THERMO KING

CERTI-TECH

Testing Tips

Preparing For and Taking CERTI-TECH Tests

Transport Temperature Control is a challenging career. Products are becoming more and more sophisticated. A successful Thermo King dealer technician must be well-trained and highly skilled to service, diagnose and repair a wide variety of products. To stay sharp, today's technician must be able to read and understand new material, schematics, wiring diagrams, service bulletins, warranty bulletins, overhaul manuals, maintenance manuals, and of course, the Thermo King microprocessor control system "Green Books".

CERTI-TECH tests provide a way for Thermo King technicians to demonstrate their knowledge. And because the tests are "open-book", they also demonstrate the ability to quickly locate and apply information contained in Thermo King technical publications.

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Preparing For and Taking CERTI-TECH Tests

CERTI-TECH tests are timed, open-book tests. A computer is used to display each multiple-choice or True/False question. If you are not familiar with computers, take the practice test as many times as you want before taking an actual test. Your CERTI-TECH proctor will help you get started on the practice test and answer questions about the test procedures.

Although the tests are open-book, you won't have time to look up all the answers! You must know most of the material and only look up details (such as terminal numbers, jumper positions, etc.) A more complete description of each test is included at the end of this document.

Before The Tests

a. Examine the list of CERTI-TECH Categories (on page 4 of this document) to see what topics are included in each test.
b. Use the Categories List to focus your study of the CERTI-TECH Reference Library.
c. Discuss the test with others who have already taken the test. They may have helpful tips.
d. Study the reference materials. Quiz yourself. Ask others about information you don't understand.
e. Use a Post-It™ note or other means to identify reference library pages you think may be helpful during the test.
f. Be sure to study the appropriate COLD FACTS for the Certified, Professional and Master tests.
g. Be able to quickly locate information in the CERTI-TECH Library.
h. Get a good night's sleep before the test.
i. Ask your CERTI-TECH proctor to let you take the CERTI-TECH sample test. This test uses the computer to show you what to expect when taking the actual tests.
j. Good preparation is the most important part of test taking.

At The Test Site

a. Have the complete CERTI-TECH Reference Library for the level you are taking next to the computer.
b. Have all supplemental manuals (maintenance manuals, microprocessor "Green Books", etc.) nearby.
c. Have enough space to spread out the reference materials for easy and quick reference during the test.
d. Wear earplugs if there's distracting noise in the area.
e. Post a sign, "DO NOT DISTURB — TESTING!" to avoid interruptions.

During The Test

a. Read each question carefully and completely.
b. Read all of the answers before you choose.
c. Answer the actual question that is asked, not the one you think is being asked.
d. If you do not know the answer, skip the question and move on. It is better to first answer all the questions you know than to run out of time without seeing all the questions.
e. If you run out of time before answering all test questions, the unanswered questions are considered "wrong". As you take the test, it's important to progress at the right speed. An indicator at the top of the test screen will help you gauge your progress. As you take the test, it's better to be ahead of schedule than behind.
f. To return to a previous question, use the *BACK* arrow on your screen. To move forward, use the *NEXT* arrow on your screen.
g. As you take the test, a *MENU* option allows you to return to any question on the test. While taking the test, use a pencil and note pad to record the number of any test question you'd like to reconsider (if time permits.) Then use the *MENU* feature to quickly access those questions.
h. *The timer doesn't start until you actually begin the test—relax and get comfortable before you begin the test. Your proctor will help you with the computer and CERTI-TECH library references.*
i. *Only the proctor and the technician registered for the test may be in the room during the test. While taking tests, the technician can receive no help beyond what is available in the CERTI-TECH Reference Library. **Any evidence of dishonesty may result in revocation of all technician certifications held by the violating dealer.***

j.   You may take one break during the test. At any time during the test, simply select the ***TAKE A BREAK*** button on your screen. <u>The test and timer will automatically resume after a fifteen-minute break</u>. This is a good time to look up information that you are not sure of.

k.   Be aware of the break timer. If it runs out, the test will automatically resume. Taking a break very near the end of the test with little test time remaining may allow the test to automatically resume and complete while you are not looking.

