1969

Cessna

MODEL 172 AND SKYHAWK

FLOATPLANE

OWNER'S MANUAL SUPPLEMENT

D709-13-CES-100-3/73

PERFORMANCE - SPECIFICATIONS

	FLOATPLANE
GROSS WEIGHT	2220 lbs
SPEED:	
Top Speed at Sea Level	108 mph
Cruise, 75% Power at 6500 ft	106 mph
RANGE:	
Cruise, 75% Power at 6500 ft	500 miles
38 Gallons, No Reserve	4.7 hours
	106 mph
Cruise, 75% Power at 6500 ft	625 miles
48 Gallons, No Reserve	5.9 hours
	106 mph
Optimum Range at 10,000 ft	530 miles
38 Gallons, No Reserve	5.5 hours
	97 mph
Optimum Range at 10,000 ft	670 miles
48 Gallons, No Reserve	7.0 hours
	97 mph
RATE OF CLIMB AT SEA LEVEL	580 fpm
SERVICE CEILING	12,000 ft
TAKE-OFF:	
Take-Off Run	1620 ft
Total Distance Over 50-Foot Obstacle	2390 ft
LANDING:	
Landing Run	590 ft
Total Distance Over 50-Foot Obstacle	1345 ft
EMPTY WEIGHT: (Approximate)	1405 lbs
WING LOADING: Pounds/Sq Foot	12.7
POWER LOADING: Pounds/HP	14.8
FUEL CAPACITY: Total	
Standard Tanks	42 gal.
Optional Long Range Tanks	52 gal.
OIL CAPACITY: Total	8 qts
PROPELLER: Fixed Pitch (Diameter)	80 inches
ENGINE:	
Lycoming Engine	
150 rated HP at 2700 RPM	O-320-E2D

FLOATPLANE LANDING DISTANCE

LANDING DISTANCE WITH 30° FLAPS AND POWER OFF

GROSS WEIGHT POUNDS	APPROACH IAS MPH	@ SEA LEVEL & 59° F		@ 2500 FEET & 50°F		@ 5000 FEET & 41° F		@ 7500 FEET & 32° F	
		WATER RUN	TOTAL TO CLEAR 50 FT. OBS.	WATER RUN	TOTAL TO CLEAR 50 FT. OBS.	WATER RUN	TOTAL TO CLEAR 50 FT. OBS.	WATER RUN	TOTAL TO CLEAR 50 FT. OBS.
2220	66	590	1345	620	1420	655	1500	695	1585

NOTE: Reduce landing distances 10% for each 5 knots headwind.

Figure 4-5.

CRUISE & RANGE PERFORMANCE

FLOATPLANE

Gross Weight-2220 Lbs.

Standard Conditions

Zero Wind Lean Mixture

MAXIMUM RECOMMENDED CRUISE IS 75% BHP

ALT.	RPM	%BHP	TAS MPH	GAL/ HOUR	38 GAL (NO RESERVE) ENDR. HOURS	38 GAL (NO RESERVE) RANGE MILES	48 GAL (NO RESERVE) ENDR. HOURS	48 GAL (NO RESERVE) RANGE MILES
2500	2700	80	106	8.8	4.3	460	5.5	580
	2600	73	102	7.9	4.8	490	6.1	615
	2500	66	97	7.3	5.2	505	6.6	635
	2400	60	92	6.8	5.6	510	7.0	645
	2300	54	86	6.4	5.9	510	7.5	640
	2200	49	79	6.0	6.3	495	8.0	625
5000	2700	76	106	8.2	4.6	490	5.8	615
	2600	69	101	7.5	5.0	510	6.4	640
	2500	63	96	7.0	5.4	515	6.8	655
	2400	57	90	6.6	5.8	515	7.3	655
	2300	51	83	6.2	6.1	505	7.7	640
7500	2700	72	105	7.8	4.9	510	6.2	645
	2600	65	99	7.2	5.3	525	6.6	660
	2500	59	94	6.8	5.6	525	7.1	665
	2400	54	87	6.4	6.0	515	7.5	655
10,000	2700	68	103	7.4	5.1	530	6.5	665
	2600	62	97	7.0	5.5	530	6.9	670
	2500	56	91	6.5	5.8	525	7.3	665
	2400	51	82	6.2	6.2	505	7.8	640
12,500	2700	64	101	7.1	5.3	540	6.7	680
	2600	59	94	6.7	5.7	515	7.2	675
	2500	53	86	6.3	6.0	515	7.6	650

