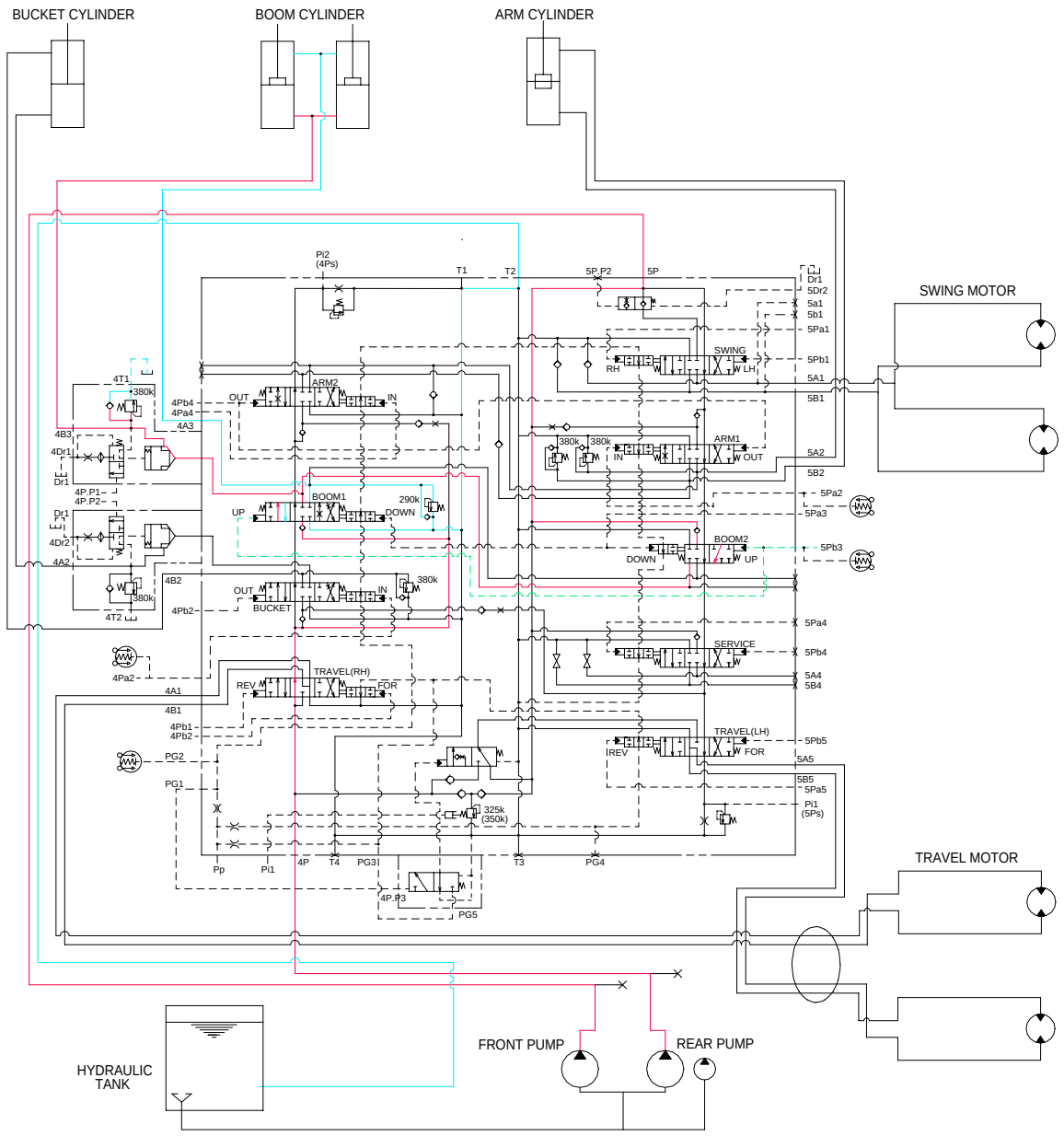
GROUP 4 SINGLE OPERATION

1. BOOM RAISE OPERATION



When the right control lever is pulled back, the boom spools in the main control valve are moved to the raise position by the pilot oil pressure from the remote control valve.

The oil from the front and rear pump flows into the main control valve and then goes to the large chamber of boom cylinders through the boom holding valve.

At the same time, the oil from the small chamber of boom cylinders returns to the hydraulic oil tank through the boom spool in the main control valve.

