



Installation Instruction

BOEING

737 SERIES

TABLE OF CONTENTS

PART 0	MANUAL ADMINISTRATION	3
0.1	DOCUMENT APPROVAL	3
0.2	AMENDMENT RECORD PROCEDURE	4
0.3	EFFECTED PAGES PROCEDURE	4
PART 1	INSTALLATION INSTRUCTION	5
1.1	GENERAL	5
1.2	CONTINUED AIRWORTHINESS	5
1.3	DESCRIPTION	6
1.4	WING POSITION LIGHTS INSTALLATION – LEFT	7
1.5	WING POSITION LIGHTS INSTALLATION – RIGHT	9
1.6	REAR POSITION LIGHTS INSTALLATION	11
1.7	TRANSFORMER REPLACEMENT - WING	13
1.7.1	Wiring Diagram of Wing Position Light – Nebulon/Pegatron	15
1.8	LOGO LIGHTS INSTALLATION	16
1.8.1	AC/DC Installation	17
1.8.2	Wiring Diagram of Logo Light – Morpheus	18
1.9	WING ILLUMINATION LIGHTS INSTALLATION	19
1.9.1	AC/DC Installation	20
1.9.2	Wiring Diagram of Wing Illumination Light - Vesta	21
1.10	TAXI LIGHTS INSTALLATION – NOSE GEAR	22
1.10.1	Wiring Diagram of Nose Gear Taxi Light - Samson	23
1.11	TURN-OFF LIGHT INSTALLATION – WING ROOT	24
1.11.1	Wiring Diagram of Runway Turn-off Light - Samson	25
1.12	LANDING LIGHTS INSTALLATION – FIXED	26
1.12.1	Wiring Diagram of Fixed Landing Light – Maximus PowerMax	28
1.13	LANDING LIGHTS INSTALLATION – RETRACTABLE	29
1.13.1	Wiring Diagram of Retractable Landing Light – Maximus PowerMax	31
PART 2	COMPLIANCE DEMONSTRATION	32

Part 0 Manual Administration

0.1 Document Approval

This document has been established in accordance with an alternative procedure to DOA approved under EASA AP429.

This installation Instruction is applicable for all Boeing 737 aircraft.

Compiled by:  23 July 2018
Petr Jaroš
Engineer, Aveo Engineering Group, s.r.o.

Approved by: _____ 23 July 2018
Georg Hartl
Head of DO, Aveo Engineering Group, s.r.o.

0.2 Amendment Record Procedure

The master copy of this document shall be kept electronically as a read only document under the control of Aveo Engineering Group, s.r.o. as Master Copy.

ALL amendments to this manual will initiate a raise of issue.

The original issue will be identified by **"01"**, and subsequent issues will be numbered sequentially from 02 to 99 in Table 01 - **Issue No.** column.

ALL issues of this document will be approved by Head of DO.

Issue No.	Details	Date	Effected Pages
01	Initial issue	01 Sep 2016	ALL
02	Corrections as marked. Addition of converter to wing, wing illumination and logo lights (not marked)	08 Mar 2017	ALL 11-22
03	Removal of the section: Distribution list (not marked)	10 Apr 2017	4
04	Corrections as marked. Drawing of logo light installation updated. Part number of Morpheus logo light changed. Removal of AC/DC converter installation. Wiring diagram of Morpheus logo light changed. Drawing of illumination light installation updated. Part number of Vesta wing illumination light changed. Removal of AC/DC converter installation. Wiring diagram of wing illumination light changed. Addition of wiring diagram – nose gear taxi light (not marked) Addition of wiring diagram – wing root light (not marked) Addition of Landing Lights Installation – Fixed (not marked) Addition of Landing Lights Installation – Retractable (not marked) Addition of Anti-collision Lights Installation (not marked) Add § 25.1383 to compliance list	25 Jun 2018	ALL 16 17 18 19 20 21 23 25 26-28 29-31 31-33 34
Table 01: Record of Document Amendments			

0.3 Effected Pages Procedure

ALL pages affected by ANY raise of issue of this manual will be listed in Table 01 - **Effected Pages** column.

The reason(s) for EACH raise of issue and the description of respective change will be provided in Table 01 - **Details** column.

Changes from the previous issue are shown as follows:

- new text is highlighted with yellow shading: **new**
- deleted text is shown with yellow shading and a strike through:
~~deleted~~

Part 1 Installation Instruction

1.1 General

This installation is to be performed in accordance to common practice as described in the aircraft maintenance manual.

The installer is responsible to follow the installation instructions in the latest revision of the following installation manuals:

- Aircraft Maintenance Manual (AMM)
- AVE-S45-001-IM
- AVE-WI-IM
- AVE-LG-IM
- AVE-WP-51G-IM
- AVE-POSW-74G-IM
- AVE-MP-IM
- AVE-WD-IM

All drawings applicable for this change are listed in the following document:

- AVE-MOD-002-DL, in the latest issue

The following appliances have received ETSO authorization:

- none

The change is to be performed using the document AVE-MOD-002-MCS in the latest issue.

The aircraft modified according to this instruction may not be released back to service without the EASA design approval certificate being provided.

1.2 Continued Airworthiness

The aircraft manuals remain fully valid. The inspection intervals and the procedures of the aircraft override the general statements in the component manuals as listed under §1.1.

For inspection of the new lights themselves follow the procedure given in the Aveo Installation Manuals referenced above.

1.3 Description

This modification consists in replacement of position lights (type I, II & III), logo lights, anti-collision lights, wing illumination lights, as well as taxi, landing and turn lights by lights of LED type.

The lights are direct replacements and do not require any structural change on the A/C side. In some cases the connectors are removed and the wires spliced.

1.4 Wing Position Lights Installation – Left

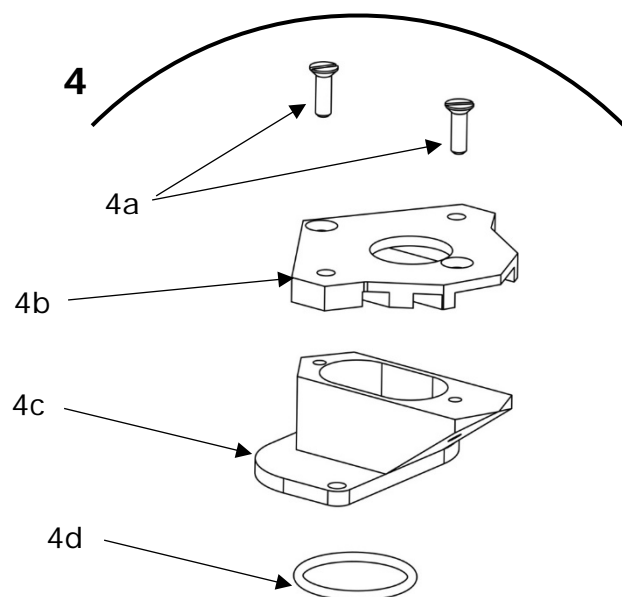
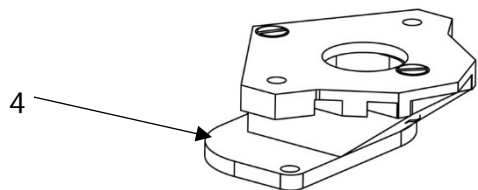
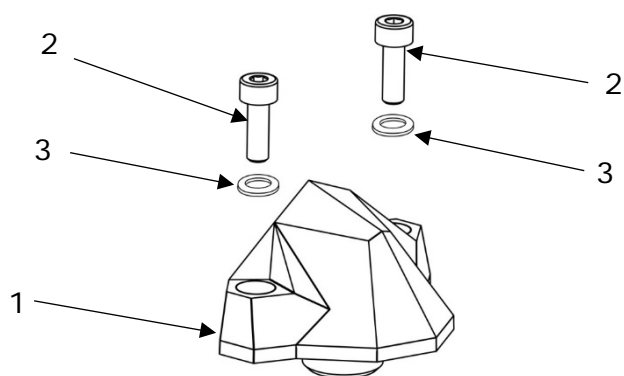
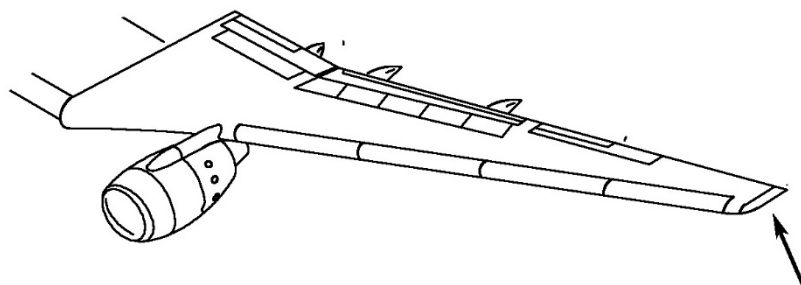


Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
1	AVE-WPR-51G-403	Nebulon TSB Red		2
2	AVS-SCM03012HAS-D0A	Screw M3x12 DIN 912, Stainless steel		4
3	AVS-WNM0327BFN-D0A	Nylon Flat Washer		4
4	AVS-P000104882-A6A	Nebulon Adapter B737 assy Left		2
4a	AVS-SCM03008FAS-D0A	Screw M3x8 DIN 7991, Stainless steel		4
4b	AVS-P000104884-A6A	Part B N737		2
4c	AVS-P000104883-A6A	Part A N737		2
4d	AVS-OR020020N70-D0A	O-ring 20x2 NBR 70		2
NOTES <ol style="list-style-type: none"> 1. Remove lens according to AMM. 2. Remove the original position light as per AMM. 3. Remove the connector and splice the wiring as per AVE-WP-51G-IM. 4. Install the complete light assembly using the original fasteners as per AMM. 5. Close lens according to AMM. 				