Figure 4-4.

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INTRODUCTION

This supplement, written especially for operators of the Cessna Model 172/Skyhawk floatplane, provides information not found in the Owner's Manual. It contains procedures and data required for safe and efficient operation of the floatplane.

Information contained in the Owner's Manual for the 172/Skyhawk landplane, which is the same as that for the floatplane, is not repeated in this supplement.

The information provided here was compiled from tests with an airplane equipped with Edo Model 89-2000 floats.

FLOATPLANE TAKE-OFF DATA

TAKE-OFF DISTANCE WITH 10° FLAPS

GROSS WEIGHT POUNDS	HEAD WIND MPH	IAS AT 50 FT	AT SEA LEVEL & 59° F			AT 2500 FT. & 50° F		AT 5000 FT. & 41° F		AT 7500 FT. & 32° F	
			WATER RUN	TO CLEAR 50' OBS.		WATER RUN	TO CLEAR 50' OBS.	WATER RUN	TO CLEAR 50' OBS.	WATER RUN	TO CLEAR 50' OBS.
1700	0	58	805	1260		985	1515	1215	1840	1530	2300
	15		425	745		535	915	670	1130	870	1440
	30		155	350		210	445	280	575	385	760
1950	0	60	1135	1715		1405	2105	1750	2625	2240	3390
	15		625	1045		775	1290	1010	1665	1320	2190
	30		255	520		345	675	460	895	635	1230
2220	0	64	1620	2390		2020	3010	2570	3900	3360	5370
	15		930	1505		1190	1940	1545	2560	2070	3625
	30		420	800		565	1070	770	1470	1070	2170

NOTE: INCREASE DISTANCES 10% FOR EACH 25°F ABOVE STANDARD TEMPERATURE FOR PARTICULAR ALTITUDE.

FLOATPLANE MAXIMUM RATE-OF-CLIMB DATA

GROSS WEIGHT POUNDS	AT SEA LEVEL & 59° F			AT 5000 FT. & 41° F			AT 10,000 FT. & 23° F			AT 15,000 FT. & 5° F		
	IAS MPH	RATE OF CLIMB FPM	GALS. OF FUEL USED	IAS MPH	RATE OF CLIMB FPM	FROM S.L. FUEL USED	IAS MPH	RATE OF CLIMB FPM	FROM S.L. FUEL USED	IAS MPH	RATE OF CLIMB FPM	FROM S.L. FUEL USED
1700	66	960	1.0	65	720	2.1	64	475	3.3	63	240	5.6
1950	68	760	1.0	67	540	2.4	66	320	4.1	66	100	7.6
2220	71	580	1.0	70	380	2.9	69	175	5.6	•	•	•

NOTES:
1. FLAPS UP, FULL THROTTLE, MIXTURE LEANED FOR SMOOTH OPERATION ABOVE 5000 FT.
2. FUEL USED INCLUDES WARM UP AND TAKE-OFF ALLOWANCE.
3. FOR HOT WEATHER, DECREASE RATE OF CLIMB 20 FT/MIN. FOR EACH 10°F ABOVE STANDARD DAY TEMPERATURE FOR PARTICULAR ALTITUDE.

Figure 4-3.

AIRSPEED CORRECTION TABLE

FLOATPLANE

	IAS	40	50	60	70	80	90	100	110	120	130	140
FLAPS UP	CAS	48	54	62	70	79	88	98	107	117	126	136
FLAPS DOWN	CAS	45	54	62	71	80	90	99	•	•	•	•

Figure 4-1.

