ITT Industries

AUTOMOTIVE
DEFENSE & ELECTRONICS
FLUID TECHNOLOGY

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INSTRUCTION AND MAINTENANCE MANUAL GH232T REVERSING RELAY

PRINCIPLE OF OPERATION

The purpose of the GH232T is to reduce the cushion load to the actuator in proportion to the positioner output pressure. This effectively provides the advantage of a full reversal positioner by providing full differential pressure across the actuator piston if necessary.

There are three active pressure chambers in the GH232T. These chambers are labeled S, B, and C on the sectional drawing. The supply pressure is connected to the port marked "IN". Note that this port is also connected to the chamber designated as "S". The positioner output pressure is connected to the middle port marked "B". The output of the GH232T is ported to chamber "C".

The operation of the GH232T can be explained by evaluating the balance of forces on the diaphragm assembly. In equilibrium, the upward forces must balance the downward forces. Note that there are two sizes of diaphragm areas in this device. The effective area of the larger diaphragm is equal to two times the area of the smaller diaphragm.

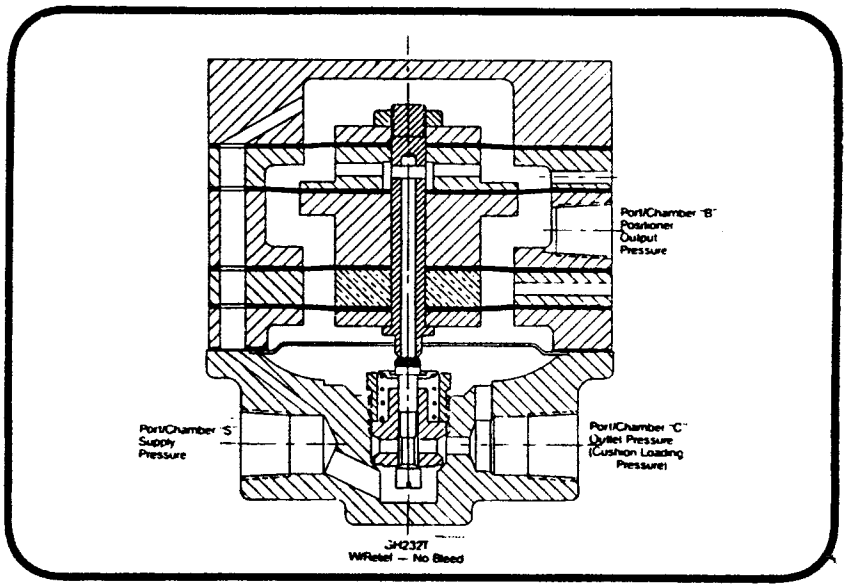
Let the various pressures in each chamber be designated by the letter assigned to each. The smaller diaphragm area will be designated as "A", and the larger area will therefore be equal to 2A. Balancing the resulting upward and downward forces provides the following result:

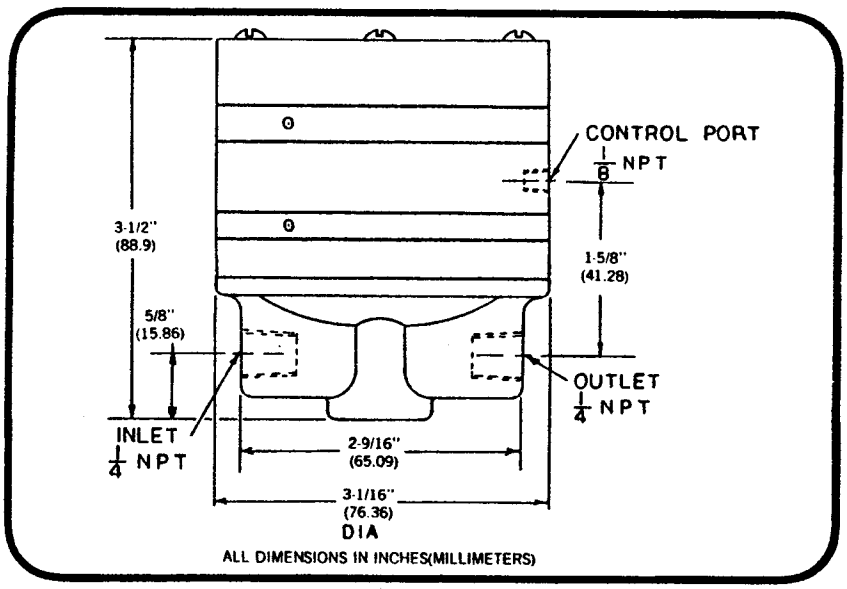
$$(S \cdot A) + (B \cdot A) = (B \cdot 2A) + (C \cdot A)$$

