



INSTRUCTIONS

BULLETIN 947918B

OILGEAR TYPE "C" OPPOSING ACCELERATION OPERATOR FOR TYPE "D" AND "DC" UNITS

REFERENCE INSTRUCTIONS BULLETINS

947000-----Type "D" Pumps w/o Controls.

967900-----Type "D" Transmissions w/o Control.

TO THE USER AND OPERATOR OF OILGEAR UNITS WITH TYPE "C" OPPOSING OPERATORS:

These instructions are printed to simplify and minimize your work of operating and maintaining Oilgear units equipped with type "C" opposing operators. Your acquaintance with the construction, principle of operation and characteristics of these units will help you obtain optimum performance, reduce shutdowns and increase service life. We feel confident the unit will operate to your satisfaction if these instructions are adhered to. Some operators may be modified for specific applications from those described in this bulletin.

I. CONSTRUCTION.

The principle components of the type "C" opposing operator are: a small, no-leak control piston; a control and acceleration valve head; a stroke limiting screw assembly; a normally open pilot plunger; an auxiliary plunger; a spring and spring guide, and acceleration valve end heads.

These opposing operators are flanged to "D" and "DC" units opposite a main control.

II. PRINCIPLE OF OPERATION. (See figure 2).

The type "C" opposing acceleration operator governs the slideblock shifting speed rate to prevent the accelerating or braking pressure from exceeding an adjusted setting. When the larger main control cylinder is drained, gear pump fluid behind the smaller type "C" opposing operator piston shifts the slideblock toward the main control. When control fluid is applied behind the main control piston, the force on the larger area piston overcomes the force on the smaller opposing operator piston and the slideblock shifts toward the type "C" opposing operator.

Fluid lines connect unit port 18 (port "B") with operator port 10B, and unit port 19 (port "A") with operator port 10A. When unit delivery is from port "A," fluid flows out port 19, into operator port 10A and behind the auxiliary plunger. With unit delivery from port "B," fluid flows out port 18, into operator port 10B and behind the pilot plunger. When the fluid behind either the normally open pilot plunger, or, the auxiliary plunger, exceeds the pressure setting of the pilot plunger spring, it shifts the pilot plunger toward the closed position. Fluid being directed into, or forced from behind the small control piston is throttled as it passes the pilot plunger land, thus, slowing the rate at which the slideblock shifts. The "slow-down" action does not begin until the operating pressure exceeds that of the pilot plunger spring setting which must be shimmed at least 250 psi below the setting

of the high pressure relief valves to prevent the relief valves from opening during normal operation.

III. SPECIFICATIONS.

Refer to basic unit reference bulletin.

IV. MALFUNCTIONS AND CAUSES.

A. ERRATIC OR UNRESPONSIVE CONTROL.

1. Faulty main control (see reference bulletin).
2. Faulty radial piston unit (See reference bulletin).
3. Low control fluid (gear pump) pressure (see reference bulletin).
4. Improper high pressure relief valve setting (see reference bulletin).
5. Damaged or disconnected fluid lines between unit ports 18 and 19 and control ports 10A and 10B.
6. Improper shimming of pilot plunger spring.
7. Binding sticking or worn pilot plunger, auxiliary plunger or control piston and piston ring.
8. Dirt or foreign material obstructing fluid passages.

V. TESTING AND ADJUSTING.

Test and adjust the units high pressure and control (G. P.) pressure relief valves as described in basic unit reference bulletins.

Operate the unit at full speed in each direction with machine loaded and observe the slideblock stroke indicator action during reversals. In normal operation, the slideblock will surge initially about 10% of the unit's eccentricity and the balance of movement will be slower and smooth. Slideblock should reach full stroke "F" mark at approximately the same time the driven element reaches full speed. An initial surge of greater than 10% of the unit's eccentricity indicates excessive air in the control, a sticking pilot plunger, or, a sticking auxiliary plunger. Loosen pipe plug (365) and operate main control to full stroke several times to remove air. When solid fluid appears, tighten pipe plug. If

