

### Type 25E Electric Pilot Operated Valve (for Steam or Air Service)

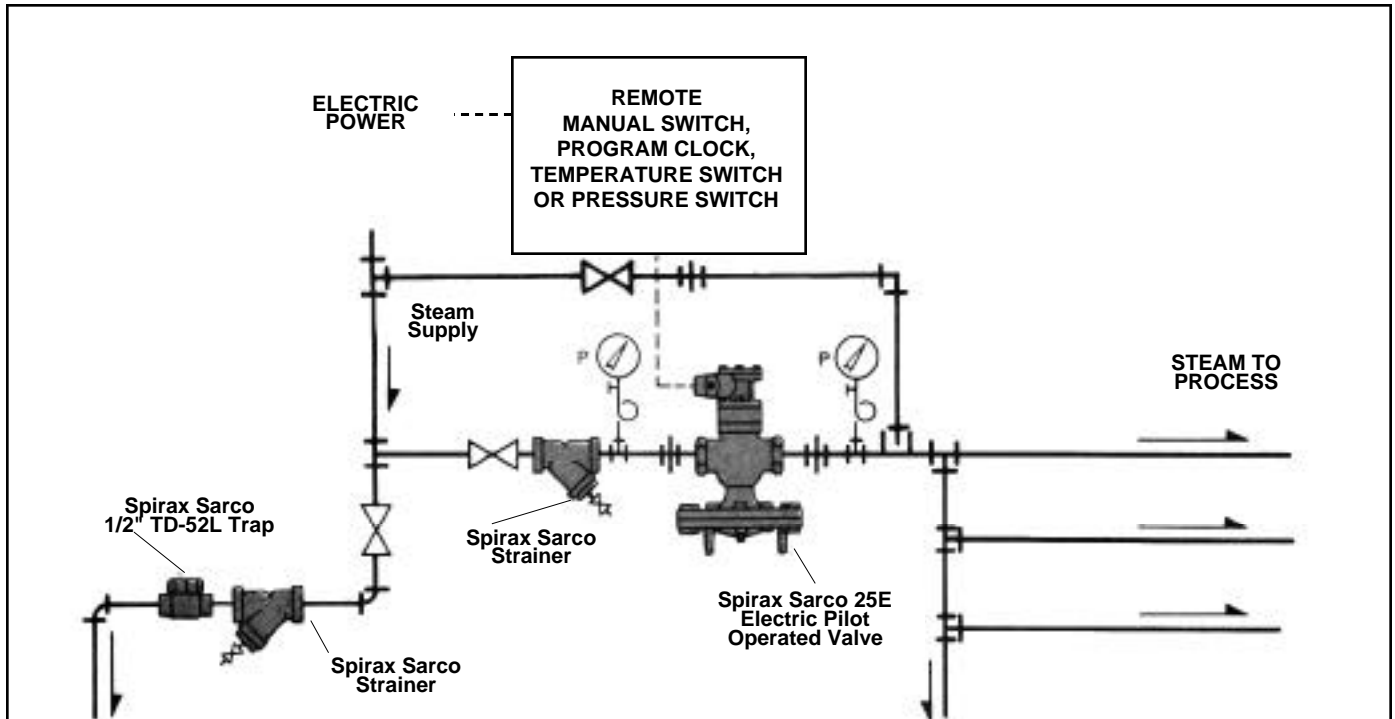


Fig 1 Automatic Control Valve Electrically Operated from Remote Station or Stations

