

EC135 ALERT SERVICE BULLETIN

Indicating and Recording Systems – Instrument Panel – Inspection and modification of switches ENG CONTROL on switch unit 20VE

1. Planning Information

A. Effectivity

- | | | |
|---------------------------|---|---|
| (1) Helicopters affected: | EC135/EC635, all models, S/N 0005 up to and including S/N 0900. | |
| (2) Components affected: | Switch unit 20VE | L311M1009102 |
| | Switch unit 20VE | L311M1009103 |
| | Switch unit 20VE | L311M1009881 |
| | Switch unit 20VE | L311M1034101 |
| | Switch unit 20VE | L311M1034102 |
| | Switch unit 20VE | L311M1075101 |
| | Switch unit 20VE | L311M1075102 |
| | Switch unit 20VE | L311M1075103 |
| | Switch unit 20VE | L311M1075104 |
| | Switch unit 20VE | L311M1075881 |
| | Switch unit 20VE | L311M1085101 up to and including L311M1085109 |
| (3) Spare Parts affected: | See Section 1.A.(2). | |

B. Concurrent Requirements

Inform pilots immediately after installation of the switch locks i.a.w. Section 3.B. of this Alert Service Bulletin.

C. Reason

For proper operation of the engine switches ENG CONTROL (ENG I or II) the switch lever must be pulled before they are set from position OFF to position IDLE, from position FLIGHT to position IDLE or from position IDLE to OFF.

If the engine switches are not properly operated the locking groove on the switch lever may quickly wear. Under these circumstances a secure and exact positioning of the switch lever cannot be ensured. In order to ensure the proper functioning, an inspection that must be accomplished every 400 fh is introduced with this Alert Service Bulletin.

Furthermore, it is required to install a dual switch lock and to wire a second switch level on switch ENG CONTROL (ENG I and II).

D. Description

Inspect switch ENG CONTROL (ENG I and II). Retrofit dual switch lock. Wire additional switch levels. Re-identify switch unit 20VE. Perform functional test.

E. Compliance

- (1) The inspection of switches ENG CONTROL (ENG I and II) and, if necessary, the replacement i.a.w. Section 3.A must be accomplished within the next 100 fh after receipt of this Alert Service Bulletin, but after two months at the latest.



EC135 ALERT SERVICE BULLETIN

- (2) After this, the inspection of switches ENG CONTROL (ENG I and II) must be repeated i.a.w Section 3.A. together with the intermediate inspection (400 fh + 40 fh tolerance).
- (3) Retrofit of the dual switch locks i.a.w. Section 3.B. and the wiring of the second switch level on switch ENG CONTROL (ENG I and II) are both recommended at the next possible opportunity, but within 12 months after receipt of this Alert Service Bulletin at the latest.

F. Approval

The information or instructions contained in this document refer to change no. 1854. The technical content of this document is approved under the authority of DOA No. EASA.21J.034.

G. Manpower

Inspection of switches ENG CONTROL (ENG I and II): approx. 0.5 man-hours.

Retrofit of dual switch locks: approx. 1 man-hour.

Wiring of additional switch levels: approx. 5 man-hours.

H. Weight and Balance

Not applicable.

I. Electrical Load Data

Not applicable.

J. Software Accomplishment Summary

Not applicable.

K. References

AMM EC135 and AMM EC135/635.

L. Other publications affected

The changes to FLM EC135/Section 7, SDS/AMM/MSM EC135, EC135/635, IPC EC135 and to IPC EC635 which are required as a result of this Alert Service Bulletin will be incorporated with one of the next revisions.

M. Interchangeability of Parts

Not applicable.

EC135 ALERT SERVICE BULLETIN

2. Material Information

A. Material – Price and Availability

Information on cost and availability of required retrofit kits SB-EC135-31A-045-2C1 up to and including SB-EC135-31A-045-2C4 will be provided by ECD, Dept. Spares Order Administration on request.

B. Support Information

Not applicable.

C. Material Necessary for Each Helicopter

EFFECTIVITY All

(starting with S/N 0870 it may be the case that the dual switch locks are a standard item of equipment and thus retrofit kit SB-135-31A-045-2C1 is not required.)

Retrofit kit SB-135-31A-045-2C1 similar to design document L311M1075886.

No.	New P/N	Keyword	Old P/N	Qty	Disposition
1	AD009472	Switch lock	-	2	A
	-		130KU02B6AA	2	C
2	MBBN3055E1AS	Placard	-	1	A

EFFECTIVITY Switch unit 20VE **L311M1009102, L311M1034101** (Wiring of additional switch levels).

Retrofit kit SB-135-31A-045-2C2 similar to design document L311M1075882.

No.	New P/N	Keyword	Old P/N	Qty	Disposition
1	MBBN3495E	Module	-	1	A
2	EN3155-016M2222	Contact	-	14	A
3	EN3155-016M2020	Contact	-	4	A
4	EN3155-014M2018	Contact	-	2	A
5	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1105	-	1	A
6	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1107	-	1	A
7	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1114	-	1	A
8	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1116	-	1	A

EC135 ALERT SERVICE BULLETIN

No.	New P/N	Keyword	Old P/N	Qty	Disposition
9	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1205	-	1	A
10	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1207	-	1	A
11	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1214	-	1	A
12	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1216	-	1	A
13	L311M1009212	Placard	-	1	A
14	-	Locking fluid (CM 620)	-	a.n.*	B
*a.n. = as needed					

EFFECTIVITY Switch unit 20VE **L311M1009103, L311M1034102, L311M1075101, L311M1085101 – L311M1085109** (Wiring of additional switch levels).

Retrofit kit SB-135-31A-045-2C3 similar to design document L311M1075883.

No.	New P/N	Keyword	Old P/N	Qty	Disposition
1	MBBN3495E	Module	-	1	A
2	EN3155-016M2222	Contact	-	4	A
3	EN3155-016M2020	Contact	-	8	A
4	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1107	-	1	A
5	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1114	-	1	A
6	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1116	-	1	A
7	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1207	-	1	A
8	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1214	-	1	A
9	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1216	-	1	A
10	L311M1009212	Placard	-	1	A
11	-	Locking fluid (CM 620)	-	a.n.*	B
*a.n. = as needed					

EC135 ALERT SERVICE BULLETIN

EFFECTIVITY Switch unit 20VE **L311M1009881, L311M1075102, L311M1075103, L311M1075881** (Wiring of additional switch levels).

