

# MANDATORY SERVICE BULLETIN

## NO. MSB-D4-053/2

### SUPERSEDES MSB-D4-053/1

#### **I TECHNICAL DETAILS**

##### **I.1 Category**

Mandatory

##### **I.2 Airplanes affected**

Type: DA 40 D

Serial Numbers: 40.080, 40.084, D4.001 and subsequent equipped with TAE125-01 engine

##### **I.3 Date of Effectivity**

02-Oct-2006

##### **I.4 Time of Compliance**

At the next engine change

##### **I.5 Subject**

Engine Controls - Electrical Harness  
ATA-Code: 76

##### **I.6 Reason**

The engine control harness has been changed by Thielert and additionally modified by Diamond Aircraft. To get a standard of the electrical engine harness this service bulletin describes the necessary modifications on the Thielert engine harness, as well as the necessary modifications of the instrument panel connections of the harness.

##### **I.7 Concurrent Documents**

Thielert Operation & Maintenance Manual TAE 125-01, Doc.No. OM-02-01, latest effective issue.

Thielert Installation Manual TAE125-01, Doc.No. IM-02-01, latest effective issue.

### **I.8 Approval**

The technical content of this document has been approved und the authority of DOA No. EASA.21J.052.

### **I.9 Accomplishment/Instructions**

- If the engine change/replacement requires an engine control harness replacement (see Thielert documentation) WI-MSB-D4-053 must be complied with.
- If the engine change/replacement requires no engine control harness replacement (see Thielert documentation) record compliance to this Service Bulletin in the airplane's log.

### **I.10 Mass (Weight) and CG**

Mass and CG are not affected.

## **II PLANNING INFORMATION**

### **II.1 Material & Availability**

see WI-MSB-D4-053, latest effective issue

### **II.2 Special Tools**

see WI-MSB-D4-053, latest effective issue

### **II.3 Labor Effort**

Instructions as shown in chapter III.1 of WI-MSB-D4-053: approx. 6 hours

Instructions as shown in chapter III.2 of WI-MSB-D4-053: approx. 4 hours

Instructions as shown in chapter III.3 of WI-MSB-D4-053: approx. 1 hour

Instructions as shown in chapter III.4 of WI-MSB-D4-053: approx: 1 hour

### **II.4 Credit**

None.

### **II.5 Reference Documents**

DA 40 Series Airplane Maintenance Manual, Doc. No. 6.02.01, latest effective issue.

WI-MSB-D4-053, latest effective issue.

Thielert Installation Manual TAE125-01, Doc. No. IM-02-01, latest effective issue.

### **III REMARKS**

1. In case of doubt, contact Diamond Aircraft.
2. All measures may only be carried out by Diamond Aircraft Industries or certified Diamond Aircraft Service Centers.
3. In case of any doubt, contact Diamond Aircraft Industries.



## INSPECTION REPORT

to MSB-D4-053

### AIRPLANE DATA

Airplane Serial Number: \_\_\_\_\_

Airplane Registration: \_\_\_\_\_

Airplane Operator: \_\_\_\_\_

Hours of operation of airplane: \_\_\_\_\_

No. of landings: \_\_\_\_\_

Hours of operation-engine LH: \_\_\_\_\_

RH: \_\_\_\_\_

Typical operation of airplane: private, club, training, other \_\_\_\_\_

\_\_\_\_\_  
Date, Name, Sign

Please fax the completed form to Fax No. \*\*43-2622-26620 or e-mail to support@diamond-air.at

# WORK INSTRUCTION

## WI-MSB-D4-053

### „Engine Harness for Engine Change“

#### **I GENERAL INFORMATION**

##### **I.1 Subject:**

If the engine has to be replaced, some modifications to the supplied TAE engine harness, Alternator harness and to the connections in the instrument panel need to be conducted. The necessary modifications are depending on the S/N of the airplane, the modifications already implemented into the airplane and the harnesses supplied by Thielert. Therefore, four different instructions are listed in chapter III. of this document.

