

## Guidance for Fitting COTS Products to Airframes Determination for Major/Minor Alterations (FAA)

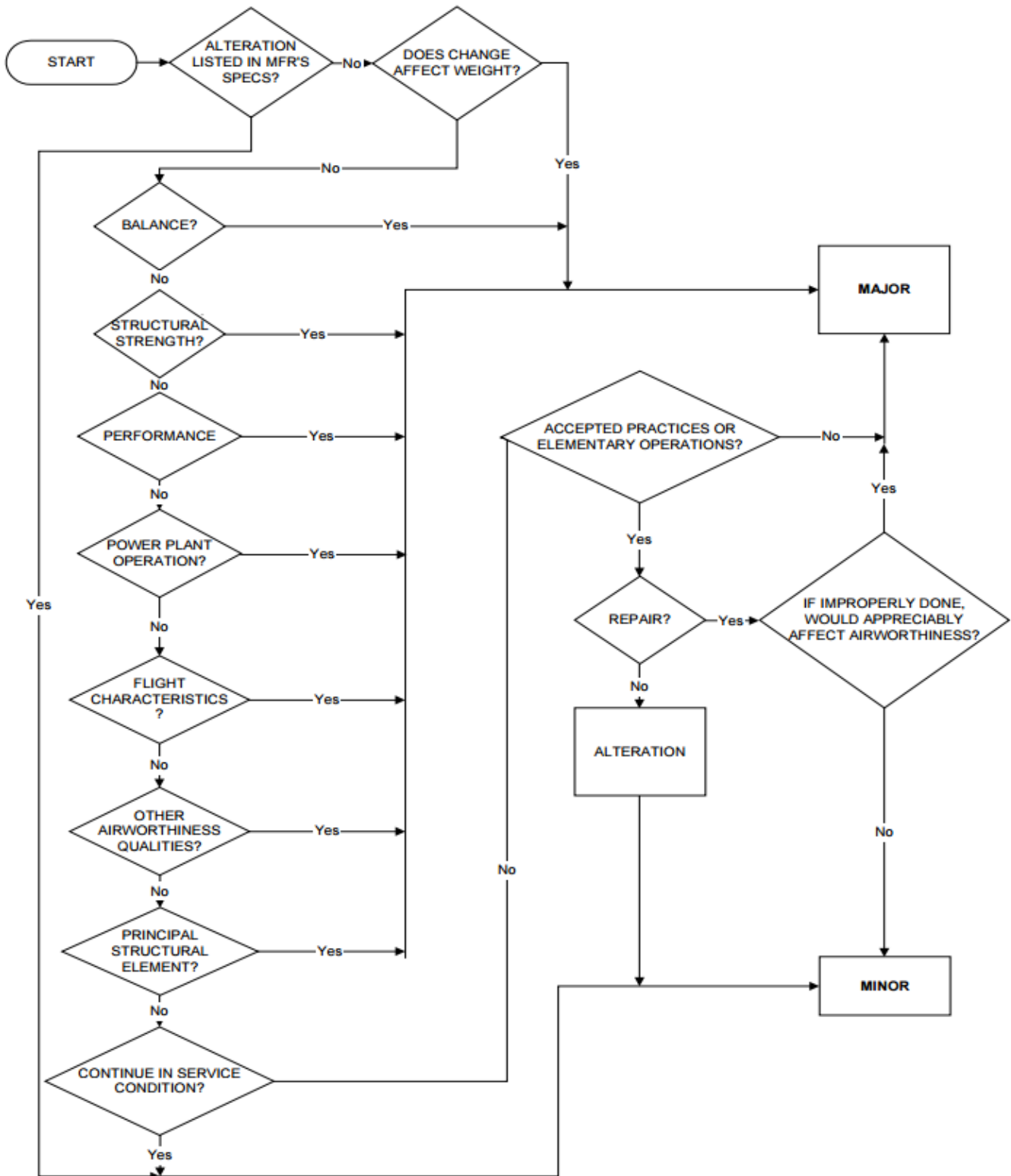
1. Who determines if an alteration to an aircraft is Major or Minor?
  - The installer, backed by approved and known data
2. What is the FAA's role?
  - To oversee
  - To ensure compliance with the regulations
  - To insure the work is performed to the appropriate standards
3. Guidance and Policy.
  - FAA Advisory Circular 43-210: Standardized Procedures for Requesting Field Approval of Data, Major Alterations and Repairs
  - FAA Advisory Circular 120-77: Maintenance and Alteration Data
  - FAA Order 8300.16 National Policy: Major Repair and Alteration Data Approval

Each question is answered either **Yes** or **No**. In addition, each answer needs an explanation justifying the answer.

If an alteration is a minor alteration with no additional published guidance the use of acceptable data is authorized and the alteration/installation must be recorded in the appropriate maintenance record. Follow the provisions of Part 43, 65 and/or 145 as appropriate.