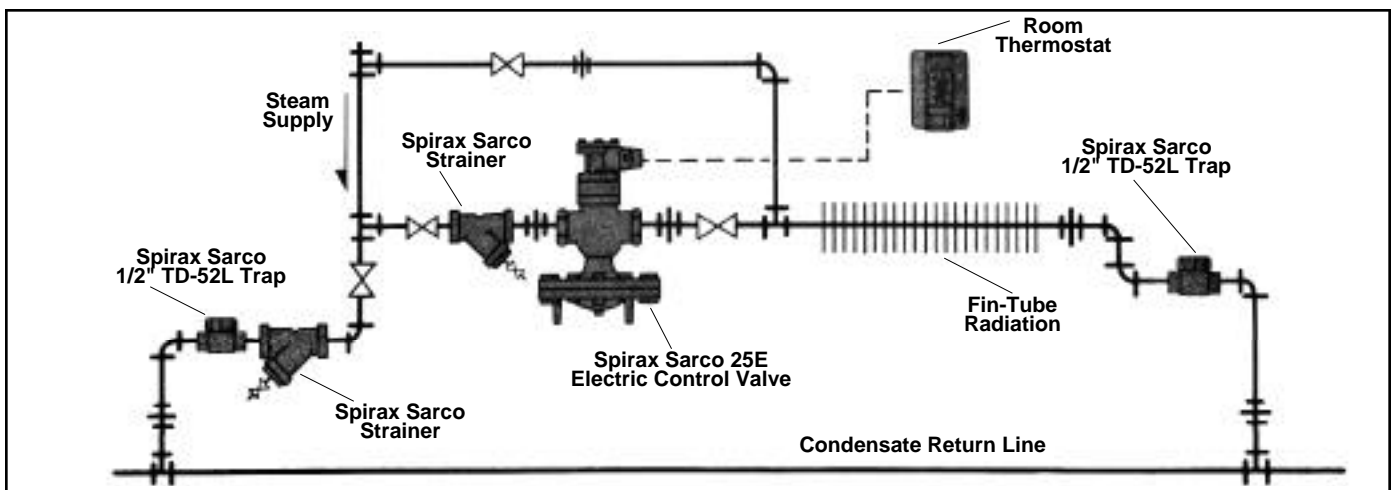
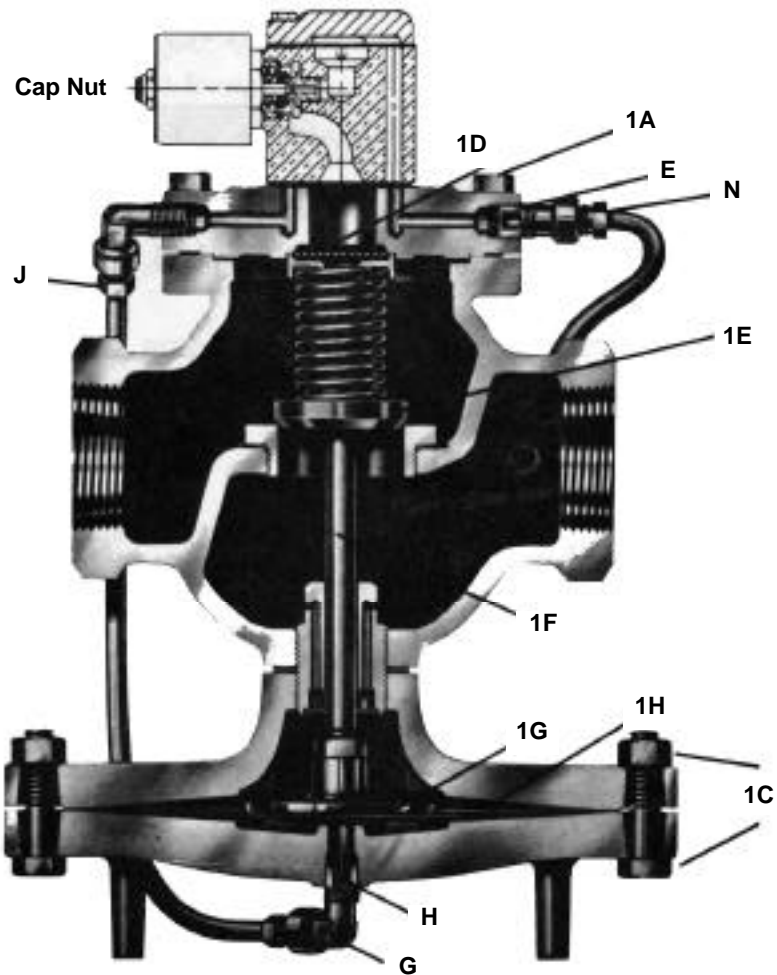


Fig 2 Controlling Temperature of Greenhouse or Other Similar Buildings



**Fig 3**  
**Sizes 1/2" - 2"**

## INSTALLING THE VALVE

**IMPORTANT:** Step by step instructions on the following pages should be read carefully before installing the valve.

### Unpack Carefully

Do not lift the regulator by the electric pilot. Grasp the body of the valve firmly when lifting.