##### **I.2 Reference Documents:**

Diamond Aircraft DA 40 Series Airplane Maintenance Manual, Doc. No. 6.02.01, latest effective issue.

Thielert, Installation Manual, Doc. No. IM-02-01, latest effective issue.

##### **I.3 Remarks:**

- a) The work must be carried out by a certified aircraft service station or a certified aircraft maintenance mechanic. In case of doubt, contact Diamond Aircraft.
- b) All works, particular those that are not especially described in this work instruction, have to be carried out in accordance with the referenced maintenance manual.

#### **II DRAWINGS, SPECIAL TOOLS & MATERIALS**

##### **II.1 Drawings:**

- D4D-2406-31-00, Modifications Alternator Harness
- D4D-2406-32-00, Modifications TAE Harness conventional I-Panel
- D4D-2406-33-00, Modifications TAE Harness G1000 I-Panel
- D4D-2433-01-00, Alternator Regulator Installation
- D4D-3143-20-00, Harness and Electrical Assembly
- D4D-9224-30-01, Schematic, Electrical System
- D4D-9224-30-02, Schematic, Electrical System, IFR
- D4D-9224-30-04, Schematic, Electrical System, G1000

for all drawings latest effective issue.

## II.2 Special Tools:

None.

## II.3 Material:

Qty	Description	Part Number
<b>Material for Instructions given in section III.1</b>		
1	Bonding Wire	DS BW1-B14-RB6-RB4-450
2	Screw	LN 9037 M6x28
2	Washer	DIN 125B M6-A2
2	Washer	DIN 9012B M6-A2
2	Locknut	DIN 985 M6-A2
8	Faston Tabs	0-42241-2
1	Connector	245-1652
1	Connector	151325-1
4	Ring Termibal, 4mm, red	31890
3	Ring Terminal, 4mm, blue	0-0320565-0
1	Ring Terminal, 6mm, red	31894
2	Cable Tie	PLT1MM30
1	Cable Tie	PLT2SM30
0.1m	Heatshrink, 6.4mm	5053094080
1*	GPC Loom V1.0, TAE125-01	02-7150-55007R2
1* (0**)	Set Alternator 14V DAI mit Altreg	02-7150-55800R1
*) available from Thielert, if not included in the engine set.		
**) not required if SB D4-036/1 has been implemented into the airplane.		
<b>Material for Instructions given in section III.2</b>		
1	Bonding Wire	DS BW1-B14-RB6-RB4-450
2	Screw	LN 9037 M6x28
2	Washer	DIN 125B M6-A2
2	Washer	DIN 9012B M6-A2
2	Locknut	DIN 985 M6-A2
1	Connector	151325-1
4	Ring Termibal, 4mm, red	31890
3	Ring Terminal, 4mm, blue	0-0320565-0
1	Ring Terminal, 6mm, red	31894
2	Cable Tie	PLT1MM30
0.1m	Heatshrink, 6.4mm	5053094080
1*	GPC Loom V1.0, TAE125-01	02-7150-55007R2
1* (0**)	Set Alternator 14V DAI mit Altreg	02-7150-55800R1
*) available from Thielert, if not included in the engine set.		
**) not required if SB D4-036/1 has been implemented into the airplane.		


<b>Material for Instructions given in section III.3</b>		
1	Connector	151325-1
4	Ring Terminal, 4mm, red	31890
3	Ring Terminal, 4mm, blue	0-0320565-0
1	Ring Terminal, 6mm, red	31894
2	Cable Tie	PLT1MM30
0.1m	Heatshrink, 6.4mm	5053094080
1*	GPC Loom V1.0, TAE125-01	02-7150-55007R2
*) available from Thielert, if not included in the engine set.		
<b>Material for Instruction given in section III.4</b>		
1	Connector	151325-1
4	Ring Terminal, 4mm, red	31890
2	Ring Terminal, 4mm, blue	0-0320565-0
1	Ring Terminal, 6mm, red	31894
2	Cable Tie	PLT1MM30
0.1m	Heatshrink, 6.4mm	5053094080
1*	GPC Loom V1.0, TAE125-01	02-7150-55007R2
*) available from Thielert, if not included in the engine set.		
<b>Recommended Consumables</b>		
A/R	Cable Tie	PLT1MM30
A/R	Cable Tie	PLT2SM30
A/R	Cable Tie	PLT4SM30
A/R	Spiral Wrap	T50F
A/R	Spiral Wrap	T25N-C
A/R	Fire Sleeve	2650-5
A/R	Fire Sleeve	2650-8
A/R	Fire Sleeve	2650-13
A/R	Fire Sleeve	2650-16

