

AVOID POWER INTERRUPTIONS AND REDUCE MAINTENANCE COSTS

WHY GROUND POWER CONNECTORS FAIL

The sphincter or grabbing action of the high force socket contacts within the ground power supply free connector causes premature wear on the pin contacts contained in the aircraft fixed connector. An additional failure mode is evidenced by the sheer weight of the ground supply free connector, which pulls down on the electrical interface causing bent contact pins, high resistive circuits and arcing. Replacement of the aircraft fixed connector represents a significant maintenance cost to the airlines.

AEROFLITE SOLUTION

Aeroflite Enterprises is proud to introduce the **Ground Power Connector Saver**. The **GPCS** requires no special provisions (mounting holes etc) for attachment

to the external ground power Interface. The **GPCS** is mated to the aircraft external power receptacle and when four screws are tightened, it becomes a secure, but easily replaceable aircraft flyaway component.

The **GPCS** has been subjected to an extensive series of tests at a major aircraft manufacturer and is now undergoing flight tests at a major airline. These tests have proven that the installation of the **GPCS** provides improved electrical performance to the mated aircraft external power receptacle and ground supply free plug connector.

Removal and replacement of the **GPCS** is quickly and easily accomplished in the field with a simple Allen hex wrench in matter of minutes.

PRODUCT DESCRIPTION



Fig 1.

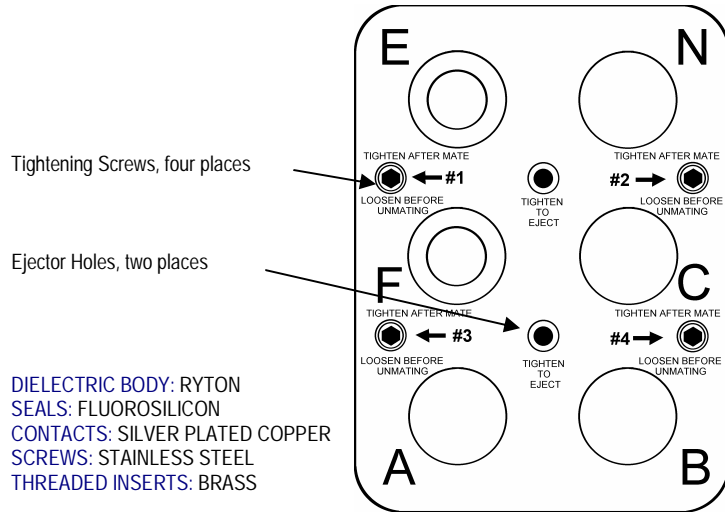


Fig 2.

INSTALLATION

1. Insure that four adapter tightening screws are backed out approximately four full turns counter clockwise from bottomed out position. Align the adapter so that the socket face will accept the pin contacts of the MS90362 type external power receptacle.
2. Push the adapter on to the external power receptacle, insuring that it is fully mated to the aircraft connector.
3. While maintaining a firm mating pressure on the adapter, evenly tighten the adapter tightening screws (see fig. 2). Torque these screws to 15 in/lbs in a diametrically opposite sequence, i.e., #1 and #4, and #2 and #3.
4. Tightening the screws results in the socket side of the hermaphroditic contacts, within the adapter, to wedge onto the pin contacts within the aircraft external power receptacle (see fig. 2).

5. The adapter becomes a temporary but secured part of the external power receptacle.
- REMOVAL**

1. Back off the 4 adapter tightening screws approximately 4 full turns counter clockwise.
2. Continue to back off two diametrically opposed screws (i.e., #1 and #4 positions) and remove them. These screws will be used to eject the connector. DO NOT remove other two screws!
3. Insert removed screws in ejector holes and evenly tighten the two screws until they bottom out within the GPCS housing (a slight resistance is felt). Tighten both screws another two turns (see fig. 2).
4. Pull the adapter straight out.

TEST AND SPECIFICATION DATA

SPECIFICATION:

CONTACTS:

1. Silver Plated Copper Alloy
2. Corrosion Resistant

BODY MATERIAL:

1. Glass Filled Thermoplastic
Polyphenelen Sulfide (RYTON)
2. Fungus Inert

SEAL MATERIAL:

1. Fluorosilicon Rubber Blend
2. Fungus Inert

MOUNTING SCREWS:

1. Stainless Steel
2. #8-32

THREADED INSERTS:

1. Brass
2. #8-32

QUALIFICATION TESTS:

CURRENT RATINGS:

1. Power contacts are capable of carrying 300 A (r.m.s.) continuously for 1 hours or more
2. Control contacts are capable of carrying 35 A (r.m.s.) continuously

CURRENT OVERLOAD:

1. Apply 700 A (r.m.s.) to the power contacts for three minutes. No damage noted
2. Apply 35 A (r.m.s.) to the control contacts for three minutes. No damage noted

TEMPERATURES:

1. Capable of unimpeded engagement, disengagement and operation at -65 °C to +65 °C (-85° F to 149° F)
2. Operational limit at 105 °C (221° F)

VOLTAGE DROP AT RATED CURRENT:

1. Apply 300 A (r.m.s.) through the power contacts for five minutes. The voltage drop at the end of the cycle for the power contacts is 45 mV or less
2. Apply 15 A (r.m.s.) through the control contacts for five minutes. voltage drop at the end of the cycle for the control contacts is 30 mV or less

SIDE LOAD TEST:

1. With the main current-carrying male contacts one-third engaged, apply a side load of 890 N (200 lbf) to the ground supply free connector.
2. No damage noted.

QUAIFICATION TESTS:

ENDURANCE:

1. Fully engage and disengage connectors 500 times (15cycles/min).
2. The voltage drop at the end of the cycle for the power contacts is 45 mV or less
3. The voltage drop at the end of the cycle for the control contacts is 30 mV or less

SALT SPRAY TEST:

1. Exposure to salt spray for 48 hours
2. Meet the voltage drop requirement

HIGH VOLTAGE TEST:

1. Performed after the salt spray test.
2. Apply 2,000 V r.m.s. at 50/60 HZ a.c. for one minute.

VIBRATION TEST:

1. Tested under sinusoidal and random vibration IAW ISO 7137.
2. No sign of loosening of fixings

FLUID SUSCEPTABILITY TEST:

1. Tested against all aircraft fluids IAW ISO 7137
2. Meet the high voltage requirement after the exposure

ADDITIONAL TESTINGS:

CURRENT OVERLOAD:

1. Application of 600 A for 1.75 hours to the external power receptacle resulted in a phase to phase short that caused flames to erupt at the interface connection on the mated receptacle pin and ground power plug socket. External power receptacle damaged
2. Application of 600 A for 1.75 hours to the external power receptacle with the connector saver resulted in the outer insulation jacket of the ground power plug to ignited into a trickle of fires. No damage to the connector saver noted.

INSULATION RESISTANCE:

1. Measured between two adjacent power contacts
2. Greater than 5000 Megohms

DIELECTRIC WITHSTANDING VOLTAGE:

1. Applied 1500 V without breakdown or flashover

ENGAGEMENT FORCE:

1. Installed the GPCS and applied 15 in-lbs torque to the mounting screws.
2. Measured hold down force of 415 lbs

CONTACT CAVITY STRENGTH:

1. Average pull-out force of 890 lbs