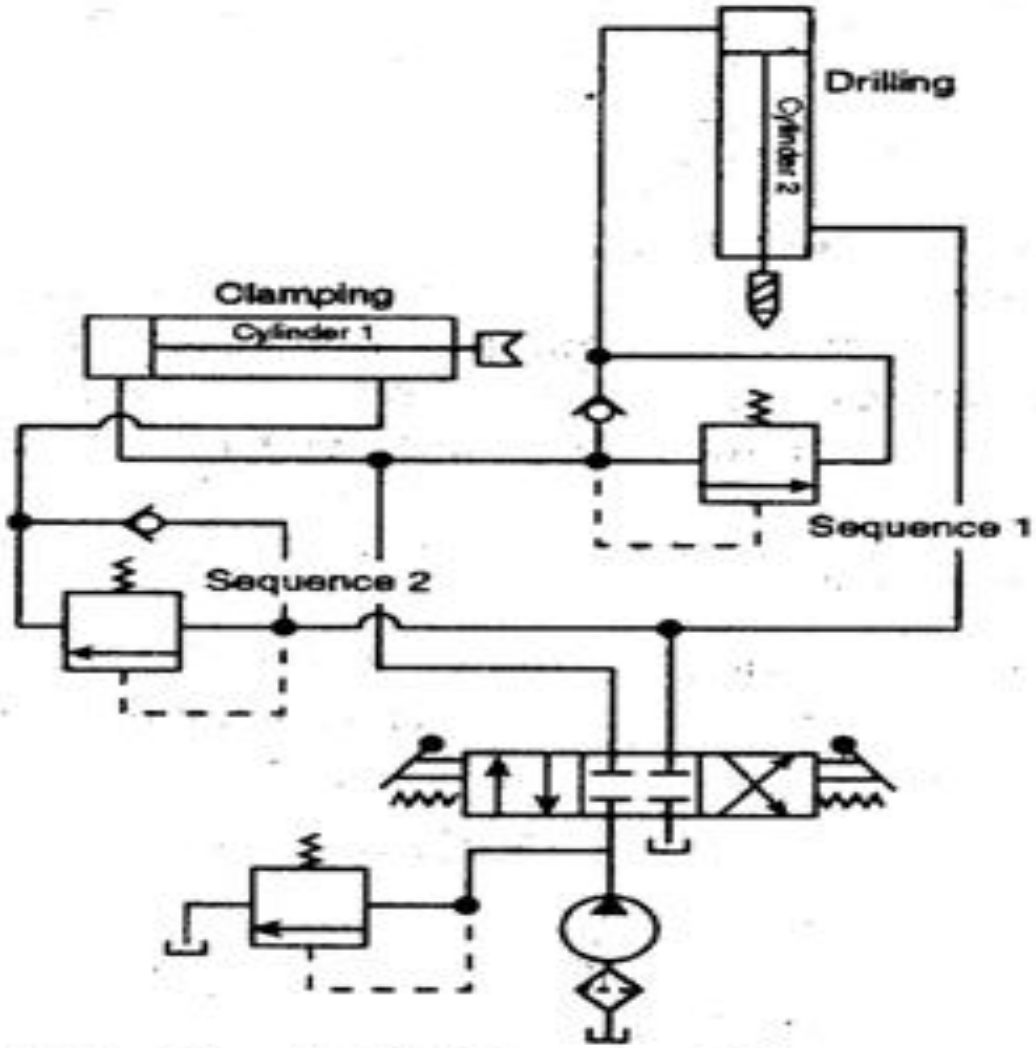
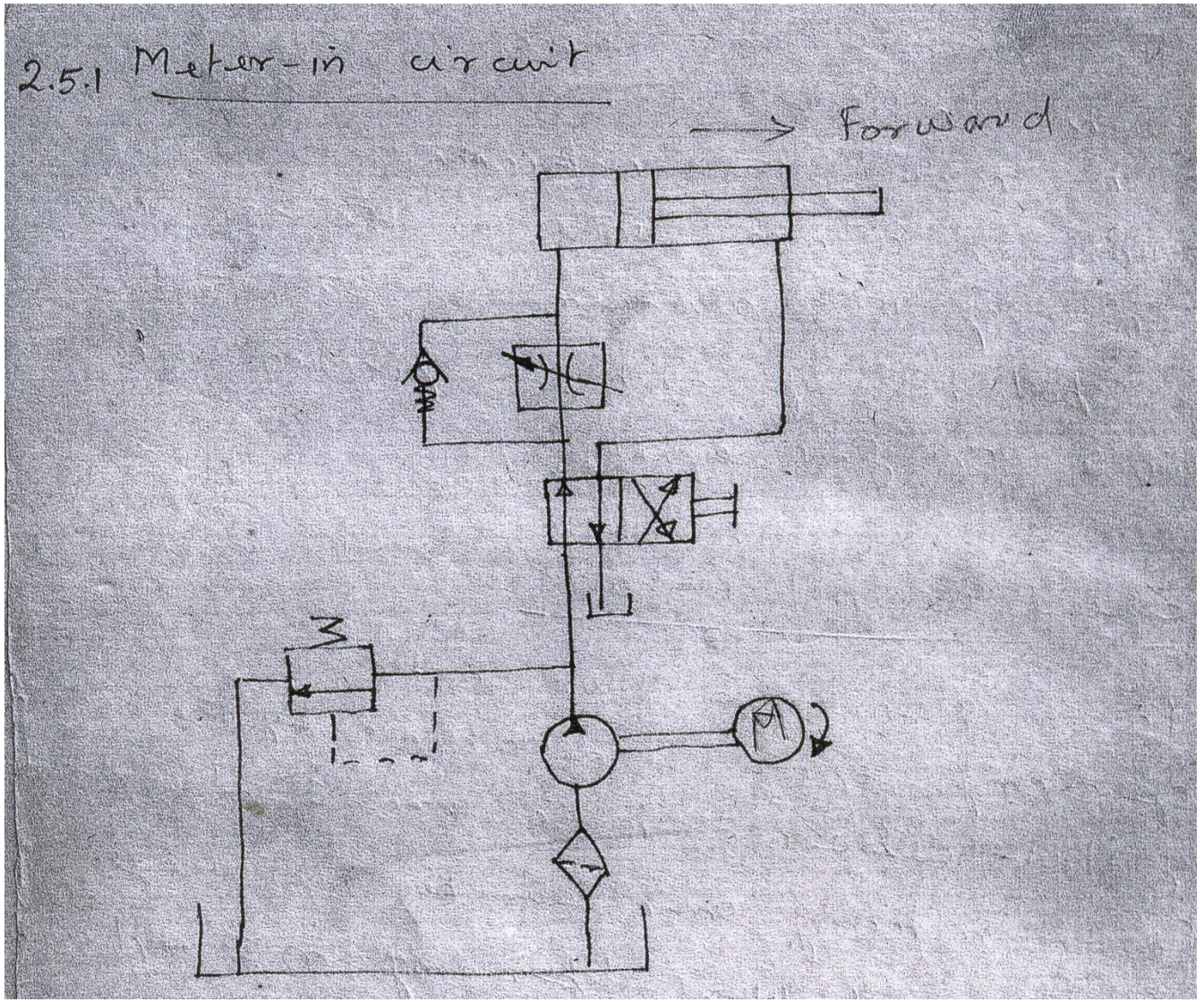
UNIT IV DESIGN OF CIRCUITS