l.   When time runs out, or when you select ***FINISH TEST***, your test score will appear on the screen. 80% is the minimum passing score. You will also have the option to print a report that will help you prepare for re-taking the test if necessary. The report will list the reference for each question you answered incorrectly. If the same reference appears four times, you missed four questions relevant to that reference.

m.   If your score is less than 80%, you cannot re-take the test immediately. It takes time to process your test. Your proctor will need to order and receive confirmation for another test. There is a charge for each test you take. Your proctor is responsible for ordering tests, maintaining the CERTI-TECH Reference Library, and all other details related to the administration of CERTI-TECH in your dealership.

Good Luck

CERTI-TECH Categories 2008

	Category Name	Cert.	Prof.	Master	MC	Eng.	Bus
1	Electrical Fundamentals	X			X		
2	Soldering	X					
3	Refrigeration Fundamentals	X			X		X
4	Refrigeration Diagnosis		X	X			
5	Small Truck Units			X			
6	Refrigerants / Oils		X				
7	Compressor		X		X		X
8	Engine					X	
9	Installation / PDI	X	X				
10	Preventive Maintenance	X					
11	Electrical Test Meters	X					
12	Microprocessor Controls / Sensors	X	X	X	X		X
13	Thermostats						X
14	Cycle Sentry / pre-SR electronics						
15	Safety / Recommended Practice	X			X		X
16	Recovery / Evacuation / Charging		X	X			
17	Multi-Temperature Refrigeration Systems and Diagnosis	X	X	X			
18	AC Electrical Circuits / Motors			X	X		X
19	Truck Units: Refrigeration		X	X			
20	Electric Standby			X			
21	Schematics / Wiring Diagrams		X	X			X
22	Defrost / Heat	X	X		X		
23	Batteries / Alternator	X	X				
24	Leak Detection		X				
25	Refrigerant Service Procedures	X	X		X		
26	Truck Units: Electrical		X				
27	µP-IV Multi-Temp & SPECTRUM		X	X			
28	Data Loggers / WinTrac		X	X			
29	Screw Compressor Units			X			
30	Warranty and Service Programs (SVC)						
31	Gensets				X		
32	Bus Refrigeration Diagnosis						X
33	Bus Electrical Diagnosis						X
34	Container Refrigeration Diagnosis				X		
35	Container Electrical Diagnosis						
36	Field Experience						
37	Electrical Diagnosis		X	X			
38	Mechanical Repairs						
39	Multi-Temp Electrical Systems and Diagnosis		X	X			
40	Container Refrigeration System Components & Fundamentals				X		
41	Container Condenser Fan Motor / Operation & Controls				X		
42	Container Evaporator Fan Motor / Operation & Controls				X		
43	Container Operation & Modes				X		
44	Container Control Voltages & Amperages				X		
45	Container Pre-Trip & Service Recommendations				X		
46	Container Emergency Features				X		
47	Control Circuits, Components, Specifications				X		
48	Bus Air Conditioning Components						X
49	Bus Air Conditioning Fan Motors						X
50	Bus Air Conditioning Diagnosis						X
		Cert.	Prof.	Maste	MC	Eng.	Bus
	Questions Per Test	120	120	120	80	80	80
	Time Allowed (minutes)	150	150	150	100	100	100

CERTI-TECH 2008 Library Contents

The 8-volume CERTI-TECH library contains most of the references required for the Certified, Professional and Master test. As a supplement to the main library several extra manuals are required for the *Professional*, *Master*, and *Specialist* tests. Be sure that you have all of the reference manuals for use during the test. Use the list below to verify that you have the appropriate references.

