

Noisy unit

Liquid line hot

Liquid line frosted

Compressor will not start; no hum

Compressor starts, but start winding stays in circuit

Compressor starts and runs but cycles on overload

Compressor starts but immediately cuts out on overload

Compressor will not start, hums, but cycles on overload protector

Compressor tries to start when thermostat closes, but cuts out on overload; finally starts after several attempts

Side 1

INSTRUCTIONS:

1. Set Blue Dot at appropriate problem.
2. Read probable cause opposite Arrows.



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Low voltage
Voltage Unbalanced (S-B)

Wiring defective

Wiring incorrect

Fuse blown

Fan motor, pump, etc., wired to wrong side of overload protector

Relay contacts open

Relay contacts stuck

Relay contacts welded

Relay defective

Relay contacts badly pitted

Relay is wrong

Start winding is held in circuit too long

Start capacitor weak

Start capacitor defective

Wrong start capacitor

Control contacts open

Defective run capacitor

Wrong run capacitor

Overload protector tripped

Overload protector defective

Disconnect switch open

Compressor motor defective

Low refrigerant charge

High head pressure

Bearings or pistons too tight

Condenser clogged or restricted

Capillary tube, strainer or drier restricted

Drier restricted

Refrigerant overcharged

TEV open too wide

Discharge line restricted

Thermostat differential too close

Air or non-condensable gases in system

Receiver shut-off valve clogged or closed too far

Solenoid valve leaking (in off cycle)

Compressor oil charge too low

Fan blade bent, causing vibration

Fan motor bearings loose or worn

Tube rattling

Condensing unit parts loose

Trouble Shooting Guide for AC/R Systems

Run cycle too long or operates continuously

Evaporator defrosts while unit is running

Refrigerated space temp too high

Run capacitor burns out

Compressor short cycles

Suction line sweating or frosted

Start capacitor burns out

Start relay burns out

Head pressure too high

Head pressure too low

Side 2

COMPRESSOR WIRING DIAGRAMS

CAPACITOR START/RUN CSR



CAPACITOR START INDUCTION RUN MODELS CSIR



PERMANENT SPLIT CAPACITOR PSC



High voltage

Low voltage

Wiring incorrect

Relay contacts stuck

Relay contacts welded

Relay is wrong type

Start winding is held in circuit too long

Start capacitor defective

Wrong start capacitor

Control contacts stuck

Control set too high

Control differential too close

Wrong run capacitor

Overload protector cutting out

Compressor short cycling

Compressor motor defective

Compressor grounded

Compressor inefficient

High pressure control cutting out

Condenser clogged or restricted

Condenser fan motor defective

Capillary tube, strainer or drier restricted

Refrigerant undercharged

Refrigerant overcharged

Refrigerant line too small

TEV opens too wide

TEV clogged or defective

TEV leaking

TEV too small

Superheat adjusted too low

Evaporator coil clogged by ice or dirt

Evaporator oil filled

Evaporator coil too small

Discharge service valve partially closed

Discharge valve leaking

Discharge line restricted

TEV thermostat bulb loose

Thermostat differential too close

Leak in system

Air or non-condensable gases in system

Mixture in system

Water supply shut off

Location or water too cold

Location too hot

Solenoid valve leaking

Picture doors open too long

Insulation defective, waterlogged or inefficient

Unit too small for its application



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Refrigeration Trouble Shooting Guide

Judd E. Hollander



Refrigeration Trouble Shooting Guide:

The Complete Guide to HVAC Troubleshooting: A Homeowners Manual Tim David, 2023-12-29 The Complete Guide to HVAC Troubleshooting is a definitive resource for homeowners and aspiring technicians alike offering in depth insights and practical advice on diagnosing and resolving a wide range of heating ventilation and air conditioning issues This book serves as an indispensable tool for anyone looking to understand maintain and repair their HVAC systems efficiently and effectively Structured to cater to both beginners and those with more technical experience the guide begins by introducing the fundamentals of HVAC systems It outlines the core components how they operate and the common types of HVAC systems found in homes and buildings This foundational knowledge sets the stage for more complex topics ensuring all readers are up to speed Central to the book is a comprehensive troubleshooting section detailing step by step methods to diagnose common and not so common problems From strange noises and inconsistent temperatures to complete system failures the guide provides clear concise instructions to identify issues and implement solutions It covers a range of scenarios including quick fixes that can be handled without professional help and more complex problems requiring expert intervention The guide goes beyond simple fixes delving into the nitty gritty of HVAC maintenance performance optimization and longevity It discusses preventive measures routine maintenance schedules and the signs that indicate a need for repair or replacement Additionally the book offers valuable tips on selecting the right tools safety precautions and understanding when to call in a professional With The Complete Guide to HVAC Troubleshooting readers will gain the confidence to tackle various HVAC issues head on ensuring their systems run smoothly and efficiently all year round This book is more than just a troubleshooting manual it s a comprehensive reference for anyone committed to understanding and caring for their HVAC system Get ready to turn the page and take control of your home s comfort and air quality

