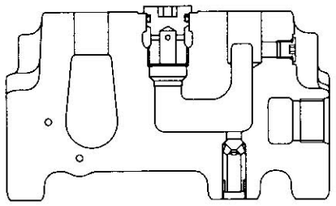
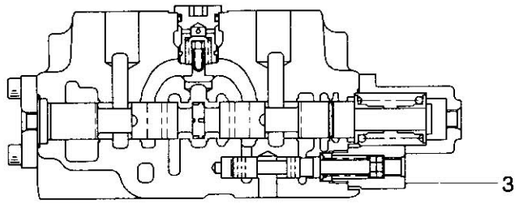
1. STRUCTURE

1 Plunger
2 Foot relief assy
3 Selector valve assy
4 Center bypass spool assy
5 Logic check assy
6 Main relief assy
7 Overload relief assy
8 Arm regeneration
9 Internal parallel valve
10 Load holding valve



SECTION D-D



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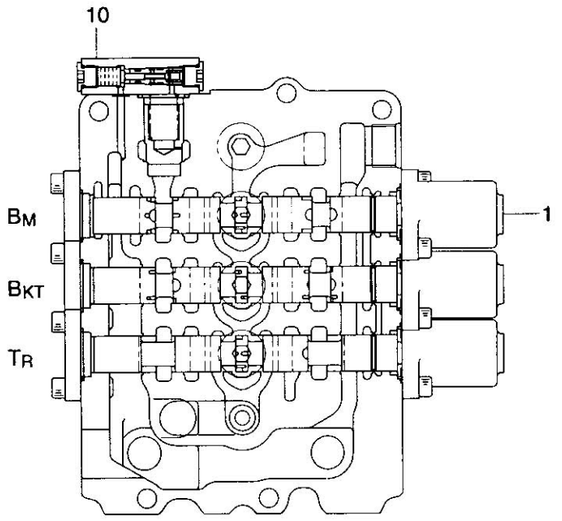
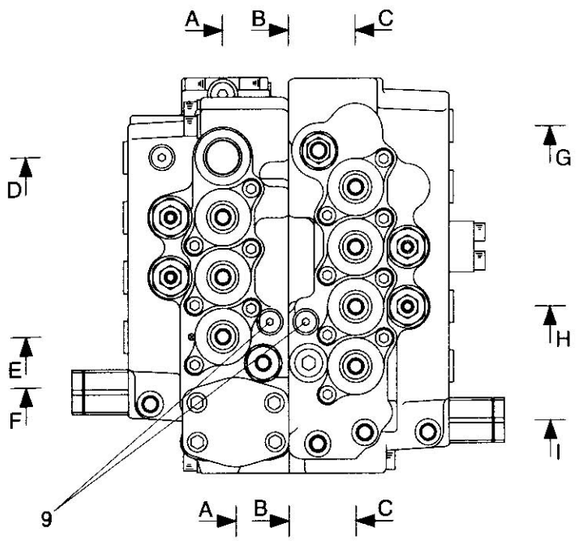
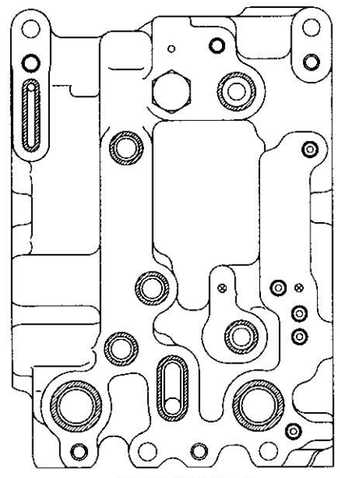


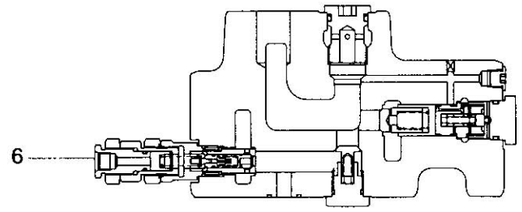
SECTION A-A

SECTION F-F





SECTION B-B



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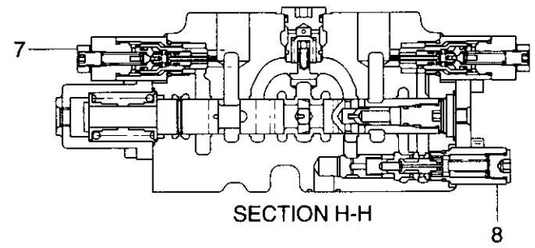