1.5 Wing Position Lights Installation – Right

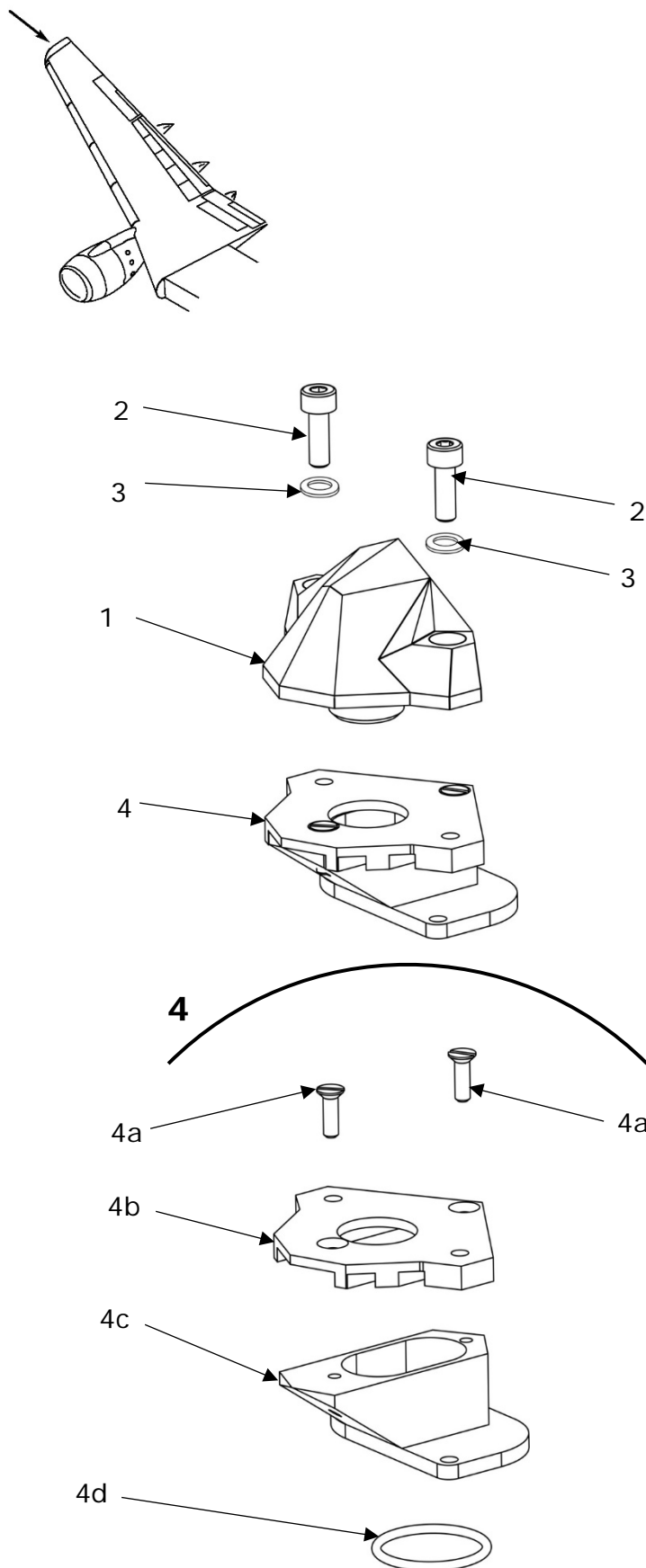


Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
1	AVE-WPG-51G-404	Nebulon TSB Green		2
2	AVS-SCM03012HAS-D0A	Screw M3x12 DIN 912, Stainless steel		4
3	AVS-WNM0327BFN-D0A	Nylon Flat Washer		4
4	AVS-P000104888-A60	Nebulon Adapter B737 assy Right		2
4a	AVS-SCM03012HAS-D0A	Screw M3x8 DIN 7991, Stainless steel		4
4b	AVS-P000104884-A6A	Part B N737		2
4c	AVS-P000104886-A60	Part C N737		2
4d	AVS-OR020020N70-D0A	O-ring 20x2 NBR 70		2
NOTES <ol style="list-style-type: none"> 1. Remove lens according to AMM. 2. Remove the original position light as per AMM. 3. Remove the connector and splice the wiring as per AVE-WP-51G-IM. 4. Install the complete light assembly using the original fasteners as per AMM. 5. Close lens according to AMM. 				

1.6 Rear Position Lights Installation

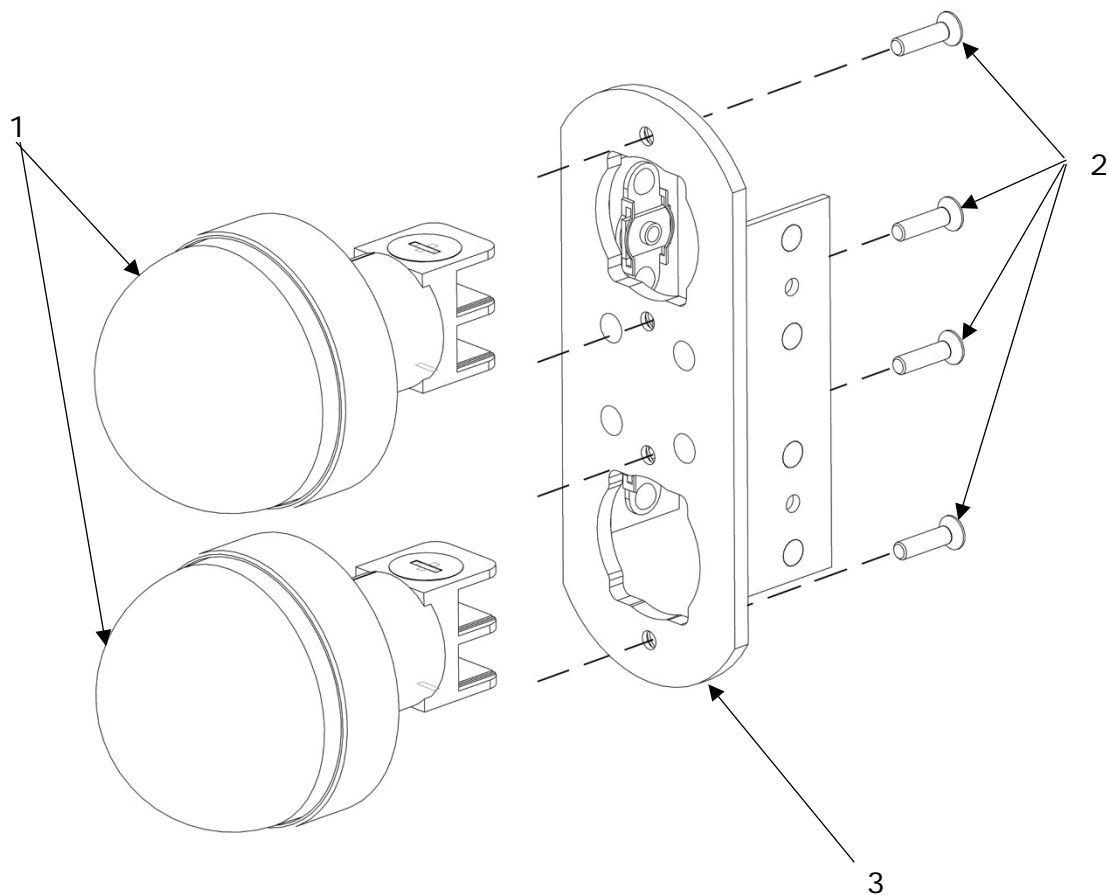
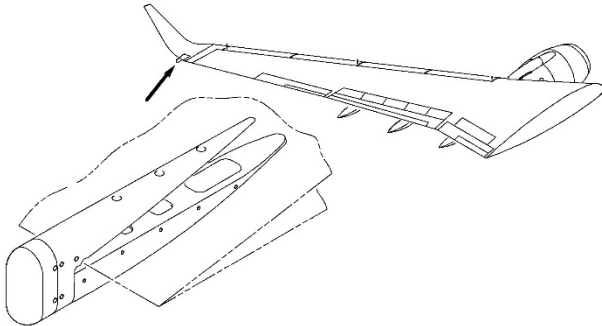
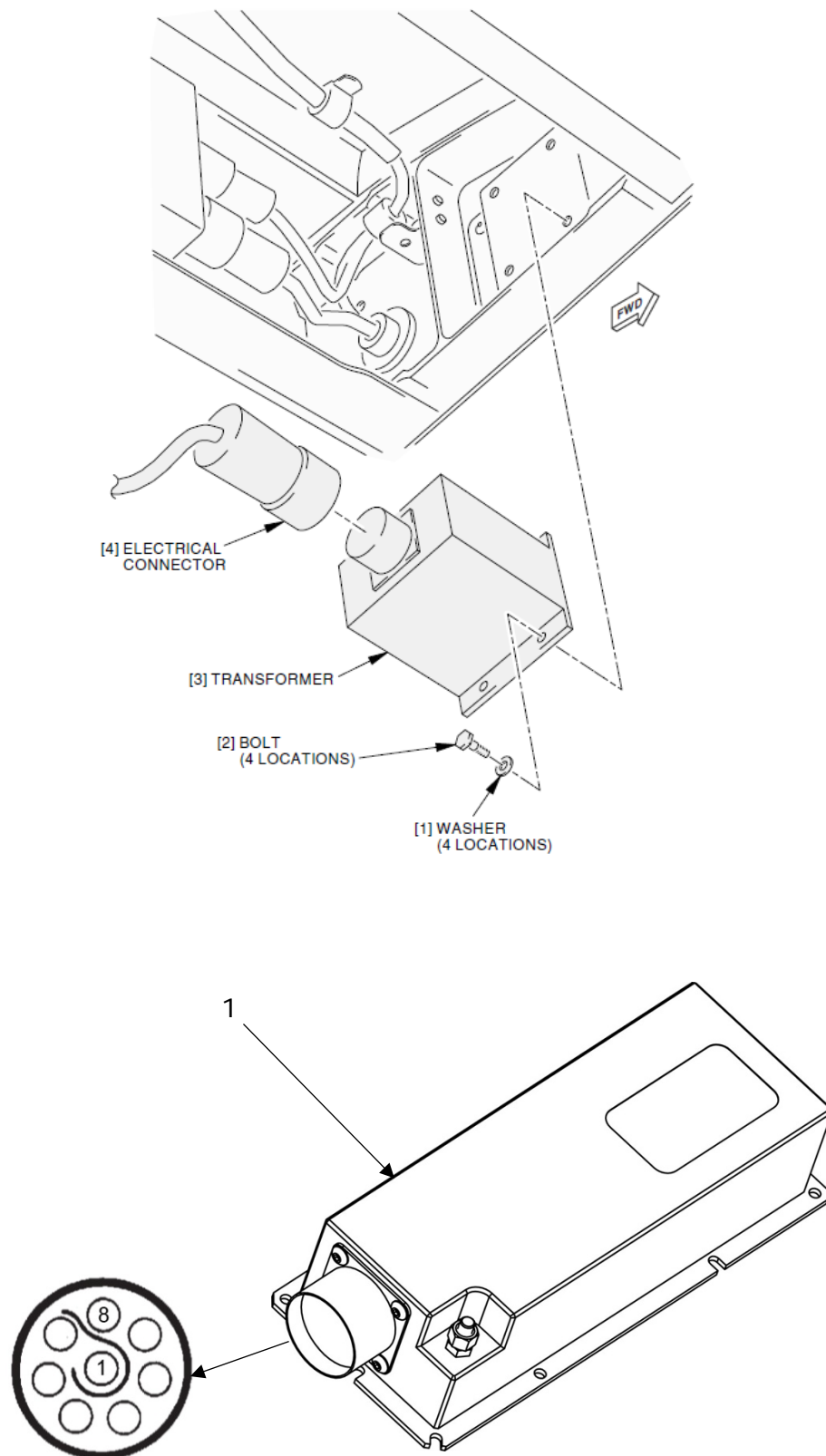


Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
1	AVE-POSW-74G-402	Pegatron TSB light		4
2	AVS-SCM03010FAS-D0A	Screw M3x10 DIN 7991, Stainless steel		8
3	AVS-P000102071-A60	Pegatron Interface B737		2
NOTES <ol style="list-style-type: none">1. Remove the original, complete aft position light on left and right wing as per AMM.2. Remove the connector and splice the wiring as per AVE-POSW-74G-IM.3. Install the new, complete light assembly according to AMM by using the original fasteners. Drill holes and install anchor nuts on installation.				

1.7 Transformer Replacement - Wing



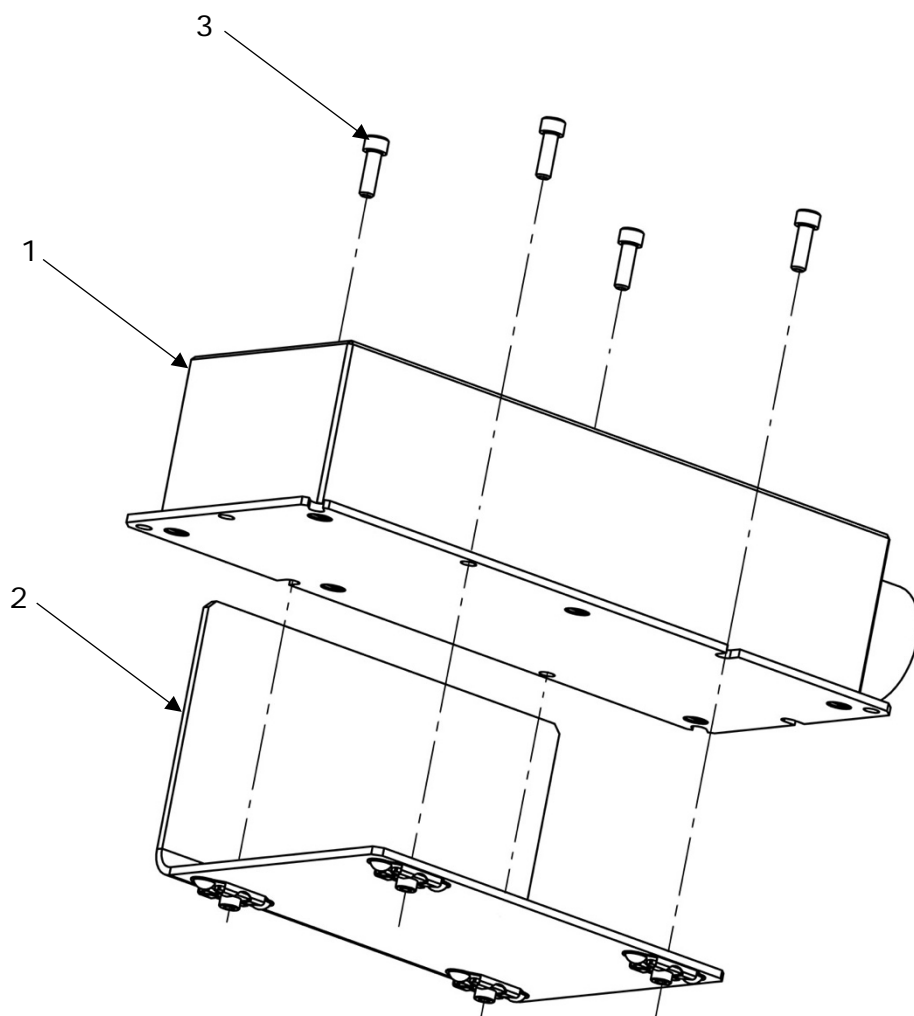


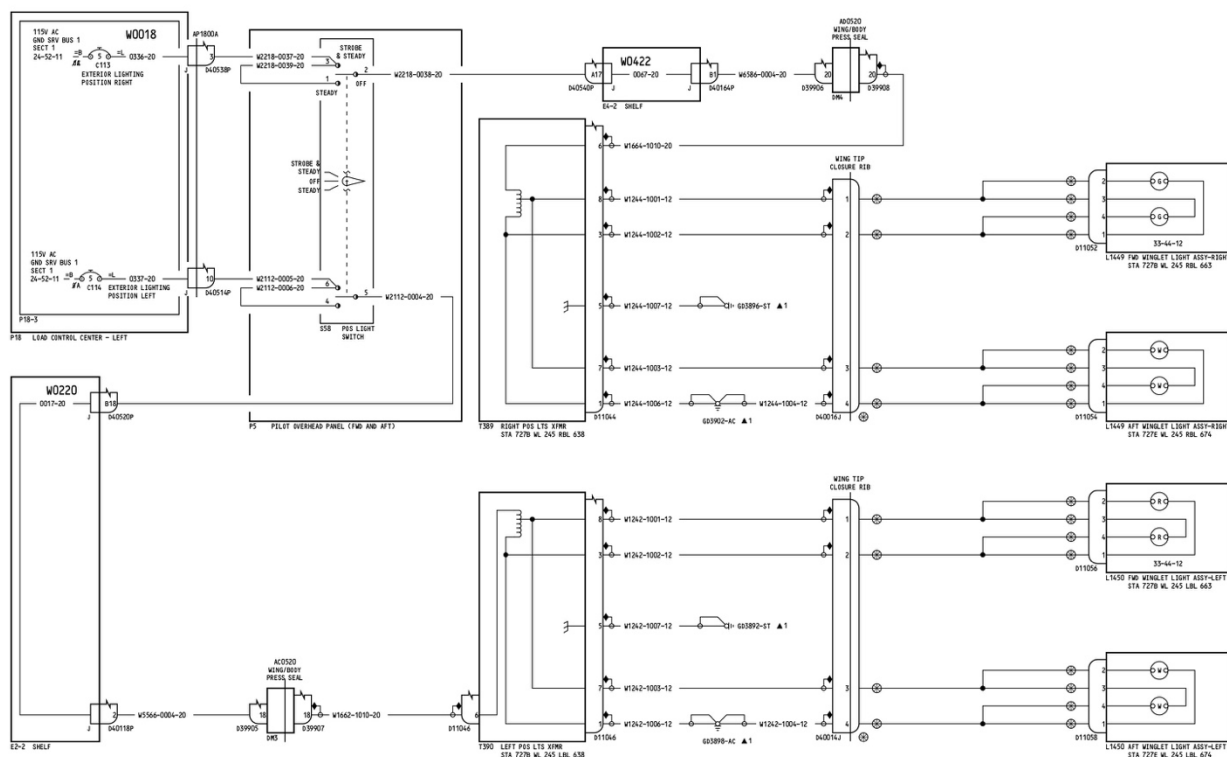
Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
1	AVS-P001100660-A60	AC/DC transformer (Warp Driver)		1
2	AVS-P001100669-A60	Bracket		1
3	MS-16997-20	Mil. Spec #6-32 Thread, 1/2" Length SHCS, Stainless Steel		4