Retrofit kit SB-135-31A-045-2C4 similar to design document L311M1075885.

No.	New P/N	Keyword	Old P/N	Qty	Disposition
1	EN3155-016M2222	Contact	-	4	A
2	EN3155-016M2020	Contact	-	8	A
3	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1107	-	1	A
4	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1114	-	1	A
5	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1116	-	1	A
6	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1207	-	1	A
7	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1214	-	1	A
8	EN2267-010A004S (0.30 m)	Wire with printed inscription 8001-1216	-	1	A
9	-	Locking fluid (CM 620)	-	a.n.*	B
*a.n. = as needed					

Disposition:

A = New, included in kit.

B = Consumable material, to be ordered from the Interturbine company as needed.
CM item number i.a.w. list of consumable materials in the AMM.

C = Part with old P/N is discarded.
Discarded parts are not taken back by ECD.

D. Material Necessary for Each Spare

Not applicable.

E. Reidentified Parts

Re-identification i.a.w. Section 3.D. of this Alert Service Bulletin.

F. Special Tooling

Not applicable.



3. Accomplishment instructions

Table of contents:

- A. Inspection of switches ENG CONTROL (ENG I and II).
- B. Retrofit of dual switch locks.
- C. Wiring of additional switch levels.
- D. Re-identification of switch unit 20VE.
- E. Functional test.
- F. Conclusive work.

A. Inspect switches ENG CONTROL (ENG I and II) on switch unit 20VE:

NOTE For proper operation of the engine switch ENG CONTROL (ENG I or II) the switch lever must be pulled before it is set from position OFF to position IDLE, from position FLIGHT to position IDLE or from position IDLE to OFF. If the engine switch is not properly operated the locking groove on the switch lever will wear.

NOTE Inspection of switches ENG CONTROL must be accomplished on switch ENG I and ENG II.

- (1) De-energize helicopter electrical system i.a.w. AMM, 24-00-00, 2-1.
- (2) Set switch lever ENG CONTROL (1, Figure 1) to position FLIGHT.
- (3) Accomplish a visual check of the locking groove (2, Figure 1) for signs of wear.
- (4) Check, that the switch ENG CONTROL can not be set from position FLIGHT to position IDLE by applying low pressure, but without pulling the switch lever (1, Figure 1, View A).
- (5) If switching is possible or the locking groove has visible signs of wear switch ENG CONTROL must be replaced as follows:
 - (a) Remove switch unit 20VE i.a.w. AMM, 31-11-20, 4-1.
 - (b) Fold up switch lock (5, Figure 2) of the switch to be replaced. Loosen nut using a suitable tool and pull out switch (6).

NOTE In order to avoid wiring errors, disconnect one wire after the other from the defective switch and insert it in a new switch on the corresponding contact location. The new switch with P/N 945UN01Q4AA8B can be ordered at ECD.

- (c) Disconnect wires from old switch and insert in new switch.
- (d) Install new switch (6) with switch lock (5) and error-proof positioner in switch unit 20VE. Attach nut with suitable tool.



EC135 ALERT SERVICE BULLETIN

- (e) Install switch unit 20VE i.a.w. AMM, 31-11-20, 4-1.
- (f) Perform functional test of switch unit 20VE i.a.w. AMM, 31-11-20, 5-1.
- (6) Confirm accomplishment of Section 3.A. of this Alert Service Bulletin by an entry in the historical record of the helicopter.

B. Retrofit of dual switch locks:

NOTE Starting with S/N 0870 it is possible that the switch locks are a standard item of equipment. If switch locks are already installed confirm accomplishment of the Alert Service Bulletin i.a.w. Section 3.B.(6).

- (1) De-energize helicopter electrical system i.a.w. AMM, 24-00-00, 2-1.

NOTE Retrofit of dual switch lock must be accomplished on switch ENG CONTROL ENG I and ENG II.

- (2) Remove switch unit 20VE i.a.w. AMM, 31-11-20, 4-1.
- (3) Fold up switch lock (5, Figure 2) on switch (6). Loosen nut using suitable tool and remove switch lock.
- (4) Install switch with new switch lock and error-proof positioner in switch unit 20VE. Attach nut with suitable tool.
- (5) Check switches ENG CONTROL with switch lock:

NOTE It must be possible to correctly operate the switch locks.

- (a) Set switch ENG CONTROL to position IDLE. Fold lower switch lock to the right. Ensure that switch ENG CONTROL cannot be set to position OFF.
- (b) Set switch ENG CONTROL to position FLIGHT. Fold upper switch lock to the right. Ensure that switch ENG CONTROL cannot be set to position IDLE.
- (c) Set switch ENG CONTROL to position OFF.
- (6) Confirm accomplishment of Section 3.B. of this Alert Service Bulletin by an entry in the historical record of the helicopter.

EFFECTIVITY S/N 0005–0699 (starting with S/N 0700 the wiring of the additional switch level has been a standard item of equipment).

C. Wiring of additional switch levels:

- (1) De-energize helicopter electrical system i.a.w. AMM, 24-00-00, 2-1.
- (2) Remove switch unit 20VE i.a.w. AMM, 31-11-20, 4-1.

EC135 ALERT SERVICE BULLETIN

NOTE On helicopters up to and including S/N 0168 a switch unit can be installed that has an additional switch row (see Figure 3, 4) with part numbers L311M1085101 up to and including L311M1085109. For the wiring of the additional switch levels the same instructions are applicable as for switch unit L311M1034102.

- (3) Read off part number of switch unit 20VE from placard (7, Figure 2).
- (4) Remove rear plate of switch unit 20VE. To do so, loosen screws (3, Figure 2) and store them for re-installation together with washers (4).

EFFECTIVITY Switch unit 20VE with part number **L311M1009102, L311M1034101**.

