



Cessna 172



U.S. Edition 1995

©1995 Aviation Supplies & Academics, Inc.

First published in England by Airplan Flight Equipment, Ltd.
and Jeremy M. Pratt, 1993

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopy, recording or otherwise, without the prior written permission of the copyright holder. While every precaution has been taken in the preparation of this book, the publisher and Jeremy M. Pratt assume no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

Cessna 172: A Pilot's Guide
Jeremy M. Pratt

ASA-PG-C-172
ISBN 1-56027-211-2

Aviation Supplies & Academics, Inc.
Newcastle, Washington

Printed in the United States of America

99 98 9 8 7 6 5 4 3

Pratt, Jeremy M.

Cessna 172 / Jeremy M. Pratt. — U.S. ed.
p. cm. — (A pilot's guide.)

Includes index.

ISBN 1-56027-211-2

1. Cessna 172 (Private planes) 2. Private flying. I. Title.

II. Series: Pratt, Jeremy M. Pilot's guide.

TL686.C4P734 1995

629.132'5217—dc20

95-16301

CIP

Contents

Editor's Note	ix
---------------------	----

Section 1 – General Description

Introduction to the Cessna 172	1-3
The Airframe	1-5
The Flight Controls	1-6
The Landing Gear	1-8
The Engine	1-10
The Propeller	1-11
The Ignition System	1-12
The Oil System	1-13
The Starter System	1-14
The Fuel System	1-15
The Carburetor	1-18
The Electrical System	1-20
The Stall Warning System	1-23
The Lighting System	1-24
The Vacuum System	1-25
The Pitot-Static System	1-26
The Heating and Ventilation System	1-28
Seats and Harnesses	1-29
Doors and Windows	1-32

Section 2 – Limitations

Cessna 172 Dimensions	2-3
The "V" Airspeed Code	2-4
Cessna 172N Limitations	2-5
Airspeed Limitations C172N 1976-78	2-5
Airspeed Indicator Markings C172N 1976-78	2-5
Maximum Demonstrated Crosswind Component C172N 1976-78	2-5
Airspeed Limitations C172N 1979-81	2-5
Airspeed Indicator Markings C172N 1979-81	2-6
Maximum Demonstrated Crosswind Component C172N 1979-81	2-6
Airframe Limitations C172N	2-6
Flight Load Factors C172N	2-6
Performance Limitations C172N	2-6
Engine Limitations C172N	2-7
Oil Quantity C172N	2-7
Fuel System C172N	2-7
Miscellaneous Limitations C172N	2-7

Cessna 172P Limitations	2-8
Airspeed Limitations C172P 1981-85.....	2-8
Airspeed Indicator Markings C172P 1981-85	2-8
Maximum Demonstrated Crosswind Component C172P 1981-85	2-8
Airframe Limitations C172P	2-8
Flight Load Factors C172P	2-9
Performance Limitations C172P	2-9
Engine Limitations C172P	2-9
Oil Quantity C172P	2-9
Fuel System C172P	2-10
Miscellaneous Limitations C172P	2-10
Oil Grades	2-10
Fuel Grades	2-11

Section 3 – Handling the Cessna 172

Ground Handling	3-3
Engine Starting	3-4
Starting with a Suspected Flooded Engine	3-4
Starting in Cold Ambient Conditions (below 0°C)	3-5
Taxiing	3-5
Power and Pre-Takeoff Checks	3-7
Takeoff.....	3-8
Climbing	3-8
Cruising Flight	3-9
Engine Handling	3-9
Stalling	3-10
Spins	3-10
Descent	3-12
Landing	3-12
Parking and Tie Down	3-14

Section 4 – Mixture and Carburetor Icing Supplement

Carburetor Icing	4-3
How Carburetor Icing Forms	4-3
Conditions Likely to Lead to Carburetor Icing	4-5
Symptoms of Carburetor Icing	4-5
Use of Carburetor Heat	4-6
The Mixture Control	4-7
Reasons for Adjusting the Mixture	4-9
Use of the Mixture Control	4-9

Section 5 – Expanded C 172 Pre-Flight Check List

Approaching Aircraft	5-3
In Cabin	5-3
External	5-4
Port Landing Gear	5-4
Port Wing	5-5
Front Fuselage and Engine	5-6
Starboard Wing	5-7
Starboard Landing Gear	5-8
Starboard Fuselage	5-9
Tail Unit	5-10
Port Fuselage	5-11

Section 6 – Cessna 172 Loading and Performance

Loading	6-3
Mathematical Weight and Balance Calculation	6-6
Use Of The Loading Graph	6-8
Cessna 172 Center of Gravity Moment Envelope	6-11
Cessna 172 Loading Graph	6-12
Performance	6-13
C172 Takeoff and Landing Performance Tables	6-13
Takeoff Performance	6-14
Takeoff Distance Calculation Example	6-15
Landing Performance	6-17
Landing Distance Calculation Example	6-18

