DCA10-DEC-034

FILING AND ACKNOWLEDGEMENT
FILED, on this date, with the designated Agency Clerk, receipt of which is hereby acknowledged.

2/12/10
Minam Snipes Date
Deputy Agency Clerk

February 10, 2010

Paula Ford, Clerk of the Commission
Department of Community Affairs
Building Codes and Standards Office
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-0300

Re: "Petition for Declaratory Statement before the Florida Building Commission" in regards to Florida Building Code Sections M2301.2.3 – Solar System Temperature and Relief Protection

Dear Clerk:

Please find attached, a Petition for Declaratory Statement from The LeverEdge, Ben Bentley, Pasco County. We respectfully request a Declaratory Statement from the Florida Building Commission seeking clarification regarding what valve or valves are allowed in the "solar loop" portion of an active direct solar water heating system.

Please contact me directly if you have any questions.

Sincerely,

C.W. (Ben) Bentley
Chairman of the Board

1423 Gunn Hwy. Odessa, FL 33556 (813) 403-5100

PETITION FOR DECLARATORY STATEMENT

BEFORE THE FLORIDA BUILDING COMMISSION

Petitioner, The LeverEdge, Ben Bentley, Pasco County, Florida, pursuant to Florida Building Code Section M2301.2.3, hereby requests a declaratory statement on the interpretation from the Florida Building Commission and as grounds therefore states the following:

Petitioner's Name and Address

Name: Ben Bentley, Solar Manufacturer and Wholesale Distributor

Address: 1423 Gunn Hwy.
Odessa, FL 33556

Telephone: (813) 403-5100 Ext. 1136

Facsimile: (813) 403-5081

Email: Bentley@TheLeverEdge.com

Name and Address of Petitioner's Attorney or Qualified Representative, if any

Not Applicable

Respectfully submitted this 10th day of February, 2010

C.W. (Ben) Bentley

C.W. (Ben) Bentley
Chairman of the Board
Petitioner

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Deputy Agency Clerk

Statutory Provision(s), Agency Rule(s), or Agency Order(s) on Which the Declaratory Statement is Sought

2007 Florida Building Code Section M2301.2.3 is being interpreted by some local officials to mean that a T&P valve, not T&P valve(s) can be installed in the solar loop.

SECTION M2301 – SOLAR ENERGY SYSTEMS
M2301.2.3 Pressure and temperature relief. System components containing fluids shall be protected with pressure- and temperature-relief valves. Relief devices shall be installed in sections of the system so that a section cannot be valved off or isolated from a relief device.

Description of How the Staute(s), Agency Rule(s) or Agency Order(s) may Substantially affect the Petitioner in the Petitioner's Particular Set of Circumstances

Petitioner has sold complete fabricated solar domestic residential water heating systems to certified solar contractors since 1979, including the proper pressure and temperature relief valves. The system includes a P&T valve, to be installed on the water heater/solar storage tank combination, and a pressure relief valve to be installed on the isolatable side of the "solar loop". Installing a P&T valve on the isolation side of the loop causes premature system failure which decreases petitioner's potential for future sales. It is a fact and the petitioner's contention that solar collector temperature can not be regulated by a valve when the collector is isolated. Since the collector temperature, under a stagnant and isolated condition, far exceeds the temperature setting on any hydronic T&P valve, the thermal gel inside the temperature probe is compromised, allowing even tepid water to discharge from the system, rendering the system inoperable. On the other hand, a pressure relief valve, when the loop is isolated and the pressure producing fixture (the collector) heats up, thermal expansion creates pressure, opens the PRV and spills a cup or so of water onto the roof, closes and repeats as necessary to provide safety from over pressurization but not temperature since the collector temperature will continue to increase until it reaches it's maximum potential for that particular sun condition. Therefore, a pressure relief valve is the valve of choice for manufactures and installing contractors for "solar loop" protection since the PRV provides safety protection and is relatively service free. See attached FSEC "Solar Thermal Manual" support sheets.

It is the petitioner's contention that M2301.2.3 says that more than one type of relief device can be installed. Otherwise, instead of saying what it says above, "System components containing fluids shall be protected with pressure- and temperature-relief valves. Relief devices shall be installed in sections of the system so that a section cannot be valved off or isolated from a relief device", it would have said, "System components containing fluids shall be protected with a pressure and temperature relief valve. A P&T valve shall be installed in sections of the system so that a section cannot be valved off or isolated from the P&T valve".

Question:

Is it the intent of 2007 Florida Building Code Section M2301.2.3 to allow installation of a PRV valve in the "solar loop" portion of an active direct solar water heating system?

