SERVICE INSTRUCTIONS

OILGEAR TYPE "HF" HORSEPOWER LIMITER W/LOAD SENSOR CONTROLS FOR "PVWH" AND "PVW" PUMPS.

PURPOSE OF INSTRUCTIONS

These instructions have been prepared to simplify and minimize your work of operating Oilgear type "HF" controlled units. This material will inform you as to basic construction, principle of operation and service parts listings. Some controls may be modified for specific applications from those described and other changes may be made without notice.

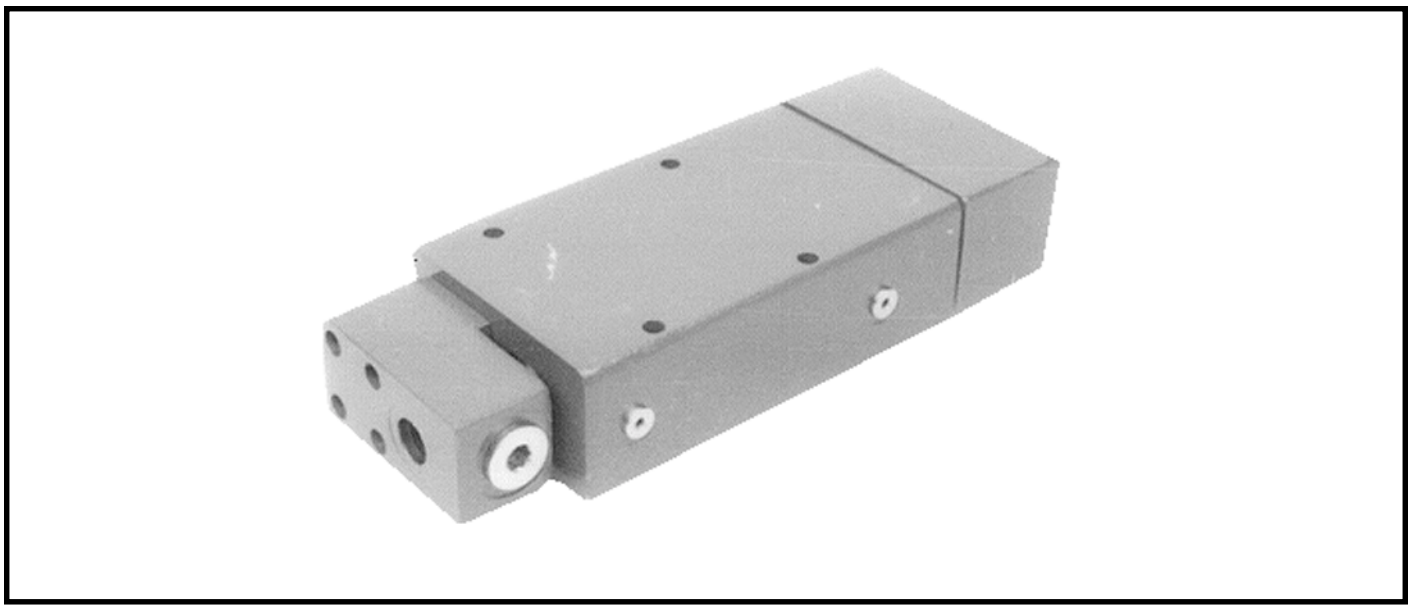

Figure 1. Typical "HF" control for Oilgear " PVWH" and "PVW" pumps (N89-002-19).

REFERENCE MATERIAL

Fluid Recommendations	Bulletin 90000
Filtration Recommendations	Bulletin 90007
Piping Information	Bulletin 90011
"PVWH" and "PVW" Open Loop Pumps . . .	Bulletin 947015

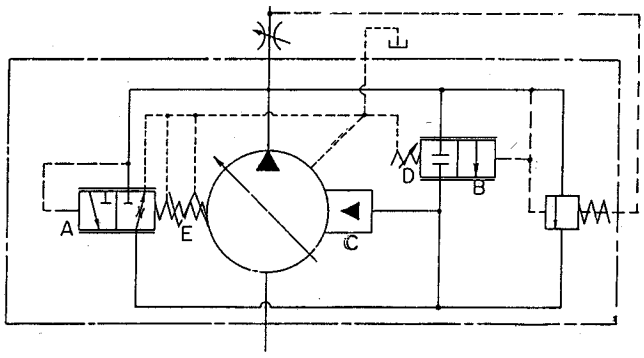

Figure 2. ASA diagram for "HF" control with typical pump (E51197).