### Piping

1. Typical hookup sketches as shown in Figs. 1 and 2 will aid in planning a correct installation.
2. Before installing the valve make sure the piping is free of foreign material, scale, etc.
3. Make certain the arrow cast on regular valve body is pointing in the direction of flow.
4. Regulating valve should always be installed in a horizontal line. (See Figs. 1 and 2)

### Bypass

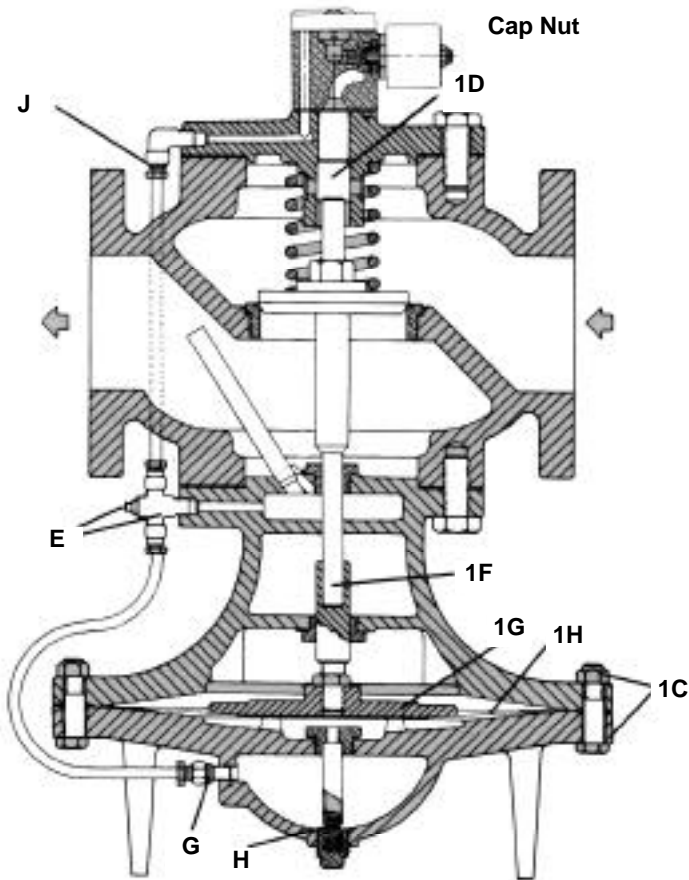
1. A bypass connection, as shown in Figs. 1 and 2, is recommended so that the valve can be serviced without shutting down the equipment.
2. The bypass valve should be the same size as the regulating valve.

### Steam Line Drain Trap

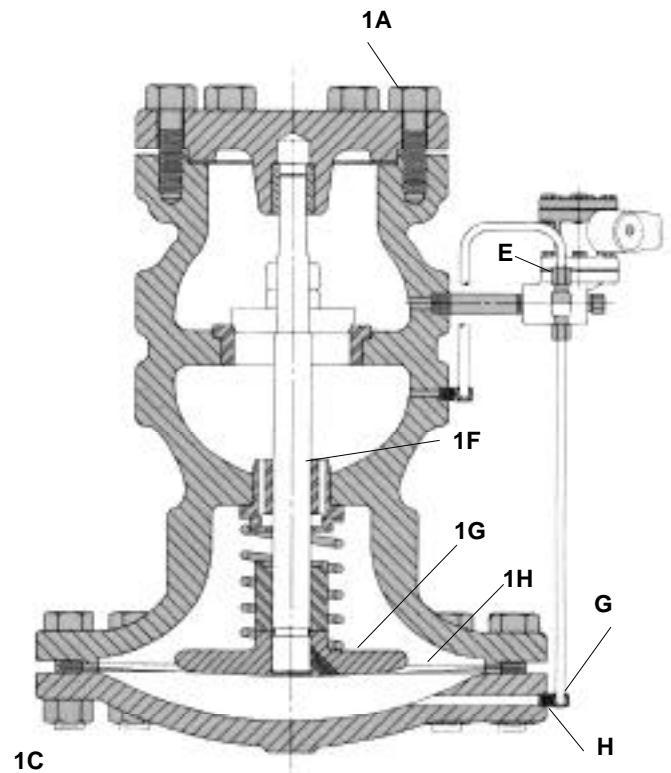
To insure proper operation of the valve and avoid premature wear, it is recommended that on steam applications a steam trap be installed on the same supply line. (See Figs. 1 and 2)

### Pipeline Strainers

1. It is strongly recommended that strainers be installed before the regulating valve and steam traps. (Figs. 1 and 2)
2. Make certain adequate clearance is provided for screen removal and blowdown connection between strainer and regulating valve body.



