

The Air Pilot's **Manual**

Volume I

Helicopter Flying Training



Nothing in this manual supersedes any legislation, rules, regulations or procedures contained in any operational document issued by Her Majesty's Stationery Office, the UK Civil Aviation Authority, the European Union, the European Commission, EASA, ICAO, the manufacturers of aircraft, engines and systems, or by the operators of aircraft throughout the world. Note that as maps and charts are changed regularly, those extracts reproduced in this book must not be used for flight planning or flight operations.

Copyright © 2023 Pooleys-Air Pilot Publishing Limited, Flying Training Vol. 1H

ISBN 978-1-84336-333-0

First Edition January 2023

All rights reserved. No part of this book may be reproduced or transmitted in any form by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system, without permission from the publisher in writing.

Origination by Pooleys Flight Equipment Limited.

Published by Pooleys–Air Pilot Publishing Limited
Elstree Aerodrome
Elstree, Hertfordshire
WD6 3AW, England

Tel: +44(0)208 207 3749
Web: www.pooleys.com
Email: sales@pooleys.com

Cover photograph: Robinson R22

Helicopter Flying Training

Contents

Introduction

Becoming a Pilot.....	1
PPL(H) Course Requirements.....	1
Privileges of a PPL(H).....	2
LAPL(H) Course Requirements.....	2
Privileges of a LAPL(H).....	2
Common Training Helicopters.....	5

Pilot Requirements

Flight (Skills) Training.....	7
Pre- and Post-Flight Briefings.....	8
Ground (Knowledge) Training.....	9
Attitudes.....	11
How a Helicopter Flies.....	13

Flight Exercises—Exercise 1a, 1b and 2 are all Completed on the Ground..... 17

Exercise 1a (PPL & LAPL) Familiarisation with the Helicopter 19

Characteristics of the Helicopter.....	19
Cockpit Layout.....	22
Checklists, Procedures and Controls.....	34
Primary Controls.....	35
Secondary Controls.....	37

Exercise 1b (PPL & LAPL) Emergency Procedures 39

Exercise 2 (PPL & LAPL) Preparation For and Action After Flight 43

Flight Authorisation, Helicopter Acceptance and Serviceability	
Documents	43
Equipment Required	45
External and Internal Checks.....	46

Exercise 3 (PPL & LAPL) Air Experience	55
Exercise 4 (PPL & LAPL) Effects of Controls	59
Exercise 5 (PPL & LAPL) Power and Attitude Changes	65
Exercise 6 (PPL) 6a (LAPL) Straight and Level	71
Exercise 7 (PPL) 6b (LAPL) Climbing	75
Exercise 8 (PPL) 6c (LAPL) Descending	81
Exercise 9 (PPL) 6d (LAPL) Turning	85
Exercise 10 (PPL) 7 (LAPL) Basic Autorotation	89
Exercise 11a (PPL) 8a (LAPL) Hovering	93
Exercise 11b (PPL) 8b (LAPL) Hover Taxiing & Spot Turns.....	97
Exercise 11c (PPL) 8c (LAPL) Hovering & Taxiing Emergencies .	101
Exercise 12 (PPL) 9 (LAPL) Take-Off and Landing	103
Exercise 13 (PPL) 10 (LAPL) Transitions from Hover to Climb and Approach to Hover	107
Exercise 14a (PPL) 11a (LAPL) Circuit, Approach and Landing..	111
Exercise 14b (PPL) 11b (LAPL) Steep and Limited Power Approaches and Landings	115
Exercise 14c (PPL) 11c (LAPL) Emergency Procedures	119
Exercise 15 (PPL) 12 (LAPL) First Solo	123
Exercise 16 (PPL) 13 (LAPL) Sideways and Backwards Hover Manoeuvring	127
Exercise 17 (PPL) 14 (LAPL) Spot Turns.....	131

Exercise 18 (PPL) 15 (LAPL) Hover Out of Ground Effect (HOGE) Hazards – Vortex Ring and Unanticipated Yaw	137
--	------------

Exercise 19 (PPL) 16 (LAPL) Simulated Engine-Off Landings	143
---	------------

Exercise 20 (PPL) 17 (LAPL) Advanced Autorotations	147
Extending Range	147
Reducing Range.....	148
Turns	149
180° Turns	149
360° Turns.....	150

Exercise 21 (PPL) 18 (LAPL) Practice Forced Landings	153
Landing Area Selection.....	153
Immediate Actions	154
Subsequent Actions	154
Summary	155

