



---

**TYPE-CERTIFICATE**

**DATA SHEET**

**NO. EASA TC NO IM.A.051**

**for**

**Type Certificate Holder**

Textron Aviation Inc.  
One Cessna Boulevard  
Wichita, Kansas 67215  
USA

**For models: 172R  
172S**

## **CONTENT**

### **SECTION 1: GENERAL, Basic Model 172R Type Design**

- A. General
- B. Certification Basis
- C. Technical Characteristics and Operational Limitations
- D. Operating and Service Instructions
- E. Operational Suitability Data
- F. Notes

### **SECTION 2: GENERAL, Basic Model 172S Type Design**

- A. General
- B. Certification Basis
- C. Technical Characteristics and Operational Limitations
- D. Operating and Service Instructions
- E. Operational Suitability Data
- F. Notes

### **SECTION 3: Reserved**

### **ADMINISTRATIVE SECTION**

- I. Acronyms
- II. Type Certificate Holder Record
- III. Change Record

## **SECTION 1: GENERAL, Model 172R Type Design**

### **A. General**

- |  |   |
|--|---|
| 1. a) Type:                            | Model 172R  |
| b) Variant:                            | N/A   |
| 2. Airworthiness Category:             | Normal Category<br>Utility Category   |
| 3. Type Certificate Holder:            | Textron Aviation Inc.<br>One Cessna Boulevard<br>Wichita, Kansas 67215<br>USA |
| 4. Manufacturer:                       | Textron Aviation Inc.<br>One Cessna Boulevard<br>Wichita, Kansas 67215<br>USA |
| 5. JAA Certification Application Date: | N/A   |
| 6. JAA recommendation Date:            | N/A   |
| 7. EASA Type Certification Date:       | 28 September 2003   |

### **B. Certification Basis**

- |  |   |
|--|---|
| 1. Reference Date for determining the applicable requirements: | FAA application date 25 September 1995  |
| 2. (Reserved)  |   |
| 3. (Reserved)  |   |
| 4. Certification Basis:  | As defined in FAA TCDS 3A12   |
| 5. Airworthiness Requirements:                                 | FAR 23 as defined in FAA TCDS 3A12, and JAR-23, Change 1, plus Special Conditions as defined in Garmin G-1000 EASA CRI A-01, Issue 5, dated 17 March 2008 for the Nav III Avionic option. |
| 6. Requirements elected to comply:                             | None  |
| 7. EASA Special Conditions:                                    | As defined in CRI A-01 for the Nav III Avionics option only.  |
| 8. EASA Exemptions:  | None  |

9. EASA Equivalent Safety Findings: None
10. EASA Environmental Standards: CS 36 (ICAO Annex 16, Volume I, as applicable.)

### **C. Technical Characteristics and Operational Limitations**

1. Type Design Definition: Master Drawing List, Document No.172-96-005, latest FAA Approved Revision.
2. Description: Single-engine, all-metal, four-place, high-wing airplane, fixed tricycle landing gear.
3. Equipment: Equipment list, Pilot's Operating Handbooks 172RPHUS00 or 172RPHAUS00 (Garmin) or 172RPHBUS00 (GFC-700), latest revision.
4. Dimensions:
- |           |                        |                          |
|-----------|------------------------|--------------------------|
| Span      | 10.9982 m              | (36.08 ft.)              |
| Length    | 8.20522 m              | (26.92 ft.)              |
| Height    | 2.35661 m              | (7.73 ft.)               |
| Wing Area | 16.3045 m <sup>2</sup> | (175.5 ft <sup>2</sup> ) |

5. Engines: Lycoming IO-360-L2A, Rated at 160 hp

When modified by Cessna Modification Kit MK172-72-01 (See Note 4)

Lycoming IO-360-L2A, Rated at 180 hp

The EASA Engine Type Certification standard includes that of FAA TC 1E10, based on individual EU member state acceptance or certification of this standard prior to 28 September 2003, Other standards conforming to TC/TCDS standards Certificated by individual EU member States prior to 28 September 2003 are also acceptable.

- 5.1 Engine Limits: For all operations: 2400 RPM (160 hp)

For power-plants limits refer to Owner's Manual, No. 172RPHUS00, 172RPH180US00 or 172RPHAUS00 (Garmin) or 172RPHBUS00 (GFC-700), latest revision.

6. Propellers
- a. (1) McCauley Propellers. Model Number 1C235/LFA7570

The EASA Propeller Type Certification standard includes that of FAA TC P12EA,

based on individual EU member state acceptance or certification of this standard prior to 28 September 2003, Other standards conforming to TC/TCDS standards Certificated by individual EU member States prior to 28 September 2003 are also acceptable.

Maximum Diameter: Not over 1.9050 m (75 in.)

Minimum Diameter: Not under 1.8796 m (74 in.)

Number of Blades: 2

No operating limitations to 2360 RPM

(2) Spinner: Drawing No. 0550236

b. When Modified by Cessna Modification Kit MK172-72-01 (SEE NOTE 4)

(1) McCauley Model 1A170E/JHA7660

(2) Spinner: Drawing No. 0550236

The EASA Propeller Type Certification standard includes that of FAA TC P-857, based on individual EU member state acceptance or certification of this standard prior to 28 September 2003, Other standards conforming to TC/TCDS standards Certificated by individual EU member States prior to 28 September 2003 are also acceptable.

Propeller Limits

Static RPM at full throttle: Not over 2165 RPM; Not under 2065

No Additional Tolerance Permitted

Diameter: Not over 1.905 m (75 in.); not under 1.8796 m (74 in.)

When Modified by Cessna Modification Kit MK172-72-01 (See NOTE 4)

Static RPM at full throttle: not over 2.400; not under 2.300

No Additional Tolerance Permitted

Diameter: Not over 76 inches; not under 75 inches

7. Fluids:

7.1 Fuel:

100/100LL minimum grade aviation gasoline

7.2 Oil: Engine

MIL-L-6082 or SAE J1966 Aviation Grade Straight Mineral Oil or MIL-L-22851 or SAE J1899 Aviation Grade Ashless Dispersant Oil. Oil conforming to Textron Lycoming Service Instruction No. 1014, latest revision, must be

used after first 50 hours or once oil consumption has stabilized.

