

SERVICE INSTRUCTIONS

OILGEAR TYPE "VV" ELECTRONIC SERVO VALVE CONTROLS FOR "PVWH" AND "PVW" PUMPS

PURPOSE OF INSTRUCTIONS

These instructions have been prepared to simplify and minimize your work of operating Oilgear type "VV" 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 "VV" Control for Oilgear "PVWH" and "PVW" Pumps (N89-002-24).

REFERENCE MATERIAL

Fluid Recommendations	Bulletin 90000
Filtration Recommendations	Bulletin 90007
"PVWH" and "PVW" Open-Loop Pumps	Bulletin 947015
"PVWC" Closed Loop Pumps	Bulletin 947018

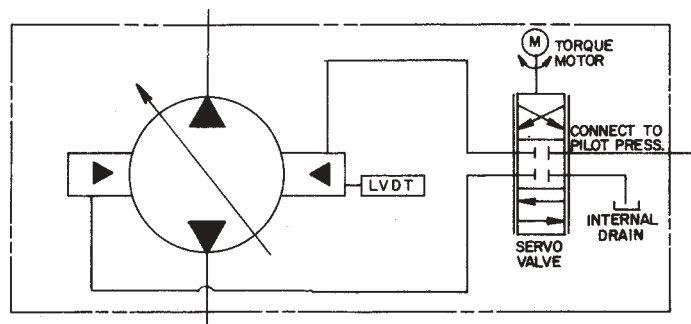


Figure 2. ASA Diagram for "VV" Control with Typical Pump (510073).

THE OILGEAR COMPANY

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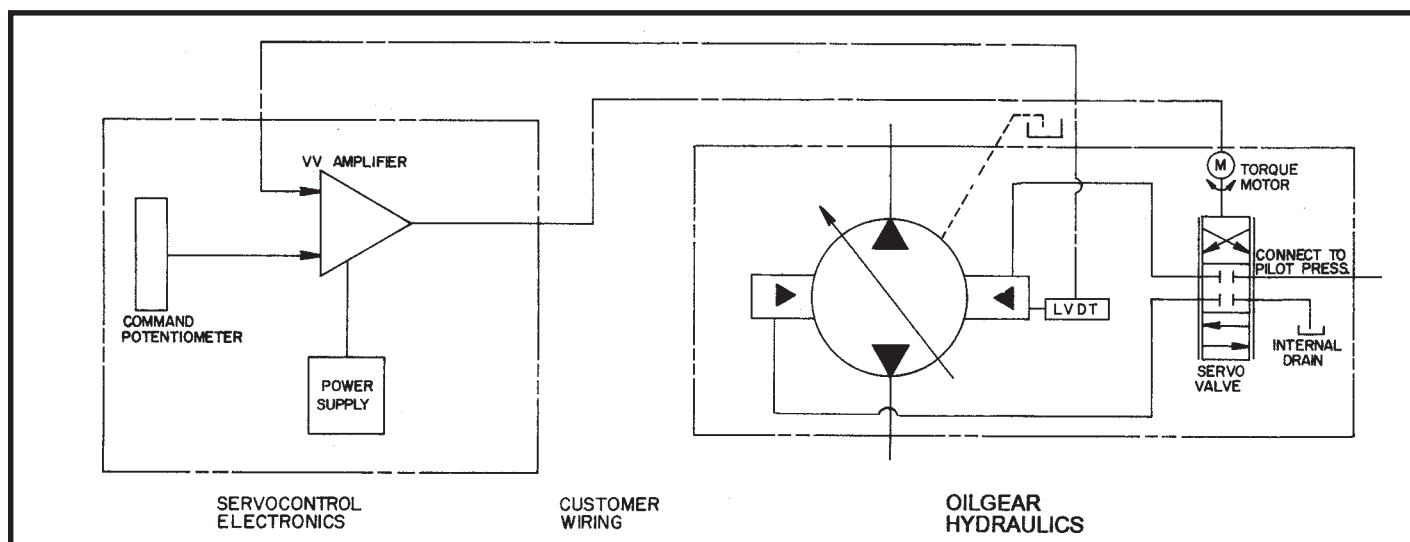


Figure 3. One of several standard Oilgear electronic command packages and a “VV” controlled “PVW” pump (5V-11446-L).

NOTE: The electronics for the “VV” control are a separate item and covered by other circuits and text.

CONSTRUCTION

The “VV” control is mounted directly on the hydraulic unit and becomes an integral part of it. This control consists of an electrohydraulic servo valve (342) ported to housing (368). The housing contains flow passages and a control piston (362). The control piston is connected to the units swashblock via control pin (373). Therefore, changing the control piston position changes the units displacement. A linear variable differential transformer (LVDT) assembly (345) contained in housing (350) mounted on the side of the control is connected to the control piston to electrically indicate control position (displacement).

PRINCIPLE OF OPERATION

Refer to figure 3. The operation of the control begins with the adjustment of the command potentiometer to a new setting. The voltage from the command potentiometer is sensed by the “VV” amplifier and is compared with the feedback voltage from the control’s LVDT. If the voltages are not the same, an error voltage is produced. The error voltage is amplified and used to actuate the torque motor of the servo valve.

