

MAGNETO SYSTEM

SERVICE TOOLS

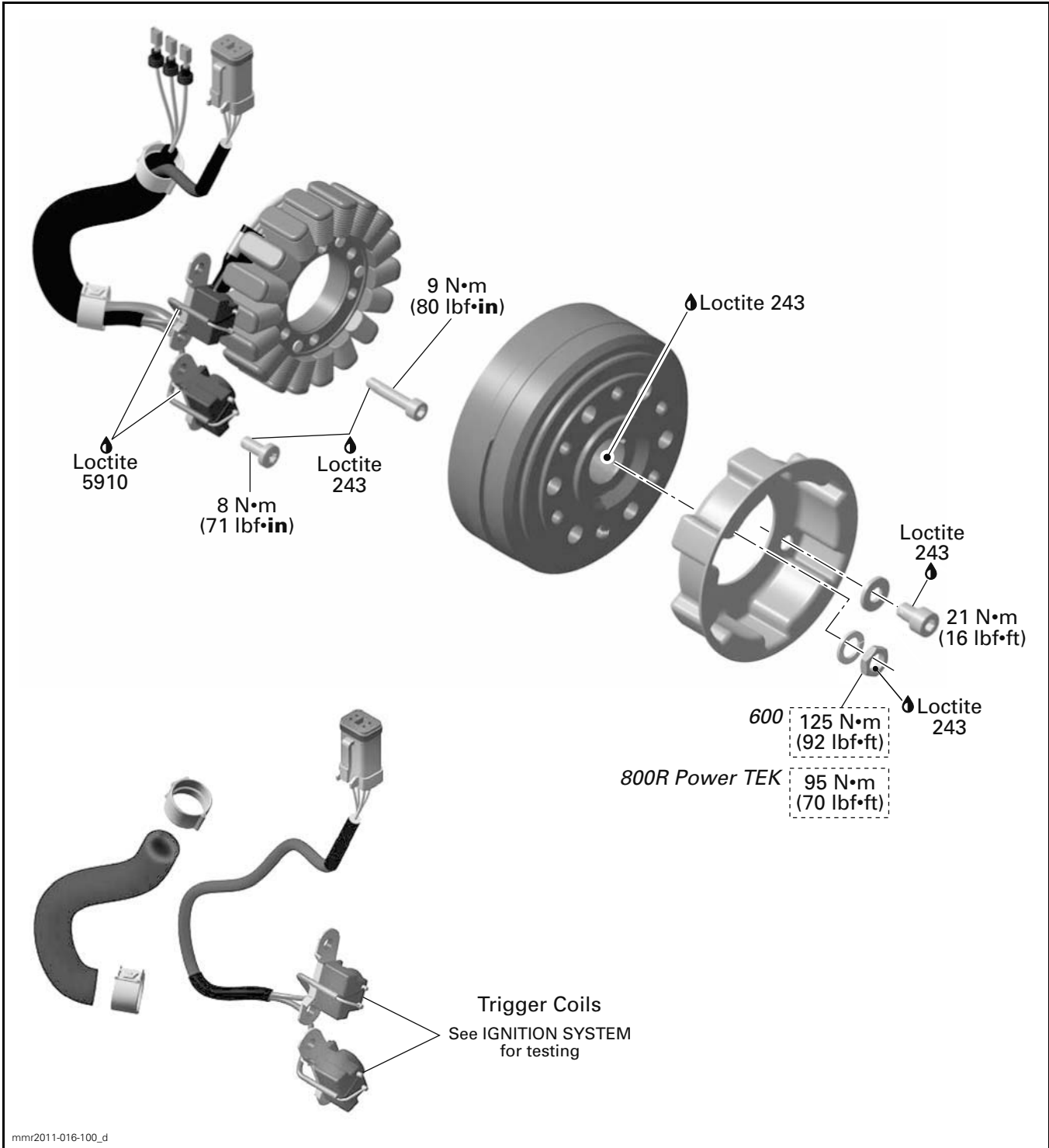
Description	Part Number	Page
CRANKSHAFT PROTECTOR (MAG).....	420 876 557	129
FLUKE 115 MULTIMETER	529 035 868 130–131, 133–134	
MAGNETO PULLER RING	420 876 081	128
MAGNETO PULLER	529 035 547	129

