Welcome to the new ElectroAir Electronic Ignition System (EIS) on Cessna N724TM
N724TM engine magneto system was modified with the specification approved in this Supplemental Type Certificate (STC).

Left Magneto
- Remains a standard mechanical magneto.

Right Magneto
- is modified to an Electronic Ignition System.
This Electronic Ignition System STC Modification Provides Increased Engine Performance

- **Stronger Spark** - Delivers greater energy.
- **Variable Timing** - Variable spark timing improves efficiency over a wider range of operating speeds and conditions.
- **Multi-Strike Start** - High-energy multi-strike start mode helps overcome a variety of start-up challenges.
- **Fewer Moving Parts** - Reduces moving parts – Reduces maintenance.
- **Better Economy/Safety** - Longer spark and variable timing will reduce fuel consumption (10% to 15%).
The EIS STC removed and installed the following engine components.

Right Mechanical Magneto is removed

Installed the Trigger Mechanism (MTH) which directly replaces the right magneto, feeds engine position & RPM information to the Controller.

Installed a MAP Sensor that reads manifold pressure (altitude) and supplies a signal to the controller to advance timing; spark timing will not be advanced above 24” of MAP.

Installed The coils that fire directly into the spark plugs; no distributor involved. The coils fire the plugs on the compression stroke and on the exhaust stroke.
How did the EIS STC Modify the Instrument Panel.

New Electronic Ignition System [EIS] 2 amp circuit breaker switch was installed

New Electronic Ignition System [EIS] 10 amp Coil circuit breaker was installed

To safely check the Electronic Ignition System [EIS] magneto RPM drop the Left and Right ignition positions have been relocated on the ignition switch.
Essential Documents Required to Operate the Electronic Ignition System

POH

Cessna 172M Checklist

EIS

STC
Where is the Electronic Ignition System (EIS) Supplement Type Certificate [STC] Located.

The Aircraft Flight Manual Supplement for the STC is permanently stored in the side pocket of N724TM dispatch binder.
How does the EIS Installation Change the Pilot Preflight Checklist Procedures.

NOTE: Verify that the EIS 2 amp circuit breaker switch is in the UP Position.

| UP Position is ON |
| DOWN Position is OFF |

| FUEL & OIL CHECK |
| RIGHT WING |
| Fuel Sample | INSPECT |
| Fuel Quantity | CHECK |
| NOSE | 172M 172N 180HP (172 N P) |
| Oil - Minimums: | 6qts 4qts 6qts |
| Fuel Strainer | DRAIN |
| LEFT WING |
| Fuel Sample | INSPECT |
| Fuel Quantity | CHECK |
| CABIN |
| Required Documents | ON BOARD |
| Control Wheel Lock | REMOVE |
| Ignition Switch | OFF |
| Avionics Power | OFF |
| Fuel Selector Valve | BOTH |
| Master Switch | ON |
| Fuel Quantity | CHECK |
| Master Switch | OFF |
| EMPENNAGE |
| Baggage Door | CLOSED/LOCKED |
| Tail Tie-Down | REMOVE |
| Control Surfaces | CHECK |
| RIGHT WING |
| Flap & Aileron | CHECK |
| Tie-Down | REMOVE |
| Main Wheel Tire | CHECK |
| NOSE |
| Alternator Belt | CHECK |
| Propeller & Spinner | CHECK |
| Landing Light | CHECK |
| Air Filter | CHECK |
| Nose Wheel Strut | CHECK |
| Static Source | CHECK |
| LEFT WING |
| Pitot Tube | CHECK |
| Stall Warning | CHECK |
| Fuel Vent | CHECK |
| Tie-Down | REMOVE |
| Aileron & Flap | CHECK |
| Main Wheel Tire | CHECK |
How does the EIS Installation Change the Pilot Before Starting Engine Checklist Procedures.

NOTE: Verify that the EIS 2 amp circuit breaker switch is in the UP Position

UP Position is ON

BEFORE STARTING ENGINE
- Preflight: COMPLETE
- Passengers: BRIEFED
- Seat Belts: FASTENED
- Fuel Selector Valve: BOTH
- Electrical / Avionics: OFF
- Circuit Breakers: IN
- Brakes: HOLD
How does the EIS Installation Change the Pilot Starting Engine Checklist Procedures.

**EIS Switch set in the UP Position** - **ON**

**Master Switch** - **ON**

**Ignition Switch** - **START**

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**STARTING ENGINE**

- Mixture: FULL RICH
- Throttle: OPEN 1/4"
- Carb Heat: COLD
- Prime: 0-3 STROKES
- Master Switch: ON
- Elect. Ignition Switch (EIS): ON (If Installed)
- Beacon: ON
- Propeller Area: CLEAR
- Ignition Switch: START
- Throttle: 1000 RPM
- Oil Pressure: CHECK / GREEN
- Radios: SET
- Transponder: STANDBY

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**CAUTION:**

If the battery voltage is not sufficient to start the engine, the battery is deemed “Dead” and the start procedure must be aborted.

The battery must be charged or replaced before attempting to restart the engine.
How does the EIS Installation Change the Pilot Before Takeoff Checklist Procedures.

