

Warner Electric Commercial MagStop Clutch/Brake Electrical Evaluation

Step 1 How to Measure Clutch Coil resistance

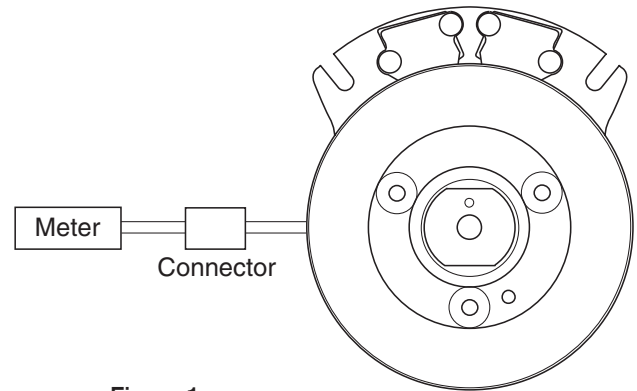
(Figure 1)

1. Turn engine and PTO switch off.
2. Disconnect clutch at clutch connector.
3. Select meter setting for ohm reading.
4. Connect meter leads to clutch.
5. Check meter reading and refer to the chart below for correct clutch resistance reading. (values are @68° F)
 If reading falls in acceptable range proceed to step 2, if not replace clutch.

Table

Model	Torque		Resistance (ohms)
	(ft-lb) Nom.	Nm	
CMS-175	175	237	2.45 - 2.71
CMS-200	200	271	1.74 - 1.93

Note: If bench tested with 12 volts applied, armature may not pull away from brakepoles. Rotational motion is required to engage clutch

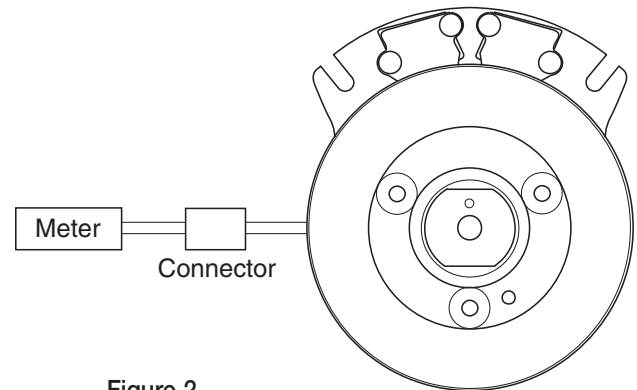


**Figure 1
 Resistance Measurement**

Step 2 Measure the supply voltage at the clutch

(Figure 2)

1. Turn engine off.
2. Connect meter leads at the clutch connector.
3. Select meter setting for voltage reading.
4. Make sure wires will not become entangled in rotating components of clutch.
5. Start engine and engage PTO switch.
6. Measure voltage across the leads at the connectors.
7. Voltage should be 12-14 volts DC. If clutch still fails to operate, replace the clutch.
8. If voltage is not within 12-14 volt range consult OEM's service manual.



**Figure 2
 Voltage Measurement**

Installation and operating notes.

Clutch mounting bolt torque is critical. Failure to torque mounting bolt to prescribed values will lead to premature failure of the clutch.

Grade 5 Mounting Bolt

Thread Size	Torque Required	N-m
3/8-24" UNF*	40-45 lb.ft.	54-61
7/16-20" UNF**	50-55 lb.ft.	67-75
M 10 X 1.50	55-60 N-m	55-60

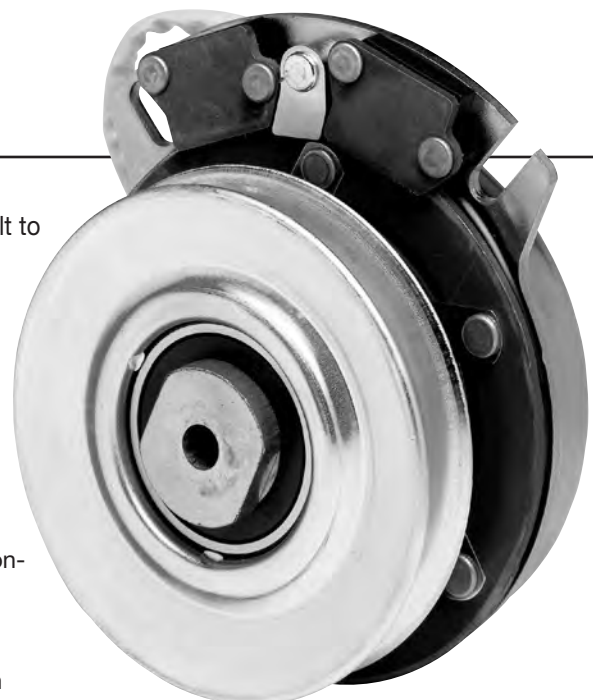
* 3/8 -24 UNF Grade 5 bolt is unacceptable