- (5) Install module TB32 (1, Figure 2) in switch unit 20VE.
- (6) Affix placard (2).
- (7) Disconnect the wires mentioned below from switch unit (see WDM 80-00-11):
 - Wire 8001-1151 from 20VEA Pin 4
 - Wire 8001-1169 from TB102 Pin M
 - Wire 8001-1251 from 20VEB Pin 4
 - Wire 8001-1269 from TB202 Pin M
- (8) Reroute disconnected wires i.a.w. Table 1 or Wiring Diagram (Figure 6) and attach to installed wire harnesses by means of lacing tape. Cut off contacts and crimp on new contacts i.a.w. Table 1.
- (9) Route new wires i.a.w. Table 1 or Wiring Diagram (Figure 6) and attach to installed wire harnesses by means of lacing tape.
- (10) Strip wires i.a.w. Table 1. Crimp on contacts and insert in respective component.

Wire code	from component	Pin	P/N Contact	to component	Pin	P/N Contact	Note
8001-1105	20VEA	4	EN3155-014M2018	TB32	E	EN3155-016M2222	new
8001-1107	TB102	M	EN3155-016M2222	TB32	L	EN3155-016M2222	new
8001-1114	104KA	H1	EN3155-016M2020	TB32	K	EN3155-016M2222	new
8001-1116	104KA	H3	EN3155-016M2020	TB32	G	EN3155-016M2222	new
8001-1151	104KA	D3	already installed	TB32	F	EN3155-016M2222	reroute
8001-1169	104KA	D1	already installed	TB32	J	EN3155-016M2222	reroute
8001-1205	20VEB	4	EN3155-014M2018	TB32	k	EN3155-016M2222	new
8001-1207	TB202	M	EN3155-016M2222	TB32	g	EN3155-016M2222	new
8001-1214	204KA	H1	EN3155-016M2020	TB32	f	EN3155-016M2222	new
8001-1216	204KA	H3	EN3155-016M2020	TB32	n	EN3155-016M2222	new

EC135

ALERT SERVICE BULLETIN

Wire code	from component	Pin	P/N Contact	to component	Pin	P/N Contact	Note
8001-1251	204KA	D3	already installed	TB32	m	EN3155-016M2222	reroute
8001-1269	204KA	D1	already installed	TB32	e	EN3155-016M2222	reroute

Table 1: Wiring Diagram of additional switch levels for switch unit 20VE
L311M1009102, L311M1034101.

EFFECTIVITY Switch unit 20VE with part number **L311M1009103, L311M1034102, L311M1075101, L311M1085101-L311M1085109.**

(11) Install module TB32 (1, Figure 2) in switch unit 20VE.

(12) Affix placard (2).

(13) Disconnect the wires mentioned below from switch unit (see WDM 80-00-21):

Wire 8001-1189 from TB102 Pin d
 Wire 8001-1191 from TB102 Pin e
 Wire 8001-1289 from TB202 Pin h
 Wire 8001-1291 from TB202 Pin e

(14) Reroute disconnected wires i.a.w. Table 2 or Wiring Diagram (Figure 7) and attach to installed wire harnesses by means of lacing tape.

(15) Reroute new wires i.a.w. Table 2 or Wiring Diagram (Figure 7) and attach to installed wire harnesses by means of lacing tape.

(16) Strip wires i.a.w Table 2. Crimp on contacts and insert in respective component.

Wire code	from component	Pin	P/N Contact	to component	Pin	P/N Contact	Note:
8001-1107	104KA	F3	EN3155-016M2020	TBN1	B	EN3155-016M2020	new
8001-1114	104KA	F1	EN3155-016M2020	TB32	G	EN3155-016M2222	new
8001-1116	104KA	F2	EN3155-016M2020	TB102	d	EN3155-016M2222	new
8001-1189	104KA	H2	already installed	TB32	F	already installed	reroute
8001-1191	104KA	E3	already installed	TB32	E	already installed	reroute
8001-1207	204KA	F3	EN3155-016M2020	TBN1	M	EN3155-016M2020	new
8001-1214	204KA	F1	EN3155-016M2020	TB32	n	EN3155-016M2222	new
8001-1216	204KA	F2	EN3155-016M2020	TB202	h	EN3155-016M2222	new

EC135 ALERT SERVICE BULLETIN

Wire code	from component	Pin	P/N Contact	to component	Pin	P/N Contact	Note:
8001-1289	204KA	H2	already installed	TB32	m	already installed	reroute
8001-1291	204KA	E3	already installed	TB32	k	already installed	reroute

Table 2: Wiring Diagram of additional switch levels for switch unit 20VE
L311M1075101, L311M1034102, L311M1009103 or L311M1085101–
L311M1085109.

EFFECTIVITY Switch unit 20VE with part number **L311M1009881, L311M1075102, L311M1075103, L311M1075881.**

(17) Disconnect the wires mentioned below from switch unit (see WDM 80-00-21):

Wire 8001-1189 from TB102 Pin d
Wire 8001-1191 from TB102 Pin e
Wire 8001-1289 from TB202 Pin h
Wire 8001-1291 from TB202 Pin e

(18) Reroute disconnected wires i.a.w. Table 3 or Wiring Diagram (Figure 8) and attach to installed wire harnesses by means of lacing tape.

(19) Reroute new wires i.a.w. Table 3 or Wiring Diagram (Figure 8) and attach to installed wire harnesses by means of lacing tape.

(20) Strip wires i.a.w Table 3. Crimp on contacts and insert in respective component.

Wire code	from component	Pin	P/N Contact	to component	Pin	P/N Contact	Note
8001-1107	104KA	F3	EN3155-016M2020	TBN1	B	EN3155-016M2020	new
8001-1114	104KA	F1	EN3155-016M2020	TB32	G	EN3155-016M2222	new
8001-1116	104KA	F2	EN3155-016M2020	TB102	d	EN3155-016M2222	new
8001-1189	104KA	H2	already installed	TB32	F	already installed	reroute
8001-1191	104KA	E3	already installed	TB32	E	already installed	reroute
8001-1207	204KA	F3	EN3155-016M2020	TBN1	M	EN3155-016M2020	new
8001-1214	204KA	F1	EN3155-016M2020	TB32	n	EN3155-016M2222	new
8001-1216	204KA	F2	EN3155-016M2020	TB202	h	EN3155-016M2222	new
8001-1289	204KA	H2	already installed	TB32	m	already installed	reroute
8001-1291	204KA	E3	already installed	TB32	k	already installed	reroute

Table 3: Wiring Diagram of additional switch levels for switch unit 20VE
L311M1009881, L311M1075102, L311M1075103, or L311M1075881.