Exercise 22 (PPL) 19 (LAPL) Steep Turns	157
Steep Turns @ 30° AoB	157
Maximum Rate Turns	158
Steep Turns in Autorotation.....	158
Steep Turns at Low Level	158

Exercise 23 (PPL) 20 (LAPL) Transitions	161
--	------------

Exercise 24 (PPL) 21 (LAPL) Quick Stops	163
Quick Stops From Downwind.....	165

Exercise 25a (PPL) 22a (LAPL) Navigation	167
Cross Country Certificate	173

Exercise 25b (PPL) 22b (LAPL) Navigation Problems at Low Levels and Reduced Visibility	175
Helicopter Precautionary Landings.....	178
The Legal Position: UK Aviation Legislation	179
Civil Law of Trespass.....	180
Summary	180

Exercise 25c (PPL) 22c (LAPL) Radio Navigation..... 181

Distress and Diversion 182

D&D Base of DF Coverage on 121.5..... 183

Position Fixing 183

**Exercise 26 (PPL) 23 (LAPL) Advanced Take-Off, Landings
and Transitions 185**

Landing and Take-Off Out Of Wind..... 185

Advanced Take-Offs..... 186

Advanced Landings..... 187

Advanced Approaches..... 189

Crosswind and Downwind Transitions 190

Downwind Transition From The Hover 191

Downwind Transition To The Hover 191

Go-Around..... 192

Exercise 27 (PPL) 24 (LAPL) Sloping Ground 193

Reconnaissance 193

Manoeuvring 194

Landing..... 195

Take-Off 195

Exercise 28 (PPL) 25 (LAPL) Limited Power 197

Hover (Take-Off) Power Check..... 197

Taking Off 198

In-Flight (Landing) Power Check..... 198

Landings..... 199

Exercise 29 (PPL) 26 (LAPL) Confined Areas..... 201

Exercise 30 (PPL) N/A (LAPL) Basic Instrument Flight 213

The Licence Skill Test Skill Tests – Managing Stress221

Going Forward 225

Privileges of a PPL(H) 225

Privileges of a LAPL(H) 225

Currency 225

Revalidation and Renewal of a LAPL(H) 232

SUMMARY 232

Night Rating..... 232

Index 241





Editorial Team

Author – Geoff Day BA

Geoff started flying at Biggin Hill before joining the RAF whilst at University. His first tour was flying Whirlwind helicopters on Search & Rescue at RAF Leuchars, during which he was awarded 2 immediate Queens Commendations.

He then became a Flying Instructor initially on fixed wing before returning to helicopters to instruct on Search and Rescue. He remained instructing and examining, holding the RAF's prestigious A2 instructor ratings for both helicopters and fixed wing, before “retiring” from the RAF in 1988. On leaving the RAF, Geoff worked for various helicopter companies both as a commercial pilot flying VIP charters, pleasure flying, loadlifting, fire-fighting and pipeline and powerline patrols, and as a freelance helicopter and examiner, holding, for 15 years, 5 examiner ratings including Flight Instructor Examiner and Senior Examiner.

Geoff retired from flying recently, 56 years after his first flight in an aircraft, having flown some 25,000 hrs, including over 18,000 instructional hours, and having trained over 300 instructors and commercial pilots. His first flight in a helicopter was in a Bell-47 as was his last. He has

flown all of the helicopter types mentioned in this book. He is now an author and contributing editor to Pooleys aviation books.

He is the author of the best selling book "Helicopter Aerodynamics Made Simple (Well....relatively simple!)" now published by Pooleys.

Dorothy Saul-Pooley LLB (Hons) FRAeS FRIN

Dorothy held both an ATPL(A) and CPL(H) and was an instructor and examiner on aeroplanes and an instructor on helicopters for over 25 years. For 15 years she was Head of Training of a school dedicated to running Flight Instructor and examiner courses at Shoreham Airport. For 20 years Dorothy was also a CAA Flight Instructor Examiner (Senior Examiner).

Dorothy originally qualified as a solicitor in 1982 and acted for many years as a specialist dealing with aviation insurance liability issues and aircraft accident investigation work. She has lectured widely on aviation law and insurance matters. This highly unusual combination of qualifications and experience led to Dorothy's appointment as one of the Honorary Solicitors to the Guild of Air Pilots and Air Navigators (GAPAN).

