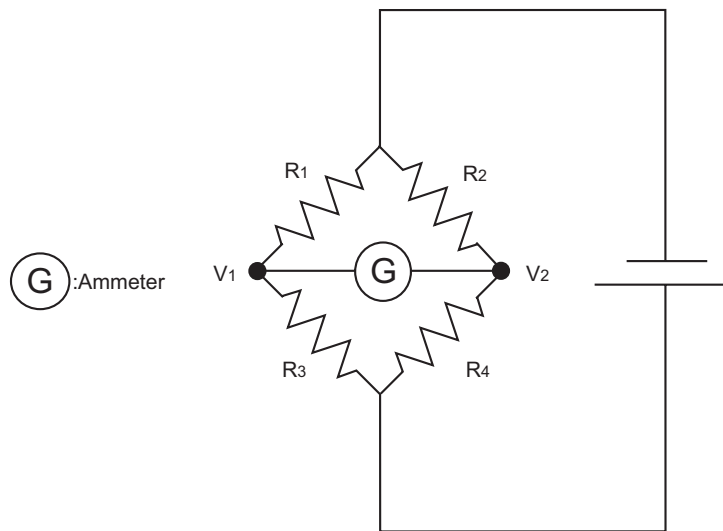


Air Flow Meter

- This air flow meter, which is a plug-in type, allows a portion of the intake air to flow through the detection area. By directly measuring the mass and the flow rate of the intake air, the detection precision has been improved and the intake air resistance has been reduced.
- This air flow meter has a built-in intake air temperature sensor.
- This system measures the air flow in the bypass, which is less likely to be affected by the intake pulsations created by the air cleaner. Also, the flow path is constructed to minimize flow resistance, thus reducing flow loss. Therefore, this system can measure small to large airflow in a precise manner.

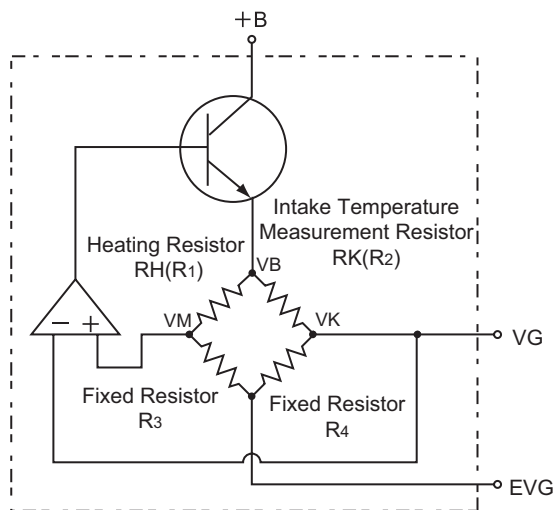
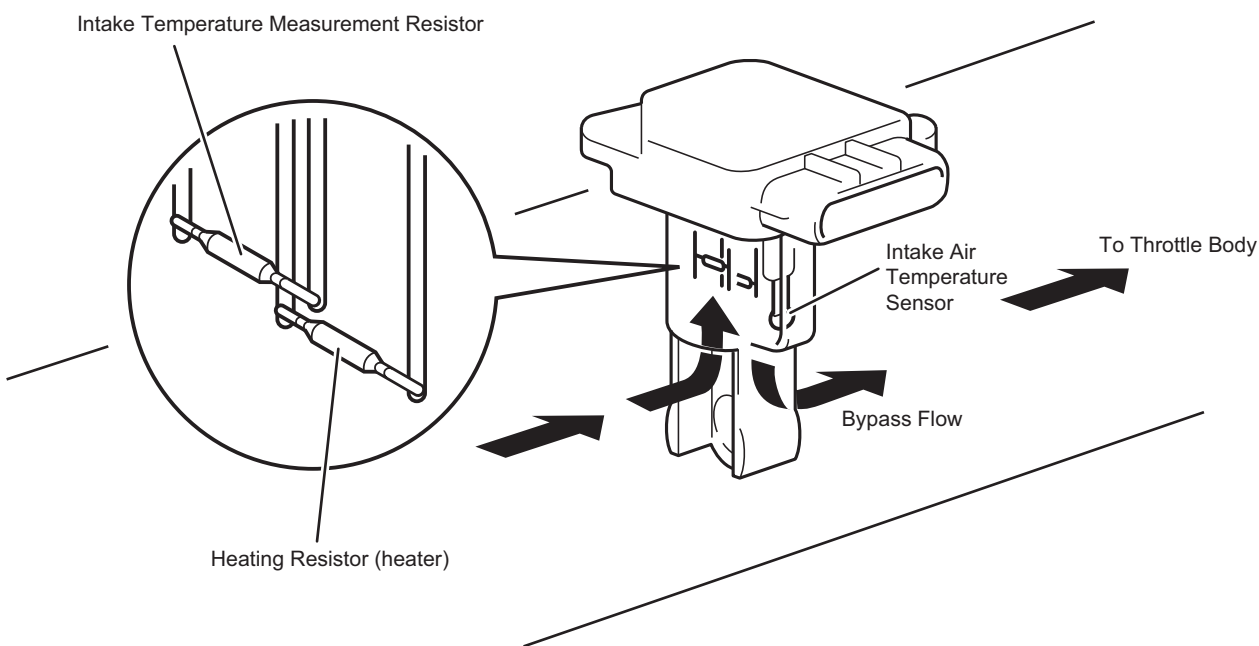
Hot Wire Type Air flow Meter Operation

- A hot-wire measurement portion measures the volume of the intake air that is partially routed through a bypass. The hot-wire, which uses a platinum filament, measures the intake air volume of the engine by comprising a bridge circuit that consists of an intake temperature measurement resistor and a heating resistor (heater). In principle, this airflow meter can directly measure the mass flow due to the nature of the hot-wire type air flow meter. Therefore, it does not require a density correction to counter the changes in the intake temperature. However, it does require intake temperature data in order to effect engine control such as in EFI (Electronic Fuel Injection). For this reason, the air flow meter contains a compact, thermistor type intake temperature sensor that detects the intake temperature.
- The bridge circuit is connected as shown in the diagram below. When $R_1 \times R_4 = R_2 \times R_3$ is established in this circuit, V_1 becomes V_2 , causing the ammeter G to indicate 0.



Bridge Circuit

- When the intake air volume changes, the bridge circuit in the hot-wire measurement portion effects feedback control to supply electricity to the heating resistor, in order to maintain a constant difference in temperature between the intake temperature measurement resistor and the heating resistor (heater). Then, it converts the supplied electricity into voltage and outputs it to the engine ECU. The engine ECU calculates the engine intake air volume based on a predetermined relationship between the air flow meter output voltage and the flow volume.
- The diagram below describes the configuration of the bridge circuit of the hot-wire type air flow meter. For example, if the intake volume that is drawn in increases, it cools the heating resistor and decreases the RH value, thus resulting in $RH(R1) \times R4 < RK(R2) \times R3$, $VM \neq VK$. When the control unit detects this condition, it effects control to increase the amperage that flows from the power supply to VB (to heat RH), in order to result in $RH(R1) \times R4 = RK(R2) \times R3$, $VM = VK$.



Bridge Circuit