Fluid Power Circuit Design, Circuits with sequence valve

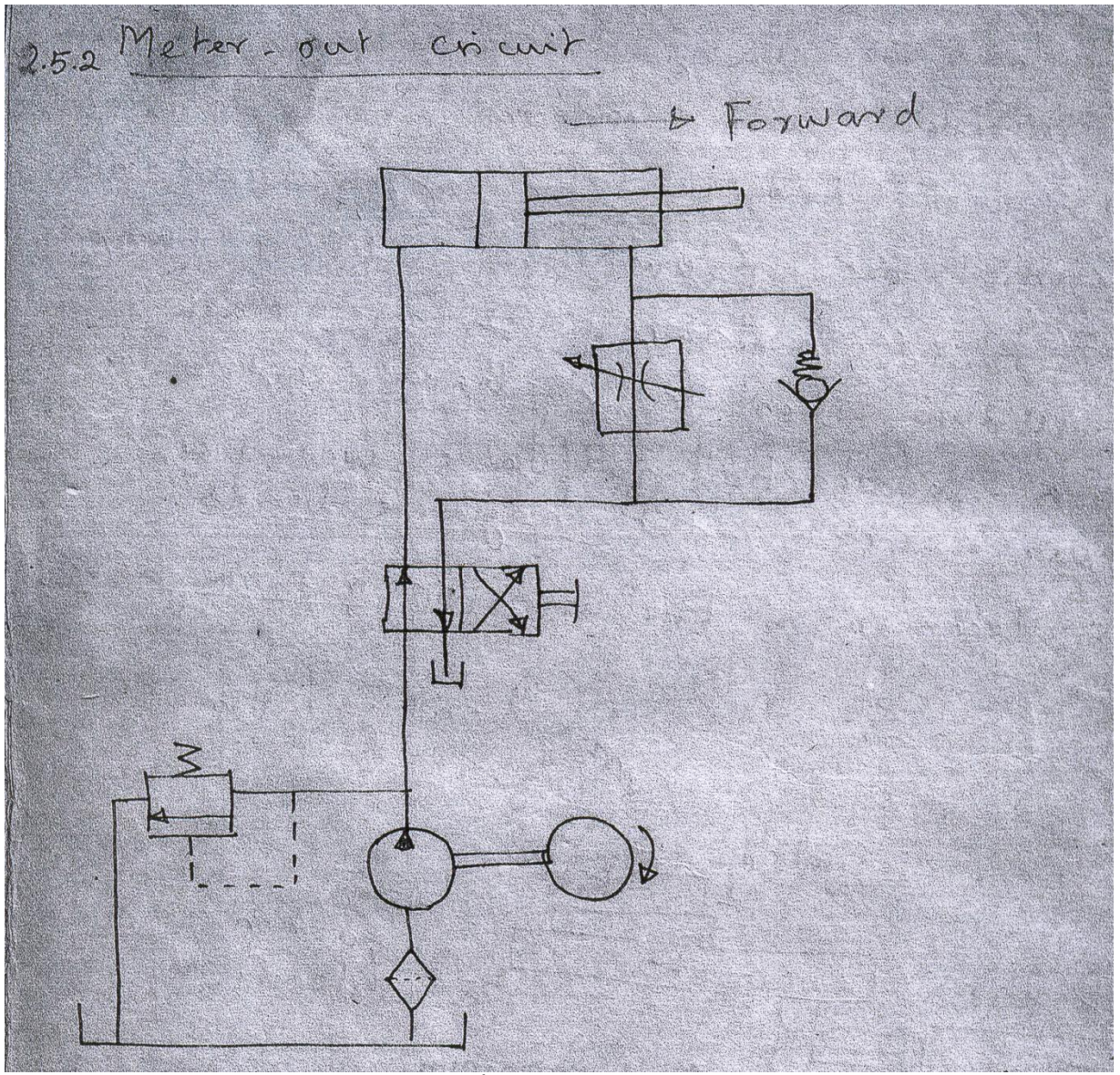


Drilling Circuit Using Sequence Valve

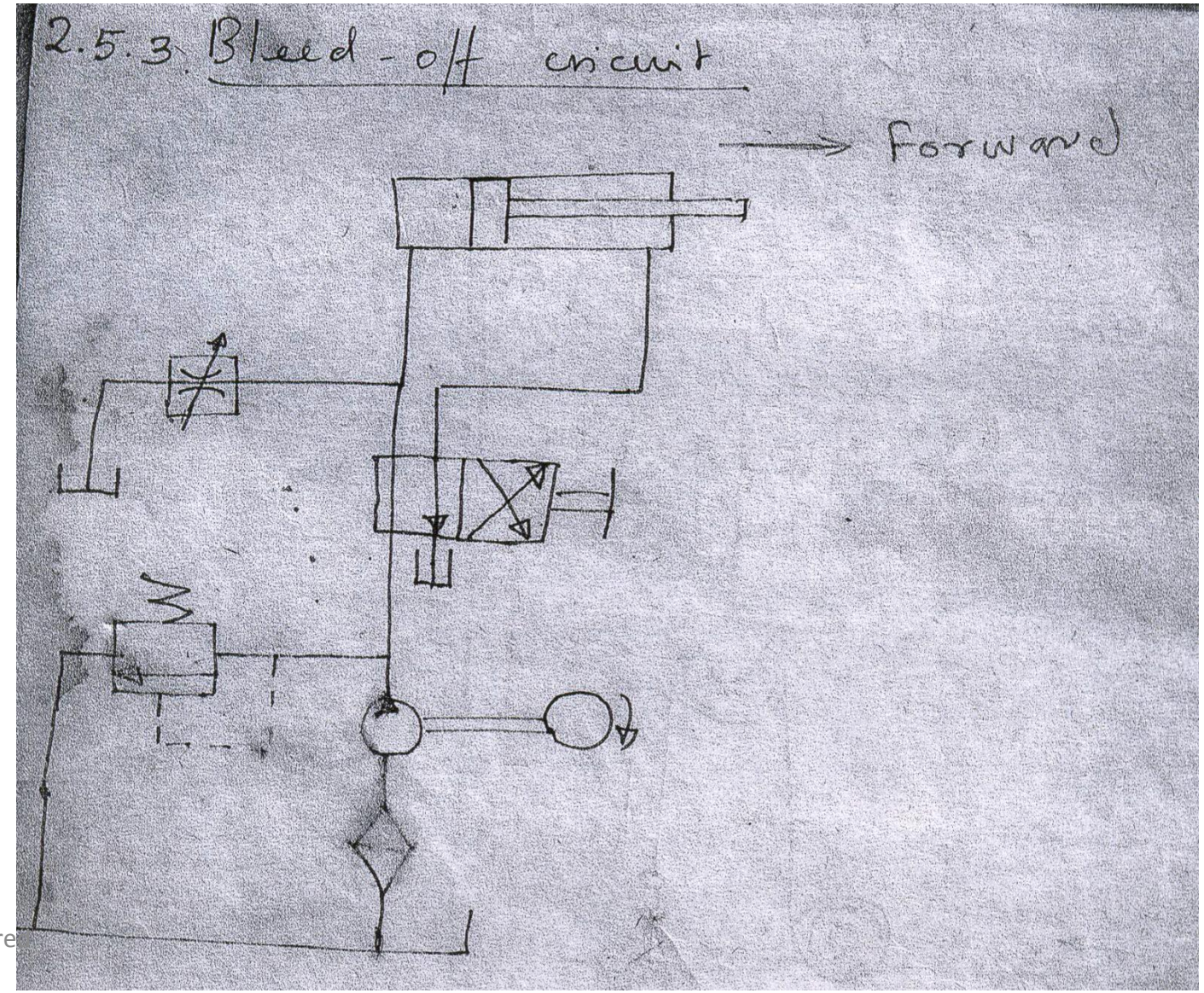
Speed control circuits



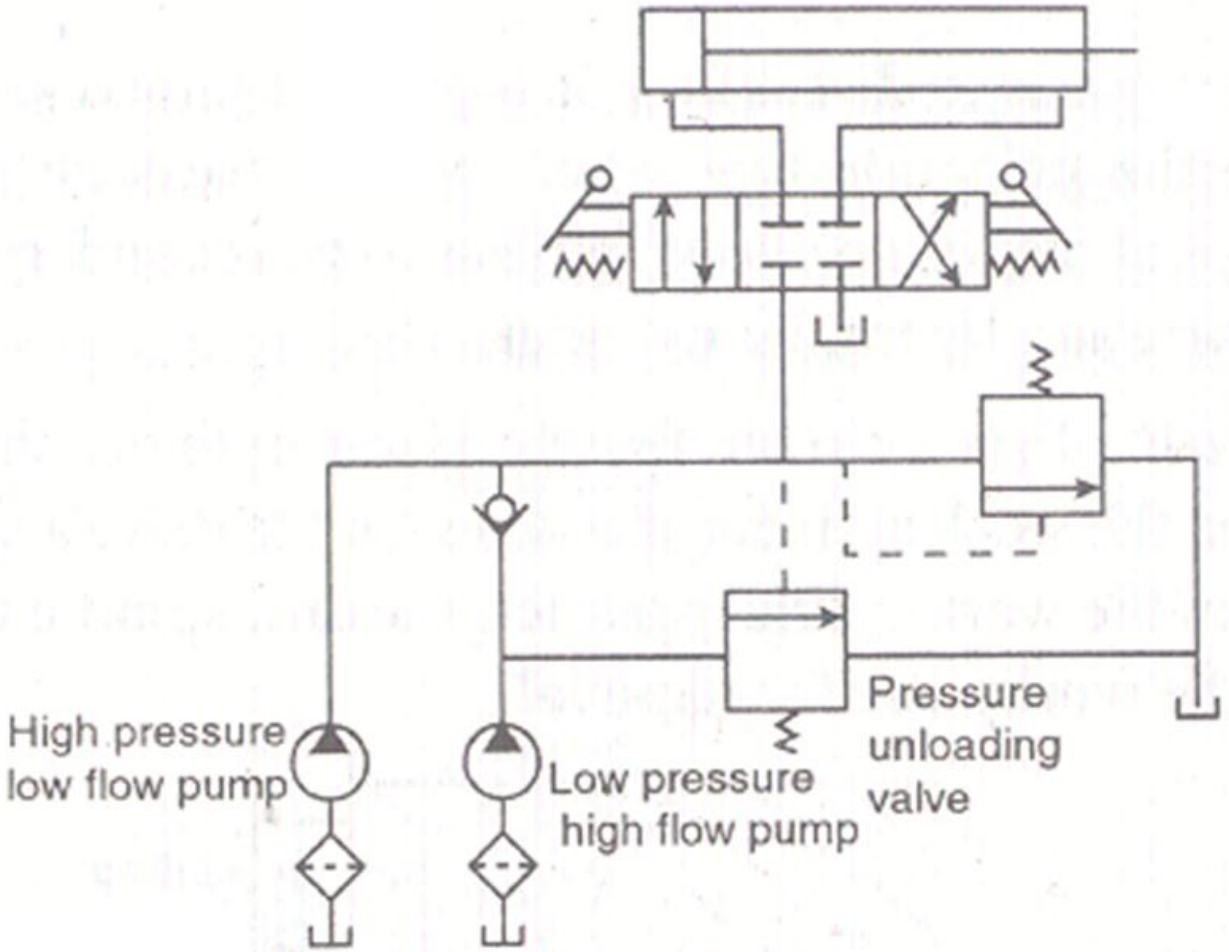
Speed control circuits



Speed control circuits