(21) Install rear plate to switch unit 20VE using screws and washers (3, 4, Figure 2). Secure screws (3) with locking fluid (CM 620).

EC135 ALERT SERVICE BULLETIN

EFFECTIVITY All.

D. Re-identification of switch unit 20VE:

- (1) Using a permanent, black pen, cross out old part number on placard (7, Figure 2) of switch unit 20VE but leave it still legible.
- (2) Affix new placard (8, Figure 2) next to the already affixed placard.

EFFECTIVITY Switch unit 20VE with part number L311M1034102 or L311M1085101 – L311M1085109.

- (3) Compare switch unit with the possible variants shown in Figure 3 – Figure 5 and verify new part number.
- (4) Using a permanent, black pen, write verified part number onto placard (8, Figure 2).
- (5) If switch unit 20VE cannot be verified contact ECD customer support.

EFFECTIVITY All switch units 20VE excluding L311M1034102 or L311M1085101 – L311M1085109.

- (6) Using a permanent, black pen, write part number onto placard (8, Figure 2) i.a.w. Table 4.
- (7) Install switch unit 20VE i.a.w. AMM, 31-11-20, 4-1.

Old part number	New part number
L311M1009102	L311M1009150
L311M1009103	L311M1009155
L311M1009881	L311M1009160
L311M1034101	L311M1034150
L311M1075101	L311M1075150
L311M1075102	L311M1075155
L311M1075103	L311M1075107
L311M1075104	L311M1075107
L311M1075881	L311M1075155

Table 4: Reference list for re-identification of part numbers.

E. Functional test:

- (1) Perform functional test of switch unit 20VE i.a.w. AMM, 31-11-20, 5-1.



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EC135 ALERT SERVICE BULLETIN

F. Final work steps:

- (1) Cross out old part number of switch unit 20VE in list of parts to be recorded and enter new part number.
- (2) Confirm accomplishment of this Alert Service Bulletin by an entry in the historical record of the helicopter.

4. Appendix

Not applicable.