### III INSTRUCTIONS

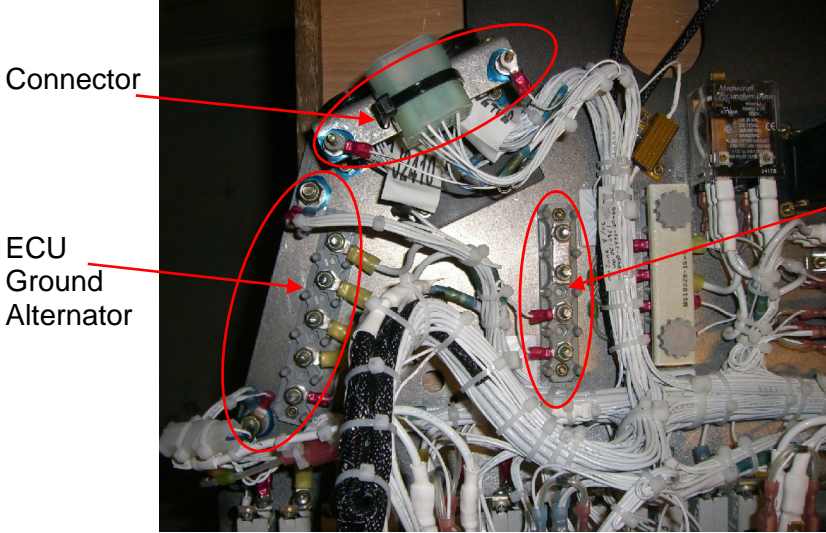
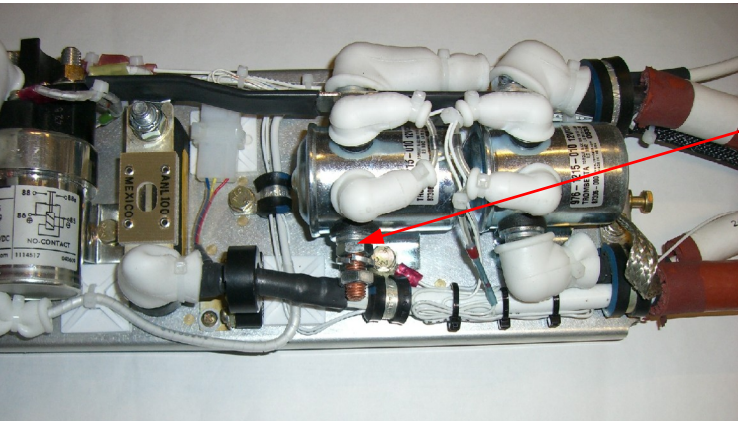
#### III.1 Instructions up to and including S/N D4.110, without G1000, without MÄM 40-151 and without DAI SBD4-036/1 implemented

**NOTE**

If SB D4-036/1 has been implemented into the airplane, Steps 3 and 5 are not applicable.


1	Remove the Engine Control System Harness in accordance with the Airplane Maintenance Manual, Doc. No. 6.02.01.
2	Modify the new engine harness according to drawing D4D-2406-32-00, if necessary.
3	<p>Install the new alternator regulator under the pilot's seat, as shown on drawing D4D-2433-01-00 and on the picture.</p> 
4	Replace the adapter in the instrument panel of the "old" Thielert engine harness, as shown in the attached sketch.
5	Modify the alternator regulator harness in accordance with D4D-2406-31-00, if necessary.
6	Connect the alternator regulator harness to the regulator, to the terminal block on the left, bottom side of the instrument panel and insert the wire for the alternator warning light into the new connector, Pin 7 of the engine harness previously modified in step 2.