SERVICE PRODUCTS

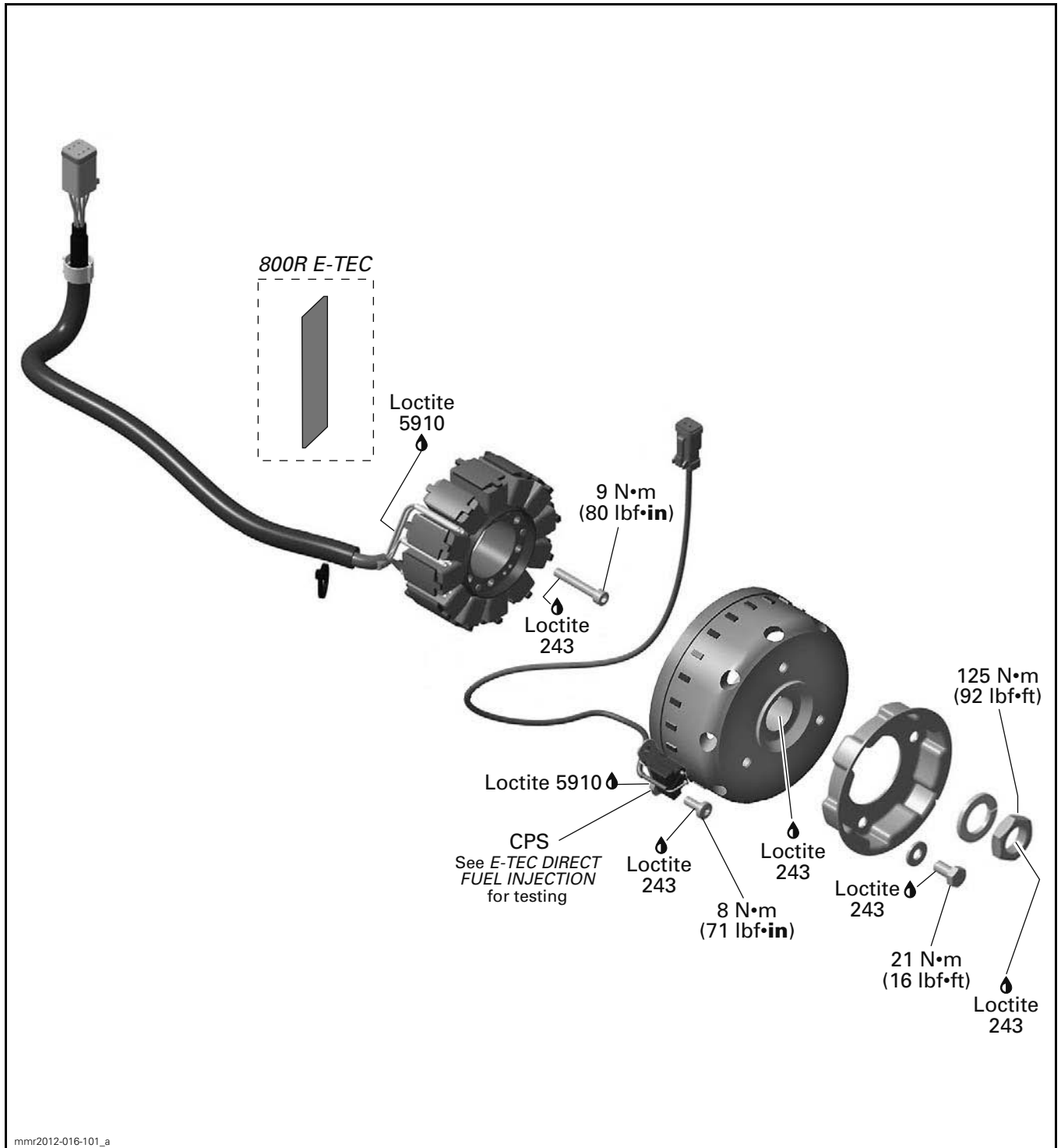
Description	Part Number	Page
LOCTITE 243 (BLUE).....	293 800 060 130, 132, 135–136, 138	
LOCTITE 5910	293 800 081 135–137	

Section 02 ENGINE
Subsection 09 (MAGNETO SYSTEM)

600 and 800R Power TEK



600 HO E-TEC and 800R E-TEC



Section 02 ENGINE

Subsection 09 (MAGNETO SYSTEM)

GENERAL

NOTE: The following procedures can be carried out without removing the engine.

During assembly/installation, use the torque values and service products as shown in the exploded views.

Clean threads before applying a threadlocker. Refer to the *SELF-LOCKING FASTENERS* and *LOC-TITE APPLICATION* sections at the beginning of this manual for complete procedure.

WARNING

Torque wrench tightening specifications must be strictly adhered to.

Locking devices must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, etc.).

PROCEDURES

MAGNETO FLYWHEEL

Magneto Flywheel Access

1. Remove RH side panel.
2. Remove muffler, refer to *EXHAUST SYSTEM* subsection.
3. Remove acoustic panel.

Magneto Flywheel Removal

1. Remove rewind starter assembly (or magneto cover for electric start models).

600 and 600 HO E-TEC Models

2. Remove rewind starter connecting flange. Refer to *REWIND STARTER* subsection.

All Models

3. Hold magneto flywheel with a socket then remove starting pulley retaining screws.

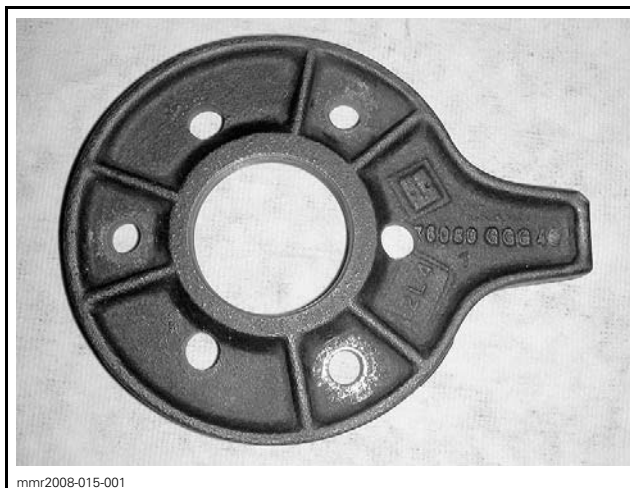


TYPICAL - STARTING PULLEY (800R E-TEC ILLUSTRATED)



TYPICAL - STARTING PULLEY SCREWS REMOVAL

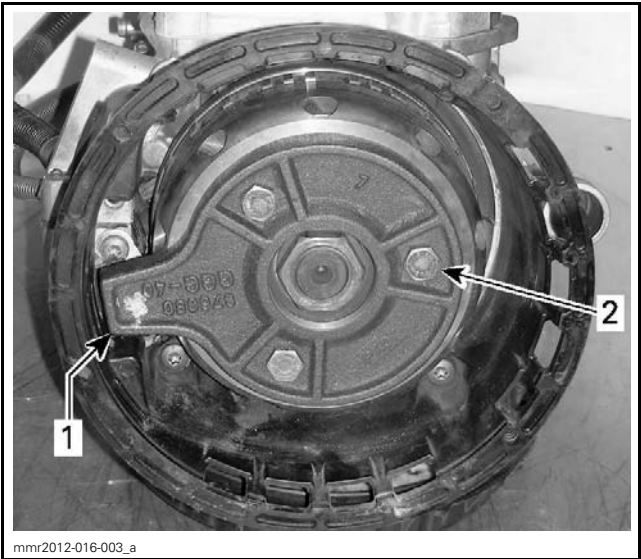
4. Install the MAGNETO PULLER RING (P/N 420 876 081) on magneto flywheel.



