

# REVERSING RELAY GH232T

## 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. The 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 "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.

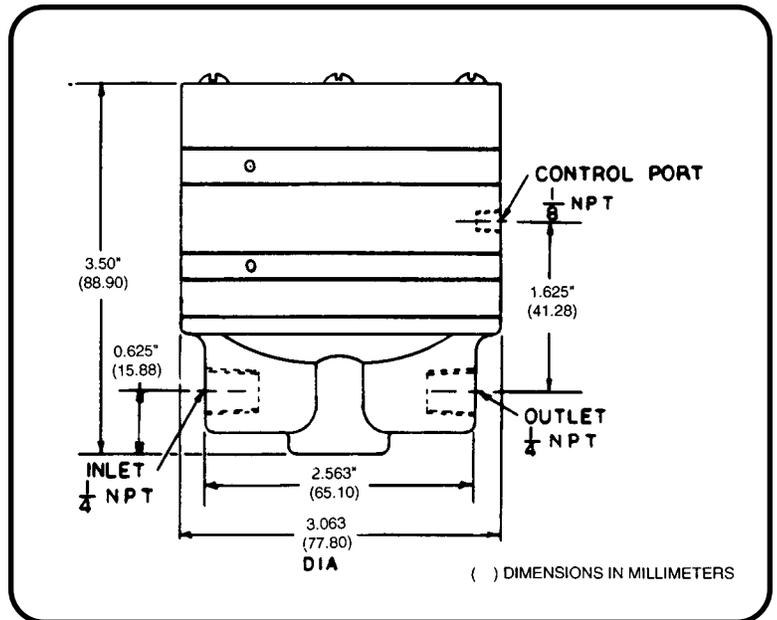
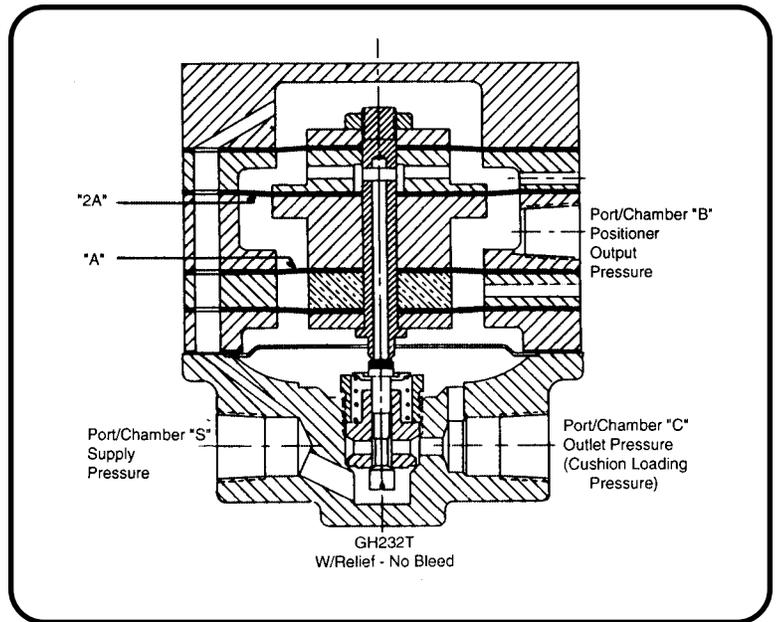
Let the various pressures in each chamber be designated by the letter assigned to each. The smaller diaphragm area will be designated as "A", and the larger area will therefore be equal to 2A. Balancing the resulting upward and downward forces provides the following result:

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

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.