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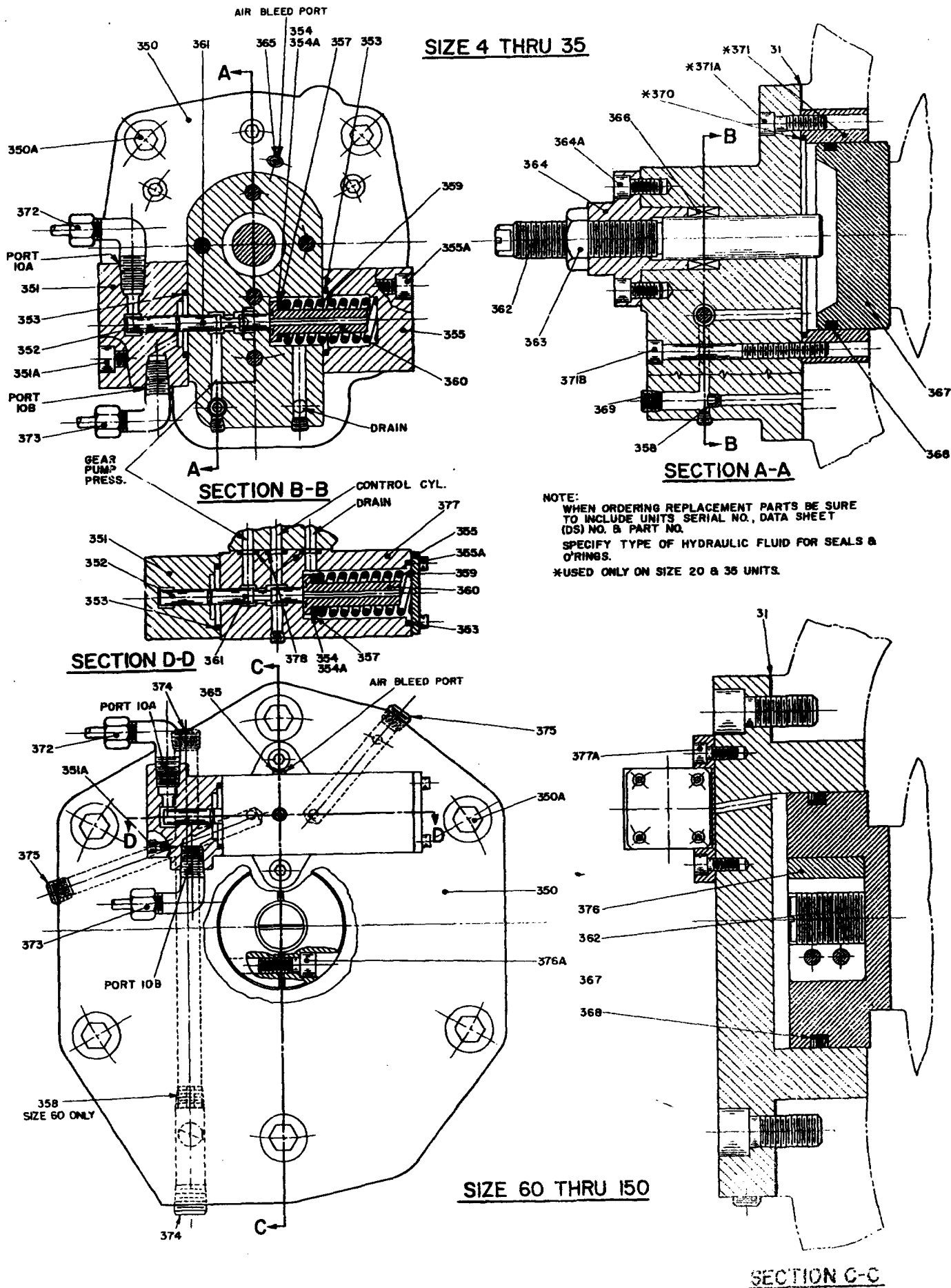


Figure 1. Parts Drawing, Type "C" Opposing Operator DS-947918-B (504968-B).

IX. PARTS LIST

Part No.	Description	Part No.	Description
350.	Housing, Operator	364A.	Screw, Sock. Hd. Cap
350A.	Screw, Sock. Hd. Cap	365.	Plug, Pipe
351.	Head, Operator End	366.	Packing, Adj. Screw
351A.	Screw, Sock. Hd. Cap	367.	Piston, Control
352.	Plunger, Auxiliary	368.	Assembly, Piston Ring
353.	Seal, O'ring	369.	Plug, Pipe
354.	Shim, Spring .003" Thick	*370.	Seal, O'ring
354A.	Shim, Spring 032" Thick	371.	Spacer, Control Piston
355.	Head, Spring End	371A.	Screw, Sock. Hd. Cap
355A.	Screw, Sock. Hd. Cap	371B.	Screw, Sock. Hd. Cap
356.	Plug, Pipe	372.	Tubing w/Fittings
357.	Guide, Spring	373.	Tubing w/Fittings
358.	Plug, Orifice	374.	Plug, Pipe
359.	Spring, Pilot Plunger	375.	Plug, Pipe
360.	Guide, Spring	376.	Spacer, Piston
361.	Plunger, Pilot	377.	Body, Valve
362.	Screw, Adjusting	377A.	Screw, Sock. Hd. Cap
363.	Nut, Lock	378.	Seal, O'ring
364.	Gland, Adj. Screw		

When ordering replacement parts, specify unit serial number, part number and data sheet (DS) number.