Respectfully submitted this 10th day of February, 2010

C.W. (Ben) Bentley
Chairman of the Board

FLORIDA SOLAR ENERGY CENTER®

Creating Energy Independence

Resources - Solar Thermal Manual

This is the manual to be used in the State of Florida's
Solar Contractor Test

Design and Installation & Repair and Maintenance

The intent of this manual is to equip the reader with the knowledge and skills needed to design, install, operate and maintain the most common types of solar water heating systems.

The manual presents an overview of solar thermal applications, provides basic information on the principles of solar energy, reviews solar thermal technologies, and provides detailed instruction on the safe, efficient installation of solar water heating and pool heating systems. The manual is divided into six sections, with each separated into individual modules.

The manual is broken down into various sections. For ease of downloading, these sections are provided below in PDF format. Go to Adobe© Acrobat© Reader™ to obtain a free version of the Reader™ that will enable you to open PDF files. These are large files, so be patient during the download.

Section 1: Solar Concepts provides an introduction, table of contents, and a basic understanding of solar thermal concepts.

Section 2: Solar Water Heating Systems focuses on what are commonly called solar domestic hot water systems, which heat water.

Section 3: System Installation covers the steps involved in installing a solar water heating system.

Section 4: Troubleshooting presents structured methods to follow in diagnosing and correcting solar water heating system problems.

Section 5: Solar Swimming Pool Heating Systems is devoted to solar systems that provide heat for swimming pools.

The Appendix includes the following

- Crome Dome Collector Siting Aid
- FSEC Simplified Sizing Procedures for Solar Domestic Hot Water Systems
- Electric Water Heater Circuitry
- Volt-Ohmmeter (VOM) or Multimeter Operation
- Solar System Flow Rates
- Tools for Service and Repair

SEC #2

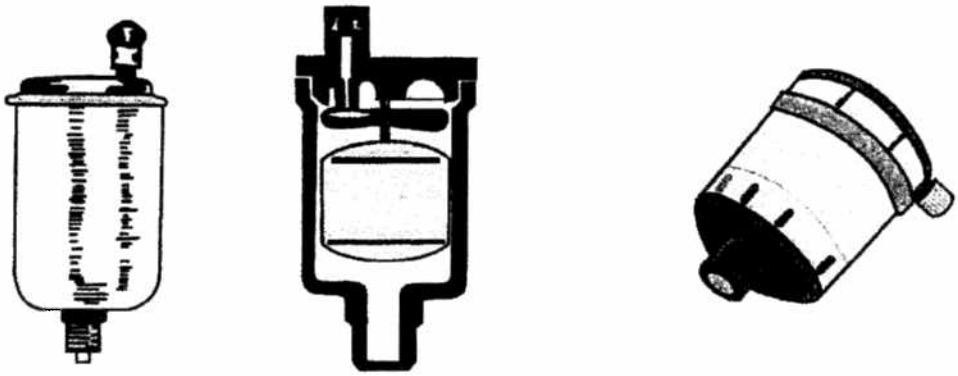

Figure 25 Air vent

TEMPERATURE-PRESSURE RELIEF VALVE

A temperature-pressure relief valve is also called a pressure-temperature relief valve or P&T valve or T&P valve. These names are used interchangeably in the industry. This valve (Figure 26) protects system components from excessive pressures and temperatures. A pressure-temperature relief valve is always plumbed to the solar storage (as well as auxiliary) tank. In thermosiphon and ICS systems, where the solar tanks are located on a roof, these tanks may also be equipped with a temperature-pressure relief valve since they are in some jurisdictions considered storage vessels. These valves are usually set by the manufacturer at 150 psi and 210° F. Since temperature pressure relief valves open at temperatures below typical collector loop operating conditions, they are not commonly installed in collector loops. (See pressure relief valves below.) Temperature-pressure relief valves located inside a building must drain to the outside. If uncertain, follow local code requirements.

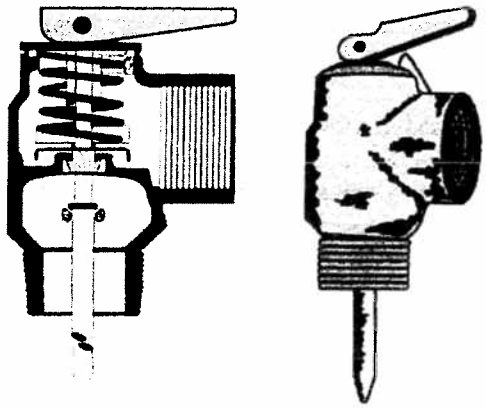

Figure 26 Pressure-temperature relief valve

PRESSURE RELIEF VALVE

A pressure relief valve (Figure 27) protects components from excessive pressures that may build up in system plumbing. In any system where the collector loop can be isolated from the storage tank, a pressure relief valve must be installed on the collector loop. The pressure rating of the valve (typically 125 psi) must be lower than the pressure rating of all other system components, which it is installed to protect.

