

SERVICE INSTRUCTIONS

OILGEAR TYPE "VU" ELECTRONIC SOLENOID OPERATED SERVO CONTROLS FOR "PVWH" AND "PVW" PUMPS.

PURPOSE OF INSTRUCTIONS

These instructions have been prepared to simplify and minimize your work of operating Oilgear Type "VU" 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.

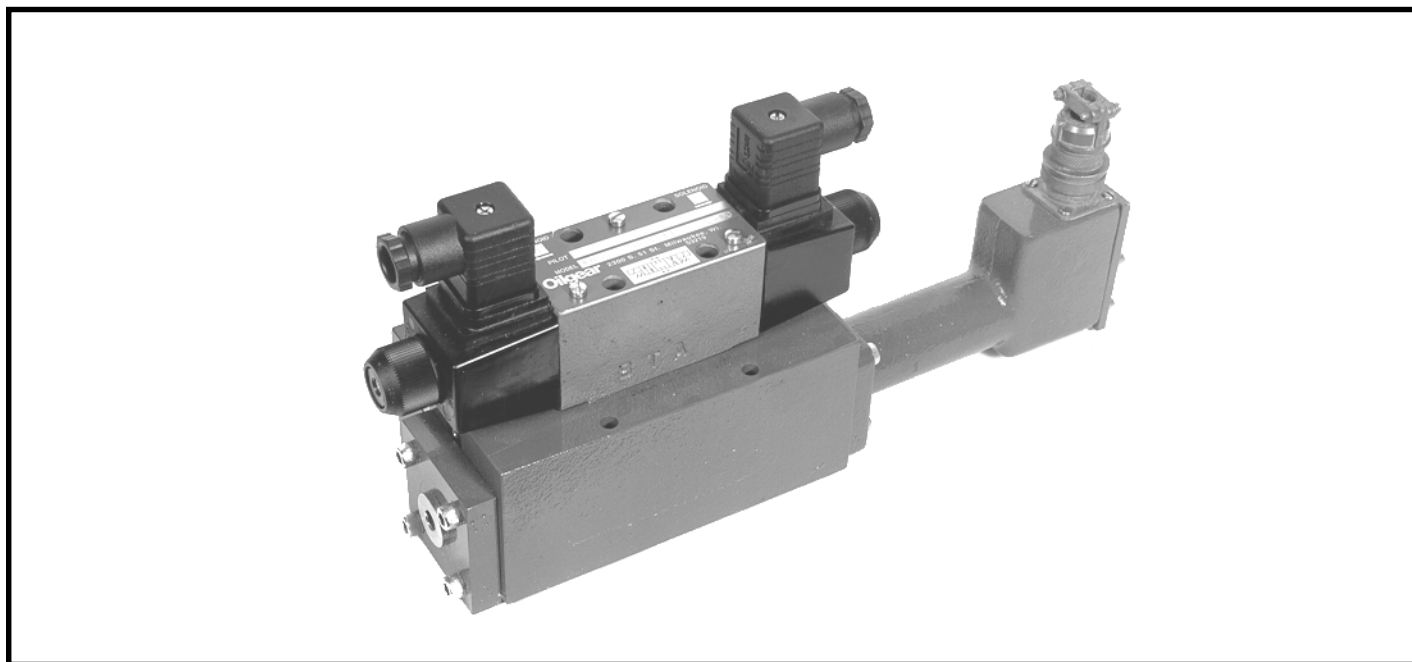


Figure 1. Typical "VU" Control for Oilgear "PVWH" and "PVW" Pumps (95000).

REFERENCE MATERIAL

Fluid Recommendations	Bulletin	90000
Filtration Recommendations	Bulletin	90007
"PVWH" and "PVW" Open Loop Pumps	Bulletin	947015
"PVWC" Closed Loop Pumps	Bulletin	947018
Basic "VU" Electronic Controls	Bulletin	936776

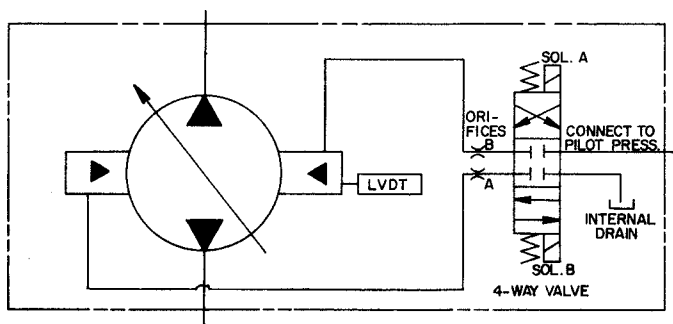


Figure 2. ASA Diagram for "VU" Control with Typical Pump (510031B).