NOTES

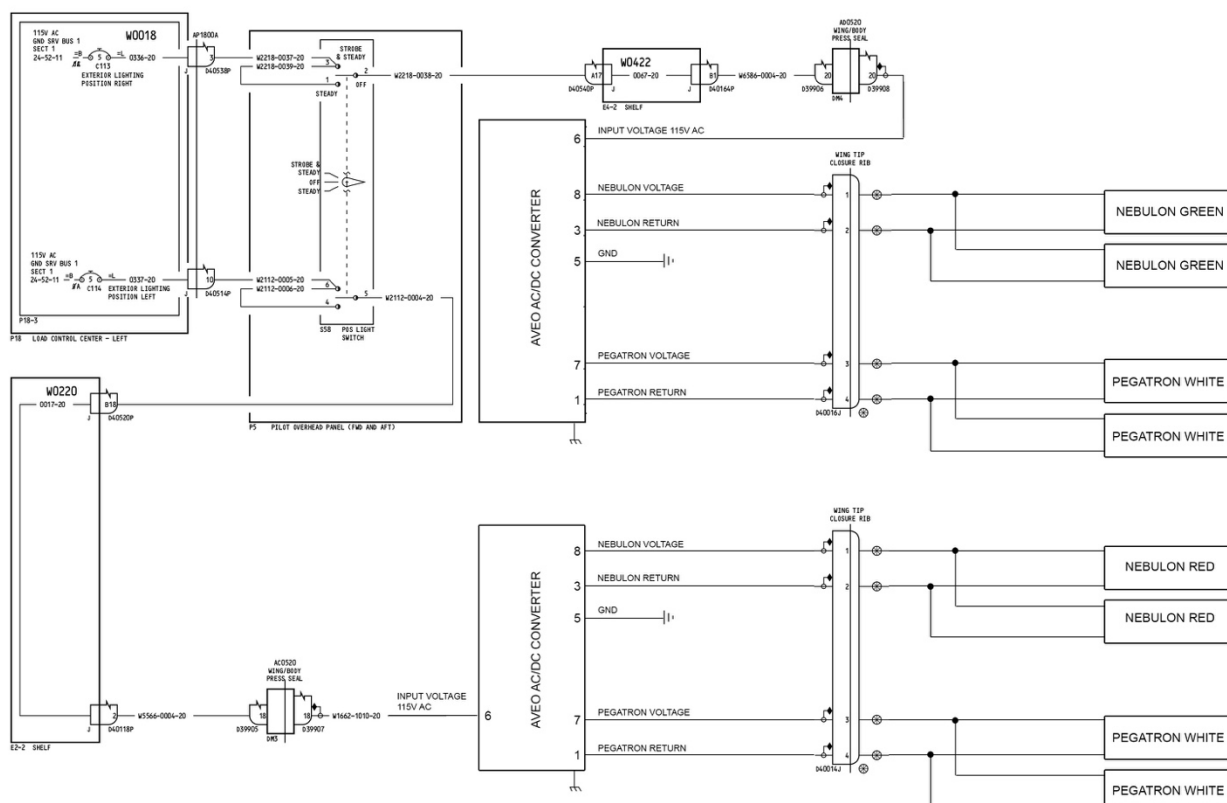
1. Remove the original transformer - left and right wing as per AMM, task 33-43-990-801.
2. Install the bracket (item 2) to the location of original transformer using original fasteners. Drill holes to the bracket to fit installation. The angle orientation may be done to any useful direction.
3. Mount the new unit (AC/DC converter, item 1) to the bracket by using screws (item 3).
4. Connect the unit to aircraft original connector.

1.7.1 Wiring Diagram of Wing Position Light – Nebulon/Pegatron

Wiring diagram **before** installation of Aveo AC/DC converter:



Wiring diagram **after** installation of Aveo AC/DC converter:



1.8 Logo Lights Installation

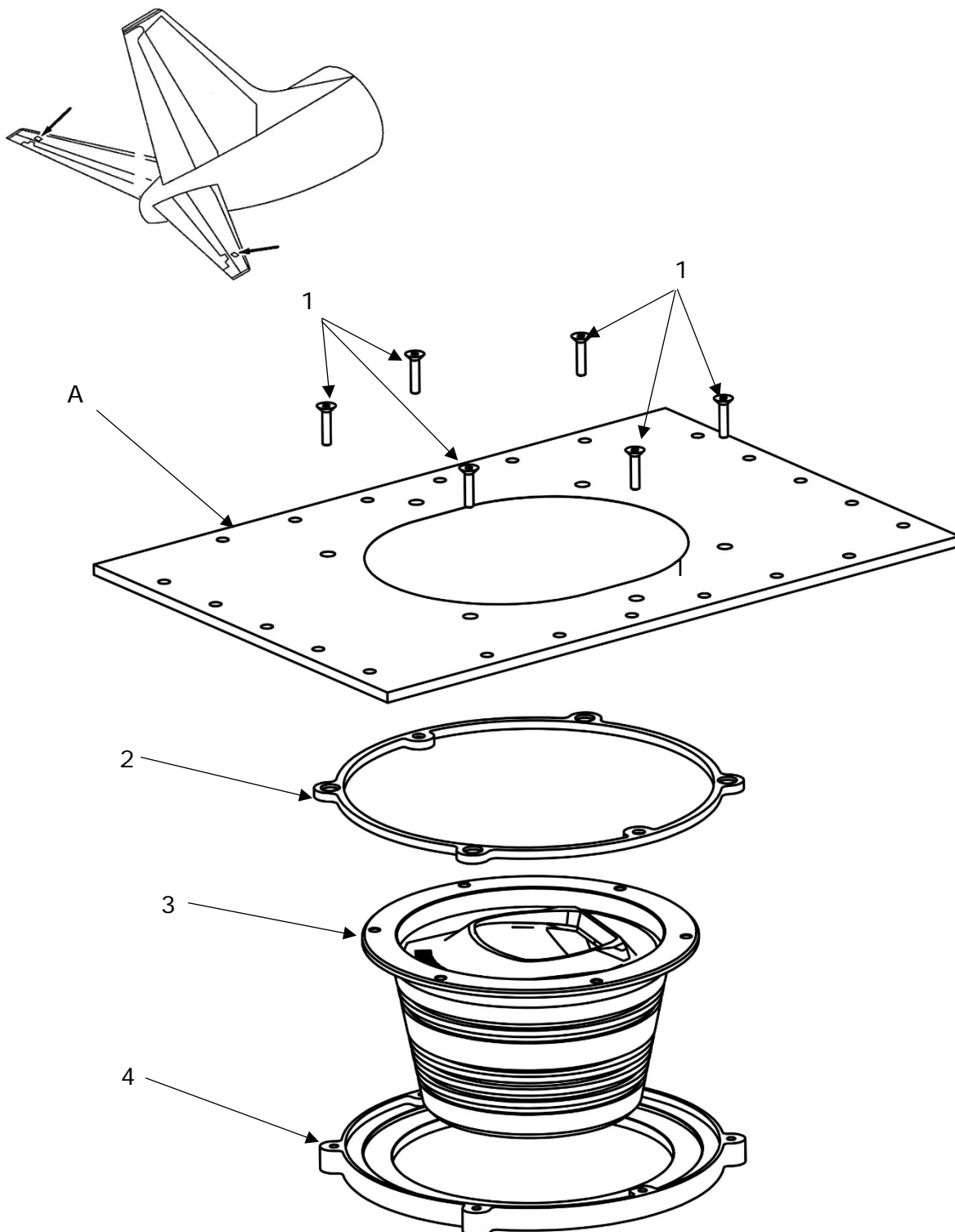


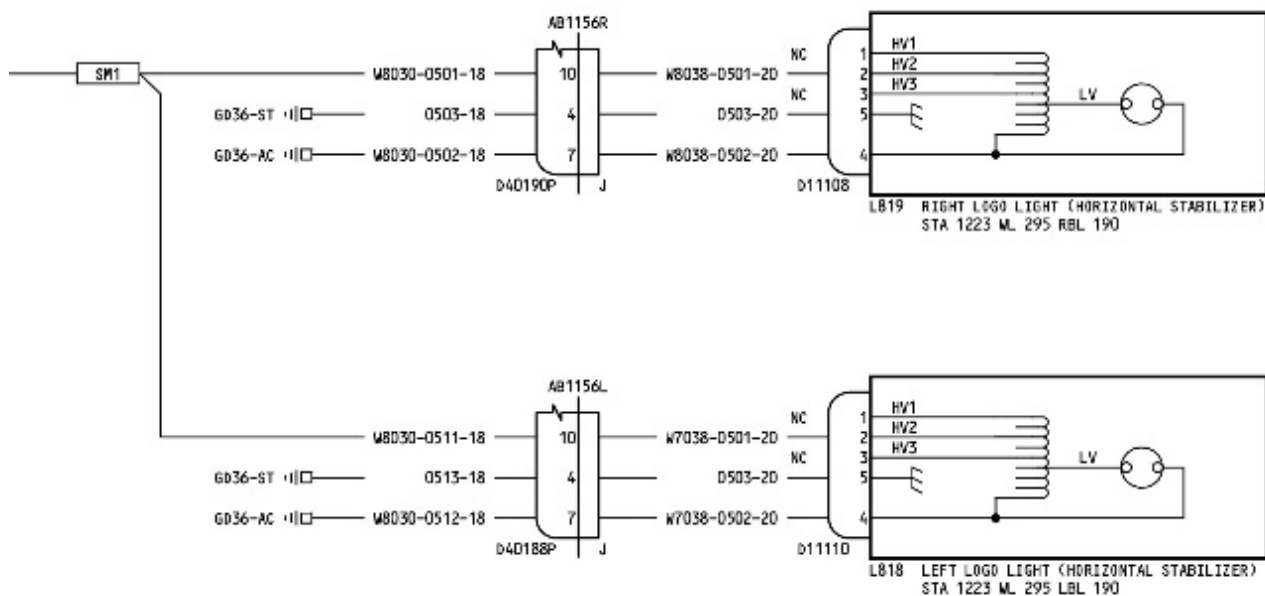
Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
A	Orig. part	Airframe		
1	MS24693C50	Screw Countersunk 8-32 x ½", Stainless Steel		6
2	Orig. part	Gasket		1
3	AVE-LGA7WCNUB-00T	Morpheus Logo Light		1
	AVE-LGM1WCNUB-20C	Morpheus Logo Light 115 VAC		1
4	AVS-P000104935-A70	Logo Light Adapter		1
NOTES: Items A, 1 and 2 are original parts. <ol style="list-style-type: none"> 1. Remove the complete original logo light as per AMM. 2. Remove the connector. 3. Install the complete assembly of the new logo light as per AMM. 				

