## Brief Contents.

SECTI	ON 1: Theory of Heat		Unit 28 Special Refrigeration Applications	733
•••		•	Unit 29 Troubleshooting and Typical Operating	753
	Introduction	1	Conditions for Commercial Refrigeration	752
Unit 1	Heat, Temperature, and Pressure	14		
Unit 2	Matter and Energy	27	SECTION 6: Air-Conditioning	
Unit 3	Refrigeration and Refrigerants	36	(Heating and Humidification)	
SECTI	ION 2: Safety, Tools and Equipment,		Unit 30 Electric Heat	798
JECI	• • • • • • • • • • • • • • • • • • • •		Unit 31 Gas Heat	816
	and Shop Practices		Unit 32 Oil Heat	889
11	Consul Safatu Durations	0.4	Unit 33 Hydronic Heat	940
	General Safety Practices	84	Unit 34 Indoor Air Quality	995
Unit 5	Tools and Equipment	102		
	Fasteners	135	SECTION 7: Air Conditioning (Cooling)	
	Tubing and Piping	148	<b>SECTION 7:</b> Air-Conditioning (Cooling)	
Unit 8	Leak Detection, System Evacuation,	470	Unit 25 Comfort and Beychromatrics	1016
	and System Cleanup	178		1016
Unit 9	Refrigerant and Oil Chemistry and		,,	1040
	Management—Recovery, Recycling,			1059
	Reclaiming, and Retrofitting	213		1107
	System Charging	251	3,	1130
Unit 11	Calibrating Instruments	269		1181
			Unit 41 Troubleshooting 1	1195
SECTION 3: Basic Automatic Controls			SECTION 8: All-Weather Systems	
Unit 12	2 Basic Electricity and Magnetism	282	Unit 42 Heat Gains and Heat Losses in Structures	1226
Unit 13	Introduction to Automatic Controls	310		1245
Unit 14	Automatic Control Components		•	1297
	and Applications	322	onit 44 Geotherman neat rumps	1237
Unit 15	Troubleshooting Basic Controls	552		
Unit 16	Advanced Automatic Controls—Direct Digital		SECTION 9: Domestic Appliances	
	Controls (DDCs) and Pneumatics	376		
			<b>-</b>	1334
			Unit 46 Room Air Conditioners	1408
SECT	ION 4: Electric Motors		CECTION 10. Commented his Conditioning	
Linit 17	7 Types of Electric Motors	398	<b>SECTION 10:</b> Commercial Air-Conditioning	
	* *	429	and Chilled-Water Systems	
	3 Application of Motors 9 Motor Controls	447		• • • • • • •
	Troubleshooting Electric Motors	458	Unit 47 High-Pressure, Low-Pressure, and Absorption	
Offic 20	Troubleshooting Electric Motors	436	•	1438
			Unit 48 Cooling Towers and Pumps	1483
SECT	ION 5: Commercial Refrigeration		Unit 49 Operation, Maintenance, and Troubleshooting	
3EC1			of Chilled-Water Air-Conditioning Systems	1509
Hni+ 21	1 Evaporators and the Refrigeration System	476	Unit 50 Commercial Packaged Rooftop, Variable	
	2 Condensers		Refrigerant Flow and Variable	
		498 532	Air Volume Systems	1535
	3 Compressors		Ammondia A Alagunatica II 41	
	Expansion Devices	566 505	Appendix A Alternative Heating	4 5 7 5
	5 Special Refrigeration System Components	595 640	(Stoves and Fireplace Inserts)	1575
	6 Applications of Refrigeration Systems	640 694	Annondiy P	1504
Unit 2	7 Commercial Ice Machines	684	Appendix B	1584