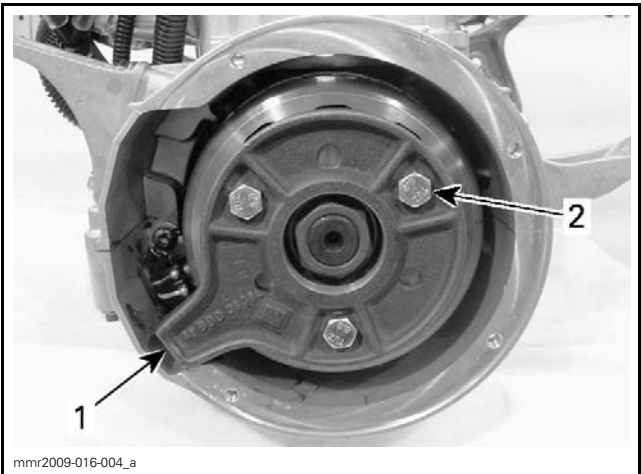
MAGNETO PULLER RING (P/N 420 876 081)

NOTICE Use only the following screw lengths to fasten puller ring to magneto flywheel. If other screw lengths are used, the stator behind the magneto flywheel may be damaged.

ENGINE	SCREW LENGTH
600, 800R Power TEK	M8 x 20 mm
600 HO E-TEC, 800R E-TEC	M8 x 25 mm



TYPICAL - 800R ENGINES
1. Tab in magneto housing opening
2. M8 screws of appropriate length (x3)

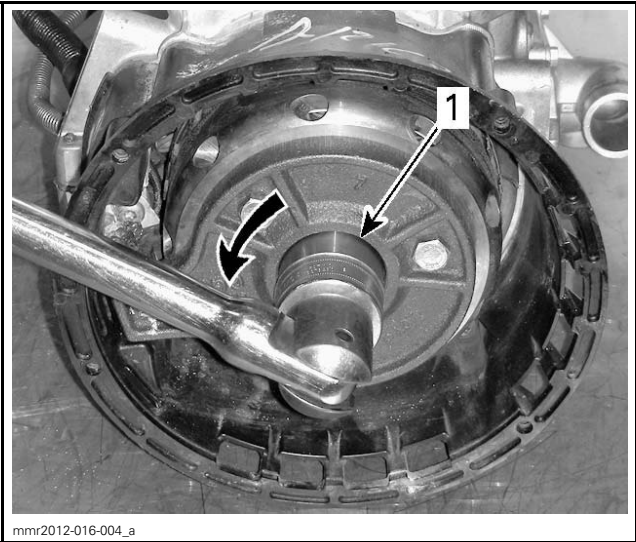


TYPICAL 600 AND 600 HO E-TEC
1. Tab in magneto housing opening
2. M8 screws of appropriate length

5. Remove magneto flywheel retaining nut, using an appropriate socket.

MAGNETO FLYWHEEL REMOVAL

30 mm socket with the outside diameter machined to 40 mm (1.575 in)



TYPICAL
1. Machined 30 mm socket

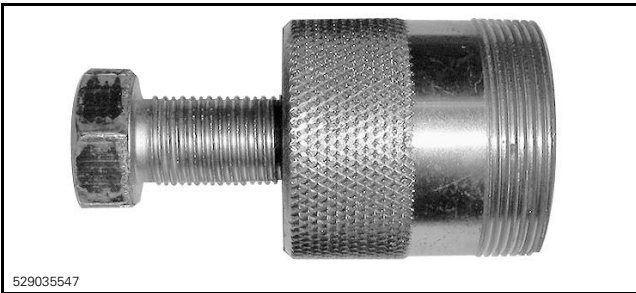
NOTE: To correctly remove a fastener with threadlocker, first tap on the fastener to break threadlocker bond. This will prevent the thread from breaking.

6. Install the CRANKSHAFT PROTECTOR (MAG) (P/N 420 876 557) on crankshaft end.



NOTE: Apply a small amount of grease on the end of the crankshaft to hold crankshaft protector in place.

7. Install the MAGNETO PULLER (P/N 529 035 547) into the magneto puller ring.



Section 02 ENGINE

Subsection 09 (MAGNETO SYSTEM)

8. Tighten puller bolt, while tapping on puller bolt head with a hammer to release magneto flywheel from crankshaft.



TYPICAL

Magneto Flywheel Cleaning

NOTICE Clean magneto flywheel using only a clean cloth.

Magneto Flywheel Inspection

Inspect magneto flywheel for abnormal coloration (brown or blue) that would indicate overheating condition.

If overheating condition is suspected, carry out the following:

- Check flywheel magnetic field using a piece of metal. If magnetic field is not felt or weak, replace flywheel.
- Inspect flywheel for cracks, pay particular attention to the inside circumference (magnets), and the tapered center portion.
- Check if magneto housing ventilation holes are clean.
- Check stator for signs of overheating.
- Test stator, see procedures further in this subsection.