C172 Takeoff Distances, Short Field (2,400 lbs.)	6-19
C172 Takeoff Distances, Short Field (2,200, 2,000 lbs.)	6-20
C172 Landing Distances, Short Field	6-21
Cruise Performance	6-22
Runway Dimensions	6-22
The Takeoff Run Available (TORA)	6-22
Runway Dimensions Diagram	6-23
The Accelerate/Stop Distance (A/SD)	6-24
The Takeoff Distance Available (TODA)	6-24
The Landing Distance Available (LDA)	6-24

Section 7 – Conversions

Takeoff Distance Factors	7-3
Landing Distance Factors	7-4
Runway Contamination	7-5
Use of the Wind Component Graph	7-6
Wind Component Graph	7-7
Temperature Conversions	7-8
Distance – Meters/Foot Table	7-9
Distance – Nautical Miles/Statute Miles Table	7-10
Volume (Fluid) Table	7-11

Index

Introduction to the Cessna 172

The Cessna 172, in its many variants and spin-offs must be the leading contender for the title of the world's most popular light plane.

The production statistics alone are staggering; an overall production (depending on which models and types you choose to include) of around 42,000 and a peak production rate of about one aircraft every 30 minutes, in a production run lasting from 1955 through to 1985. The 172 makes a natural progression for those trained in Cessna 150s or 152s, and has a well earned reputation for being safe and forgiving, with few airframe or engine problems.

This book covers the 172s built from 1977 through to 1985 (models 172N and 172P). These models are powered by the Lycoming O-320 engine of 160 HP, replacing the 150 HP version, which itself had replaced the six cylinder Continental engines in the 1960s. The 172 is popularly referred to as the "Skyhawk" and the "Skyhawk II" which was sold with an increased standard package including an avionics fit. As with other Cessna models a significant number were manufactured by Reims Aviation in France. These models are identical to American built examples, but carry the "F" prefix to their model number.

The 172N is powered by the O-320-H2AD engine which proved to be an expensive proposition, contrary to previous 172 powerplants. It was subject to various ADs (Airworthiness Directives), oil additives and special operating procedures as a result of problems in the valve train. The controversial situation with the H2AD engine continued until 1981 when a new model of engine—the D2J—was introduced, which appears to have been altogether better. Also in this year the maximum flap extension was reduced from 40° to 30° and the gross weight was increased by 100 lbs. In addition, the landing and taxi lights were moved from the lower cowling to the leading edge of the port wing. This final version of the Skyhawk is designated the 172P.

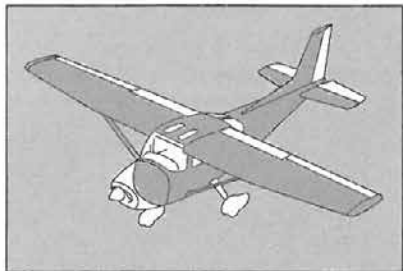
Production of the 172 ended in 1985, another victim of the problems affecting the General Aviation industry in the early 1980s. It is doubtful that any other aircraft will surpass the 172 for production and popularity, and it is certain to have the same longevity as its 150 and 152 stable mates.



PRODUCTION YEAR	MODEL	MODEL NAME
1977 – 1980	172 N	Skyhawk/Skyhawk II
1977 – 1980	F172 N	Reims/Cessna F 172 Skyhawk/Skyhawk II
1981 – 1986	172 P	Skyhawk/Skyhawk II
1981 – 1986	F172 P	F 172 Skyhawk/Skyhawk II

The Airframe

The Cessna 172 airframe can be described as being of all metal construction, the primary structure being constructed of aluminum alloy. Some non-structural components such as the wing tips and wing strut fairings are made from fiberglass.



The fuselage has a semi-monocoque structure; that is the vertical bulkheads and frames are joined by horizontal longerons and stringers which run the length of the fuselage. The metal skin is riveted to this structure. This arrangement is conventional for modern light aircraft and allows loads to be spread over the whole construction. At the rear of the fuselage the tail unit consists of a swept fin with rudder and conventional horizontal stabilizer with elevators. Underneath the rear fuselage a metal loop tie-down point and tail guard is fitted. This loop is vulnerable to damage in a "tail-strike." It is possible for this loop to be pushed back into the base of the rudder. Small holes are drilled in the underneath of the fuselage to act as drainage points. If it is suspected that water has entered the rear fuselage, the tail should be lowered and any water should drain from these holes (as long as they aren't blocked of course).

The wings are of semi-cantilever design (supported by an external strut) and have a 1° dihedral. Where each strut connects to the wing, a metal ring is installed to be used as a tie-down point.

A Pilot's Guide Series by Jeremy M. Pratt

Each *Pilot's Guide* is a comprehensive book on the fundamentals of flying the airplane. Subjects covered in detail include an overall description of the aircraft, limitations, handling characteristics, and loading/performance data. All of the information is gleaned from flying experiences by experts in the industry, and is presented in an easy-to-read format. Pilots will find each guide in the series an invaluable companion to the aircraft's Flight Manual, and an excellent sourcebook for the aircraft's principle characteristics.

Other books available
in this series:

Cessna 152
Cessna 150
PA 28 Cherokee
PA 28 Warrior
PA 38 Tomahawk



Aviation Supplies & Academics

7005 132nd Place SE
Newcastle, WA 98059-3153