Air Conditioning and Refrigeration Troubleshooting Handbook Billy C. Langley, 1980 A complete practical overview of the servicing and troubleshooting of cooling equipment Provides detailed explanations of the purpose of each cooling system component Covers the common problems encountered during troubleshooting Troubleshooting charts provide readers with practical information and are a handy reference Numerous wiring diagrams illustrate the book Suggested procedures for repairs are listed

Air Conditioning Maintenance and Troubleshooting: A Comprehensive Guide to Efficient and Safe HVAC Care Charles Nehme, The importance of air conditioning in our daily lives cannot be overstated From the comfort of our homes to the productivity of our workplaces air conditioning systems play a critical role in maintaining an optimal environment However like all mechanical systems air conditioners require regular maintenance and occasional troubleshooting to function efficiently and prolong their lifespan This book Air Conditioning Maintenance and Troubleshooting Guide aims to serve as a comprehensive resource for homeowners technicians and HVAC professionals alike Whether you are a novice looking to understand the basics of your home air conditioning system or a seasoned technician

seeking advanced troubleshooting tips this guide is designed to meet your needs

Why This Guide Air conditioning systems are complex and involve various components including compressors evaporators condensers and various electrical parts Proper maintenance can prevent many common issues and save on costly repairs This guide covers the essential aspects of air conditioning maintenance providing step by step instructions and detailed explanations to ensure your system runs smoothly

Key Features Comprehensive Maintenance Tips Learn about the routine tasks necessary to keep your air conditioning system in top condition from cleaning filters to checking refrigerant levels

Troubleshooting Techniques Diagnose and resolve common problems with clear practical solutions This section includes troubleshooting flowcharts and checklists to simplify the process

Safety Precautions Understand the safety measures you need to take while working with air conditioning systems to prevent accidents and injuries

Technical Insights Gain deeper knowledge of the components and workings of different types of air conditioning systems including central air conditioners split systems and window units

Environmental Considerations Learn about the environmental impact of air conditioning systems and how to adopt practices that are both efficient and eco friendly

Who Should Read This Book Homeowners Equip yourself with the knowledge to maintain your home air conditioning system identify problems early and possibly avoid expensive service calls

HVAC Students Use this guide as a supplementary resource to enhance your understanding of air conditioning systems and prepare for a career in HVAC maintenance and repair

Professional Technicians Update your skills with the latest maintenance and troubleshooting techniques and use this book as a quick reference on the job

Acknowledgments This book would not have been possible without the valuable input and feedback from HVAC professionals and industry experts who have generously shared their knowledge and experience I am also grateful to the publishers and technical reviewers whose efforts have ensured the accuracy and clarity of this guide

Conclusion Maintaining and troubleshooting air conditioning systems can seem daunting but with the right knowledge and tools it becomes manageable and rewarding This guide is intended to empower you with the confidence and skills necessary to keep your air conditioning system running efficiently and reliably Thank you for choosing this guide I hope it serves as a valuable resource and enhances your understanding and enjoyment of air conditioning maintenance and troubleshooting

Machinery Failure Analysis and Troubleshooting Heinz P. Bloch, Fred K. Geitner, 2012-08-27 Resumen This newly expanded edition discusses proven approaches to defining causes of machinery failure as well as methods for analyzing and troubleshooting failures *Chilton's Guide to Auto Tune-Up and Troubleshooting* Chilton Automotive Books, 1983

Air conditioning and Refrigeration Repair Made Easy Hooman Gohari, 2009-10-19 This comprehensive book has been developed to quickly train an average person for the vast commercial and residential refrigeration and air conditioning market within a short period of time It provides all the technical knowledge needed to start a successful refrigeration and air conditioning business anywhere in the world *A Practical Guide to Maintenance Engineering* C. L. Dunlop, 2014-05-23 A Practical Guide to Maintenance Engineering presents a critical review

of the physical make up of the equipment It discusses the equipment register equipment codes instrument function terminology and loop function terminology It also addresses planned preventive and running maintenance as well as the objectives and guidelines of running maintenance Some of the topics covered in the book are the preparations of completed planned maintenance service sheet task sheet service sheet and equipment failure sheet maintenance defect monitoring maintenance stores spare part monitoring statutory inspection monitoring maintenance vibration analysis and maintenance management The preparation of safety relief valve schedule is also discussed An in depth analysis of the work order input output flow diagram is provided The planned and preventive maintenance flow diagram is presented A chapter is devoted to creation of test running and maintenance record The book can provide useful information to iron mechanics engineers students and researchers