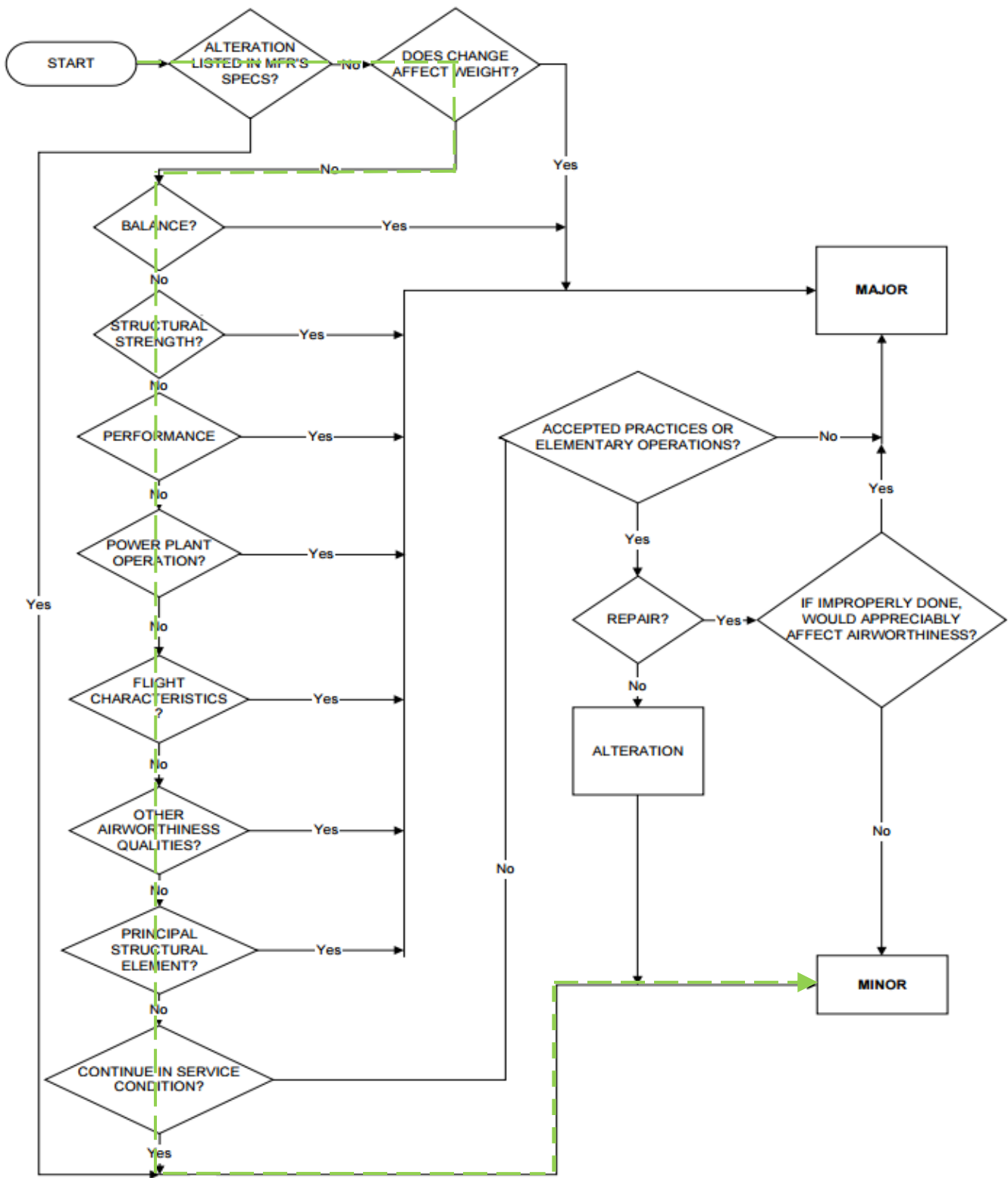
# Decision Tree for Major and Minor Determinations

Repairs, Alterations, and Continue-In-Service Conditions



Flowchart courtesy of FAA Advisory Circular 120-77

# DZMx Decision Path -----



Flowchart courtesy of FAA Advisory Circular 120-77

# Questions for Major & Minor Determinations

With DZMx Answers

## Type Design

Q1: Does the proposed alteration have an appreciable effect on the certificated weight? (i.e. A change in the maximum takeoff weight limitations, minimum landing weight limitations, etc.)

Yes

No

Why?	There is no change to the certified weight of the aircraft. Refer to AC 43-13 – 2b paragraph 111.
------	---

Q2: Does the proposed alteration have an appreciable effect on the certificated balance? (i.e. A change in the forward or aft center of gravity limits, etc.)

Yes

No

Why?	The light weight of the DZMx does not have an appreciable effect on the certified balance of the aircraft.
------	--

Q3: Does the proposed alteration have an appreciable effect on the structural strength?