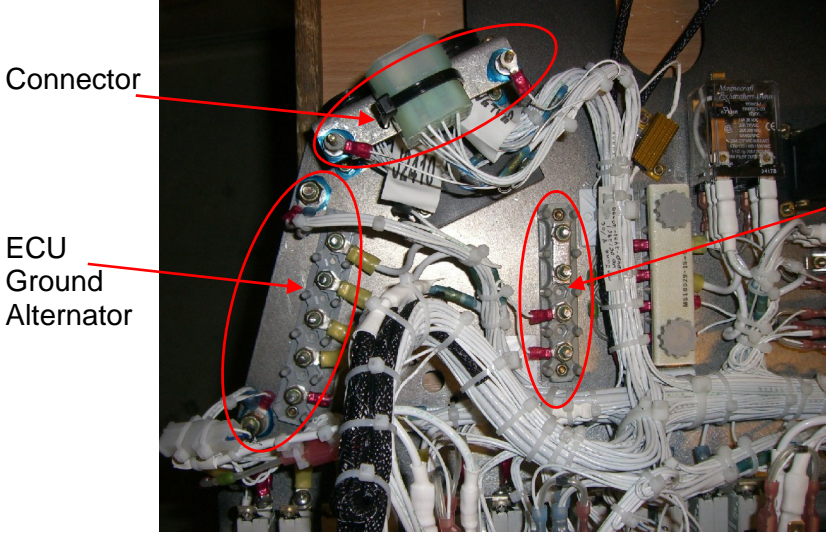
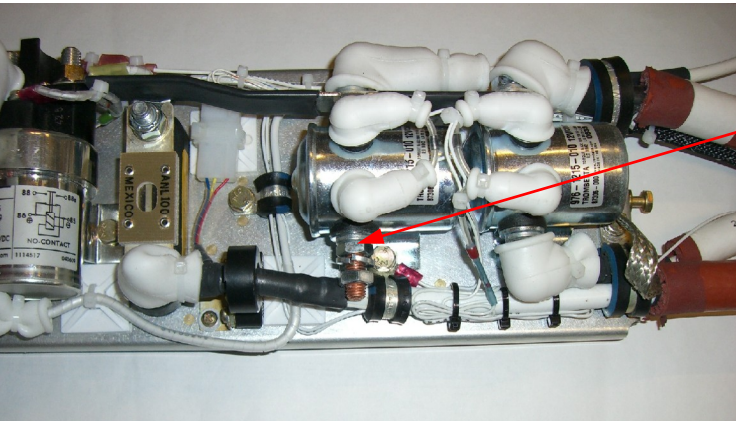


<p>7</p>	<p>Connect the new Thielert engine harness to its terminal blocks, connectors and shield connections. Refer also to the attached sketch.</p>  <p>Connector</p> <p>ECU Ground Alternator</p> <p>Glow</p> <p>CAUTION: Take extreme care of the polarity of the glow control connections and the diode, installed at the Glow Relay. Wrong connection (short circuit over the diode) will lead to a failure of the glow control output of the ECU and this will cause a replacement of the defective ECU.</p> <p>NOTE: If the actual installation looks slightly different, refer to the wire numbers for correct connection.</p>
<p>8</p>	<p>Connect the new GPC Loom V1.0, P/N 02-7150-55007R2 to the Glow Relay in the forward relay panel as shown below.</p>  <p>GPC Loom V1.0  P/N 02-7150-55007R2</p>
<p>9</p>	<p>Secure the harnesses by using appropriate cable ties, clamps and appropriate abrasion protection.</p>
<p>10</p>	<p>Clean working area and check for foreign objects.</p>
<p>11</p>	<p>Install the Engine Control System Harness and the parts prior removed in accordance with the Airplane Maintenance Manual, Doc. No. 6.02.01.</p>
<p>12</p>	<p>Test all systems in working area for function.</p>
<p>13</p>	<p>Make all necessary entries in the airplane's logs</p>

