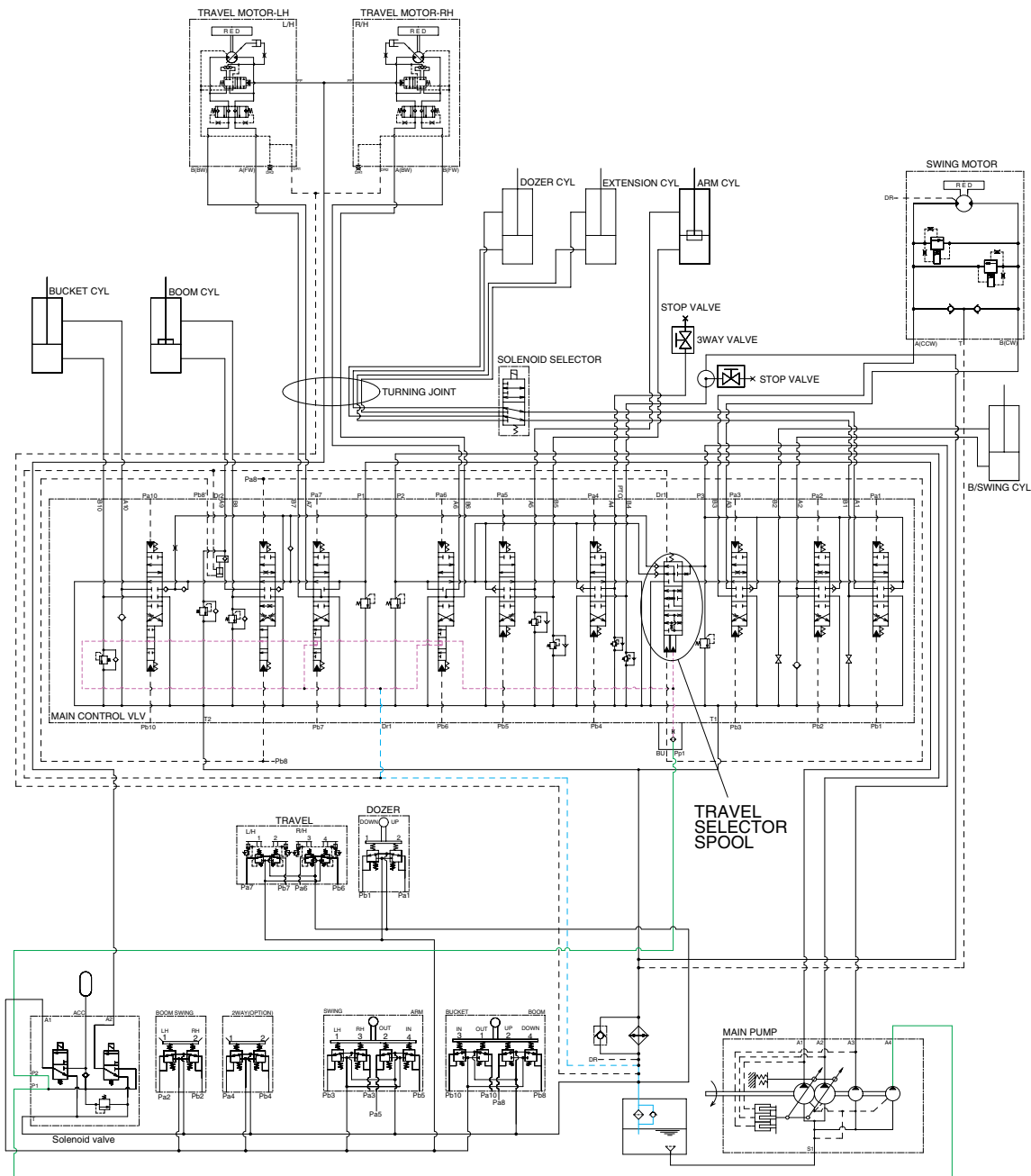


GROUP 5 COMBINED OPERATION

1. OUTLINE



1693HC30

The oil from the A1, A2, A3 pump flows through the neutral oil passage, bypass oil passage and confluence oil passage in the main control valve. Then the oil goes to each actuator and operates them. Check valves and orifices are located on these oil passage in the main control valve. These control the oil from the main pumps so as to correspond to the operation of each actuator and smooth the combined operation.

