



Mastering Rebreathers

Jeffrey E. Bozanic



BEST PUBLISHING COMPANY

Contents

Dedication .....	.VII
Preface .....	.IX
Foreword	XIII
Acknowledgements	XVII
Credits	XXI
About the Author	XXIII
Your Responsibilities as a Rebreather Diver	XXV
Disclaimer	XXVII
Chapter 1 Introduction	1
Chapter 2 History	17
Early Concepts	19
Rebreathers at War	22
Post War Developments	26
Commercial Applications	28
Chapter 3 Types of Rebreathers	37
An Overview of the Types and Classifications	39
Oxygen Closed-Circuit Rebreathers	40
Semi-Closed Circuit Rebreathers	41
Constant Mass Flow	43
Respiratory Minute Volume Keyed (Quasi-Constant FO ₂)	43
Constant Ratio (Quasi-Constant PO ₂)	44
Electronically Controlled	45
Longer, Quieter Dives	45
Mixed Gas Closed-Circuit Rebreathers	45
Choosing a Rebreather – Criteria	48
Chapter 4 Diving Physics	57
Pressure and Depth	59
Pressure and Volume	62
Breathing Gas Composition	64
Maximum Operating Depth	66
Equivalent Air Depth	68
Gas Consumption	70
Cylinder Gas Volumes	75
Summary	77
Chapter 5 Physiology	81
Oxygen Metabolism	83
Oxygen Exposure	85
Hypoxia	87
CNS Oxygen Toxicity	89
Pulmonary Oxygen Toxicity	94
Hyperoxic Myopia	98
Hypercapnia	99
Decompression Sickness	101
Inert Gas Narcosis	101
Arterial Gas Embolism	103
Squeezes	104

Chapter 13 Travel .....	.277
General Travel Hints .....	.279
Travel by Automobile .....	.279
Travel by Boat .....	.280
Travel by Plane .....	.281
While Away From Home .....	.282
International Travel .....	.284
Common Sense .....	.286
Chapter 14 Where Do You Go From Here? .....	.289
Keep Diving .....	.290
Future Training .....	.293
Staying Current .....	.294
The Adventure Continues .....	.295
Rebreather Supporters .....	.297
Appendices .....	.321
Appendix A — Table of Appendices .....	.321
Appendix B — Dive Tables .....	.325
Appendix C — Dräger .....	.357
Appendix D — Halcyon .....	.405
Appendix E — Innerspace Systems .....	.417
Appendix F — Olympic Submarine Technologies .....	.423
Appendix G — San O Sub .....	.431
Appendix H — Steam Machines .....	.437
Appendix I — OCEANx Calculator .....	.467
Appendix J — Rebreather Damage/Failure Report .....	.473
Appendix K — Documentation/Regulations .....	.477
Appendix L — References .....	.503
Appendix M — Glossary .....	.507
Appendix N — Index .....	.527



Jeff is an active diving instructor and author who has been teaching technical diving since 1983. He publishes and lectures extensively on diving education topics. His latest contribution, *Mastering Rebreathers*, is an in-depth resource providing information not available elsewhere.

