

Air Research Technology Inc.
 3440 McCarthy St.
 Montreal, Quebec Canada H4K 2P5
 Tel. 514 337 7588 or 800-325-2588
 Email; info@wingxstol.com

Flight / Operating Manual Supplement No. 172

Applicable to:

TC	Models
A-799	CESSNA 170A, 170B
3A12	CESSNA 172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H, 172I, 172K, 172L, 172M, 172N, 172P, 172Q
A-199	CESSNA 172R, 172S
3A17	CESSNA P172D, 175, 175A, 175B, 175C, R172E, R172F, R172G, R172H, R172J, R172K, 172RG

Modified in accordance with Transport Canada STC # SA01-35
 When fitted with ART *WingExtensions*
 Models # R1582, R1582-1, R1582-SS and R1582-1-CS

Sections 2 of this document comprises the Approved Flight / Operating Manual Supplement. Compliance with Section 2 – Operating Limitations is mandatory. Section 1, 3, 4, 5, 6, 7, 8 and 9 are Unapproved and are provided for information only.

The information and data contained in this document supersede or supplement that contained in the basic Flight / Operating Manual for the airplane and other Approved Flight / Operating Manual Supplements.

This supplement is to be attached to the Approved Flight / Operating Manual for the aircraft with the subject design change incorporated.



TABLE OF CONTENTS

Section 1 – GENERAL.....	3
Section 2 – OPERATING LIMITATIONS	4
MANEUVER LIMITS.....	4
AIRSPEED LIMITATIONS	4
FLAP LIMITS.....	4
PLACARDS	4
WEIGHT LIMITS with <i>WING-X</i> (LANDPLANE).....	5
CG LIMITS WITH <i>WING-X</i> (LANDPLANE).....	6
MAXIMUM APPROVED GROSS WEIGHT (GW) - SEAPLANE.....	8
MAXIMUM APPROVED GROSS WEIGHT WITH POWERPLANT STC	8
FLIGHT WITH <i>WingExtensions</i> REMOVED	8
Section 3 – EMERGENCY PROCEDURES.....	9
Section 4 – NORMAL PROCEDURES	9
Pre-flight Inspection.....	9
Flap Operation.....	9
Balked Landing Procedure.....	9
Noise Characteristics and Noise Reduction.....	10
Section 5 – PERFORMANCE.....	11
Stall Speeds	11
Takeoff Performance	11
Landing Performance.....	11
Section 6 – WEIGHT AND BALANCE	12
Section 7 – AIRPLANE AND SYSTEMS DESCRIPTION.....	13
Section 8 – AIRPLANE HANDLING, SERVICE AND MAINTENANCE.....	13
Section 9 – APPENDIX.....	14
DETERMINING WEIGHT LIMITATIONS.....	14

Revision and Distribution

When this document requires revision, it will be reissued in whole.

Air Research Technology Inc. will provide copies of this document to all registered operators of *WingExtensions*. To obtain copies of this document please contact:

Air Research Technology Inc.
3440 McCarthy St.
Montreal, Quebec Canada H4K 2P5
Tel. 514 337 7588 or 800-325-2588
Email; info@wingxstol.com
<http://www.wingxstol.com>

Section 1 – GENERAL

- *WingExtensions* are approved for landplane and seaplane operation on all the models and series of airplanes listed in this Supplement. Note 172RG is approved in landplane configuration only.
- *WingExtensions* increase the wingspan 37.75 inches providing a span of approximately 39 ft. 4 inches or 11.4 square feet more wing area.
- The all-aluminum *WingExtension* kit and spar reinforcements increase the basic empty weight of the aircraft by 18 lbs.
- The modification permits an increase in Maximum Approved Takeoff Weight (MTOW) on most Landplane models. MTOW increase applies only to airplanes that have been modified with *WingExtensions* and the spar reinforcement.
- Maximum Gross Takeoff Weight limits will vary with airplane model and engine horsepower and are due to performance and or other structural limitations.
- This installation is compatible with the following FAA STOL STCs or combinations thereof:
 - Bush: SA1073CE, SA2851SW, SA2852SW, SA2853SW
 - Horton: SA910CE, SA948CE, SA989CE, SA2551CE
 - Sierra/Robertson: SA499NW, SA1677SW, SA1689WE
 - Sportsman: SA2100WE, SA2256WE
- This installation is compatible with the following Float STCs :
 - Aerocet: SA02400AK
 - Aqua: SA1168SO, SA665CE
 - Baumann: SA00795CH, SA01815CH
 - CAP: SA62-7, SA62-8
 - Kenmore/Edo: SA1191NW, SA584NW
 - Pee-Kay: SA358NW, SA365NW, SA602AL, SA603AL, SA1000EA
 - Wipline: SA00804CH, SA00674CH, SA00900CH
- Compatibility has not been demonstrated with any seaplane configuration in excess of 2550 lbs.
- Compatibility has not been demonstrated with any wing tip fairings that extend the wing span, excluding nav lights, beyond 36 ft 6 in.