INDEPENDENT TRAVEL SYSTEM

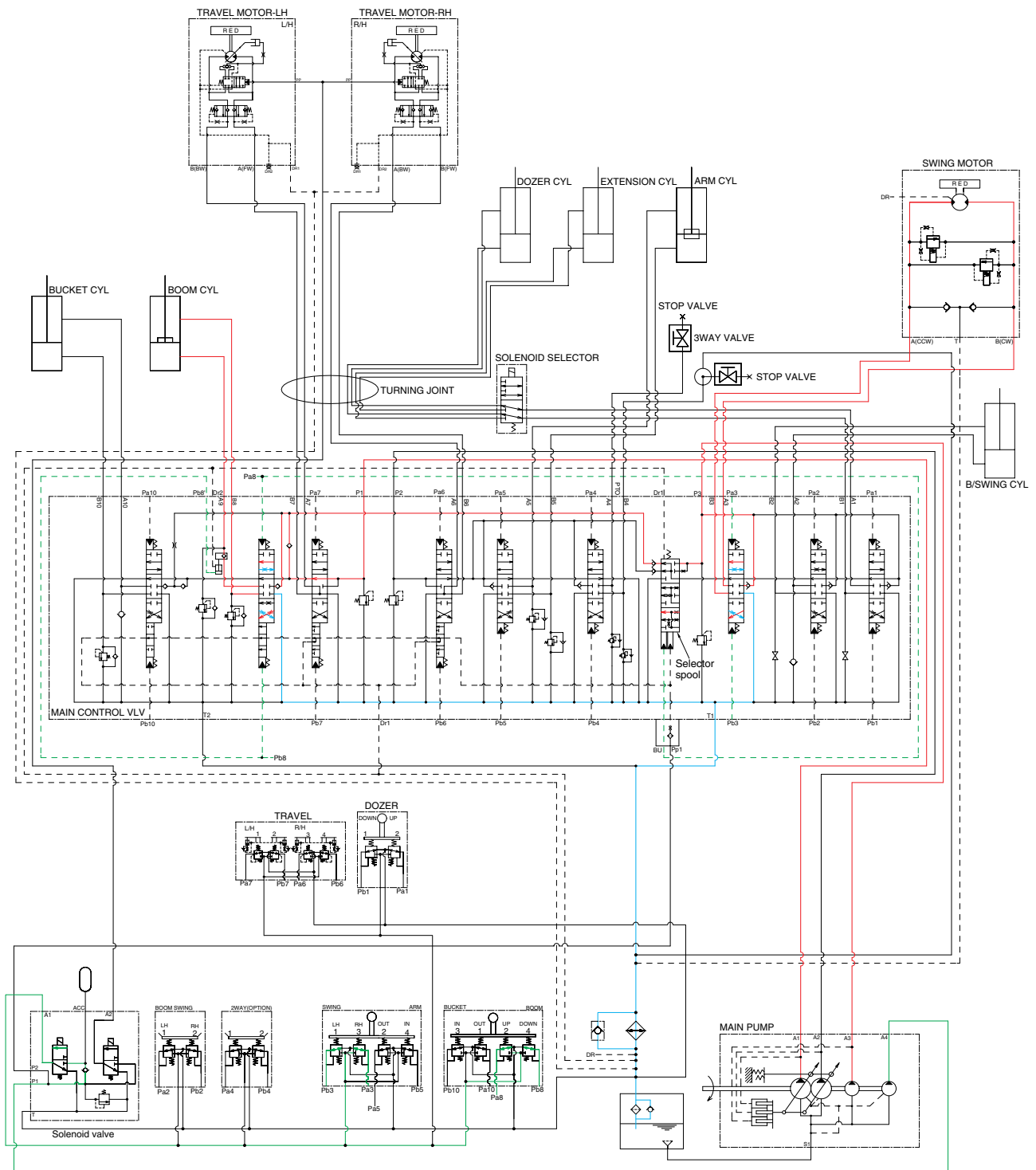
This independent travel system for straight travel is provided in the main control valve.

If any actuator(s) on A1 and A2 pump side is operated when traveling, the travel selector spool is moved to the selected side by the pilot oil pressure.

Consequently, the pressure oil from A1 and A2 pump are supplied to the right and left travel motor and oil from A3 pump flows into the other operated actuator.

This keeps the straight travel.