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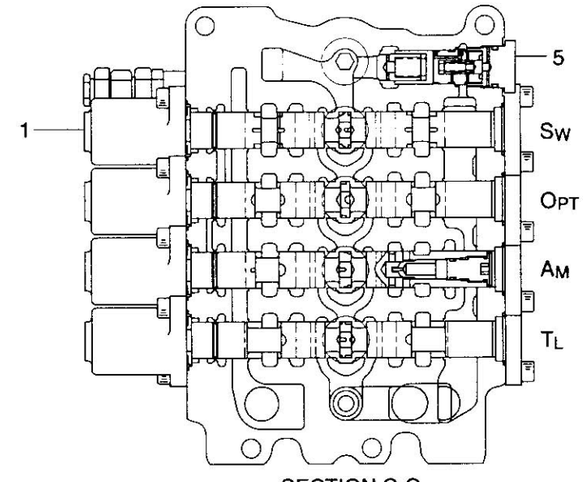
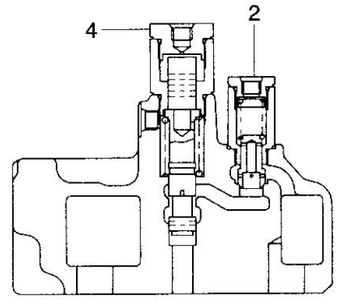
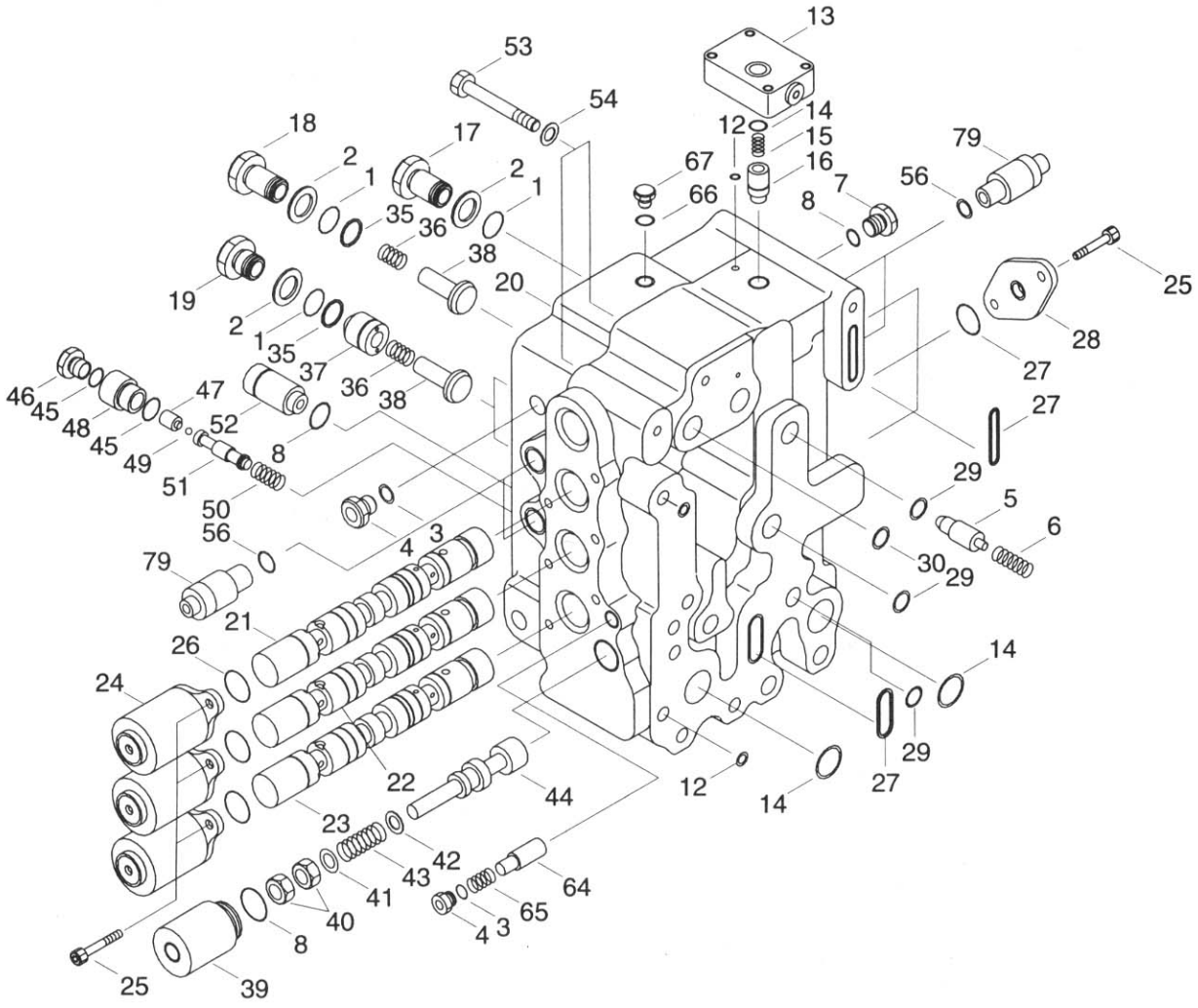