Dividing through by the area "A" and rearranging yields:

$$C = S - B$$

In other words, the output of the GH232T, "C", is equal to the supply pressure minus the positioner output pressure. Therefore, as the positioner output pressure increases, the cushion load pressure provided by the GH232T decreases accordingly. As the positioner output reaches its maximum which is the supply pressure, the output of the GH232T goes to zero providing the full differential pressure across the actuator piston. At intermediate positioner output pressures, the cushion load is adjusted as necessary to provide the actuator force required.





FOR CERTIFIED DIMENSIONAL DRAWING, REFER TO A17-85

INSTALLATION

CAUTION: Maximum Suppy Pressure is 100 PSI(690 kPa).

Unit has two ¼" N.P.T. connections. Port "B" is ⅛" N.P.T. **IT IS RECOMMENDED THAT A FILTERED AIR SUPPLY BE USED.**

Check all connections for leakage after installation.

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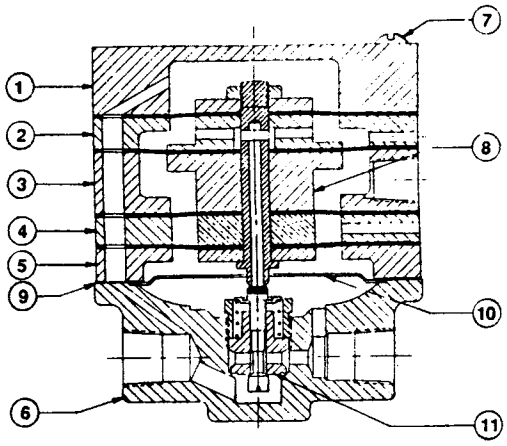
DATE: 10/91 - Rev. C

C-8050



ITEM NO.	DESCRIPTION	QTY. REQ'D.	GH232T
1	Upper Cap	1	6021299
2	Spacer	1	6021224
3	Spacer	1	6021216
4	Spacer	1	6021208
5	Spacer	1	6021182
6	Body	1	6320782
7	FIHMS	6	6900578
8 (1)	Diaphragm Assembly	1	6021174
9 (1)	Gasket	1	6073498
10	Baffle Plate	1	6319115
11	Nozzle Assembly	1	6385637

NOTES: 1. Recommended spare parts kit can be purchased individually or as a spare parts kit, under number 6385504 - Spare Parts Kit (Consists of items 8 and 9).
2. When ordering spare parts, specify complete catalog no., item no. and part no. This will permit positive identification and rapid handling of order.

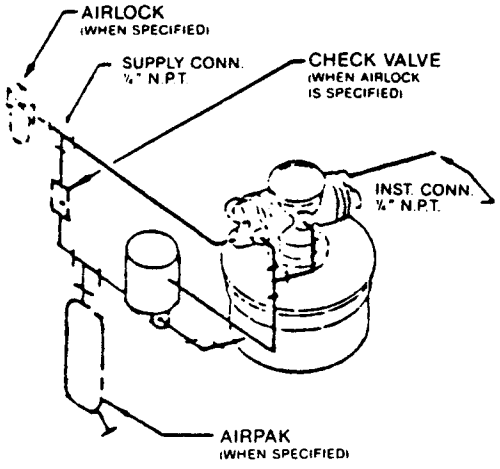
MAINTENANCE

Remove air supply pressure prior to performing maintenance.

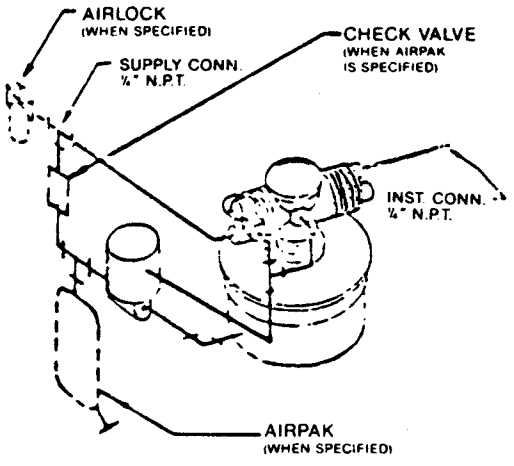
Periodic replacement of the diaphragm assembly and nozzle assembly is recommended for services where the unit is on stream continuously and where consistent high accuracy regulation is required. The frequency of replacement will depend on the nature of the service, cleanliness of air, humidity of air, etc.

