TEMPORARY REVISION

AMM-TR-MÄM-22-0016

Flap Actuator Motor

This Temporary Revision AMM-TR-MÄM-22-0016 is approved in conjunction with the Mandatory Design Change Advisory MÄM 22-0016 and is valid in conjunction with the Airplane Maintenance Manual (AMM) until this Temporary Revision has been incorporated into the AMM.

The limitations and information contained herein either supplement or, in the case of conflict, override those in the AMM.

The technical information in this document has been approved.

Doc. No	Section	Affected Pages
DA201-C1	27-50-00	Pages 2, 4, 101, 102, 202, 203 and 204
		Insert before each respective Page
		Page 219 is new
		Insert after Page 218
	92-00-00	Page 1
		Insert before Page 1
	92-10-00	Page 9
		Insert the 2 pages before Page 9

Filing Instructions:

- Print this Temporary Revision on single sided 8.5 X 11 inch yellow paper.
- Insert this cover page as the first page of the AMM.
- Insert the pages of this temporary revision in the AMM as instructed in the Affected Pages column.
- Record the incorporation of this Temporary Revision on the yellow RECORD OF TEMPORARY REVISIONS sheet at the front of the manual.
- Keep this Temporary Revision until normal revision service incorporates the information into the DA20-C1 AMM.

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The electronic control unit has a 3-position selector switch, solid-state logic circuits and a flap position indicator. The selector switch can be set to:

- CRUISE (fully up). 0 ±1°
- T/O (take-off). 15 ±1°
- LDG (landing). 45 ±1°

The logic circuits monitor the outputs from the selector switch and the micro-switches on the switch board. They control 4 power transistors. Two of the power transistors can connect the power supply to the flap motor. The other two can connect the motor to ground.

The flap position indicator has three light-emitting diodes. The top diode lights when the flaps are in the CRUISE position. The middle diode lights when the flaps are in the T/O position. The bottom diode lights when the flaps are in the LDG position.

The switch board attaches to the body of the flap actuator with 2 worm-drive clamps. The switch board has 5 micro switches. Two screws attach each micro-switch to the switch board. You can adjust the position of the switch board with the worm-drive clamps. You can adjust each micro-switch with its attaching screws. The micro-switches have the following functions:

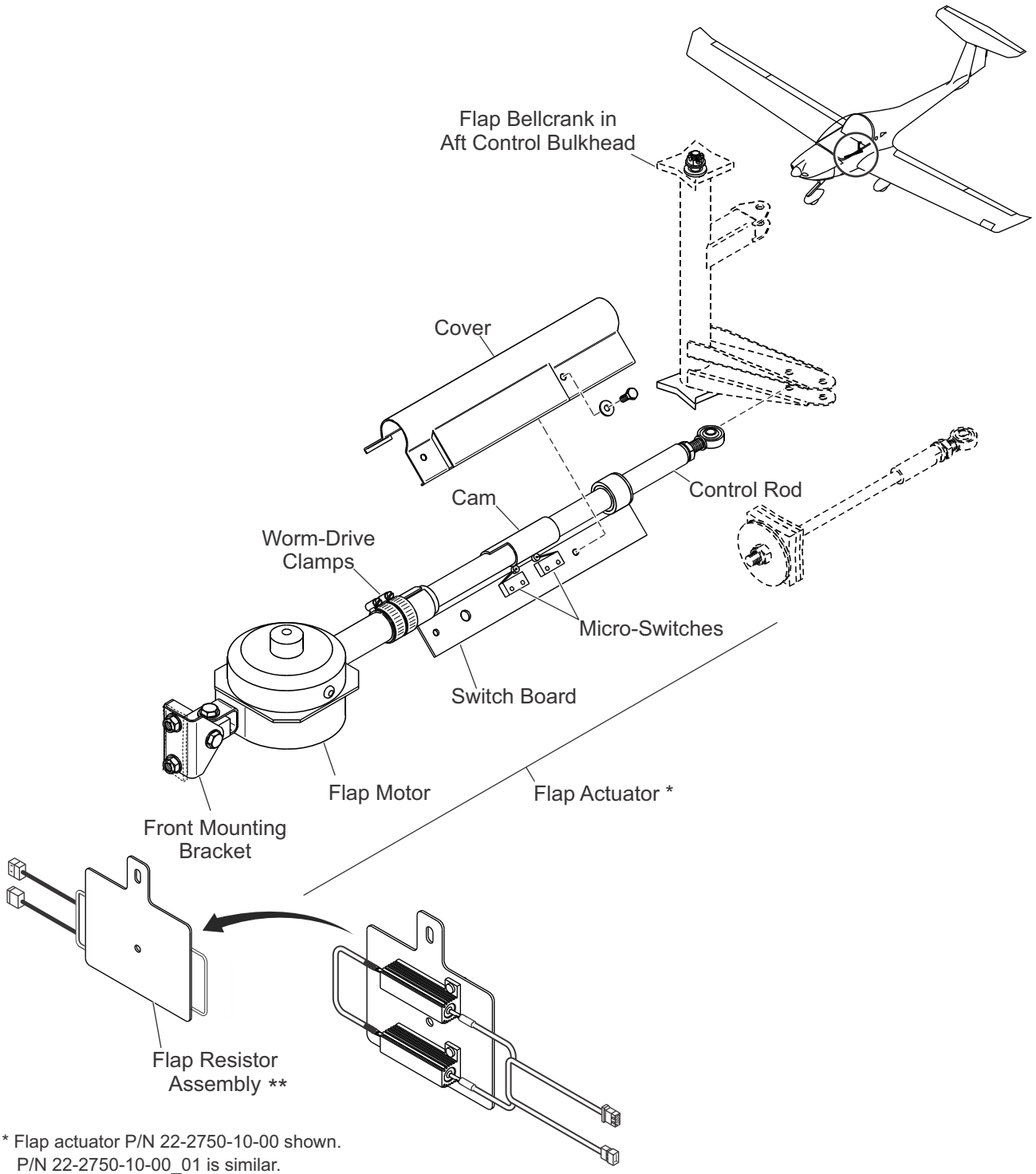
- Micro-switch 1 - CRUISE position
- Micro-switch 2 - CRUISE indication and T/O position moving down
- Micro-switch 3 - T/O indication
- Micro-switch 4 - LDG position
- Micro-switch 5 - LDG indication T/O position moving up.

With the Diamond flap control module installed (P/N 22-2753-00-00) the micro switches have the following functions:

- Micro-switch 1 - LDG indication and T/O limit (from LDG position)
- Micro-switch 2 - CRUISE indication and T/O limit (from CRUISE position)
- Micro-switch 3- LDG Limit
- Micro-switch 4 - T/O indication
- Micro-switch 5 - CRUISE limit

Cable harnesses with multi-pin connectors connect the components.

If Diamond P/N 22-2750-10-00_01 flap actuator assembly is installed, a pair of power resistors is installed to limit the force produced by the flap actuator.



* Flap actuator P/N 22-2750-10-00 shown.
P/N 22-2750-10-00_01 is similar.
** Installed only with flap actuator assembly P/N 22-2750-10-00_01.

Figure 1 - Flap Control System in the Fuselage

FLAPS - TROUBLESHOOTING

1. General

This table explains how to troubleshoot the flap system. If you find the trouble in column 1, do the repair given in column 3.

TROUBLE	POSSIBLE CAUSE	REPAIR
Flaps do not operate.	Circuit breaker not set.	Set the flap circuit breaker.
	Aircraft electrical system voltage low.	Do a test of the aircraft electrical system voltage.
	Flap selector switch defective	Replace the flap electronic control unit.
	Flap resistor assembly defective (open circuit, resistor defective) (if Diamond P/N 22-2750-10-00_01 installed).	Replace the flap resistor assembly.
Flap circuit-breaker will not stay closed.	Short to ground, as follows:	
	in the wires to the electrical control unit or the micro-switches.	Do an insulation test between each wire and ground. Repair or replace defective wires.
	in the electrical control unit.	Replace the electrical control unit.
	in a micro-switch.	Replace the micro-switch.
	in a wire between a closed micro-switch and the control unit.	
	in the flap resistor assembly (if Diamond P/N 22-2750-10-00_01 installed).	Replace the flap resistor assembly.
Flap circuit-breaker opens when flap selector switch moved to any down position.	Short to ground in a motor supply wire.	Do an insulation test between each wire and ground. Repair or replace defective wires.
Flap circuit-breaker opens when flap selector switch moved to any up position.	Short to ground in a motor supply wire.	Do an insulation test between each wire and ground. Repair or replace defective wires.
Flap circuit-breaker opens when the flaps stop at the chosen position.	Short to ground in the wires to the electrical control unit from the related indication micro-switch.	Do an insulation test between each wire and ground. Repair or replace defective wires.
Flap circuit-breaker opens when the flaps have moved only a short distance from the CRUISE setting.	Short to ground in the wires to the electrical control unit from micro-switch 1.	Do an insulation test between each wire and ground. Repair or replace defective wires.
Flap circuit-breaker opens when the flaps have moved only a short distance from the LDG setting.	Short to ground in the wires to the electrical control unit from micro-switch 4.	Do an insulation test between each wire and ground. Repair or replace defective wires.