SECTION C-C



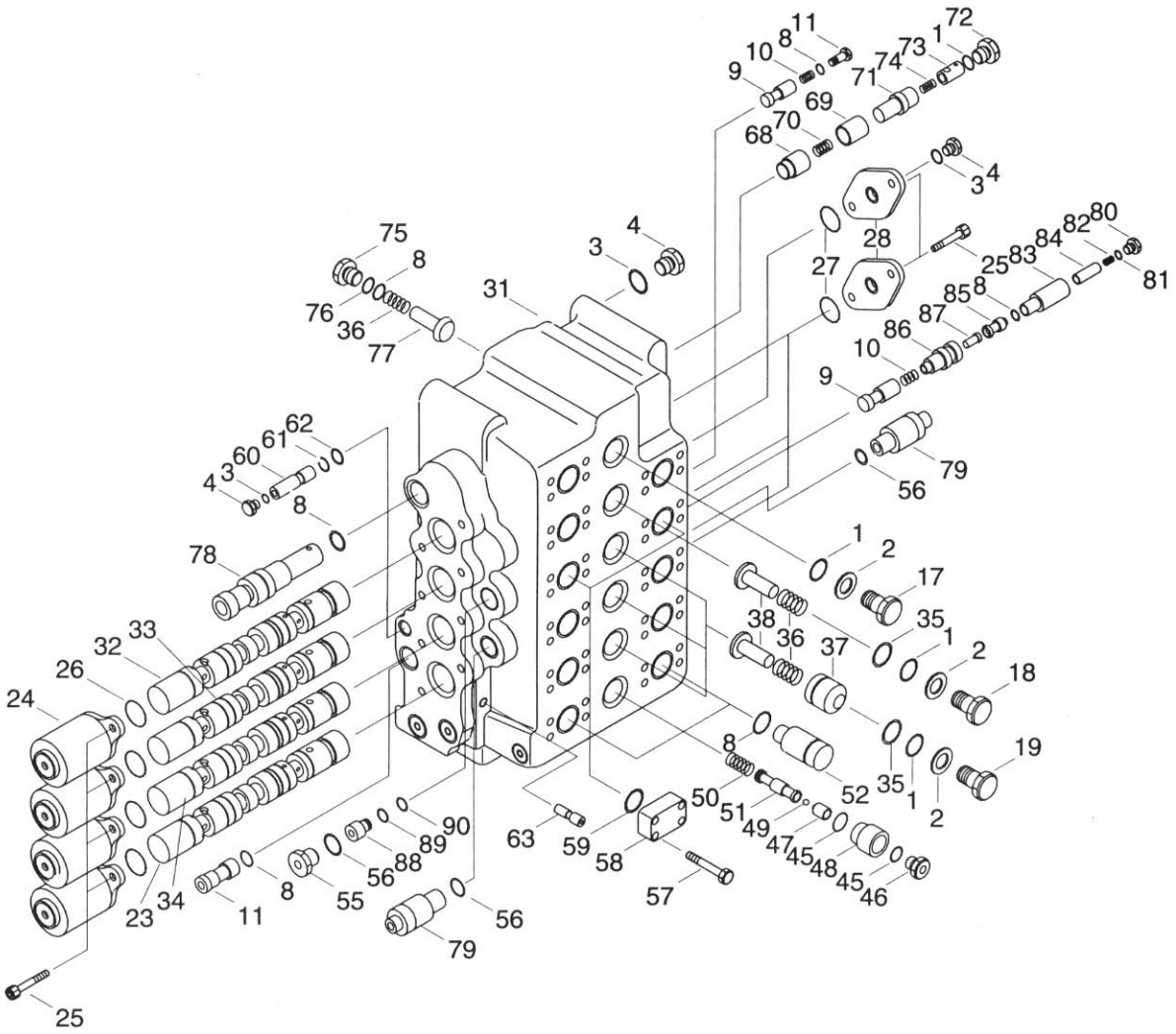
SECTION I-I

STRUCTURE



1	O-ring	22	Plunger assy(BKT)	44	Spool
2	Back up ring	23	Plunger assy(TR)	45	O-ring
3	O-ring	24	Cover	46	Cap
4	Cap	25	Socket bolt	47	Piston
5	Check	26	O-ring	48	Cap
6	Spring	27	O-ring	49	Steel ball
7	Cap	28	Retainer	50	Spring
8	O-ring	29	O-ring	51	Spool
12	O-ring	30	O-ring	52	Foot relief assy
13	Cover assy	35	Nylon chip	53	Socket bolt
14	O-ring	36	Spring	54	Spring washer
15	Spring	37	Check	56	O-ring
16	Poppet	38	Check	64	Check
17	Cap	39	Cap	65	Spring
18	Cap	40	Nut	66	O-ring
19	Cap	41	Spacer	67	Cap
20	Housing	42	Washer	79	Overload relief assy
21	Plunger assy(BM)	43	Spring		

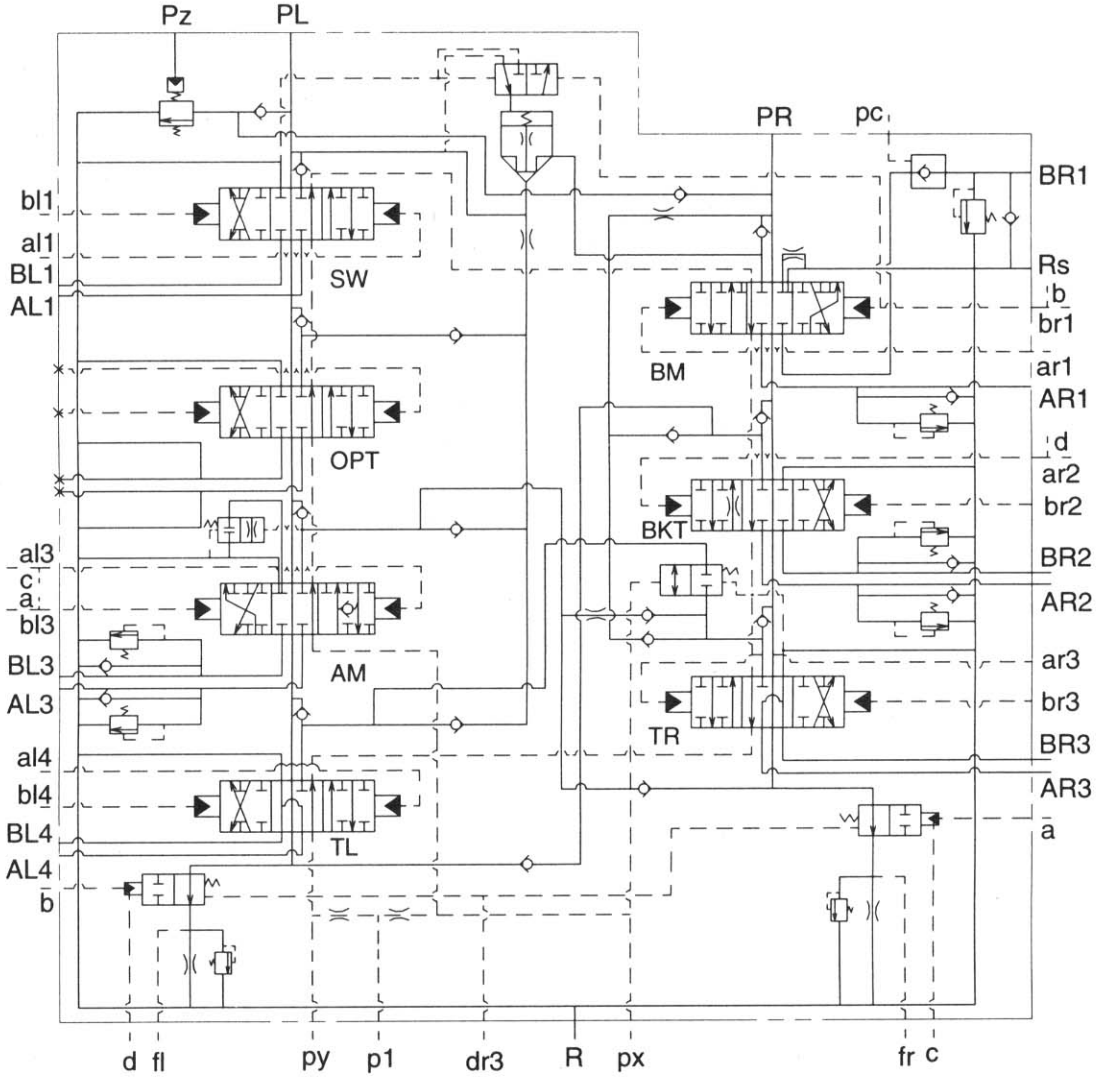
STRUCTURE



1	O-ring	36	Spring	70	Spring
2	Back up ring	37	Check	71	Sleeve
3	O-ring	38	Check	72	Cap
4	Cap	45	O-ring	73	Piston
8	O-ring	46	Cap	74	Spring
9	Check	47	Piston	75	Cap
10	Spring	48	Cap	76	Back up ring
11	Cap	49	Steel ball	77	Check
17	Cap	50	Spring	78	Main relief assy
18	Cap	51	Spool	79	Overload relief assy
19	Cap	52	Foot relief assy	80	Cap
23	Plunger assy(TL)	55	Cap	81	O-ring
24	Cover	56	O-ring	82	Spring
25	Socket bolt	57	Socket bolt	83	Cap
26	O-ring	58	Flange	84	Spring guide
27	O-ring	59	O-ring	85	Spool
28	Retainer	60	Orifice	86	Sleeve
31	Housing	61	Back up ring	87	Piston
32	Plunger assy(SW)	62	O-ring	88	Plug
33	Plunger assy(OPT)	63	Orifice	89	Back up ring
34	Plunger assy(AM)	68	Check	90	O-ring
35	Nylon chip	69	Piston		