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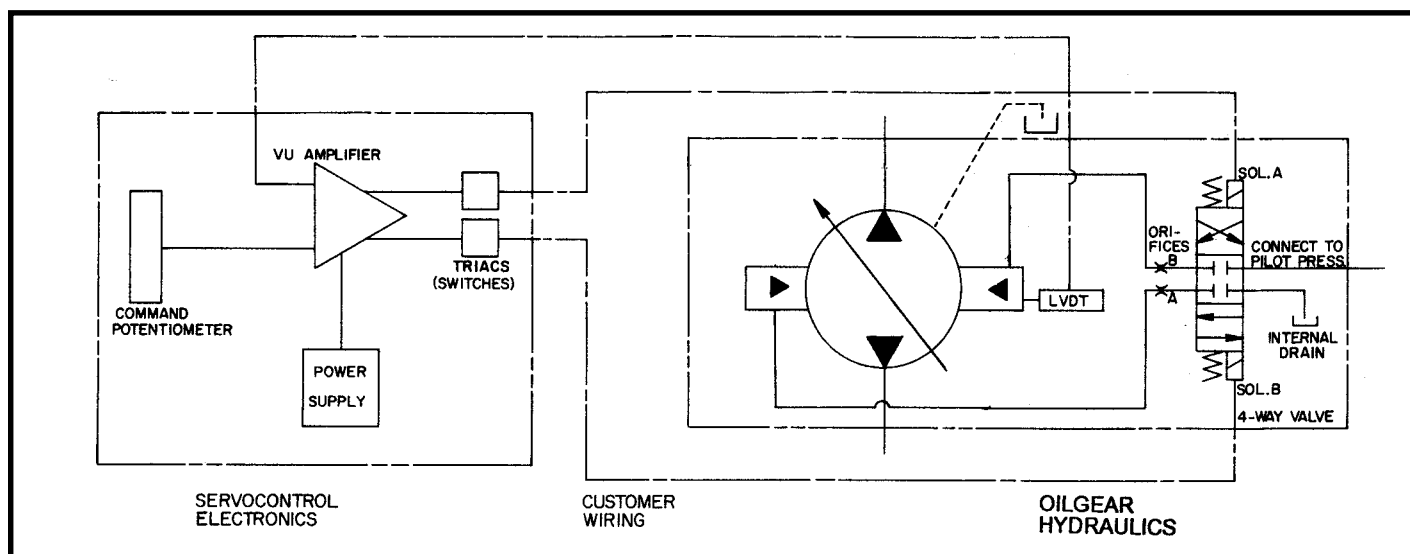


Figure 3. One of several standard Oilgear electronic command packages and a "VU" controlled "PVW" pump (5V-11446-L).

NOTE: The electronics for the "VU" control are a separate item. Instructions for Oilgear Electronic Controllers are covered in Bulletin 936776.

CONSTRUCTION

The "VU" control is mounted directly on the hydraulic unit and becomes an integral part of it. The control consists of a solenoid operated, three position four-way valve (342) ported to a control housing (368). The housing contains rate of change orifices (367C), flow passages and the control piston (362). The control piston is connected to the units swashblock via a control pin (373). Therefore, changing the control piston position, changes the units displacement. A linear variable differential transformer (LVDT) assembly (345), contained in a housing mounted on the side of the control, is connected to the control piston to electrically indicate control piston position (displacement).

PRINCIPLE OF OPERATION

Refer to figure 3. The operation of the control begins with the adjustment of the (electronic control) command potentiometer to a new setting. The voltage from the command potentiometer is sensed by the "VU" amplifier and is compared with the feedback voltage from the units' LVDT. If the voltages are not the same, an error voltage is produced. This initiates a triac switching action to energize either solenoid "A" or "B" on the control valve depending on whether the error voltage is positive or negative.

The solenoid shifts the four-way valve spool from the spring centered position and connects one side of the control piston to

pressure and the other side to drain. The control piston starts moving and changing the units displacement.

The voltage from the feedback LVDT is also changing in direct proportion to the changing position of the control piston. When the feedback voltage equals the command potentiometer voltage, the error signal is zero and both the solenoids are de-energized. The control valve spool is spring centered, blocking flow to and from the ends of the control piston, the control piston movement stops and holds that displacement.

Any further change in position of the command potentiometer or LVDT position (such as control piston "drift") will again initiate an error voltage and the same action (as above) will take place until error voltage is zero.

CAUTION!!!

On (one-way) open-loop "PVWH" or "PVW" pumps, care must be exercised to prevent control from going past the neutral position (crossing-over for delivery from the other port) or damage will result to the pump and/or the system. Consider use of Type "SA" minimum stop.

On (two-way) "PVWC" or "PVW" closed-loop (hydrostatic pumps), the control can provide controlled variable delivery from either port.