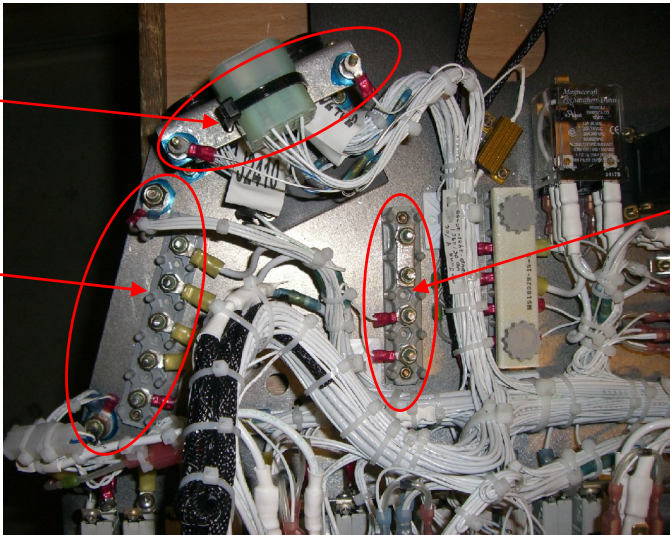
**III.2 Instructions above S/N D4.111, without G1000, without MÄM 40-151 and without DAI SB D4-036/1 implemented****NOTE**

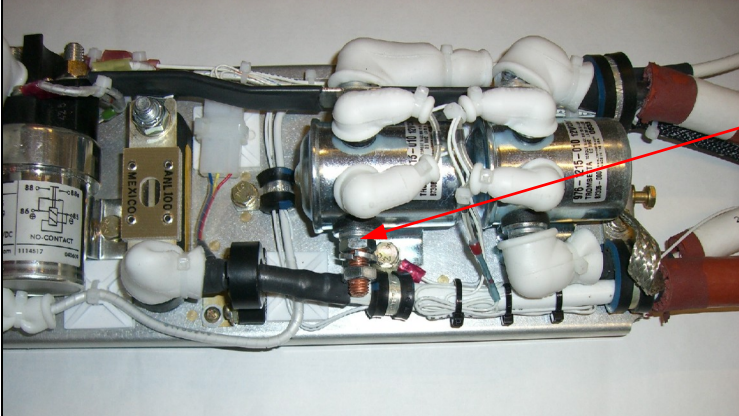
If SB D4-036/1 has been implemented into the airplane, Steps 3 and 4 are not applicable.

1	Remove the Engine Control System Harness in accordance with the Airplane Maintenance Manual, Doc. No. 6.02.01.
2	Modify the new engine harness according to drawing D4D-2406-32-00, if necessary.
3	Install the new alternator regulator under the pilot's seat, as shown on drawing D4D-2433-01-00 and on the picture. 
4	Modify the alternator regulator harness in accordance with D4D-2406-31-00, if necessary.
5	Connect the alternator regulator harness to the regulator, to the terminal block on the left, bottom side of the instrument panel and insert the wire for the alternator warning light into the new connector, Pin 7 of the engine harness previously modified in step 2.

<p>6</p>	<p>Connect the new Thielert engine harness to its terminal blocks, connectors and shield connections. Refer also to the attached sketch.</p>  <p>Connector</p> <p>ECU Ground Alternator</p> <p>Glow</p> <p>CAUTION: Take extreme care of the polarity of the glow control connections and the diode, installed at the Glow Relay. Wrong connection (short circuit over the diode) will lead to a failure of the glow control output of the ECU and this will cause a replacement of the defective ECU.</p> <p>NOTE: If the actual installation looks slightly different, refer to the wire numbers for correct connection.</p>
<p>7</p>	<p>Connect the new GPC Loom V1.0, P/N 02-7150-55007R2 to the Glow Relay in the forward relay panel as shown below.</p>  <p>GPC Loom V1.0  P/N 02-7150-55007R2</p>
<p>8</p>	<p>Secure the harnesses by using appropriate cable ties, clamps and appropriate abrasion protection.</p>
<p>9</p>	<p>Clean working area and check for foreign objects.</p>
<p>10</p>	<p>Install the Engine Control System Harness and the parts prior removed in accordance with the Airplane Maintenance Manual, Doc. No. 6.02.01.</p>
<p>11</p>	<p>Test all systems in working area for function.</p>
<p>12</p>	<p>Make all necessary entries in the airplane's logs</p>