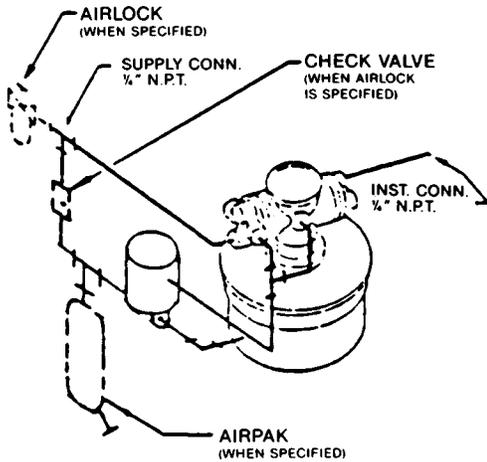
For Certified Dimensional Drawing, Refer to A17-85

## INSTALLATION

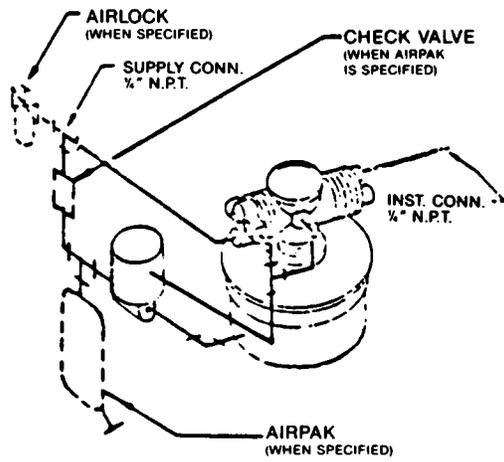
**CAUTION: Maximum Supply Pressure is 100 PSI.**

Unit has two 1/4" NPT connections. Port "B" is 1/8" NPT. **IT IS RECOMMENDED THAT A FILTERED AIR SUPPLY BE USED.**

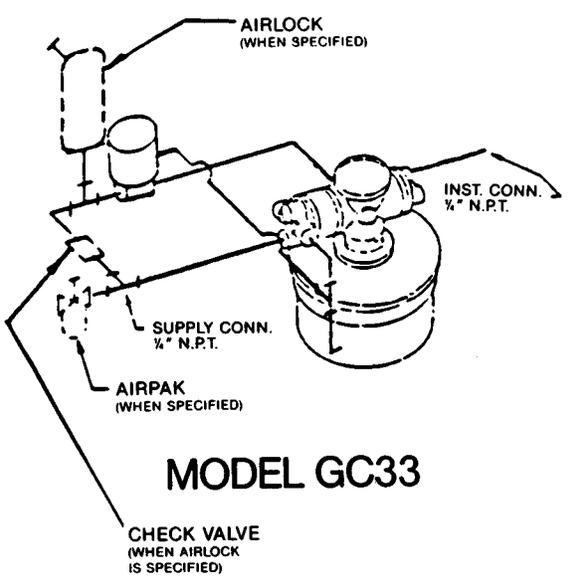
Check all connections for leakage after installation.



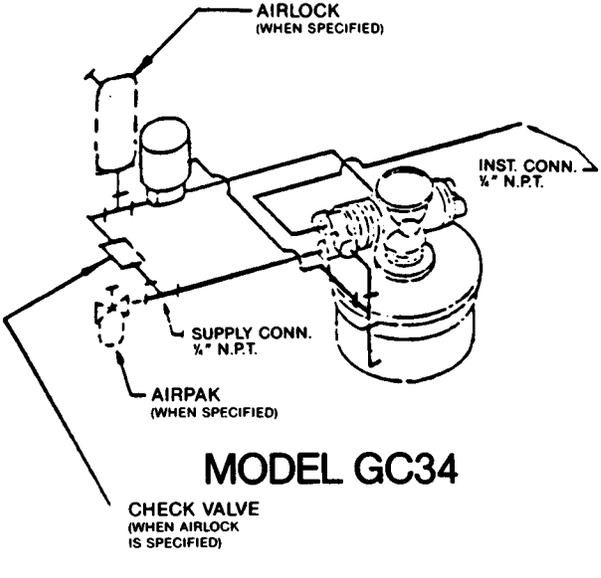
**MODEL GC31**



**MODEL GC32**



**MODEL GC33**



**MODEL GC34**

OPERATIONAL CHARACTERISTICS		GC31	GC32 GC3230	GC33 GC3330	GC34
As Instrument Signal Increases	Positioner	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