**Fig 4**  
**Sizes 2-1/2" - 4"**



**Fig 7**  
**6" Size**

**Stop Valves**

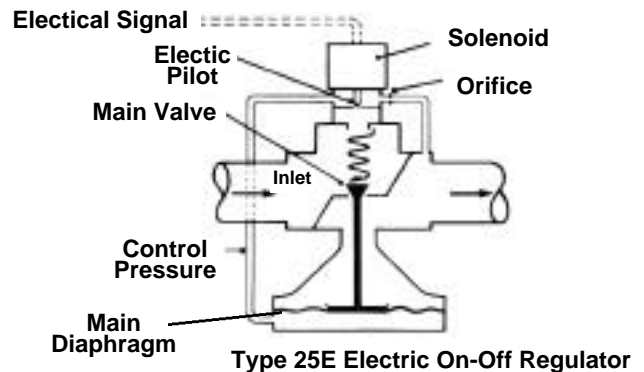
All stop valves on the supply side, as well as on the downstream side of the regulating valve, should be of the gate type so as to insure full rated capacity and good control.

**Wiring**

1. Check name plate on electric pilot for correct voltage and service conditions.
2. Wiring must comply with local and national electrical codes.
3. Solenoid enclosure is provided with hole to accommodate standard 1/2 inch conduit connection.
4. The solenoid enclosure can be rotated to facilitate wiring by loosening the cap nut (See Fig. 6).

**HOW IT WORKS**

Normally, the main valve and electric pilot valve are closed. When the electric pilot is energized, pilot valve will open allowing steam or air to pressurize main valve diaphragm chamber which opens main valve fully. When electric pilot is de-energized, pilot valve closes and diaphragm chamber pressure is relieved through control orifice. Main valve will close tight by the force of head spring and steam or air pressure acting on valve head.



## MAINTENANCE

### General Inspection

While a program of planned maintenance is always to be recommended, the 25E Regulator will give long and trouble-free service if correctly selected, installed and kept reasonably free of dirt and foreign matter. Dirt and foreign matter are most likely to collect during installation and later trouble can be avoided by inspecting the installation a few days later. Check the following: Refer Fig. No. 3, 4, and 7.

1. Clean all pipeline strainers (remove screens to clean).
2. Check the main valve seat and protective screen (1D).
3. Inspect and clean orifices (E) and (H).
4. Check all joints for leakage.

### Electric Pilot, Inspection of Solenoid and Internal Parts (Refer to Fig.6)

1. Shut off steam supply to valve and turn off electrical power.
2. Unscrew solenoid housing nut and remove housing, coil, and housing base plate.
3. Base assembly (4J) is now accessible for removal with hexagon or adjustable open end wrench.
4. Valve head, spring and seat are now accessible for inspection, cleaning and replacement, if necessary. When replacing seat use compound on threads (remove excess). Tighten to 75 in.-lb. torque.

### Valve Sizes 1/2" thru 4".

#### Inspecting and Replacing Main Valve Head and Seat (Refer to Figs. 3 and 4)

1. Unscrew copper tubing connection at (J) and (N).
2. Remove main valve cover cap screws (1A).
3. Remove main valve cover, strainer, screen, and head spring.
4. Head can then be removed by simply withdrawing with pliers or similar tool.
5. Inspection should then be made to determine if scale or other foreign material prevented tight closure of the head and seat.
6. If the head or seat shows signs of wear this can be corrected by grinding, using a fine grinding compound (400 grit) providing the wear is not severe. Check for body erosion.
7. If it is necessary to replace the valve seat, this can be removed from the valve body using a standard hexagon socket. (Valve sizes 1/2" to 2"). When replacing the valve seat, a new gasket should be used to insure a tight joint. 2-1/2" thru 6" valves contain raised lugs for removal and seal metal-to-metal without a gasket. Replacement heads and seats should be lapped in.