MAGNETO CHECK

- **Verify EIS Switch - ON**
- **Set RPM to 1,700 RPM**
- **Ignition Switch - BOTH**
- **Max Drop 125 RPM**
- **Switch Ignition To - LEFT**
  - For a few seconds – Note RPM drop
  - 1,700 RPM
  - **Switch Back to – BOTH**
  - To clear to other set of plugs
  - **Max Drop 125 RPM**
  - **Switch Ignition To – RIGHT**
  - For a few seconds – Note RPM drop
  - 1,700 RPM
  - **Switch Back to – BOTH**

**NOTE:**
If Right Magneto is checked 1st, the engine could experience back firing, loud explosive sounds and vibrations.
How does the EIS Installation Change the Pilot **Shutdown** Checklist Procedures.

**NOTE:**
Verify that the EIS 2 amp circuit breaker switch is in the **UP Position**

**UP Position is ON**

**SHUTDOWN**
- Electrical / Avionics: OFF
- Mixture: IDLE CUT-OFF
- All Lights: OFF
- Ignition Switch: OFF
- EIS Switch: ON (if installed)
- Master Switch: OFF
- Control Wheel Lock: INSTALL

**DASHBOARD**
- MASTER Switch: OFF
- PRIMER Switch: OFF
- PANEL LT Switch: OFF
- LAND LT Switch: OFF
- NAV LT Switch: OFF
- BCN LT Switch: OFF
- INT LT Switch: OFF
- INST LT Switch: OFF
- FLAP STROBE LT Switch: OFF
- PITCH Switch: OFF

**EIS KNOBS**
- EIS Switch: UP
- EIS COIL Switch: ON
- 2 Amp Circuit Breaker: ON
Essential Electronic Ignition System
Abnormal Operating Procedures
“Alternator/Generator Failure”

In the event of an alternator failure, the EIS will draw approximately 0.75 AMPS from the aircraft's Battery.
Essential Electronic Ignition System
Abnormal Operating Procedures

“Dead/Bad Battery”

If the battery voltage is not sufficient to start the engine, the battery is deemed “Dead” and the start procedure must be aborted.

The battery must be charged or replaced before attempting to restart the engine.

In the case of a bad battery, the battery must be replaced.

Inadequate charge on the battery can cause the EIS to not operate.
Step 1: Turn OFF the EIS.

Step 2: Wait for roughness to reduce.

A. If the engine continues to run extremely rough, turn power back on to the EIS and start standard in-flight engine troubleshooting.

B. If the engine roughness does reduce, proceed to step 3.

Step 3: Keep EIS OFF and make a precautionary landing.

**Note:**
Treat the EIS as the magneto it replaced for all other in-flight troubleshooting. After any precautionary landing, have aircraft inspected by appropriately rated aircraft mechanic.
Essential Electronic Ignition System
Emergency Procedures

“Severe loose in engine power”

Step 1: Turn OFF the EIS.
Step 2: Determine if the engine loses significantly more power (RPM).

A. If the engine loses approximately the same amount of RPMs that are lost during the MAG check turn power back on to the EIS and start standard in-flight engine troubleshooting.

B. If the engine does not lose significant RPMs, proceed to Step 3.

Step 3: Keep EIS OFF and make a precautionary landing.

Note:
Treat the EIS as the magneto it replaced for all other in-flight troubleshooting. After any precautionary landing, have aircraft inspected by appropriately rated aircraft mechanic.
United States of America
Department of transportation -- Federal Aviation Administration

Supplemental Type Certificate

Number SA02987CH

This certificate issued to Electroair Acquisition Corporation

Name Address
Electroair Acquisition Corporation
317 Catrell Dr. Suite #2
Howell, MI 48843

Supplement No 018-EA41000-4

FAA-APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR

CESSNA 172M
Make and Model Airplane

Reg. No. N724TM
Ser. No. 1726971

This supplement must be attached to the FAA approved Airplane Flight Manual, or AFM, when the EIS-41000 is installed in accordance with STC SA02987CH. The information contained in this document supplements or supersedes the basic manual only in those areas listed. For limitations, procedures, performance, and loading information not contained in this supplement, consult the basic Airplane Flight Manual.
FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT

FOR

Cessna 172M
Make and Model Aircraft

Reg. No. N7247M
Ser. No. 17262471

This supplement must be attached to the FAA approved Airplane Flight Manual, or AFM, when the EIS-41000 is installed in accordance with STC SA02987CH. The information contained in this document supplements or supersedes the basic manual only in those areas listed. For limitations, procedures, performance, and loading information not contained in this supplement, consult the basic Airplane Flight Manual.

I. LIMITATION:

NO CHANGE

II. NORMAL PROCEDURES:

Circuit Breakers: A 2 Amp and 10 Amp breaker have been added to the instrument panel during the installation of the EIS-41000. The 2 Amp breaker provides circuit protection for the EA-1000 Controller and the 10 Amp breaker provides circuit protection for the EA-2000 4-cyl Coil Pack. When the Master Switch and EIS Switch are on, opening the breaker will remove power from the Electroair component the circuit breaker is associated with.