7.3 Coolant: Not Applicable

8. Fluid capacities:

8.1 Fuel: Total: 211.983 liters (56 US Gallons)  
Usable: 200.627 liters (53 US Gallons)  
[Two 105.992 liters (28 US Gallon) tanks in wings at 1.2192 m (48.0 in.) aft of datum]  
See NOTE 1 for data on unusable fuel.

8.2 Oil: 7.57082 liters (2.0 gal) at 0.33274 m (13.1 in.) forward of datum  
3.31224 liters (3.5 qts) usable.

When modified by Cessna Modification Kit MK172-72-01 (See NOTE 4)  
7.57082 liters (2.0 gal) at 0.33274 m (13.1 in) forward of datum  
2.83906 liters (3.0 qts) usable.

9. Air Speeds:

a. Airspeed Limits	Maneuvering	99 Knots IAS ( 97 Knots CAS)
	Max Structural Cruising	129 Knots IAS (126 Knots CAS)
	Never Exceed	163 Knots IAS (160 Knots CAS)
	Flaps Extended	85 Knots IAS ( 84 Knots CAS)

When Modified by Cessna Modification Kit MK172-72-01  
(See NOTE 4)

Maneuvering	105 Knots IAS (102 Knots CAS)
Max Structural Cruising	129 Knots IAS (126 Knots CAS)
Never Exceed	163 Knots IAS (160 Knots CAS)
Flaps Extended	85 Knots IAS ( 84 Knots CAS)

10. Maximum Operating Altitude: With a portable oxygen system, the aircraft is limited to 5334 m (17500 ft MSL). Oxygen must be provided as required by the operating rules. Only portable oxygen systems listed in the AFM, document number 11934-002, 11934-003, or later FAA approved revisions, are allowed

11. Operational Capability: VFR Day and Night  
IFR Day and Night

12. Maximum Masses:  
When using POH.AFM 172RPHUS-00 or later rev or 172RPHAUS-00 thru 03

Normal Category

Maximum Ramp	1114,48 kg (2.457 lbs)
Maximum Takeoff and Landing	1111,30 kg (2.450 lbs)

Utility Category

Maximum Ramp	955,719 kg (2.107 lbs)
Maximum Takeoff and Landing	952,544 kg (2.100 lbs)

When using POH.AFM 172RPHAUS-04 or later rev or 172RPHBUS-00 or later

Normal Category

Maximum Ramp	1114,48 kg (2.457 lbs)
Maximum Takeoff and Landing	1111,30 kg (2.450 lbs)

Utility Category

Maximum Ramp	1001,00 kg (2.207 lbs)
Maximum Takeoff and Landing	997,90 kg (2.200 lbs)

When Modified by Cessna Modification Kit MK172-72-01 (see NOTE 4)

Normal Category

Maximum Ramp	1160,29 kg (2.558 lbs)
Maximum Takeoff and Landing	1156,66 kg (2.550 lbs)

Utility Category

Maximum Ramp	1001,53 kg (2.208 lbs)
Maximum Takeoff and Landing	997,90 kg (2.200 lbs)

13. Centre of Gravity Range:

When Using POH.AFM 172RPHUS-00 or later rev or 172RPHAUS-00 thru -03

Normal Category

- (1) Aft Limits: 1,20142 m (47.3 in) aft of datum at 1111,30 kg (2.450 lbs) or less.
- (2) Forward Limits: Linear variation from 1,016 m (40.0 in) aft of datum at 1111,30 kg (2.450 lbs) to 0,889 m (35.0 in) aft of datum at 884,505 kg (1.950 lbs); 0,889 m (35.0 in) aft of datum at 884,505 kg (1.950 lbs) or less

Utility Category

- (1) Aft Limits: 1,0287 m (40.5 in) aft of datum at 952,554 kg (2.100 lbs) or less.
- (2) Forward Limits: Linear variation from 0,9271 m (36.5 in) aft of datum at 952,544 kg (2.100 lbs) to 0,889 m (35.0 in) aft of datum at 884,505 kg (1.950 lbs); 0,889 m (35.0 in) aft of datum at 884,505 kg (1.950 lbs) or less

When using POH.AFM 172RPHAUS-04 or later rev or 172RPHBUS-00 latest rev

Normal Category

- (1) Aft Limits:  
1.20142 m (47.3 in) aft of datum at 1111,30 kg (2.450 lbs) or less.
- (2) Forward Limits:

Linear variation from 1 016 m (40.0 in) aft of datum at 1111,30 kg (2.450 lbs) to 0,889 m (35.0 in) aft of datum at 884,505 kg (1,950 lbs); 0,889 m (35.0 in) aft of datum at 884,505 kg (1.950 lbs) or less

Utility Category

- (1) Aft Limits:  
1,0287 m (40.5 in) aft of datum at 997,90 kg (2.200 lbs) or less.
- (2) Forward Limits:  
Linear variation from 0,9525 m (37.5 in) aft of datum at 997,90 kg (2.200 lbs) to 0,889 m (35.0 in) aft of datum at 884,505 kg (1.950 lbs); 0,889 m (35.0 in) aft of datum at 884,505 kg (1.950 lbs) or less

When Modified by Cessna Modification Kit MK172-72-01 (See NOTE 4)

Normal Category

- (1) Aft Limits:  
1,20142 m (47.3 in) aft of datum at 1156,66 kg (2,550 lbs) or less
- (2) Forward Limits:  
Linear variation from 1,0414 m (41.0 in) aft of datum at 1156,66kg (2.550 lbs) to 0,889 m (35.0 in) aft of datum at 884,903 kg (1.950 lbs); 0,889 m (35.0 in) aft of datum at 884,903 kg (1.950 lbs) or less

Utility Category

- (1) Aft Limits:  
1,0287 m (40.5 in) aft of datum at 997,903 kg (2.200 lbs) or less
- (2) Forward Limits:  
Linear variation from 0,9525 m (37.5 in) aft of datum at 997,903 kg (2.200 lbs) to 0,889 m (35.0 in) aft of datum at 884,505 kg (1.950 lbs); 0,889 m (35.0 in) aft of datum at 884,903 kg (1.950 lbs) or less

- 14. Datum: 1.49352 m (58.8 in.);  
Leading edge of MAC 13.3579 (25.9 in.) aft of datum
- 15. (Reserved)
- 16. Levelling Means: Left side of Tailcone at 2.7432 m (108 in.)  
and 3.6068 m (142 in.) aft of datum
- 17. Minimum Flight Crew: 1 (Pilot)
- 18. Maximum Occupant Seating Capacity: 4 [2 at 0.8636 m to 1.1684 m (34 in. to 46 in.) aft of datum; 2 at 1.8542 (73 in.) aft of datum]
- 19. Baggage / Cargo Compartment aft of datum 54.4311 kg (120 lbs.) at 2.413 m (95.0 in.)