1.8.1 AC/DC Installation

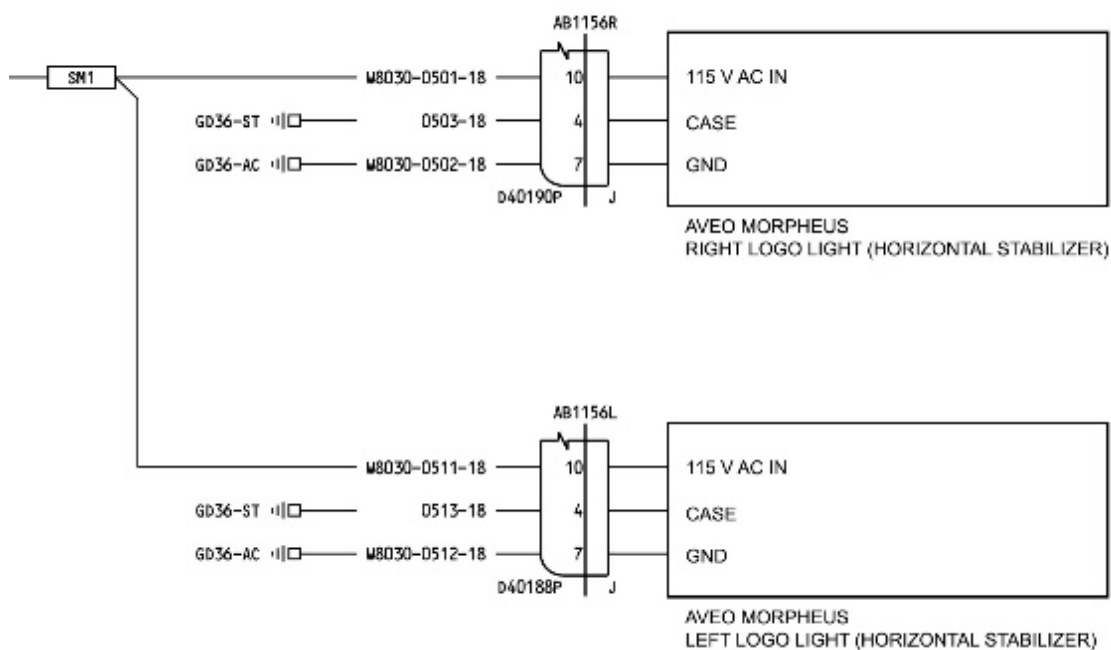
The installation of AC/DC converter is not needed as the Morpheus logo light includes a built-in converter.

1.8.2 Wiring Diagram of Logo Light – Morpheus

Wiring diagram **before** installation of Aveo Morpheus – logo light:



Wiring diagram **after** installation of Aveo Morpheus – logo light:



1.9 Wing Illumination Lights Installation

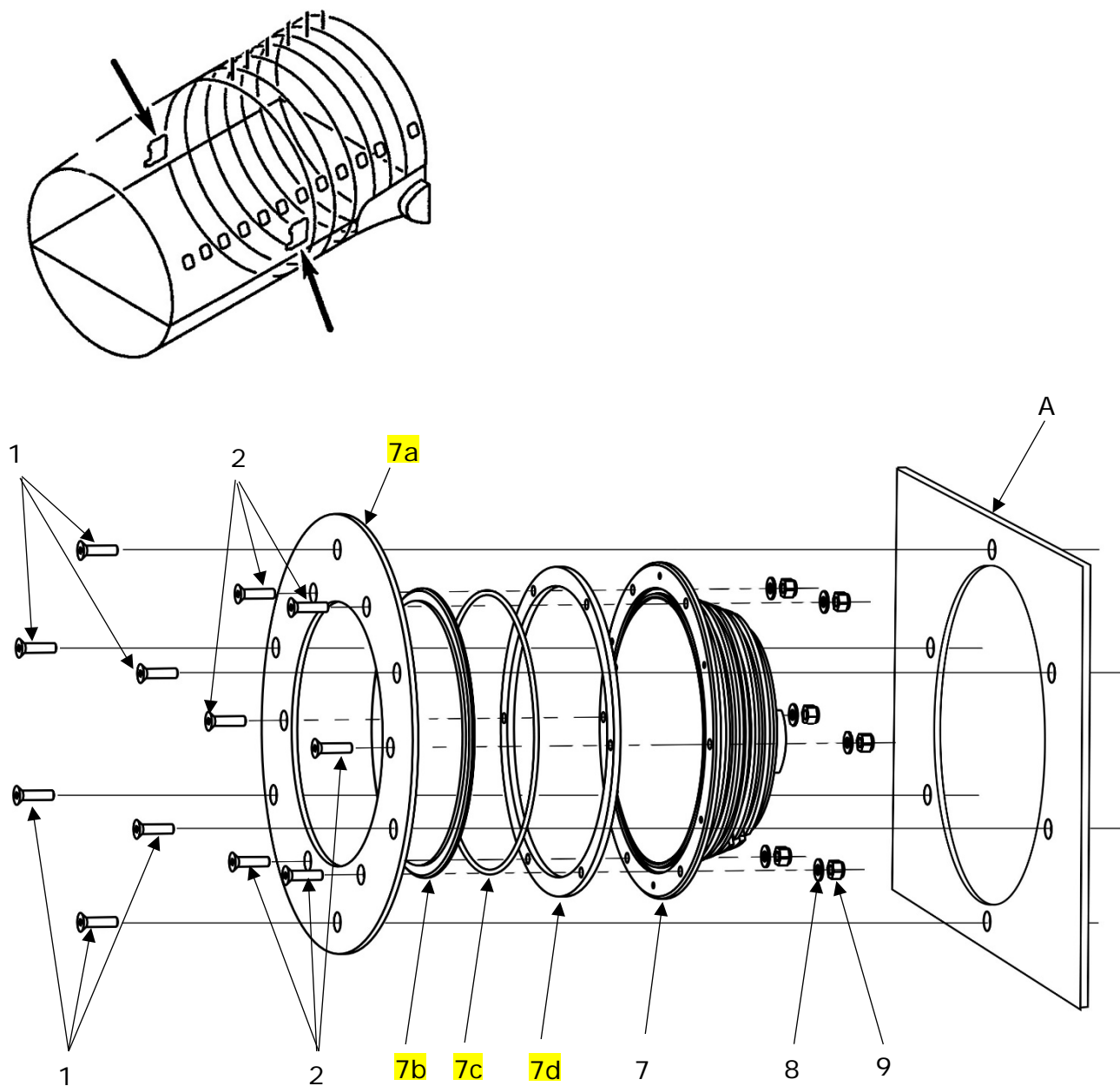


Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy
A	Orig. part	Airframe		6
1	Orig. part	Screw		6
2	AVS-SCM04016FAS-D0A	Screw M4 x 16 DIN 7991, Stainless steel		1
7	AVE-LGB7WNNUB-00T	Vesta wing illumination light		1
7	AVE-WIV1WCNUB-20C	Vesta wing illumination light 115 VAC		1
7a	AVS-P000104931-A00	Outside cover		1
7b	AVS-P000104104-A00	PC cover light		1
7c	AVS-OR115020N70-D0A	O-ring 115x2 NBR 70		1
7d	AVS-P000104932-D10	Gasket		1
8	AVS-WAM0432DFS-D0A	Washer M4 DIN125, Stainless steel		6
9	AVS-HLM0427SHS-D0A	Nylon-Insert Lock Nut M4 DIN985		6

NOTES:

Items A and 1 are original parts.

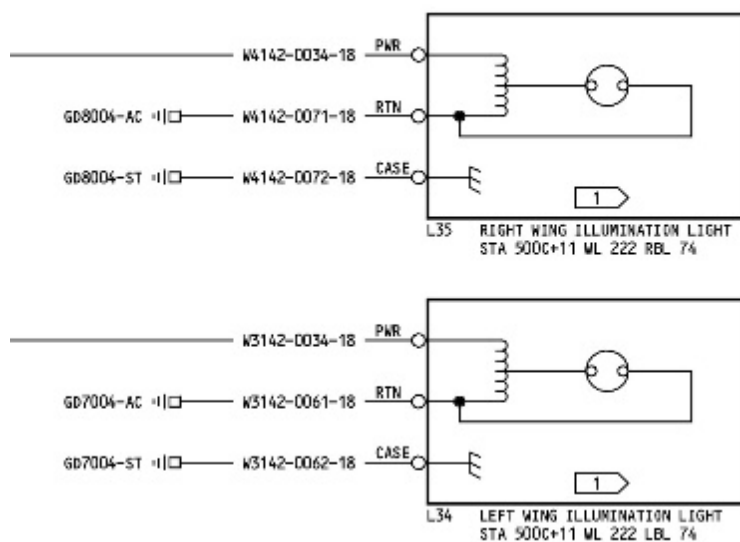
1. Remove the complete wing illumination light as per AMM.
2. Remove the connector.
3. Install the new, complete light assembly as per AMM by using the original fasteners.
Drill holes to the outer ring on installation.

1.9.1 AC/DC Installation

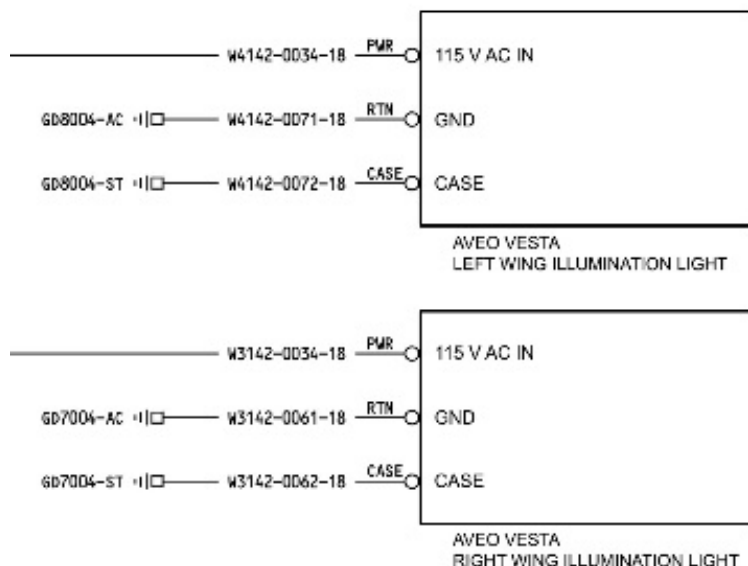
The installation of AC/DC converter is not needed as the Vesta wing illumination light includes a built-in converter.