2. COMBINED SWING AND BOOM OPERATION



1693HC31

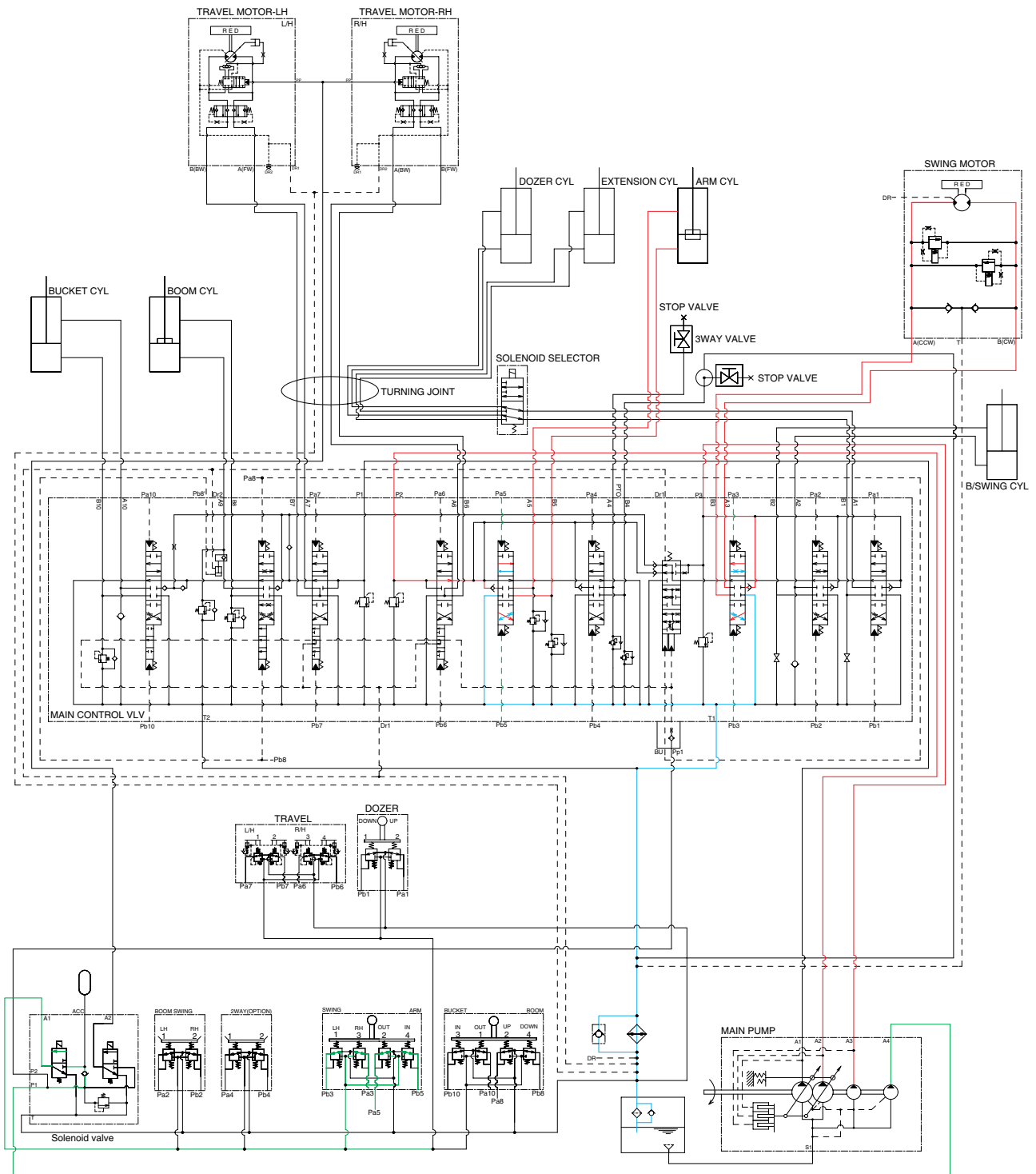
When the swing and boom functions are operated, simultaneously the selector spool, swing spool and boom spools in the main control valve are moved to the functional position by the pilot oil pressure from the remote control valve.

The oil from the A1 pump and solenoid from the A3 pump flows into the boom cylinder through boom.

The oil from the A3 pump flows into the swing motor through the swing spool.

The superstructure swings and the boom is operated.