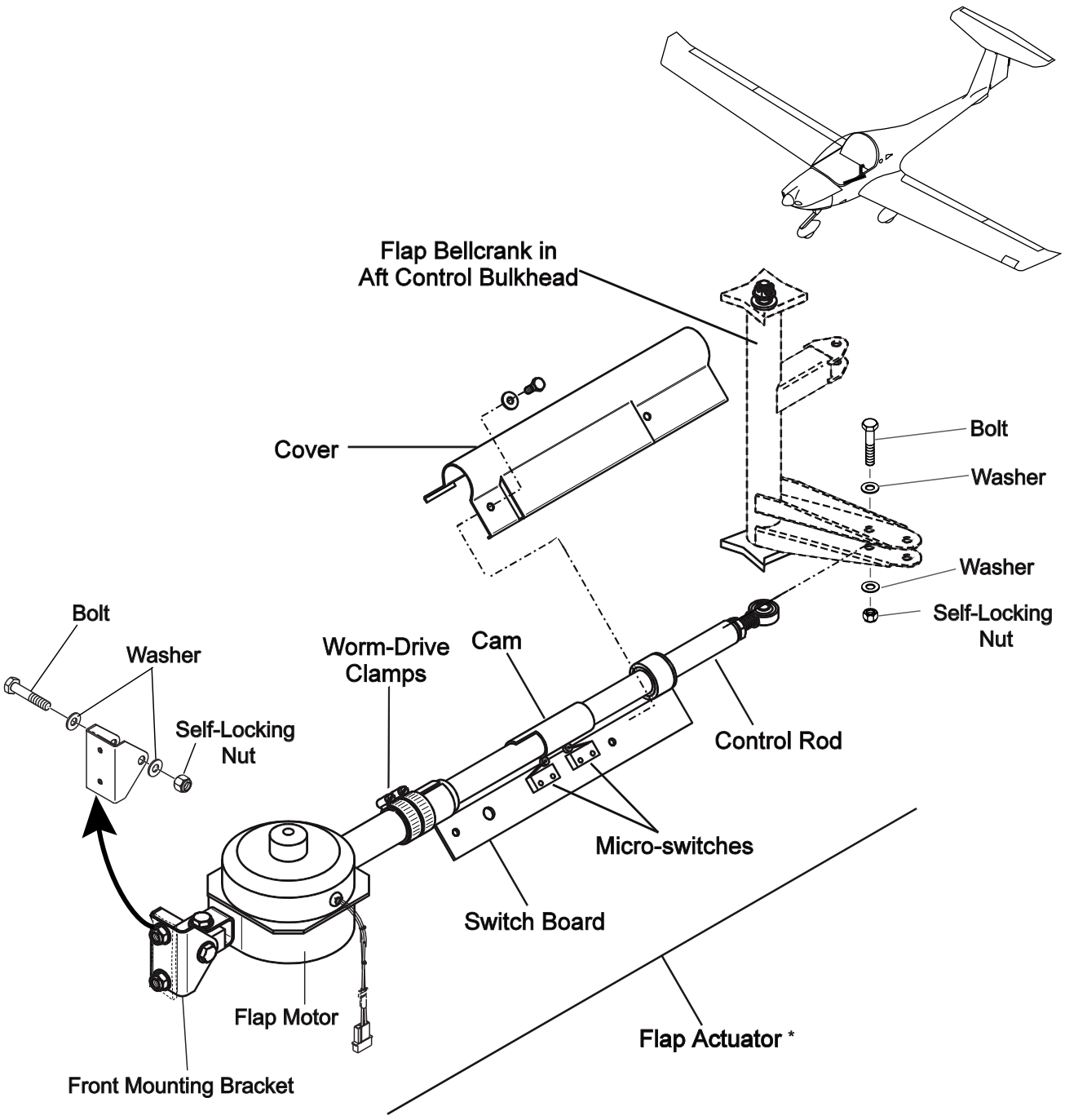
TROUBLE	POSSIBLE CAUSE	REPAIR
Flaps move slowly.	Aircraft electrical system voltage low.	Do a test of the aircraft electrical system voltage.
	Flap motor defective.	Do a test for 12V at the motor with flaps selected. If there is 12V at the motor. Replace the actuator.
	Defective flap actuator.	Examine the actuator. If you find damage, then replace the flap actuator.
	Flap resistor assembly defective (if Diamond P/N 22-2750-10-00_01 installed).	Do a resistance check on each resistor. It must be 0.3 ohm each, otherwise replace the flap resistor assembly.
Flaps do no not align with the wing trailing edge.	Flaps extended at too high airspeed.	Examine the flap system. Replace damaged parts. Adjust the system.
Flaps will not move to LDG position. Flaps move to T/O and CRUISE correctly.	Micro-switch 4 defective. With Diamond p/n 22-2753-00-00 installed: Micro-switch 3 defective	Replace the micro-switch.
	Open circuit in the micro-switch 4 wiring. With Diamond p/n 22-2753-00-00 installed: Open circuit in the micro-switch 3 wiring.	Do a continuity test of the wiring. Repair or replace the defective wire.
Flaps will not move to CRUISE position. Flaps move to T/O and LDG correctly.	Micro-switch 1 defective. With Diamond p/n 22-2753-00-00 installed: Micro-switch 5 defective	Replace the micro-switch.
	Open circuit in the micro-switch 1 wiring. With Diamond p/n 22-2753-00-00 installed: Open circuit in the micro-switch 5 wiring.	Do a continuity test of the wiring. Repair or replace the defective wire.
No LDG indication when the flaps are in the LDG position. Flaps will not move from LDG to T/O. Flaps move from LDG to CRUISE correctly.	Micro-switch 5 defective. With Diamond p/n 22-2753-00-00 installed: Micro-switch 5 defective	Replace the micro-switch.

