

DUCTULATOR® SI UNITS

The required air flow rate in liters/second (L/s) - outer blue and red bands is established first. With only one of the following factors known, the other three are found from a single setting of the Ductulator.

1. Friction loss in Pascals (Pa) per meter of equivalent length. (Inner blue band)
2. Desired velocity in meters/second (m/s) in round duct. (Inner red band)
3. Round duct diameter in millimeters (mm). (Inner red band)
4. Dimensions for rectangular ducts (mm). (Green bands)

Procedure: With the friction loss per meter of duct known, set this friction loss (inner blue band) opposite the required L/s. The resulting velocity in round duct (inner red band) coincides with established L/s in outer band. Round duct diameter is indicated in the window by the black arrow. Various equivalent rectangular duct sizes are read from the green bands.



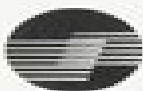
Example: Assume a 5000 L/s air flow rate with a friction loss of 1 Pa per meter of duct.
A 9.3 m/s velocity is read opposite the 5000 L/s from the inner red band.
Round duct diameter is 835 mm.

Equivalent rectangular duct dimensions are 550 x 1100, 650 x 1000, 750 x 800, etc.
A similar procedure is used regardless of which one of the four factors is known.
Approximate values

SI to I-P conversions: The equivalent I-P duct sizes for any single setting of the Ductulator are read directly from the I-P scales on the reverse side. The equivalent air flow rate is obtained by converting L/s to CFM (L/s x 2.119 = CFM). The corresponding friction loss and velocity are then read on the I-P scales.

CONVERSION TABLE I-P to SI Units

1 inch x 25.4	= millimeter (mm)
Cubic Foot/Minute (CFM) x 0.4719	= liter/second (L/s)
Foot/Minute (FPM) x 0.3048	= meter/second (m/s)
1 inch H ₂ O/100 Feet x 5.175	= 1 Pascal/meter (Pa/m)



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Form No. 07020-10176

Duct Sizing Guide Using Ductulator

A. M. Khashab



Duct Sizing Guide Using Ductulator:

How to Size HVAC Equipment Step by Step Charles Nehme, The proper sizing of Heating Ventilation and Air Conditioning HVAC equipment is arguably the most critical step in designing an efficient comfortable and durable building system Yet it remains one of the most misunderstood and frequently misapplied processes in the construction industry Far too often equipment is selected based on rough rules of thumb arbitrary square footage estimates or the dangerous notion that bigger is better This inevitably leads to significant problems high energy bills poor humidity control making spaces feel clammy and uncomfortable shortened equipment lifespan due to constant cycling and pervasive comfort complaints This book *How to Size HVAC Equipment Step by Step* is written to close that gap It is a comprehensive practical guide designed to demystify the rigorous process of load calculation and equipment selection We move beyond simple guesswork and dive into the accredited methodology used by top tier engineering consultants worldwide specifically utilizing the standards set forth by the Air Conditioning Contractors of America Manuals J S and D Our approach is built on a foundation of fundamental engineering principles but is structured in a clear sequential and highly accessible manner We will guide you from the initial collection of site and building data through the detailed calculations of sensible and latent heat gains and losses and finally to the precise selection of the right sized equipment and the design of the necessary ductwork Whether you are a seasoned professional seeking to refine your methods or a newcomer looking for a structured entry into this essential field this guide provides the clarity and authority you need to ensure every system you design or install operates optimally delivering peak comfort maximum efficiency and reliable performance for decades to come

Simplified Design of HVAC Systems

William Bobenhausen, 1994-04-14 A practical overview of what to consider when designing a building's heating cooling ventilating and humidifying systems along with their space power control and other requirements Includes the latest concepts applications basic design problems and their solutions Packed with examples to facilitate understanding

Building Technology Benjamin Stein, 1996 The complete guide to building technology This comprehensive guide provides complete coverage of every aspect of the building technologist's profession It details design and installation procedures describes all relevant equipment and hardware and illustrates the preparation of working drawings and construction details that meet project specifications code requirements and industry standards The author establishes procedures for professional field inspections and equipment operations tests provides real world examples from both residential and nonresidential construction projects and makes specific references to code compliance throughout the text This new edition incorporates changes in building codes advances in materials and design techniques and the emergence of computer aided design CAD while retaining the logical structure and helpful special features of the first edition More than 1 100 drawings tables and photographs complement and illustrate discussions in the text Topics covered include Heating ventilating and air conditioning systems equipment and design Plumbing systems equipment and design Electrical and lighting systems