3. COMBINED SWING AND ARM OPERATION



1693HC32

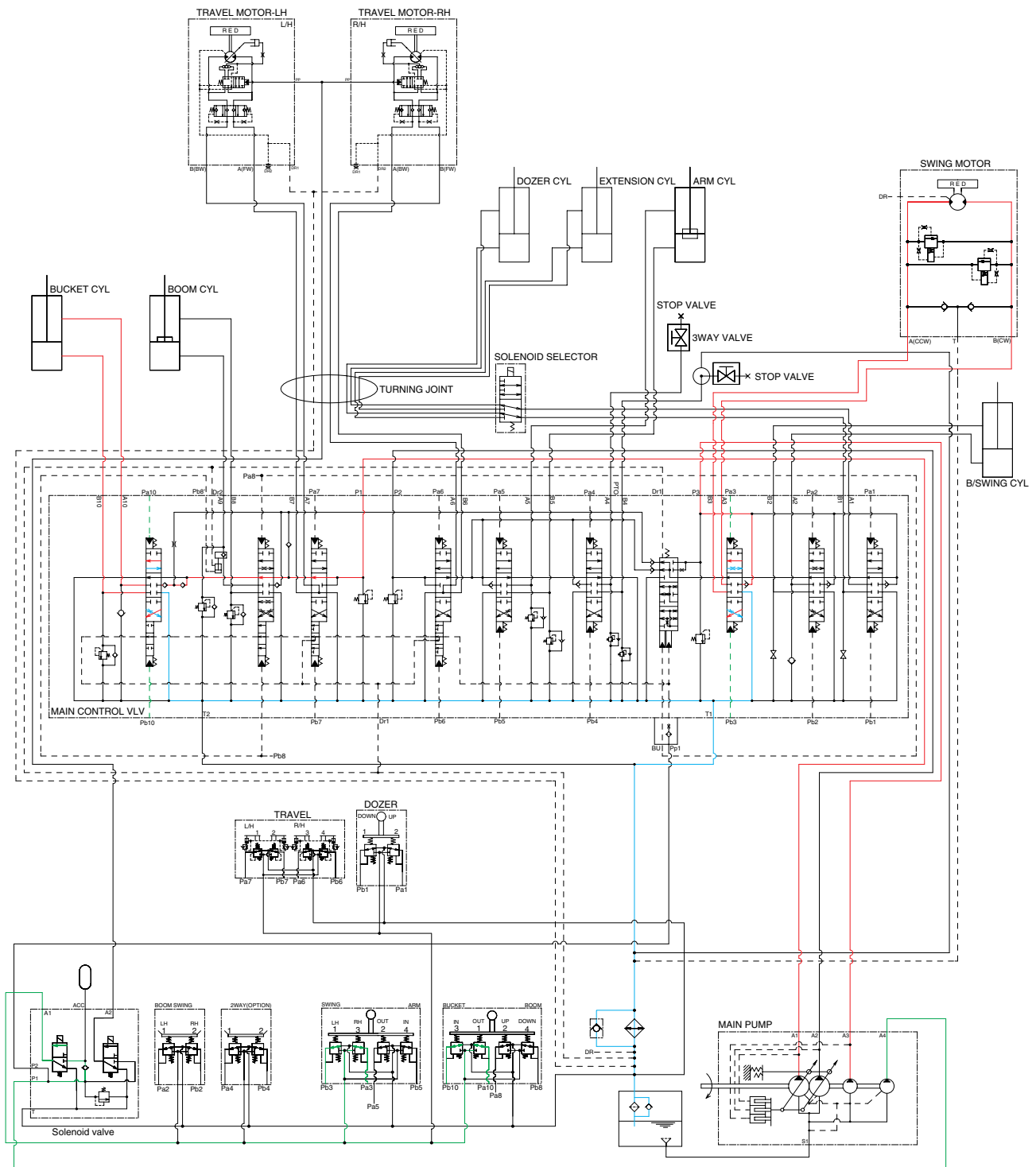
When the swing and arm functions are operated, simultaneously the swing spool and arm spools in the main control valve are moved to the functional position by the pilot oil pressure from the remote control valve.

The oil from the A3 pump flows into the swing motor through swing spool.

The oil from the A2 pump flows into the arm cylinder through the arm.

The superstructure swings and the arm is operated.