Specify type of hydraulic fluid used when ordering O'rings and packings.

*Parts used only on size 20 and 35 units.

O'RING SIZES
Cross Section x O.D. Duro + 5

Part No.	UNIT SIZE			
	4, 8 & 12	20 & 35	60 & 100	150
353.	1/8 x 1-5/8 90	1/8 x 4-7/8 90	1/8 x 1-5/8 90	-
370.	-----	1/8 x 4-7/8 90	-----	-
378.	-----	-----	1/16 x 1/2 70	-

initial surge is still excessive, the auxiliary or pilot plunger may be sticking. Refer to Sections VI and VII on Disassembly and Inspection.

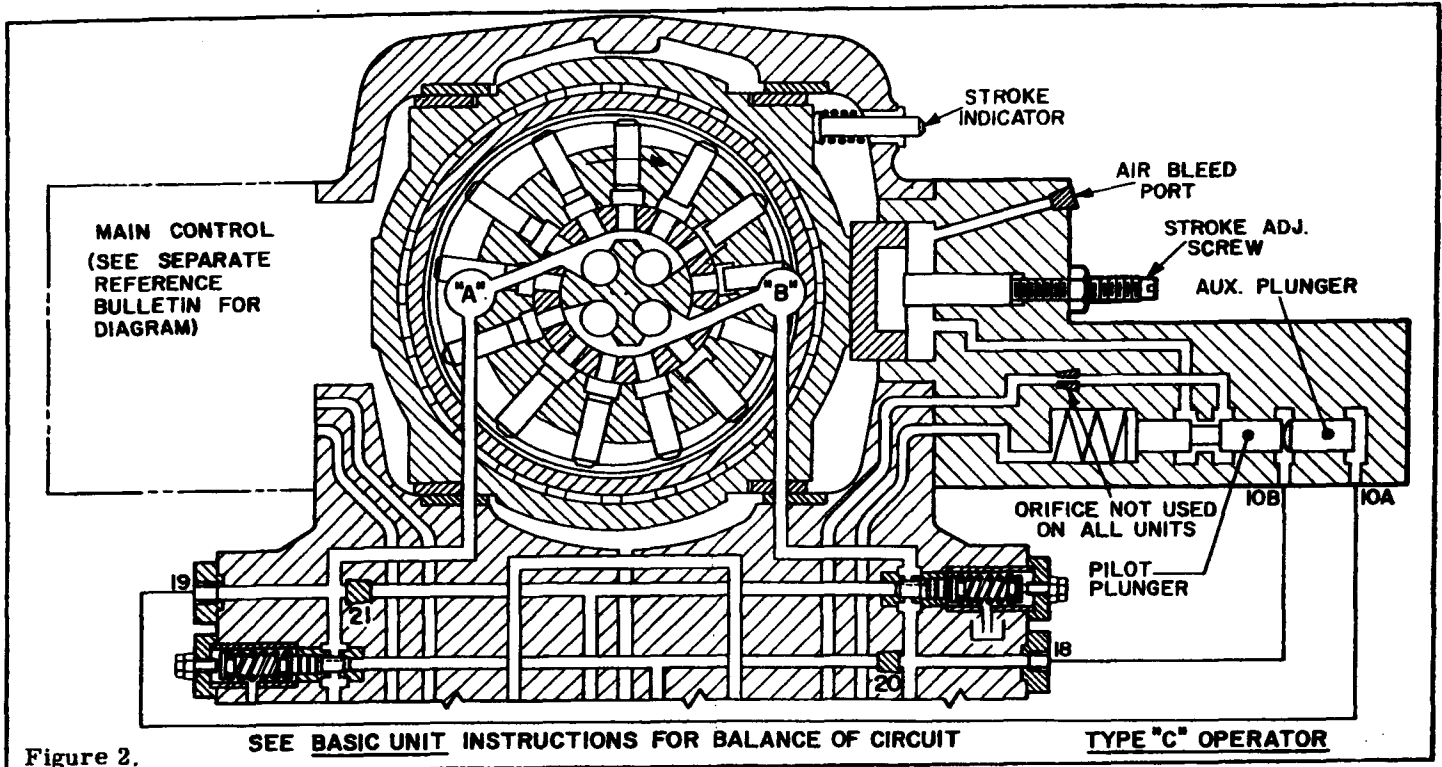
If the slideblock stroke indicator moves rapidly to full stroke before the driven machine reaches full speed the operator pressure setting may be too high. Proceed as follows to check the pressure setting: Install pressure gages (0-3000 psi) in the high pressure ports and observe pressure required with an average load on the machine during acceleration to full stroke. A "peak," approximately equal to the high pressure relief valve setting, will occur initially; then the pressure will decrease to a "steady value" until the driven machine reaches full speed. The "steady value" reading is the operator pressure setting. Remove shims (354 and 354A) to lower the setting to at least 250 psi below the setting of the high pressure relief valves. If, when the main control is actuated to shift the slideblock to full stroke and then returned to neutral, the slideblock stays in the full stroke position except for a slight drift toward neutral, the operator pressure setting is too low. Add shims (354 and 354A) to increase the setting.

