

COMPONENT OPERATION / Travel Device

BRAKE VALVE

The brake valve consists of counterbalance valve (10) and relief valve (11).

Traveling Flat or Up

When the pressure oil from the control valve is routed to port AV, the pressure oil further flows into port AM after passing around spool (5) and opening check valve (4). On the other hand, the return oil from port BM is blocked by check valve (6) and spool (5) so that the return oil cannot flow into port BV. Accordingly, pressure at port AV increases gradually and is routed into chamber (1) through orifice (3), causing spool (5) to move to the right. As a result, the return oil from port BM can flow to port BV via a notch on spool (5), allowing the motor to rotate.

Traveling Down Slope

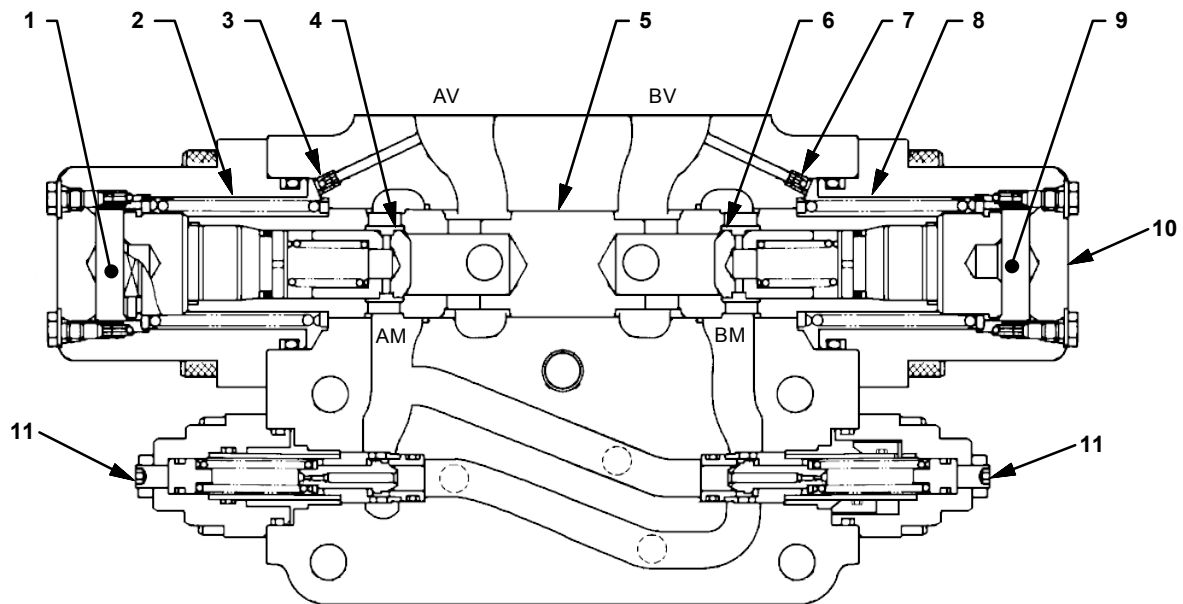
While traveling down slope, the travel motor is forcibly driven by the machine weight, causing the motor to draw oil in port AM.

Therefore, oil pressure in port AV and chamber (1) decreases so that spool (5) returns to the left, blocking the return oil flow from port BM and braking motor rotation. Once the return oil from port BM is blocked, the oil pressure in port AV again increases.

Thereby, spool (5) is moved to the right. The repetition of this blocking and easing of the return oil flow, which is called hydraulic braking, prevents the machine from running away while traveling down slopes.

Circuit Protection

If the circuit pressure exceeds the specified set pressure, relief valves (11) open to relieve excessive high pressure to the low pressure side, protecting the motor from overload. Also, relief valves (11) buffers shock pressure which occurs due to the machine inertial force when stopping. Moreover, check valve (4) or (6) opens (a make-up operation) to prevent cavitation from occurring in the motor circuit when the motor begins to draw oil.



T144-03-05-002

1 - Chamber
2 - Spring
3 - Orifice

4 - Check Valve
5 - Spool
6 - Check Valve

7 - Orifice
8 - Spring
9 - Chamber

10 - Counterbalance Valve
11 - Relief Valve