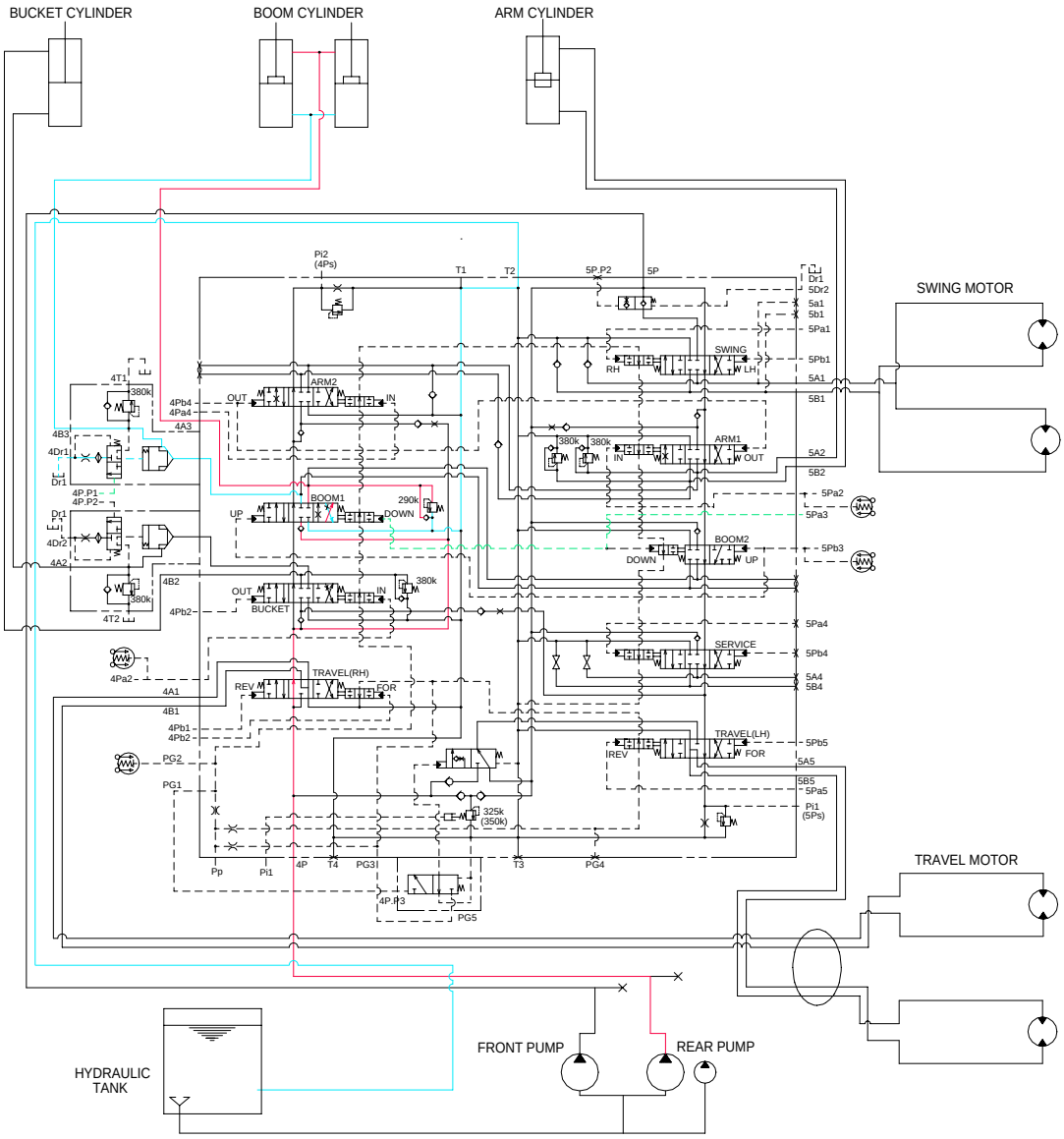
When this happens, the boom goes up.

The excessive pressure in the boom cylinder bottom end circuit is prevented by the overload relief valve in the main control valve.

When the boom is raised and the control lever is returned to neutral, the circuit for the holding pressure at the bottom end of the boom cylinder is closed by the boom holding valve in the main control valve.

This prevents the hydraulic drift of boom cylinder.

2. BOOM DOWN OPERATION



When the right control lever is pushed forward, the boom spools in the main control valve are moved to the lower position by the pilot oil pressure from the remote control valve. Also, this pilot oil flows into 4P.P1 port of boom holding valve and pushes open poppet. Then the return line open to tank port.

For anti drift function of boom holding valve, see function of MCV at page 2-39.

The oil from the rear pump flows into the main control valve and then goes to the small chamber of boom cylinders.

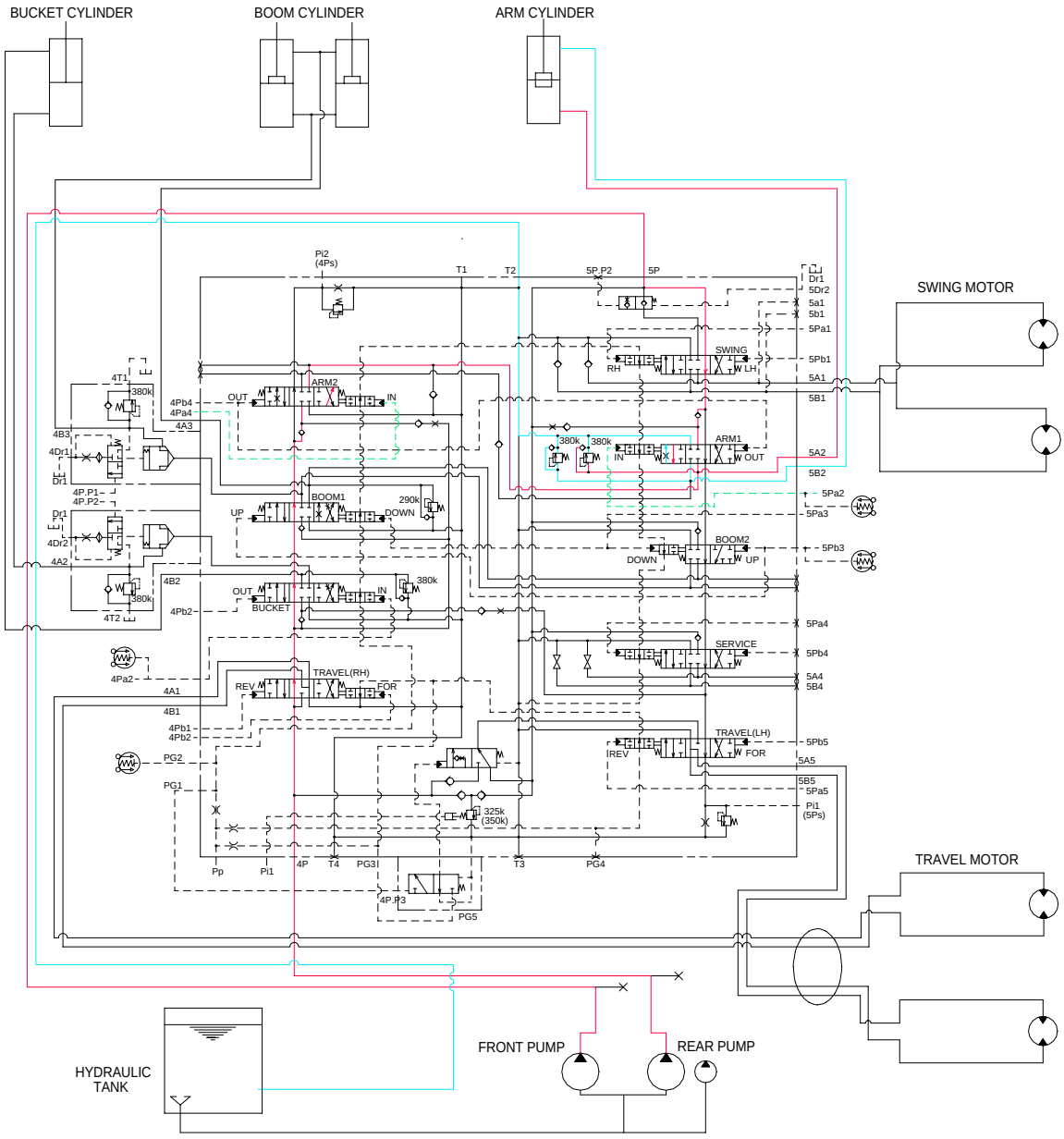
At the same time, the oil from the large chamber of boom cylinders returns to the hydraulic tank through boom holding valve and the boom spool in the main control valve.