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	ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
303	Screw, Hex.	342E	Screw, Connector	347	Ring, Retaining
342	Valve, Sol. Oper. Spring Center	342F	Connector, Electric	348	Retainer, Seal
342A	Solenoid, Side A	343	Connector, LVDT Cable	349	Packing, LVDT Rod
342B	Solenoid, Side B	344	Plate, Cover	350	Housing, LVDT
342C	Screw, Cap	345	Assembly, LVDT (w/plastic conn.)	351	Stem, LVDT
342D	Seal, O'ring	346	Spring, LVDT	352	Seal, O'ring

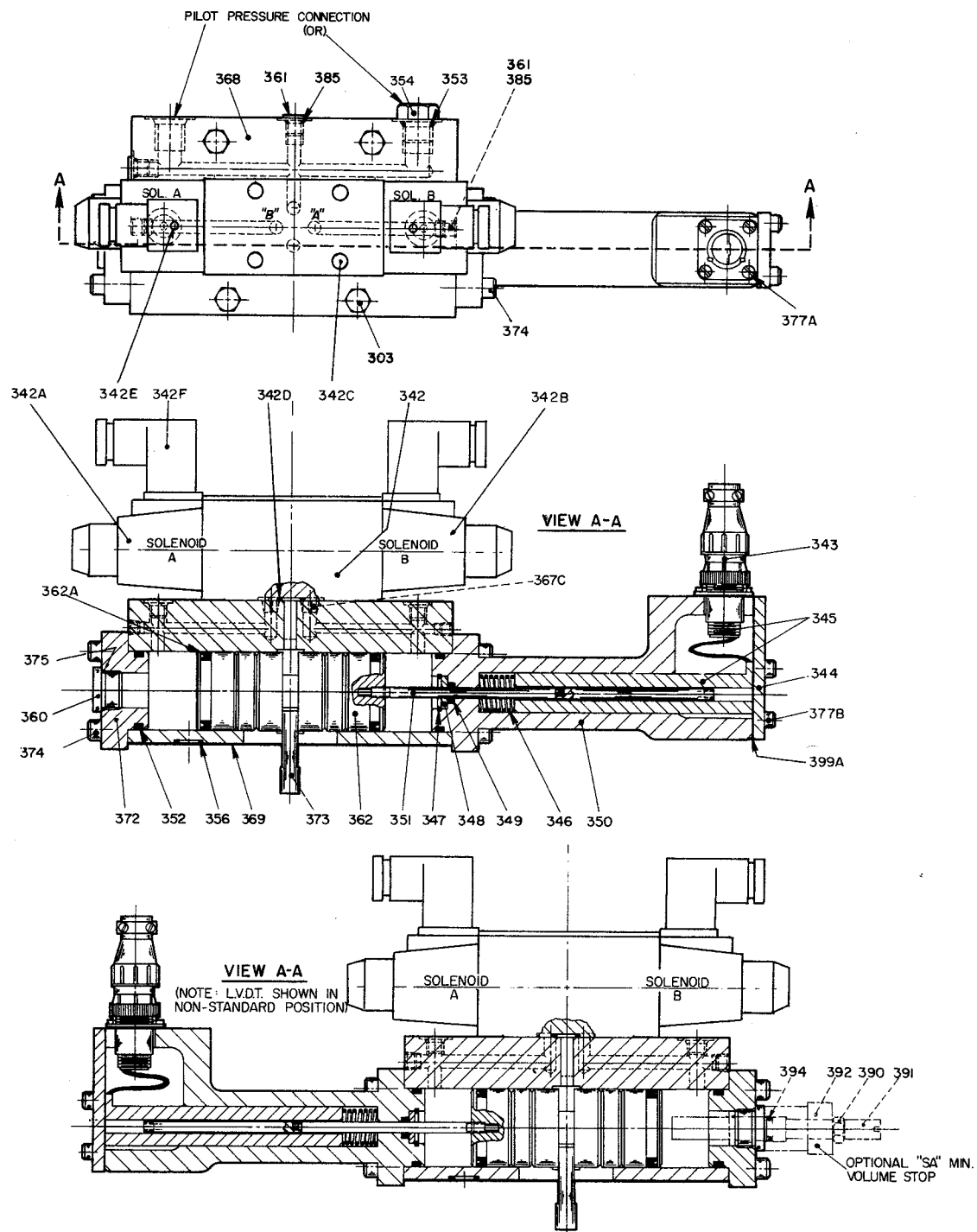


Figure 4. Parts Drawing, Oilgear Type "VU" Controls (510031).

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
353	Seal, O'ring	368	Housing, Control	377B	Screw, Cap
354	Plug, SAE	369	Gasket, Control	385	Seal, O'ring
356	Seal, O'ring	372	Cover, Control Housing	390	Nut, Jam
360	Plug, SAE	373	Pin, Control Piston	391	Stem, Min. & Max. Volume
361	Plug, Hollow Hex.	374	Screw, Cap	392	Adapter, Min. & Max. Volume
362	Piston, Control	375	Seal, O'ring	394	Seal, O'ring
362A	Seal, Piston	377A	Screw, Machine	399A	Gasket, LVDT cover
367C	Plug, Orifice				

NOTES:



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