2. FUNCTION

1) HYDRAULIC CIRCUIT DIAGRAM



2) BASIC OPERATION

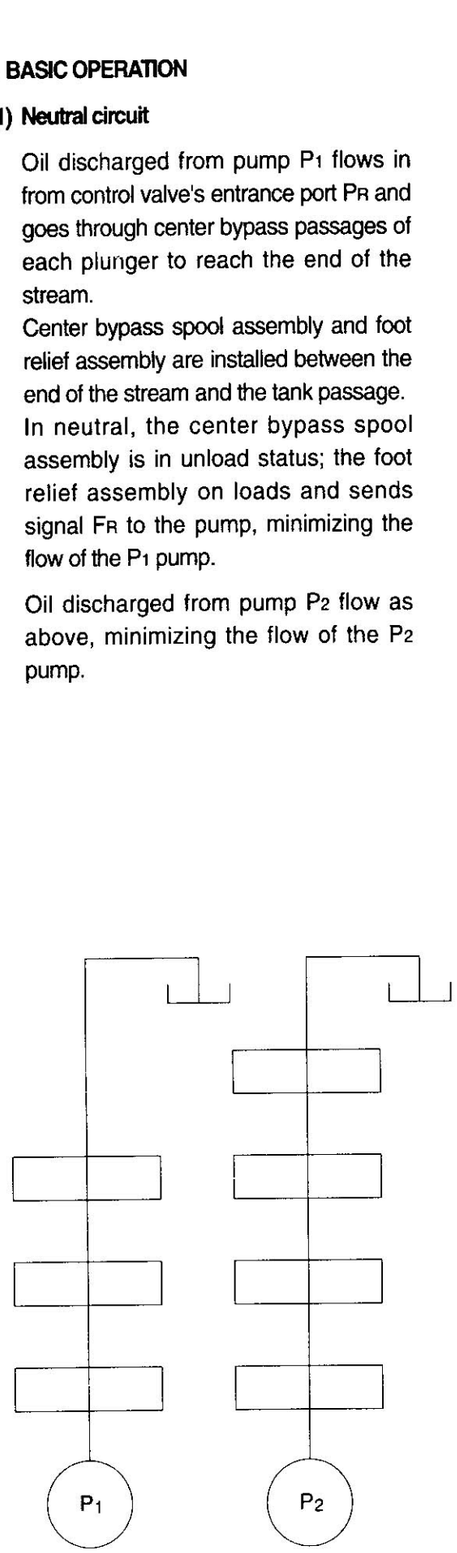
(1) Neutral circuit

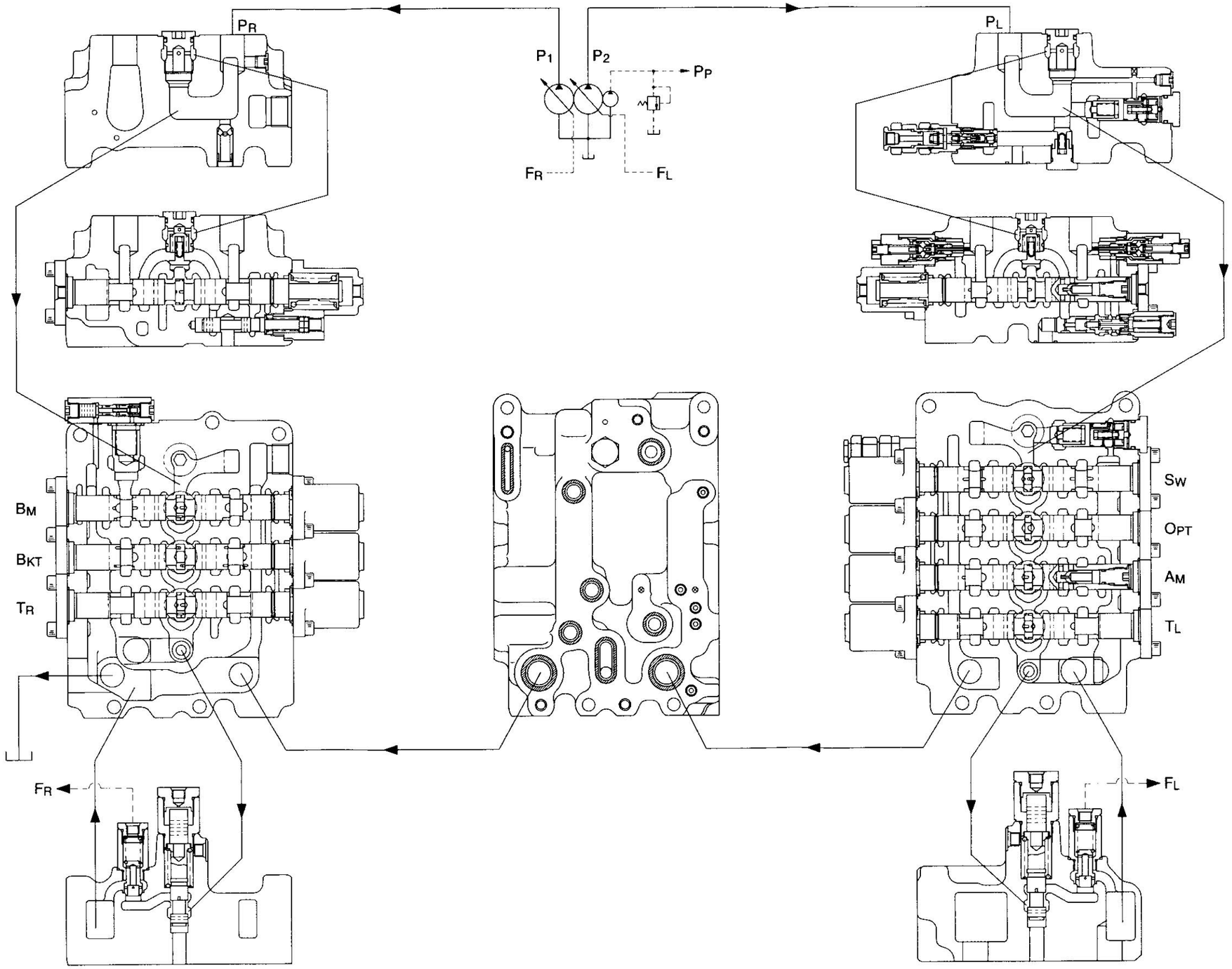
Oil discharged from pump P_1 flows in from control valve's entrance port P_R and goes through center bypass passages of each plunger to reach the end of the stream.