Section 2 – OPERATING LIMITATIONS

COMPLIANCE IS MANDATORY

The information found in the basic airplane Flight / Operating Manual, any applicable Flight / Operating Manual Supplement and any installed placards applies, except as listed below.

MANEUVER LIMITS

With *WingExtensions* installed, aircraft must be operated in the Normal Category. The maneuver limits specified in the basic flight manual for the Normal category apply. All acrobatic maneuvers, including spins, are prohibited.

AIRSPPEED LIMITATIONS

Cessna models R172K, 172RG, 172R and 172S:

With the *WingExtensions* installed Vne is reduced to 160 KIAS (184 mph). On these models the airspeed indicator must be marked with a radial red line at 160 KIAS.

FLAP LIMITS

At any weight above the approved MLW do not exceed Flap 30°.

PLACARDS

The following placards must be installed in full view of the pilot:

All MODELS:

**AEROBATIC MANEUVERS INCLUDING
SPINS PROHIBITED WITH WING
EXTENSIONS INSTALLED
OPERATE IN NORMAL CATEGORY**

**MODELS 170A, 170B, 172, 172A THRU 172N,
P172D, 175, 175A THRU 175C, R172E THRU R172J,
R172K S/N R1722000 THRU R1723399:**

**MAXIMUM FLAPS 30°
AT INCREASED GROSS WEIGHT
WITH WING EXTENSIONS**

TC Approved

OCT 22 2020

WEIGHT LIMITS with WING-X (LANDPLANE)

Model	Engine (ref only)	WING-X Landplane MTOW (lbs)	WING-X Landplane MLW (lbs)
170A	145HP	2250	2200
170B	145HP	2250	2200
172	145HP	2250	2200
172A	145HP	2250	2200
172B	145HP	2250	2200
172C	145HP	2300	2250
172D	145HP	2350	2300
172E	145HP	2350	2300
172F	145HP	2350	2300
172G	145HP	2350	2300
172H	145HP	2350	2300
172I	150HP	2400	2300
172K	150HP	2400	2300
172L	150HP	2400	2300
172M	150HP	2400	2300
172N	160HP	2400	2300
172P	160HP	2450	2400
172Q	180HP	2675	2550
172R	160HP	2450	2450
172R	180HP	2675	2550
172S	180HP	2675	2550
P172D	175HP	2500	2500
175	175HP	2450	2350
175A	175HP	2450	2350
175B	175HP	2450	2350
175C	175HP	2450	2450
R172E	210HP	2625	2500
R172F	210HP	2625	2500
R172G	210HP	2675	2550
R172H	210HP	2550	2550
R172J	210HP	2675	2550
R172K	195HP	2675	2550
172RG	180HP	2650	2650

MTOW = Maximum Approved Takeoff Weight
 MLW = Maximum Approved Landing Weight
 All aircraft weight above the MLW must be fuel.
 Intentional landing above the MLW is not permitted.

<p>TC Approved OCT 22 2020</p>
--

CG LIMITS WITH WING-X (LANDPLANE)

Model	CG Envelope (straight line variation between points)
170A.170B	(+42.7) to (+46.4) at 2250 lbs. (+40.8) to (+46.4) at 2200 lb. (+36.4) to (+46.4) at 1733 lb. or less
172, 172A, 172B	(+42.7) to (+46.4) at 2250 lbs. (+40.8) to (+46.4) at 2200 lbs. (+36.4) to (+46.4) at 1733 lbs. or less
172C	(+42.7) to (+46.4) at 2300 lbs. (+40.5) to (+46.4) at 2250 lbs. (+36.4) to (+46.4) at 1850 lbs. or less
172D, 172E, 172F, 172G, 172H,	(+42.7) to (+47.3) at 2350 lbs. (+38.5) to (+47.3) at 2300 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
172I, 172K, 172L	(+42.7) to (+47.3) at 2400 lbs. (+38.5) to (+47.3) at 2300 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
172M	(+42.7) to (+47.3) at 2400 lbs. (+38.5) to (+47.3) at 2300 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
172N	(+42.7) to (+47.3) at 2400 lbs. (+38.5) to (+47.3) at 2300 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
172P	(+42.7) to (+47.3) at 2450 lbs. (+39.5) to (+47.3) at 2400 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
172Q	(+42.7) to (+47.3) at 2675 lbs. (+41.0) to (+47.3) at 2550 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
172R (160 HP)	(+40.0) to (+47.3) at 2450 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
172R (180 HP)	(+42.7) to (+47.3) at 2675 lbs. (+41.0) to (+47.3) at 2550 lbs. (+35.0) to (+47.3) at 1950 lbs. or less

