

SERVICE INSTRUCTIONS

OILGEAR SOLENOID PILOT OPERATED FOOT (COUNTERBALANCE) VALVES WITH SCREW ADJUSTMENT

PURPOSE OF INSTRUCTIONS:

These instructions are furnished to simplify and minimize your work of operating and maintaining Oilgear solenoid pilot operated foot (counterbalance) valves with screw adjustment. Your acquaintance with the construction and characteristics of these valves will help you obtain optimum performance, reduce shut-downs and increase service life. Some valves may be modified for specific applications from those described in this bulletin and other changes may be made without notice.

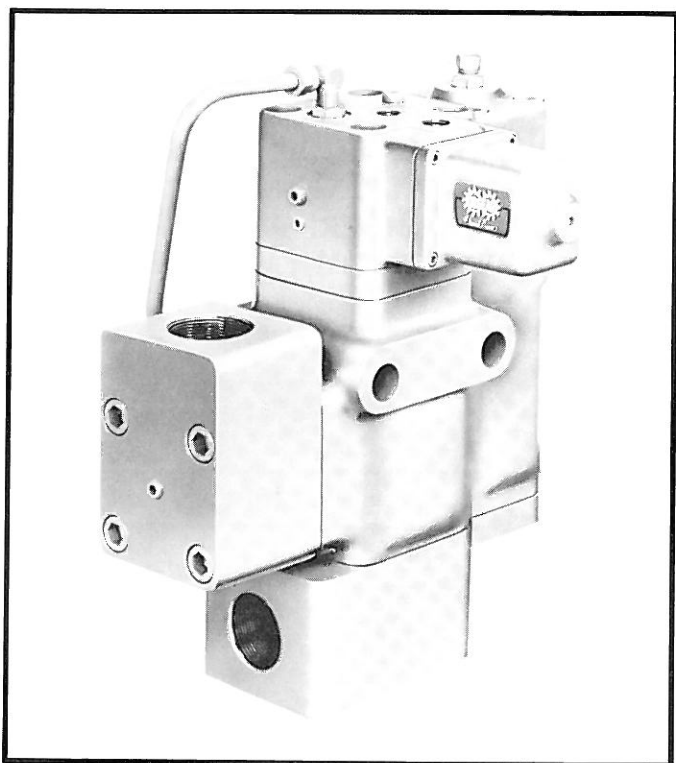


Figure 1. Typical Oilgear 2" solenoid pilot operated foot (counterbalance) valve (54130-R).

I. GENERAL INFORMATION

PIPING AND FITTINGS: Refer to Oilgear "Piping Information" Bulletin 90011 and your individual circuit diagram before connecting valve to the system.

FLUID RECOMMENDATIONS: Refer to Oilgear "Fluid Recommendations Bulletin 90000". To assure long valve life, keep fluids clean at all times.

CAUTION!

Cleanliness is essential when working on any hydraulic component. Always work in a clean area. Dirt and foreign material entering a hydraulic valve may result in malfunction or serious damage.

II. INSTALLATION

NOTE:

To aid in location of parts, numerals in parenthesis throughout the text and those found on the parts figure correspond to the Item number column on the parts listing.

Flanges must be removed from the body when welding or brazing. Pilot valve port 12 is a drain connection and MUST be connected to the reservoir above the fluid level (drain lines should be separate from return lines). For units with "BE" pilot valves (used with adapter 65), arrange piping so solenoid cover is kept full of fluid. For units with "PE" pilot valves (used with adapter 63 or no adapter) drain lines must be free flow as solenoid

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REFERENCE MATERIAL

<u>DESCRIPTION</u>	<u>BULLETIN</u>
Fluid Recommendations	90000
Piping Information	90011
Solenoid Operated Pilot Valves	980125

THE OILGEAR COMPANY

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operates dry. Pilot valve port 1 connects to the foot valve port 1. Inlet must connect to the foot valve port 1 and outlet to the foot valve port 2.

III. CONSTRUCTION/OPERATION

Valves consist of a foot valve, adjustable relief valve all integrally connected. The adjustable relief valve provides control of resistance to flow. With the solenoid energized the flow is practically free in either direction, from port 1 to 2 or from 2 to 1. With the solenoid de-energized the preset resistance to flow is from port 1 to port 2 through relief valve and practical free flow from port 2 to 1.

IV. SPECIFICATIONS

In all but a few special cases, the valves are equipped with a spring allowing adjustment from 300 to 3000 psi (20,7 to 206,9 bar).

NOTE:

Maximum working pressure is 3000 psi (206,9 bar).

VALVE SIZE IN INCHES	BOLT CIRCLE FOR TYPE "PE" PILOT VALVES
1-1/4	4"
1-1/2	4"
2	4-3/4"
2-1/2	3-3/8"

V. TROUBLESHOOTING/ADJUSTING

Flow and vibration characteristics on some installations may result in valve chatter. Inverting or changing the foot valve plunger spring or maintaining a closer fit between the plunger and valve body may reduce chatter. If this condition exists in the relief valve, reducing the size of the axial groove on the relief valve plunger may reduce chatter but can also cause higher peaks.