Test	Description	TK#	Library Location
Certified	Transport Temperature Control Systems (08-00)	50951-7-TM	Volume 1
Certified	SKILLBUILDERS (EF) Electrical Fundamentals (06-99)	50559-7-TM	Volume 1
Certified	Cold Facts – *Certified* (Rev. 2, 2008)	52659-7-TM	Volume 1
Certified	6 & 12 Mo. PM Checklist Guide (09-98)	41164-4	Volume 2
Certified	12-Month PM Training For Truck & Trailer (05-08)	50572-7-TM	Volume 2
Certified	TS-200, 300, 500 Installation (Rev 7, 10-06)	50727-1-IM	Volume 2
Certified	SPECTRUM SB SR-2 Installation (Rev 1, 01/07)	53543-2-IM	Volume 2
Certified	SPECTRUM Evaporator Installation SR-2 (Rev 2, 04-07)	53509-2-IM	Volume 2
Certified	SB-210 / SB-310 Maintenance Manual (Rev 1, 03/05)	51586-2-MM	Volume 2
Professional	Cold Facts – *Professional* (Rev. 2, 2008)	52855-7-TM	Volume 3
Professional	Diagnosing Thermo King Refrigeration Systems (02-07)	5984-10	Volume 3
Professional	TS-200/300 Maintenance Manual (Rev. 5, 04-03)	50794-1-MM	Volume 3
Professional	Dealer Professional Technician Training Manual (10-06)	53575-7-TM	Volume 4
Professional	µP-T Green Book (Rev. 8, 01-03)	41087-1-OD	Volume 5
Professional	V-200, V-300 Installation (Rev. 6, 05-04)	51856-1-IM	Volume 6
Professional	µP-V Green Book (08-97)	50042-2-OD	Volume 6
Professional	µP-VI Green Book, 40xx software (Rev. 5, 4-02)	50566-2-OD	Supplement
Professional	µP-IV Multi-Temp Green Book (Rev. 7, 10-01)	50033A&B	Supplement
Professional	SR-2 Green Book (02-05)	51727-2-OD	Supplement
Professional	SR-2 SPECTRUM Green Book (01-07)	53080-2-OD	Supplement
Professional	SB-210/310 Maintenance (Rev. 0, 1-04)	50566-2-OD	Supplement
Master	Cold Facts – *Master* (Rev. 2, 2008)	52856-7-TM	Volume 7
Master	V-200/300 Maintenance	50982-1-MM	Volume 7
Master	TS-200 and TS-300 Maintenance	50794-1-MM	Volume 7
Master	SB-400 Refrigeration System (Rev. 1, 9-04)	51696-2-MS	Volume 7
Master	WinTrac User Manual	52185-7-TM	Volume 7
Master	Dealer Master Training Manual (Rev. 4.2, 03-08)	52280-7-BD	Volume 8
Master	µP-VI Green Book, 40xx software (Rev. 5, 4-02)	50566-2-OD	Supplement
Master	µP-IV Multi-Temp Green Book (Rev. 7, 10-01)	50033-2-OD	Supplement
Master	SR-2 Green Book (02-05)	51727-1-OD	Supplement
Master	SR-2 SPECTRUM Green Book (01-07)	53080-2-OD	Supplement

CERTI-TECH 2008 Library Contents

— Continued—

Test	Description	TK#	Library Location
Bus	T1 M53-M72 Series	50105-3-MM	Supplement
Bus	MRT, LRT Maintenance Manual	50613-3-MM	Supplement
Bus	Bus Climate Control Training Manual (Rev. 5, 08-01)	50626-3-TM	Supplement
Bus	IntelligAIRE I Green Book (Rev. 7, 10-03)	50175-3-OD	Supplement
Bus	IntelligAIRE II Green Book (Rev. 1, 06-05)	51535-3-OD	Supplement
Container	MAGNUM Maintenance Manual	51122-4-MM	Supplement
Container	Diagnosing Container Refrigeration Systems	41166	Supplement
Container	SGSM 2000 Maintenance Manual	50935-4-MM	Supplement
Container	Container Training Manual	50390-4-TM	Supplement
Container	Skill Builders (EF) Electrical Fundamentals	50559-7-TM	Supplement
Engine	di 2.2 and se2.2 Engine Overhaul	8009-3-OM	Supplement
Engine	TK 482 and 486 Engine Overhaul	50136-2-OM	Supplement
Engine	TK2.44, etc. Engine Overhaul	8312-2-OM	Supplement

Certification Levels

CERTI-TECH *Certified* - 120 Questions, 150 Minutes

This is the basic certification level and is intended for entry-level technicians. Successful completion of this test requires knowledge of truck and trailer unit installations, soldering, preventive maintenance and safe work practices. It also requires an understanding of Thermo King unit identification, microprocessor control operation, electrical fundamentals, electrical meter usage, refrigeration fundamentals, and refrigeration service procedures.