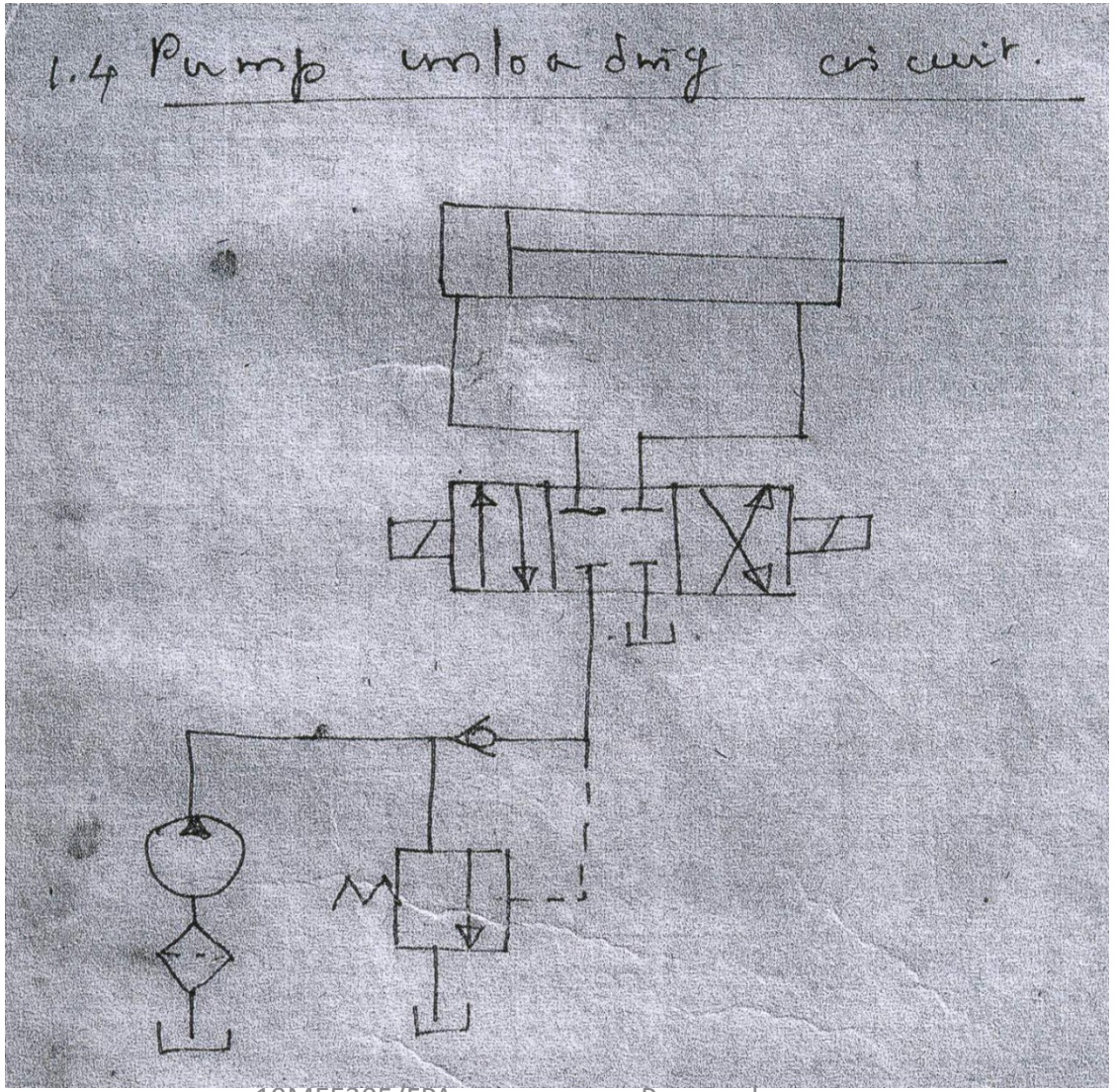


Pump unloading circuit

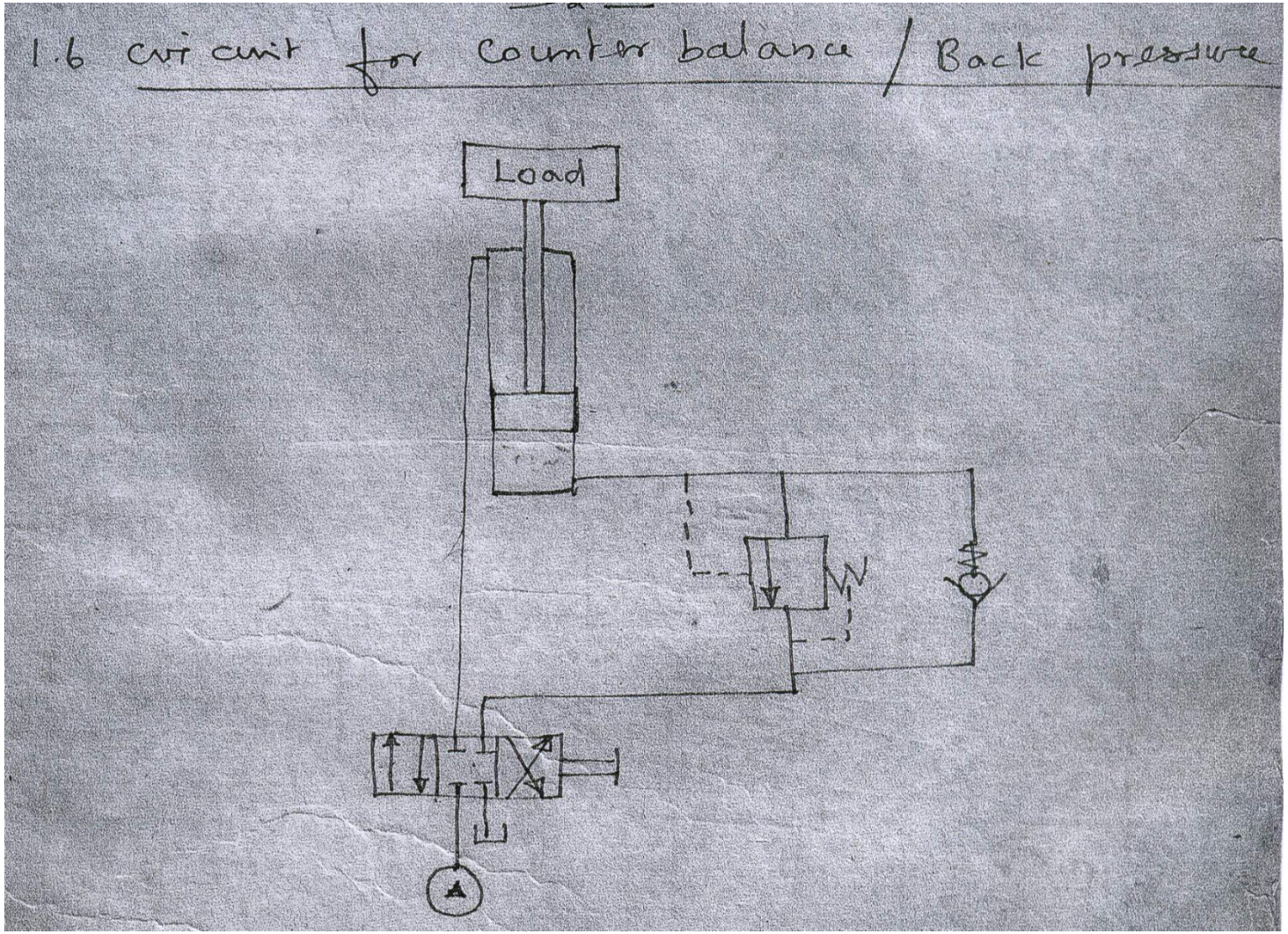


High-Low Circuit Using Unloading Valve

Pump unloading circuit



Counter balance valve circuit



synchronizing circuit,

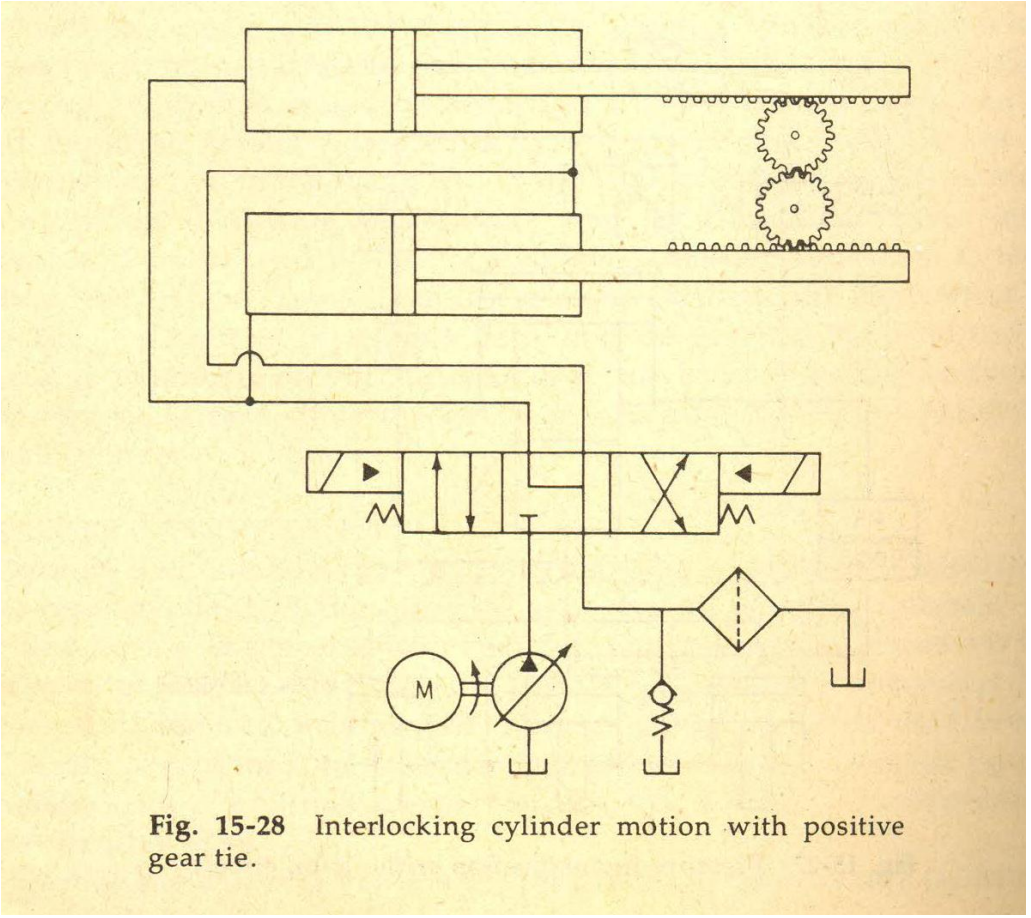