NOTE:

Special tools are required to remove, install, ream, lap or grind foot valve seat.

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PARTS USED IN THIS ASSEMBLY ARE PER OILGEAR SPECIFICATIONS. USE OILGEAR SUPPLIED PARTS TO INSURE COMPATIBILITY WITH ASSEMBLY REQUIREMENTS. WHEN ORDERING REPLACEMENT PARTS, INCLUDE TYPE DESIGNATION AND "L" NUMBER STAMPED ON NAMEPLATE, ITEM NUMBER AND BULLETIN NUMBER. WHEN ORDERING O-RINGS SPECIFY TYPE OF HYDRAULIC FLUID USED. SPECIFY VOLTAGE AND HERTZ WHEN ORDERING SOLENOIDS OR COILS.

PARTS LIST

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
30	Assembly, Solenoid	50	O-ring
30A	Screw, Sckt. Hd. Cap	** 52	Ring, Retaining
35	Screw, Adjusting	54	Flange, Port 1
36	Nut, Lock	54A	Screw, Sckt. Hd. Cap
37	Cap, Relief Valve	55	O-ring
37A	Screw, Sckt. Hd. Cap	56	Plunger, Foot Valve
38	Assembly, Seal (Includes Guide, Quad Ring and Back-up Ring)	57	Spring, Plunger
40	Spring, Relief Valve	58	O-ring
41	O-ring	59	Assembly, Tubing
42	Retainer, Bushing	* 60	Body, Valve
43	Guide, Inner Spring	* 61	Seat, Plunger
44	Shims, Retainer	62	Flange, Port 2
45	O-ring	62A	Screw, Sckt. Hd. Cap
* 46	Bushing, Relief Valve	** 63	Adapter, Pilot Valve
* 47	Plunger, Relief Valve	** 64	O-ring
48	O-ring	† 65	Adapter, "BE" Pilot Valve
49	Cap, Bushing	† 65A	Screw, Sckt. Hd. Cap
49A	Screw, Sckt. Hd. Cap	† 66	O-ring

* Part numbers 46 and 47, 56, 60 and 61 furnished only as assemblies.

** Not used on all size units.

† Not used on units with "PE" pilot valves.

O-RING SIZES

ITEM NUMBER	VALVE SIZE		
	1-1/4" AND 1-1/2"	2"	2-1/2"
41	2-1/2 x 3/16 x 90	2-5/8 x 3/16 x 90	4-1/4 x 3/16 x 90
45	2-1/8 x 3/16 x 90	2-1/4 x 3/16 x 90	2-3/4 x 3/16 x 90
48	1-3/8 x 1/8 x 90	1-3/8 x 1/8 x 90	1-7/8 x 3/16 x 90
50	2-3/4 x 3/16 x 90	3-1/8 x 3/16 x 90	3-7/8 x 3/16 x 90
55	2-1/4 x 3/16 x 90	2-3/4 x 3/16 x 90	3 x 3/16 x 90
58	2-5/8 x 3/16 x 90	3 x 3/16 x 90	3-5/8 x 3/16 x 90
64	—————	3-1/2 x 3/16 x 90	2 x 3/16 x 90
66	2-1/2 x 3/16 x 90	2-1/2 x 3/16 x 90	2-1/2 x 3/16 x 90

NOTE:

All o-ring sizes given in cross section x O.D., Duro ± 5.