4. COMBINED SWING AND BUCKET OPERATION



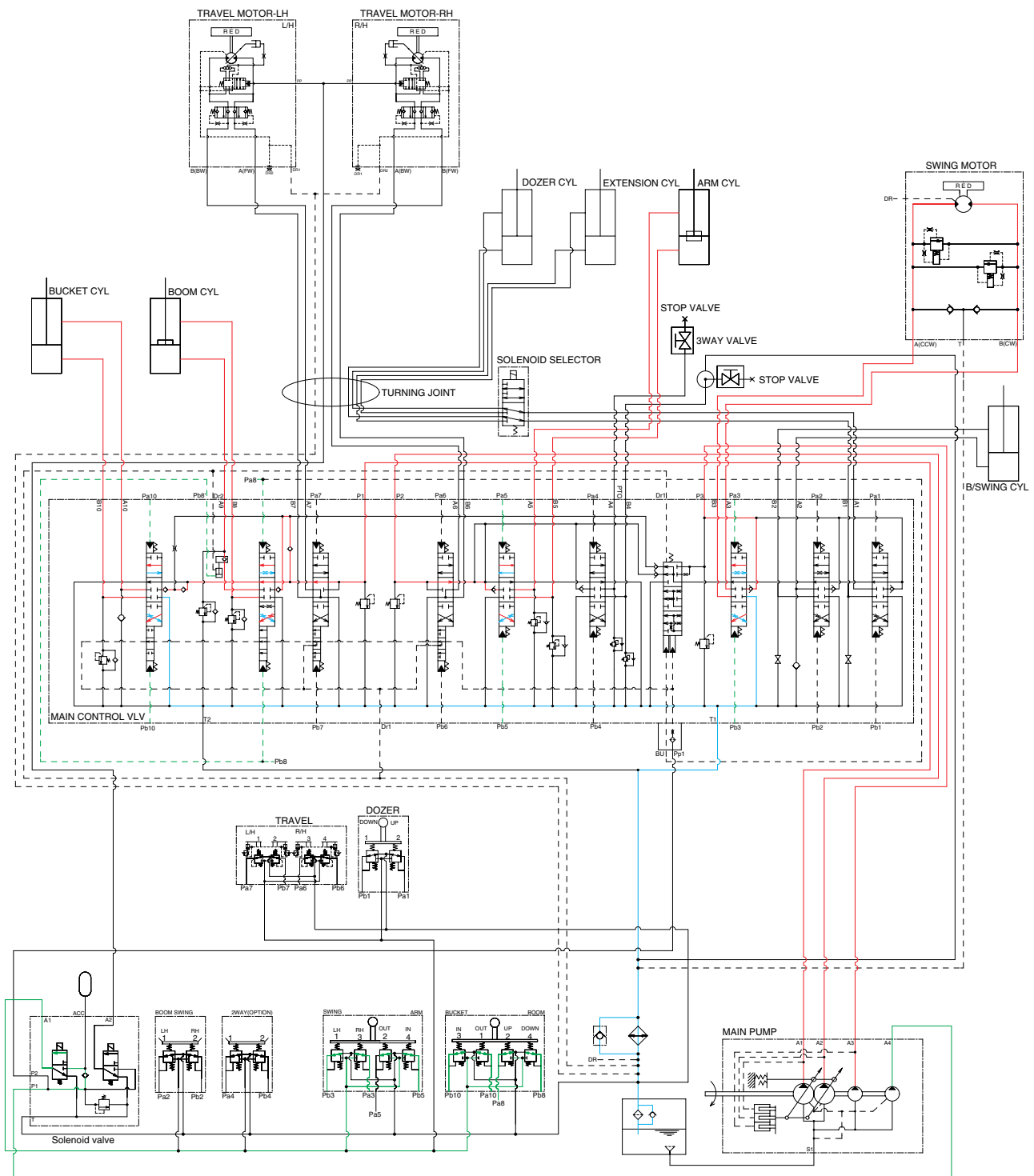
1693HC33

When the swing and bucket functions are operated, simultaneously the swing spool and bucket spool in the main control valve are moved to the functional position by the pilot oil pressure from the remote control valve.

The oil from the A3 pump flows into the swing motor through the swing spool.

The oil from the A1 pump flows into the bucket cylinder through the bucket spool.

5. COMBINED SWING, BOOM, ARM AND BUCKET OPERATION



1693HC34

When the swing, boom, arm and bucket functions are operated, simultaneously each spool in the main control valve is moved to the functional position by the pilot oil pressure from the remote control valve.

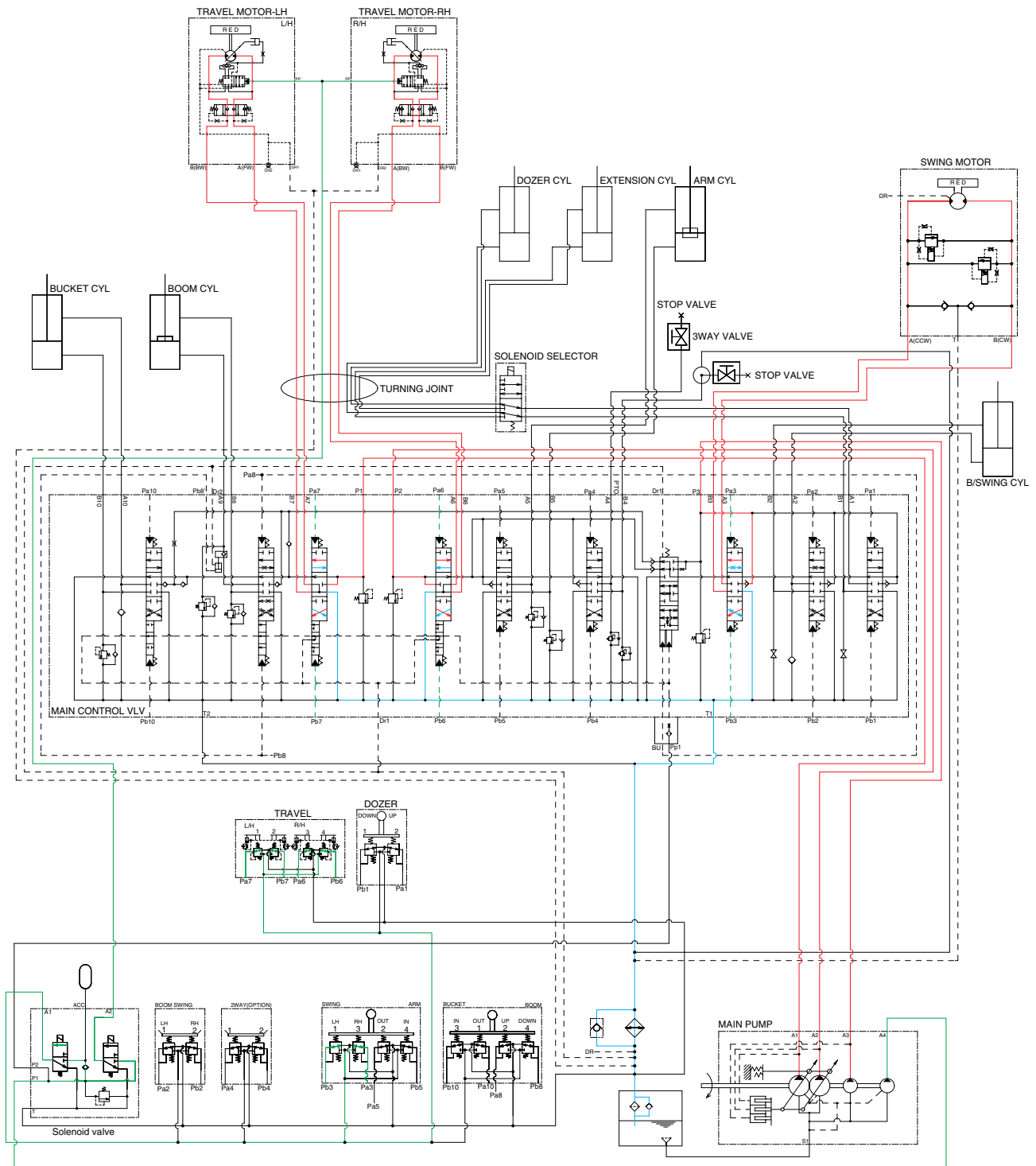
The oil from the A2 pump flows into the arm cylinder through, arm spool.