Fig. 15-28 Interlocking cylinder motion with positive gear tie.

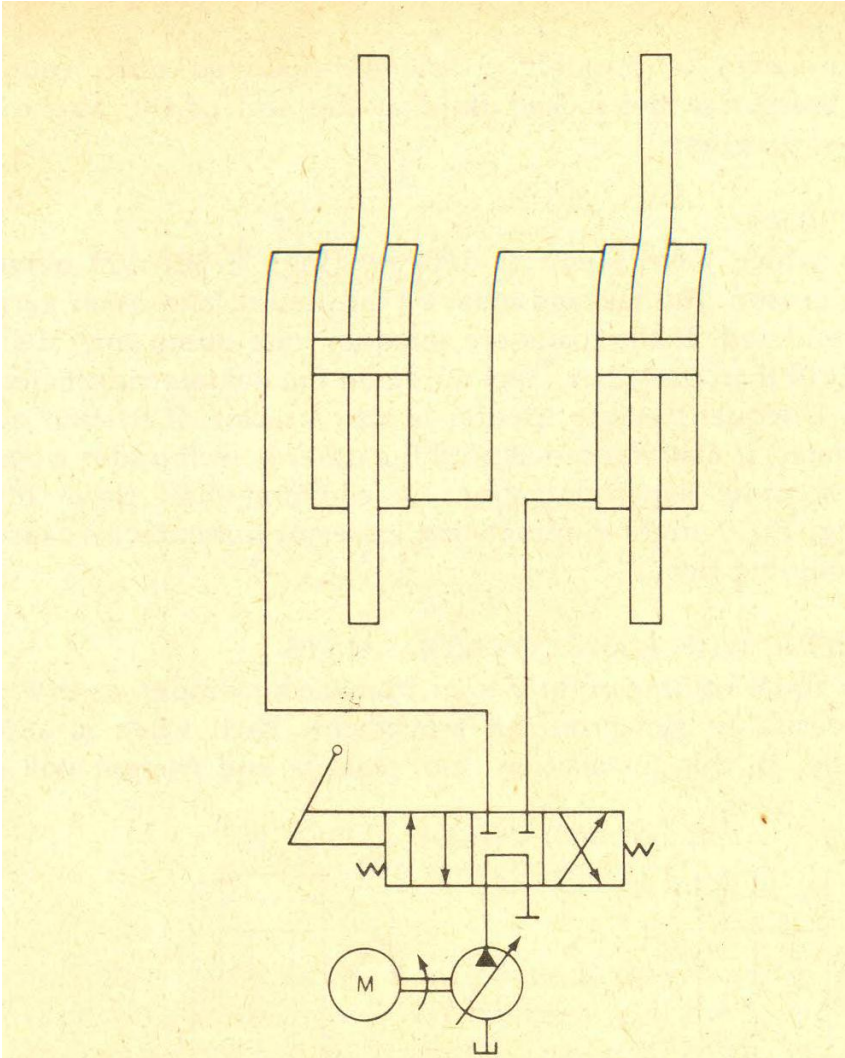


Fig. 15-29 Series piping to provide synchronous cylinder movement.

synchronizing circuit,

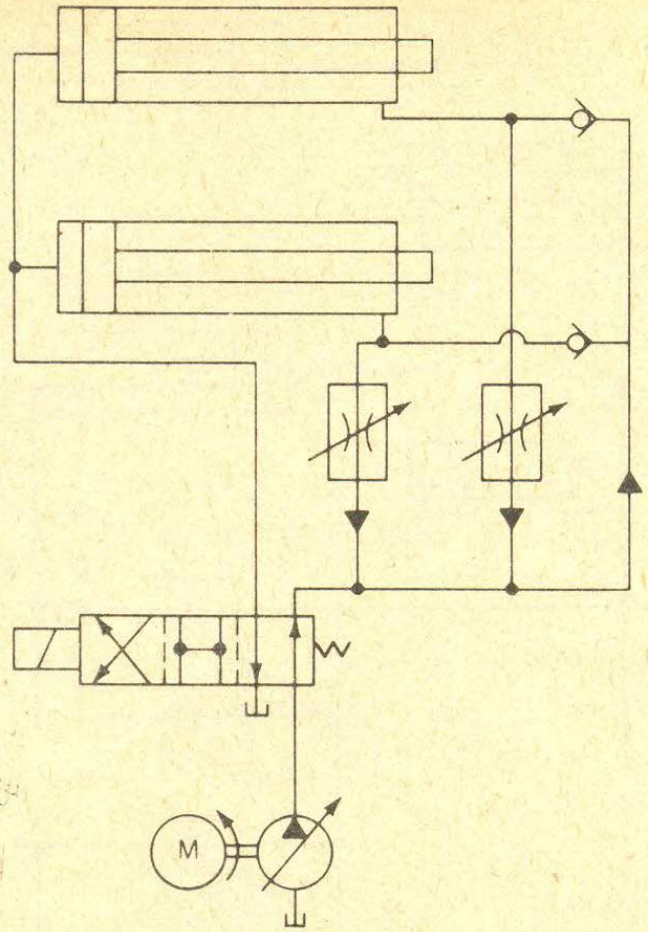


Fig. 15-31 Synchronization with compensated flow-control valves.