TC Approved

OCT 22 2020

CG LIMITS WITH WING-X (LANDPLANE) - Continued

Model	CG Envelope (straight line variation between points)
172S	(+42.7) to (+47.3) at 2675 lbs. (+41.0) to (+47.3) at 2550 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
P172D	(+40.5) to (+47.3) at 2500 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
175	(+42.7) to (+46.4) at 2450 lbs. (+41.5) to (+46.4) at 2350 lbs. (+36.5) to (+46.4) at 1850 lbs. or less
175A, 175B	(+42.7) to (+46.4) at 2450 lbs. (+41.5) to (+46.4) at 2350 lbs. (+36.0) to (+46.4) at 1850 lbs. or less
175C	(+39.5) to (+46.4) at 2450 lbs. (+36.0) to (+46.4) at 2050 lbs. or less
R172E, R172F	(+42.7) to (+47.3) at 2625 lbs. (+40.5) to (+47.3) at 2500 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
R172G, R172J,	(+42.7) to (+47.3) at 2675 lbs. (+41.0) to (+47.3) at 2550 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
R172H	(+41.0) to (+47.3) at 2550 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
R172K	(+42.7) to (+47.3) at 2675 lbs. (+41.0) to (+47.3) at 2550 lbs. (+35.0) to (+47.3) at 1950 lbs. or less
172RG	(+39.5) to (+46.5) at 2650 lbs. (+36.0) to (+46.5) at 1950 lbs. or less

TC Approved
OCT 22 2020

MAXIMUM APPROVED GROSS WEIGHT (GW) - SEAPLANE

Seaplane STC gross weight limits apply with *WingExtensions* installed, however in no case shall seaplane gross weight exceed 2550 lbs.

MAXIMUM APPROVED GROSS WEIGHT WITH POWERPLANT STC

If a powerplant STC that increases the gross weight is concurrently installed, refer to that STC for gross weight limits, however in no case shall the gross weight exceed 2675 lbs.

FLIGHT WITH *WingExtensions* REMOVED

Flight with *WingExtensions* removed is permitted.
This Supplement does not apply when *WingExtensions* are removed.

TC Approved

OCT 22 2020

Section 3 – EMERGENCY PROCEDURES

-No change-

Section 4 – NORMAL PROCEDURES

With *WingExtensions* installed, when taking off at a weight greater than the Maximum Landing Weight, the pilot must ensure that the planned fuel burn will result in the Maximum Landing Weight not being exceeded for the scheduled landing.

Pre-flight Inspection

The pilot's pre-flight inspection must include a visual inspection of the *WingExtensions* for missing or loose fasteners and physical damage.

Flap Operation

At weights above the Maximum Landing Weight, use maximum flaps 30°. Refer to page 5 for Maximum Landing Weight for your model aircraft.

Balked Landing Procedure

Power – FULL THROTTLE

Carburator Heat –COLD

Wing-Flaps – RETRACT to 20° Immediately

CLIMB SPEED – Maintain Climb speed for obstacle clearance as per POH

Wing Flaps -- 10° (until all obstacles are cleared)

Wing Flaps -- Retract after reaching safe altitude and 65 Kts or 75 Mph

Noise Characteristics and Noise Reduction

The certificated noise levels of affected models are changed as follows:

Model	Original Certificated Noise Level	New Certificated Noise Level
172N	73.8 dB(A) at 2300 lbs	74.1 dB(A) at 2400 lbs
172Q	74.9 dB(A) at 2550 lbs	75.5 dB(A) at 2675 lbs
172R (180 HP)	75.1 dB(A) at 2550 lbs	75.7 dB(A) at 2675 lbs
172S	75.1 dB(A) at 2550 lbs	75.7 dB(A) at 2675 lbs
R172K	74.1 dB(A) at 2550 lbs	74.6 dB(A) at 2675 lbs

Section 5 – PERFORMANCE

NOTE:

**REPLACE THIS PAGE WITH SECTION 5
APPLICABLE TO YOUR AIRCRAFT MODEL
DISCARD ALL OTHER SECTION 5 PAGES**

Section 6 – WEIGHT AND BALANCE

**NOTE:
REPLACE THIS PAGE WITH SECTION 6
APPLICABLE TO YOUR AIRCRAFT MODEL
DISCARD ALL OTHER SECTION 6 PAGES**

Section 7 – AIRPLANE AND SYSTEMS DESCRIPTION

WingExtensions increase the wingspan by 37.75 inches providing a span of approximately 39 ft. 4 inches and they increase total wing area by 11.4 square feet.