The oil from the A1 pump flows into the boom cylinders and bucket cylinder through the boom spool, bucket spool.

The oil from the A3 pump flows into the swing motor through the swing spool.

The superstructure swings and the boom, arm and bucket are operated.

6. COMBINED SWING AND TRAVEL OPERATION



1693HC35

When the swing and travel functions are operated, simultaneously the swing spool and travel spools in the main control valve are moved to the functional position by the pilot oil pressure from the remote control valve and the travel levers.

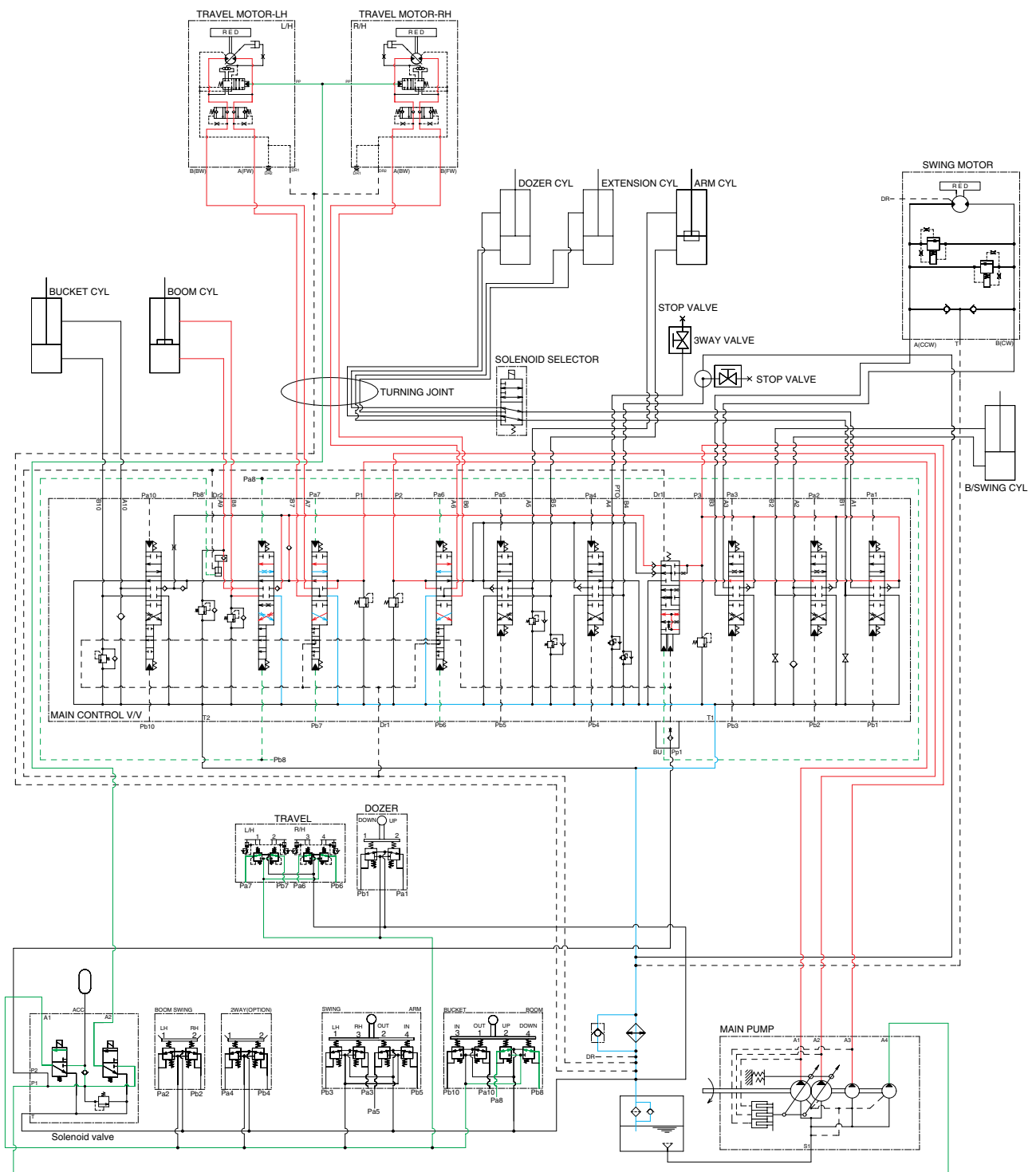
The oil from the A3 pump flows into the swing motor through the swing spool.