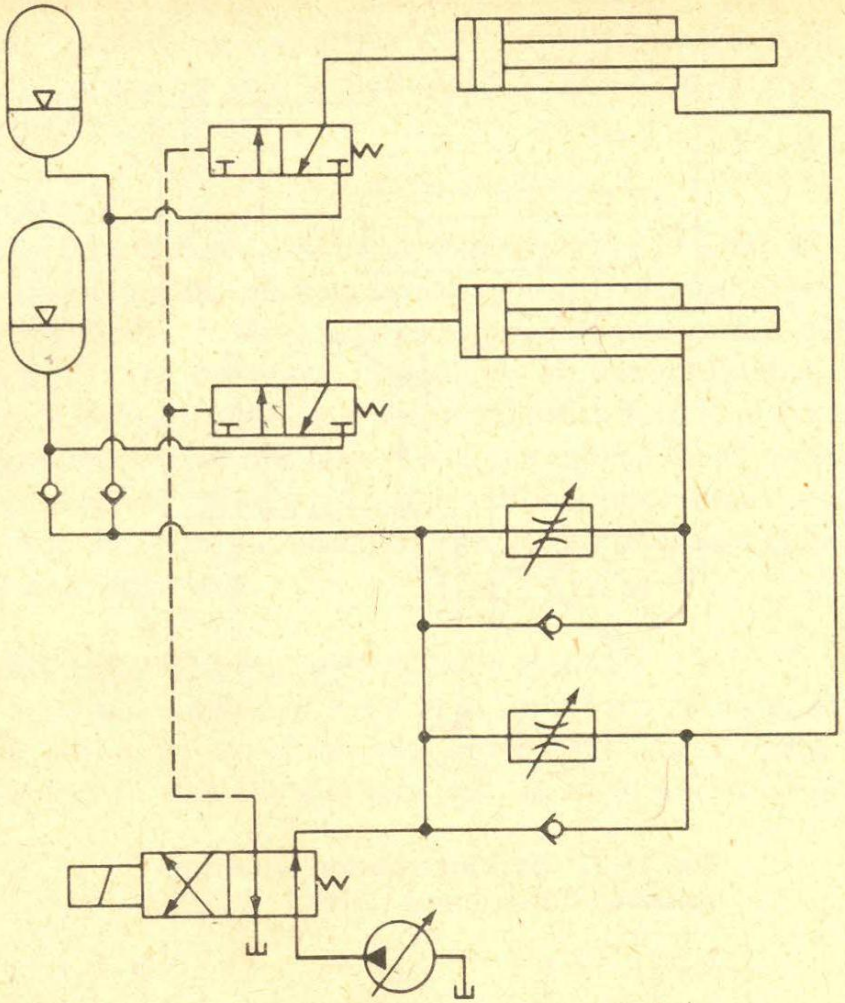


Fig. 15-32 Synchronization with flow-control valves and accumulators.

Accumulators

- An accumulator is a device that stores potential energy by means of either gravity, mechanical springs or compressed gas.

- Accumulator is hydraulic device that stores the pressure energy of liquid (oil, water, etc.) by converting it into pressure energy of gas (nitrogen gas).

TYPES

1. Weight-loaded or gravity type
2. Spring-loaded type
3. Gas-loaded type

    1.Non separator type

    2.Separator type

        1.Piston Type

        2.Diaphragm Type

        3.Bladder Type

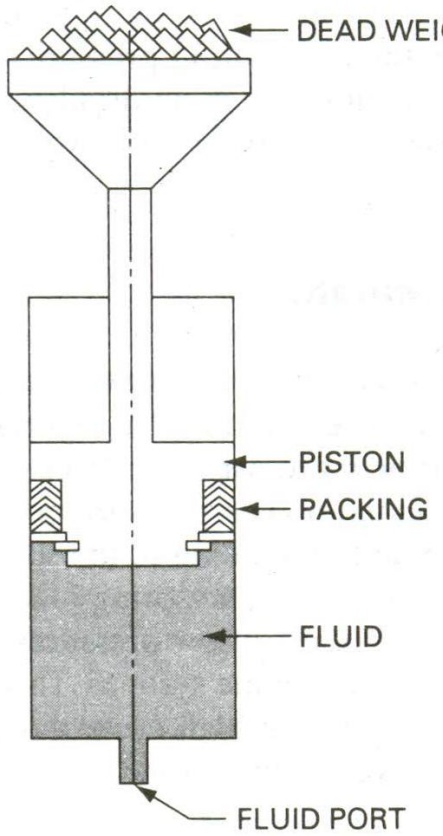


Figure 11-3. Weight-loaded accumulator. *(Courtesy of Greer Olaer Products Division/Greer Hydraulics Inc., Los Angeles, California.)*

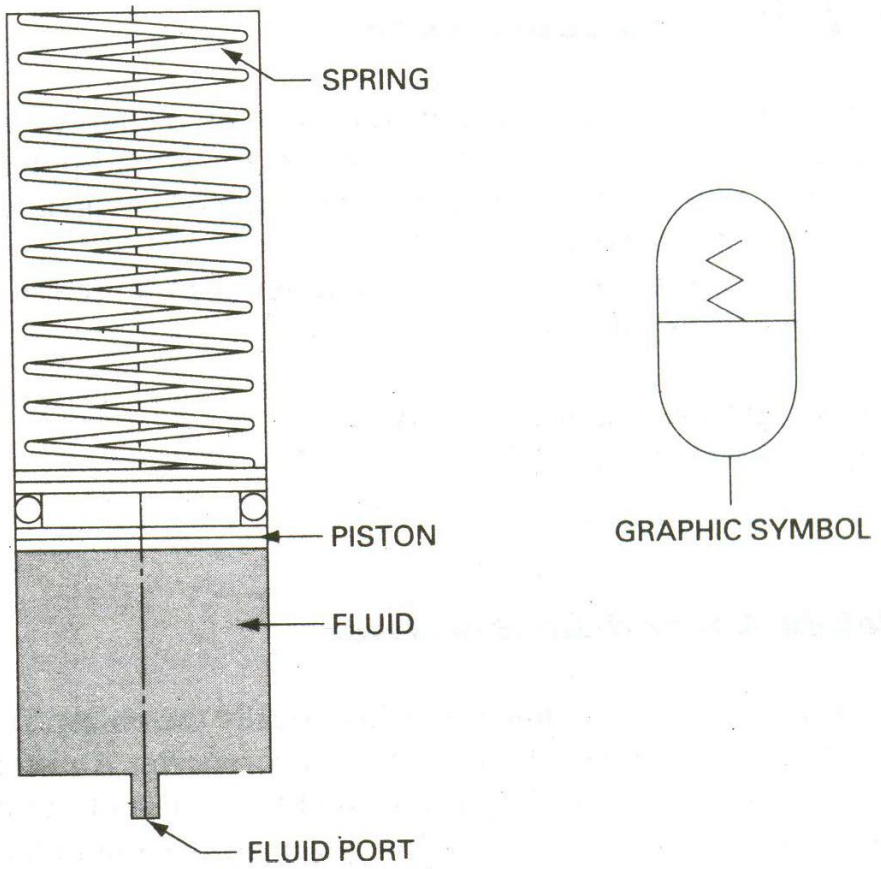


Figure 11-4. Spring-loaded accumulator. *(Courtesy of Greer Olaer Products Division/Greer Hydraulics Inc., Los Angeles, California.)*