Section 8 – AIRPLANE HANDLING, SERVICE AND MAINTENANCE

-No change-

Section 9 – APPENDIX

DETERMINING WEIGHT LIMITATIONS

- 1) Refer to the Weight Limits with *Wing-X* landplane Table (page 5) for applicable weight limitations
- 2) Find any additional powerplant STC and refer to the applicable POH / FOM Supplement for revised weight limitations (if applicable).
- 3) For Landplane the applicable weight limit is the highest limit found, except that weight increase granted by powerplant STC must not exceed 2550 lbs.
- 4) Find related float STC and refer to the applicable POH / FOM Supplement for revised weight limitations (if applicable).
- 5) In Seaplane configuration the Maximum takeoff Weight for aircraft fitted with engines having 180 HP or greater is 2,550 lbs. or as otherwise limited to a lower value by the applicable powerplant and seaplane STCs.
- 6) For amphibious floats, when operating in landplane configuration (wheels down hard surface) the takeoff and landing weight limitations set forth by the float manufacturer shall apply.

Example 1:

Cessna 172K – GW = 2300 lbs landplane / 2220 lbs seaplane (from TCDS)
 Powerplant STC # SA4428SW (180 HP) combined with GW increase STC#SA2196CE
WingExtensions installed
 GW = 2500 lbs for C172K
 Float STC SA584NW, for EDO model 2130 GW = 2350 lbs (from STC SA584NW)
 Conclusion:
 Landplane Maximum Gross Weight = 2500 lbs (from GW incr. STC & Powerplant STC)
 Landplane Maximum Landing Weight = 2500 lbs (from GW incr. STC & Powerplant STC)
 Seaplane Maximum Gross Weight = 2350 lbs (from Float STC SA584NW)

Example 2:

Cessna 172N GW = 2300 lbs landplane / 2220 lbs seaplane (from TCDS)
 Powerplant STC # SA703GL (180 HP) GW = 2550 lbs for C172N (from STC SA703GL)
WingExtensions installed
 Float STC SA01815CH for Baumann Model BF2550A GW = 2,550 lbs refer to page 2
 para 6 of STC SA01815CH
 Conclusion:
 Landplane Maximum Gross Weight = 2550 lbs (from Powerplant STC)
 Landplane Maximum Landing Weight = 2550 lbs (from Powerplant STC)
 Seaplane Maximum Gross Weight = 2550 lbs (from Float STC and Powerplant STC)

Example 3:

Cessna 172K GW = 2300 lbs landplane / 2220 lbs seaplane (from TCDS)
Powerplant STC # SA703GL (180 HP) - GW = 2500 lbs for C172K (from STC SA703GL)
WingExtensions installed
Float STC SA01815CH when combined with SA703GL on Baumann Model BF2550A
GW = 2500 lbs (from page 2 para 5 of STC SA01815CH)
Conclusion:
Landplane Maximum Gross Weight = 2500 lbs (from Powerplant STC)
Landplane Maximum Landing Weight = 2500 lbs (from Powerplant STC)
Seaplane Maximum Gross Weight = 2500 lbs (from Float STC)

Example 4:

Cessna 172S GW = 2550 lbs landplane (from TCDS)
WingExtensions installed
Float STC SA00900CH for Wipaire model 2350A GW = 2,550 lbs
(from AMLSA00900CH and AFM Supplement)
Wing-X Landplane MTOW = 2675 lbs (from Gross Weight Table page 6)
Conclusion:
Landplane Maximum Takeoff Weight = 2675 lbs (from Gross Weight Table page 6)
Landplane Maximum Landing Weight = 2550 lbs (from Type Certificate)
Seaplane Max Gross Weight = 2550 lbs (from Float STC SA00900CH – AFM supplement)

Example 6:

Cessna 172L GW = 2300 lbs landplane / 2220 lbs seaplane (from TCDS)
WingExtensions installed
Combo Powerplant & Land Propeller STC # SA703GL (180 HP) GW increase = 2550 lbs
Combo Powerplant & Sea Prop. STC # SA332GL (180 HP) GW = 2550 lbs Seaplane
Float STC SA665CE Aqua model 2400
Conclusion:
Landplane Maximum Gross Weight = 2550 lbs (with STC SA703GL)
Landplane Maximum Landing Weight = 2550 lbs (with STC SA703GL)
Seaplane Gross Weight = 2550 lbs (From Float STC SA332GL)