

turn transmits a signal to the proportional position control on the directional control valve. A state-of-the-art, load sensing, pressure-compensated direction control valve is shown in Fig. 11.

It is obvious that the trend is toward more sophisticated, high performance, multifunction controls — hydraulic and electrohydraulic — for mobile equipment applications. On balance, these controls and systems should only be used where they are cost effective: that is, where increased operating efficiency and production offset the higher initial and typically greater maintenance costs. And as always, an additional consideration is availability of qualified personnel in the field to deal with these systems.

Servo systems or closed loop systems as they are designated in Fig. 2, have the four functional sections of open loop circuits plus a fifth, feedback. Feedback is the technique of sensing the state of an output or load variable and comparing it to a command signal. Any difference between the commanded level and actual level produces an "error" signal which is used to correct the output. Servo systems are self regulating — and relatively expensive. There are some mobile equipment applications of hydraulic servo systems but generally their use can be classified as a trend.

The fourth functional section, auxiliaries, don't usually get much attention in discussions of trends. Yet there are some areas of interest within this segment. In the area of contamination control, certainly a major concern in mobile equipment hydraulics, there has been a new twist in magnetic separators using high-strength, rare earth magnets by Halex Coil. Available in bar form for use in reservoirs, heat exchangers, etc., these devices can remove "virtually all micro-ferrous particles suspended in hydraulic fluid which pass through standard filters," according to the manufacturer.

A second configuration, in coil form, is wrapped around the canister of a typical filter. Shown in Fig. 12, it essentially converts it into a powerful magnetic particle trap. A second auxiliary function segment which is vital to mobile equipment is in the area of leakage control — the so-called "zero leak" initiative. While this is a desirable goal, it's probably not totally achievable as too many leakage problems result from

poor practices in the field. Our industry can, however, realize significant improvements and revised ISO 6149, parts 1, 2 and 3, lay out the requirements for

an S.I. Metric-based, international program. The basic element is the metric version of the SAE, straight thread-oring port and fitting. ★

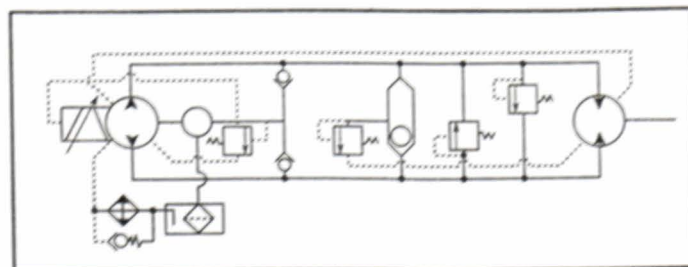


Fig. 9. A modern HST circuit. This is an open loop, closed circuit configuration with an electrohydraulic stroker control.

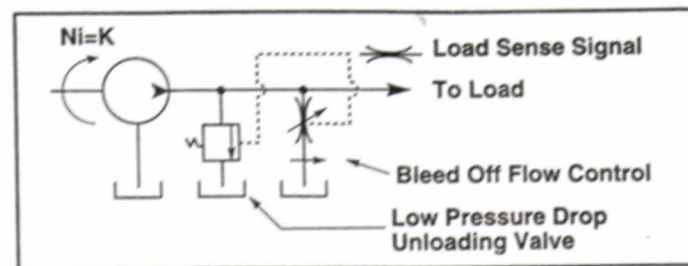


Fig. 10. A schematic of a constant flow, load sensing pump using ISO/ANSI symbology.

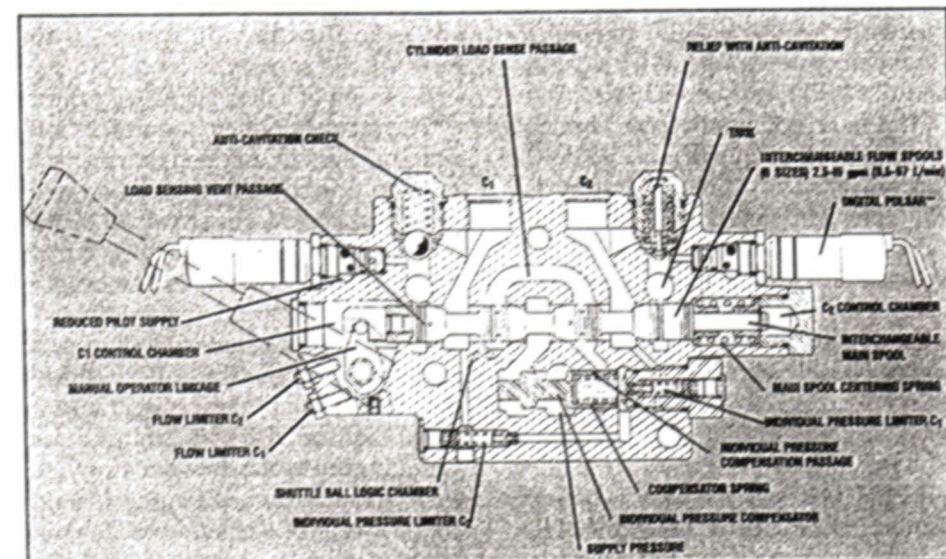


Fig. 11. A look at a modern pressure-compensated directional control valve.

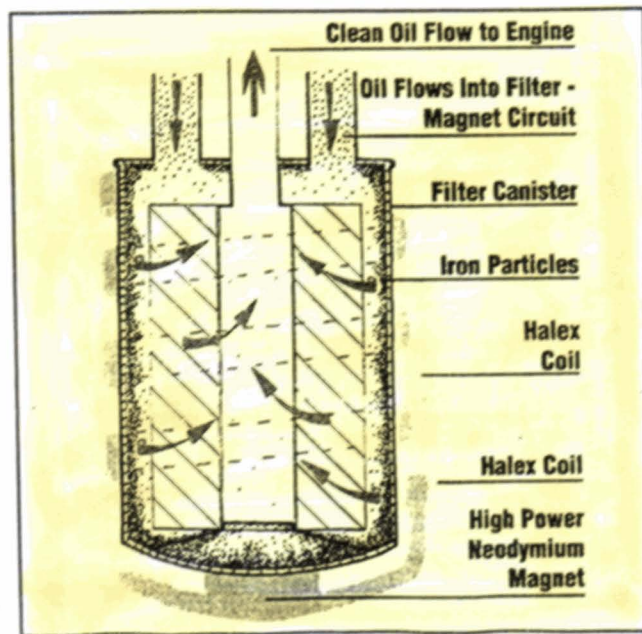


Fig. 12. A view of a coil version of a rare earth magnet system by Halex Coil, which converts the filter into a powerful magnetic particle trap.