Adjusting screw (362) limits the slideblock stroke away from the main control. After loosening locknut (363) on size 4-35 units, turn adjusting screw (362) counter-clockwise to increase slideblock stroke and clockwise to decrease the stroke. On size 60-150 units, loosen screws (376A) and turn adjusting screw clockwise to decrease stroke and counter-clockwise to increase stroke.

VII. DISASSEMBLY.

Size 4 thru 35 Operators.

Disconnect piping from unit ports 18 and 19 to the operator. Remove screws (351A) and separate end head (351) from operator housing (350). Withdraw auxiliary plunger (352), pilot plunger (361) and O'ring (353). Withdraw screws (355A) and carefully separate end head (355) from operator housing (350). Withdraw O'ring (353), spring (359), guide (357), shims (354 and 354A) and spring guide (360). Remove screws (350A) and separate operator housing (350) from units case. Withdraw gasket (31) and control piston (367). Remove piston ring assembly (368) from the piston,



if replacement is necessary. Remove screws (371A and 371B) and separate spacer ring (371) (when used) from control housing (350). Withdraw O-ring (370), if used. Remove pipe plug (369) for access to orifice plug (358), if removal is required. Remove screws (364A) and gland (364). Withdraw adjusting screw packing (366). Remove locknut (363) and turn adjusting screw (362) from gland (364).

Size 60, 100 and 150 Operators.

Disconnect piping from unit ports 18 and 19 to the operator. Remove screws (377A) and separate acceleration valve assembly from operator housing (350) and withdraw O-rings (378). Remove screws (350A); separate housing (350) from case and remove gasket (31). Withdraw control piston (367) and remove piston ring assembly, if replacement is required. Withdraw adjusting screw assembly, remove screws (376A) and turn adjusting screw (362) from spacer (376). Remove screws (351A) separate end head (351) from valve body (377) and withdraw pilot plunger (361), auxiliary plunger (352) and O-ring (353). Remove screws (355A), end head (355) and withdraw spring (359), guide (357), shims (354 and 354A), guide (360) and O-ring (353).

VII. INSPECTION.

Clean all parts thoroughly and make certain fluid passages are clean. Inspect auxiliary plunger (352), pilot plunger (361), control piston (367) and piston ring assembly (368) for signs of excessive wear or damage and replace if necessary. Be sure the plungers move freely in their bores. Inspect O-rings and packings for hardening, deterioration and damage and replace, if necessary.

VIII. ASSEMBLY.

Size 4 thru 35 Operators.

If orifice plug (358) was removed, install it and plug (369). Insert adjusting screw packing (366) in its bore. Turn adjusting screw (362) into gland (364) and install locknut (363). Secure gland to housing (350) with screws (364A). If piston spacer (371) is used, secure it, with O-ring (370) in place, to housing (350) with screws (371A and 371B). Install piston ring assembly (368) on piston (367) and insert the piston in its bore.

Position gasket (31) and secure housing (350) in place with screws (350A). Place shims (354 and 354A), guide (357) and spring (359) on spring guide (360) and insert in housing (350). Insert O-ring (353) in end head (355) and secure the end head to housing (350) with screws (355A). Install pilot plunger (361), auxiliary plunger (352) and O-ring (353) in their respective bores. Secure end head (351) to housing (350) with screws (351A). Connect tubing assemblies (372 and 373) to unit ports 18 and 19. Test and adjust as described in Section V.

Size 60, 100 and 150 Operators.

Turn adjusting screw (362) into spacer (376) and secure with screws (376A). Insert spacer into control piston (367). If piston ring assembly (368) was removed, install it in its bore. Insert the control piston into housing (350). Position gasket (31) and secure housing (350) to units case. Install O-rings (378) in their bores and secure valve body (377) to housing (350). Place shims (354 and 354A), guide (357) and spring (359) on spring guide (360) and insert in valve body (377). Install O-ring (353) and secure end head (355) to valve body with screws (355A). Install pilot plunger (361) auxiliary plunger (352) and O-ring (353) in their respective bores. Secure end head (351) to valve body with screws (351A). Connect tubing assemblies (372 and 373) to unit ports 18 and 19. Test and adjust as described in Section V.

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