When the lowering speed of boom is faster, the return oil from the large chamber of boom cylinder combines with the oil from the rear pump, and flows into the small chamber of the cylinder.

This prevents cylinder cavitation by the negative pressure when the rear pump flow cannot match the boom down speed.

And the excessive pressure in the boom cylinder rod end circuit is prevented by the overload relief valve in the main control valve.

3. ARM ROLL IN OPERATION



When the left control lever is pulled back, the arm spools in the main control valve are moved to the roll in position by the pilot oil pressure from the remote control valve.

The oil from the front and rear pump flows into the main control valve and then goes to the large chamber of arm cylinder.

At the same time, the oil from small chamber of arm cylinder returns to the hydraulic oil tank through the arm spool in the main control valve.

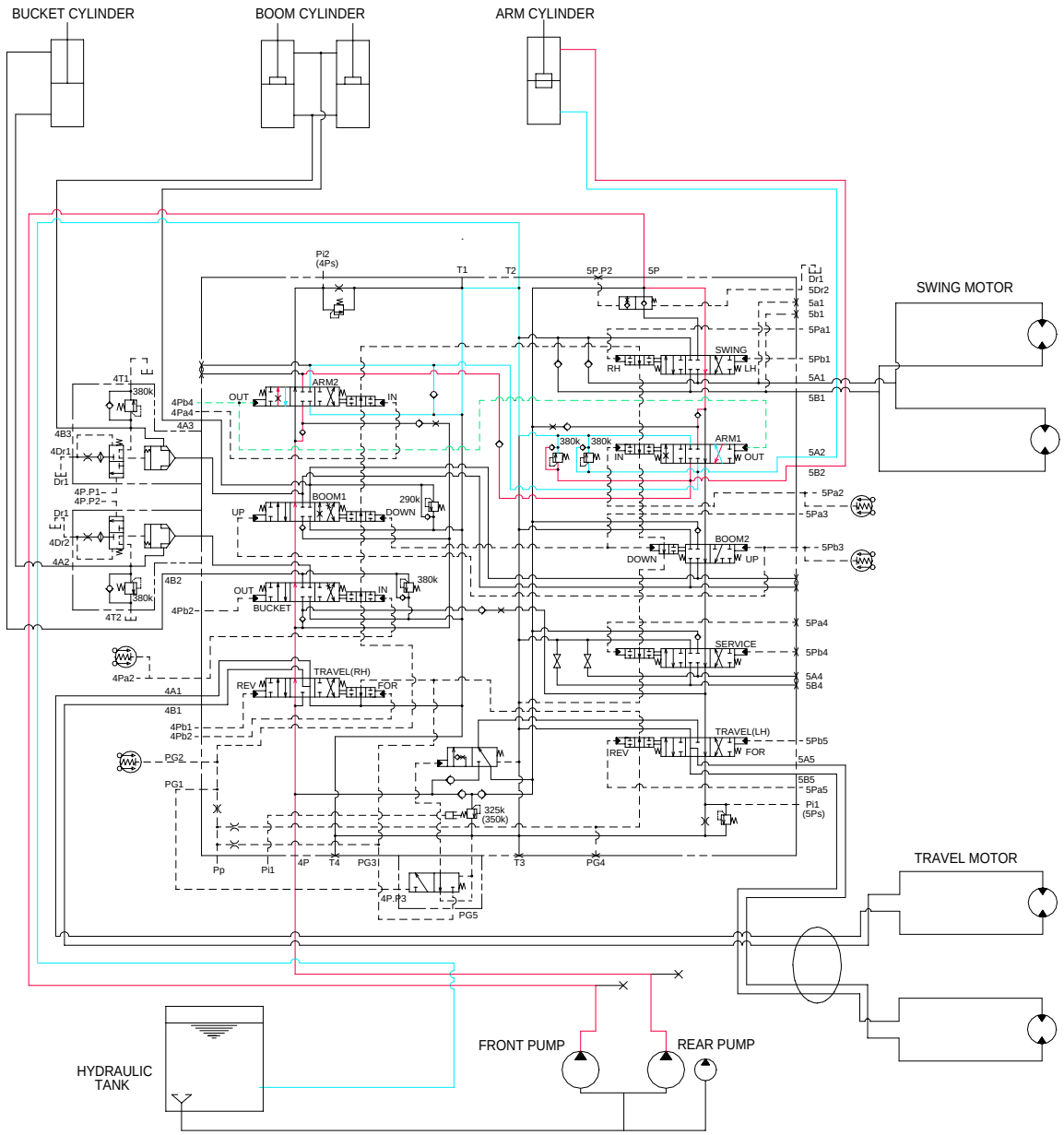
When this happens, the arm rolls in.