POWER OFF STALLING SPEEDS MPH - CAS

FLOATPLANE

	CONDITION	ANGLE OF BANK 0°	20°	40°	60°
2220 LBS. GROSS WEIGHT	FLAPS UP	59	61	67	83
	FLAPS 10°	56	58	64	79
	FLAPS 30°	52	53	59	73

Figure 4-2.

Section I

OPERATING CHECK LIST

BEFORE ENTERING FLOATPLANE.

(1) Inspect the floats for dents, cracks, scratches, etc.
(2) Remove the cover plates and inspect the floats for water, removing accumulation with a sponge or pump. Reinstall cover plates, tightening only enough for a snug fit.

BEFORE STARTING ENGINE.

(1) Operate and visually check water rudder for proper retraction and rudder action.
(2) Water Rudder -- Down for taxiing (retraction handle removed from stowage hook).

TAKE-OFF.

(1) Water Rudder -- Up (retraction handle secured on stowage hook).
(2) Set wing flaps 10°.
(3) Hold the control wheel full back and advance the throttle slowly.
(4) Place the airplane in a planing attitude (on the step) by slowly moving the control wheel forward when the bow wave moves aft of the wing strut position.
(5) As airplane accelerates, apply light control wheel back pressure and allow the airplane to fly off smoothly.

NOTE

To reduce take-off water run, the technique of raising one float out of the water may be used. This procedure is described on page 2-3 under "Minimum Run Take-Off."

(6) Climb out at 70-80 MPH IAS. With obstructions ahead climb at 64 MPH IAS.

CLIMB.

The maximum rate of climb is obtained at full throttle and 71 MPH IAS with wing flaps retracted (see the Maximum Rate-Of-Climb Data chart in Section IV).

BEFORE LANDING.

(1) Water Rudder -- Up.
(2) Maintain 65-75 MPH with wing flaps extended.

LANDING.

(1) Touchdown in conventional manner at desired wing flap setting.
(2) Maintain full up elevator as floatplane decelerates to taxi speed.

IMPORTANT

With forward loading, a slight nose-down pitch may occur if the elevator is not held full up as floatplane comes down off step.

AFTER LANDING.

(1) Water Rudder -- Down.

Section IV

OPERATIONAL DATA

Cruise and range performance shown in this section is based on flight tests using a McCauley 1A175/ATM8042 propeller. Other conditions of the tests are shown in the chart headings. Allowances for fuel reserve, headwinds, take-offs, and climb, and variations in mixture leaning technique should be made and are in addition to those shown on the chart. Other indeterminate variables such as carburetor metering-characteristics, engine and propeller conditions, and turbulence of the atmosphere may account for variations of 10% or more in maximum range.

Section II

DESCRIPTION AND OPERATING DETAILS

THE FLOATPLANE.

The Cessna Model 172 floatplane is identical to the landplane with the following exceptions:

(1) Floats, incorporating a water rudder steering system, replace the landing gear. A water rudder retraction handle, connected to the water rudder by cables and springs, is located on the cabin floor.
(2) Additional fuselage structure is added to support the float installation.
(3) An additional structural "V" brace is installed between the top of the front door posts and the cowl deck.
(4) Stronger rudder return springs replace the standard rudder return springs.
(5) The airplane has additional corrosion-proofing and stainless steel cables.
(6) A wing flap limit stop is added to restrict the maximum flap travel to 30°.
(7) The fuel strainer installation is modified for floatplane use.
(8) The standard propeller is replaced with a propeller of larger diameter (80 inches) and flatter pitch, and the standard propeller spinner assembly is modified.
(9) Hoisting provisions are added to the top of the fuselage.
(10) Floatplane placards are added.
(11) Fueling steps and assist handles are mounted on the forward fuselage, and steps are mounted on the wing struts to aid in refueling the airplane.