1.9.2 Wiring Diagram of Wing Illumination Light - Vesta

Wiring diagram **before** installation of Aveo Vesta – wing illumination light:



Wiring diagram **after** installation of Aveo Vesta – wing illumination light:



1.10 Taxi Lights Installation – Nose Gear

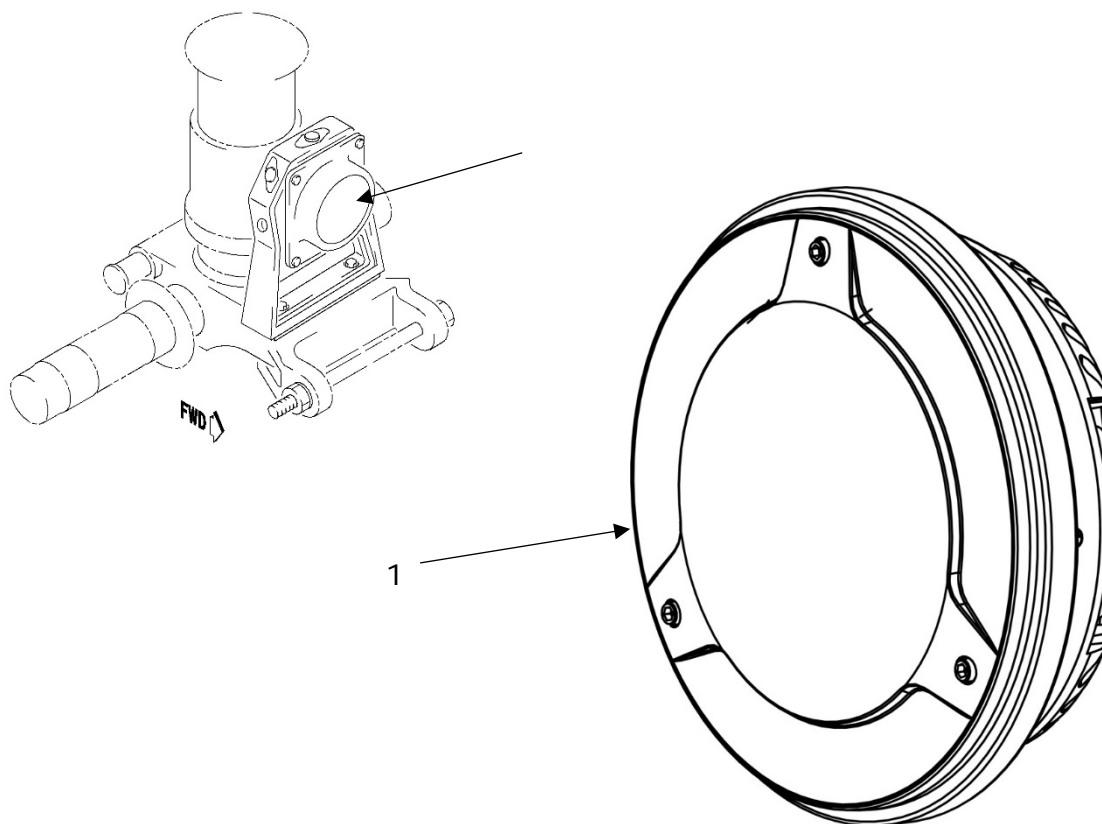
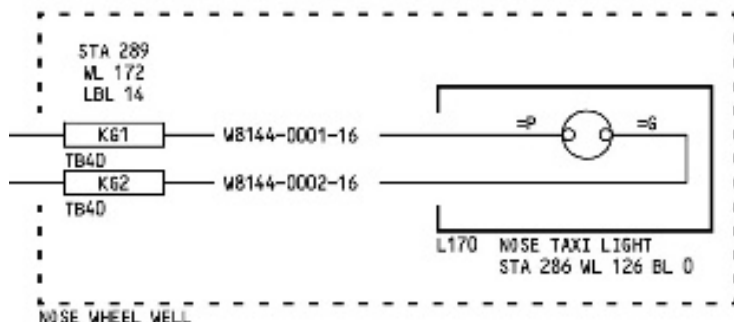


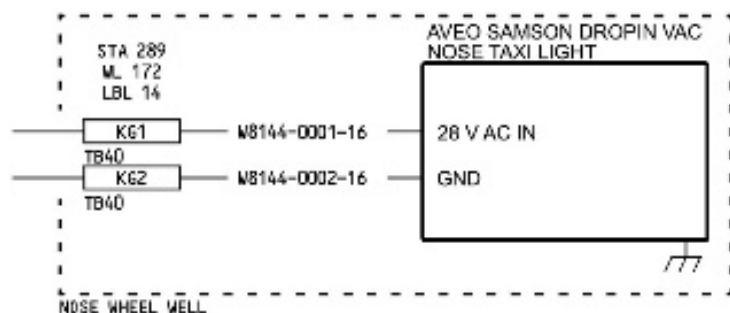
Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
1	AVE-S45MATSNT-TDS	Samson Drop-In TAXI 28VAC 400Hz		1
NOTES: Direct replacement of item 40 in IPC 33-45-01-04: Replace the bulb of the original light installation with the new LED light (item 1) according to AMM.				

1.10.1 Wiring Diagram of Nose Gear Taxi Light - Samson

Wiring diagram **before** installation of Aveo Samson – nose gear taxi light:



Wiring diagram **after** installation of Aveo Samson – nose gear taxi light:



1.11 Turn-off Light Installation – Wing Root

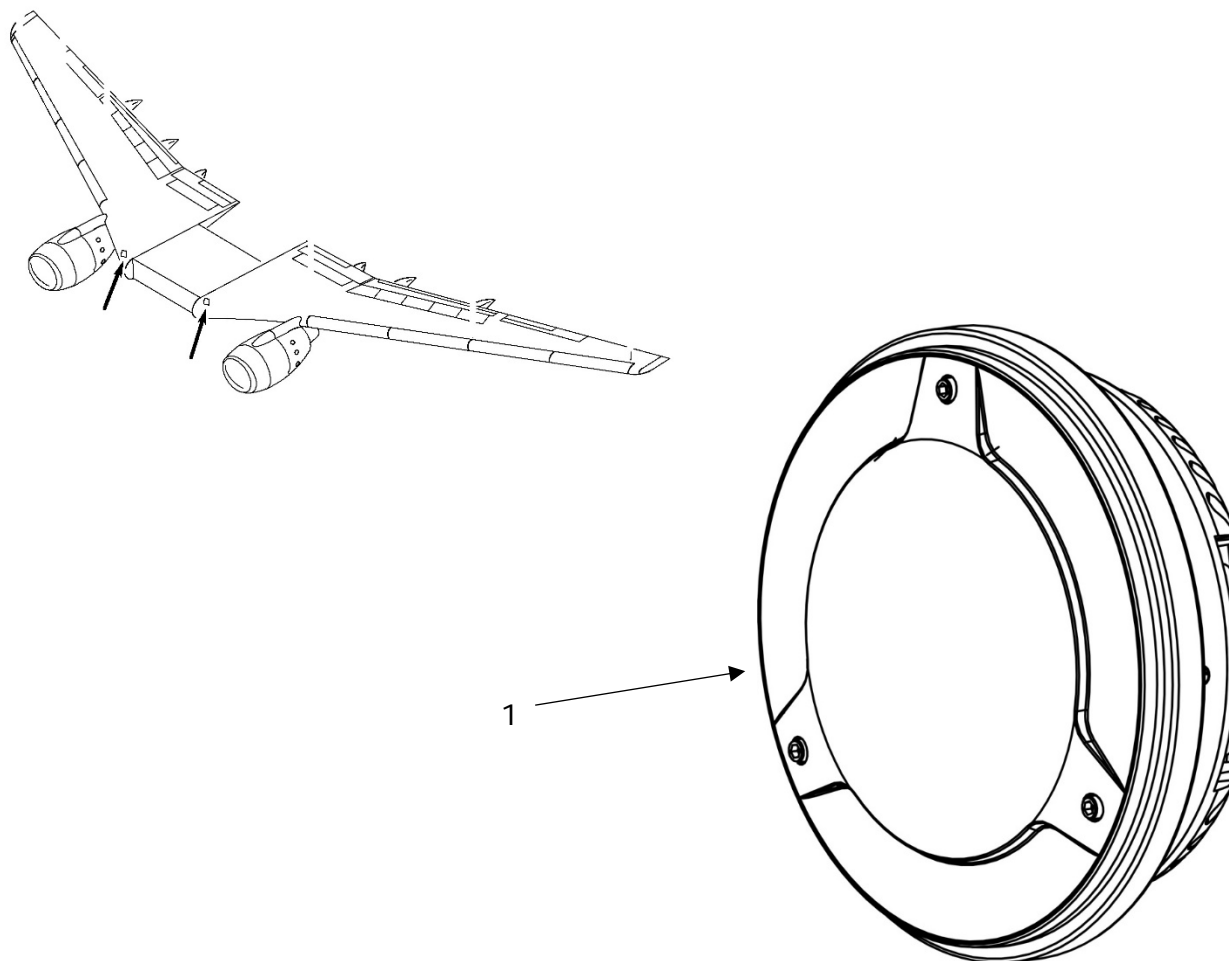
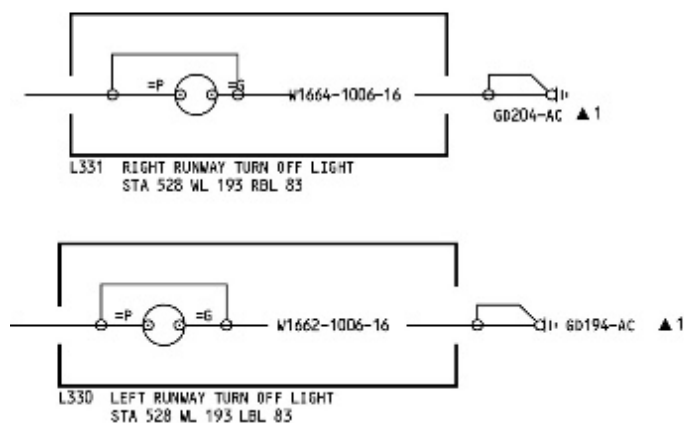


