



**UNITED
TECHNOLOGIES
CARRIER**

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-19-C-61-10
DATE: 4/20/61
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SERVICE BULLETIN

SUBJECT:

VANE POSITION INDICATOR ASSEMBLY

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PURPOSE

To provide a guide for servicing the vane position indicator assembly.

MACHINES AFFECTED

All 19C machines that have a thermal purge with electronic controls and a vane position indicator assembly installed on top of the compressor inlet venturi. Machines with pneumatic control do not have this assembly.

DESCRIPTION

The vane indicator assembly consists of four basic subassemblies, some of which were located previously in other areas of the machine.

- A. The vane indicator assembly is a rotating drum (17) connected through mechanical linkage directly to the vane shaft on the compressor. As the vanes change position, the movement of this shaft rotates a crank (3) which, in turn, rotates the vane indicator drum (17) seen in the window in the assembly cover.
- B. The vane closed switch (20) has been relocated from the cover of the hydraulic cylinder into this vane indicator assembly. The only time the switch is contacted is when the vanes are in the fully closed position. An adjusting screw (19) is located on the drum plate (18) to adjust the contact point of the switch.
- C. The potentiometer (14) is connected to the drum plate (18). As the drum plate is rotated by movement of the vanes, the potentiometer is also moved to provide a feedback signal into the control circuit for proportional control.
- D. The drive shaft (2) of the assembly connects to the vane shaft on the compressor. A crank setscrew (4) can be loosened to allow adjustment of the crank (3) in relation to the drive shaft.

ADJUSTMENTS

The total assembly is serviceable. Remove the assembly sheet metal cover to make the necessary adjustments on the potentiometer and vane closed switch. When servicing the vane indicator assembly, care must be taken to properly adjust the total assembly for effective operation. Failure to properly calibrate this assembly will lead to poor operation of the controls.



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- A. To initially set the position of the vane indicator drum (17) corresponding to the closed position of the vanes, the plug (7) in the drive shaft cover plate (5) must be removed and an allen wrench inserted into the crank setscrew (4) located in the top of the drive shaft. Loosen the setscrew so that the vane indicator drum can be rotated without rotating the drive shaft. After the desired setting is obtained on the vane indicator drum and the vanes are fully closed, tighten the crank setscrew and replace the plug on the cover plate.
- B. Adjust the vane closed switch to make contact at this point by loosening the two hold-down screws on the vane closed switch and moving it to a desired position, or by adjusting the screw (19) in the drum plate. After the adjustment has been made, the lock nut should be securely tightened to prevent changing the setting during future use.
- C. If the potentiometer setting or range appears to be wrong, it can be adjusted by loosening the potentiometer setscrew (22) on the side of the drum plate (18) and rotating the potentiometer to the desired position. Tighten the potentiometer setscrew to insure proper position of the potentiometer. With the vanes in the closed position and the wires removed from the terminals, there should be approximately 350 ohm between Terminals 25 and 26. At full vane open position the ohmic value should reduce to approximately 100 ohm between Terminals 25 and 26.
- D. When servicing the arm bellows assembly (12), refer to Fig. 1 through 4 for respective location of parts. This assembly can be removed as follows:
1. Remove drum plate pin (21) from the drum plate.
 2. Remove the cover plate (5) and the cotter key (9) from the crank pin (8) to free the arm bellows assembly from the crank.
 3. Remove the four machine screws (11). Replace or repair the arm bellows assembly as required.
- E. To replace the potentiometer, it is first necessary to disconnect the arm bellows assembly from the drum plate by removing the drum plate pin (21). The potentiometer can be removed as follows:
1. Loosen the two screws on the rear of the assembly case (16) to allow the supporting bracket (13) for the potentiometer to be removed. (Some wires may have to be loosened from the terminal strip (15).)
 2. Place the potentiometer and bracket on the bench and loosen the potentiometer setscrew (22) in the drum plate to allow the drum plate to be removed from the potentiometer shaft.
 3. Replace the faulty potentiometer. Check ohmic value setting (Step C)
- F. If the vane closed switch should need replacing, remove the two hold-down screws and disconnect the wires leading to this switch. After installing the new switch, set the adjusting screw (19) in the drum plate to properly close the switch when the vanes are in the fully closed position.