THE OILGEAR COMPANY
2300 So. 51st. Street
Milwaukee, WI 53219

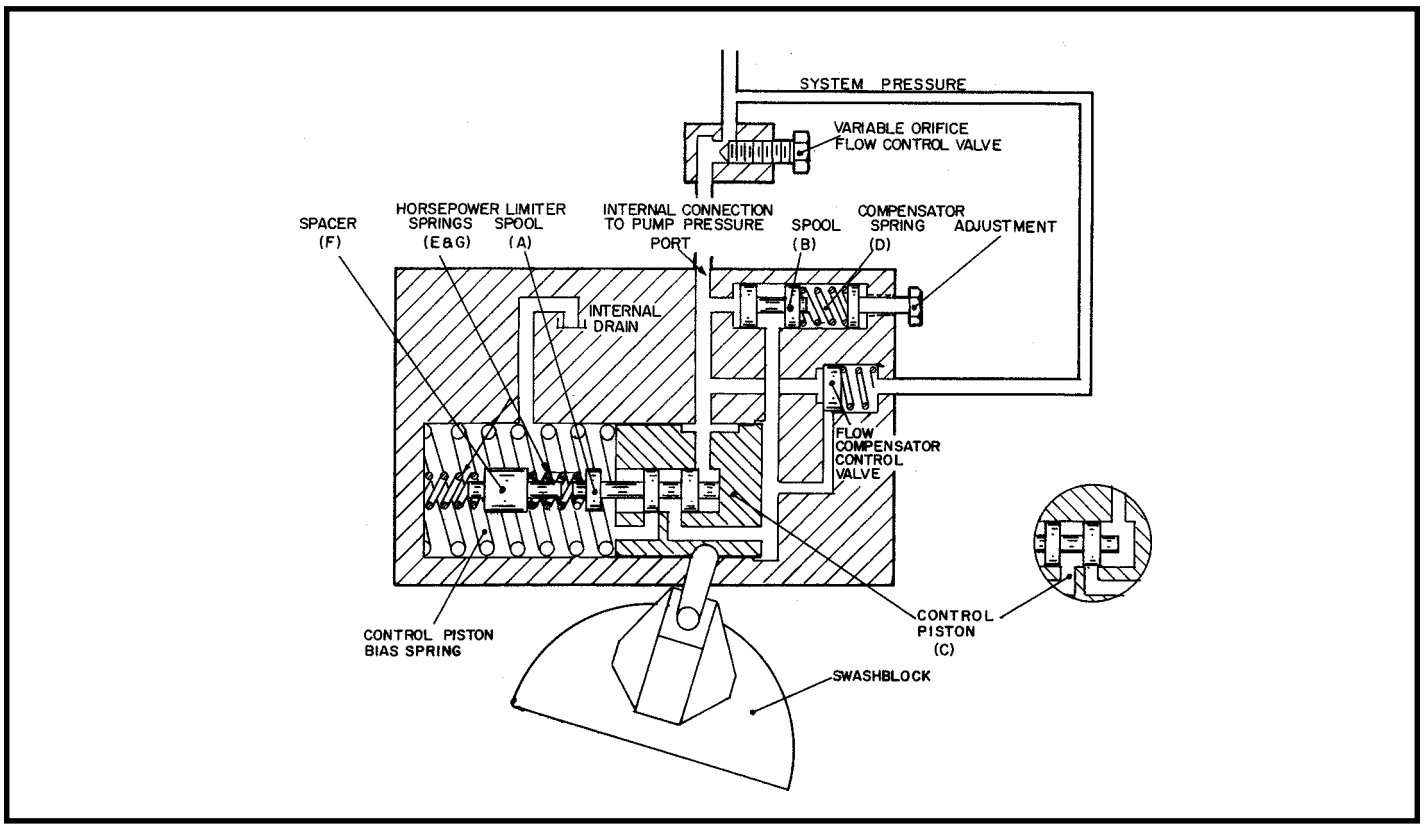

Figure 3. Cut-a-way diagram of Horsepower Limiter w/Load Sensor Control (E51197).

PRINCIPLE OF OPERATION

Refer to figure 3. Initially the load sensor elements of the control match flow and pressure to load demand. As the load on the system increases, pump pressure will also increase but the flow (volume) will remain constant. The control senses and maintains a constant pressure differential across an orifice (flow control valve) in the delivery line resulting in pump flow becoming a function of valve position. For a given flow control valve setting, the pump will maintain a constant flow regardless of changes in pump input speed and/or working pressure.