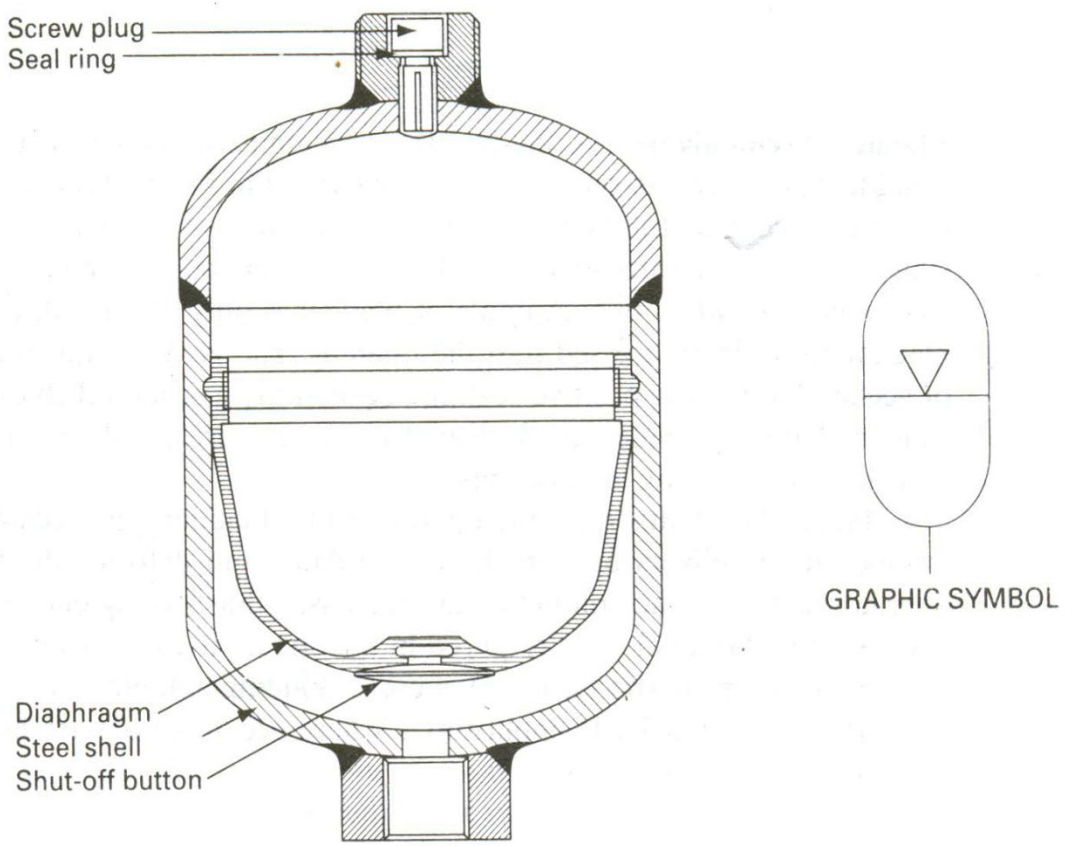


Figure 11-7. Diaphragm-type accumulator. *(Courtesy of Robert Bosch Corp., Broadview, Illinois.)*

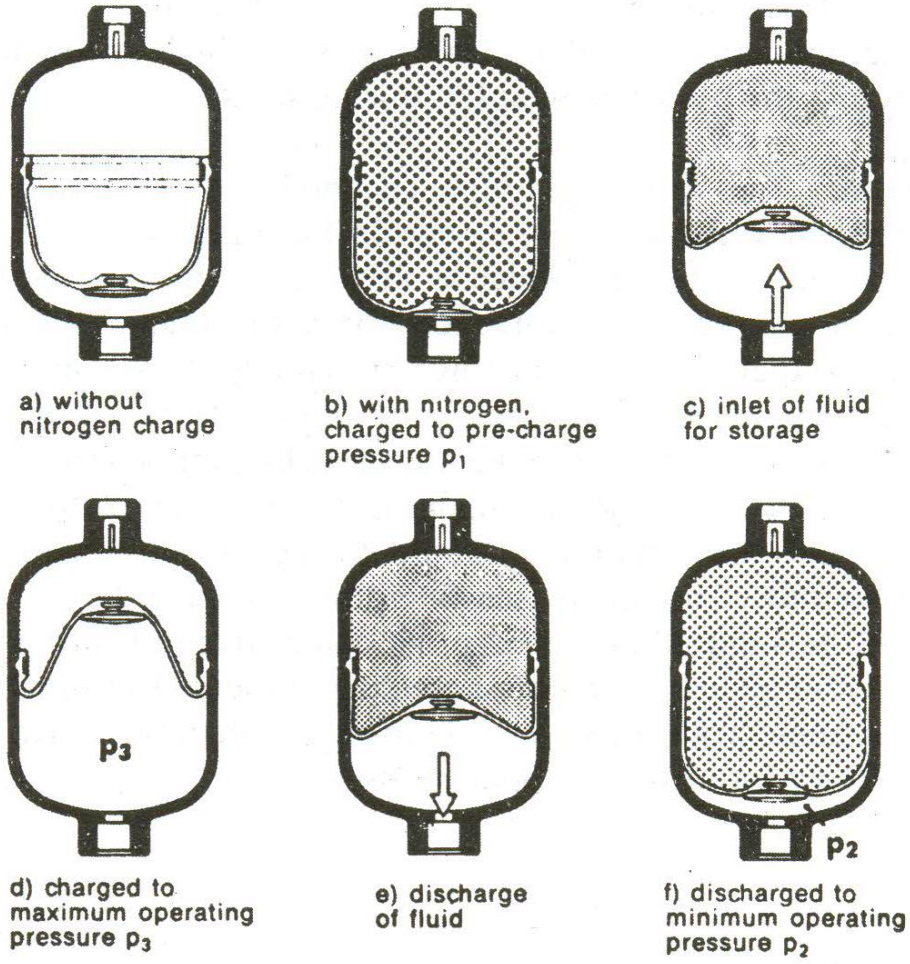


Figure 11-8. Operation of a diaphragm-type accumulator. *(Courtesy of Robert Bosch Corp., Broadview, Illinois.)*

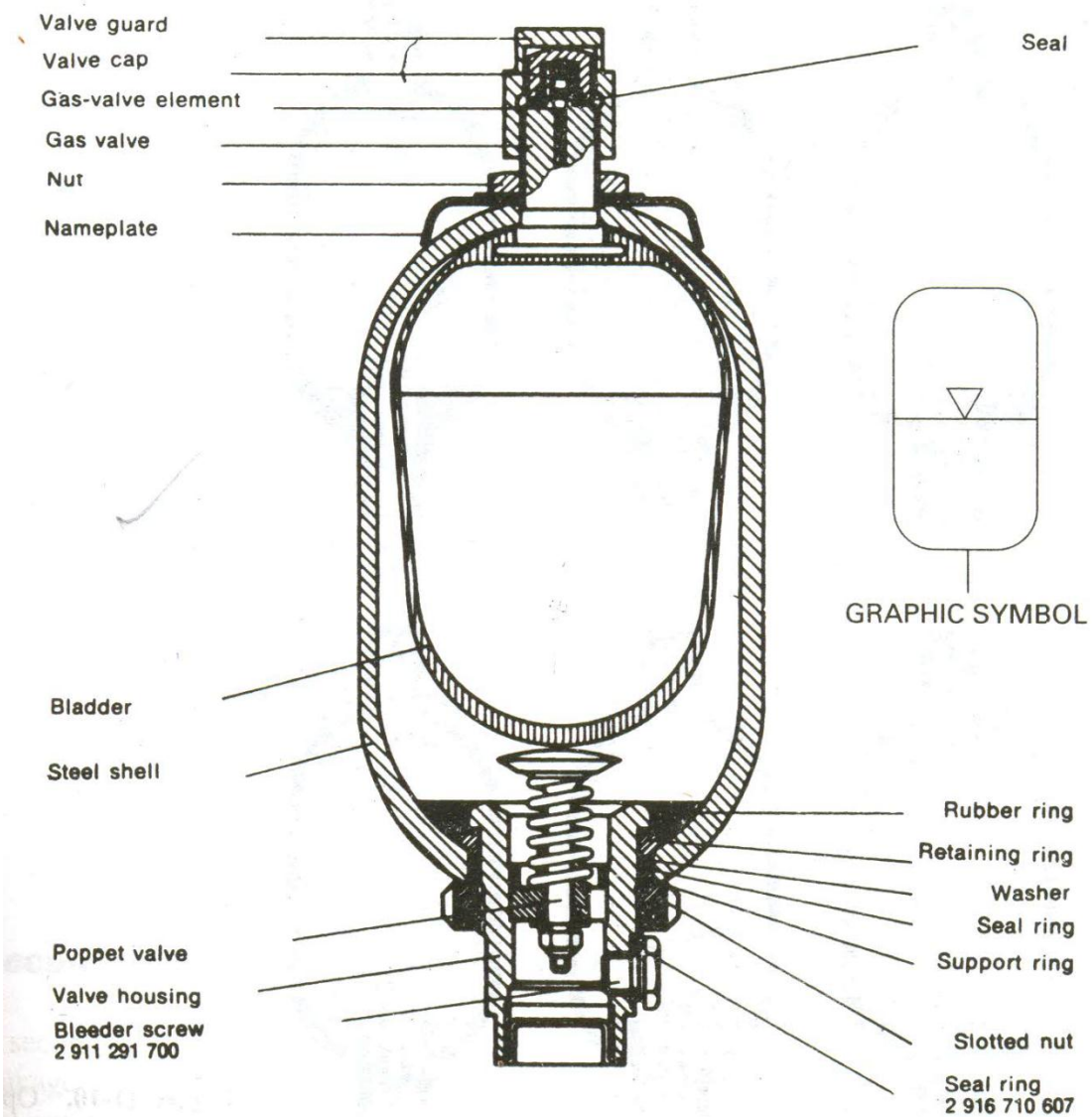


Figure 11-9. Bladder-type accumulator. *(Courtesy of Robert Bosch Corp., Broadview, Illinois.)*

