



**UNITED  
TECHNOLOGIES  
CARRIER**

Commercial Division  
Carrier Corporation

BULLETIN: CA-SB-17-69-7  
DATE: 9/26/69  
PAGE: 1 OF 3

## SERVICE BULLETIN

SUBJECT: NEW IMPROVED QUICK EXHAUST SOLENOID VALVE ASSEMBLY

SUPERSEDE  
BULLETIN:  
DATE:  
PAGE: OF:

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### PURPOSE

To transmit information concerning a new improved quick exhaust valve assembly used on all high pressure suction dampers in order to minimize the reaction time to close the damper blade.

### MACHINES AFFECTED

17 series 30 and 40 sizes shipped after February 1970.

### BACKGROUND AND PROCEDURE

A slow moving suction damper may allow the compressor to rotate in reverse due to the large difference in cooler and condenser pressures. This might possibly cause damage to the turbine drivers, gears and couplings.

A new quick exhaust assembly has been designed and is shown mounted on a pneumatic suction damper motor in Figure 1. The assembly has a 3/4 inch exhaust valve insuring a rapid bleed of the existing pressure in the motor allowing the damper to close immediately.

The assembly works in the following manner:

During normal operation, solenoid 14 is open allowing signal air to pass into the damper motor from the positioner. The pilot valve (16) has a diaphragm which is closed during operation. This diaphragm has a small hole in it which allows air to pass through it to solenoid 15 which is closed. Pressure builds up until it equalizes across each side of the diaphragm.

Upon shutdown, solenoid 14 closes preventing signal air from entering into the damper motor. Solenoid 15 opens venting that side to atmosphere. The pressure on the motor side, being higher than atmospheric, opens the diaphragm and dumps the existing air out the 3/4 inch exhaust port to atmosphere. This allows the damper motor to return to its normal position which quickly closes the suction damper blade.

A cross section of the pilot valve showing the internals is shown in Figure 2.



**UNITED  
TECHNOLOGIES  
CARRIER**

Commercial Division  
Carrier Corporation

BULLETIN: CA-SB-17-69-7  
DATE: 9/26/69  
PAGE: 2 OF: 5

## SERVICE BULLETIN

SUPERSEDE  
BULLETIN:  
DATE:  
PAGE: OF:

A 3/16 inch bleed hole must be drilled as shown in Figure 1. This bleed hole will allow the damper motor diaphragm to return faster.

A kit (Carrier Part No. 17M40-335-2) is available from the Replacement Components Division in Syracuse.

Attached is a bill of material for the makeup of this valve assembly and a wiring diagram to wire it into the safety circuit.

When mounting this assembly, be sure to have the exhaust port on the 2-way pilot valve facing downward. This will insure that dirt and foreign matter do not get into the valve and harm the valve diaphragm.



**UNITED  
TECHNOLOGIES  
CARRIER**

Commercial Division  
Carrier Corporation

BULLETIN: CA-SB-17-69-7

DATE: 9/26/69

PAGE: 3 OF 5

## SERVICE BULLETIN

### BILL OF MATERIAL

FOR QUICK EXHAUST SOLENOID VALVE ASS'Y

SUPERSEDE  
BULLETIN:

DATE:

PAGE: OF:

<u>ITEM</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
*1	1	3/8 nipple, pipe, full x 1" lg.
*2	1	Elbow 90° maleable iron
*3	1	Same as 1
*4	1	Bracket support
*5	1	Reducing tee 3/8 x 3/8 x 1/4 maleable iron
*6	1	Same as 1
*7	1	Reducing bushing 3/4 M.P.T. x 3/8 F.P.T.
*8	1	1/4 nipple pipe full 7/8 lg.
*9	1	1/8 nipple pipe full
10	1	Damper motor
*11	1	90° elbow 1/4 O.D.T. x 1/8 M.P.T.
*12	1	90° elbow 1/4 O.D. cu tube
*13	1	3/8 N.P.T. full or half coupling (2000 lb. forged steel)
**14	1	Solenoid valve (2-way) N.C. (17Q4-4092)
**15	1	Solenoid valve (2-way) N.O. (17Q4-4072)
**16	1	Pilot valve (17Q4-4112)
*17	1	1/4" x (.028W) tubing x 24" lg

This kit is for 115 volt circuits. Part numbers for 230 volt solenoids are available from Service Engineering - Syracuse.