Preparation for this test should include on-the-job training and independent study of recommended reference materials. Completion of this test is required prior to attending a formal Thermo King factory two-week Dealer Professional (DP) training course. After achieving an 80% minimum score on the test, CERTI-TECH *Certified* status is jointly awarded to the technician and his/her dealership. Shoulder patches and a certificate are sent to the CERTI-TECH proctor for presentation to the technician. CERTI-TECH *Certified* is available in Spanish and English. CERTI-TECH *Certified* cannot be renewed. The CERTI-TECH *Professional* test must be passed with in three (3) years of passing the *Certified* test.

CERTI-TECH *Professional* - 120 Questions, 150 Minutes

This certification level is intended to provide a technician with solid system understanding and diagnostic skills. CERTI-TECH *Professional* technicians should be productive in a wide variety of common diagnostic and repair situations on common Thermo King systems. Successful completion of this test requires a thorough knowledge of Thermo King refrigeration systems, electrical systems, microprocessor controllers and system diagnostics. The test includes questions on refrigeration diagnostic procedures, electrical diagnostic procedures, compressors, microprocessor controllers, electrical components and circuits, schematic diagrams, wiring diagrams and multi-temperature systems.

To become a CERTI-TECH *Professional*, a technician must first be CERTI-TECH *Certified* and hold a valid EPA certification under Section 608 of the Clean Air Act (or equivalent, per country). It is recommended that technicians complete the two-week Dealer Professional (DP) training course prior to taking the CERTI-TECH *Professional* test. After achieving an 80% minimum score on the test, CERTI-TECH *Professional* status is jointly awarded to the technician and his/her dealership. Shoulder patches and a certificate are sent to the CERTI-TECH proctor for presentation to the technician. Passing the CERTI-TECH Professional test satisfies the Dealer Agreement requirement of attending a Dealer Professional course. The CERTI-TECH *Professional* certification must be renewed every three (3) years.

CERTI-TECH *Master* - 120questions, 150 Minutes

This certification level is intended for experienced technicians that deal with advanced diagnostics, newer technologies, and a wider variety of products. To become CERTI-TECH *Master* certified a technician must demonstrate an advanced diagnostic knowledge of Thermo King truck and trailer equipment. Technicians will be tested on their ability to analyze symptoms and identify repair solutions. The test includes questions on the diagnosis and repair of screw and scroll compressor units, multi-temperature systems, current microprocessor controllers and data loggers, WinTrac and communications, electrical systems, electric standby, AC electrical circuits, and truck unit (self-powered and vehicle-powered) installation, service and repair.

Prior to requesting the CERTI-TECH *Master* test a technician must have passed the CERTI-TECH *Certified* test, passed the CERTI-TECH *Professional* test within the last three years, and hold a valid EPA Section 608 certification of the Clean Air Act (or equivalent, per country). The technician should have completed a two-week Dealer Professional (DP) course. A one-week Dealer Master (DM) course should also have been completed prior to taking the *Master* test. After achieving an 80% minimum score on the test, CERTI-TECH *Master* status is jointly awarded to the technician and his/her dealership. Shoulder patches and a certificate are sent to the CERTI-TECH proctor for presentation to the technician. The CERTI-TECH Master certification must be renewed every three (3) years.

CERTI-TECH *Specialist* - 80 Questions, 100 Minutes

Technicians can earn a CERTI-TECH *Specialist* certification in any of three specialty areas: Bus Climate Control, Marine Container, and Diesel Engines. CERTI-TECH *Certified* certification is a prerequisite to taking *Specialist* tests. Technicians may be certified in one, two, or all three specialties. After achieving an 80% minimum score on the test, CERTI-TECH *Specialist* status is jointly awarded to the technician and his/her dealership. Shoulder patches and a certificate are sent to the CERTI-TECH proctor for presentation to the technician.