WATER RUDDER STEERING SYSTEM.

The retractable water rudder is mounted at the aft end of the right float (left float water rudder is available as optional equipment) and is connected by a system of cables and springs to the airplane rudder pedals. When the water rudder is extended, normal operation of the pedals moves the water rudder to provide steering control for taxiing.

A water rudder retraction handle, located on the cabin floor between the front seats, is used to manually raise and lower the water rudder. During take-off, landing, and in flight, the retraction handle is normally secured on the stowage hook located on the cabin floor just aft of the control pedestal. With the handle in this position, the water rudder is up. When the handle is removed from the stowage hook and allowed to retract full aft, the water rudder extends to the full down position for taxiing.

TAXIING.

Taxi with water rudder down. It is best to limit the engine speed to 1000 RPM for normal taxi because water piles up in front of the float bow at higher engine speeds. Taxiing with higher engine RPM may result in engine overheating and will not appreciably increase the taxi speed.

Although taxiing is very simple with the water rudder, it is sometimes necessary to "sail" the floatplane in close quarters. In addition to the normal flight controls, the wing flaps, ailerons, cabin doors, and water rudder will aid in "sailing."

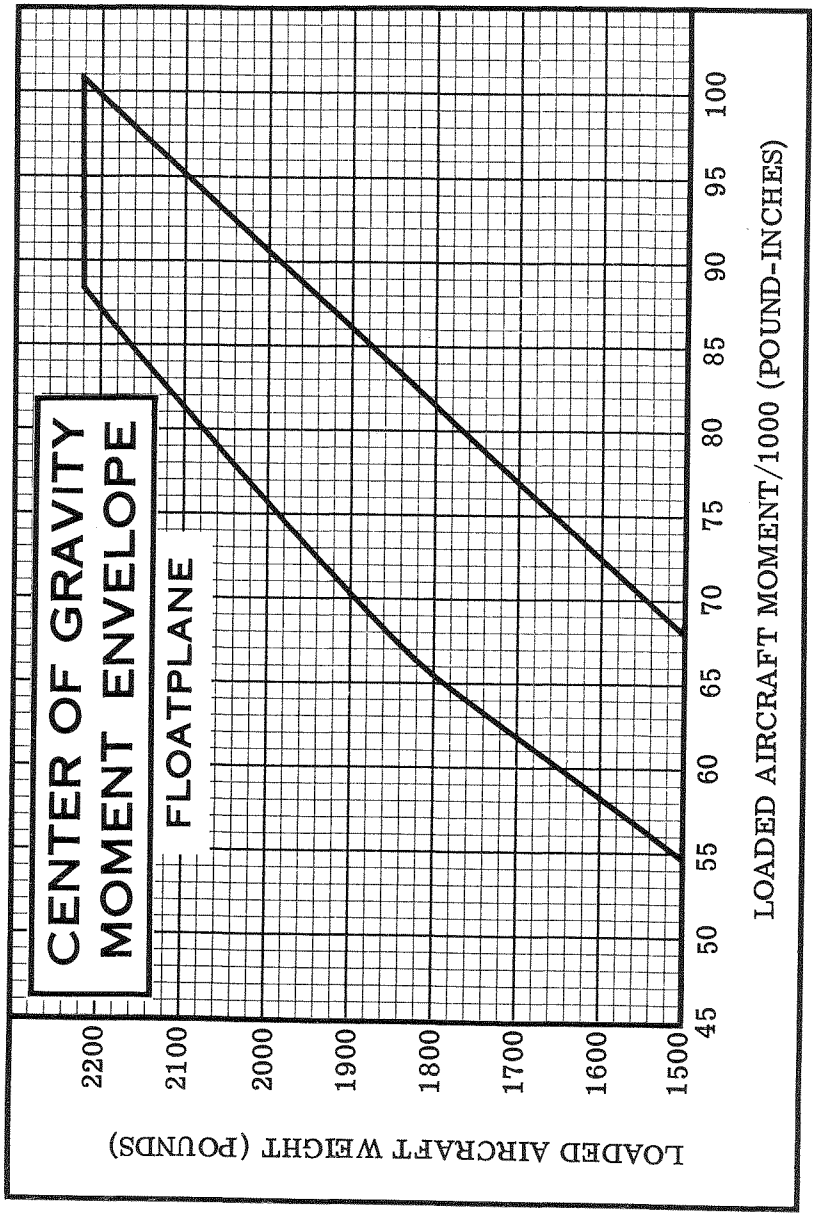
To taxi great distances, it may be advisable to taxi on the step with the water rudder retracted. Turns on the step may be made with safety providing they are not too sharp and if ailerons are used to counteract the overturning tendency.