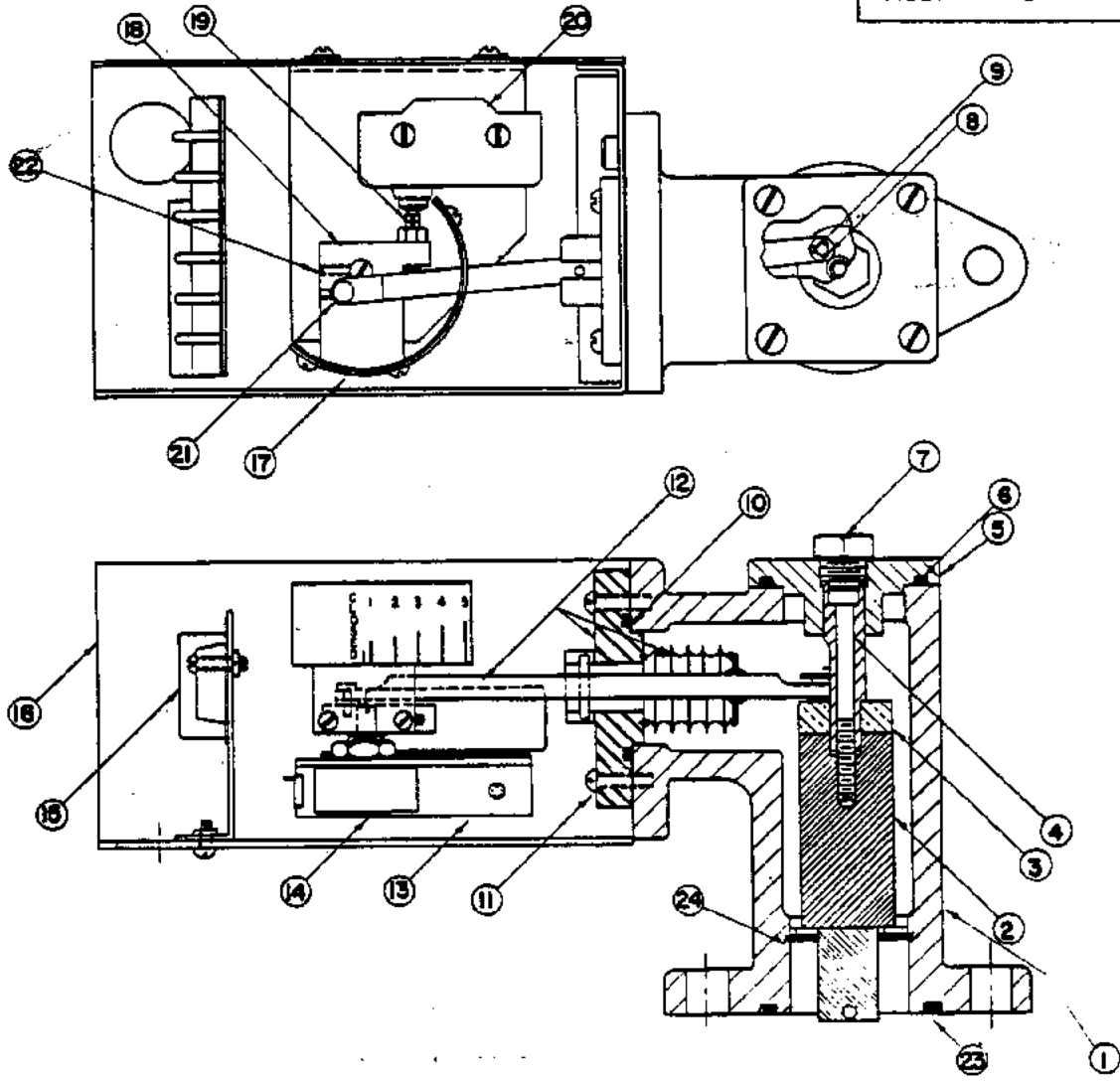
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Item	Description	Item	Description
1	Vane Indicator Housing	13	Bracket
2	Driver Shaft	14	Potentiometer
3	Crank	15	Terminal Strip
4	Crank Set Screw	16	Assembly Case (cover not shown)
5	Cover Plate	17	Vane Indicator Drum
6	"O" Ring Gasket	18	Drum Plate
7	Plug	19	Vane Closed Switch Adjusting Screw
8	Crank Pin	20	Vane Closed Switch
9	Cotter Key	21	Drum Plate Pin
10	"O" Ring Gasket	22	Potentiometer Set Screw
11	Machine Screw	23	"O" Ring Gasket
12	Arm-Bellows Assembly	24	Retaining Ring

Fig. 1. Vane Position Indicator

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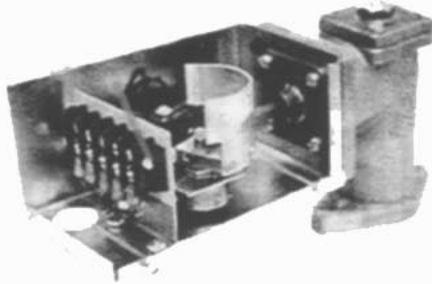


Fig. 2. Left front view of vane position indicator, showing terminal strip and vane indicator drum in the vane closed position.

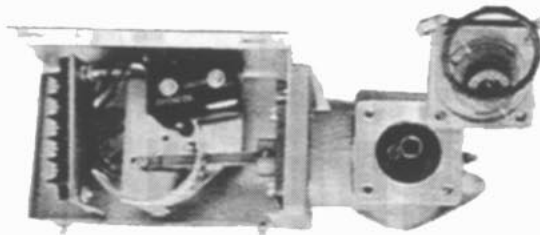


Fig. 3. Top view of vane position indicator showing cover plate removed. Crank set-screw (4), crank (3), and crank pin (8) can be seen.

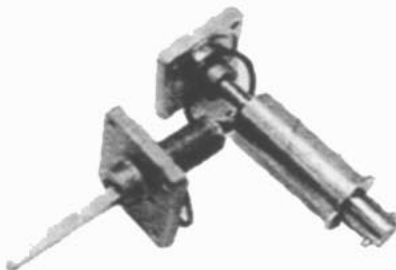


Fig. 4. Arm bellows assembly (12) and drive shaft (2) and crank (3) removed from vane position indicator.