The excessive pressure in the arm cylinder bottom end circuit is prevented by the overload relief valve in the main control valve.

The cavitation which will happen to the bottom of the arm cylinder is also prevented by the make-up valve in the main control valve.

For detail function, see the arm half flow pilot system at page 3-8.

4. ARM ROLL OUT OPERATION



When the left control lever is pushed forward, the arm spool in the main control valve are moved to the roll out position by the pilot oil pressure from the remote control valve.

The oil from the front & rear pump flows into the main control valve and then goes to the small chamber of arm cylinder.

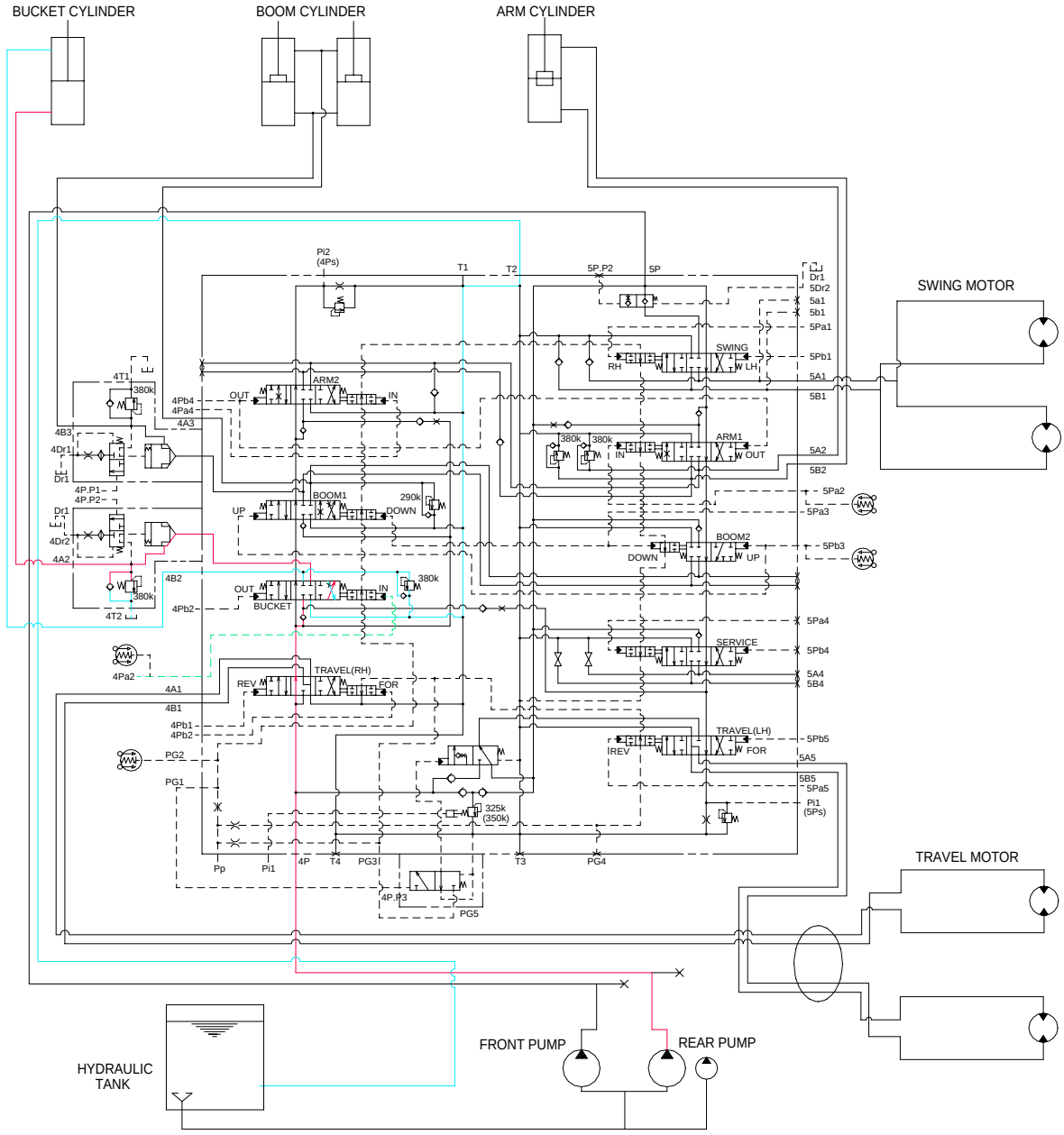
At the same time, the oil from the large chamber of arm cylinder returns to the hydraulic oil tank through the arm spool in the main control valve.

When this happens, the arm rolls out.

The excessive pressure in the arm cylinder rod end circuit is prevented by the overload relief valve in the main control valve.

The cavitation which will happen to the rod of the arm cylinder is also prevented by the make-up valve in the main control valve.

5. BUCKET ROLL IN OPERATION



When the right control lever is pulled left, the bucket spool in the main control valve is moved to the roll in position by the pilot oil pressure from the remote control valve.

The oil from the rear pump flows into the main control valve and then goes to the large chamber of bucket cylinder.