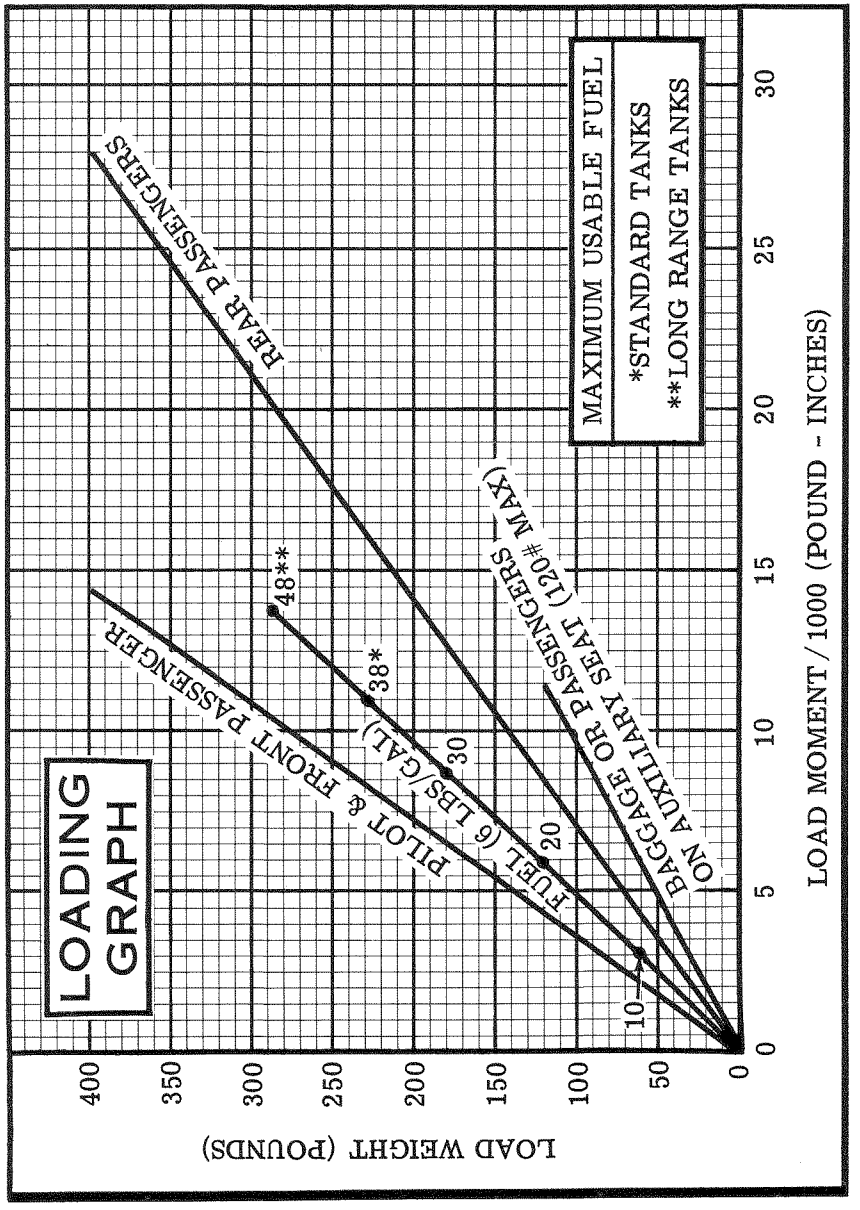
TAKE-OFF.