2. Remove/Install the Flap Actuator

A. Remove the Flap Actuator

Refer to Figure 202.

	Detail Steps/Work Items	Key Items/References
1.	If possible, set the flaps to the LDG position.	
2.	Disconnect the aircraft battery.	Refer to Chapter 24-31.
3.	Remove the pilot's seat.	Refer to Chapter 25-10.
4.	If Diamond P/N 22-2750-10-00 installed, disconnect the flap motor connector from the supply connector. If Diamond P/N 22-2750-10-00_01 installed, disconnect the flap motor connector from the flap resistor assembly connector.	
5.	Disconnect the control harness plug from the switch-board.	
6.	Remove the access panels below the aft control bulkhead for access to the flap actuator.	Refer to Figure 201.
7.	At the aft control bulkhead, remove the bolt, self-locking nut and washers that attach the actuator control rod to the flap bellcrank.	A second person will be required at this step to hold the flaps.
8.	Have the second person lower the flaps by hand until the stop.	
9.	Remove the bolt, self-locking nut and washers which attach the flap actuator to the forward mounting bracket.	
10.	Remove the flap actuator from the aircraft.	



* Flap actuator P/N 22-2750-10-00 shown.
P/N 22-2750-10-00_01 is similar.

Figure 202 - Flap Actuator - Removal/Installation

B. Install the Flap Actuator

Refer to Figure 202.

	Detail Steps/Work Items	Key Items/References
1.	Put the flap actuator in position in the fuselage.	Refer to Figure 201. Make sure that the actuator is in the fully retracted position.
2.	Install the bolt, washers and self-locking nut which attach the flap actuator to the forward mounting bracket.	
3.	At the aft control bulkhead, install the bolt, washers and self-locking nut that attach the actuator control rod to the flap bellcrank.	A second person will be required at this step to hold and position the flaps to have the rod end of the flap actuator line up with the bellcrank bracket.
4.	Connect the control harness plug for the switch-board.	
5.	If Diamond P/N 22-2750-10-00 installed, connect the flap motor connector to the supply connector. If Diamond P/N 22-2750-10-00_01 installed, connect the flap motor connector to the flap resistor assembly connector.	
6.	Connect the aircraft battery.	Refer to Chapter 24-31.
7.	Do the flap system adjustment test procedure.	Refer to Para 3.
8.	Install the left pilot's seat.	Refer to Chapter 25-10.
9.	Install the access panels below the aft control bulkhead.	

