THE INSTRUMENT LANDING SYSTEM (ILS) Explained

A simplified guide for the instrument helicopter student



The Instrument Landing System (ILS) Explained A simplified guide for the instrument helicopter student. Matt Johnson

Copyright © 2013 by Matt Johnson. All rights reserved. Published by MattJohnsonHeliCFI.com. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of the author/publisher. For information on getting permission for reprints and excerpts, contact us in writing at the address below.

The information in this book is distributed on an "As Is" basis, without warranty. While every precaution has been taken in the preparation of the book, the author/publisher shall not have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the instructions contained in this book. Throughout this book, trademarks are used. Rather than put a trademark symbol in every occurrence of a trademarked name, we state that we are using names in an editorial fashion only and to the benefit of the trademark owner with no intention of infringement of the trademark. Additionally, any aeronautical charts used in the book are strictly *for example only* and are NOT for actual navigational use.

ISBN-10: 0979263816 ISBN-13: 978-0-9792638-1-1



MattJohnsonHeliCFI.com PO Box 237 Lebanon, OH 45036

Find us on the World Wide Web at: www.MattJohnsonHeliCFI.com To report errors, please send a note to matt@mattjohnsonhelicfi.com

Editor, Cover/Interior Design: MaryJo Regier

First Edition. Printed and bound in the United States of America.

Contents

7

9

23

29

34

40

List of Figures iv Tables v Many Thanks v About This Guide vi

THE INSTRUMENT	LANDING	SYSTEM
(ILS) EXPLAINED		

ILS components and approach types

THE FOUR ILS COMPONENTS

Localizer, glide slope, marker beacons, approach lighting systems

ALTERNATIVE ILS COMPONENTS

Compass locators, ILS errors to consider

FLYING THE ILS APPROACH

On the ground, in the air; four A's procedure checklist

THE APPROACH PLATE

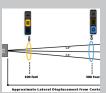
Briefing strip, plan view, profile view, minima section, airport view, TIMTS procedures checklist

FINAL PHASES OF THE ILS APPROACH

Final approach fix, course reversal procedure, procedure turn, GPS modes, going "missed"

> About the Author 48 Recommended Reading 49 Index 50





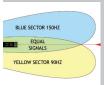






List of Figures





CATEGORY	,
S-ILS 21L	
S-LOC 21L	160
CIRCLING	160 1117 (1:

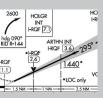




FIG 1 The ILS System	9)
-----------------------------	---	---

FIG 2 Localizer Identification Box 10

FIG 3 End-Of-Runway Localizer Antenna 10

FIG 4 Frequencies in Equal Amounts... 11

FIG 5 Localizer CDI Indications 11

FIG 6 Localizer Beam 12

FIG 7 Localizer Course Displacement 13

FIG 8 Glide Slope Needle Indications **14**

FIG 9 Glide Slope Signal 14

FIG 10 Glide Slope Antenna 14

FIG 11 ILS Marker Beacon Indications 16

FIG 12 Illuminated Visual/Light Indicators 18

FIG 13 ALS Type Symbols 19

FIG 14 ALS Type Symbols from NACO
Approach Chart Booklet 20

FIG 15 Inoperative Components and Visual Aids Table 20

FIG 16 Airport Diagram 21

FIG 17 Minimum Sections **22**

FIG 18 Terms/Landing Minima Data 22

FIG 19 Compass Locator 23

FIG 20 Locator Outer Marker 24

FIG **21** ILS Approach With No Marker Beacons **26**

FIG 22 ILS Approach Chart 27

FIG 23 ILS Holding Position Sign **28**

FIG 24 ILS Critical Boundary Sign **28**

FIG 25 GPS Mode 32

FIG 26 VLOC Mode 32

FIG 27 Briefing Strip Area 34	Tables
FIG 28 Plan View 35 FIG 29 Profile View 35 FIG 30 Minimums Section 36 FIG 31 Airport View/Sketch 36	Tables TAB A ILS System Components 7 TAB B ILS Approach Types 8 TAB C FOUR A's Procedures
516 25 Th., Day, Juny Thoma 11	Checklist 30 TAB D TIMTS Procedures Checklist 37

Many Thanks

I would be remiss if I didn't extend a very special "thank you" to several friends and professionals for taking the time to review this information for accuracy and relevance.

Without further adieu, many thanks go out to **Shawn Coyle**, author of what I consider to be the "encyclopedia" for helicopter pilots in the form of his classic tome, Cyclic & Collective.

I also want to thank another aviation-education legend,

Rod Machado. Rod has written numerous "must have" aviation textbooks.

In addition, thanks go to **John Zimmerman**, Vice President of the infamous **Sporty's Pilot Shop**.

Much appreciation goes to **Pat** Shaub, friend, professional pilot and instructor.

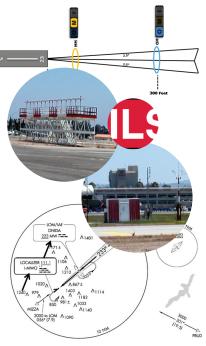
And finally, much appreciation goes to Marylo Regier, an absolute professional in the area of editing, layout and graphic design.

About This Guide

First and foremost, I hope this guide gives you just that: Guidance. It has been written in simple, concise and practical terms. That is my hope anyway!

This guide is compiled from a collection of notes and handouts assembled for my past instrument-helicopter students. Learning to fly helicopters can, at times, be challenging enough. The pursuit of the instrumenthelicopter rating adds a new level of knowledge and hopefully, a new level of understanding about many flight dynamics.

This guide will provide the reader with a basic overview of the Instrument Landing System and its various associated components. The material has been written for you, the helicopter pilot, by a helicopter pilot and instructor. Sadly, the majority of



training guides, manuals and texts are normally geared for our fixedwing brethren. Finally, a guide just for you!