

This DSTR-AOA-1996 Flap Transmitter Kit comes prewired and is a universal way for multiple aircraft to detect the changes of flap positions. It is additional to the Alpha Systems AOA kit and MAY require a FAA Field Approval and a form 337 to be submitted if the installing mechanic determines one is needed.

Installation Instructions for DSTR-AOA-1996 Flap TX

OVERVIEW:

There are many aircraft that don't have a Flap position Indicator or system that gives a signal, whether from switches or an accurate, repeatable analog voltage change for each stopped flap position from "Clean" through "Full" flaps. In most aircraft, when the flaps are deployed, it may become necessary to monitor the flap position and add AOA calibration set points that correspond for the changing wing coefficient. The Alpha Systems AOA is calibrated in the "CLEAN" configuration, or the worst-case lift. When the flaps are deployed, any changes of Alpha at a given flap position can be added at time of calibration. The Alpha Systems AOA then automatically changes to the indicated scale corresponding to the flap deployment position. This standardizes the visual AOA indication from the display and gives the pilot very accurate AOA indication at any flap positions.

Flap Transmitter (Flap TX)

The Alpha Systems AOA has the ability, through the I/O module, a selectable, analog flap position input with three flap position set points that can be used to signal to the Alpha Systems any changes to the wing by flap position deployment. The Flap Transmitter, (TX) was developed to give repeatable voltage changes in reference to the aircraft flap positions. The flapTX, is simply a self-contained cable pulled, multi-turn potentiometer that has a spring loaded retract system. The Flap TX unit is mounted solidly to the aircraft at a location, so that when the flaps are deployed, the cable is extended, and a corresponding voltage change is sent to the I/O module. The electrical connections are fused to protect the aircraft power. The Flap transmitter was designed with three available cable clamping sizes for varying aircraft cables. The aluminum cable clamps are protected by Buna rubber tube that's first put around the aircraft flap control cable. The flap TX clamp then compresses the rubber tube, never making direct contact, metal to metal. The flap TX also has a mechanical safety disconnect in line with the Flap TX cable. This mechanical disconnect is calibrated at the factory at less than 2 lbs. pull, to disconnect from the aircraft flap control cable. This insures that any aircraft flap change will be unaffected by any malfunction of the TX.

Pilot Verification of flap positions from Flap TX or Flap inputs

After installation and calibration of flap positions, the pilot can check the flap positions and the function of the Flap TX or discreet flap position switches before any flight. The Alpha Systems AOA has a "Flap Diagnostic Routine" that turns on specific segments of the AOA display to correspond to flap position while on the ground.

Wiring Reference: See Electrical Schematic

This Alpha Systems AOA Flap TX has been prewired at the potentiometer with the following wire colors:

Pin 1 = White/Green (To aircraft ground)

Pin 2 = White (To C2-13, through the .250 Amp fuse of the I/O module)

