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Titolo	Mechanical Ventilation Amid the COVID-19 Pandemic : A Guide for Physicians and Engineers // edited by Amir A. Hakimi, Thomas E. Milner, Govind R. Rajan, Brian J-F Wong
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Descrizione fisica	1 online resource (267 pages)
Collana	Medicine Series
Disciplina	614.8 615.83620284
Soggetti	Biomedical engineering Critical care medicine Emergency medicine Mechanical engineering Internal medicine Biomedical Devices and Instrumentation Biomedical Engineering and Bioengineering Intensive Care Medicine Emergency Medicine Mechanical Engineering Internal Medicine Respiració artificial Respiradors COVID-19 Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	History of ventilator devices -- Ventilator splitters: requirements and feasibility -- SARS CoV-2 transmission and innovative protective barriers -- What is a bridge ventilator and why is it needed? -- Fundamental requirements for a bridge ventilator -- Categorization for emergency ventilators amid COVID-19 pandemic -- Mechanics of

resuscitation bag -- How to compress a bag: an overview of mechanical and pneumatic methods -- Choosing the right motor: considerations and concerns -- Re-purposing positive airway pressure machines (CPAP and BiPAP) for ventilators -- The role of non-invasive ventilation to treat COVID-19 induced lung disease -- Categorization of non-invasive ventilators amid the COVID-19 pandemic -- An appraisal of FDA-approved emergency ventilator designs -- DIY: A detailed guide to build your own bridge ventilator -- Regulatory considerations for ventilator production -- Post-regulatory concerns: liability, risk mitigation, and more.

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## Sommario/riassunto

The surge in COVID-19 cases leading to hospitalizations around the world quickly depleted hospital resources and reserves, forcing physicians to make extremely difficult life-or-death decisions on ventilator allocation between patients. Leaders in academia and industry have developed numerous ventilator support systems using both consumer- and industry-grade hardware to sustain life and to provide intermediate respiratory relief for hospitalized patients. This book is the first of its kind to discuss the respiratory pathophysiology underlying COVID-19, explain ventilator mechanics, provide and evaluate a repository of innovative ventilator support devices conceived amid the pandemic, and explain both hardware and software components necessary to develop an inexpensive ventilator support device. This book serves both as a historical record of the collaborative and innovative response to the anticipated ventilator shortage during the COVID-19 pandemic and as a guide for physicians, engineers, and DIY'ers interested in developing inexpensive transitory ventilator support devices. Provides a qualitative appraisal of numerous transitory ventilator devices developed and/or used during the COVID-19 pandemic including non-invasive ventilation; Explores the mechanics, considerations, and concerns of emergency ventilator components; Provides a detailed framework for beginners and experts alike to develop their own emergency ventilation systems.

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