The pressure relief valve is usually installed at the collector. Because it opens only with high pressure, it operates less frequently than does a temperature-pressure relief valve. For this reason, it offers a higher degree of reliability and is the valve of choice for protecting the solar collector. Indirect systems typically use pressure-relief valves with even lower psi settings. Pressure relief valves located inside a building should be piped to discharge to a safe location.

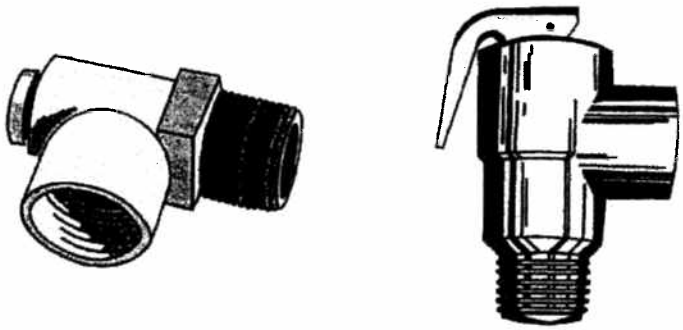

Figure 27 Pressure relief valve

PRESSURE GAUGE

A pressure gauge (Figure 28) is used in indirect systems to monitor pressure within the fluid loop. In both direct and indirect systems, such gauges can readily indicate if a leak has occurred in the system plumbing.

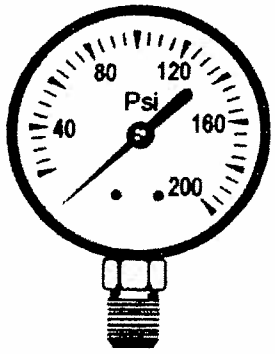

Figure 28 Pressure gauge

If multiple collector arrays are used, an air vent should be installed on each array. The system must be piped to prevent air traps and allow for gravity draining (Figure 24).

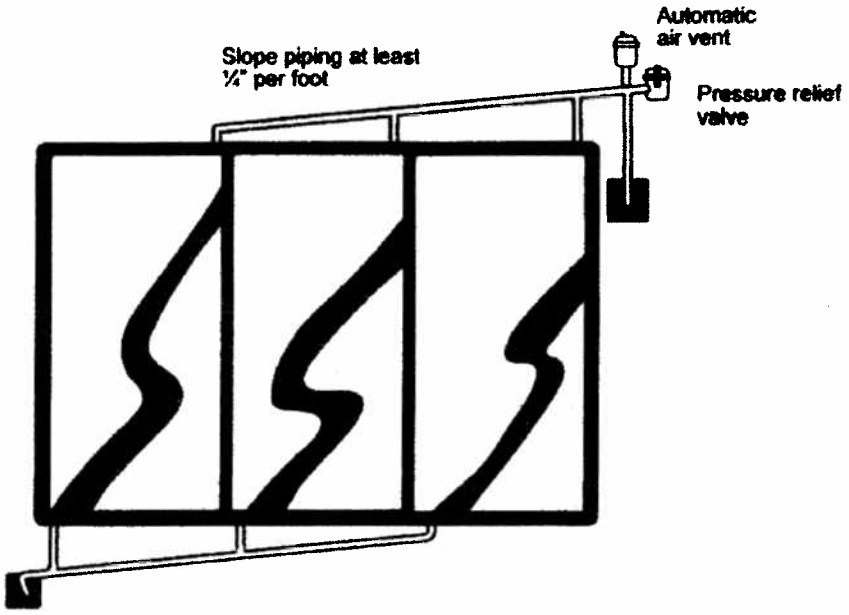

Figure 24 Piped and vented collector array

By code, a pressure relief valve is required in any portion of the system that can be isolated that contains a pressure producing fixture. For example, a circulating pump might have isolation valves so it can be removed for maintenance, but it is not considered a pressure producing fixture from the standpoint of the risk of bursting the system, so you don't need a pressure relief valve on this part of the system. However, the collector, or tanks with heater elements (connected or not), and even tankless water heaters are pressure producing fixtures, so if any can be isolated, there must be a pressure relief valve somewhere in that portion of the isolated loop that contain them. Most solar water heaters have the pressure relief valve for the collector loop installed at the collector. Special care should be taken to ensure the hot overflow from this valve does not come into contact with people or pets; some codes specify how this should be accomplished. The discharge pipe must be large enough to safely handle the overflow volume from indirect antifreeze systems, which usually operate at low pressure. Special low-pressure relief valves are often used on these systems.

Piping Collector Arrays

Cover all roof piping with insulation. Protect the insulation from degradation through exposure to ultra violet (UV) light by completely covering it with UV-resistant paint, or metallic or vinyl tape. Painted insulation will need to be repainted periodically, as the paint will deteriorate over time.