Magneto Flywheel Installation

1. Clean crankshaft extension (taper) and apply LOCTITE 243 (BLUE) (P/N 293 800 060) on tapered surface.
2. Position Woodruff key, magneto flywheel and lock washer on crankshaft.
3. Clean threads in magneto flywheel nut and apply LOCTITE 243 (BLUE) (P/N 293 800 060).

4. Install nut on crankshaft and tighten to specification.

ENGINE	TIGHTENING TORQUE
600, 600 HO E-TEC, 800R E-TEC	125 N•m (92 lbf•ft)
800R Power TEK	95 N•m (70 lbf•ft)

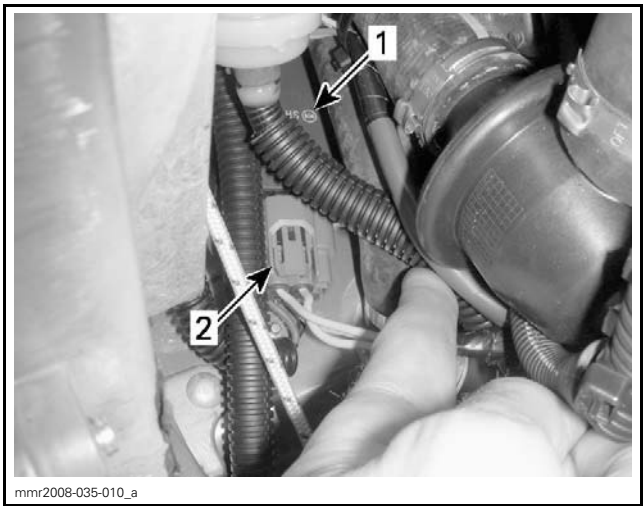
NOTICE Do not apply silicone dielectric grease or any other product on Deutsch waterproof housings as housing seal may be damaged.

STATOR (600 AND 800R Power TEK)

Stator Connector Access

Remove the following components to access to stator connector:

- RH side panel
- Muffler
- Acoustic panel.



TYPICAL

1. Voltage regulator
2. Stator connector

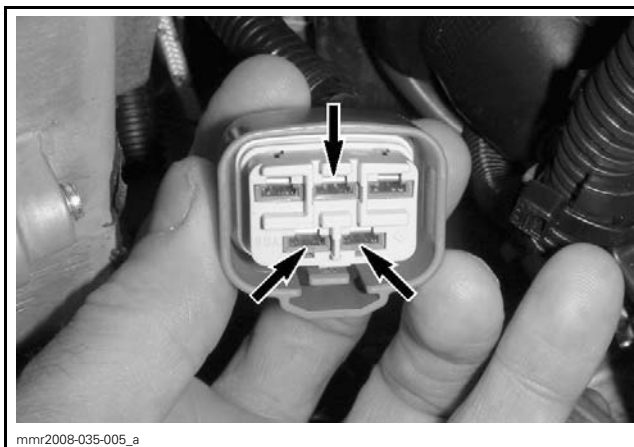
Stator Continuity Test

1. Disconnect stator connector from voltage regulator.
2. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω .



3. Read resistance as follows.

STATOR CONTINUITY TEST		
TEST PROBES		RESISTANCE @ 20°C (68°F)
Any YELLOW wire	To another YELLOW wire	0 - 0.5 Ω



VOLTAGE REGULATOR CONNECTOR, YELLOW WIRES

4. Repeat test for every pair of YELLOW wires.
5. If resistance is out of specification, replace stator.

Stator Insulation Test

1. Disconnect stator connector from voltage regulator.
2. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω.



3. Read resistance as follows.

STATOR INSULATION TEST		
TEST PROBES		RESISTANCE @ 20°C (68°F)
Any YELLOW wire	Engine ground	OL (open circuit)

If results are out of specification, the stator and/or the wiring need to be repaired/replaced.

Stator AC Voltage Output Test

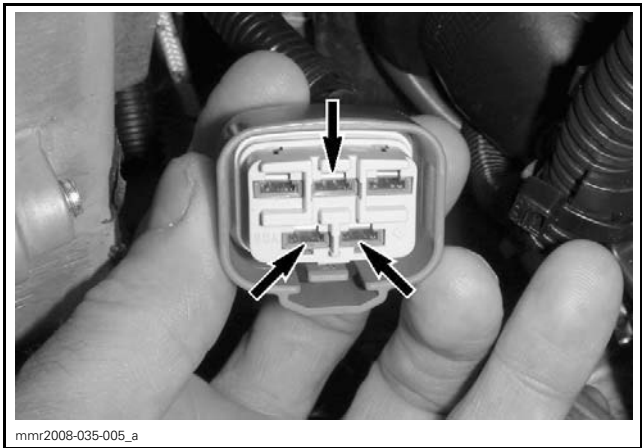
1. Disconnect stator connector from voltage regulator.
2. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Vac scale.



3. Manually crank engine and read voltage as follows.
4. Repeat the test 3 times for each pair of YELLOW wires.

STATOR AC VOLTAGE OUTPUT TEST		
TEST PROBES		VOLTAGE
Any YELLOW wire	Any other YELLOW wire	3.5 - 7.5 Vac

Section 02 ENGINE
Subsection 09 (MAGNETO SYSTEM)



VOLTAGE REGULATOR CONNECTOR, YELLOW WIRES

5. If voltage is lower than specification, replace stator.

Stator Removal

- 1. Remove magneto flywheel. Refer to *MAGNETO FLYWHEEL REMOVAL* in this subsection.
- 2. Remove screws retaining stator to magneto housing.
- 3. Disconnect voltage regulator connector.
- 4. Remove the three yellow stator wires from voltage regulator connector using the appropriate contact removal tool.
- 5. Tie a string of adequate length to the stator wires and secure loose end so that it cannot be pulled through harness and grommet.
- 6. Cut locking tie securing wires at grommet near crankcase opening.
- 7. Carefully pull wires through crankcase opening as you remove stator.

