



# Engineering and Safety Guidelines

## for the Application of Parker TEV Products on Systems Utilizing Hydrocarbons as the Working Fluid

In response to the increased consideration and use of hydrocarbon refrigerants in refrigeration systems, the Sporlan Division of Parker Hannifin is issuing the following Application and Safety Guidelines for the use of its products on these systems. This document specifically refers to the application and use of R-170 (ethane), R-290 (propane) and R-600a (isobutane).

### Material Compatibility

In general, the materials of construction used in Thermostatic Expansion Valves will not be affected by these refrigerants. Typically the area of most concern is with synthetic or rubber

seals, however; the material used in both the pushrod seal and adjusting stem seal have been found by Sporlan to be compatible with these hydrocarbons used with common refrigeration oils.

### Application

Sporlan thermostatic expansion valves may be applied on systems with R-170, R-290 or R-600a as the working fluid, with the design and selection criteria being the same as those for conventional refrigerants. Please contact the Sporlan Division technical support team for assistance in sizing the correct valve.

Letter Code	Refrigerant	Application	Replacing	Thermostatic Charge
U	R-600a	Medium temperature domestic appliances (0 to 50 deg F evaporator)	R-134a	UC
O	R-290	Air conditioning and heat pumps	R-22, R-407C	VGA, VCP100
O	R-290	Medium and low temperature refrigeration	R-404A, R-507	VC, VZ, VZP40
K	R-170	Low temperature cascade systems	R-13, R-23, R-503	KGP

In case of leak in the system, Sporlan thermostatic expansion valves should only be applied to equipment whose final use location has a room volume sufficient to contain the entire refrigerant charge at a concentration not to exceed 20% of the refrigerant's lower flammability limit (LFL), in accordance with EN378:2008.

### User Safety Responsibility Statement

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

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