With swashblock at angle shown, pump delivers maximum volume. A rise in system pressure forces horsepower limiter spool (A) against horsepower limiter springs (E & G). Spring and spacer (F) have been selected to match your individual horsepower limit requirements. As spool (A) moves against the spring, it allows flow to the area behind control piston (C) which forces it against the control piston bias spring, thus causing it to shift position and decrease swashblock angle (and pump delivery). The follow-up movement of the piston (C) over the spool (A) stops further flow to the area behind the piston, as well as compressing horsepower limiter springs (E & G) thereby automatically increasing its resistance to pressure. If system pressure continues to rise, the horsepower limiter spool (A) is again forced against the spring (E & G) and additional volume is directed behind control piston (C) which further reduces swashblock angle and pump output volume.

If the system reaches (adjustable) preset compensator pressure, it forces the compensator spool (B) against spring (D). Volume is now allowed to flow directly behind control piston (C) and reduces swashblock angle (and pump output volume) to a point just sufficient to maintain preset pressure on the system. Thus, the compensator overrides the horsepower limiter function of the control.

PARTS LIST

Parts used in this assembly are per Oilgear specifications. Use Oilgear parts to ensure compatibility with assembly requirements. When ordering replacement parts, be sure to include pump type designation and serial number stamped on nameplate, bulletin and item number. To assure seal and packing compatibility, specify type of hydraulic fluid used.

ITEM NO.	DESCRIPTION
303	Screw, H.H.C.
351	Spool, Horsepower
352*	Spring, Compression
353*	Spring, Compression
354*	Guide, Spring
355	Seal, O'ring