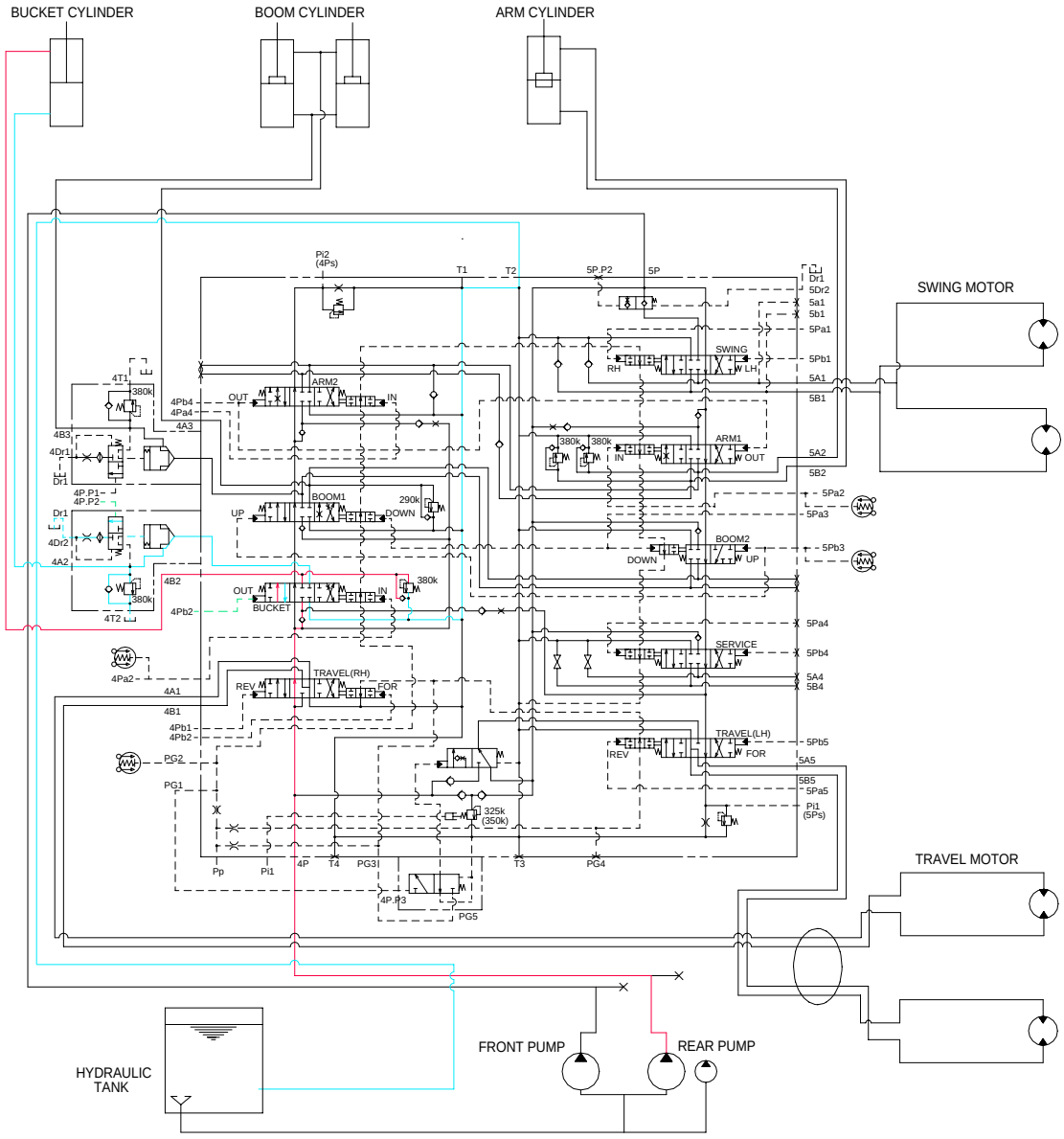
At the same time, the oil from the small chamber of bucket cylinder returns to the hydraulic oil tank through the bucket spool in the main control valve.

When this happens, the bucket rolls in.

The excessive pressure in the bucket cylinder bottom end circuit is prevented by the overload relief valve in the main control valve.

The cavitation which will happen to the bottom of the bucket cylinder is also prevented by the make-up valve in the main control valve.

6. BUCKET ROLL OUT OPERATION



When the right control lever is pushed right, the bucket spool in the main control valve is moved to the roll out position by the pilot oil pressure from the remote control valve. Also this pilot oil flows into 4P.P2 port of bucket holding valve and pushes open poppet. Then the return line open to tank port.

For anti drift function of bucket holding valve, see function of MCV at page 2-39.

The oil from the rear pump flows into the main control valve and then goes to the small chamber of bucket cylinder.

