



[54] OFF-THE-ROAD TIRE TEMPERATURE AND PRESSURE MONITORING SYSTEM

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[57] ABSTRACT

A tire pressure and temperature measurement system adapts a Y-block (30) to an existing valve stem (20). One branch (44) of the Y-block accepts a conventional valve core (42) and another branch (38) accepts a flexible tubular temperature sensor (36) that leads "down the throat" of the existing valve stem and into the interior of a tire (14, 18). Another embodiment is adapted for use on inside dual tires (18). Making a measurement entails attaching a pressure sensor (40) to the valve stem and attaching a hand-held processor (112) to the sensors. The hand-held processor reads the current tire pressure and temperature; executes a program (Eqs. 1-6) that accounts for measured and target temperatures, vapor pressures, and gas compressibility; and indicates how much pressure to add or subtract to the tire to achieve an accurate final tire operating pressure. In yet another embodiment, a spherical protective housing (70) enclosing pressure and temperature sensors (72), a controller (76), a data transceiver (74), a controller (76), and a data transceiver (74) is loosely placed within the interior of a tire when it is mounted to a rim. A remote measurement system (80) receives at another data transceiver (108) pressure and temperature data transmitted from inside the tire while the vehicle is moving and conveys the data to a processor (112) for executing the above-described program.

22 Claims, 3 Drawing Sheets