HVAC Troubleshooting Guide Rex Miller, 2009-02-10 A Practical On the Job HVAC Guide Applicable to residential commercial and industrial jobs this essential handbook puts a wealth of real world information at your fingertips HVAC Troubleshooting Guide shows you how to read interpret and prepare schedules mechanical plans and electrical schematics This handy resource will aid you in your everyday tasks and keep you up to date with the latest facts figures and devices The book includes numerous illustrations tables and charts troubleshooting tips safety precautions resource directories and a glossary of terms HVAC Troubleshooting Guide helps you Identify and safely use tools and equipment both new and old Use heat pumps and hot air furnaces Calculate ventilation requirements Work with refrigeration equipment and the new refrigerants Utilize control devices including solenoids and relays Operate select and repair electric motors Work with condensers compressors and evaporators Monitor the flow of refrigerant with valves tubing and filters Comply with the Section 608 refrigerant recycling rule Program thermostats Insulate with batts sheet tubing covers and foam Work with solid state controls Understand electrical and electronic symbols used in schematics

HVAC A to Z - A Comprehensive Guide to Heating, Ventilation, and Air Conditioning Charles Nehme, A Comprehensive Guide to Heating Ventilation and Air Conditioning The field of heating ventilation and air conditioning HVAC is a crucial aspect of modern living impacting our comfort health and overall well being As we strive for energy efficiency and sustainability the significance of HVAC systems has never been greater This comprehensive guide aims to provide a detailed exploration of all aspects of HVAC from its historical development to cutting edge technologies and practices Whether you are a seasoned HVAC professional a building owner or someone curious about the inner workings of HVAC systems this guide has something to offer We start by understanding the fundamental principles of heating ventilation and air conditioning including thermodynamics heat transfer and psychrometrics With this knowledge as a foundation we delve into the different types of heating and cooling systems their components and efficient operation Energy efficiency is a key theme throughout this guide and we explore various strategies to optimize energy use reduce environmental impact and cut operating costs From load calculations and efficiency ratings to smart building automation and renewable energy integration we aim to equip readers

with tools to create sustainable and eco friendly HVAC solutions We also place a strong emphasis on indoor air quality and the role of ventilation in maintaining a healthy and comfortable indoor environment Discussions on mechanical and natural ventilation methods help shed light on the importance of fresh air in our daily lives Beyond the technical aspects we address broader considerations such as compliance with building codes and safety standards the integration of IoT technology in HVAC systems and the potential for demand response and peak load management to create a more balanced energy grid The challenges and opportunities in the HVAC industry are not overlooked as we explore how evolving technologies and changing environmental concerns present new avenues for growth and innovation In conclusion this comprehensive guide aims to be a valuable resource for anyone seeking a deeper understanding of heating ventilation and air conditioning As we strive for sustainable practices and energy efficient solutions the knowledge shared within these pages can pave the way for a more comfortable healthier and environmentally conscious future HVAC Q A What is HVAC HVAC stands for heating ventilation and air conditioning It is a system of technology that controls the temperature humidity and ventilation of indoor and restricted spaces How does HVAC work HVAC systems typically use a combination of heating and cooling elements fans and ductwork to control the indoor environment The specific components and operation of an HVAC system will vary depending on the type of system and the specific needs of the building What are the different types of HVAC systems There are many different types of HVAC systems but some of the most common include Central heating and cooling systems Split systems Ductless mini split systems Heat pumps Furnaces Air conditioners How do I choose the right HVAC system for my home When choosing an HVAC system for your home there are a number of factors to consider such as the size of your home the climate you live in your budget and your energy efficiency goals It is important to consult with a qualified HVAC professional to get the best advice for your specific needs What is the best way to maintain my HVAC system The best way to maintain your HVAC system is to have it inspected and serviced by a qualified professional on a regular basis This will help to ensure that your system is operating efficiently and safely You should also change your air filter regularly according to the manufacturer s recommendations Short answer HVAC stands for heating ventilation and air conditioning It is a system of technology that controls the temperature humidity and ventilation of indoor and restricted spaces There are many different types of HVAC systems and the best way to choose the right one for your home is to consult with a qualified HVAC professional To maintain your HVAC system have it inspected and serviced by a qualified professional on a regular basis and change your air filter regularly Audel Air Conditioning Home and Commercial Rex Miller,Mark Richard Miller,Edwin P. Anderson,2004-10-28 This guide will keep you cool Like its earlier editions this fully updated guidebook is packed with practical information on installing servicing maintaining and trouble shooting air conditioning systems Whether you re an AC professional an independent repair technician or a cost conscious homeowner everything you need is here Clearly organized and loaded with diagrams and illustrations it s a vital addition to your toolbox Find concise accurate information on installing

