

## EXHAUST MANIFOLD [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

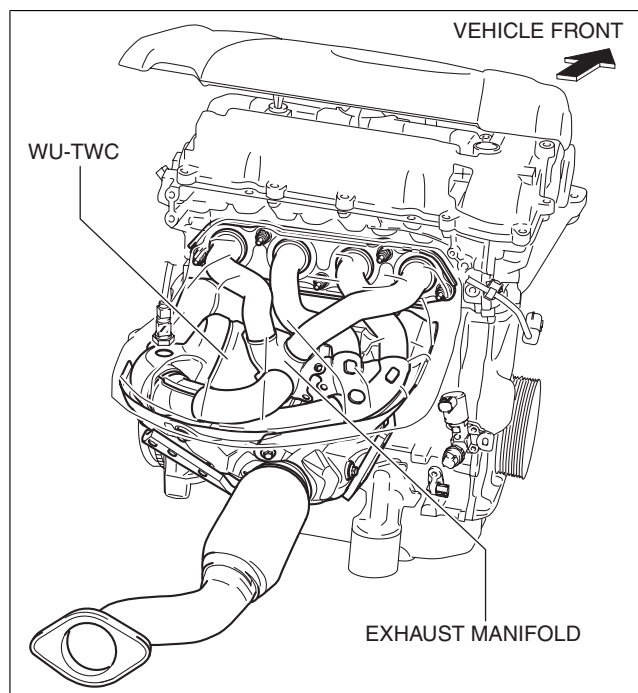
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### Purpose, Function

- By lengthening the exhaust passage, the transmission of exhaust pressure waves to other cylinders can be delayed, therefore the amount of exhaust gas forced back into the combustion chamber is reduced. By reducing the residual gas, the temperature inside the combustion chamber is lowered and the occurrence of knocking is suppressed even at a high compression ratio.

### Construction

- The exhaust manifold is installed to the rear of the engine. In addition, the catalytic converter (WU-TWC) is integrated (WU-TWC).



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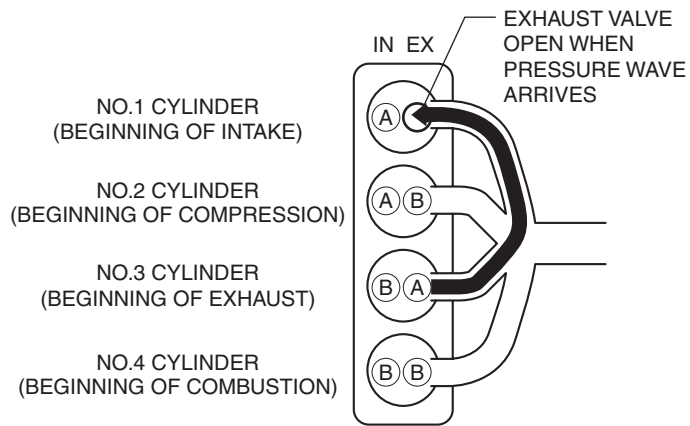
### Residual gas occurrence mechanism

- When exhaust gas is exhausted from the cylinder, a pressure wave occurs inside the exhaust pipe.
- The pressure wave reaches each cylinder and the high-temperature exhaust gas in the exhaust manifold is pushed back into the cylinder, which is in overlap.
- The exhaust valve closes and the exhaust gas pushed back into the cylinder remains in the cylinder (Residual gas increases the temperature inside the cylinder and causes engine knocking).

### Advantages of 4-2-1 exhaust pipes

- Suppresses engine knocking by reducing the residual gas and preventing the temperature inside the cylinder from increasing. A high compression ratio has been realized by suppressing engine knocking.
- With conventional short exhaust pipes, the pressure wave which occurs during the exhaust stroke of the No. 3 cylinder reaches the No.1 cylinder, which is in overlap. Because the exhaust valve of the No.1 cylinder is open while in overlap, high-temperature exhaust gas in the exhaust manifold is pushed back into the No.1 cylinder. With the 4-2-1 exhaust pipes, because the length of the pipes is long, it takes time for the pressure wave to reach each cylinder. When the pressure wave occurring from the No.3 cylinder reaches the No.1 cylinder, the exhaust valve has already been closed, therefore the amount of exhaust gas which is pushed backed at almost all engine speeds is reduced.

### SHORT EXHAUST PIPES



### LONG EXHAUST PIPES (4-2-1 TYPE)