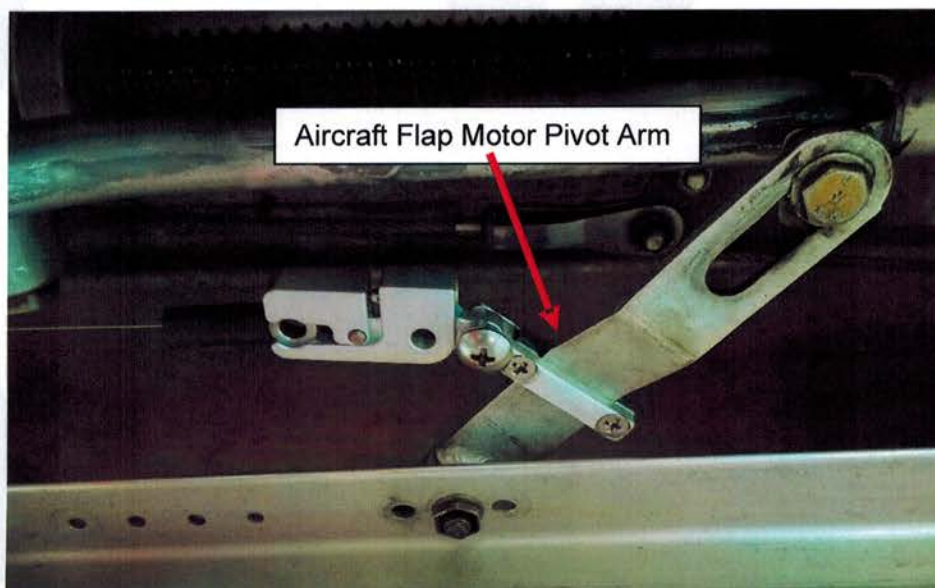
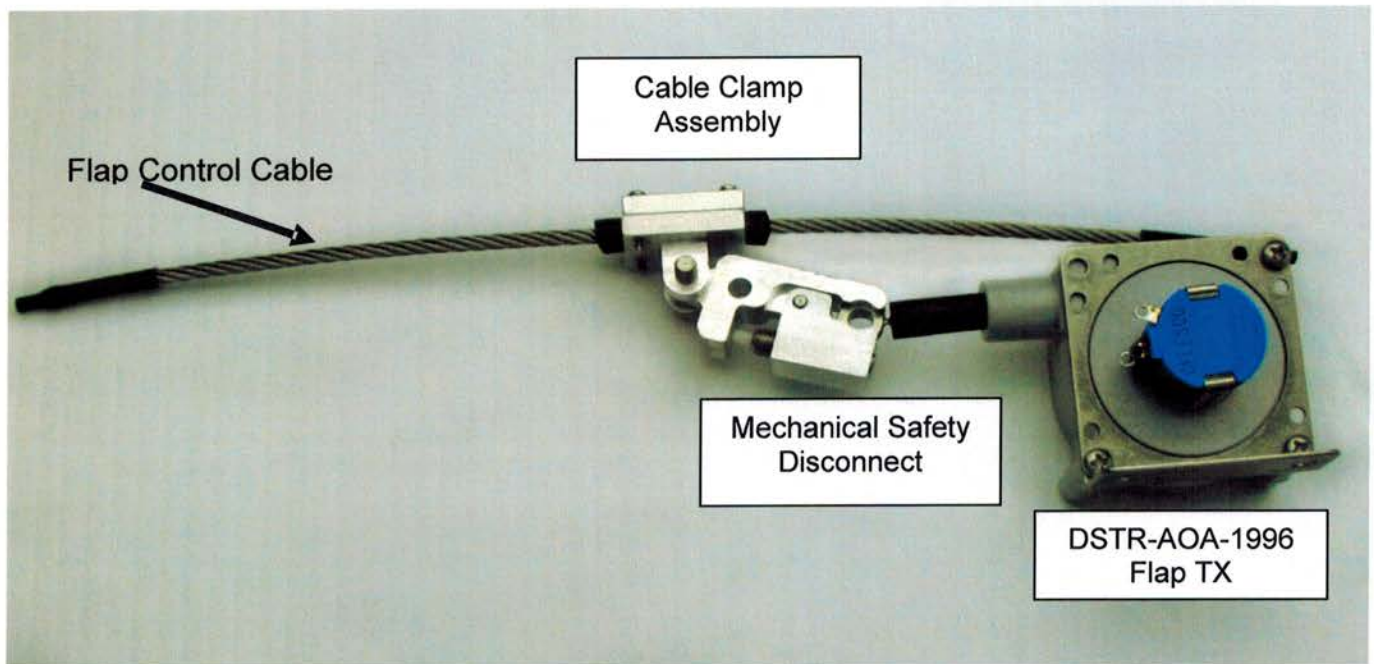
Pin 3 = White/Blue (To aircraft power, through .250 Amp fuse)

The voltage MUST increase on the WHITE wire as the flaps deploy.