The torque motor shifts the servo valve and connects one side of the control piston to pressure and the other side of the control piston to drain. The control piston starts moving and changes

the unit’s displacement. The direction the servo valve moves depends up on whether there is a positive or negative error voltage.

The voltage from the feedback LVDT is also changing in direct proportion to the changing position of the control piston. When feedback voltage equals the command potentiometer voltage, the error voltage is zero. The torque motor centers the servo valve spool to block flow to and from the control piston chambers and the control piston stops and holds displacement.

Any further changes in position of 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/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. Hd.	343	Connector, LVDT Cable	350	Housing, LVDT
342	Assembly, Servo Valve	344	Plate, Cover	351	Stem, LVDT
342C	Screw, Cap	345	Assembly, LVDT/Plastic Conn.	352	Seal, O’ring
342D	Seal, O’ring	346	Spring, LVDT	353	Seal, O’ring
342G	Connector, Servo Cable	347	Ring, Retaining	354	Plug, SAE
342H	Plate, Adapter	348	Retainer, Seal	356	Seal, O’ring
342J	Seal, O’ring	349	Packing, LVDT Stem	360	Plug, Hollow Hex.

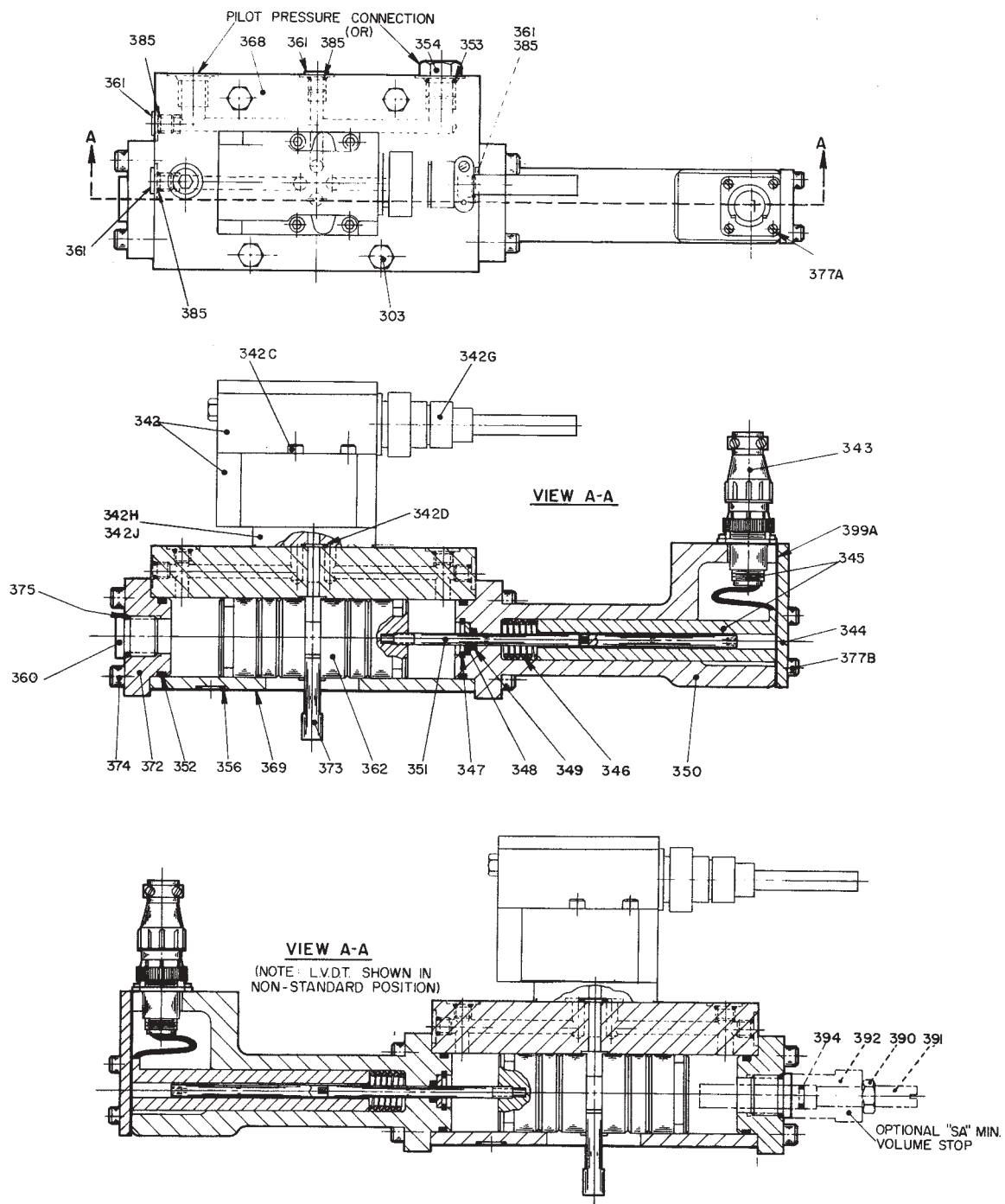


Figure 4. Parts Drawing, Oilgear Type "VV" Control (E51321).

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

NOTES:



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