\* Field supplied items

\*\* Contained in quick exhaust solenoid valve assembly kit, part no. 17M40-335-2.

NOTE 1: Remove existing fitting and enlarge the hole to accommodate a 3/8 N.P.T. coupling (Item 13). The coupling must be securely welded into the motor as shown.

NOTE 2: Tack weld bracket in place as shown.

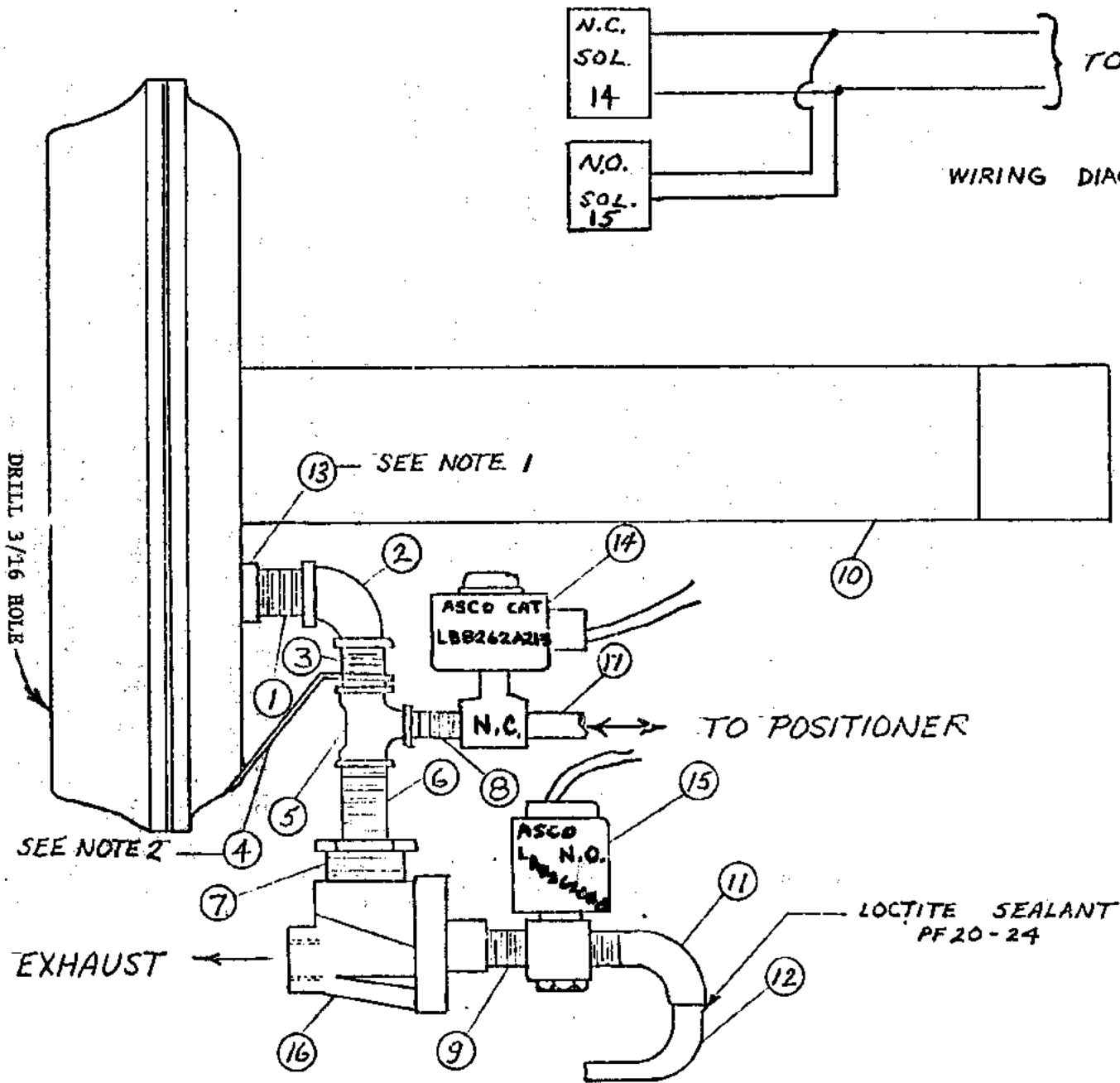


Fig. 1. Quick Exhaust Valve Assembly



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**SERVICE BULLETIN**

BULLETIN: CA-88-17-69-7
DATE: 9/26/89
PAGE: 4 OF: 5
SUPERSEDES BULLETIN:
DATE:
PAGE: OF:



**UNITED  
TECHNOLOGIES  
CARRIER**

Commercial Division  
Carrier Corporation

BULLETIN: CA-SB-17-69-7

DATE: 9/26/69

PAGE: 5 OF: 5

## SERVICE BULLETIN

SUPERSEDE

BULLETIN:

DATE:

PAGE: OF:

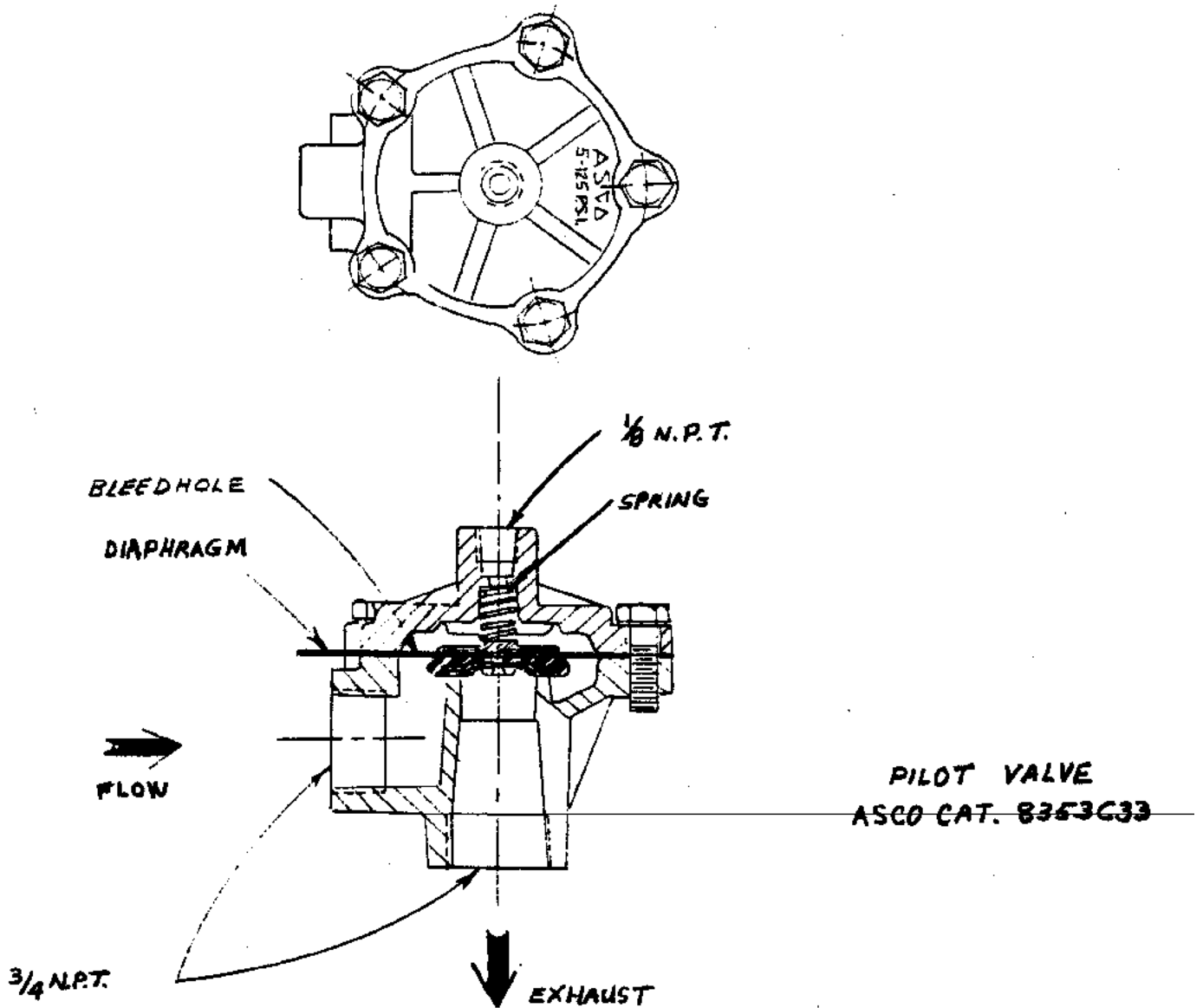


FIGURE 2