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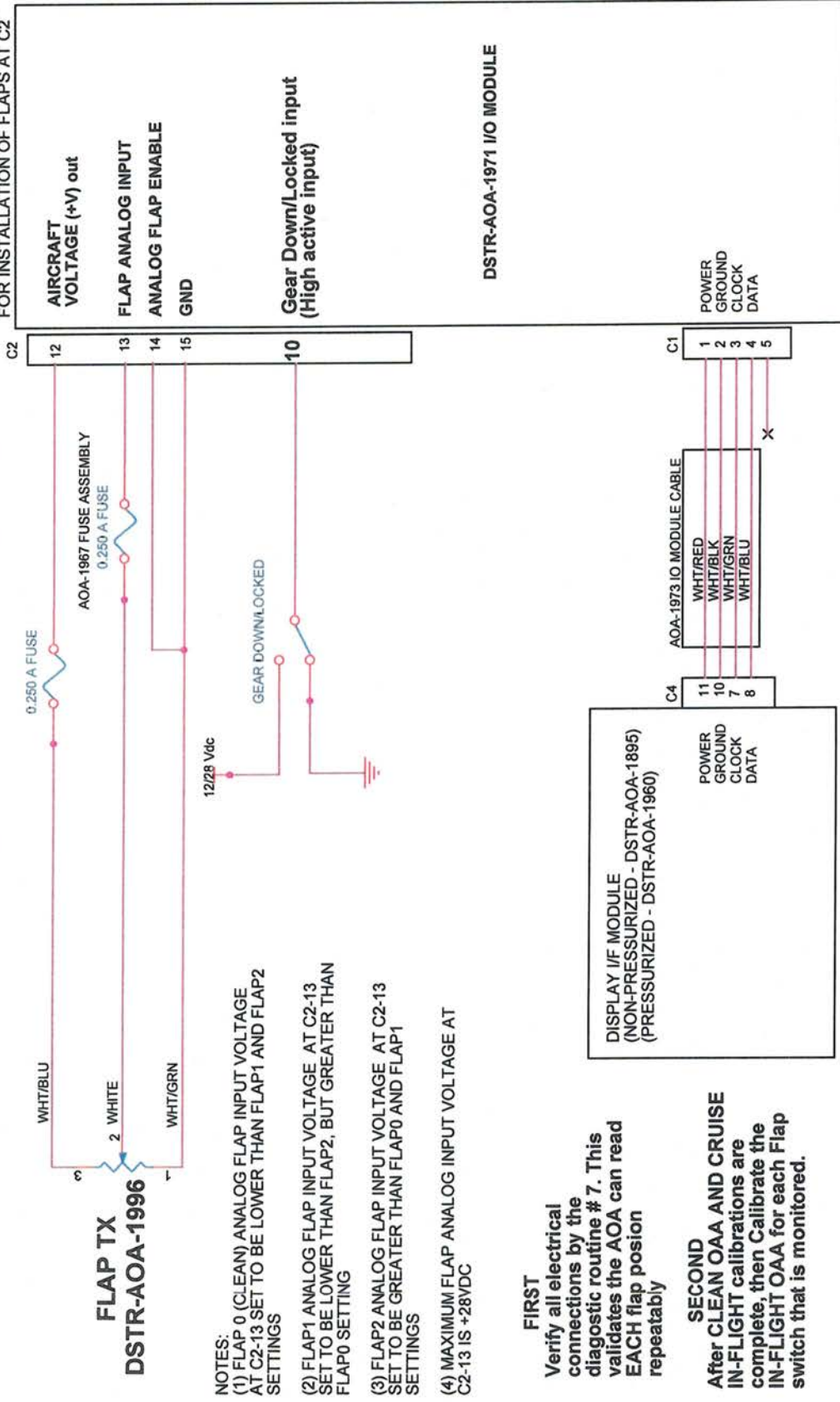
Hardware Installation:

- 1.) There are multiple size connection clamps, 1/16", 1/8" cable or a 1.00" bar or an adel clamp for clamping around a push / pull flap tube.
- 2.) Find a location to securely mount the TX so when the cable is pulled out that it does NOT interfere with any aircraft system or function and the cable pulls out and retracts straight from the opening on the TX.
- 3.) The mechanical disconnect must NOT interfere with any movement of the flap system.
- 4.) The Flap TX should be mounted so that when flaps are deployed, the cable is pulled out.



FLAP TX FLAP CONNECTIONS

NOTE: ONE DSUB 15 CONN INCLUDED FOR INSTALLATION OF FLAPS AT C2



FLAP TX DSTR-AOA-1996

NOTES:

- (1) FLAP 0 (CLEAN) ANALOG FLAP INPUT VOLTAGE AT C2-13 SET TO BE LOWER THAN FLAP1 AND FLAP2 SETTINGS
- (2) FLAP1 ANALOG FLAP INPUT VOLTAGE AT C2-13 SET TO BE LOWER THAN FLAP2, BUT GREATER THAN FLAP0 SETTING
- (3) FLAP2 ANALOG FLAP INPUT VOLTAGE AT C2-13 SET TO BE GREATER THAN FLAP0 AND FLAP1 SETTINGS
- (4) MAXIMUM FLAP ANALOG INPUT VOLTAGE AT C2-13 IS +28VDC

FIRST

Verify all electrical connections by the diagnostic routine # 7. This validates the AOA can read EACH flap position repeatably

SECOND

After CLEAN OAA AND CRUISE IN-FLIGHT calibrations are complete, then Calibrate the IN-FLIGHT OAA for each Flap switch that is monitored.