When Modified by Cessna Modification Kit  
MK172-72-01 (See NOTE 4)

54.4311 kg (120 lbs.) at 2.0828 m to 2.7432 m (82 to 108 in.) aft of datum  
22.6796 kg (50 lbs.) at 2.4432 m to 3.6068 m (108 to 142 in.) aft of datum (Maximum combined weight capacity for baggage areas is 54.4311 kg (120 lbs.)

20. Wheels and Tires

Nose Wheel Tire Size	5.00 x 5 (6-ply)
Main Wheel Tire Size	6.00 x 6 (4-ply)

21. Control surface movements

Wing flaps Takeoff 0° - 10°  
Landing 0° - 30° + 0°/-2°  
Ailerons Up 20° ± 1° Down 15° ± 1°  
Elevator tab Up 22° + 1°/-0° Down 19° + 1°/-0°  
Elevator Up 28° + 1°/-0° Down 23° + 1°/-0°  
(Neutral position is with bottom of balance area flush with bottom of stabilizer)  
Rudder (Measured parallel to W.L.):  
Right 16° 10' ± 1° Left 16° 10' ± 1°  
Rudder (Measured perpendicular to Hinge):  
Right 17° 44' ± 1° Left 17° 44' ± 1°

**D. Operating and Service Instructions**

Airplane Flight Manual (AFM):	Document No. 172RPHUS00, 172R180PHUS00 or 172RPHAUS00 or 172RPHBUS00, latest approved revision.
-------------------------------	---

Airplane Maintenance Manual (AMM) (Including Airworthiness Limitations)	Document No. 172MM00, latest revision.
--	--

**E. Operational Suitability Data**

Master Minimum Equipment List (MMEL)	172MMELEU, Initial Issue, EASA approved 24 November 2015, or any later EASA approved issue.
--------------------------------------	---

**F. Notes**

**Production Basis**

Production Certificate No. PC-4 issued March 28, 1997. Applies to airplane serial numbers 17280014, 17280015, 17280017, 17280021 through 17280029, and 17280031 and on. Airplane serial numbers not listed were produced under Type Certificate only. Textron Aviation Inc. is authorized to issue airworthiness certificates under the delegation provisions of Delegation Option Authorization No. CE-1 in accordance with Part 21 of the Federal Aviation Regulations.

## Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the airplane for certification.

NOTE 1: Weight and Balance:

Serial Nos. 17280001 and On

The certificated empty weight and corresponding center of gravity location must include unusable fuel of 8.16466 kg (18 lbs.) at 1.1684 m (46.0 in.) aft of datum, and full oil of 6.80389 kg (15.0 lbs.) at 0.33274 m (13.1 in.) forward of datum.

NOTE 2: The airplane must be operated according to the appropriate Pilot's Operating Handbook and FAA Approved Airplane Flight Manual (POH/AFM). POH/AFM part number 172RPHUS00 (or later approved revision) is applicable to Production Model 172R. POH/AFM part number 172R180PH00 (or later approved revision) is applicable to Production Model 172R airplanes when modified by Cessna Modification Kit MK172-72-01. All POH/AFM Supplements approved for part number 172RPHUS00, are also applicable to part number 172R180PH00, unless specifically noted otherwise in the Supplement. All FAA required placards are included in Section 2 of the applicable POH/AFM, the applicable operating rules, or the certification basis must be installed as specified via the parts list for 0500530, Airplane Assembly (A useful placarding reference is the Textron Aviation Illustrated Parts Catalogue (IPC). Any discrepancies identified between the IPC and an aircraft under inspection need to be reconciled using the previously stated parts list).

FAA Approved Airplane Flight Manual (AFM): Part Number 172RPHAUS-00 (or later FAA approved revisions) is applicable to the Model 172R equipped with Garmin G1000 Integrated Cockpit System. The airplane must be operated according to the appropriate AFM. Required placards are included in the AFM, the applicable operating rules, or the certification basis must be installed as specified via the parts list for 0500530, Airplane Assembly (A useful placarding reference is the Textron Aviation Illustrated Parts Catalogue (IPC). Any discrepancies identified between the IPC and an aircraft under inspection need to be reconciled using the previously stated parts list).

FAA Approved Airplane Flight Manual (AFM): Part Number 172RPHBUS-00 (or later FAA approved revisions) are applicable to the Model 172R equipped with Garmin G1000 Integrated Cockpit System and Garmin GFC-700 AFCS. The airplane must be operated according to the appropriate AFM. Required placards are included in the AFM, the applicable operating rules, or the certification basis must be installed as specified via the parts list for 0500530, Airplane Assembly (A useful placarding reference is the Textron Aviation Illustrated Parts Catalogue (IPC). Any discrepancies identified between the IPC and an aircraft under inspection need to be reconciled using the previously stated parts list).

NOTE 3: Special Ferry Flight Authorization. Flight Standards District Offices are authorized to issue Special overweight ferry flight authorizations. This airplane is structurally satisfactory for ferry flight if maintained within the following limits: (1) Takeoff weight must not exceed 130% of the maximum weight for Normal Category; and (2) The Never Exceed Airspeed ( $V_{NE}$ ) and Maximum Structural

Cruising Speed ( $V_C$ ) must be reduced by 30%; and (3) Forward and aft center of gravity limits may not be exceeded; and (4) Structural load factors of +2.5 g. to -1.0 g. may not be exceeded. Requirements for any additional oil should be established in accordance with Advisory Circular AC23.1011-1. Increased stall speeds and reduced climb performance should be expected for the increased weights. Flight characteristics and performance at the increased weights have not been evaluated. Flight Permit for operations of overweight aircraft may be found in Advisory Circular AC21-4B.