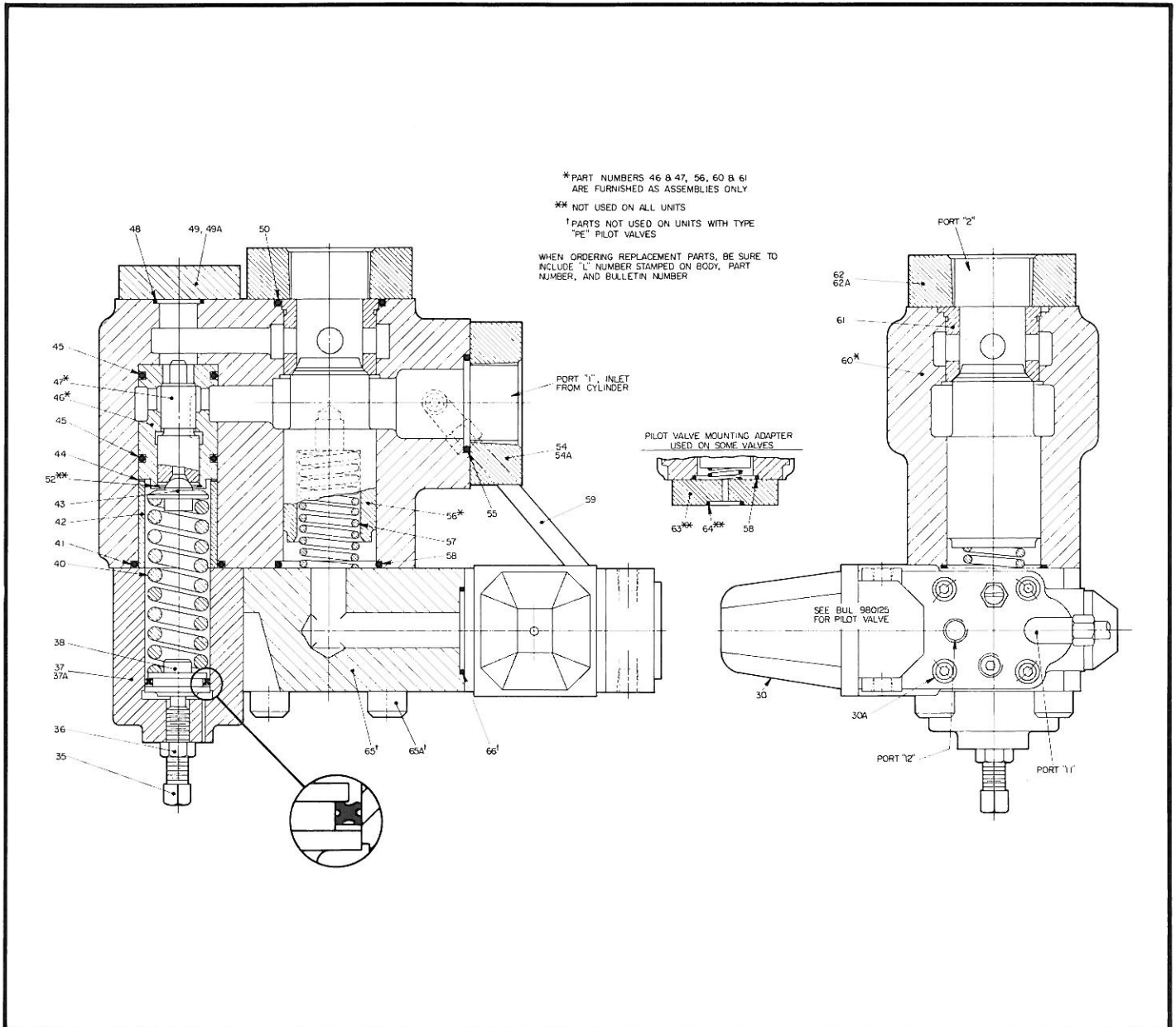


Figure 2. Parts drawing of solenoid operated foot valve (501691-E).

Turning the relief valve adjusting screw inward increases resistance setting. Turning the choke needle (pilot valve) inward slows the main plunger movement in the direction of the pilot valve.



NEVER attempt to remove or install any hydraulic component while system is running! Always stop the pump, shut power off and release pressure from the system before servicing or testing. Severe personal injury or death could result if system pressure is not released before servicing or testing.

VI. DISASSEMBLY

Valve may be serviced without disassembling piping. Disconnect flanges at ports 1 and 2 and remove the valve from the piping.

To disassemble foot (counterbalance) valve, remove pilot valve (30) as a assembly. For disassembly of the pilot valve, see reference Bulletin 980125. Remove spring (57) and plunger (56). If necessary, remove seat (61) with puller or special tools.

To disassemble relief valve, back off spring adjustment until compression is released. Remove cap (37), seal assembly (38), spring (40), guide (43), plunger (47), spacer (42) and shims (44). Remove bushing (46) if necessary.

IV. INSPECTION

If either the foot or relief valves leak, check plunger and valve seat for foreign matter or scored surfaces. Be sure the foot valve seat is a press fit in the body.

NOTE:

THERE SHOULD BE NO SLIP AT THIS SEAT!

Any o-rings which have hardened, deteriorated or been damaged should be replaced. For inspection of the pilot valve, see reference Bulletin 980125. Wash all parts thoroughly with CLEAN mineral spirits.



Always wear safety goggles when using solvents or compressed air. Failure to wear safety goggles could result in serious personal injury.

VIII. ASSEMBLY

To assemble foot (counterbalance) valve, press seat (61), if removed, into body (60). Insert plunger (56). Check to be certain plunger does not bind. Install spring (57) and o-ring (58) if necessary. For assembly of the pilot valve, see reference Bulletin 980125.

CAUTION!

Care should be taken to avoid pinching or damaging o-rings.

For relief valve assembly, when using a new bushing (46) first insert spacer (42) and bushing (without o-rings) into body (60) to be certain that the spacer is flush to 0.003 inches below face of the body. Use shims (44) or face off spacer if necessary. Remove the spacer and bushing. Install o-rings (45) onto bushing (46) and insert plunger (47). Install this assembly, the correct number of shims as determined above and spacer (42) into the body (60).

IMPORTANT!

Install the spacer so the **LARGER** bore is nearest the cap (37).

Make certain the plunger does not bind. Complete the valve assembly and adjust spring compression for desired resistance pressure. Mount the pilot valve and appropriate adapter assembly (when used) to the body (60). If disconnected, assemble flanges (49), (54) and (62).