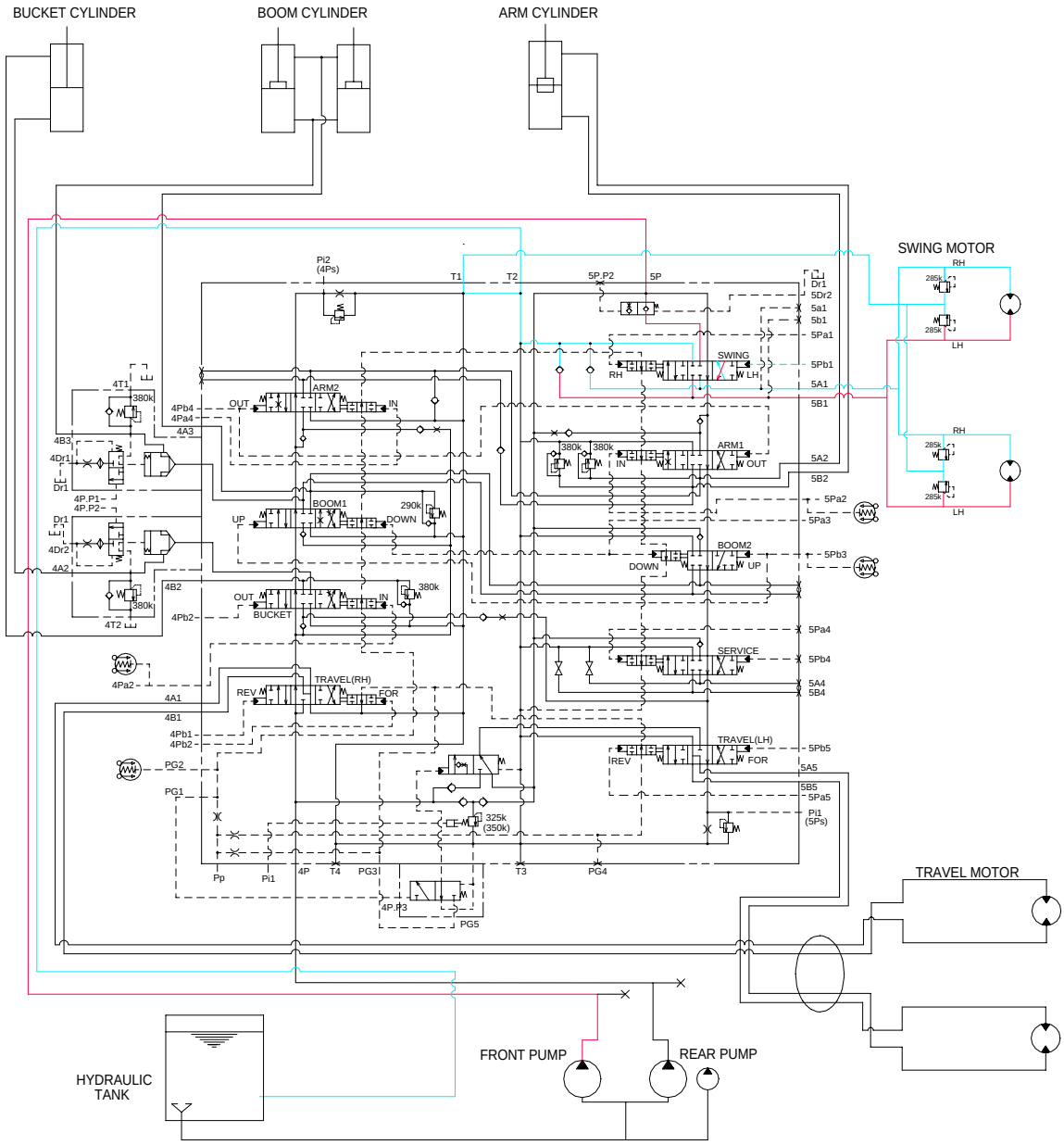
At the same time, the oil from the large chamber of bucket cylinder returns to the hydraulic oil tank through boom holding valve and the bucket spool in the main control valve.

When this happens, the bucket rolls out.

The excessive pressure in the bucket cylinder rod end circuit is prevented by the overload relief valve in the main control valve.

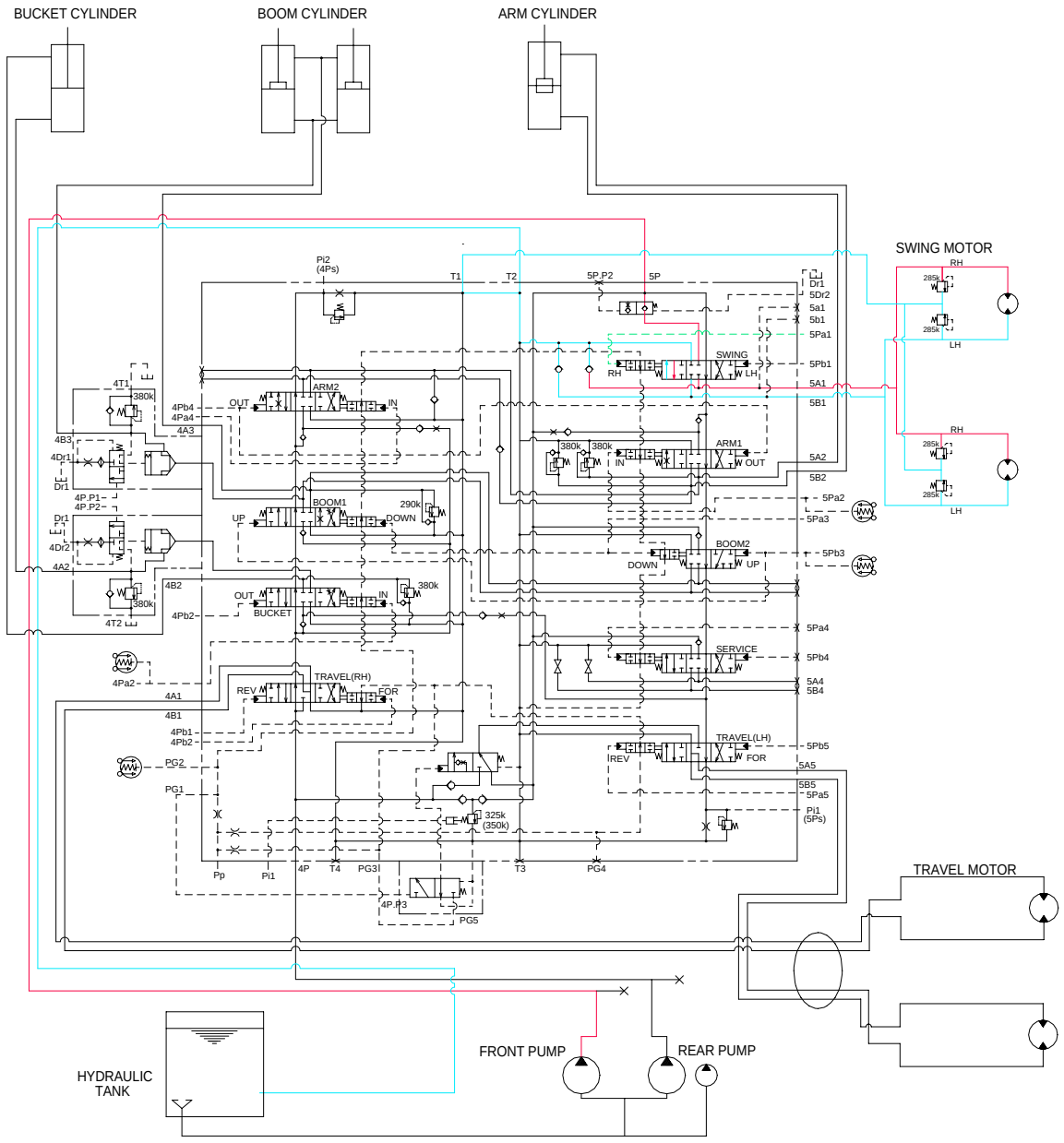
The cavitation which will happen to the rod of the bucket cylinder is also prevented by the make-up valve in the main control valve.