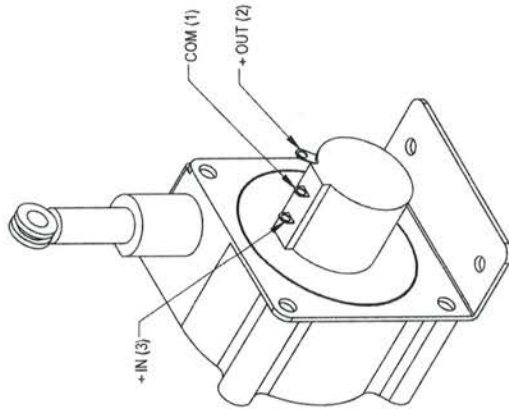
THE FLAP TX OUTPUT CORRESPONDS TO THE AIRCRAFT'S FLAP POSITION. CALIBRATION ALLOWS UP TO 3 FLAP POSITIONS.
 1.) F0 MUST EQUAL CLEAN,
 2.) F1 TYPICALLY EQUALS T.O. FLAP POSITION.
 3.) F2 MUST EQUAL FULL FLAPS.

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Title	FLAP TX INCREASING VOLTAGE WITH FLAP DEPLOYMENT.	FOR 1971
Size	Document Number	DSTR-AOA-1971-4
Date:	Friday, February 28, 2020	Sheet 1 of 1
Rev		C

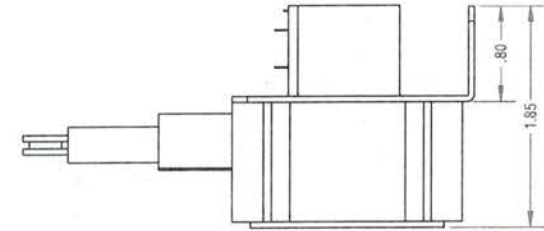
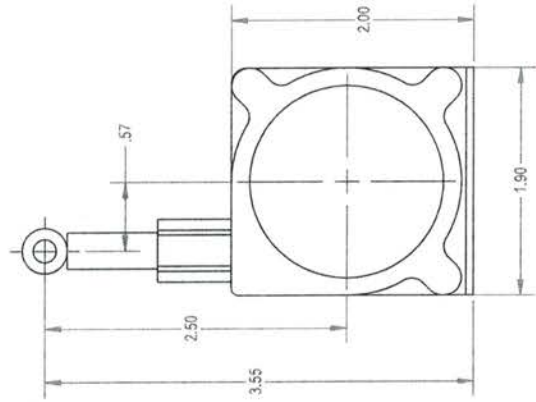
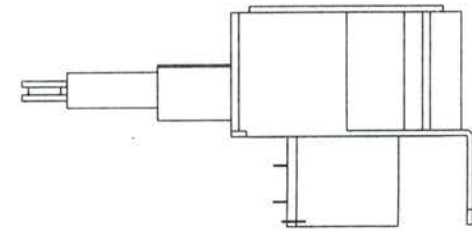
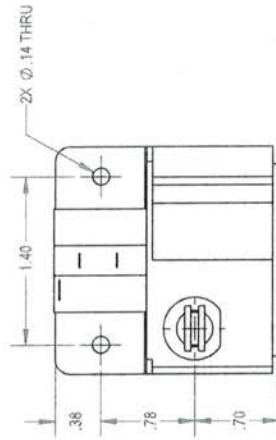
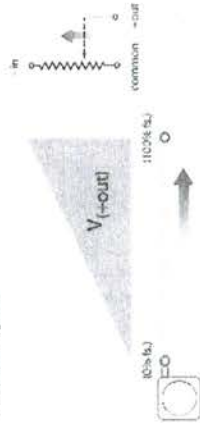
REV.	DESCRIPTION	DATE	DRAWN
A	INITIAL RELEASE	5/31/2017	CAP



Terminal/Pin Location



Output Signal



STROKE: 12.5 INCHES
 ACCURACY: .25% FS.
 REPEATABILITY: +/- .05 FS.
 ENCLOSURE: POLYCARBONATE
 MEASURING CABLE: 0.19IN DIA. NYLON-COATED STAINLESS
 MEASURING CABLE TENSION: 7 OZ. +/-25%
 MAX CABLE ACCELERATION: 15 G
 INPUT RESISTANCE: 10K OHMS +/-10%
 SENSOR: PLASTIC-HYBRID POTENTIOMETER
 RECOMMENDED MAX INPUT VOLTAGE: 30V (AC/DC)
 POWER RATING: 2W AT 70F
 OPERATING TEMP: 0-160F



DESIGNER: CAP	PROJECT: AOA
DATE: 5/31/2017	TITLE: DSTR-AOA-1996
SHEET: 1	SCALE: 1:1
SIZE: B	QUANTITY: 1
MATERIAL: Material not specified	PART # DSTR-AOA-1996