** 7/16-20 UNF Grade 5 or 8 bolt is acceptable

Note: All values are for dry (unlubricated) plated bolts, please consult fastener manufacturer if any type of locking element (thread lock compound, patch etc.) is to be used.

⚠ WARNING Failure to torque bolt to requirements will degrade clamping and can allow the clutch to separate from the shaft, causing risk of personal injury.

Engage deck at less than full engine RPM to increase clutch life. Once clutch is engaged engine RPM can be increased to full RPM.



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Warner Electric Commercial MagStop Clutch/Brake Troubleshooting Checklist

A. Symptom: Clutch will not engage

Problem	Possible Causes	Solution
- Blown fuse	- Low coil resistance - Defective battery - Faulty charging system - Bad wiring or connections, PTO switch	- Replace with new MagStop unit - Replace - Repair or replace - Repair or replace
- Low voltage supply (Less than 12 VDC at clutch)	- Defective battery - Faulty charging system - Bad wiring or connectors, PTO switch	- Replace - Repair or replace - Repair or replace
- Incorrect coil resistance (see Step 1)	- Damaged coil	- Replace with new MagStop unit
- Inadequate current supply	- Broken clutch lead wire - Faulty electrical system	- Repair - Measure clutch coil resistance and supply voltage at the clutch. If both are correct, electrical system is faulty. Repair or replace.
- Rotor/armature airgap too large (greater than .125 inch/3.18 mm)	- Rotor/armature wear. End of usable life	- Replace with new MagStop unit

B. Brake will not engage

Problem	Possible Causes	Solution
- Armature/brake poles wore out	- End of usable life	- Replace with new MagStop unit
- Contaminated friction surfaces	- Engine oil leak on brake	- Repair leak - Replace with new MagStop unit

C. Clutch slip

Problem	Possible Causes	Solution
- Low voltage supply (less than 12 VDC at clutch)	- Defective battery - Faulty charging system - Bad wiring or connectors, PTO switch	- Replace - Repair or replace - Repair
- Inadequate current supply	- Broken clutch lead wire - Faulty electrical system	- Repair - Measure clutch coil resistance and supply voltage at the clutch. If both are correct, electrical system is faulty. Repair or replace.
- Overloaded clutch	- Clogged deck, bad spindle, etc.	- Remove excess grass - Replace spindle
- Contaminated friction surfaces	- Engine oil leak on clutch	- Repair leak - Replace with new MagStop unit

D. Symptom: Noisy clutch/Vibration

Problem	Possible Causes	Solution
- Failed bearing	- Loose mounting (bolt not torqued properly) - Field assembly movement restricted	- Replace, torque to spec. - Confirm proper Anti-rotation
- Adapter plate rattles against anti-rotation pin	- Some noise is normal	- If noise is excessive, repair or pin replace anti-rotation device. (Follow OEM's Specifications.
- Clutch loose on shaft	- Loose mounting (bolt not torqued properly) - Mounting bolt too long and bottoms in engine shaft before clamping clutch - Mounting washer too thin and deforms when bolt is tightened. - Shaft bottomed on D-drive	- Tighten mounting bolt to specification. - Use correct length bolt - Use proper spacer 1/4" thick min.
- Clutch not mounted square	- Ground Drive Spacer mounting shoulder not square - Clutch integral key hitting end of keyway in engine shaft - Incorrect or no chamfer on ground drive spacer.	- Replace - Space clutch away from radius in shaft keyway. - Increase chamfer on ground drive spacer.
- Broken spring	- Loose mounting	- Replace clutch

⚠ WARNING A clutch with broken rivets or springs may separate from the shaft and cause personal injury.