6. Remove/Install the Flap Resistor Assembly (if Diamond P/N 22750-10-00_01 installed)

A. Remove the Flap Resistor Assembly

	Detail Steps/Work Items	Key Items/References
1.	If possible, set the flaps to the LDG position.	
2.	Disconnect the aircraft battery.	Refer to Chapter 24-31.
3.	Remove the pilot's seat.	Refer to Chapter 25-10.
4.	Remove the access panels below the aft control bulkhead.	
5.	Disconnect the flap resistor assembly connectors from the flap motor connector and the flap control board connector.	
6.	Remove the bolts, nuts, and washers.	
7.	Remove the flap resistor assembly and the spacers from the aircraft.	

B. Install the Flap Resistor Assembly

	Detail Steps/Work Items	Key Items/References
1.	Put the flap resistor assembly and spacers in the installation position.	
2.	Install the bolts, nuts, and washers.	
3.	Connect the flap resistor assembly connectors to the flap motor connector and the flap control board connector.	
4.	Connect the aircraft battery.	Refer to Chapter 24-31.
5.	Do a flap system operational test.	Make sure that the flaps stop in each LDG, T/O and CRUISE position.
6.	Install the pilot's seat.	Refer to Chapter 25-10.
7.	Install the access panels below the aft control bulkhead.	