NOTE: It may be necessary to lift the engine for greater access to the magneto harness. If so, refer to *ENGINE REMOVAL AND INSTALLATION*.

- 8. Untie the string from stator wires, it will be used to pull wires back through the grommet on installation.

Stator Cleaning

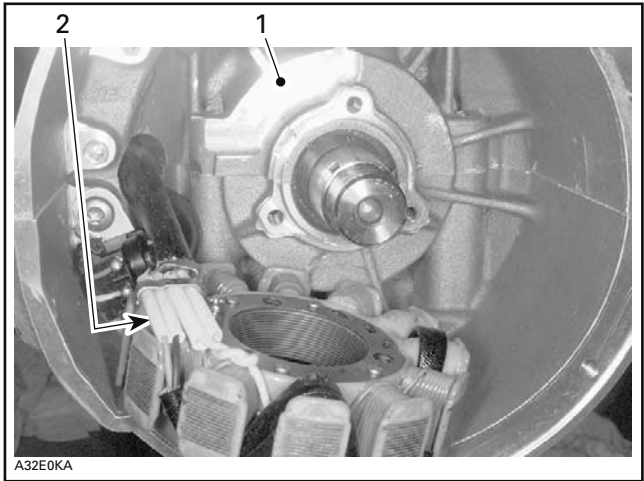
NOTICE Clean stator using only a clean cloth.

Stator Installation

- 1. Insert stator wires through crankcase grommet and pull them up to voltage regulator connector.

NOTE: Use a string and a piece of tape to secure the ends of wires. It will ease pulling them through crankcase, grommet and flexible conduit.

- 2. Position stator so that its wire protectors are positioned over the recessed area in the crankcase.



- 1. Crankcase recessed area
- 2. Wire protectors

NOTE: During installation, ensure stator harness is located on the left side.

- 3. Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads of stator screws then tighten them to specification.

STATOR RETAINING SCREWS TORQUE
9 N•m (80 lbf•in)

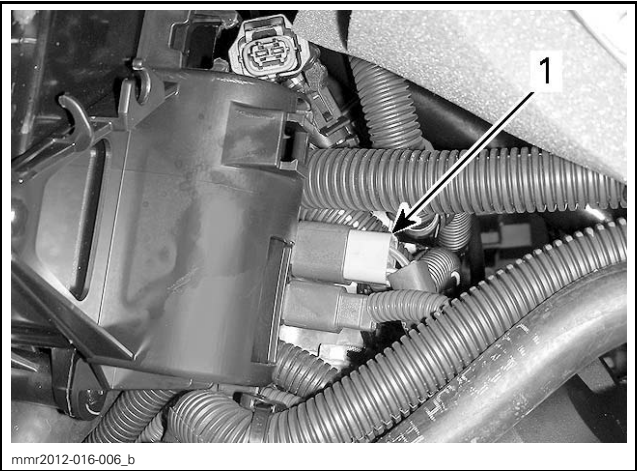
- 4. Install a new locking tie near crankcase grommet as prior to stator removal.
- 5. Insert yellow stator wires into voltage regulator connector.
- 6. Pull on wires with enough force to ensure they are properly locked in.
- 7. Reinstall all other removed parts.

STATOR (600 HO E-TEC AND 800R E-TEC)

Stator Connector Access

Remove the following components to access to stator connector:

- LH side panel
- Tool kit
- Drive belt guard.



TYPICAL - RH SIDE VIEW
1. Stator connector

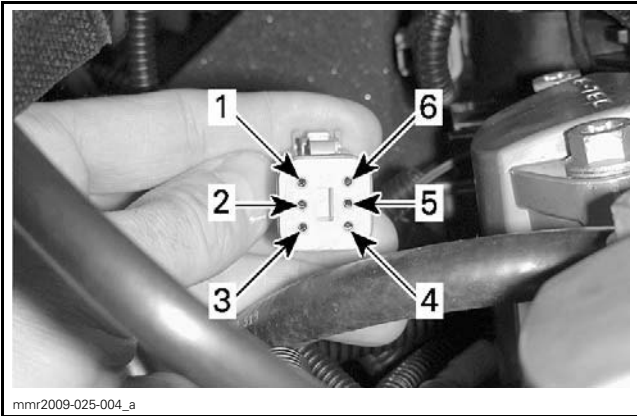
Stator Continuity Test

- 1. Disconnect stator connector.
- 2. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω .



- 3. Measure resistance of each stator coil as follows.

STATOR CONTINUITY TEST		
TEST PROBES		RESISTANCE @ 20°C (68°F)
Pin 1	Pin 6	0.63 ± 0.03 Ω
Pin 2	Pin 5	
Pin 3	Pin 4	



STATOR CONNECTOR PIN-OUT

NOTE: The stator resistance values mentioned in the table are manufacturers specifications under ideal conditions. If stator coil resistance is less than 1 Ω , consider stator to be in good working condition.

If resistance is out of specification, replace stator.