Center bypass spool assembly and foot relief assembly are installed between the end of the stream and the tank passage.

In neutral, the center bypass spool assembly is in unload status; the foot relief assembly on loads and sends signal F_R to the pump, minimizing the flow of the P_1 pump.

Oil discharged from pump P_2 flow as above, minimizing the flow of the P_2 pump.



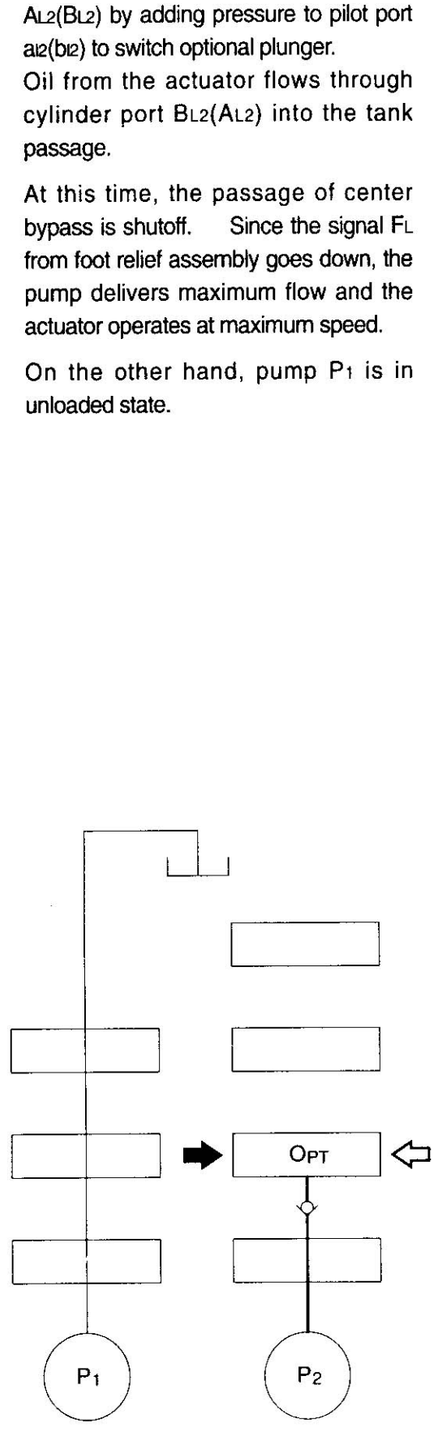


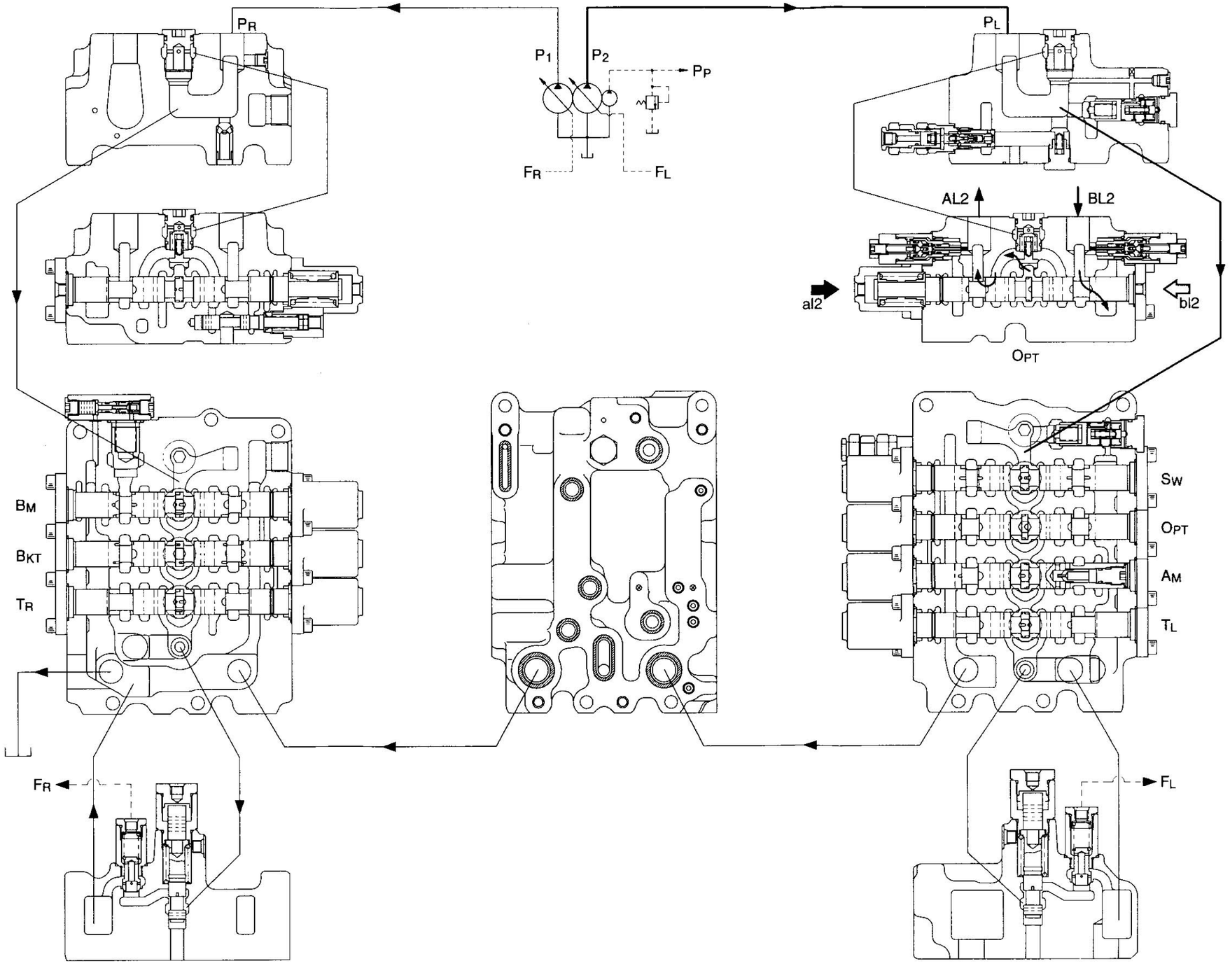
(2) Optional circuit

Oil from pump P_2 is fed into cylinder port $A_{L2}(B_{L2})$ by adding pressure to pilot port $a_{l2}(b_{l2})$ to switch optional plunger.
Oil from the actuator flows through cylinder port $B_{L2}(A_{L2})$ into the tank passage.