NOTE 4: Only certain Model 172R airplane serial numbers are eligible for modification by Cessna Modification Kit MK172-72-01. Applicable serial numbers are as follows:

17280159	17280242	17280251	17280253	17280257
17280262	17280281	17280292	17280301	17280305
17280426	17280488	17280606	17280607	17280608
17280609	17280610	17280613	17280614	17280616
17280621	17280622	17280623	17280624	17280631
17280632	17280633	17280634	17280638	17280639
17280640	17280646	17280647	17280648	17280652
17280653	17280659	17280660	17280661	17280662
17280664	17280667	17280668	17280669	17280670
17280672	17280673	17280674	17280675	17280701
17280707				

NOTE 5: FAA Certification Basis (Model 172R)

Part 23 of the Federal Aviation Regulations effective February 1, 1965, as amended by 23-1 through 23-6, except as follows:

FAR 23.423; 23.611; 23.619; 23.623; 23.689; 23.775; 23.871; 23.1323; and 23.1563 as amended by Amendment 23-7.

FAR 23.807 and 23.1524 as amended by Amendment 23-10.

FAR 23.507; 23.771; 23.853(a),(b) and (c); and 23.1365 as amended by Amendment 23-14.

FAR 23.951 as amended by Amendment 23-15.

FAR 23.607; 23.675; 23.685; 23.733; 23.787; 23.1309 and 23.1322 as amended by Amendment 23-17.

FAR 23.1301 as amended by Amendment 23-20.

FAR 23.1353; and 23.1559 as amended by Amendment 23-21.

FAR 23.603; 23.605; 23.613; 23.1329 and 23.1545 as amended by Amendment 23-23.

FAR 23.441 and 23.1549 as amended by Amendment 23-28.

FAR 23.779 and 23.781 as amended by Amendment 23-33.

FAR 23.1; 23.51 and 23.561 as amended by Amendment 23-34.

FAR 23.301; 23.331; 23.351; 23.427; 23.677; 23.701; 23.735; and 23.831 as amended by Amendment 23-42.

FAR 23.961; 23.1093; 23.1143(g); 23.1147(b); 23.1303; 23.1357; 23.1361 and 23.1385 as amended by Amendment 23-43.

FAR 23.562(a), 23.562(b)2, 23.562(c)1, 23.562(c)2, 23.562(c)3, and 23.562(c)4 as amended by Amendment 23-44.

FAR 23.33; 23.53; 23.305; 23.321; 23.485; 23.621; 23.655 and 23.731 as amended by Amendment 23-45.

FAR 36 dated December 1, 1969, as amended by Amendments 36-1 through 36-21.

Additions for the Garmin G1000 Integrated Cockpit System (ICS) Only:

14 CFR 23.303; 23.307; 23.601; 23.1163(a); 23.1367 and 23.1381 as amended by Amendment 23- N/C.

14 CFR 23.1589 as amended by Amendment 23-13.

14 CFR 23.771(a) as amended by Amendment 23-14.

14 CFR 23.607 and (Electrical System) 23.1309(a)(1)(2), (c) as amended by Amendment 23-17.

14 CFR 23.1301; 23.1327 and 23.1547(e) as amended by Amendment 23-20.

14 CFR 23.1501 and 23.1541(a)(1), (a)(2), (b)(1), (b)(2) as amended by Amendment 23-21.

14 CFR 23.603 and 23.605 as amended by Amendment 23-23.

14 CFR 23.1529 as amended by Amendment 23-26.

14 CFR 23.561(e); 23.1523; 23.1581(a)(2); and 23.1583(a), (c), (d), (f) as amended by Amendment 23-34.

14 CFR 23.301 as amended by Amendment 23-42.

14 CFR 23.1322; 23.1331 and 23.1357(a)(b)(c)(d) as amended by Amendment 23-43.

14 CFR 23.305; 23.773(a)(1), (a)(2); 23.1525 and 23.1549 as amended by Amendment 23-45.

14 CFR 23.1303(a)(b)(c)(f); 23.1309(a)(1)(i), (a)(1)(ii), (a)(2), (b)(1), (b)(2)(i), (b)(2)(ii), (b)(3), (b)(4)(i), (b)(4)(ii), (b)(4)(iii), (b)(4)(iv), (c)(1), (c)(2)(iii), (c)(3), (d), (e), (f)(1); 23.1311; 23.1321 (a)(c)(d)(e); 23.1323(a), (b)(1), (b)(2), (c); 23.1329 (g)(h); 23.1351(a)(1), (a)(2)(i), (b)(1)(iii), (b)(2)(3), (c)(4), (d)(1); 23.1353(a)(b)(c)(d)(e); 23.1359(c); 23.1361; 23.1365(a)(b)(d)(e)(f) and 23.1431(a)(b)(d)(e) as amended by Amendment 23-49.

14 CFR 23.1325(a), (b)(1), (b)(2)(i), (b)(3), (c)(d)(e); 23.1543(b)(c); 23.1545(a), (b)(1), (b)(2), (b)(3), (b)(4); 23.1553; 23.1555(a)(b); 23.1563(a) and 23.1567(a) as amended by Amendment 23-50.

14 CFR 23.777(a)(b); 23.955(a)(2); 23.1337(a)(1), (a)(2), (b)(1), (c) as amended by Amendment 23-51.

14 CFR 23.1305(a)(1), (a)(2), (a)(3), (b)(2), (b)(3)(i), (b)(4)(i), (b)(5), (b)(6)(i) as amended by Amendment 23-52.

14 CFR 23.901(a)(b) as amended by Amendment 23-53.

Additions for the Garmin GFC-700 Automatic Flight Control System (AFCS) only:

14 CFR 23.1335 as amended by Amendment 23-20,

14 CFR 23.1329 (a)(c)(d)(e)(f) as amended by Amendment 23-49.

Equivalent Safety Items

(1) Induction System Icing Protection

FAR § 23.1093; Refer to FAA letter dated 5/3/96

(2) Throttle Control

FAR § 23.1143(g); Refer to FAA letter dated 3/22/96

(3) Mixture Control

FAR § 23.1147(b); Refer to FAA letter dated 3/22/96

(4) Anti-Collision Light System

14 CFR § 23.1401(d); Refer to ACE-07-09, FAA letter dated 10/12/07

(5) Aviation White Color Reqmt.