Stator Insulation Test

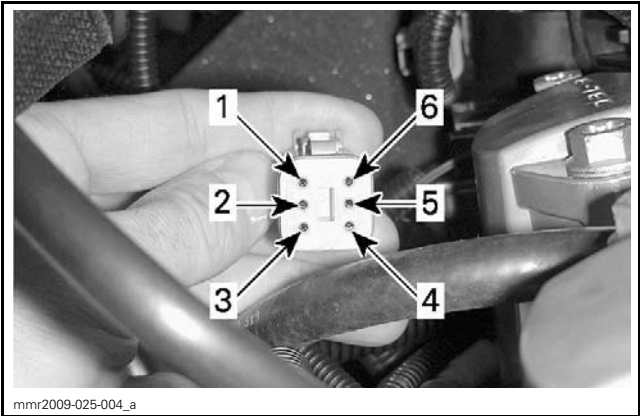
- 1. Disconnect stator connector.
- 2. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω .



- 3. Measure resistance as follows.

STATOR INSULATION TEST		
TEST PROBES		RESISTANCE @ 20°C (68°F)
Pin 1	Engine ground	OL (open circuit)
Pin 2		
Pin 3		
Pin 1	Pin 4	
Pin 1	Pin 5	
Pin 2	Pin 4	

Section 02 ENGINE
Subsection 09 (MAGNETO SYSTEM)



STATOR CONNECTOR PIN-OUT

If results are out of specification, the stator and/or the wiring need to be repaired/replaced.

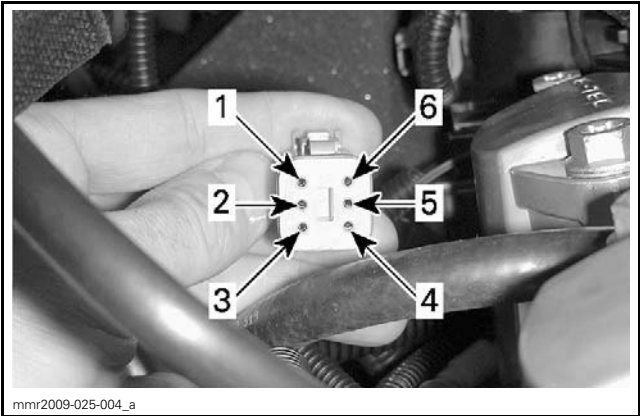
Stator Voltage Output Test

- 1. Disconnect stator connector.
- 2. Set FLUKE 115 MULTIMETER (P/N 529 035 868) to Vac and manually set a scale capable of reading at least 20 Vac.



- 3. Manually crank engine and read voltage from each winding as follows.
- 4. Repeat the test 3 times for each winding.

Table with 3 columns: TEST PROBES, VOLTAGE. It lists pin pairings (1-6, 2-5, 3-4) and specifies a voltage of approximately 15 - 20 Vac.



STATOR CONNECTOR PIN-OUT

- 5. If voltage is lower than specification, remove and inspect magneto flywheel and stator. Refer to MAGNETO FLYWHEEL in this subsection.
- 6. Replace magneto flywheel and/or stator if applicable.

Stator Removal

- 1. Lift engine for access to stator harness. Refer to ENGINE REMOVAL AND INSTALLATION (E-TEC) subsection.
- 2. Remove MAGNETO FLYWHEEL, see procedure in this section.
- 3. Remove Allen socket screws retaining stator to magneto housing.
- 4. Remove grommet from crankcase where CPS sensor and stator wires exit magneto housing.
- 5. Disconnect crankshaft position sensor (CPS) connector, see procedure in this section.
- 6. Disconnect stator connector located on the capacitor support.



TYPICAL - RH SIDE VIEW
1. Stator connector

NOTE: To ease harness routing at installation, tie a string on each connector and let the strings follow through as you pull on the harnesses. Pass the CPS sensor connector through the grommet first.

7. Remove stator and carefully pull wires through the grommet.

NOTE: It will be necessary to break the silicone sealant behind the left side of the stator. Proceed carefully to avoid wire damage.

Stator Cleaning

NOTICE Clean stator using only a clean cloth.

Stator Inspection

Refer to *MAGNETO FLYWHEEL INSPECTION* in this subsection.

Stator Installation

800R E-TEC Only

1. Install adhesive pad on crankcase as illustrated.

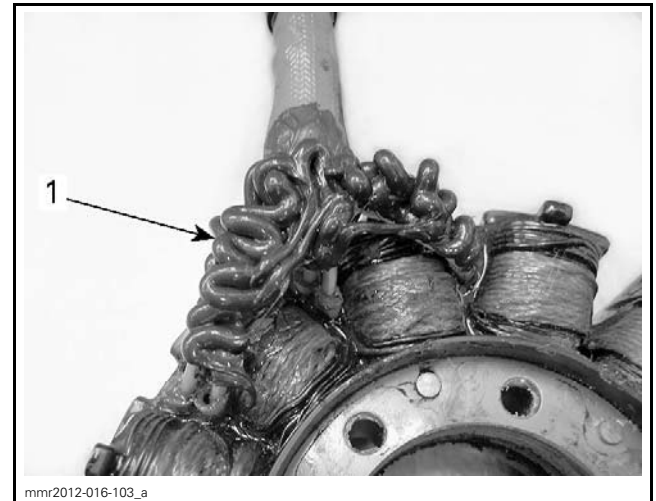


1. Adhesive pad to install

All Models

NOTE: It is important to remove the old sealant behind the LH side of the stator then apply new sealant specified on stator wires.

SERVICE PRODUCT	
Stator wires	LOCTITE 5910 (P/N 293 800 081)



1. New sealant LOCTITE 5910 (P/N 293 800 081)

2. Insert stator connector through the crankcase and grommet, followed by the CPS sensor connector.

3. Install grommet on crankcase.

NOTE: During installation, ensure stator harness is located on the left side.

4. Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads of stator screws then tighten them to specification.

TIGHTENING TORQUE	
Stator retaining screws	9 N•m (80 lbf•in)

5. Tie the strings on the connectors used during removal of the stator and CPS sensor connectors, then pull on them to route the harnesses up to their original locations.

6. Reinstall all other removed parts.

CRANKSHAFT POSITION SENSOR (600 HO E-TEC AND 800R E-TEC)

CPS Sensor Test

Refer to *E-TEC DIRECT INJECTION* subsection.

CPS Sensor Removal

CAUTION Ensure tether cord is removed from D.E.S.S. post and engine shut-off switch is in the OFF position.

1. Remove magneto flywheel, refer to *MAGNETO FLYWHEEL REMOVAL* in this subsection.

2. Remove CPS sensor retaining screws.

Section 02 ENGINE

Subsection 09 (MAGNETO SYSTEM)

- 3. Remove grommet from crankcase where CPS sensor harness exits magneto housing.
- 4. Disconnect CPS sensor connector located on the capacitor support.



TYPICAL - RH SIDE VIEW

1. CPS sensor connector

NOTE: To ease harness routing at installation, tie a string to the CPS sensor connector and guide it through as you pull on the CPS sensor harness.

5. Remove CPS sensor and carefully pull harness through from crankcase.

CPS sensor Installation

The installation is the reverse of the removal procedure, however pay attention to the following.

Tie the rope used during removal on the CPS sensor connector, then pull on it to route the harness to its original location.

Apply threadlocker on CPS sensor screws.

SERVICE PRODUCT	
CPS sensor retaining screws	LOCTITE 243 (BLUE) (P/N 293 800 060)

Tighten CPS sensor screws to specification.

TIGHTENING TORQUE	
CPS sensor retaining screws	7 N•m (62 lbf•in)

NOTE: It is important to remove the old silicon at CPS sensor location then apply new silicon. Screw CPS sensor then stick the CPS sensor harness using LOCTITE 5910 (P/N 293 800 081).

TRIGGER COILS (600)

Trigger Coil Test

For trigger coil testing, refer to the *IGNITION SYSTEM* subsection.

Trigger Coil Removal

⚠ CAUTION Ensure tether cord is removed from D.E.S.S. post and engine shut-off switch is in the OFF position.

- 1. Remove magneto flywheel, refer to *MAGNETO FLYWHEEL REMOVAL* in this subsection.
- NOTE:** The trigger coil connector is located behind the oil filter (below oil reservoir).
- 2. Remove grommet from crankcase where trigger coil wire(s) exit(s) magneto housing.
 - 3. Remove trigger coil retaining screws.
 - 4. Remove trigger coil and carefully pull wires through crankcase.

Trigger Coil Installation

The installation is the reverse of the removal procedure, however pay attention to the following.

Apply threadlocker on trigger coil screws.

SERVICE PRODUCT	
Trigger coil retaining screws	LOCTITE 243 (BLUE) (P/N 293 800 060)

Tighten trigger coil screws to specification.

TIGHTENING TORQUE	
Trigger coil retaining screws	7 N•m (62 lbf•in)

NOTE: It is important to remove the old silicon at trigger coil location then apply new silicon. Screw trigger coil then stick the trigger coil wires using LOCTITE 5910 (P/N 293 800 081).

TRIGGER COILS (800R POWER TEK)

Trigger Coil Test

For trigger coil testing, refer to the *IGNITION SYSTEM* subsection.

Trigger Coil Removal

Remove magneto housing. See procedure in this subsection.

Separate trigger coils from silicone sealer on magneto housing.

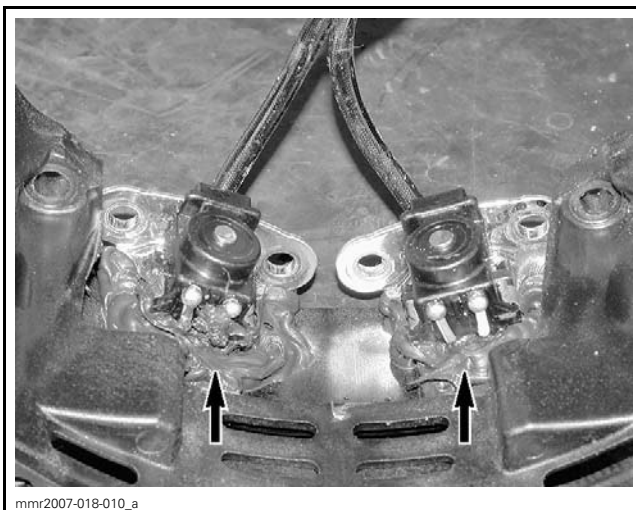


TRIGGER COILS SEALED TO MAGNETO HOUSING WITH SILICONE

Trigger Coil Installation

Apply new silicone sealer LOCTITE 5910 (P/N 293 800 081) between trigger coils and magneto housing prior to removal.

Stick trigger coil wires in the silicone.



NEW SILICONE SEALER APPLICATION

Install magneto housing. See procedure in this subsection.