7. SWING OPERATION(LH)



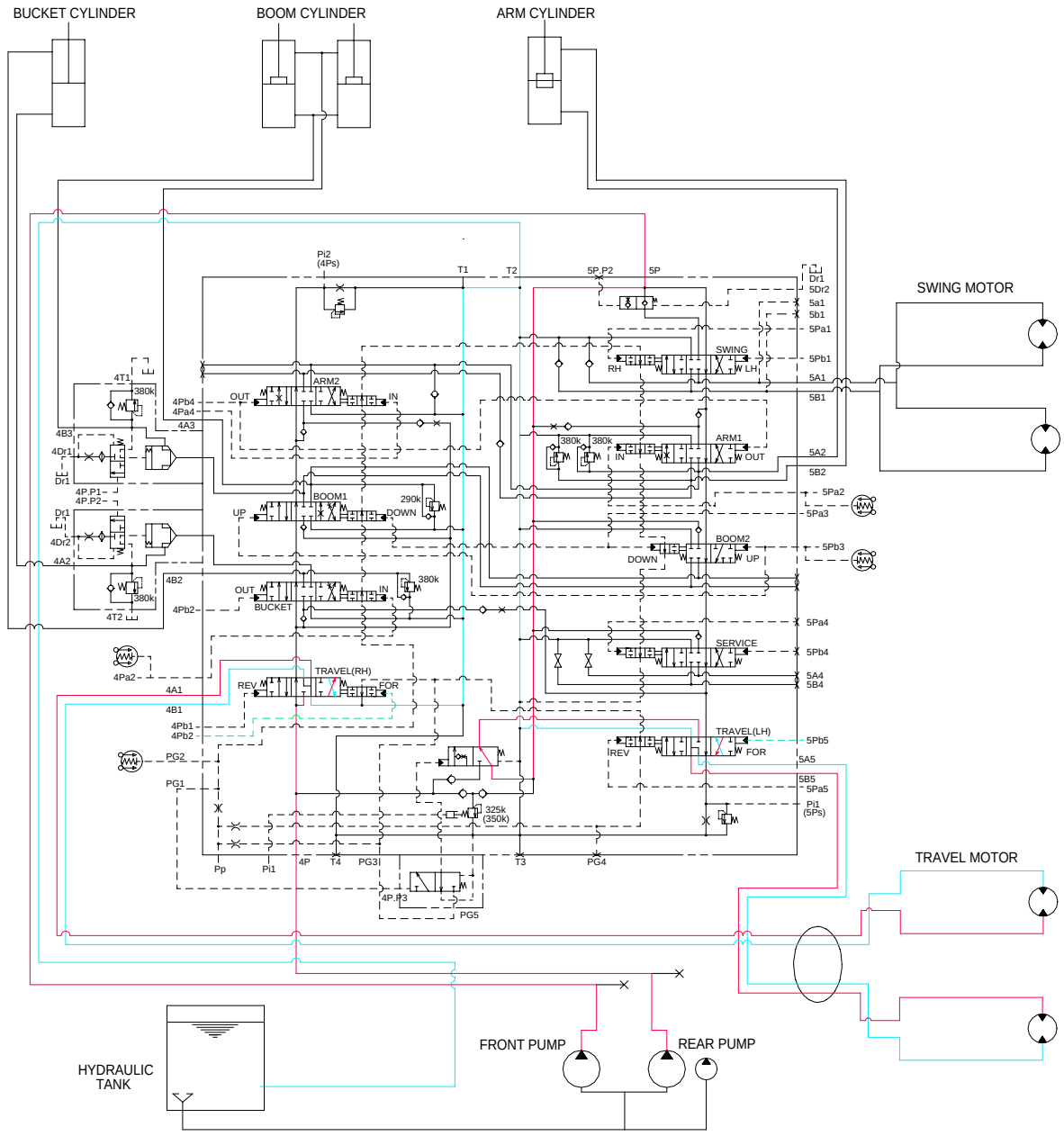
When the left control lever is pushed left, the swing spool in the main control valve is moved to the left swing position by the pilot oil pressure from the remote control lever.
The oil from the front pump flows into the main control valve and then goes to the swing motors.
At the same time, the return oil from the swing motors returns to the hydraulic oil tank through the swing spool in the main control valve.
When this happens, the superstructure swings to the left.
The swing parking brake and the overload relief valve are provided in the swing motors.
The cavitation which will happen to the swing motors is also prevented by the make up valve in the main control valve.