NORMAL TAKE-OFF.

The use of 10° flaps throughout the take-off run is recommended (take-off distances are given in figure 4-3).

Apply full throttle smoothly and hold the control wheel full back. Watch the point where the bow wave leaves the float, and move the control wheel forward slowly as this point moves aft of the wing strut. Slow control movement and light control pressures produce the best results. Attempts to force the airplane into the planing attitude will generally result in loss of speed and delay in getting on the step. The airplane will assume a planing attitude which permits acceleration to take-off speed (50 to 60 MPH IAS) at which time the airplane will fly off smoothly.





MINIMUM RUN TAKE-OFF.

To shorten the take-off run, the following procedure is recommended: With the airplane in the planing position, allow the airspeed to build up to 40 MPH IAS, at which speed one float can be raised out of the water by slowly applying full aileron. When one float leaves the water, apply slight elevator back pressure to complete the take-off. Care must be taken to stop the rising wing as soon as the float is clear of the water, and in crosswinds, raise only the downwind wing. With one float out of the water, the airplane accelerates to take-off speed almost instantly.

If porpoising is encountered while on the step, apply additional control wheel back pressure to correct the excessively nose-low attitude.

CROSSWIND TAKE-OFF.

Start the take-off run with the flaps up and the water rudder extended for better directional control. Flaps are lowered to 10° and the water rudder retracted when the airplane is on the step; the remainder of the take-off is normal. If the floats are lifted from the water one at a time, the down-wind float should be lifted first.

CLIMB.

The best rate of climb is obtained with the floatplane at 71 MPH IAS (see figure 4-3) with the flaps up and full throttle. Full rich mixture is used below 5000 feet for engine cooling. For obstruction clearance with 10° flaps, climb at 64 MPH IAS. Such climbs should be of short duration due to reduced cooling at less than best rate-of-climb speeds.

In a balked landing (go-around) climb, retract wing flaps immediately to 10°.

CRUISE.

Speed, range and endurance figures are shown on the Cruise and Range Performance chart, figure 4-4.

Section III

WEIGHT AND BALANCE

The following information will enable you to operate your floatplane within the prescribed weight and center of gravity limitations.

In figuring your loading problems, be certain that you use the Licensed Empty Weight of your particular floatplane as shown on its Weight and Balance Data Sheet. This sheet, plus an Equipment List, is included with each floatplane as it leaves the factory. When the floats have been installed by anyone other than the factory, the Repair and Alteration Form FAA-337 must be consulted for proper weight and balance information.

The loading instructions given in the Owner's Manual for the landplane should be used as a guide when figuring floatplane weight and balance problems. In conjunction with these instructions, use the Sample Problem, Loading Graph, and Center of Gravity Moment Envelope in this supplement.

SAMPLE LOADING PROBLEM	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (lb.-ins. /1000)	Weight (lbs.)	Moment (lb.-ins. /1000)
1. Licensed Empty Weight (Sample Airplane)	1447	54.3		
2. Oil (8 qts. - Full oil may be assumed for all flights)	15	-0.3	15	-0.3
3. Fuel (Standard - 38 gal at 6 lbs./gallon)	228	10.9		
Fuel (Long Range - 48 gal at 6 lbs./gallon)				
4. Pilot and Passenger	340	12.2		
5. Rear Passengers	170	11.9		
6. Baggage	20	1.9		
7. TOTAL WEIGHT AND MOMENT	2220	90.9		
8. Locate this point (2220 at 90.9) on the center of gravity moment envelope, and since this point falls within the envelope, the loading is acceptable.				