Turning ON the EIS Switch: In the procedures for starting the engine, after the AFM calls out "Master Switch - ON" the next procedure must be "EIS Switch - ON". The procedure for "EIS Switch - ON"

FAA Approved

Josephines

Manager, Aircraft Certification Office

Federal Aviation Administration

City, State

DATE APR 6 2012

Electroair Acquisition Corp.

Doc #: 1018-EA41000-4

Revision: 5; 3/12/2012
These 2 Paragraphs Do Not Applies to the STC installation on N724TM.

**ROTARY IGNITION SWITCH WITHOUT P-LEAD INSTALLED:**

Procedure: The Magneto check should be made at the same RPM as defined in the AFM Magneto Check. The magneto check should go as follows: With the ignition switch in the "BOTH" position, move the "EIS Switch" to the "OFF" position and note the RPM (This checks the operation of the EIS). Move the "EIS Switch" to the "ON" position to clear a new set of plugs. Move the ignition switch to the "RPM" position and note RPM (This checks the operation of the RPM). Magneto and EIS individual RPM drops should not exceed the RPM defined in the AFM Magneto Check. If there is a doubt concerning operation of the ignition systems, RPM checks at higher engine speeds will usually confirm whether a deficiency exists. At the end of the Magneto check, move the ignition switch to the "RPM" position and note RPM (This checks the operation of the RPM). Magneto and EIS individual RPM drops should not exceed the RPM defined in the AFM Magneto Check. If there is a doubt concerning operation of the ignition systems, RPM checks at higher engine speeds will usually confirm whether a deficiency exists. IMPORTANT: At the end of the Magneto check, verify that BOTH ignition switches are in the "ON" position.

For all other procedures in the AFM that deal with the aircraft's ignition systems, treat the EIS-41000 as the Magneto the EIS-41000 replaced.

**III. ABNORMAL PROCEDURES**

**Alternator/Generator Failure:** In the case of an alternator or generator failure, follow the approved procedures for this failure. It is important to take into consideration that the EIS-41000 will be drawing power from the aircraft's remaining power supply. For load shedding calculations, use the value of 0.75 AMPS for what the EIS-41000 will draw.

**Dead/Bad Battery:** In the case of a dead battery, the battery MUST be properly charged before the engine is turned on. Review and complete the battery manufacturer's recommended procedures for recharging the battery. If the battery fails to hold a charge or cannot charge to the manufacturers recommended charge, the battery will be considered bad. In the case of a bad battery, the battery must be replaced with a battery that meets its manufacturers recommended charge. It is important to follow these procedures; inadequate charge on a battery can cause the EIS-41000 to not operate.

**IV. EMERGENCY PROCEDURES:**

**Problem:** Extremely rough running engine and/or high CHTs

**Step 1:** Turn OFF the EIS.

**Step 2:** Wait for roughness to reduce and/or CHTs start to lower.

A. If the engine continues to run extremely rough and/or the CHTs remain high, turn power back on to the EIS and start standard in-flight engine troubleshooting.

B. If the engine roughness does reduce and/or the CHTs start to lower, proceed to step 3.

**Step 3:** Keep EIS OFF and make a precautionary landing.

**Problem:** Severe lose in engine power and/or low CHTs

**Step 1:** Turn OFF the EIS.

**Step 2:** Determine if the engine looses significantly more power (RPM) and/or CHTs start to lower.

A. If the engine looses approximately the same amount of RPMs that are lost during the MAG check and/or the CHTs lower further, turn power back on to the EIS and start standard in-flight engine troubleshooting.

B. If the engine does not loose significant RPMs and/or the CHTs remain the same, proceed to Step 3.

**Step 3:** Keep EIS OFF and make a precautionary landing.

Note: Treat the EIS as the magneto it replaced for all other in-flight troubleshooting. After any precautionary landing, have aircraft inspected by appropriately rated aircraft mechanic.
V. PERFORMANCE:

With the installation of the EIS-41000, there are a few changes in performance that should be defined.

1. In most installations, the idle RPM will be slightly higher than in the normal 2 Magneto configuration. Adjustments to the engine idle should be made if needed.
2. In most installations, there will be a greater difference in RPM drop between the two ignition systems during the "Magneto Check". This is normal because the EIS-41000 is allowing the engine to operate more efficiently than the Magneto does.
3. In all other aspects, the performance of the engine equipped with the EIS-41000 is equal to or better than the performance as listed in the original FAA-approved AFM.

VI. LOADING INFORMATION:

The installation of the EIS-41000 requires the removal of one Magneto and the installation of the six EIS-41000 components. This installation results in a change to the aircraft's weight and balance. A new weight and balance should be calculated for the aircraft after the installation of the EIS-41000. All future loading calculations should use the updated aircraft weight and balance. The individual EA part weights are below.

1. EA-1000: 0.6 lbs
2. EA-2000: 2.9 lbs
3. EA-3000: 1.5 lbs
4. EA-4000: 1.1 lbs
5. EA-5000: 0.4 lbs
6. EA-6000: 0.8 lbs