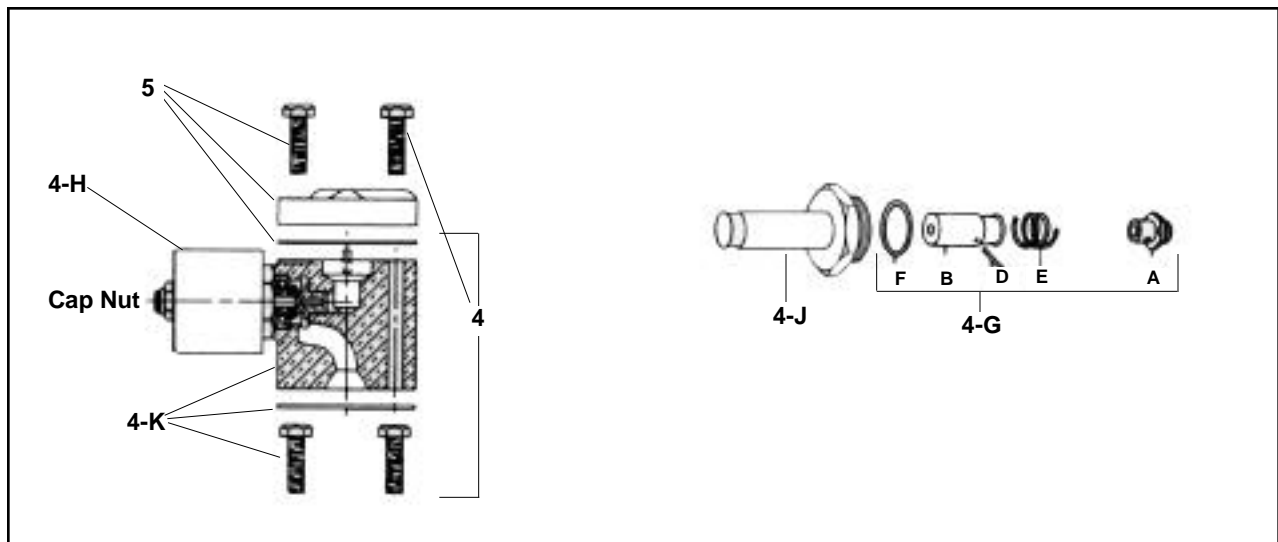


Fig 6

**Valves Sizes 1/2" thru 4"**

**Inspecting and Replacing Main Valve Diaphragms**

*(Refer to Figs. 3 and 4)*

1. Unscrew copper tubing connection at (G).
2. Remove main valve diaphragm bolts (1C).
3. This will allow the lower diaphragm case to be removed.
4. The 2 metal diaphragms (1H) should be inspected to insure that they have not become distorted or possibly fractured as a result of abnormal operating conditions.
5. At the same time any accumulation of dirt or foreign material should be removed from the diaphragm case.
6. The valve stem (1F) should also be checked to make sure it is free to move and that there is no scale or foreign material lodged in the guide bushing.
7. **Before reassembling diaphragms in 1/2" thru 4" sizes, main valve head must be in place and held in a closed position with the return spring and main valve cover.**
8. Make certain pressure plate (1G) is set properly. *(Refer to Figure 5)*
9. Care should be taken in centering the diaphragms properly and equalizing bolt take-up uniformly.

**6" VALVE ONLY.**

**Inspecting and Replacing Main Valve Diaphragms, Seat, and Head Assembly** *(Refer to Figure 7)*  
**Diaphragms**

1. Unscrew copper tubing connections (G) to lower diaphragm chamber.
2. Remove main valve diaphragm bolts (1C) and drop lower diaphragm case.
3. The 2 metal diaphragms (1H) should be inspected and replaced if they have become distorted or fractured.
4. Clean any accumulation of dirt from the diaphragm case and orifice (H).

**Servicing the Main Valve Head and Seat.**

5. Loosen the diaphragm plate set screw and remove the diaphragm plate (1G).
6. Remove the top cover bolts (1A). and cover.
7. Remove the stem and head assembly from the valve. Inspect the head and seat for wear.
8. Check for body erosion around the seat ring.
9. Replacement seats and heads should be lapped in, and minor wear can also be corrected by lapping with 400 grit compound.
10. On re-assembly be sure diaphragm plate (1G) is set at 27/64" and set screw securely tightened.