### III.3 Instructions above S/N D4.154, without G1000

1	Remove the Engine Control System Harness in accordance with the Airplane Maintenance Manual, Doc. No. 6.02.01.
2	Modify the new engine harness according to drawing D4D-2406-32-00, if necessary.
3	Modify the alternator regulator harness in accordance with D4D-2406-31-00, if necessary.
4	Connect the alternator regulator harness to the regulator, to the terminal block on the left, bottom side of the instrument panel and insert the wire for the alternator warning light into the new connector, Pin 7 of the engine harness previously modified in step 2.
5	<p>Connect the new Thielert engine harness to its terminal blocks, connectors and shield connections. Refer also to the attached sketch.</p> <div style="text-align: center;">  </div> <p><b>CAUTION:</b> Take extreme care of the polarity of the glow control connections and the diode, installed at the Glow Relay. Wrong connection (short circuit over the diode) will lead to a failure of the glow control output of the ECU and this will cause a replacement of the defective ECU.</p> <p><b>NOTE:</b> If the actual installation looks slightly different, refer to the wire numbers for correct connection.</p>

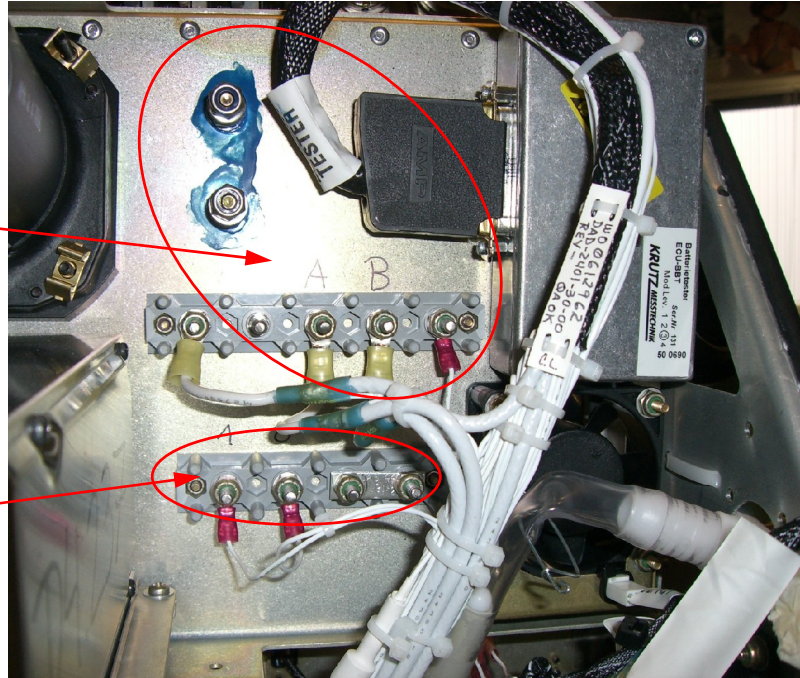
6	<p>Connect the new GPC Loom V1.0, P/N 02-7150-55007R2 to the Glow Relay in the forward relay panel as shown below.</p>  <p>GPC Loom V1.0        P/N 02-7150-55007R2</p>
7	Secure the harnesses by using appropriate cable ties, clamps and appropriate abrasion protection.
8	Clean working area and check for foreign objects.
9	Install the Engine Control System Harness and the parts prior removed in accordance with the Airplane Maintenance Manual, Doc. No. 6.02.01.
10	Test all systems in working area for function.
11	Make all necessary entries in the airplane's logs