EC135 ALERT SERVICE BULLETIN



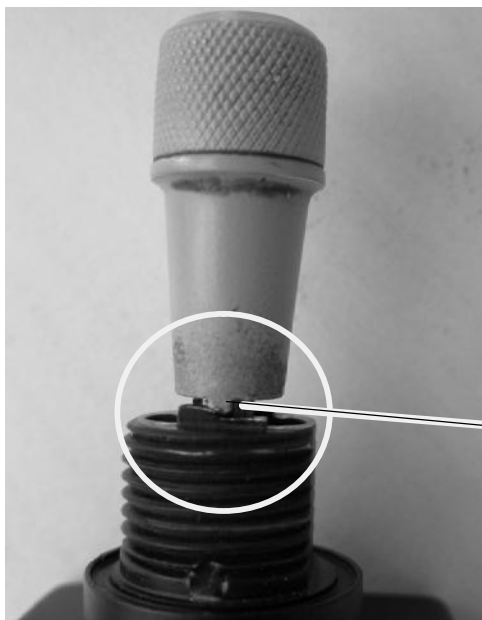
Switch unit 20VE

View A



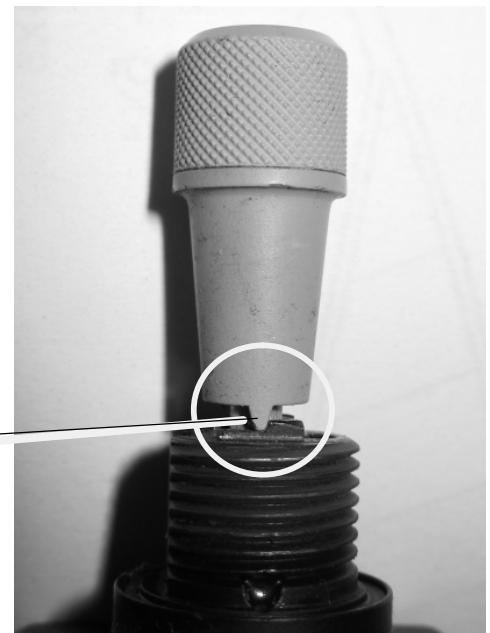
- 1 Switch lever
- 2 Locking groove

View B



Worn locking groove

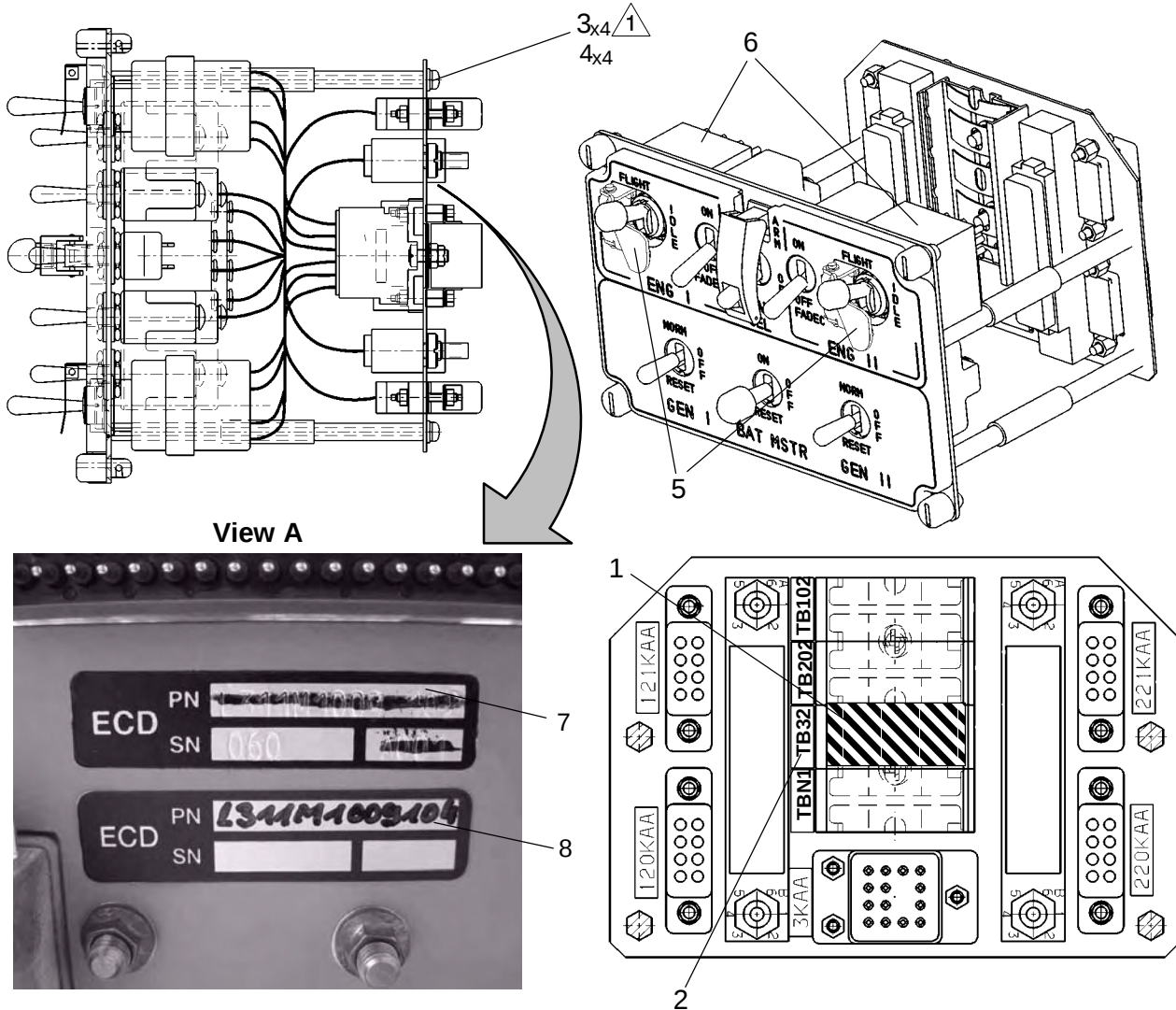
View C



Not worn locking groove

Inspection of Locking Groove
Figure 1

EC135 ALERT SERVICE BULLETIN



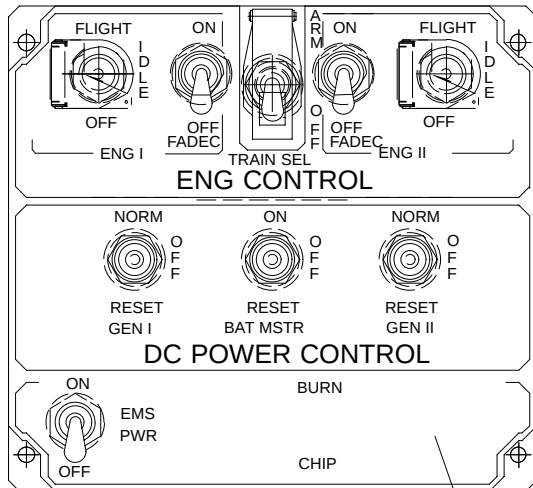
- | | | | |
|---|-------------|---------------|----|
| 1 | Module | MBBN3495E | |
| 2 | Placard | L311M1009212 | |
| 3 | Screw | | |
| 4 | Washer | | |
| 5 | Switch lock | 130KU02B6AA | △2 |
| | | AD009472 | △3 |
| 6 | Switch | 945UN01Q4AA8B | |
| 7 | Placard | △2 | |
| 8 | Placard | MBBN3055E1AS | △3 |

- △1 Secure with locking fluid (CM 620)
- △2 Before retrofit
- △3 After retrofit

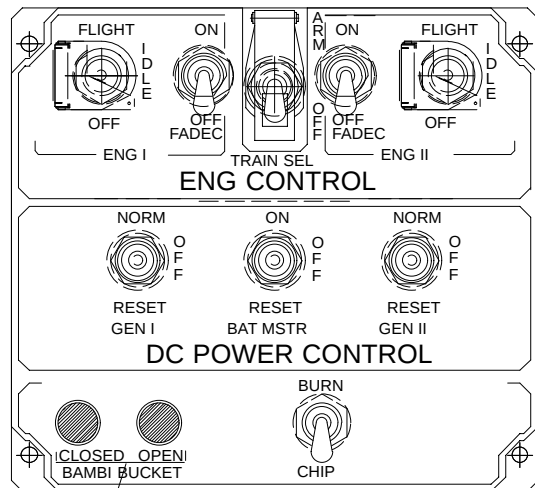
Typical Switch Unit 20VE
Figure 2

EC135 ALERT SERVICE BULLETIN

New P/N L311M1085150 (HELICAP)
L311M1085165 (AIRSERVICE) 