At this time, the passage of center bypass is shutoff. Since the signal F_L from foot relief assembly goes down, the pump delivers maximum flow and the actuator operates at maximum speed.

On the other hand, pump P_1 is in unloaded state.

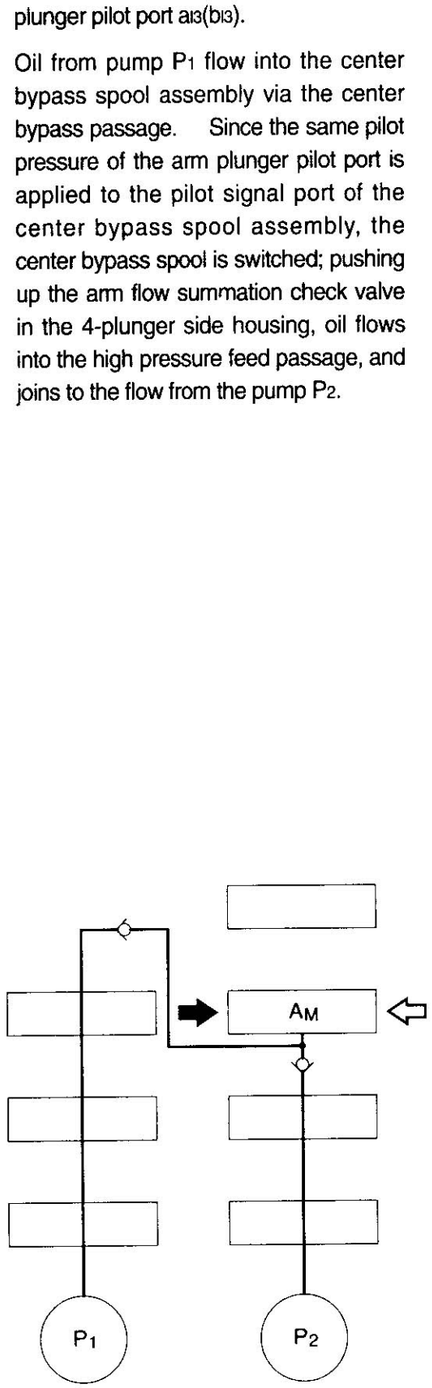


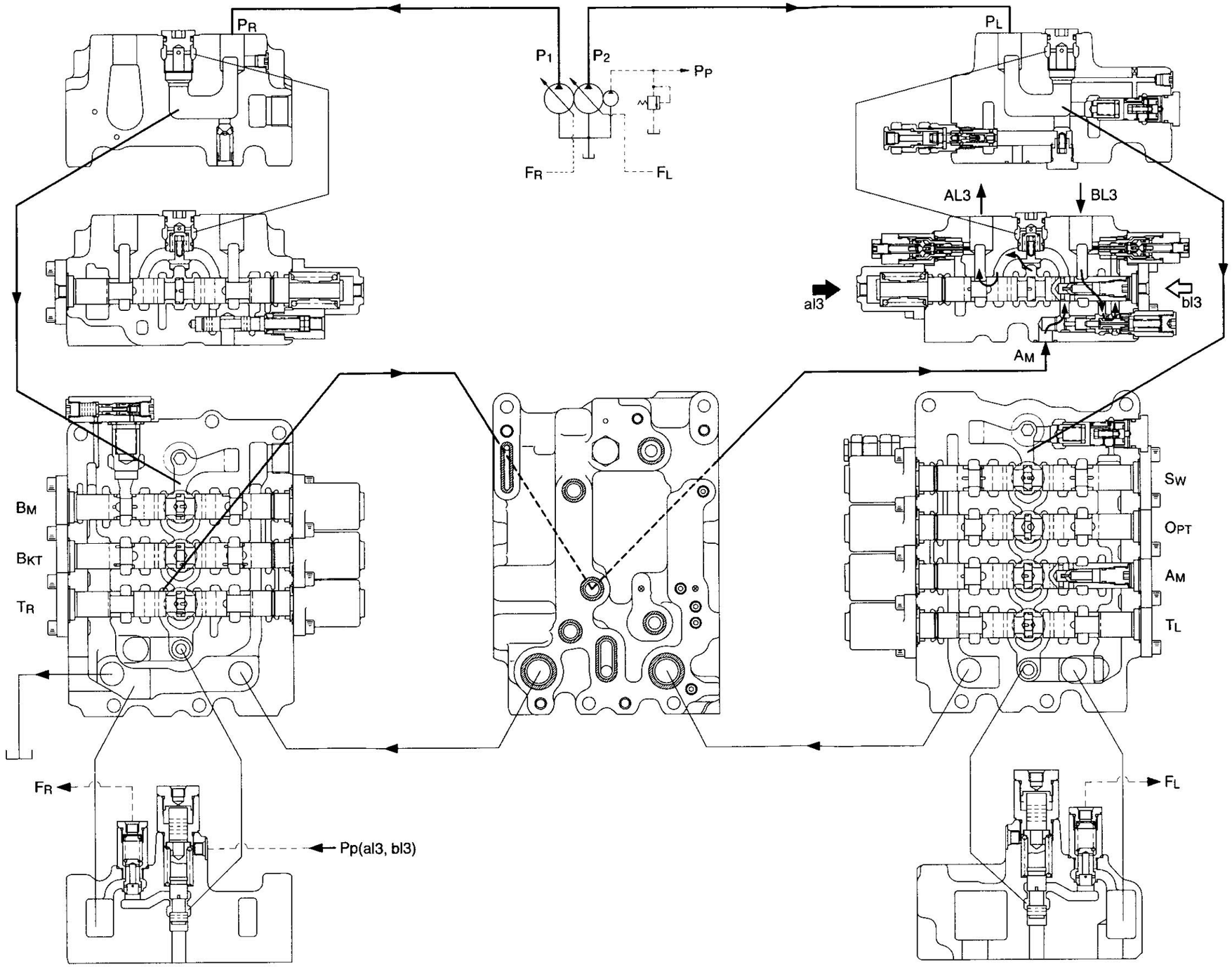


(3) Arm flow summation circuit

Oil from pump P_2 is fed into cylinder port $A_{L3}(B_{L3})$ by adding pressure to arm plunger pilot port $a_{l3}(b_{l3})$.