equipment and design Testing adjusting and balancing procedures for all building systems Every aspect of the building technologist s profession from the creation of working drawings through on site supervision and systems maintenance Extensive appendices include conversion factors duct design data test report forms for use in field work design forms and schedules for electrical HVAC and plumbing work and more *Official Bulletin Heating, Piping and Air Conditioning Contractors National Association,1951* **Air Conditioning Journeyman's Exam Book** John Gladstone,1984 **The HPAC&V Contractor's Reference Book and License Review** John Gladstone,George Perpich,1987 *Energy Primer, Solar, Water, Wind, and Biofuels* Richard Merrill,Thomas E. Gage,1978 *Heating, Ventilating, and Air-conditioning Systems Estimating Manual* A. M. Khashab,1984 Good No Highlights No Markup all pages are intact Slight Shelfwear may have the corners slightly dented may have slight color changes slightly damaged spine *Florida Air Conditioning Contractor's Handbook* John Gladstone,George Perpich,1983 *Power* ,1950 **HVAC Design Data Sourcebook** Robert O. Parmley,1994 A compact 5x8 25 data sourcebook for engineers and designers providing basic authoritative answers on general HVAC questions in an easy access format Annotation copyright by Book News Inc Portland OR *Plant* ,1950 **Heating, Plumbing and Air Conditioning Age** ,1951 **Mechanical Estimating Guidebook for Building Construction** John Gladstone,Kenneth King Humphreys,B. K. Lunde,1987 *Chemical Engineering Equipment Buyers' Guide* ,1990 [Building Services Engineering](#) Neville Samuel Billington,Brian M. Roberts,1982 Includes a chapter on automatic control **HVAC Licensing Study Guide, Second Edition** Rex Miller,Mark R. Miller,2012-10-04 This fully updated study guide helps readers pass the HVAC licensing exam and serves as an on the job reference after the exam *HVAC Licensing Study Guide, Third Edition* Rex Miller,Mark R. Miller,2018-01-24 Publisher s Note Products purchased from Third Party sellers are not guaranteed by the publisher for quality authenticity or access to any online entitlements included with the product Ace the Major HVAC Licensing Exams Featuring more than 800 accurate practice questions and answers HVAC Licensing Study Guide Third Edition provides everything you need to prepare for and pass the major HVAC licensing exams This highly effective career building study resource is filled with essential calculations troubleshooting tips for the job site hundreds of detailed illustrations and information on the latest codes and standards You will get brand new coverage of troubleshooting for small motors and electrical equipment for HVAC This thoroughly revised study guide helps you Master the material most likely to appear on the ARI NATE ICE RSES and HVAC licensing exams Improve your test taking ability with 800 true false and multiple choice questions and answers Learn about current refrigerant usage and regulations Keep up with the most recent codes and standards Acquire the confidence skills and knowledge needed to pass your examCovers key HVAC topics including Heat sources Heating systems Boilers burners and burner systems Piping systems Ductwork sizing Refrigerants Cooling and distribution systems Refrigeration equipment and processes Filters and air flow Maintenance servicing and safety Humidification dehumidification and psychrometrics EPA refrigerant reclaimers

Heating circuits Safety on the job Trade associations and codes Troubleshooting for small motors Electrical equipment for HVAC **McGraw-Hill's HVAC Licensing Study Guide** Rex Miller,Mark Miller,2007-01-11 Get All the Practice Questions and Answers Calculations and Troubleshooting Tips You Need to Ace the major HVAC Licensing Exams HVAC technicians and students alike can turn to the HVAC Licensing Study Guide for everything they need to prepare for and pass the major HVAC licensing exams on the very first try Designed to boost confidence skills and knowledge this unique career building resource contains over 800 practice questions and answers essential calculations and step by step troubleshooting tips for the job site Written by two of the most experienced and successful authors in the HVAC field this on target book presents a wealth of current information on heating boilers ventilation ductwork air conditioning systems and methods refrigeration electrical systems control devices materials and equipment design and codes and standards Filled with over 200 detailed illustrations and handy tip boxes on important code matters and exam questions the HVAC Licensing Study Guide enables readers to Develop skills with material most likely to appear on the NATE ICE RSES and HVAC licensing exams Improve test taking ability with over 800 exam style multiple choice and true false questions and answers Learn about the latest refrigerant usage and regulations Keep up with the most recent codes and standards Acquire the confidence skills and knowledge needed to pass your licensing exam on the first try This HVAC Study Guide Will Help You Master Heating Boilers Ventilation Ductwork Air Conditioning Refrigeration Electrical Control Devices and Much More **Industrial Engineering** George Worthington,1950-07

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