and maintaining both residential and commercial systems Understand the physics of air conditioning and filtration Make accurate temperature measurements using various methods and devices Work with room air conditioners water cooling systems and auto air conditioning Learn about refrigerants compressors condensers evaporators and AC motors Service troubleshoot and repair both old and new AC units Equipment Improvement Report and Maintenance Summary for TARCOM Equipment ,1989 *Marine Refrigeration and Air-Conditioning* James A. Harbach,2009-06-30 Due to a strong industry need many academies and technical schools now offer courses on refrigeration and air conditioning Marine Refrigeration and Air Conditioning introduces this complicated subject in a detailed straightforward manner Mechanical refrigeration is used onboard in many ways including refrigerated ship s stores air conditioning and refrigerated cargo storage areas Although reciprocating compressors have been the standard for decades systems using rotary and centrifugal compressors are quickly becoming the norm Author James A Harbach addresses both systems and discusses the changes step by step Since the 1990s environmental concerns have had a major effect on refrigeration and air conditioning systems Today s students are required to learn how to retrofit existing systems and replace entire units These tasks are explained fully in this title **Guide for Afloat Training, Naval Reserve Fleet Divisions and Selected Reserve Crews** United States. Bureau of Naval Personnel,1966 Audel Refrigeration Home and Commercial Rex Miller,Mark Richard Miller,Edwin P. Anderson,2005-02-08 Know how to put a chill in the air Here at last is a reference manual devoted exclusively to refrigeration both home and commercial Beginning with the essential physics and math it provides a complete course in maintaining troubleshooting and repairing both new and vintage refrigeration systems for home and light industry You ll find the answers you need whether you re a student apprentice cost conscious homeowner or skilled technician Know how different types of refrigerants are used and how to handle them safely Perform routine maintenance on various types of compressors Test for leakage and resolve common problems such as freeze ups Repair and replace refrigerator cabinet parts Troubleshoot common problems with home freezers Understand the working parts of both electrically driven and absorption type refrigeration units Learn to troubleshoot and maintain the wide variety of motors used in cooling devices Service and repair automatic icemakers water coolers and display cases *Air-conditioning System Design Manual* Walter T. Grondzik,2007 The Air Conditioning Manual assists entry level engineers in the design of air conditioning systems It is also usable in conjunction with fundamental HVAC R resource material as a senior or graduate level text for a university course in HVAC system design The manual was written to fill the void between theory and practice to bridge the gap between real world design practices and the theoretical calculations and analytical procedures or on the design of components This second edition represents an update and revision of the manual It now features the use of SI units throughout updated references and the editing of many illustrations Helps engineers quickly come up with a design solution to a required air conditioning system Includes issues from comfort to cooling load calculations New sections on Green HVAC systems deal with hot topic of sustainable buildings

HVAC Procedures & Forms Manual, Second Edition Wendes,2001-11-30 Developed over the course of many years of on the job projects involving HVAC energy auditing testing balancing and cost estimating and refined through feedback from thousands of engineers and technicians who have used them the forms contained in this manual are concise comprehensive and optimally organized for easy reference Complete sets of forms are provided for all aspects of testing and balancing energy auditing indoor quality diagnosis and load calculations The first edition entitled HVAC Energy Audit Balancing Forms Manual compiled these time saving forms for the first time in a single reference This enhanced second edition adds a new chapter on technical management providing procedures for achieving thorough systematic and accurate problem solving troubleshooting and decision making in building systems management and contracting Utilitiesman 3 & 2 Paul J. Moore,1983 **Guide to the Evaluation of Educational Experiences in the Armed Services: Coast Guard, Marine Corps, Navy, Department of Defense** American Council on Education,1978 *Air Force Manual* United States. Department of the Air Force,1955 **Resources in Education** ,1996-04

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step 1 gather up some stuff i used a chunk of wood that i had lying around 1 5 x 75 x 6 however just about any size will do six pushpins a pencil and a half inch drill bit step 2 find the center at one end find the center use your drill bit and drill and make a hole step 3 with my pencil i marked where i wanted to place the pins

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oct 2 2013 directions measure across the board and mark with the pencil the 1 inch 2 inch and 3 inch marks going down the length of the board this keeps your lines straight for the pins three pencil marks 1 inch apart next step is to mark where the pins will go place the measure tape down the length of the board

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