Oil from pump P_1 flow into the center bypass spool assembly via the center bypass passage. Since the same pilot pressure of the arm plunger pilot port is applied to the pilot signal port of the center bypass spool assembly, the center bypass spool is switched; pushing up the arm flow summation check valve in the 4-plunger side housing, oil flows into the high pressure feed passage, and joins to the flow from the pump P_2.

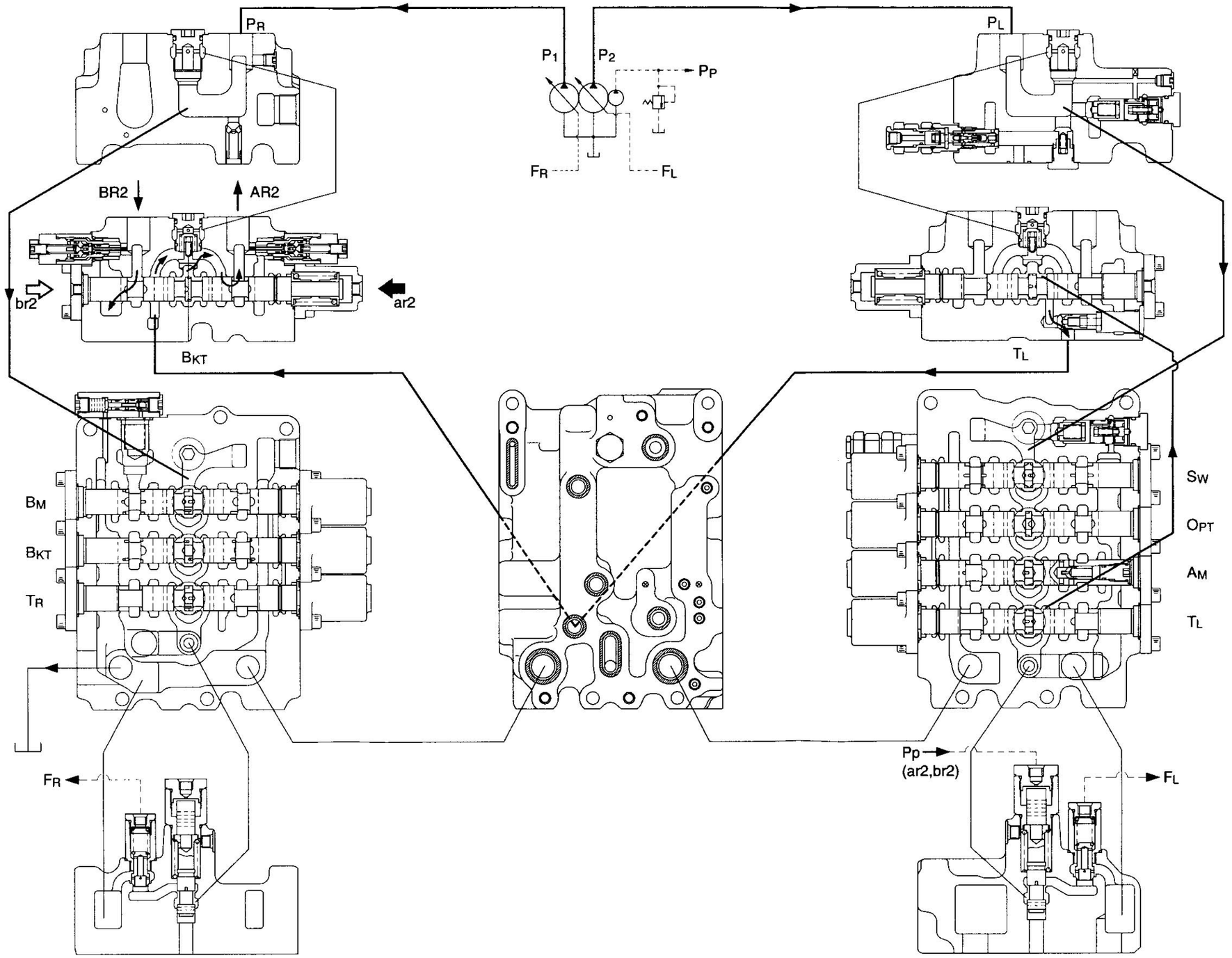


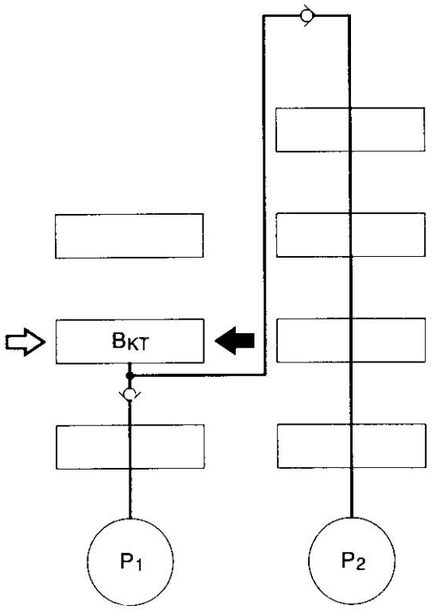


(4) Bucket flow summation circuit

Oil from pump P_1 is fed into cylinder port $A_{R2}(B_{R2})$ by adding pressure to bucket plunger pilot port $a_{r2}(b_{r2})$.

Oil from pump P_2 flow into the center bypass spool assembly via the center bypass passage. Since the same pilot pressure of the bucket plunger pilot port is applied to the pilot signal port of the center bypass spool assembly, the center bypass spool is switched; pushing up the bucket flow summation check valve in the 4-plunger side valve, oil flows into the high pressure feed passage for bucket, and joins to the flow from the pump P_1.

