

Figure 8. Disc MRF brake

### 3.4 MRF hydraulic device

In the hydraulic system, the magneto-rheological valve is another application in engineering, under the control of magneto-rheological valve, the MRF as the working medium can complete drive action. As can be seen from Fig.9, magneto-rheological valve worked as a non-moving elements proportional control valve in the hydraulic system, compared to traditional hydraulic proportional valve, MR valve is much cheaper and it has longer longevity.

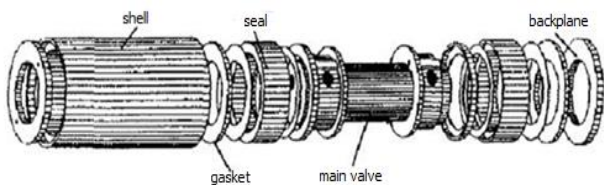


Figure 9. MRF hydraulic device

The working principle was shown in Fig.10, during normal operation, the current work through the coil of diagonal hydraulic valve (2, 3 or 1, 4), the resistance changed a lot, and it was controlled by the size of current, hydraulic cylinder piston moved in the chamber up and down, caused a difference of pressure, the piston moves in this difference, and achieve the purpose of positioning the actuator.

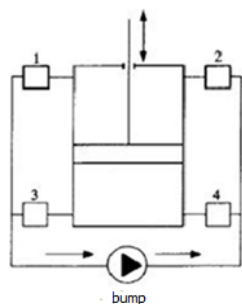


Figure 8. MRF hydraulic system

## 4. CONCLUSION

In order to make the MR device widely used in engineering, the MRF must be stable and reliable, but in practice, there are still exists many problems, one of the biggest problems is the stability of the settlement, which is

how to preserve the MRF. Three working modes of MRF, in which the shear mode (applied to the brake, clutch) and pressure-driven mode (damper) has been studied, and its related devices are gradually entering the market, but the research progress of the press mode is slow. MRF lose stability in high-speed rotation easily, resulting in the difference between the output torque and the ideal state in the clutch and brake. At the same time, the relevant technology is only reported in the literature is limited to general principle, key technology in the development process is still in the stage of secrecy. These factors have seriously affected the wide application of the magnetic rheological device.

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