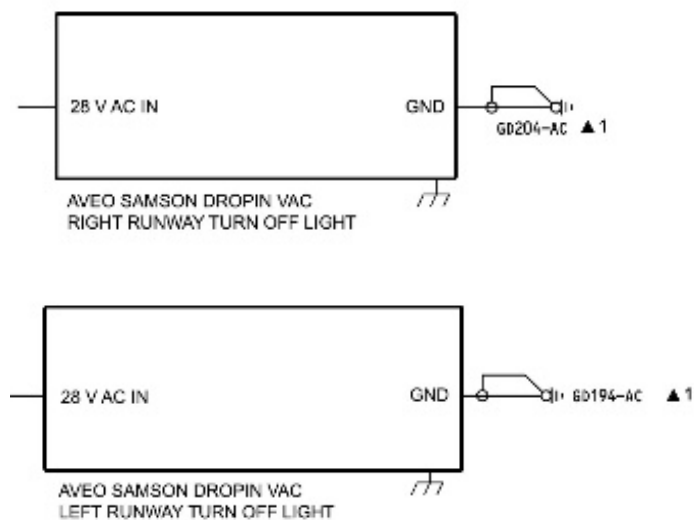
Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
1	AVE-S45MATSNT-TDS	Samson Drop-In TAXI 28VAC 400Hz		2
NOTES: Direct replacement of item 40 in IPC 33-45-02-01: Replace the bulb of the original light installation with the new LED light (item 1) according to AMM.				

1.11.1 Wiring Diagram of Runway Turn-off Light - Samson

Wiring diagram **before** installation of Aveo Samson – runway turn-off light:



Wiring diagram **after** installation of Aveo Samson – runway turn-off light:



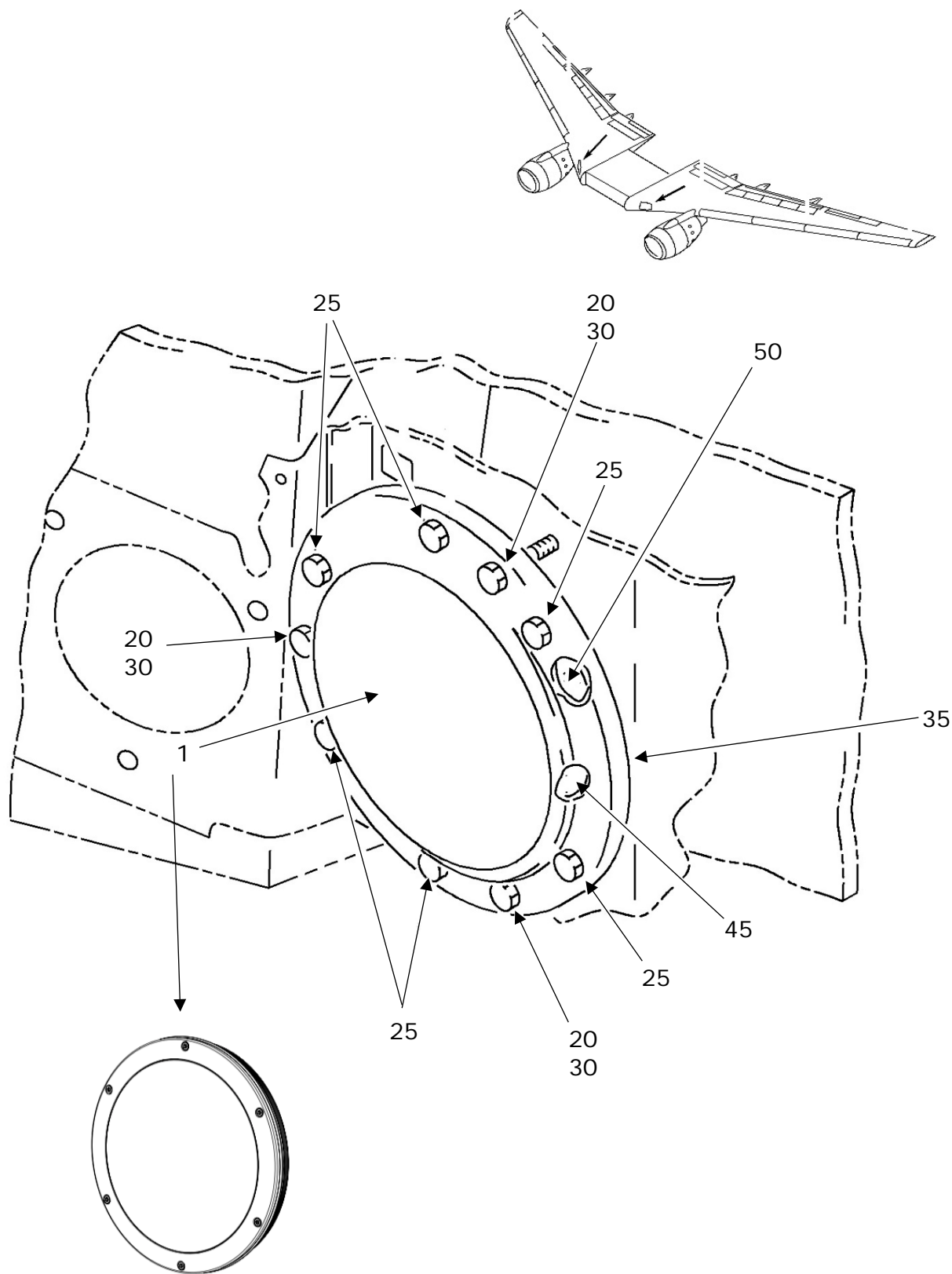
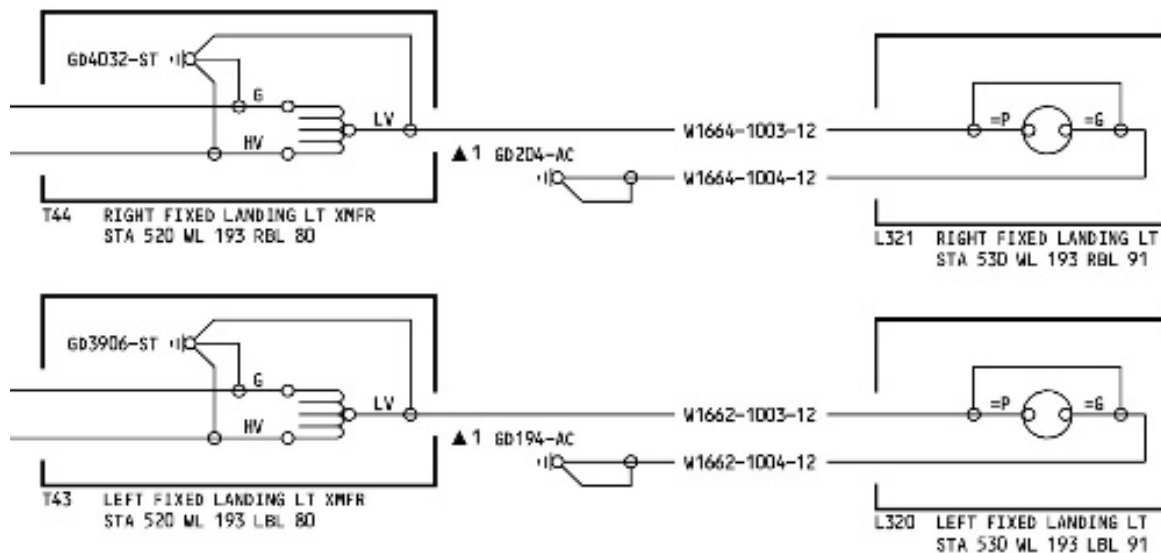
1.12 Landing Lights Installation – Fixed

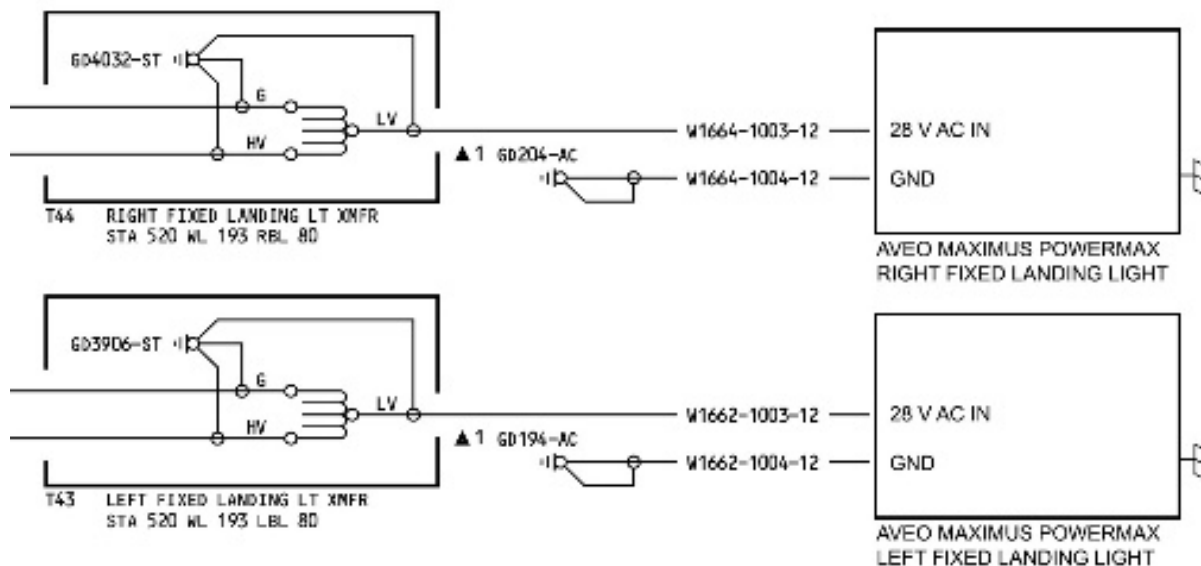
Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
1	AVE-MP18LW-T01	Maximus PowerMax		1
Original parts				
20	BACS12GU3K30	Screw		3
25	BACS12GU3K6	Screw		6
30	NAS43DD3-12FC	Spacer		3
35	9-64386-6	Retainer assy		1
45	65-53875-3 65-53875-19 65-53875-3 65-53875-19 65-17604-3	Gasket		1
50	9-64387-4	Frame		1
NOTES: Direct replacement of item 40 in IPC 33-42-01-01(A): Replace the bulb of the original light installation with the new LED light (item 1) according to AMM.				