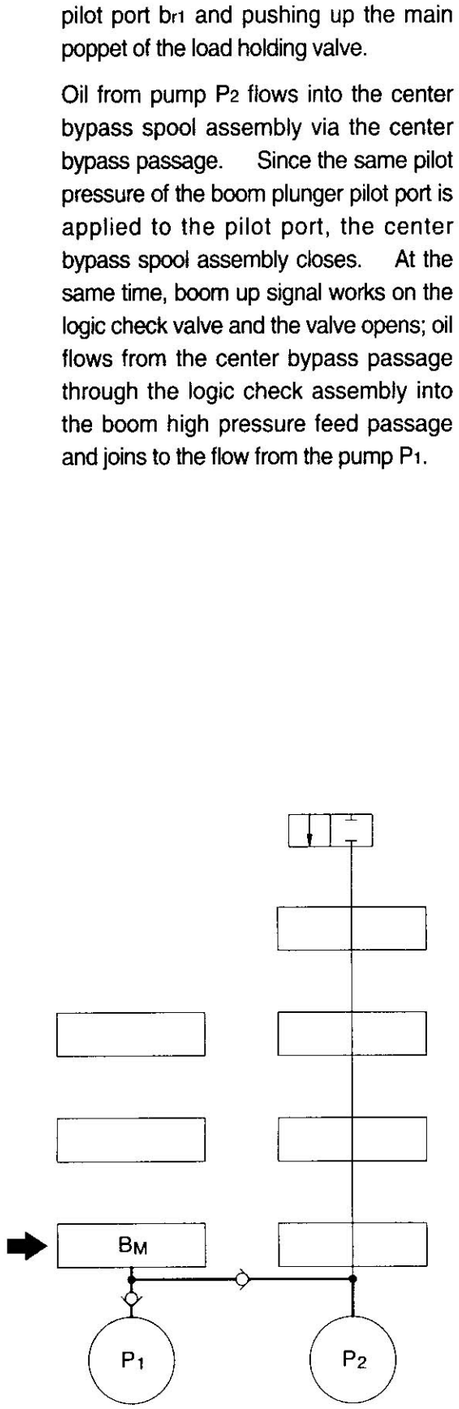


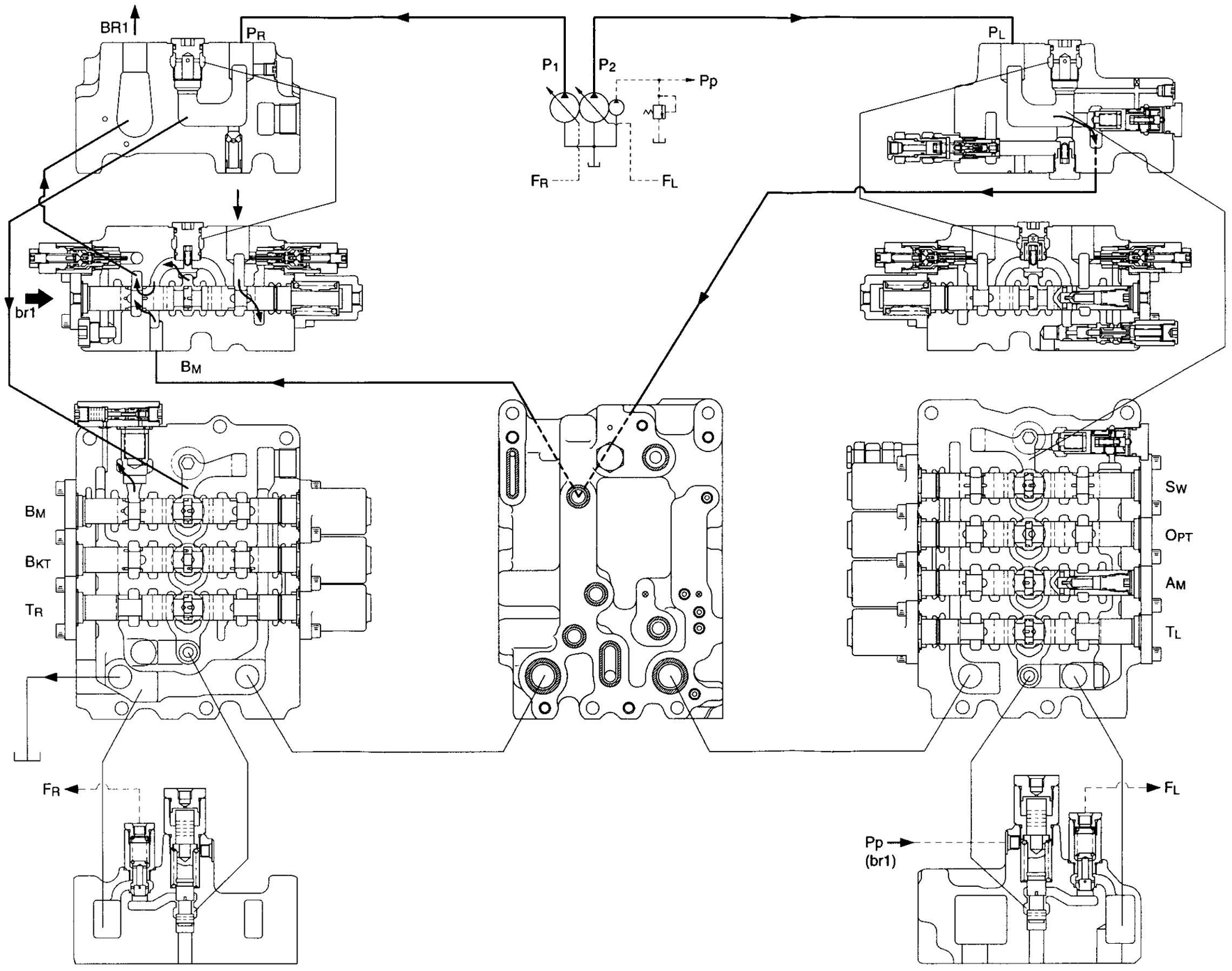


(5) Boom up flow summation circuit

Oil from pump P_1 is fed into cylinder port B_{R1} by adding pressure to boom plunger pilot port b_{r1} and pushing up the main poppet of the load holding valve.

Oil from pump P_2 flows into the center bypass spool assembly via the center bypass passage. Since the same pilot pressure of the boom plunger pilot port is applied to the pilot port, the center bypass spool assembly closes. At the same time, boom up signal works on the logic check valve and the valve opens; oil flows from the center bypass passage through the logic check assembly into the boom high pressure feed passage and joins to the flow from the pump P_1.





(6) Boom down operation circuit

Oil from pump P_1 is fed into cylinder port A_{R1} by adding pressure to boom plunger pilot port a_{r1}. Oil from cylinder port B_{R1} pushes up the main poppet of the load holding valve and flows into the low pressure passage.

Oil from pump P_2 flows through the center bypass passage into the center bypass spool assembly, but the center bypass spool assembly is not switched and stays in unloaded status. When the boom goes down, the logic check assembly closes and the passage is shut off because boom plunger pilot signal is not applied to the logic check valve.