To replace the diaphragm assembly (8), remove six screws (7) and lift off upper cap (1). Lift off diaphragm assembly (8) and spacers (2), (3) and (4). Insert spacers (2), (3) and (4) in diaphragm assembly as shown in cross-sectional. Line up through holes and place diaphragm assembly/spacer stack over spacer (5) again lining up through hole. Re-install upper cap (1) lining up through hole and tighten six screws (7). The six screws should be tightened alternately.

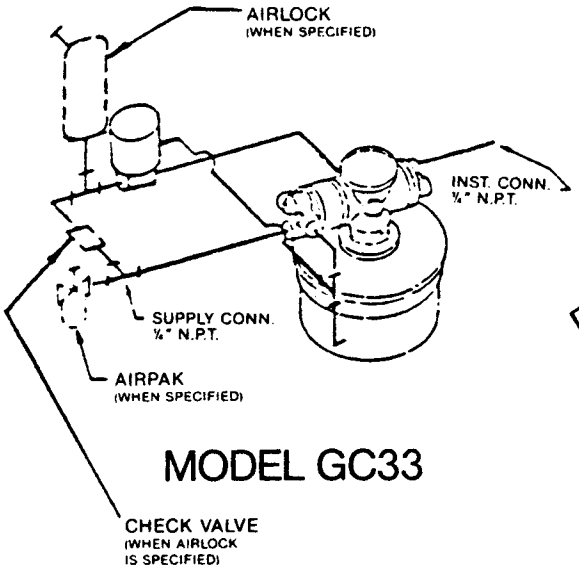
To replace nozzle assembly (11) loosen six screws (7) and slide body (6) off. Use 5/8" socket wrench to remove and replace nozzle assembly to avoid damage to the nozzle. Nozzle assembly may be cleaned by immersion in a suitable solvent and blowing dry with air stream.



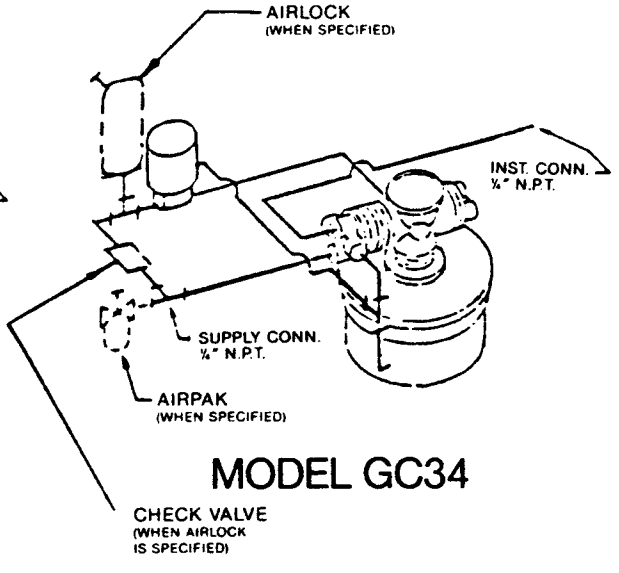
MODEL GC31



MODEL GC32



MODEL GC33



MODEL GC34

MODEL		GC31	GC32	GC33	GC34
AS INSTRUMENT SIGNAL INCREASES	POSITIONER OUTPUT	INCREASES	DECREASES	INCREASES	DECREASES
	ACTUATOR STEM MOVES	OUT	IN	IN	OUT
POSITIONER OUTPUT LOADING TO ACTUATOR		TOP	TOP	BOTTOM	BOTTOM
ON AIR FAILURE (WITH AIRLOCK) ACTUATOR STEM MOVES		IN	IN	OUT	OUT
*LETTER DESIGNATION IN ACTUATOR MODEL NO.		C	H	K	V

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WARNING: **MANUFACTURED WITH (1, 1, 1-TRICHLOROETHANE), A SUBSTANCE WHICH HARMS PUBLIC HEALTH AND ENVIRONMENT BY DESTROYING OZONE IN THE UPPER ATMOSPHERE.**