14 CFR § 23.1397(c); Refer to ACE-07-10, FAA letter dated 11/29/07

Date of Application for Amended Type Certificate was September 25, 1995.  
Type Certificate No. 3A12 was amended June 21, 1996.

Serial Numbers Eligible: 17280001 and On

Special Conditions as follows:

No. 23-159-SC, "Special Conditions: Cessna Aircraft Company; Cessna Model 172R Airplane; Installation of Electronic Flight Instrument System and the Protection of the System from High Intensity Radiated Fields (HIRF)."

## **SECTION 2: GENERAL, Model 172S Type Design**

### **A. General**

- |  |  |
|--|--|
| 1. a) Type:                            | Model 172S   |
| b) Variant:                            | N/A  |
| 2. Airworthiness Category:             | Normal Category<br>Utility Category  |
| 3. Type Certificate Holder:            | Textron Aviation Inc.<br>One Cessna Boulevard<br>Wichita, Kansas 67215<br>USA  |
| 4. Manufacturer:                       | Textron Aviation Inc.<br>One Cessna Boulevard<br>Wichita, Kansas 67215<br>USA. |
| 5. JAA Certification Application Date: | N/A  |
| 6. JAA recommendation Date:            | N/A  |
| 7. EASA Type Certification Date:       | 28 September 2003  |

### **B. Certification Basis**

- |  |                                       |
|--|---------------------------------------|
| 1. Reference Date for determining the applicable requirements: | FAA Application date 13 November 1997 |
| 2. (Reserved)  |                                       |
| 3. (Reserved)  |                                       |
| 4. Certification Basis:  | As defined in FAA TCDS 3A12           |
| 5. Airworthiness Requirements:                                 |                                       |

FAA Certification Basis (Model 172S)

Part 23 of the Federal Aviation Regulations effective February 1, 1965, as amended by 23-1 through 23-6, except as follows:

FAR 23.423; 23.611; 23.619; 23.623; 23.689; 23.775; 23.871; 23.1323; and 23.1563 as amended by Amendment 23-7.

FAR 23.807 and 23.1524 as amended by Amendment 23-10.

FAR 23.507; 23.771; 23.853(a),(b) and (c); and 23.1365 as amended by Amendment 23-14.

FAR 23.951 as amended by Amendment 23-15.

FAR 23.607; 23.675; 23.685; 23.733; 23.787; 23.1309 and 23.1322 as amended by Amendment 23-17.

FAR 23.1301 as amended by Amendment 23-20. FAR 23.1353; and 23.1559 as amended by Amendment 23-21.

FAR 23.603; 23.605; 23.613; 23.1329 and 23.1545 as amended by Amendment 23-23.

FAR 23.441 and 23.1549 as amended by Amendment 23-28.

FAR 23.779 and 23.781 as amended by Amendment 23-33.

FAR 23.1; 23.51 and 23.561 as amended by Amendment 23-34.

FAR 23.301; 23.331; 23.351; 23.427; 23.677; 23.701; 23.735; and 23.831 as amended by Amendment 23-42.

FAR 23.961; 23.1093; 23.1143(g); 23.1147(b); 23.1303; 23.1357; 23.1361 and 23.1385 as amended by Amendment 23-43.

FAR 23.562(a), 23.562(b)2, 23.562(c)1, 23.562(c)2, 23.562(c)3, and 23.562(c)4 as amended by Amendment 23-44.

FAR 23.33; 23.53; 23.305; 23.321; 23.485; 23.621; 23.655 and 23.731 as amended by Amendment 23-45.

FAR 36 dated December 1, 1969, as amended by Amendments 36-1 through 36-21.

Additions for the Garmin G1000 Integrated Cockpit System (ICS) Only:

FAR 23 as defined in FAA TCDS 3A12, and JAR-23 Normal, Utility, Aerobatic and Commuter Category Aeroplanes Amendment 1 dated 1 February 2001.

14 CFR 23.303; 23.307; 23.601; 23.1163(a); 23.1367 and 23.1381 as amended by Amendment 23- N/C.

14 CFR 23.1589 as amended by Amendment 23-13.

14 CFR 23.771(a) as amended by Amendment 23-14.

14 CFR 23.607 and (Electrical System) 23.1309(a)(1)(2), (c) as amended by Amendment 23-17.

14 CFR 23.1301; 23.1327 and 23.1547(e) as amended by Amendment 23-20.

14 CFR 23.1501 and 23.1541(a)(1), (a)(2), (b)(1), (b)(2) as amended by Amendment 23-21.

14 CFR 23.603 and 23.605 as amended by Amendment 23-23.

14 CFR 23.1529 as amended by Amendment 23-26.

14 CFR 23.561(e); 23.1523; 23.1581(a)(2); and 23.1583(a), (c), (d), (f) as amended by Amendment 23-34.

14 CFR 23.301 as amended by Amendment 23-42.

14 CFR 23.1322; 23.1331 and 23.1357(a)(b)(c)(d) as amended by Amendment 23-43.

14 CFR 23.305; 23.773(a)(1), (a)(2); 23.1525 and 23.1549 as amended by Amendment 23-45.

14 CFR 23.1303(a)(b)(c)(f); 23.1309(a)(1)(i), (a)(1)(ii), (a)(2), (b)(1), (b)(2)(i), (b)(2)(ii), (b)(3), (b)(4)(i), (b)(4)(ii), (b)(4)(iii), (b)(4)(iv), (c)(1), (c)(2)(iii), (c)(3), (d), (e), (f)(1); 23.1311; 23.1321 (a)(c)(d)(e); 23.1323(a), (b)(1), (b)(2), (c); 23.1329 (g)(h); 23.1351(a)(1), (a)(2)(i), (b)(1)(iii), (b)(2)(3), (c)(4), (d)(1); 23.1353(a)(b)(c)(d)(e); 23.1359(c); 23.1361; 23.1365(a)(b)(d)(e)(f) and 23.1431(a)(b)(d)(e) as amended by Amendment 23-49.