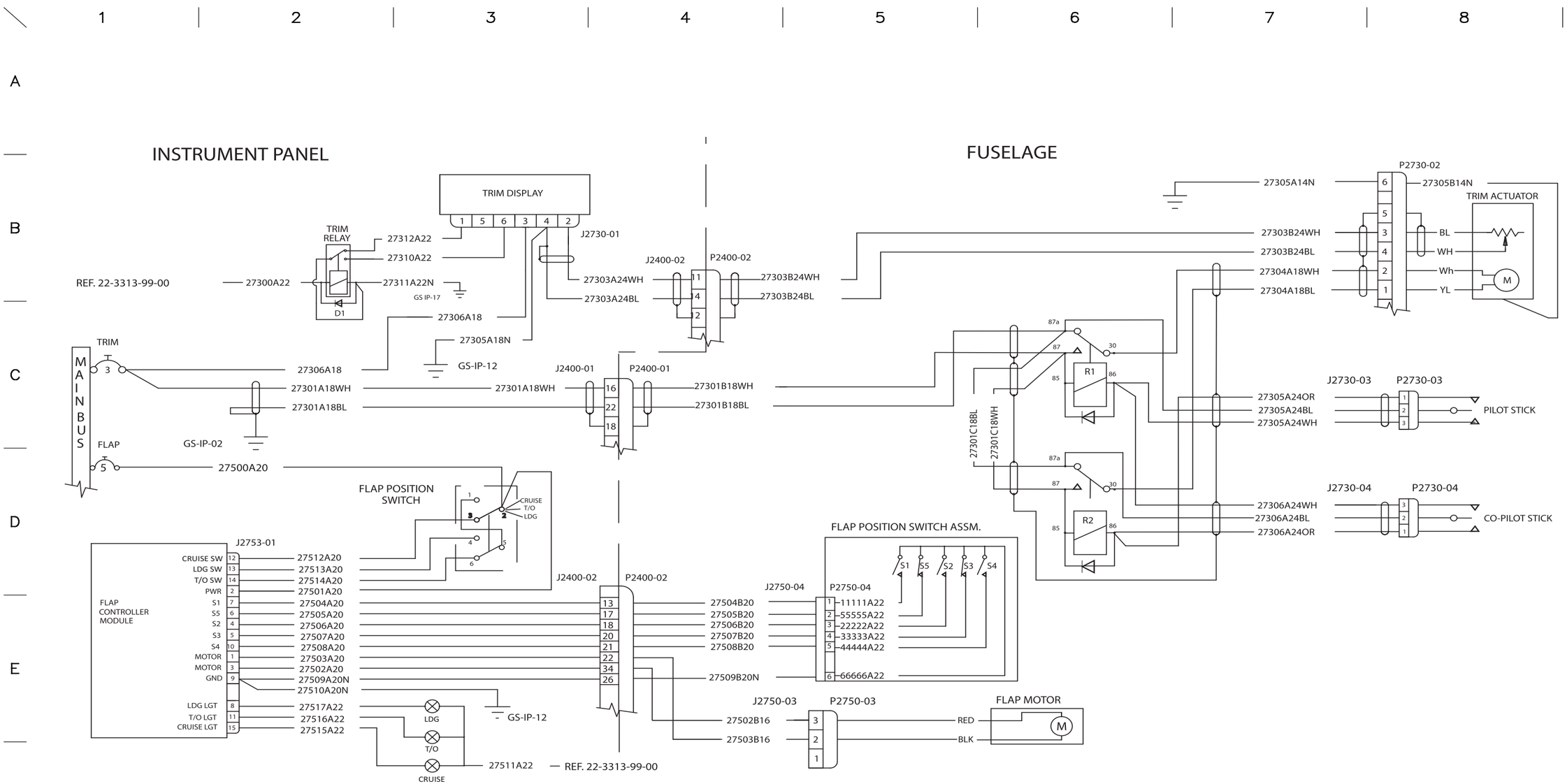
WIRING DIAGRAMS

1. General

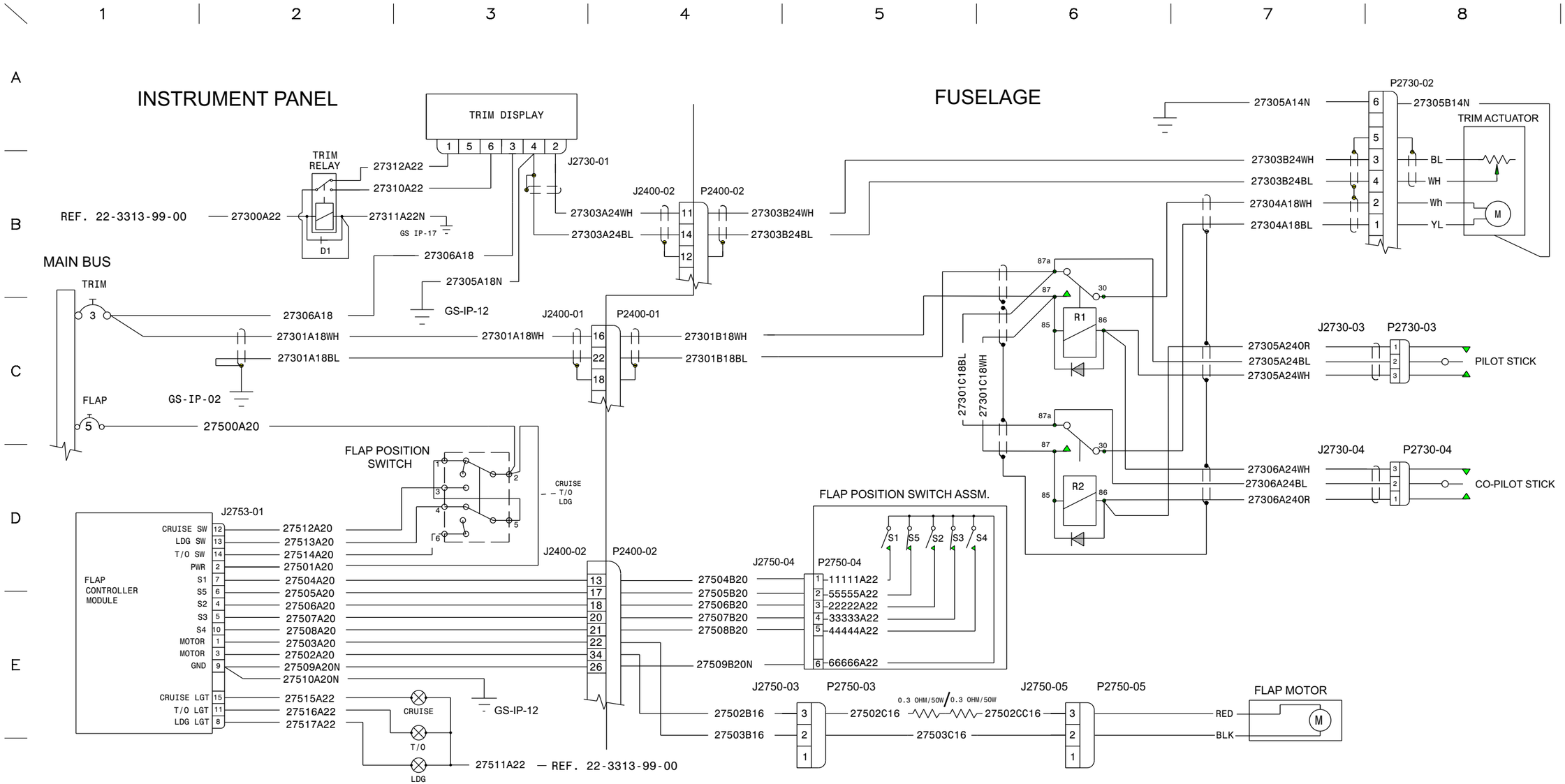
This Subject describes the Wiring Diagram/Schematic for each system installed on the DA20-C1 aircraft. The Wiring Diagrams/Schematics use the ATA Chapter-Section-Subject numbering system.