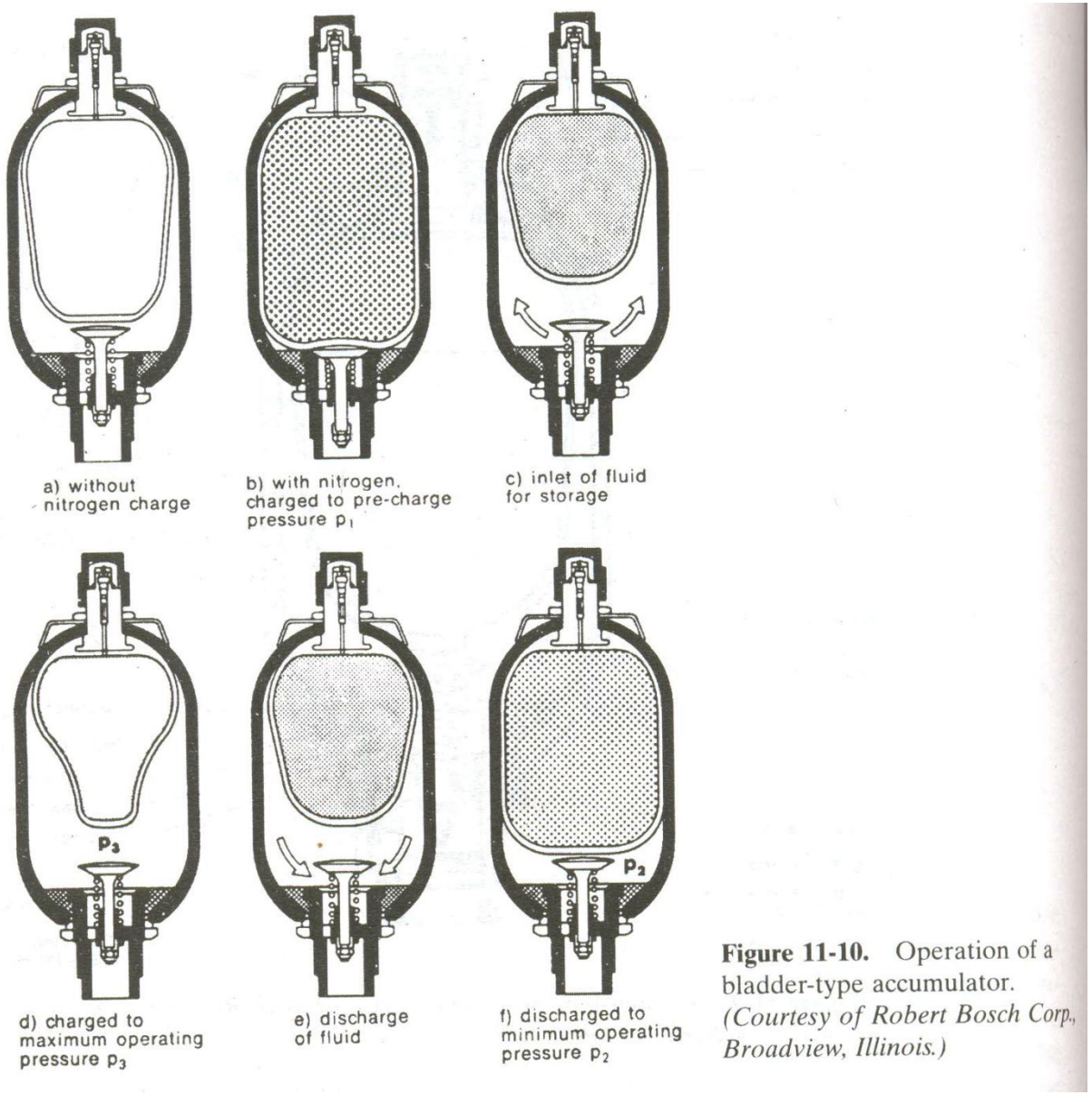


Figure 11-10. Operation of a bladder-type accumulator. *(Courtesy of Robert Bosch Corp., Broadview, Illinois.)*

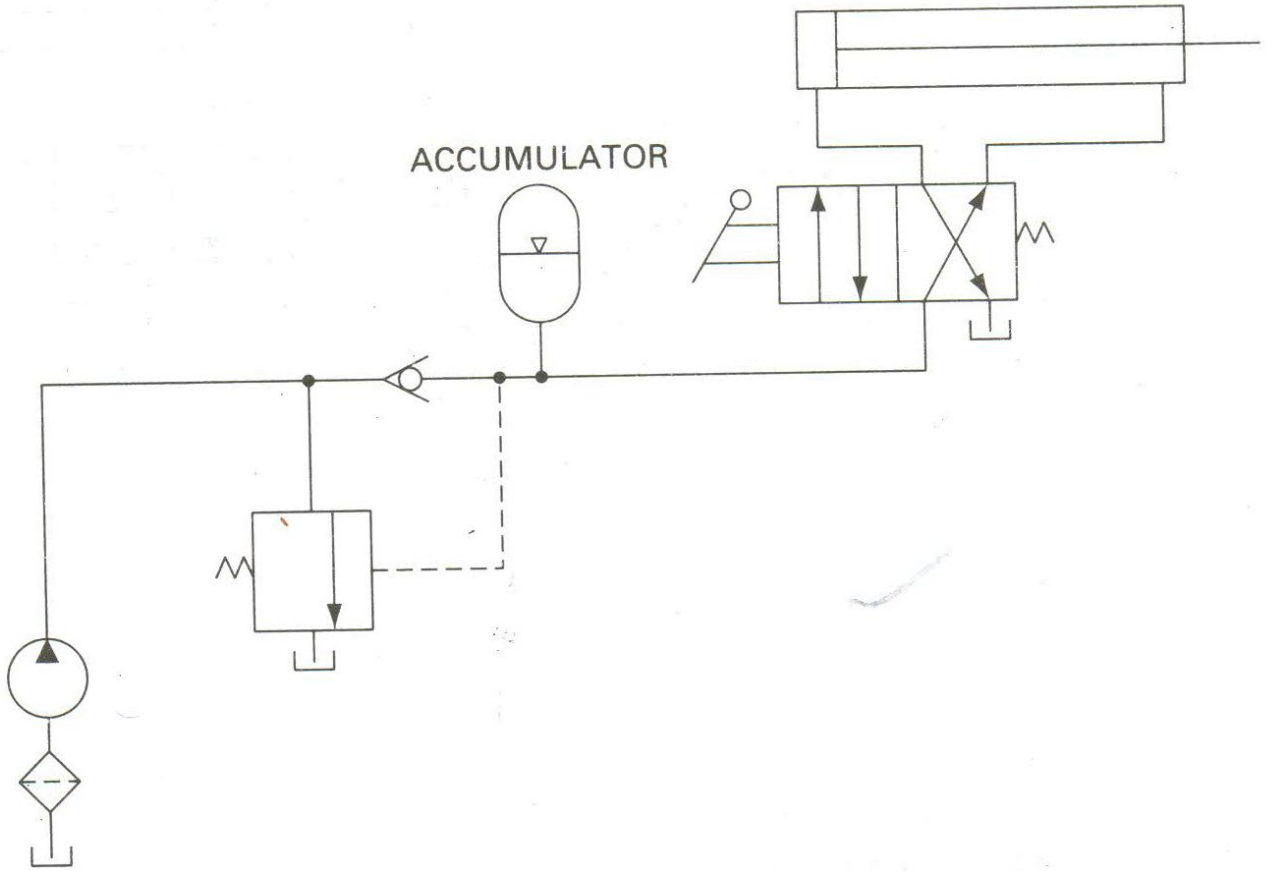


Figure 11-11. Accumulator as an auxiliary power source.