MAGNETO HOUSING (800R POWER TEK AND 800R E-TEC)

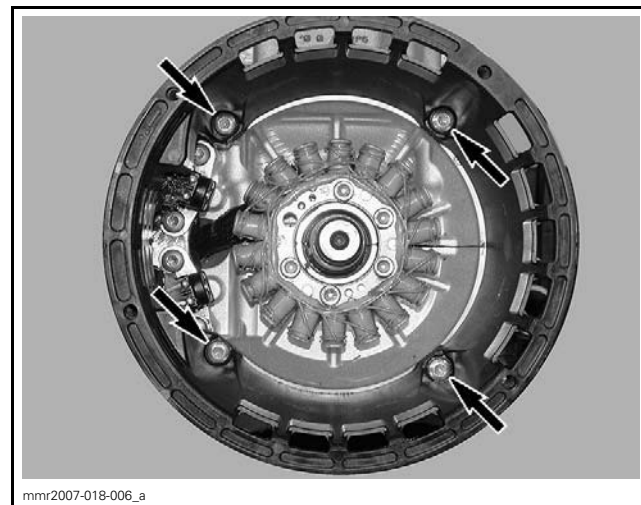
Magneto Housing Inspection

Inspect housing for cracks or other apparent damage. Replace if necessary.

Magneto Housing Removal

CAUTION Ensure tether cord is removed from D.E.S.S. post and engine shut-off switch is in the OFF position.

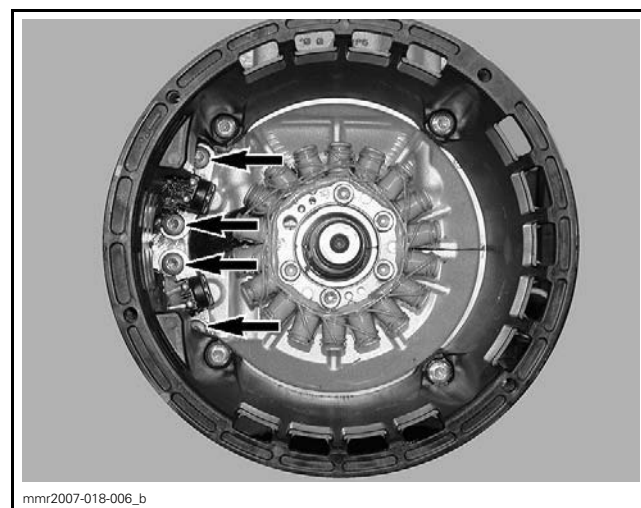
1. Remove magneto flywheel, refer to *MAGNETO FLYWHEEL REMOVAL* in this subsection.
2. Remove magneto housing retaining screws.



MAGNETO HOUSING RETAINING SCREWS

800R Power TEK Model

3. Remove trigger coil retaining screws.



TRIGGER COIL RETAINING SCREWS

800R E-TEC Models

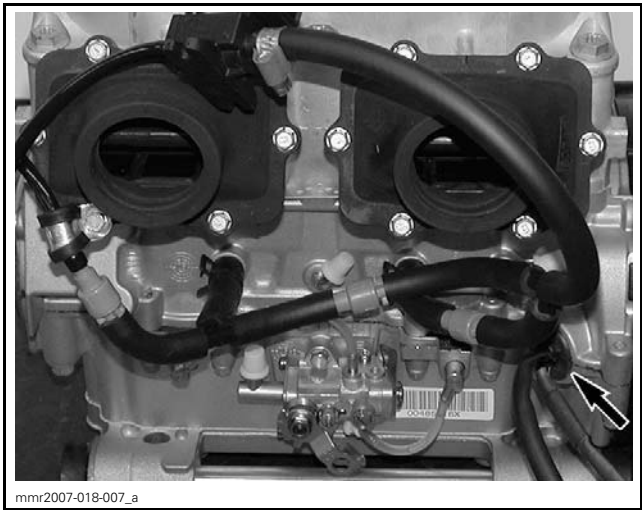
4. Remove CPS retaining screws.

All Models

5. Remove magneto harness grommet from crankcase.

Section 02 ENGINE

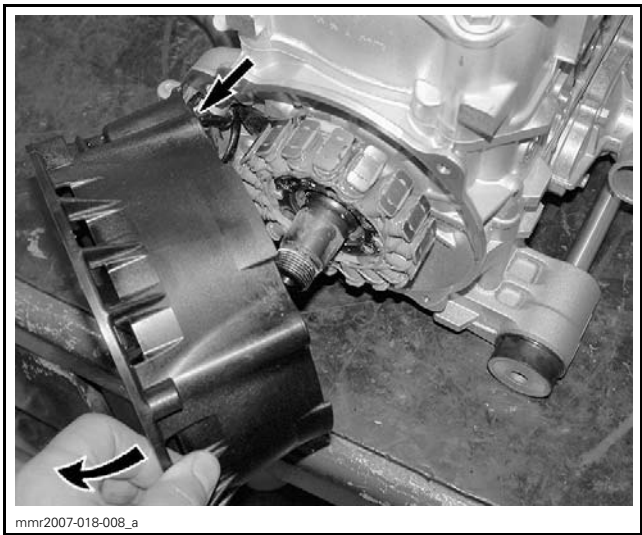
Subsection 09 (MAGNETO SYSTEM)



TYPICAL - GROMMET

800R Power TEK Model

6. Slightly pull magneto housing and cut silicone sealer from between trigger coils and crankcase.



TYPICAL

All Models

7. Remove magneto housing.

Magneto Housing Installation

The installation is the reverse of the removal procedure, however pay attention to the following.

Apply threadlocker on the following screws.

SERVICE PRODUCT	
Trigger coil retaining screws	LOCTITE 243 (BLUE) (P/N 293 800 060)
CPS retaining screws	
Magneto cover (or rewind starter) screws	

Tighten screws to specification.

TIGHTENING TORQUE	
Trigger coil retaining screws	8 N•m (71 lbf•in)
CPS retaining screws	

TIGHTENING TORQUE		
800R Power TEK	Magneto housing screws	9 N•m (80 lbf•in)
800R E-TEC		13 N•m (115 lbf•in)