Yes

No

Why?	The only structural alteration to the aircraft is the installation of the antenna which has a TSO and is installed using Approved Data - as per manufacturers specifications including a doubler plate to strengthen the fuselage where required.
------	---

Q4: Does the proposed alteration have an appreciable effect on the performance?

Yes

No

Why?	The proposed alteration does not have an appreciable effect on the performance.
------	---

Q5: Does the proposed alteration have an appreciable effect on the reliability?

Yes

No

Why?	The DZMx does not affect airframe reliability. It does not affect the MEL.
------	--

Q6: Does the proposed alteration have an appreciable effect on the powerplant operation?

Yes

No

Why?	There is no interaction with the powerplant of the aircraft and the DZMx.
------	---

Q7: Does the proposed alteration have an appreciable effect on the flight characteristics?

Yes

No

Why?	The proposed alteration does not have any effect on the flight characteristics.
------	---

Q8: Does the proposed alteration have an appreciable effect on other characteristics affecting the airworthiness?

Yes

No

Why?	The alteration does not have an appreciable effect on any other characteristics affecting airworthiness.
------	--

If you answered **Yes** to any of the above questions the proposed change is a **major change in type design** requiring the application for a Supplemental Type Certificate (STC).

If you confirmed **No** to all of the above questions - continue

---

## Alterations

Q9: Does the proposed alteration alter the wings?

Yes

No

Why?	The proposed alteration does not affect the wings.
------	--

Q10: Does the proposed alteration alter the tail surfaces?

Yes

No

Why?	The proposed alteration does not affect the tail surfaces.
------	--

Q11: Does the proposed alteration alter the fuselage?

Yes

No

Why?	The only external modification is the addition of an approved external antenna that has a TSO and that is installed using Approved Data.
------	--

Q12: Does the proposed alteration alter the engine mounts?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q13: Does the proposed alteration alter the control system?

Yes

No

Why?	The DZMx does not alter the navigation or flight controls.
------	--

Q14: Does the proposed alteration alter the landing gear?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q15: Does the proposed alteration alter the hull or floats?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q16: Does the proposed alteration alter the elements of an airframe including spars, ribs, fittings, shock absorbers, bracing, cowling, fairings and balance weights?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q17: Does the proposed alteration alter the hydraulic and electrical actuating system of components?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q18: Does the proposed alteration alter the rotor blades?

Yes

No

Why?	The installation of a DZMx does not alter the rotor blades.
------	---



Q19: Does the proposed alteration change the empty weight or empty balance which results in an increase in the maximum certificated weight or center of gravity limits of the aircraft?

Yes

No

Why?	Does not alter the weight and balance to a measurable degree that takes it outside limits
------	---

Q20: Does the proposed alteration change the basic design of the fuel, oil, cooling, heating, cabin pressurization, electrical, hydraulic, deicing, or exhaust systems.

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q21: Does the proposed alteration change the wing or any fixed or movable control surfaces which affect flutter and vibration characteristics?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q22: Does the proposed alteration convert an aircraft engine from one approved model to another, involving any changes in compression ratio, propeller reduction gear, impeller gear ratios or the substitution of major engine parts which requires extensive rework and testing of the engine?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q23: Does the proposed alteration change the engine by replacing aircraft engine structural parts with parts not supplied by the original manufacturer or parts not specifically approved by the Administrator?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q24: Does the proposed alteration include the installation of an accessory which is not approved for the engine?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q25: Does the proposed alteration include the removal of accessories that are listed as required equipment on the aircraft or engine specification?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q26: Does the proposed alteration include the installation of primary structural parts other than the type of parts approved for the installation?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

Q27: Does the proposed alteration make any conversions of any sort for the purpose of using fuel of a rating or grade other than that listed in the engine specifications?

Yes

No

Why?	This is an avionics installation. Does not alter above
------	--

If for any answers you thought “**Maybe**” then your answer should be a **Yes**.

If you answered **Yes** to any of the above questions the proposed change is a **major alteration** requiring approved data, recording of a FAA Form 337 and a log book entry.

If you confirmed **No** to all of the above questions – continue.

## Administrative

Q28: Has the Administrator issued an Advisory Circular that requires the use of approved data for this installation/alteration?

Yes

No

Why?	The alteration is a minor alteration with no additional published guidance therefore the use of acceptable data is authorized and the alteration/installation must be recorded in the appropriate maintenance record.
------	---

If you answered **Yes** to this question - follow the guidance contained in the Advisory Circular.

If you answered **No** to this question - continue.

---

Q29: Has the Administrator issued policy (HBAW, FSAW, etc.) that requires the use of approved data for this installation/alteration?

Yes

No

Q30: Does the alteration require change to the flight manual or the additional of a decal?

Yes

No

If you answered **Yes** - follow the published policy.

If you answered **No** - the alteration is a **minor alteration** with no additional published guidance therefore the use of acceptable data is authorized and the alteration/installation must be recorded in the appropriate maintenance record. Follow the provisions of Part 43, 65 and/or 145 as appropriate.