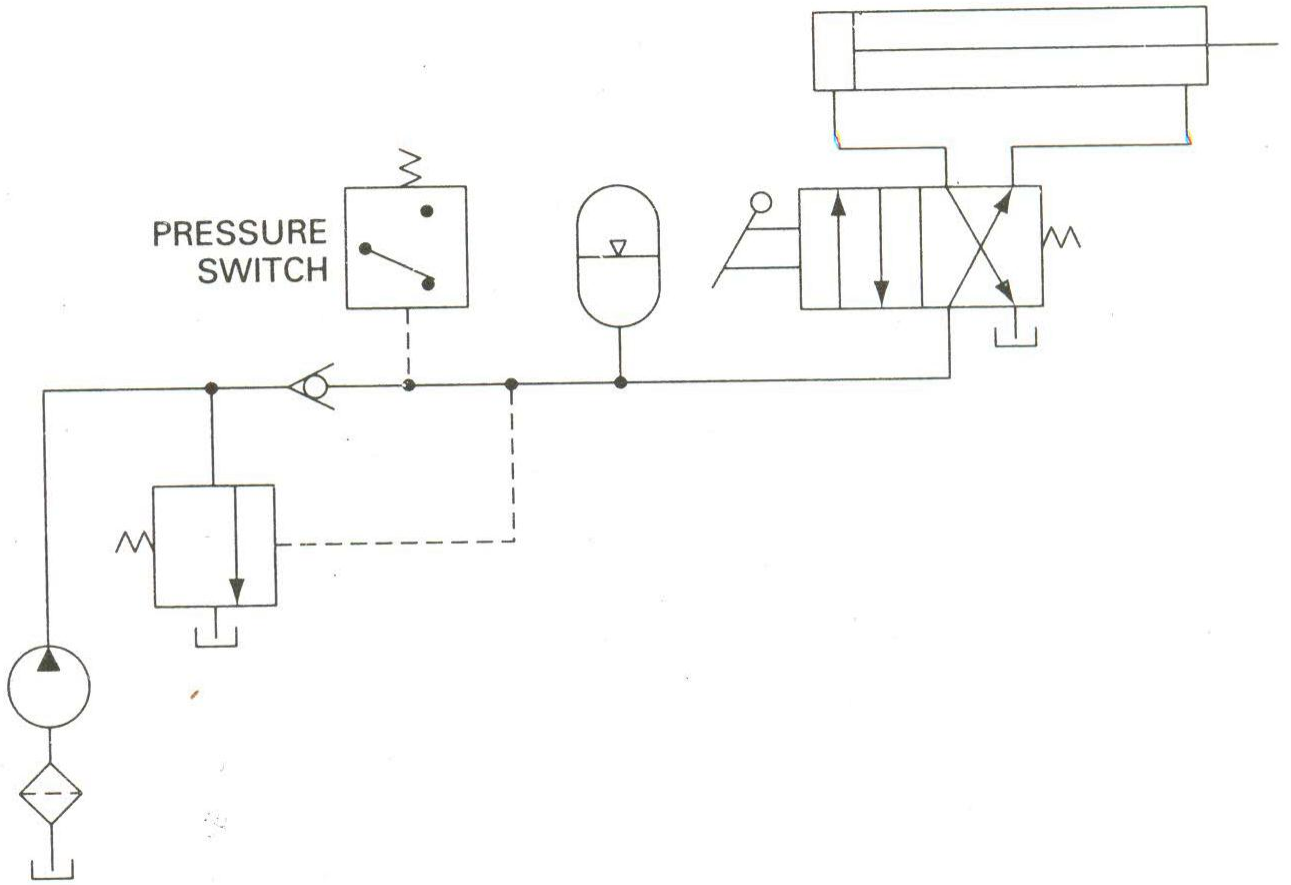


Figure 11-12. Accumulator as a leakage compensator.

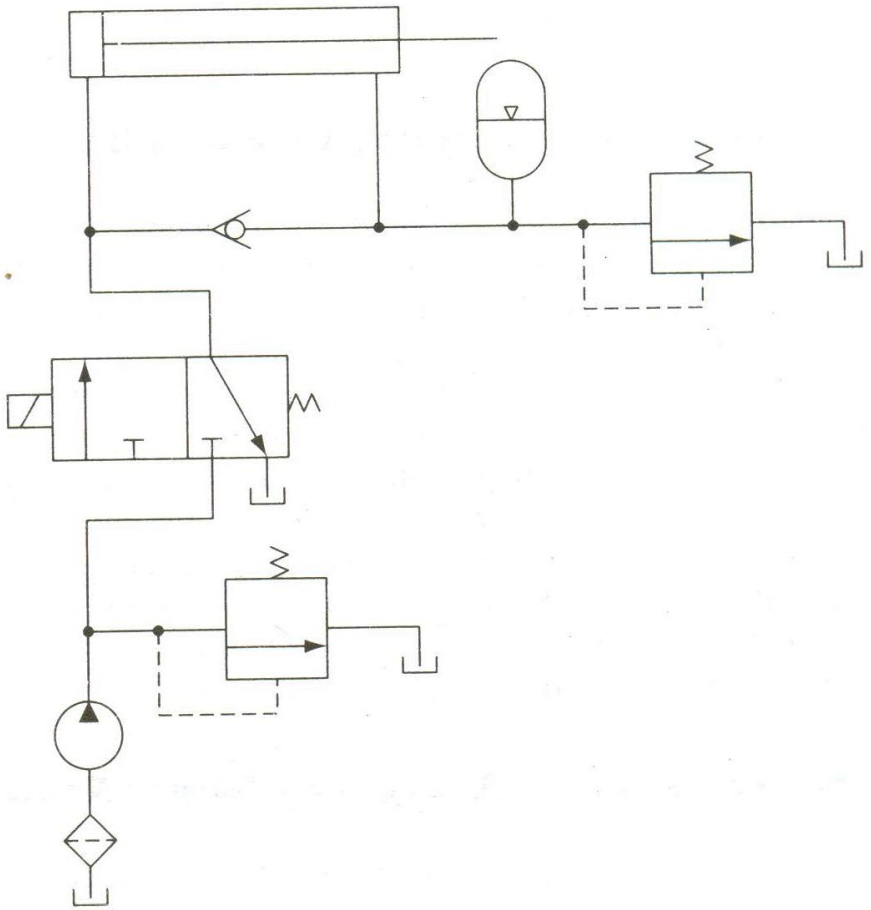


Figure 11-13. Accumulator as an emergency power source.

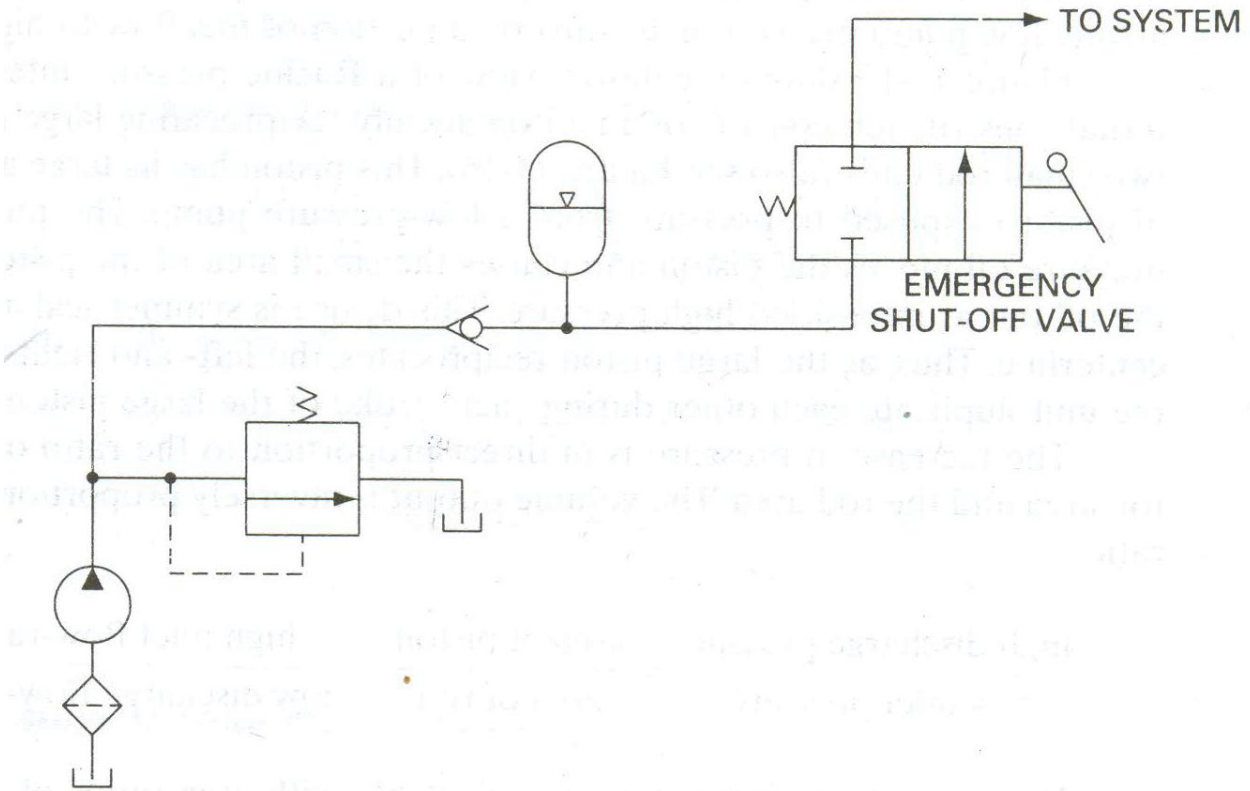


Figure 11-14. Accumulator as a hydraulic shock absorber.