1.12.1 Wiring Diagram of Fixed Landing Light – Maximus PowerMax

Wiring diagram **before** installation of Aveo Maximus PowerMax – fixed landing light:



Wiring diagram **after** installation of Aveo Maximus PowerMax – fixed landing light:



1.13 Landing Lights Installation – Retractable

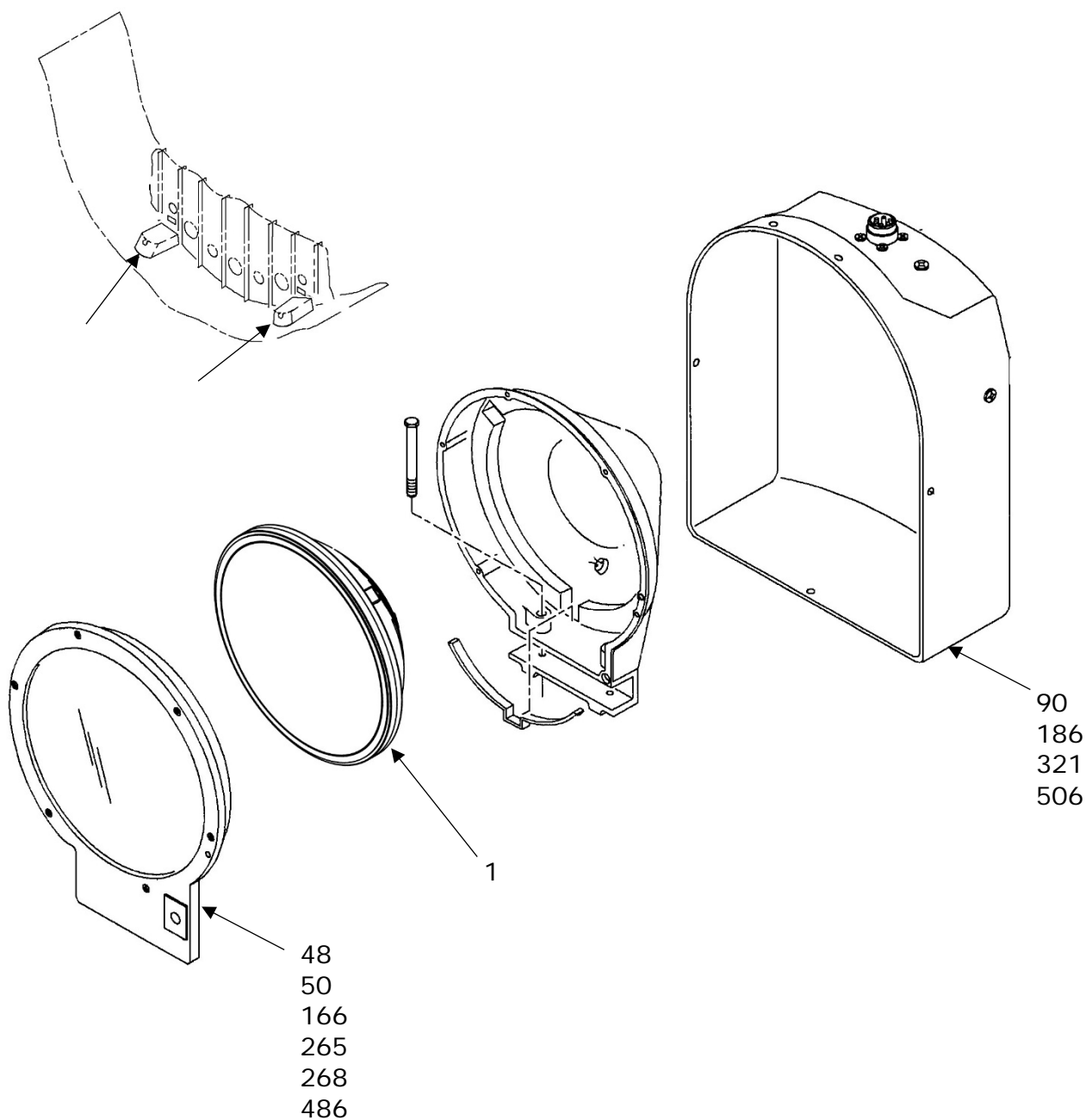
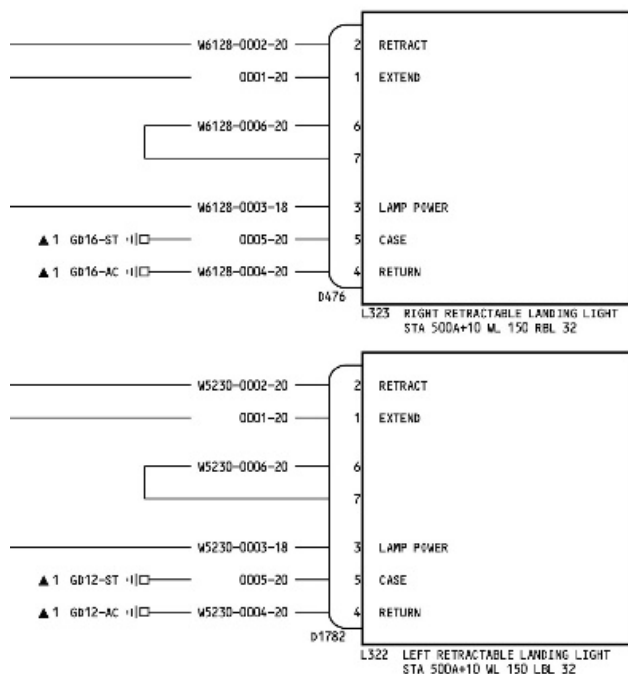


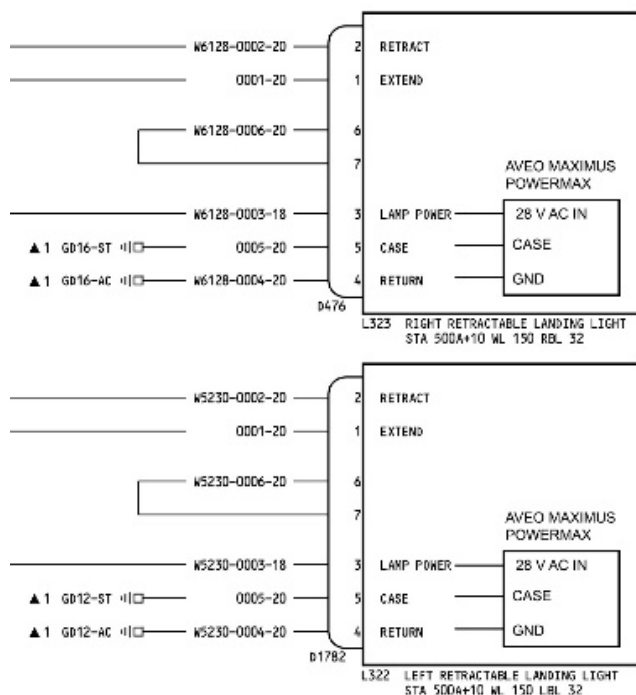
Figure and Index Number	Part Number	Description	Parts Avail.	QTY. Per assy.
1	AVE-MP18LW-T01	Maximus PowerMax		1
Original parts				
48	46-3421-1	Retainer assy		1
50	72464198-1	Retainer assy		1
90	46-2770-1	Cover		1
166	72464198-1	Retainer assy		1
186	46-2770-1	Cover		1
265	46-2768-1 46-3421-1	Retainer assy		1
268	72464198-1	Retainer assy		1
321	46-2770-1	Cover		1
486	72464198-1	Retainer assy		1
506	46-2770-1	Cover		1
NOTES: Direct replacement of item 89, 185, 320, 505 in IPC 33-42-02-01(A): Replace the bulb of the original light installation with the new LED light (item 1) according to AMM.				

1.13.1 Wiring Diagram of Retractable Landing Light – Maximus PowerMax

Wiring diagram **before** installation of Aveo Maximus PowerMax – landing light:



Wiring diagram **after** installation of Aveo Maximus PowerMax – landing light:



Part 2 Compliance demonstration

This document is in relation to the certification program AVE-MOD-002-PFC.

The compliance is demonstrated for the following certification specification:

Requirements	MoC	Statement of Compliance
CS 25.609 Protection of structure	MoC 0	(a) All parts installed are verified to be suitable. The installation instruction requests the aircraft structure to be inspected for probable corrosion before installing the new lights. (b) Not applicable
CS 25.1301 Function and installation	MoC 0	(a) All navigation lights are equivalent to ETSO certified lights. All taxi lights are qualified according to RTCA DO160 as per AVE-S45-001-CCL. (b) Not applicable as there is no change to any function. (c) Each piece of equipment is installed within its limits.
CS 25.1383 Landing lights	MoC	(a)(1) The landing light replacement is a direct bulb replacement. In addition is the position of the light at the inboard side of the wing root and under the belly fairing. From there is no direct angle to the cockpit is given. (a)(2) The position of the landing light is as original installation and this position allows light to the forward down or to the outboard side. The forward critical area is shadowed by the fuselage and can therefore be excluded. (a)(3) The landing light is slightly brighter (+2%) than the original bulb. The beam angle is 12° instead of the original 15° but due to the better optics the light distribution is much better and the higher color temperature improves the pilot view as it is closer to daylight. (b), (c) These parts are unchanged.
CS 25.1529 Instructions for Continued Airworthiness	MoC 0	The modification does not require any changes to the aircraft maintenance procedure which is clearly stated in §1.1 General.