

ABSTRACT

A reference range identifying device acquires and records, for example at a predetermined time interval, a measuring result each of a load and an exhaust temperature of an engine. The reference range identifying device identifies, based on combinations of a load and an exhaust temperature of the engine recorded at multiple points of time, for each of load zones, for example a 95 percent confidence interval of a distribution of exhaust temperatures as a reference range. Subsequently, the reference range identifying device calculates an approximate curve for lower limits of reference ranges identified for the load zones. In addition, the reference range identifying device calculates an approximate curve for upper limits of the reference range identified for the load zones. The reference range identifying device identifies a range sandwiched by the calculated two approximate curves as a reference range that changes in accordance with a load. The reference range identifying device, upon detecting that a current load and exhaust temperature of the engine is not included in the reference range, notifies the detected fact to a user.