14 CFR 23.1325(a), (b)(1), (b)(2)(i), (b)(3), (c)(d)(e); 23.1543(b)(c); 23.1545(a), (b)(1), (b)(2), (b)(3), (b)(4); 23.1553; 23.1555(a)(b); 23.1563(a) and 23.1567(a) as amended by Amendment 23-50.

14 CFR 23.777(a)(b); 23.955(a)(2); 23.1337(a)(1), (a)(2), (b)(1), (c) as amended by Amendment 23-51.

14 CFR 23.1305(a)(1), (a)(2), (a)(3), (b)(2), (b)(3)(i), (b)(4)(i), (b)(5), (b)(6)(i) as amended by Amendment 23-52.

14 CFR 23.901(a)(b) as amended by Amendment 23-53.

Additions for the Garmin GFC-700 Automatic Flight Control System (AFCS) only:

14 CFR 23.1335 as amended by Amendment 23-20,

14 CFR 23.1329 (a)(c)(d)(e)(f) as amended by Amendment 23-49.

Additions for the Garmin GI 275 Electronic Flight Instrument Only:

14 CFR 23.1327 as amended by Amendment 23-20. 23.1501 as amended by Amendment 23-21. 23.1529 as amended by Amendment 23-26. 23.1523(b), 23.1581(a)(1)(2) as amended by Amendment 23-34. 23.1322, 23.1331 as amended by Amendment 23-43. 23.1525 as amended by Amendment 23-45. 23.1303(a)(b)(f), 23.1309(a)(1)(2)(b)(c)(1)(2)(iii)(3)(d)(e)(f), 23.1311(a)(b), 23.1321(a)(c)(d)(e), 23.1323(a)(c), 23.1351(a)(1)(2)(i), 23.1359(c), 23.1365(a)(d)(e), 23.1431 (a)(b) as amended by Amendment 23-49. 23.1325(a)(b)(1)(i)(ii)(iii)(2)(i), 23.1543(b)(c), 23.1545(a)(b)(1)(2)(3)(4), 23.1555(a)(b) as amended by Amendment 23-50. 23.777(a)(b) as amended by Amendment 23-51. 23.1308(a)(b)(c) as amended by Amendment 23-57. 23.1306(a)(b) as amended by Amendment 23-61. 23.2010 and 23.2510 as amended by Amendment 23-64 (see NOTE 3). Effective at S/N 172S12701 and On.

Additions for 14 CFR Part 23 Amendment 64:

14 CFR 23.2000, 23.2005, 23.2010 as amended by Amendment 23-64 (see NOTE 4). Effective at S/N 172S12701 and on.

Additions for the Garmin G1000 NXi Integrated Cockpit System Only:

CS 23.143; CS 23.301; CS 23.337; CS 23.561(a)(b)(3)(e); CS 23.607 (a)(b); CS 23.611; CS 23.613 (a) (b); CS 23.683; CS 23.867; CS 23.1337(b)(c); CS 23.1329 (b); CS 23.1351(g); CS 23.1353(h); CS 23.1359(a)(b); CS 23.1555(e)(2); CS 23.1581(a)(b)(1)(3)(c)(d)(f); CS 23.1583 (h)(m), CS 23.1585(J) at amendment 0; CS 23.2515; CS 23.2520 at amendment 5 (see NOTE 5). Effective at S/N 172S13231 and On

Additions for the installation of the Dual Electronic Ignition System (EIS):

CS 23.901(a)(1)(2)(b)(1)(2), CS 23.1309(a)(1)(2), CS 23.1353(h), CS 23.1431(b), CS 23.1581(a)(2) at CS-23 Initial Issue. Effective serials 172S13375 and on.

6. Requirements elected to comply: None



7. EASA Special Conditions:

for the Nav III avionics option only:  
SC/G1000/01 HIRF Protection;  
SC/G1000/02 Human factors;  
SC/G1000/03 Part 23 Lightning.

8. EASA Exemptions:

None

9. EASA Equivalent Safety Findings:

None

FAA equivalent safety findings

- (1) Induction System Icing Protection  
FAR § 23.1093; Refer to FAA letter dated 5/1/98
- (2) Throttle Control  
FAR § 23.1143(g); Refer to FAA letter dated 5/1/98
- (3) Mixture Control  
FAR § 23.1147(b); Refer to FAA letter dated 5/1/98
- (4) Anti-Collision Light System  
14 CFR § 23.1401(d); Refer to ACE-07-09, FAA letter dated 10/12/07
- (5) Aviation White Color Reqmt.  
14 CFR § 23.1397(c); Refer to ACE-07-10, FAA letter dated 11/29/07

Date of Application for Amended Type Certificate for the 172S was November 13, 1997.

Type Certificate No. 3A12 was amended May 1, 1998 for the Model 172S.

Serial Numbers Eligible: 172S8001 and on

Special Conditions as follows:

No. 23-159-SC, "Special Conditions: Cessna Aircraft Company; Cessna Model 172S Airplane; Installation of Electronic Flight Instrument System and the Protection of the System from High Intensity Radiated Fields (HIRF)."

10. EASA Environmental Standards:

CS 36 (ICAO Annex 16, Volume 1, as applicable.)

**C. Technical Characteristics and Operational Limitations**

1. Type Design Definition:

Master Drawing List, Document No.172-96-005, latest FAA Approved Revision.

2. Description:

Single-engine, all-metal, four-place, high-wing airplane, fixed tricycle landing gear.

3. Equipment: Equipment list, Owner's Manual No. 172SPHUS00 or 172SPHAUS00 (Garmin) or 172SPHBUS00 (GFC-700), latest revision.

4. Dimensions:

Span	10.9982 m	(36.08 ft.)
Length	8.20522 m	(26.92 ft.)
Height	2.35661 m	(7.73 ft.)
Wing Area	16.3045 m <sup>2</sup>	(175.5 ft <sup>2</sup> )

5. Engines: Lycoming IO-360-L2A, Rated at 180 hp

The EASA Engine Type Certification standard includes that of FAA TC 1E10, based on individual EU member state acceptance or certification of this standard prior to 28 September 2003, Other standards conforming to TC/TCDS standards Certificated by individual EU member States prior to 28 September 2003 are also acceptable.