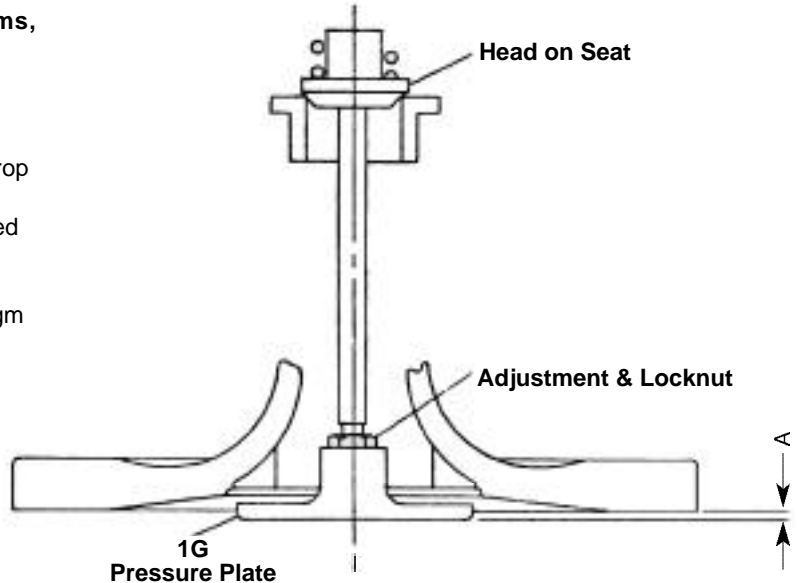
**Spare Parts Kits**

Spare parts kits and coils are available. Refer to

TIS 3.027 for 1/2" to 4" Main Valve

TIS 3.029 for 6" Main Valve

TIS 3.0271 for Pilot Valves



**Fig 5**

**NOTE: In 1/2" thru 4" sizes, top of valve must be completely assembled and head must be on seat when measuring dimensions "A" and when reassembling diaphragms.**

Size	1/2" & 3/4"	1"	1-1/4" & 1-1/2"	2"	2-1/2"	3"	4"	6"
Dim.A	1/16"	5/64"	3/32"	1/8"	13/64"	13/64"	1/4"	27/64"

## TROUBLESHOOTING CHART — TYPE 25E

Symptom	Cause	Check and Cure
1. Valve does not close.	1. (a) Dirt under pilot valve head or seat. (b) Dirt in orifices (E) or (H). (c) Dirt or foreign material under main valve head (1E).  (d) Faulty control circuit.  (e) Actuating device, that is, timer, thermostat or programmer may be defective. (f) Bypass valve leaking	1. (a) Remove and, if necessary, replace or clean. See Figure 6, Page 4. (b) Inspect and clean. (c) De-energize solenoid to close pilot. Disconnect tubing at (G). Main valve should close, if not, remove bolts (1A) and clean main valve. (d) Check the electrical system by energizing the solenoid. A metallic click signifies the solenoid is open. Absence of the click indicates loss of power supply. Check for loose or blown out fuses, open circuited or grounded coil, broken lead wires or splice connections. (e) Check and correct.  (f) Check and correct
2. Valve does not open.	2. (a) Actuating device, that is, timer, thermostat or programmer may be faulty. (b) Main Valve diaphragm (1H) cracked.  (c) Orifice at (H) blocked. (d) Valve strainer (1D) blocked.  (e) Steam or air pressure too low. (f) Line strainer partially or completely blocked. (g) Faulty control circuit.  (h) On steam applications, steam trap draining equipment may not be functioning properly.	2. (a) Check and correct.  (b) Check and correct. Remove copper tubing at (G) and crack bypass valve. If steam or air blows from diaphragm case at (G) connection, replace diaphragm. (c) Check and correct. Remove copper tubing at fitting. Inspect and clean. (d) Check and correct. Remove bolts (1A). Inspect strainer and clean. (e) Check and correct. (f) Check and correct. Inspect and clean. (g) Check the electrical system by energizing the solenoid. A metallic click signifies the solenoid is open. Absence of the click indicates the loss of power supply. Check for loose or blown out fuses, open circuited or grounded coil, broken lead wires or splice connections. (h) Check and repair, if necessary.

Spirax Sarco Applications Engineering Department

**Toll Free at:  
1-800-833-3246**



SPIRAX SARCO, INC. • 1150 NORTHPOINT BLVD. • BLYTHEWOOD, SC 29016  
PHONE 803-714-2000 • FAX 803-714-2200