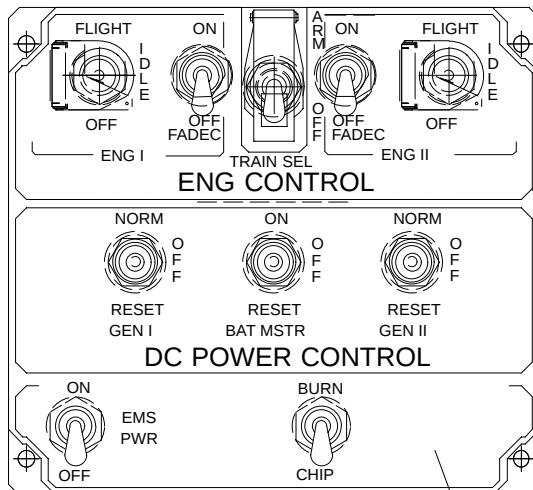


New P/N L311M1085155 

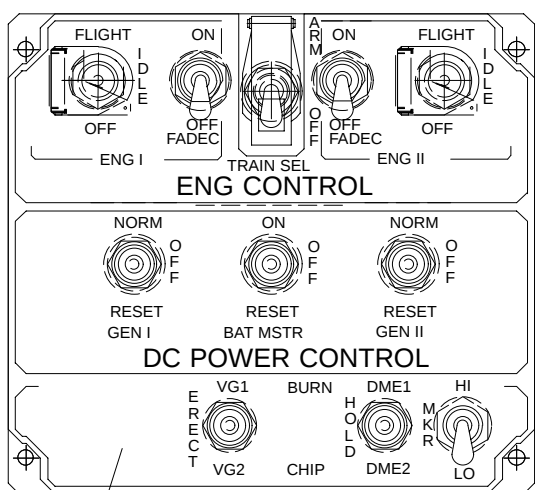


Additional switch row

New P/N L311M1085160 



New P/N L311M1085170 



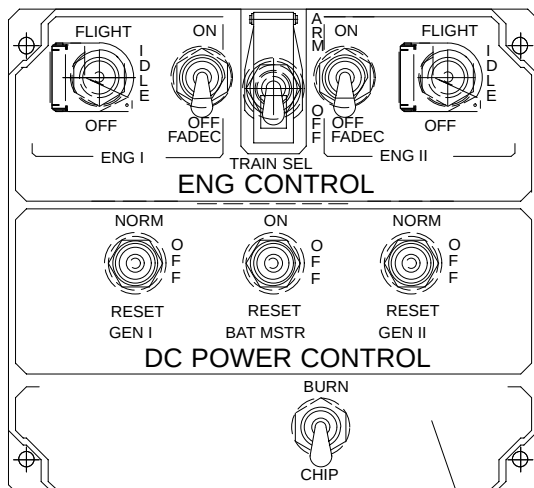
additional switch row

 After accomplishment of ASB EC135-31A-045
identify switch unit with this number

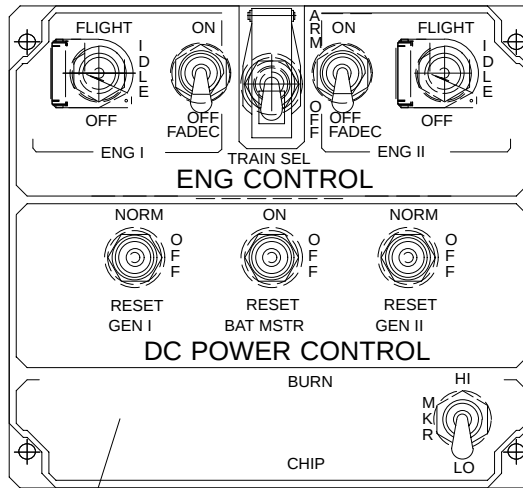
Possible Variants of Switch Units (up to and including H/C S/N 0168)
Figure 3

EC135 ALERT SERVICE BULLETIN

New P/N L311M1085175 ¹

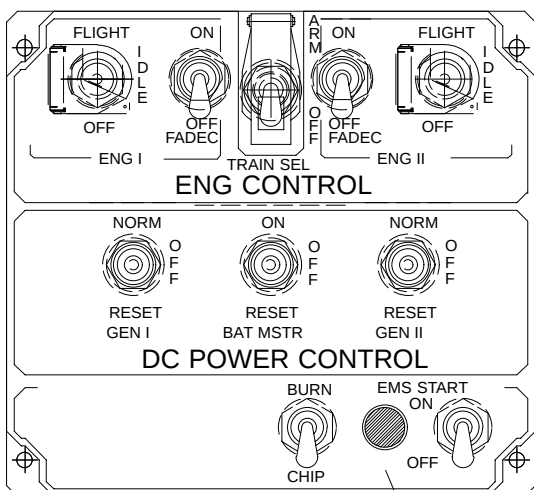


New P/N L311M1085180 ¹

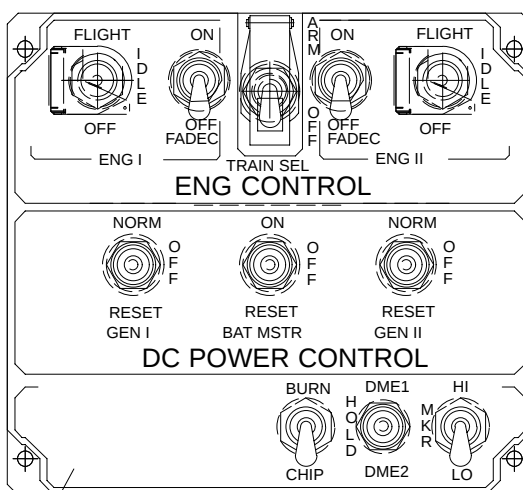


additional switch row

New P/N L311M1085185 ¹



New P/N L311M1085190 ¹



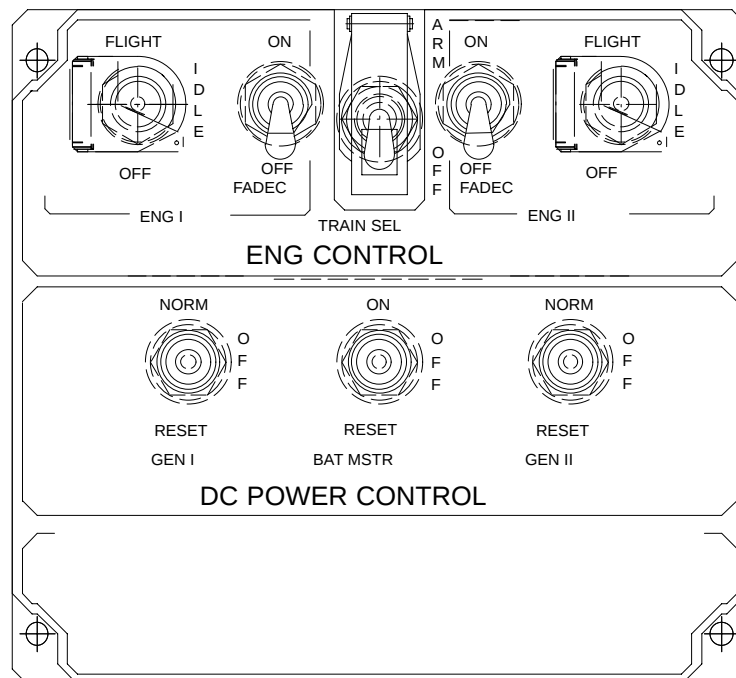
additional switch row

¹ After accomplishment of ASB EC135-31A-045
identify switch unit with this number