5.1 Engine Limits: For all operations: 2700 RPM (180 hp)

For power-plants limits refer to Owner's Manual, No. 172SPHUS00 or 172SPHAUS00 (Garmin) or 172SPHBUS00 (GFC-700), latest revision.

6. Propellers (1) McCauley Propellers. Model Number 1A170E/JHA7660

(2) Spinner: Drawing No. 0550236

The EASA Propeller Type Certification standard includes that of FAA TC P-857, based on individual EU member state acceptance or certification of this standard prior to 28 September 2003, Other standards conforming to TC/TCDS standards Certificated by individual EU member States prior to 28 September 2003 are also acceptable.

Static RPM at full throttle: Not over 2400 RPM; Not under 2300

Diameter: Not over 1.9304 m (76 in.); not under 1.905 m (75 in.)

7. Fluids:

- 7.1 Fuel: 100/100LL minimum grade aviation gasoline
- 7.2 Oil: Engine MIL-L-6082 or SAE J1966 Aviation Grade Straight Mineral Oil or MIL-L-22851 or SAE J1899 Aviation Grade Ashless Dispersant Oil. Oil conforming to Textron Lycoming Service Instruction No. 1014, latest revision, must be used after first 50 hours or once oil consumption has stabilized.
- 7.3 Coolant: Not Applicable
8. Fluid capacities:
- 8.1 Fuel: Total: 211.983 liters (56 US Gallons)  
Usable: 200.627 liters (53 US Gallons)  
[Two 105.992 liters (28 US Gallon) tanks in wings at 1.2192 m (48.0 in.) aft of datum]  
See NOTE 1 for data on unusable fuel.
- 8.2 Oil: 7.57082 liters (8.0 qts) at 0.33274 m (13.1 in.) forward of datum  
2.83906 liters (3.0 qts ) unusable.
9. Air Speeds:
- |                    |                         |                               |
|--------------------|-------------------------|-------------------------------|
| a. Airspeed Limits | Maneuvering             | 105 Knots IAS (102 Knots CAS) |
|                    | Max Structural Cruising | 129 Knots IAS (126 Knots CAS) |
|                    | Never Exceed            | 163 Knots IAS (160 Knots CAS) |
|                    | Flaps Extended          | 85 Knots IAS (84 Knots CAS)   |
10. Maximum Operating Altitude: With a portable oxygen system, the aircraft is limited to 5334 m (17500 ft MSL). Oxygen must be provided as required by the operating rules. Only portable oxygen systems listed in the AFM, document number 11934-002, 11934-003, or later FAA approved revisions, are allowed
11. Operational Capability: VFR Day and Night  
IFR Day and Night
12. Maximum Masses:
- |                             |                         |
|-----------------------------|-------------------------|
| <u>Normal Category</u>      |                         |
| Maximum Ramp                | 1160.29 kg (2,558 lbs.) |
| Maximum Takeoff and Landing | 1156.66 kg (2,550 lbs.) |
| <u>Utility Category</u>     |                         |
| Maximum Ramp                | 1001.53 kg (2,107 lbs.) |
| Maximum Takeoff and Landing | 997.903 kg (2,200 lbs.) |
13. Centre of Gravity Range:

Normal Category

- (1) Aft Limits 1.20142 m (47.3 in.) aft of datum at 1156.66 kg (2,550 lbs.) or less.
- (2) Forward Limits Linear variation from 1.0414 m (41.0 in.) aft of datum at 1156.66 kg (2,550 lbs.) to 0.889 m (35.0 in.) aft of datum at 884.505 kg (1,950 lbs.); 0.889 m (35.0 in.) aft of datum at 884.505 kg (1,950 lbs.) or less.

Utility Category

- (1) Aft Limits 1.0287 m (40.5 in.) aft of datum at 997.903 kg (2,200 lbs.) or less.
- (2) Forward Limits Linear variation from 0.9525 m (37.5 in.) aft of datum at 997.903 kg (2,200 lbs.) to 0.889 m (35.0 in.) aft of datum at 884.505 kg (1,950 lbs.); 0.889 m (35.0 in.) aft of datum at 884.505 kg (1,950 lbs.) or less.

14. Datum: 1.49352 m (58.8 in.); Leading edge of MAC 13.3579 (25.9 in.) aft of datum
15. (Reserved)
16. Levelling Means: Left side of Tailcone at 2.7432 m (108 in.) and 3.6068 m (142 in.) aft of datum
17. Minimum Flight Crew: 1 (Pilot)
18. Maximum Passenger Seating Capacity: 4 [2 at 0.8636 m to 1.1684 m (34 in. to 46 in.) aft of datum; 2 at 1.8542 (73 in.) aft of datum]
19. Baggage / Cargo Compartment 54.4311 kg (120 lbs.) at 2.0828 m to 2.7432 m (82 to 108 in.) aft of datum
- 22.6795 kg (50 lbs.) at 2.7432 to 3.6068 m (108 to 142 in.) aft of datum
- (Maximum combined weight capacity for baggage areas is 54.4311 kg (120 lbs.)

20. Wheels and Tires

- Nose Wheel Tire Size 5.00 x 5 (6-ply)
- Main Wheel Tire Size 6.00 x 6 (6-ply)

21. Control surface movements
- |              |         |                   |
|--------------|---------|-------------------|
| Wing flaps   | Takeoff | 0° - 10°          |
|              | Landing | 0° - 30° + 0°/-2° |
| Ailerons     | Up      | 20° ± 1°          |
|              | Down    | 15° ± 1°          |
| Elevator tab | Up      | 22° + 1°/-0°      |
|              | Down    | 19° + 1°/-0°      |
| Elevator     | Up      | 28° + 1°/-0°      |
|              | Down    | 23° + 1°/-0°      |
- (Neutral position is with bottom of balance area flush with bottom of stabilizer)

Rudder (Measured parallel to W.L.):  
Right  $16^{\circ} 10' \pm 1^{\circ}$  Left  $16^{\circ} 10' \pm 1^{\circ}$   
Rudder (Measured perpendicular to Hinge):  
Right  $17^{\circ} 44' \pm 1^{\circ}$  Left  $17^{\circ} 44' \pm 1^{\circ}$

#### **D. Operating and Service Instructions**

Airplane Flight Manual (AFM): Document No. 172SPHUS00 or 172SPHAUS00 or 172SPHBUS00, latest approved revision.