The oil from the A1 pump flows into the travel motor through the RH travel spool.

The oil from the A2 pump flows into the travel motor through the LH travel spool.

The superstructure swings and the machine travels straight.

7. COMBINED BOOM AND TRAVEL OPERATION



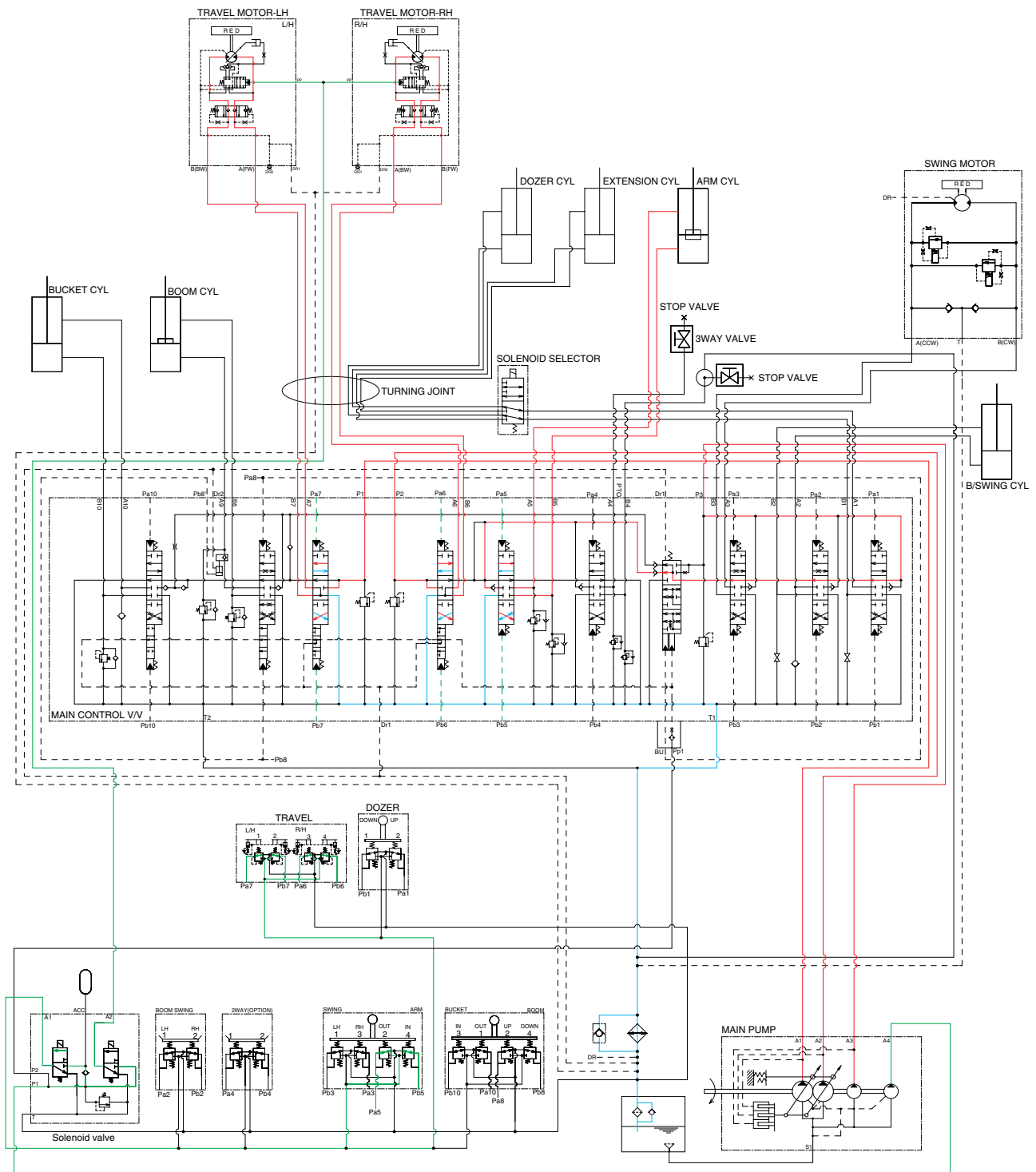
1693HC36

When the boom and travel functions are operated, simultaneously the boom spools and travel spools in the main control valve are moved to the functional position by the pilot oil pressure from the remote control valve.

The oil from the A1 and A2 pumps flows into the travel motors through travel RH and travel LH spools.