**III.4 Instructions above S/N D4.154, with G1000**

1	Remove the Engine Control System Harness in accordance with the Airplane Maintenance Manual, Doc. No. 6.02.01.
2	Modify the new engine harness according to drawing D4D-2406-33-00, if necessary.
3	Modify the alternator regulator harness in accordance with D4D-2406-31-00, if necessary.
4	Connect the alternator regulator harness to the regulator, to the terminal block on the left, bottom side of the instrument panel and insert the wire for the alternator warning light into the new connector, Pin 7 of the engine harness previously modified in step 2.

- 5 Connect the new Thielert engine harness to its terminal blocks, connectors and shield connections. Refer also to drawing D4D-3143-20-00.

ECU  
Ground  
Alternator

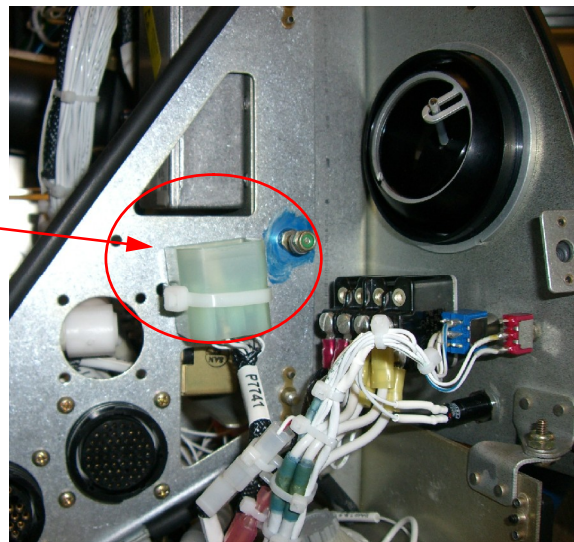


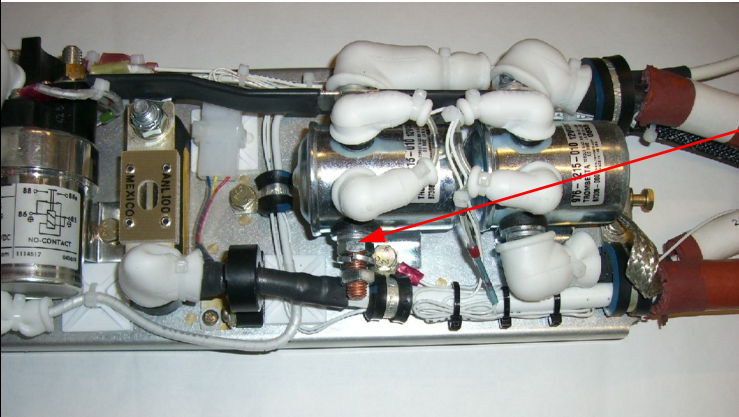
Glow

**CAUTION:** Take extreme care of the polarity of the glow control connections and the diode, installed at the Glow Relay. Wrong connection (short circuit over the diode) will lead to a failure of the glow control output of the ECU and this will cause a replacement of the defective ECU.

**NOTE:** If the actual installation looks slightly different, refer to the wire numbers for correct connection.

Connector



<p>6</p>	<p>Connect the new GPC Loom V1.0, P/N 02-7150-55007R2 to the Glow Relay in the forward relay panel as shown below.</p>  <p>GPC Loom V1.0        P/N 02-7150-55007R2</p>
<p>7</p>	<p>Secure the harnesses by using appropriate cable ties, clamps and appropriate abrasion protection.</p>
<p>8</p>	<p>Clean working area and check for foreign objects.</p>
<p>9</p>	<p>Install the Engine Control System Harness and the parts prior removed in accordance with the Airplane Maintenance Manual, Doc. No. 6.02.01.</p>
<p>10</p>	<p>Test all systems in working area for function.</p>
<p>11</p>	<p>Make all necessary entries in the airplane's logs</p>