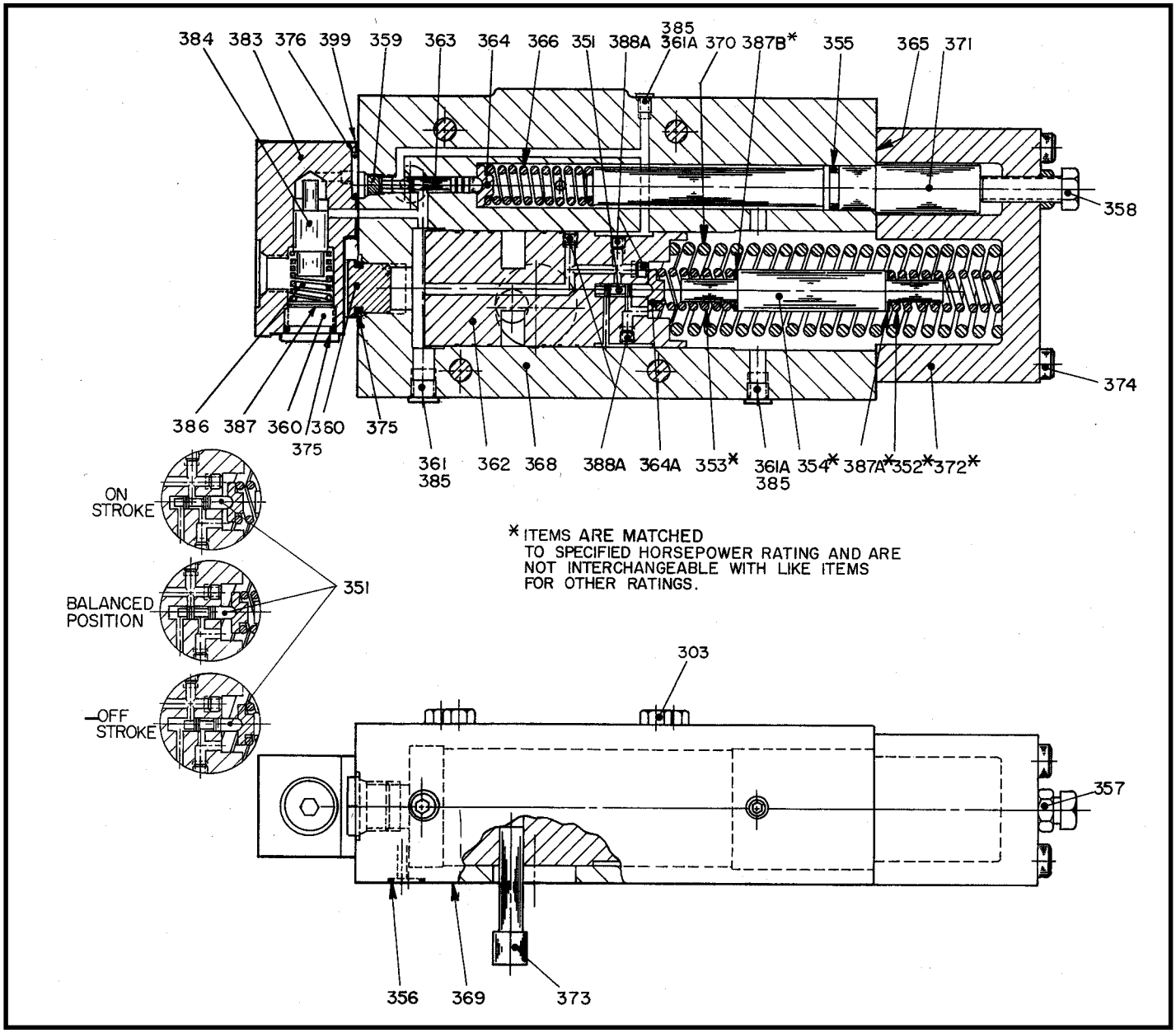

Figure 4. Parts Drawing, Oilgear Type “HF” Control (E51197).

ITEM NO.	DESCRIPTION
356	Seal, O'ring
357	Nut, Hex.
358	Screw, Compensator Adjustment
359	Plug, Pipe
360	Plug, SAE
361	Plug, SAE
361A	Plug, SAE
362	Piston, Control
363	Spool, Pressure Compensator
364	Seat, Spring
364A	Seat, Spring
365	Gasket, Control Cover
366	Spring, Pressure Compensator
368	Housing, Control
369	Gasket, Control

ITEM NO.	DESCRIPTION
370	Spring, Control Piston
371	Plug, Control
372*	Cover, Control
373	Pin, Control Piston
374	Screw, Cap
375	Seal, O'ring
376	Seal, O'ring
383	Housing, Flow Compensator
384	Spool, Flow Compensator
386	Spring, Flow Compensator
387	Shims
387A	Shims
387B*	Shims
388A	Screw, Set
399	Gasket, "CF" Module

*Items vary for different horsepower ratings.

REMOTE PRESSURE CONTROL

Refer to figure 5. Remote operation of type "HF" controls can be accomplished by installing an Oilgear remote compensator module at the location shown in the control circuit. Use module L51542 for units rated continuously for 3500 psi or less, use L51542-1 for units rated above 3500 psi.

When system pressure reaches the setting of the remote compensating module, the module opens and ports fluid into the control piston chamber via the port from which plug (361) has been removed. This fluid flow causes the pump to destroke and maintain remote pressure setting.

The compensator setting on the pump control must be set at least 200 psi (13,8 bar) higher than required maximum system pressure setting of the remote compensator module. Doing this will prevent the pump compensator control from interacting with remote adjustable compensator (sequence) module.

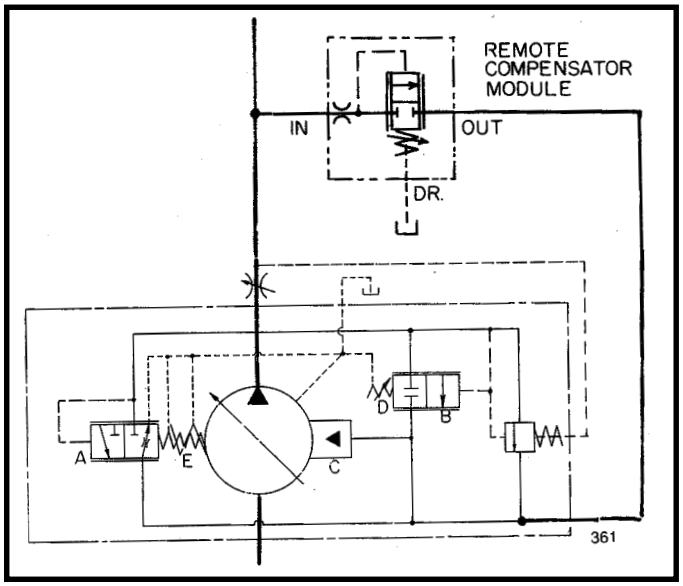

Figure 5. "HF" Control Circuit with Remote Pressure Control.

NOTES:

THE OILGEAR COMPANY
2300 So. 51st. Street
Milwaukee, WI 53219

BULLETIN 947511

Litho in USA