The oil from the A3 pump flows into the boom cylinders through boom spool via the travel selector spool. The boom is operated and the machine travels straight.

8. COMBINED ARM AND TRAVEL OPERATION



1693HC37

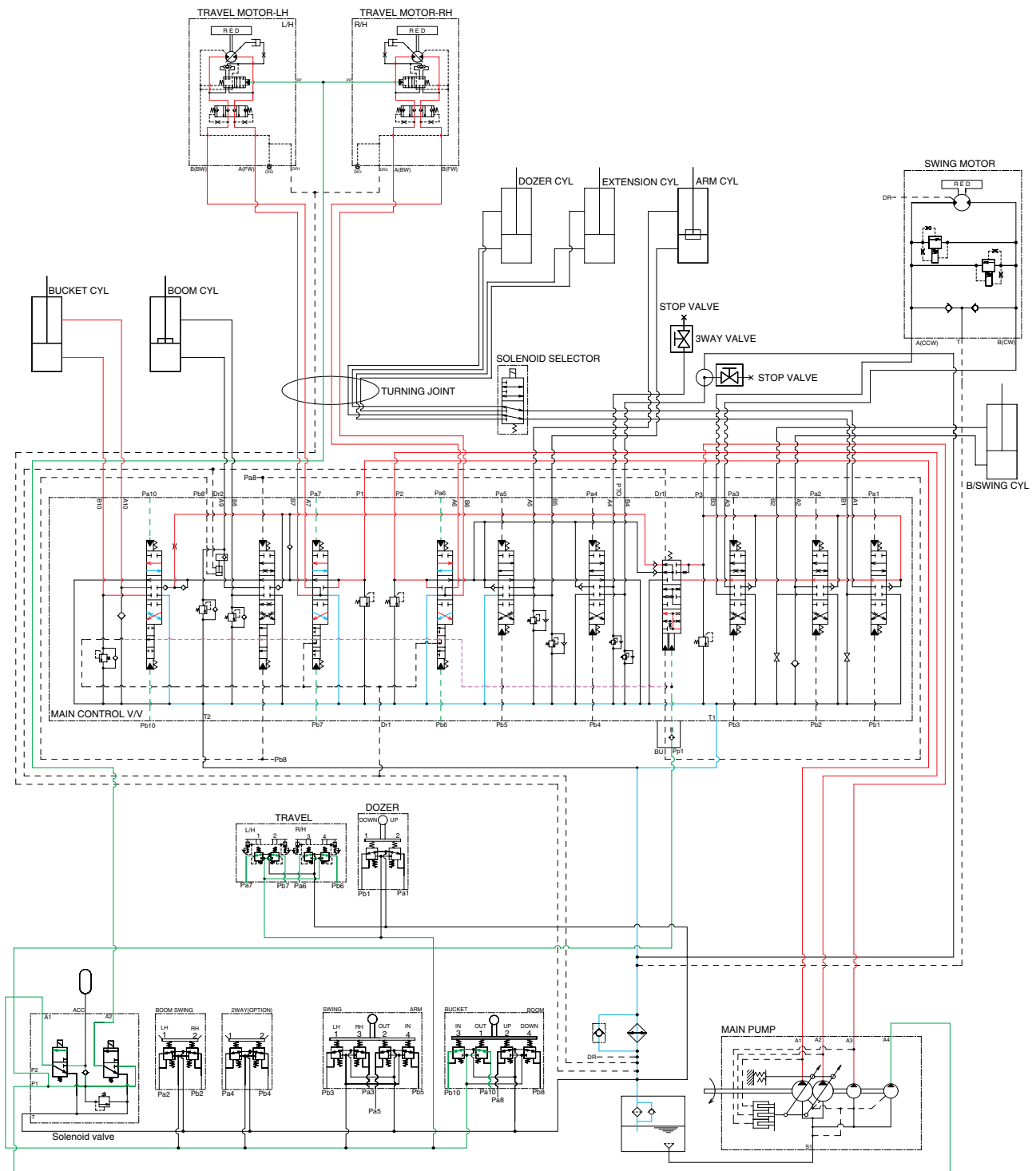
When the arm and travel functions are operated, simultaneously the arm spools and travel spools in the main control valve are moved to the functional position by the pilot oil pressure from the remote control valve.

The oil from the A1 and A2 pumps flows into the travel motors through travel spools.

The oil from the A3 pump flows into the arm cylinder through arm spool via the travel selector spool.

The arm is operated and the machine travels straight.

9. COMBINED BUCKET AND TRAVEL OPERATION



1693HC38

When the bucket and travel functions are operated, simultaneously the bucket spool and travel spools in the main control valve are moved to the functional position by the pilot oil pressure from the remote control valve, and the travel selector spool is pushed to the up by the oil pressure from pilot pump. The oil from the A1 and A2 pumps flows into the travel motors.

The oil from the A3 pump flows into the bucket cylinder through bucket spool via the travel selector spool.

The bucket is operated and the machine travels straight.