2. List of Wiring Diagrams/Schematics

CH-SE-SU	Title	Drawing No.	No. of Pages
92-10-00	SCHEMATIC, BATTERY FORWARD, DC GENERATION AND DISTRIBUTION	22-2400-98-00	1
92-10-00	SCHEMATIC, BATTERY FORWARD, DC GENERATION AND DISTRIBUTION WITH UMA ENGINE INSTRUMENTS INSTALLED	22-2400-97-00	1
92-10-00	SCHEMATIC, EPU INSTALLATION, OPTIONAL	22-2442-99-00	1
92-10-00	SCHEMATIC, TRIM DISPLAY	22-2720-10-00	1
92-10-00	SCHEMATIC, TRIM, CIRCUIT BOARD	22-2720-99-00	1
92-10-00	SCHEMATIC, ELECTRICAL SYSTEM FLIGHT CONTROLS	22-2732-99-00	1
92-10-00	SCHEMATIC, ELECTRICAL SYSTEM FLIGHT CONTROLS	22-2751-99-00	1
92-10-00	SCHEMATIC, FLAP/TRIM (DIAMOND P/N 22-2750-10-00 INSTALLED)	22-2752-99-00	1
92-10-00	SCHEMATIC, FLAP/ TRIM (DIAMOND P/N 22-2750-10-00_01 INSTALLED)	22-2752-99-00_01	1
92-10-00	SCHEMATIC, FUEL SYSTEM	28-00-00	1
92-10-00	SCHEMATIC, 2-SPEED ELECTRIC FUEL PUMP	22-2820-99-00	1
92-10-00	SCHEMATIC, FUEL QUANTITY TIMER	22-2843-99-00	1
92-10-00	SCHEMATIC, HEATER, PITOT STATIC	22-3030-99-00	1
92-10-00	SCHEMATIC, DIGITAL CLOCK, HOUR METER & OAT	22-3120-99-00	1
92-10-00	SCHEMATIC, CANOPY SWITCHES	22-3160-99-00	1
92-10-00	SCHEMATIC, FLOOD LIGHT	22-3310-97-00	1
92-10-00	SCHEMATIC, INTERNAL LIGHTING	22-3310-99-00	1
92-10-00	SCHEMATIC, INTERNAL LIGHTING, ASPEN	22-3312-98-00	1
92-10-00	SCHEMATIC, INTERNAL LIGHTING	22-3312-99-00	1
92-10-00	SCHENATIC, DIMMING REGULATOR & PLACARDS	22-3313-99-00	1



EFFECTIVITY	REV	SCHEMATIC FLAP/TRIM (DIAMOND P/N 22-2750-10-00 INSTALLED)	SCHEMATIC	PAGE
C0648-CXXXX	B		22-2752-99-00	1/1



EFFECTIVITY	REV	SCHEMATIC FLAP/TRIM	SCHEMATIC	PAGE
C0648-CXXXX	B	(DIAMOND P/N 22-2750-10-00_01 INSTALLED)	22-2752-99-00_01	1/1