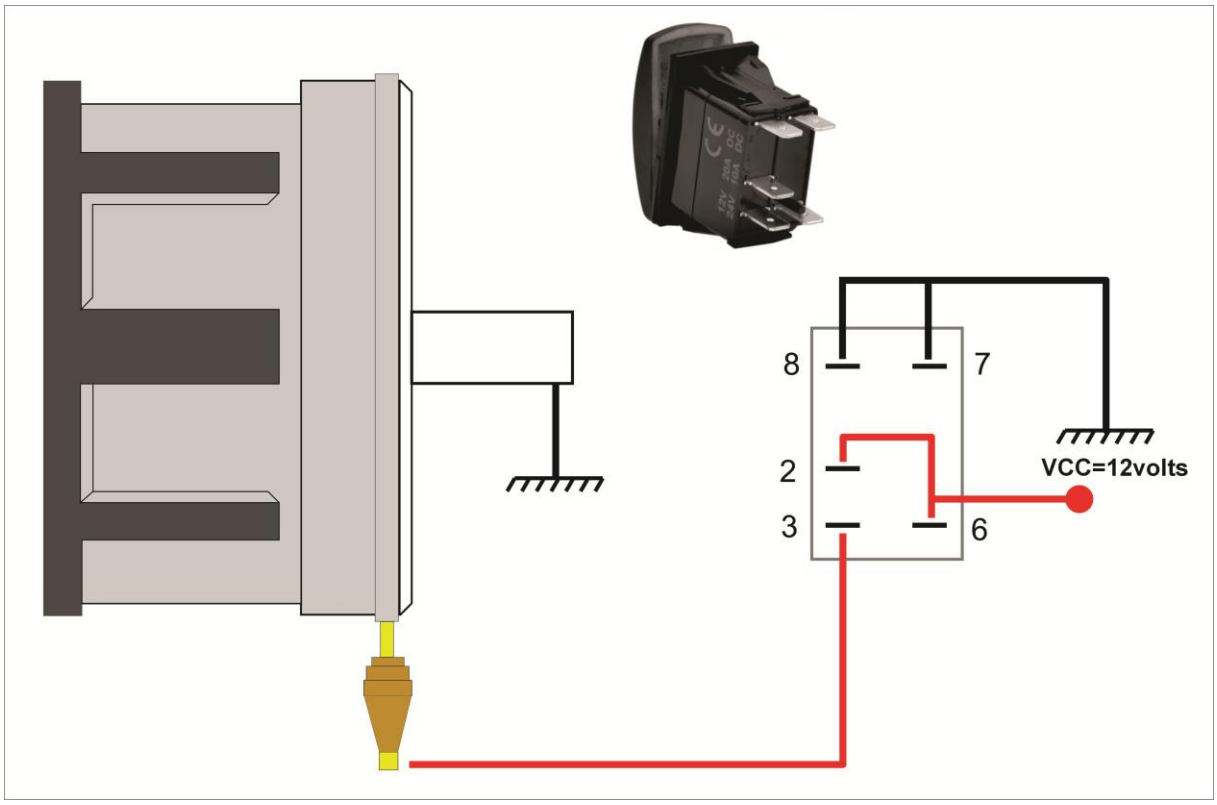


Figure 7

7 Diagnose

None of these provided diagnostic procedures should be performed while the PTO is engaged, except when specifically carried out by authorized personnel. Always prioritize safety and follow proper protocols during maintenance and diagnostics.

Issue	Possible Causes	Solution/Explanation
1. The clutch won't engage (with click sound)	Insufficient clearance gap	Increase the clearance gap as instructed to provide more engagement.
	Incorrect voltage or current	While stationary and in the engaged state, check the voltage to be **12 volts** and current to be around **5 amps**.
2. The clutch won't engage (without click sound)	Power source issue	Check the supplied voltage to the clutch system, ensuring it is around **12 volts**.
	Poor brush connection to slip ring	Inspect the connection of the brush to the slip ring.
3. The clutch is always engaged, regardless of its state*	Incorrect clearance gap	Measure and reduce the clearance gap if necessary.
	Misalignment of input/output shafts	Check the axial alignment of the input/output shafts of the clutch system.
4. The clutch won't deliver the full input torque	Incorrect voltage or current	While stationary and in the engaged state, check the voltage to be 12 volts and current to be around **5 amps.**
	Poor contact between brush and slip ring	Inspect the slip ring for a clean and even connection surface.
	Uneven brush wear	Inspect the brush tip to ensure it's evenly worn out.
	Incorrect clearance gap	Adjust the clearance gap as instructed.
5. Excessive wear on friction pads	High engage/disengage frequency	Examine the engage/disengage frequency and adjust the operational pattern.
	Excessive slippage due to incorrect clearance gap	Ensure the clearance gap is correctly set to prevent extra slippage of the friction pads.
6. Excessive wear on brush	Incorrect preload on the brush	Adjust the brush for a suitable pre-load range of **2-3 mm.**
	Damaged slip ring surface	Ensure the slip ring does not have dents or scratches.
7. The clutch barely clicks when engage/disengage	Too much clearance gap	Adjust the air gap to the correct range.
8. The sweep auger takes too long to fully stop	rotational inertia of the sweep auger	This is normal due to the rotational mass of the sweep auger. When unloaded with grain, the sweep auger may take up to 50 seconds to fully stop after the clutch is disengaged.

*When the clutch is in the disengaged state, a small portion of power may still be transferred to the sweep auger. This is expected behaviour when the bin is unloaded, or the grain doors are closed. The sweep auger may rotate at up to 3% of the input speed in these conditions, as it is not loaded with grain. This minor rotation does not indicate a malfunction.