Possible Variants of Switch Units (up to and including H/C S/N 0168)
Figure 4

EC135 ALERT SERVICE BULLETIN

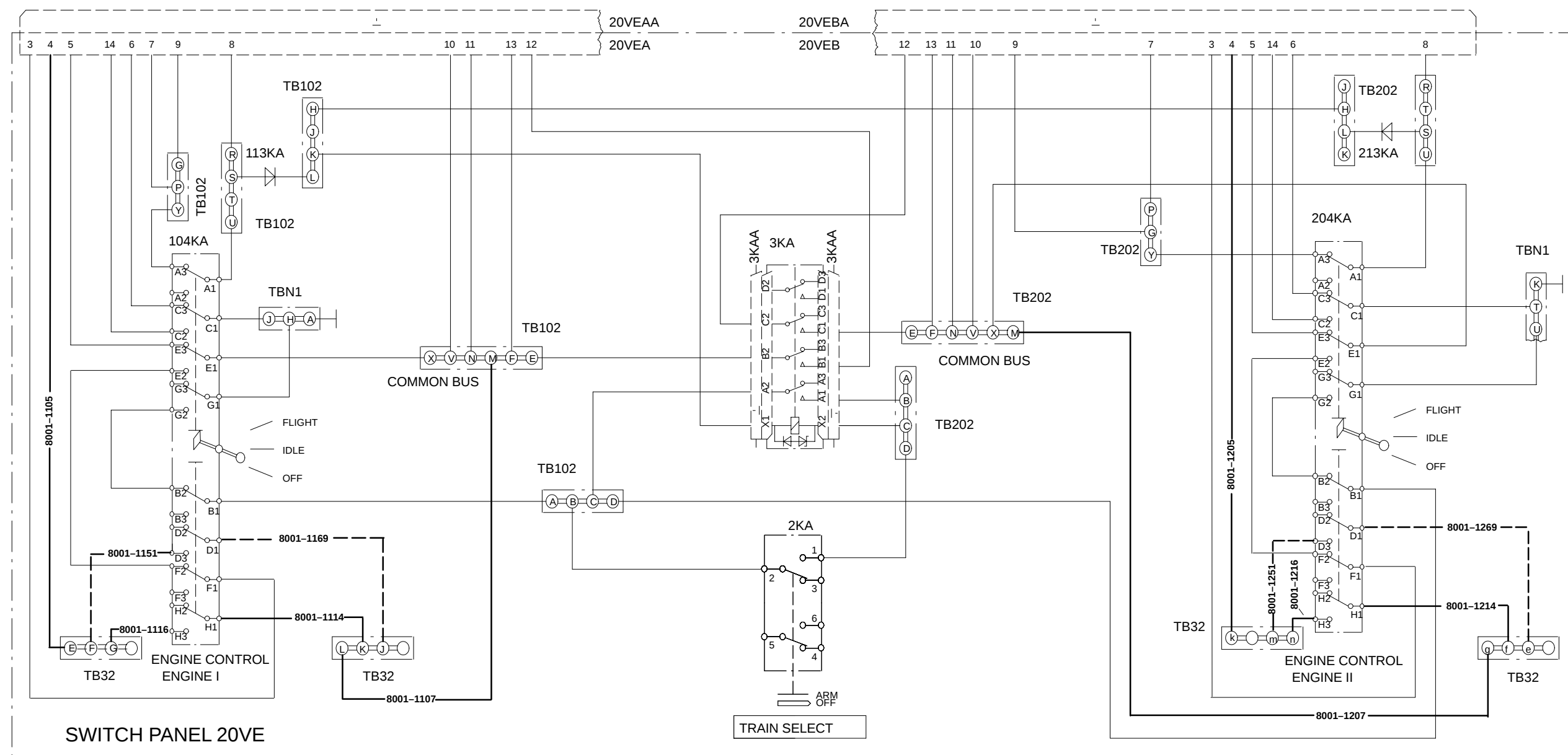
New P/N L311M1034155 



 After accomplishment of ASB EC135-31A-045
identify switch unit with this number

Possible Variants of Switch Units (up to and including H/C S/N 0168)
Figure 5

ALERT SERVICE BULLETIN



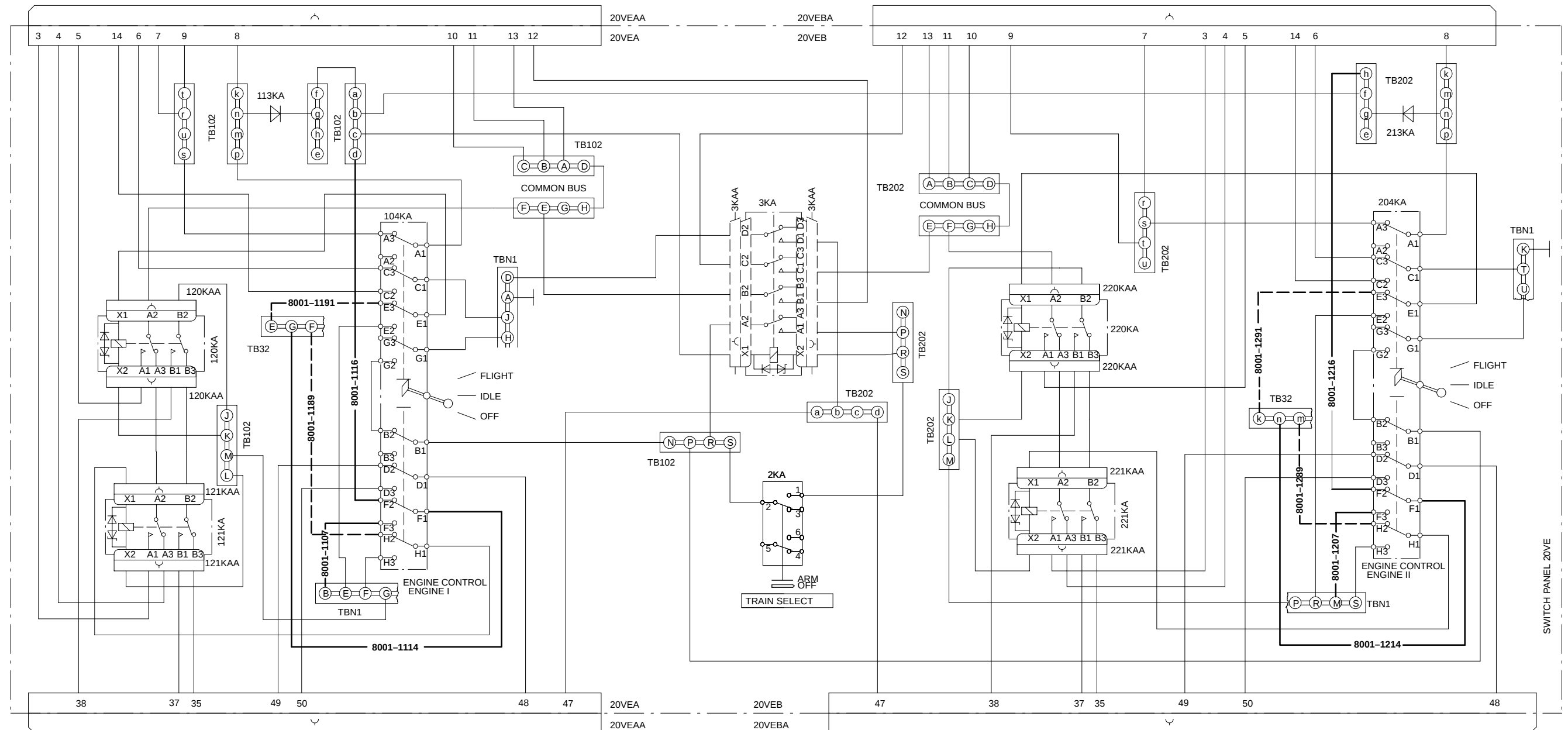
effective for switch unit 20VE

L311M1009150

L311M1034150