Airplane Maintenance Manual (AMM)  
(Including Airworthiness Limitations) Document No. 172MM00, latest revision.

Pilot's Operating Handbook and FAA Approved Airplane Flight Manual (POH/AFM): part number 172SPHUS-00 (or later approved revision) is applicable to the Model 172S. The airplane must be operated according to the appropriate POH/AFM. All FAA required placards are included in Section 2 of the POH/AFM, the applicable operating rules, or the certification basis must be installed as specified via the parts list for 0500531, Airplane Assembly (A useful placarding reference is the Textron Aviation Illustrated Parts Catalogue (IPC). Any discrepancies identified between the IPC and an aircraft under inspection need to be reconciled using the previously stated parts list).

FAA Approved Airplane Flight Manual (AFM): Part Number 172SPHAUS-00 (or later FAA approved revisions) is applicable to Model 172S equipped with Garmin G1000 Integrated Cockpit System. The airplane must be operated according to the appropriate AFM. Required placards are included in the AFM, the applicable operating rules, or the certification basis must be installed as specified via the parts list for 0500531, Airplane Assembly (A useful placarding reference is the Textron Aviation Illustrated Parts Catalogue (IPC). Any discrepancies identified between the IPC and an aircraft under inspection need to be reconciled using the previously stated parts list).

FAA Approved Airplane Flight Manual (AFM): Part Number 172SPHBUS-00 (or later FAA approved revisions) are applicable to the Model 172S equipped with Garmin G1000 Integrated Cockpit System and Garmin GFC-700 AFCS. The airplane must be operated according to the appropriate AFM. Required placards are included in the AFM, the applicable operating rules, or the certification basis must be installed as specified via the parts list for 0500531, Airplane Assembly (A useful placarding reference is the Textron Aviation Illustrated Parts Catalogue (IPC). Any discrepancies identified between the IPC and an aircraft under inspection need to be reconciled using the previously stated parts list).

FAA Approved AFM: P/N 172SPHCUS-00, or later FAA approved revision, are applicable to the Model 172S equipped with Garmin G1000 NXi Integrated Cockpit System. The airplane must be operated according to the appropriate AFM. Required placards are included in the AFM, the applicable operating rules, or the certification basis must be installed as specified via the parts list for 0500531, Airplane Assembly (useful placarding reference is the Textron Aviation IPC. Any discrepancies identified between the IPC and an aircraft under inspection need to be reconciled using the previously stated parts list).

## **E. Operational Suitability Data**

Master Minimum Equipment List (MMEL) 172MMELEU, Initial Issue, EASA approved 24 November 2015, or any later EASA approved issue.

## **F. Notes**

### **Production Basis**

Production Certificate No. PC-4 issued August 27, 1998. Applies to airplane serial numbers 172S8003 and on. Airplane serial numbers not listed were produced under Type Certificate only. Textron Aviation Inc. is authorized to issue airworthiness certificates under the delegation provisions of Delegation Option Authorization No. CE-1 in accordance with Part 21 of the Federal Aviation Regulations.

Company name change effective 29 July 2015. The following serials are manufactured under the name Textron Aviation Inc.: 172S11615 and On.

### **Equipment**

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the airplane for certification.

NOTE 1: Weight and Balance:

#### Serial Nos. 172S8001 and On

The certificated empty weight and corresponding center of gravity location must include unusable fuel of 8.16466 kg (18 lbs.) at 1.1684 m (46.0 in.) aft of datum, and full oil of 6.80389 kg (15.0 lbs.) at 0.33274 m (13.1 in.) forward of datum.

NOTE 2: Special Ferry Flight Authorization. Flight Standards District Offices are authorized to issue Special overweight ferry flight authorizations. This airplane is structurally satisfactory for ferry flight if maintained within the following limits: (1) Takeoff weight must not exceed 130% of the maximum weight for Normal Category; and (2) The Never Exceed Airspeed ( $V_{NE}$ ) and Maximum Structural Cruising Speed ( $V_C$ ) must be reduced by 30%; and (3) Forward and aft center of gravity limits may not be exceeded; and (4) Structural load factors of +2.5 g. to -1.0 g. may not be exceeded. Requirements for any additional oil should be established in accordance with Advisory Circular AC23.1011-1. Increased stall speeds and reduced climb performance should be expected for the increased weights. Flight characteristics and performance at the increased weights have not been evaluated. Flight Permit for operations of overweight aircraft may be found in Advisory Circular AC21-4B.

NOTE 3: The Means of Compliance for 23.2510 [23-64] is draft AC 20-184A.

NOTE 4: 14 CFR 23.2005 Certification Level and Performance Level: Level 2, Low Speed.

NOTE 5: The Means of Compliance for 23.2515 [23-64] and 23.2520 [23-64] is FAA Policy PS-ACE-23-10.

**SECTION 3: Reserved**

## **ADMINISTRATIVE SECTION**

### I. Acronyms

AFM	Airplane Flight Manual
Amdt.	Amendment
AMM	Airplane Maintenance Manual
EASA	European Aviation Safety Agency
MMEL	Master Minimum Equipment List
POH	Pilot's Operating Handbook
SC	Special Condition
TAI	Textron Aviation Inc.
TC	Type Certificate
TCDS	Type Certificate Data Sheet

### II. Type Certificate Holder Record

Cessna Aircraft Company transferred to Textron Aviation Inc. on 29 July 2015.

### III. Change Record

Issue	Date	Change	TC issue no & date
5	07.12.2012	Section 1: C.3, C.6.b, 8.2, 12, 13, 18, Note 4	-
6	10.06.2013	Airworthiness categories clarified (sections 1.A & 2.A)	-
7	19.08.2014	Sections 1 & 2: point 20 corrected	-
8	17.12.2015	Transfer of Type Certificate Holder and of Production Organisation; New Sections E with OSD data introduced	07.12.2015
9	29.10.2020	Change in TC Holder	-
10	02.11.2021	Additions for the Garmin GI 275 Electronic Flight Instrument	-
11	17.11.2025	Additions for the Garmin G1000 NXi Integrated Cockpit System (NXi STC indraw) & Additions for the Dual EIS system installation. Alignment with FAA TCDS Revision 88.	-