Dorothy is a Fellow of the Royal Aeronautical Society and of the Royal Institute of Navigation. She is the Past Chairman of the GAPAN Instructor Committee, of which she was a founding member and she was the prime instigator of the Guild's biennial joint Forum with the Central Flying School at RAF Cranwell for Senior Flight Instructors, both civil and military. She is also Past Chairman of the Education and Training Committee. Dorothy was elected to the post of Master of the Honourable Company of Air Pilots (formerly GAPAN) for the year 2014-2015, the first woman to hold that post. Dorothy currently holds the post of Chairman of the Professional Flying Instructors Association and is the Governor of the British Section of the 99s, an international women pilots' organisation.

In 2003, Dorothy was awarded the Jean Lennox Bird Trophy for her contribution to aviation and support of Women in Aviation and the British Women Pilots Association (BWPA). In 2013, Dorothy was honoured to receive the prestigious award of a Master Air Pilot certificate from GAPAN. In 2015 she was awarded the Brabazon Cup by the BWPA for her outstanding achievements in aviation.



In 2019 Dorothy was awarded the Pike Trophy by the Honourable Company of Air Pilots for her outstanding contribution to the maintenance of civil flying instruction standards.

As consulting editor for Air Pilot Manuals and for Pooleys Flight Equipment, Dorothy has written, edited and contributed to more than 30 training manuals and has published many articles in aviation magazines, legal journals and on-line publications.



Daljeet Gill BA (Hons)

Daljeet is the Head of Design & Development for Pooleys Flight Equipment and editor of the Air Pilot's Manuals, Pre-flight Briefing and R/T Communications as well as many other publications. Daljeet has been involved with the editing, typesetting and designing of all Pooleys publications and products since she joined us in 2001. Graduating in 1999 with a BA(Hons) in Graphic Design, she deals with marketing, advertising, exhibition design and technical design of our manufactured products in the UK. She maintains our website and produces our Pooleys Catalogue. Daljeet's design skills and imaginative approach have brought a new level of clarity and readability to the projects she has touched.

Acknowledgements

Civil Aviation Authority, Arcus Helicopters, Tamzin Evans, Jamie Ferrand, Daljeet Gill, Pace Silverstone, and many others.

Photo Credits

Arcus Helicopters, James Booth, Mike Chadwick, Jamie Chalkley (Eastern Atlantic Helicopters), Clive Clark, Owain Davies, Geoff Day, Tamzin Evans, James Silverstone (JBS Helicopters) and Jack Fox (Ice Helicopters), Ian Lunt & three anonymous.

A Condensed History of the Air Pilot Manuals

For over 35 years the Air Pilot Manuals have led the academic training of pilots in the United Kingdom and in many countries around the world.



I first met Trevor Thom, a professional pilot and natural teacher, in Melbourne during a visit to Australia in January 1985. He already had his series of PPL Manuals for the Australian market and I asked him to produce a series for the New Zealand market where we had a small aviation business. Having completed this task, Trevor immediately began writing the first of the Air Pilot Manuals for the United Kingdom market and this project began in earnest on 5th December 1985.

Both Trevor Thom and Robert Johnson commenced the task in my office at Felden, Hertfordshire. By the end of the following year, all four volumes were completed and were published in February 1987. By the end of that year, we estimated that 95% of all the UK Flying Schools were using our manuals. Volumes 5, 6 and 7 followed, so completing the full series which also now includes the Question & Answer Exam Books Volumes 1-9 and the Air Presentations series of PowerPoint Teaching Aids.

Unfortunately, Trevor Thom had a serious accident at home which prevented him from continuing with the editing of the manuals. His rights were eventually sold to David Robson, another experienced pilot and natural teacher, who progressively improved the drawings and brought colour into the manuals for the first time.

Over the years there have been many assistant editors, in particular Peter Godwin, whose help I first asked for in the very early days with Trevor Thom. The rights in the Air Pilot Manuals are now vested with the Pooley family and they continue to be edited by Dorothy Saul-Pooley, with the assistance of Daljeet Gill who is responsible for the design and layout, and are published from our offices at Cranfield. The APM series of manuals are used in many countries around the world.

Robert Pooley MBE CStJ FRIN FRAeS

Introduction

Becoming a Pilot	1
PPL (H) Course Requirements	1
Privileges of a PPL(H)	2
LAPL(H) Course Requirements	2
Privileges of a LAPL(H)	2
Airmanship	4
Threat & Error Management (TEM)	4
Situational Awareness	4
Pilot Requirements	7
Flight (Skills) Training	7
Pre- and Post-Flight Briefings	8
Ground (Knowledge) Training	9
Attitudes	11
How a Helicopter Flies	13