Wiring Diagram after Accomplishment of ASB EC135-31A-045
Figure 6

ALERT SERVICE BULLETIN



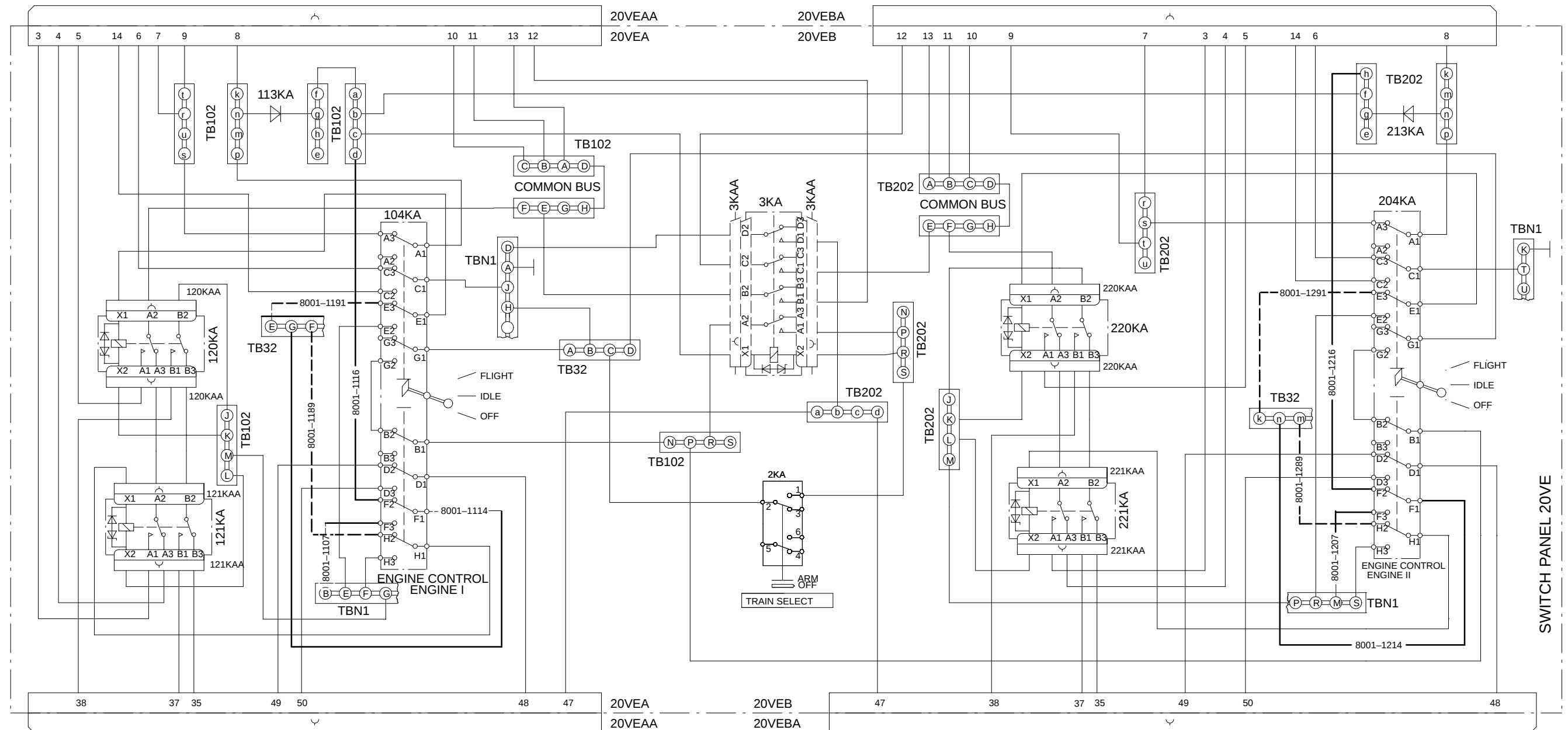
effective for switch unit 20VE

L311M1009155
L311M1034155
L311M1075150
L311M1085150–L311M1085190

Wiring Diagram after Accomplishment of ASB EC135–31A–045

Figure 7

ALERT SERVICE BULLETIN



effective for switch unit 20VE

L311M1009160

L311M1075155

L311M1075107

Wiring Diagram after Accomplishment of ASB EC135-31A-045
Figure 8