8. SWING OPERATION(RH)



When the left control lever is pulled right, the swing spool in the main control valve is moved to the right swing position by the pilot oil pressure from the remote control lever.
The oil from the front pump flows into the main control valve and then goes to the swing motors.
At the same time, the return oil from the swing motors returns to the hydraulic oil tank through the swing spool in the main control valve.
When this happens, the superstructure swings to the right.
The swing parking brake and the overload relief valve are provided in the swing motors.
The cavitation which will happen to the swing motors is also prevented by the make up valve in the main control valve.

9. TRAVEL FORWARD OPERATION



When the travel levers are pushed forward, the travel spools in the main control valve are moved to the forward travel position by the pilot oil pressure from the remote control lever.

The oil from the front pump flows into the main control valve and then goes to the left travel motor through the turning joint.

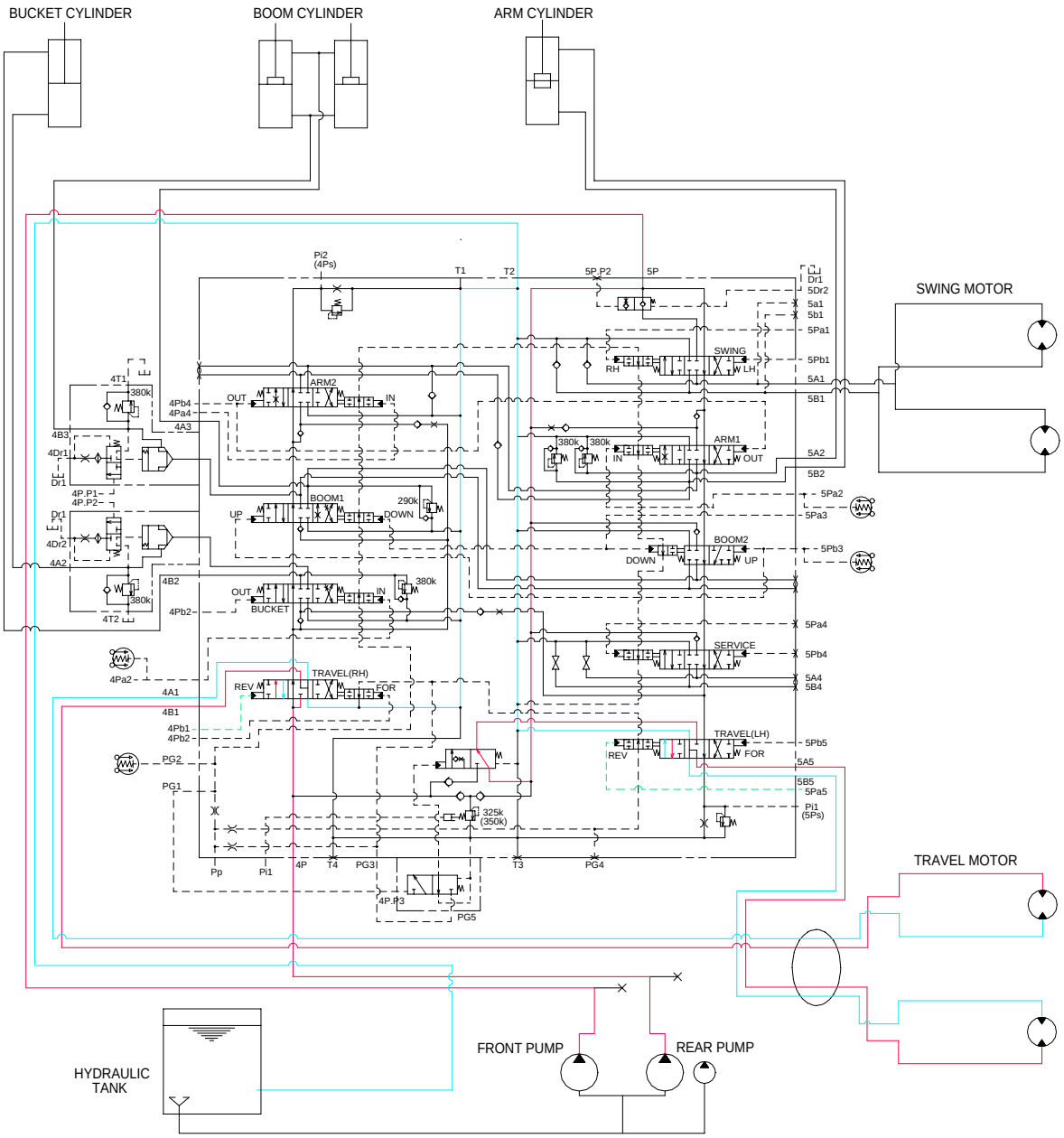
At the same time, the oil from th rear pump flows into the main control valve and then goes to the right travel motor through the turning joint.

The return oil from both travel motors returns to the hydraulic oil tank through the turning joint and the travel spools in the main control valve.

When this happens, the machine moves to the forward.

The travel parking brake and the overload relief valve are provided in the travel motors.

10. TRAVEL REVERSE OPERATION



When the travel levers are pulled back, the travel spools in the main control valve are moved to the reverse travel position by the pilot oil pressure from the remote control lever.

The oil from the front pump flows into the main control valve and then goes to the left travel motor through the turning joint.

At the same time, the oil from the rear pump flows into the main control valve and then goes to the right travel motor through the turning joint.

The return oil from both travel motors returns to the hydraulic oil tank through the turning joint and the travel spools in the main control valve.

When this happens, the machine moves to the reverse.

The travel parking brake and the overload relief valve are provided in the travel motors.